

## Examining the Impact of HSE Stakeholder Engagement Strategies on University Construction Organizational Performance



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### ABSTRACT

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Due to the high level of risk, every organization is required to implement the Occupational Health, Safety, and Environmental Management System, or OHSEMS, during the construction process. Academic activities, laboratory research, and building work all require HSE management at XYZ University. The university's implementation of the OHSEMS in the construction process is done to predict work accidents that can impair the organization's performance. This study examines the involvement of OHSEMS stakeholders in construction activities. The study then organizes strategies for stakeholders to improve the organization's performance. The case study technique was employed in this study, with questionnaires distributed to 18 respondents and five experts. The results of the questionnaires will be analyzed by statistical and stakeholder analysis. According to the study's conclusions from stakeholder analysis, there are 36 HSE stakeholders, including 30 primary and six subsidiary stakeholders. The Head of the HSE Organization, the Facility Operation and Maintenance Directorate, and contractors are examples of stakeholders who have a positive impact on the organization's performance. However, according to linear regression result, one of the consultant's strategies had no effect on the organization's performance. Workers can use the stakeholder engagement strategy to improve organizational performance by hosting a construction work evaluation meeting.

## 1. INTRODUCTION

### 1.1 Research background

The university is a public institution whose core functions are education, teaching, and research. In order to carry out those operations, the university is divided into academic and non-academic management, which work together to complete the business process. The fulfillment of educational facilities and infrastructure is one of the supporting actions in non-academic management. Construction of an administrative center building, lectures, a library, sports facilities, laboratories, and other supporting facilities and infrastructure are among these efforts.

Since it is an educational environment, the construction of facilities and environment must be explicitly managed. That is because, in a construction project, some potential hazards and risks can influence the academic community and the University's assets. The organization is required to manage construction activities to ensure the safety of people, support, and the environment.

A project is an activity carried out at a defined time with restricted resources to meet the project's objectives [1]. The construction phase is when the project is put into action on the ground [2]. According to the definitions, a construction project is a job that seeks to achieve specified goals while working under certain constraints [3]. Construction is a diverse industry,

with several industrial sectors collaborating [4]. On the other hand, the construction business is notorious for its high death rate [5]. As a result, the industry is frequently chastised by the general public [6]. Nonetheless, the building industry is critical to the development of infrastructure [7]. That is why, despite the significant risk, the building industry remains one of the most vital sectors in this country.

Because of the high risk, construction projects are related to health, safety, and environmental management since an accident could happen [4]. However, occupational safety, health, and the environment in the construction sector are often neglected [6]. It is shown by the number of injuries, diseases, and accidents that happen in the workplace [8]. Some countries also do not implement the OHSEMS well. It causes a high risk in construction projects because of its complexity. Based on the data from International Labor Organization (ILO), there were 2.78 million fatality accidents and 374 million non-fatality accidents in 2019. Most of those accidents happened in the construction industry [9]. It is because construction projects have risks that are dangerous in various ways, including death [10]. Aside from that, construction work is an activity that frequently results in accidents, particularly on campus [11]. It may have an impact on the university's safety performance [12]. Therefore, an Occupational, Safety, Health, and Environment Management System, or OHSEMS, is needed to prevent work accidents that could happen. It is also supported by the Government Regulation of the Republic

of Indonesia no. 50 of 2012, which says every enterprise should implement OHSEMS.

Based on the Government Regulation of the Republic of Indonesia, No. 50 of 2012, OHSEMS is a part of the enterprise's comprehensive management system for occupational activity to create safe, efficient, and productive work. Regulation of the Minister of Public Works and Public Housing of the Republic of Indonesia no. 09/PRT/M/2008 also says that OHSEMS is a management system that includes the organization's structure, responsibilities, planning, implementation, procedures, processes, and resources to develop, implement, achieve, review, and maintain OHSE policies to create a safe and efficient workplace. It is why OHSEMS is very crucial in a construction project which has high risk.

As one of the universities in Indonesia, XYZ University strives to provide educational facilities through a construction project. The scope of construction activities at XYZ University consists of planning, assessing the qualification, selecting contractors, carrying out the construction work, and evaluating the construction work. Those stages can be categorized as two big stages: pre-construction and construction. The pre-construction stage starts from the planning until the selection or tender stages. Some parties are involved in the internal and external stages and are responsible for implementing OHSEMS at XYZ University.

According to the interview with HSE Organization, XYZ University has already implemented OHSEMS to protect people from potential risks and hazards. Eighteen organizations manage the OHSEMS, and 102 stakeholders are involved in the implementation. Thirty-six stakeholders are involved in implementing OHSEMS specifically for the construction process. A stakeholder is a person, or a group involved actively in an organization. They can either influence or be influenced by the organization's goal [13]. Stakeholder needs to be managed well because they are critical to the organization's success [14]. Stakeholder management is also critical because they must be engaged effectively to avoid conflicting views about the project [15].

### **1.2 Problem identification**

However, some problems arose during the implementation of OHSEMS at XYZ University. The HSE organizations found it difficult to manage the workers from the contractor's side. Furthermore, some requirements based on the Government Regulations of the Republic of Indonesia and ISO 45001: 2018 still need to meet the target. Furthermore, there is no data about the work accident caused by the construction project. The lack of data on workplace accidents shows that stakeholder management has not been implemented well. It is because one of the acts in stakeholder management is data collection and analysis. That is why this study will arrange the stakeholder engagement strategy to avoid those issues. This paper will also examine whether the strategies affect the organization's performance.

One of the reasons why some problems happen throughout the construction process is the stakeholder. The poor working relationship at the enterprise might lead to OHSEMS problems. The lack of communication and coordination is an example of a poor relationship [16]. The lack of managing stakeholder engagement can decrease the organization's performance. It makes their performance less optimal. Besides that, the poor number of accidents, incidents and the severity level of the

accident at XYZ University shows that the organization's performance is decreasing. Based on the data, those numbers did not decrease. That also shows the lack of the organization's performance. Based on the interview with HSE Organization, they said that HSE performance at the University is pretty good, but the performance of each faculty still needs to improve. It is because of the lack of coordination regarding the HSE officer assignment. Another cause is the large number of HSE officers who are working on multiple projects at the same time. That is why the implementation of OHSEMS still needs to be improved.

### **1.3 Research objective**

Work accidents can cause physical injuries and disease. It may have a negative impact on the organization's performance. As a result, the stakeholder engagement strategy is required because it can improve the organization's performance. This paper discusses the OHSE's stakeholder engagement strategy during the construction process. This study aims to organize the stakeholder engagement strategy and determine whether it can effectively improve the organization's performance. It is also the novelty of the research since the study about how HSE stakeholder engagement strategy impacts the organization's performance has not existed yet. A relationship model between the stakeholder engagement strategy and organizational performance will be used to model the strategy and organizational performance. It is essential to determine how effectively the strategies increase the organization's performance.

### **1.4 The importance of construction industry**

The construction industry is an industry that builds public infrastructure, such as universities, schools, and hospitals. The construction industry is critical to the country's growth [7]. The construction industry also contributes to the economic growth of the country and the country's long-term development. It is because the industry contributes to the country's progress [17]. Since the university is a public infrastructure, the construction work at the campus is essential. The construction industry builds educational buildings and infrastructure, laboratories, administration buildings, and other infrastructures that can help maximize the education process. The quality of human resources can be improved with a decent education [18]. High-quality human resources can help the country grow. It can also help the country to deal the industrial resolution [19]. That is why the construction industry is essential to the country.

### **1.5 HSE stakeholder engagement implementation to improve organizational performance**

Stakeholder management is needed to improve the organization's performance. Stakeholder management can ensure that they will actively involve in the project. It can help them to achieve the project's goals [14]. Stakeholder management boosts the project's chances of success [20]. The stakeholder engagement strategy is required to ensure stakeholder involvement to improve the organization's performance [13]. A stakeholder engagement strategy can be organized by identifying the stakeholders' relationship with the project. It also can be determined by how the stakeholder can get the project's information [21]. Each stakeholder may

have similar or different strategies. It depends on the stakeholder's relationship with the project, the type of stakeholders, and the stakeholder grouping [22].

Stakeholder management can have a positive impact on the project. It can improve the project's chances of success [23]. Stakeholder management can also help the organization achieve its goals and improve the project output [24]. The quality of the project can be enhanced by stakeholder management. It is because the organization will take care of the stakeholder's rights, needs, and expectations. One of the outputs of stakeholder management is a stakeholder engagement strategy that can help the project to be well executed [13]. A well-planned stakeholder engagement strategy can significantly improve the organization's performance [25]. It means that a stakeholder engagement strategy has the potential to improve the organization's performance.

## 2. METHODOLOGY

Research methodology is the procedure in the exploration process. In doing some research, a research strategy is necessary to be selected. A research step is also required to make the study run well. Figure 1 is the flowchart of the research.

This research began with a review of the literature on stakeholders involved in the OHSEMS implementation at XYZ University. The literature comes from archival documents from the University. The documents show the structure of XYZ University. Aside from that, the HSE instruction book from the University is also one of the archival documents. The literature also comes from previous research on similar topics. The stakeholders and their power interests list were the outputs of the literature review process. The stakeholders and their power-interest lists were validated by five experts using a questionnaire. The experts were picked based on their experience in the HSE field at XYZ University. They should have more than ten years of experience and a bachelor's degree. Following that, the respondent survey was carried out. Seventeen respondents answered the questionnaire. The method used for choosing the respondents is cluster sampling. It is a system in which the respondents were picked based on their faculty. There are 14 faculties and one vocational program at the University. The other respondents were the representative of the HSE organization and the Facilities Maintenance and Operation Directorate, which oversees the construction process. The respondents were given a digital questionnaire using Microsoft Word files. They must fill out the questions about their past education, experience, and job. It is needed to ensure that they have met the requirements. The respondents should have more than five years of experience in the HSE field. The data were gathered in a Microsoft Excel file and moved to the statistical analysis.

Some issues happened in collecting the data. The respondents took a long time to complete the questionnaire. Some of them also refused to answer the questionnaire. The respondents were reminded to answer the questionnaire each week as a solution to the issue. When they rejected the questionnaire, they suggested some people to replace them as the respondent. Those who agreed to be the respondents answered the questionnaire about each stakeholder's level of power and interest, how the strategies affect the organization, and the current condition of the organization's performance.

The questionnaire used a Likert scale.

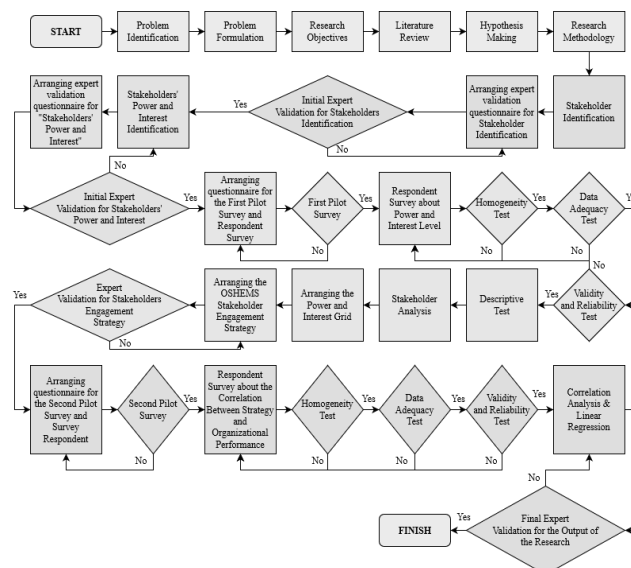


Figure 1. Research flow chart

Statistical analysis was used to analyze the data from the questionnaire. The homogeneity test, data adequacy test, validity, and reliability test, descriptive test, and linear regression are the tests used in this study. The statistical analysis is determined by the function of each test. For example, the data adequacy test is required to ensure that there is enough data to be analyzed. All statistical analysis tests are needed to confirm whether the data can be analyzed. Besides that, this research also used stakeholder analysis. It is used to create power-interest grids and the stakeholder engagement strategy. Except for the data adequacy test, all statistical analyses used SPSS software. The data adequacy test used Microsoft Excel by using this formula:

$$N' = \left( \frac{k}{s} \sqrt{N \sum X_i^2 - (\sum X_i)^2} \right)^2 \quad (1)$$

Notes:

N : the amounts of the gathered data.

N' : the amount of data needed.

k : level of confidence, if the confidence level is 95%, the k value is 2. If the confidence level is 99%, the k value is 3.

s : level of precision (1–10%)

The homogeneity test examines whether or not the sample and the respondents are from the same population [26]. It is called as homogeneous. The data that is not homogenous will not proceed to the next step. The validity test assesses whether the variable is suitable for the research purpose [27]. The data will proceed to the reliability test if the variable is valid. The reliability test determines whether the research instrument or the questionnaire is reliable [28]. The stakeholder analysis was used to arrange power and interest grids. The grids help in the arrangement of the stakeholder engagement strategy. The linear regression method is used to determine the relationship between the stakeholder engagement strategy and the organization's performance. Linear regression estimates the value of the dependent variables based on the independent variables [29].

### 3. RESULTS AND DISCUSSION

Some parties are involved in the OHSEMS implementation at XYZ University during construction. Those parties are known as the stakeholders. Stakeholders can positively or negatively affect the project. It depends on how the organization manages them. As a result, stakeholder management is required to meet the needs, interests, and expectations of each stakeholder. It may have a beneficial impact on the project.

Stakeholders are classified into two groups, such as primary and secondary stakeholders. The primary stakeholders are the key stakeholders who have significant impacts on the organization's performance. They are actively involved in the program and participate in the arrangement of the policies. Meanwhile, the secondary stakeholders are those who have an impact on the organization's performance but are not actively involved in the project. However, they still have concerns about the organization's goals. They can also give insightful advice that can influence the project's decision-making. The primary stakeholders in this study influence the OHSEMS implementation and the performance of the HSE organization. They also participate in planning the HSE policies at XYZ University. The stakeholder identification process was carried out by reviewing some papers related to this study. It is followed by initial expert validation. The output from this process is the list of 36 stakeholders involved in OHSEMS implementation.

The first step in this research is to conduct a literature review. Literature reviews from the previous research defined the stakeholder list. The stakeholder list is the result of the literature review. The list must be validated by some experts. The experts were given a questionnaire in which they were

asked if the stakeholder list was correct. Based on the validation from five experts, 36 stakeholders are involved in the OHSEMS implementation at XYZ University during the construction phase. Table 1 and Table 2 show the stakeholders involved in OHSEMS implementation at XYZ University during construction.

Based on the table, 36 stakeholders were involved in implementing OHSEMS at XYZ University during construction. There are 30 primary stakeholders and six secondary stakeholders among the 36 stakeholders. The stakeholder list is an important thing in managing stakeholders. The list can be used for every stakeholder management process. The stakeholder list in this study was used to determine the power and interest.

After the experts approved the stakeholder list, the next step was to determine the power and interest of each stakeholder. As in the previous process, the first step is to do a literature review of the University's archival documents and some research on similar topics. The archival documents, such as manual books, show the stakeholder's role, responsibility, and authority. The power of stakeholders is based on their authority, while the interest comes from their role. The prior literature also gave an overview and illustration of the power and interest of stakeholders. Since the literature did not discuss the HSE organizations, the power and interest were modified based on the role of each stakeholder. The list of stakeholders' power and interest is the result of the literature review. The power and interest list were also validated by the same five experts who validated the stakeholder list. They were also given a questionnaire that asked if each stakeholder's power and interests were correct. If something is incorrect, the experts will correct the power and interest. Table 3 shows the power and interest list of some stakeholders.

**Table 1.** Primary stakeholder list

Code	Primary Stakeholder	Role
REK	Head of University	The leader of university
WR4	Vice Head of University 4	The vice head of university
SOU	Secretary of University	HSE management supervisor
KPU	Head of Occupational, Safety, Health, and Environment Organization	The chief administrator of HSE management
KJK	Work Safety Management Coordinator of HSE Organization at XYZ University	Work safety manager and supervisor
KMH	Work Health and Hygiene Management Coordinator HSE Organization at XYZ University	Work health and hygiene manager and supervisor
KML	Environment Management Coordinator OSHE Organization at XYZ University	Environment manager and supervisor
KMP	Fire Prevention and Urgent Condition Management Coordinator HSE Organization at XYZ University	Fire prevention and urgent condition supervisor
DSL	Director of School of Environmental Science	The head of School of Environmental Science
DSK	Director of School of Strategic and Global Studies	The head of School of Strategic and Global Studies
DVK	Director of Vocational Program	The head of Vocational Program
WDV	Vice Director of Vocational Program	The vice head of Vocational Program
MUV	General Manager of Vocational Program	The manager who analyzes the hazard and risk
KIK	Head of Health Science Cluster	The head of Health Science Cluster
DFK	Dean of Faculty	The head of Faculty
WDK	Vice Dean of Faculty	The vice head of Faculty
MUF	General Manager of Faculty	The faculty manager who analyzes the hazard and risk
PKF	Staffs of HSE at Faculty	The chief administrator of HSE management at the faculty
FOD	Facility Operations and Maintenance Directorate	The administrator and supervisor of construction project
DPL	Stocks and Logistics Directorate	The administrator and supervisor of procurement
SDP	Facility Management and Maintenance Sub-Directorate	The supervisor of construction project (internal)
PNK	Work Supervisor	The supervisor of construction project
OTO	Area Authority	The contract signing officials

Code	Primary Stakeholder	Role
PBJ	Contractor	Service providers and construction project implementers
PKA	Water, Flora, and Fauna Conservation Executor of HSE Organization at XYZ University	The supervisor of water, flora, and fauna management
KPG	Supervision Consultant	The supervisor of the construction project (external)
KMK	Construction Management Consultant	The supervisor of the construction management (external)
P3K	First Aid Officer	Responsible in first aid when the accident happened
PMC	Solid, Liquid, and Gas Waste Management Executor of HSE Organization at XYZ University	The supervisor of solid, liquid, and gas management
PPF	Zoo, Venomous, and Poisonous Control Executor of HSE Organization at XYZ University	The supervisor of zoo, venomous, and poisonous control

**Table 2.** Secondary stakeholder list

Code	Secondary Stakeholder	Role
PLK	Campus Environmental Security Technical Implementation Unit	Maintain the campus security
PDN	Contractor Data Processor of HSE Organization at XYZ University	The data collector and processor from the contractor
PKN	Contractor Executor of HSE Organization at XYZ University	The supervisor of contractor from HSE organization
PDC	Solid, Liquid, and Gas Waste Management Data Processor of HSE Organization at XYZ University	The data collector and processor regarding solid, liquid, and gas waste management
PDF	Zoo, Venomous, and Poisonous Control Data Processor of HSE Organization at XYZ University	The data collector and processor regarding zoo, venomous, and poisonous control
PDA	Water, Flora, and Fauna Conservation Data Processor of HSE Organization at XYZ University	The data collector and processor regarding water, flora, and fauna conservation

**Table 3.** Stakeholders' power and interest list

Code	Stakeholder	Power	Interest
KPU	Head of Occupational, Safety, Health, and Environment Organization	Has a high position as the head of the HSE organization at the university and is responsible for managing the implementation of OHSEMS at the university.	Contribute to managing and monitoring the implementation of OHSEMS at the university as the primary manager.
FOD	Facility Operations and Maintenance Directorate	Has deep knowledge and ability to manage the implementation and cooperation related to construction development at the university and working with the HSE Organization.	Contribute to maintaining the OSHE management by managing the implementation and cooperation related to construction development at the university and monitoring the performance of OHSEMS at the construction site with the HSE organization.
PBJ	Contractor	The main executor of construction projects and works closely with the HSE Organization to maintain the implementation of OHSEMS and provide goods needed in construction activities.	Execute the construction projects and contribute to maintaining HSE management for construction implementation.
KPG	Supervision Consultant	Is an expert in the construction project, has authority in supervising the project, and can stop the project if there is a violation of regulations.	Monitoring the construction project.

Each stakeholder has power and interest. It also goes to the stakeholder involved in the implementation of OHSEMS at XYZ University. Power is defined as the influence and authority of each stakeholder. Meanwhile, the interest is the involvement and interest of each stakeholder in the implementation of OHSEMS during the construction process. It is supported by a statement stating that the power of stakeholders can be seen from the authority and the influence of each stakeholder. Meanwhile, the interest can be determined by the impact of each stakeholder [30]. The head of Occupational, Safety, Health, and Environment at XYZ University, for example, has a high position since they are the head of the organization. Their power is their position. The head of Occupational, Safety, Health, and Environment manages the implementation of OHSEMS. It can also be the

stakeholder's interest. Thus, each stakeholder's power and interest can be determined by reviewing their duties and responsibilities. The power and interest list were used to determine the level of power and interest.

The level of power and interest was determined using respondent survey. The level of power and interest was measured using a Likert scale ranging from 1-4. 1 indicates that the stakeholder has low power or interest, while four means the stakeholder has high power or interest. Stakeholders who have high power are the ones with high positions and authorization. Those who have high interest want to be involved actively in the HSE implementation. The power and interest Grid represents the level of power and interest. Based on their quadrant, stakeholders are split into four groups: Manage Closely, Keep Informed, Keep Satisfied, and Monitor.

Figure 2 shows the power and interest matrix.

POWER	HIGH	4	Keep Satisfied		Manage Closely		
		3					
	LOW	2	Monitor		Keep Informed		
		1					
			1	2	3	4	
		LOW		HIGH			
		INTEREST					

Figure 2. Power and interest matrix

This matrix is one of the factors to consider when developing a stakeholder engagement strategy. Each quadrant's stakeholders can involve in the implementation of OHSEMS in various ways. The previous research also supported it by dividing stakeholders into four quadrants [31]. Manage Closely stakeholders, for example, has a significant impact on the project. It means that they need to be actively involved in the OHSEMS implementation. The power and interest grids are required to arrange the stakeholder engagement strategy. This power and interest list are used as the basis and reference in the arrangement of stakeholder engagement strategy at XYZ University.

The power and interest grids are the stakeholder management tool that visualizes the power and interest level. The power and interest level were determined through the respondent survey. The survey was completed by 17 stakeholders. According to the analysis, the amount of data from the survey is sufficient. The data is also homogeneous, valid, and reliable. It means they can be used in the data analysis to arrange the stakeholder engagement strategy. The descriptive analysis was used to examine the level of power and interest. The level of power and interest is determined by the mean of the respondents' responses. The result of this process is the power and interest grid. The power and interest grid visualize the level of power and interest stakeholder. Figures 3, 4 and 5 are the stakeholders' power and interest matrix for each level.

POWER	High	4	KMP			KML	KJK
		3	REK	WR4	SOU	SDP	KMH
	Low	2	DPL	PLK	PDN	FOD	PKN
		1	PDA	PPK	PKA	KPU	
			PDF	PMC	PDC	EST	
			1	2	3	4	
		Low		High			
		INTEREST					

Figure 3. University-level stakeholders' power and interest matrix

POWER	High	4	PKF			
		3	DVK	DFK	DSL	
	Low	2	WDV	WDF	DSK	
		1	MUV	MUF	KIK	
			1	2	3	4
		Low		High		
		INTEREST				

Figure 4. Faculty-level stakeholders' power and interest matrix

POWER	High	4	PNK		OTO	
		3	PKM	KPG		
	Low	2	KMK	PBJ	P3K	
		1				
			1	2	3	4
		Low		High		
		INTEREST				

Figure 5. Project-level stakeholders' power and interest matrix

The grids were used to divide stakeholders into four quadrants. However, based on the grids, all stakeholders are classified as Manage Closely. It shows that all stakeholders have a high level of power and interest. That also means they involve actively in the OHSEMS implementation at XYZ University during the construction process, especially in the decision-making. As a result, stakeholders with high positions will be fully engaged in making decisions. In this study, the best way to include stakeholders in decision-making is by involving them in meetings. Besides, since all stakeholders are in the same quadrant, even though their strategies may be similar, but their involvement can be different. For example, the strategy for Contractor and Consultant can be involving them in meetings. However, Contractor is the executor of the project, meanwhile Consultant is responsible to monitor and control the project. Both have a similar strategy, but they have a different interest. The quadrant from the grids helps to arrange the stakeholder engagement strategy. Manage Closely stakeholders, for example, need to be involved in decision-making because they are interested in the project and have high authority.

The following step is to arrange the stakeholder engagement strategy. Same as in the previous process, the arrangement of the stakeholder engagement strategy started with some literature reviews from papers on related issues. Stakeholder engagement strategies were organized based on the power, interest, and quadrant of each stakeholder. The interest shows the interest from stakeholders to remain involved in the implementation of OHSEMS. As a result, all previously collected data, such as a list of stakeholders, powers, interests,

and the quadrants of stakeholders, are used to prepare this strategy.

The arranged strategies were also validated by five experts. The experts also validated the stakeholder list and the power interest of each stakeholder. The validation process is required to confirm that each strategy can be applied to improve the organization's performance. The experts were given a questionnaire that asked if the strategy was correct and efficient for managing stakeholders. If they disagree with the strategies, the experts will offer suggestions. The output from this process is the stakeholder engagement strategy that has been validated.

After arranging the strategy, the next step is to determine whether the strategy correlates with the performance of the organization. This step also determines how the strategy affects the performance. This process used correlation analysis and linear regression. The data for the analysis were collected through a respondent survey. There were 17 respondents who participated in the survey. The analysis proved that the data is sufficient, homogeneous, valid, and reliable. It means that the data can proceed to the next analysis.

The correlation study determined the relationship between the strategy and the performance of the organization. Correlation analysis determines if the X variables are related to the Y variables. The X variables in this study are the stakeholder engagement strategy, and the Y variables are the organization's performance. The related variables were analyzed using linear regression to see if the strategies had a positive impact on the performance of the organization. The data must be evaluated using correlation analysis to determine whether the plan correlates to the organization's performance. It is one of the statistical analysis tests. Correlation analysis is frequently referred to as an external validation test. The test is used to see if the X-variable is connected to the Y-variable. The X-variables in this study are the stakeholder engagement strategy, and the Y-variable is the organization's performance. The external validation test is similar to the validation test. The analysis result can be used to determine whether the X-variable correlates with the Y-variable. The result of the analysis is significant numbers. The X-variable correlates with the Y-variable if the significant number is less than 0.05.

According to the result of the analysis, some X-variables have a significant number greater than 0.05. It indicates that several stakeholder engagement strategies do not correlate with the organization's performance. However, most of the strategies have a significant number less than 0.05. It means that most of the strategies correlate to the organization's performance.

The next stage was linear regression after finding the correlation. Only the correlated strategies were analyzed using linear regression. The linear regression shows us how the strategy affects performance. If the beta coefficient of a strategy is positive, it has a positive influence. If the beta coefficient is negative, the strategy has a negative impact on the performance. Most strategies have a positive beta coefficient. It implies that the strategies can improve the organization's performance.

Based on the analysis, some strategies do not correlate to the organization's performance. Some strategies also have a negative impact on the organization's performance. Expert validation is required to confirm that the correlations and the impacts of the strategy on the performance are accurate. The experts who participated in this validation did not participate in prior validations. It is due to getting new opinions or input

from other experts about the strategy. The expert validated the correlation and the impacts of the strategies on the performance by filling out the questionnaire. The questionnaire inquired if the statement about the association and its influence was correct or incorrect. The experts also had a direct or online discussion to discuss it. If the experts agree on the strategies' correlation and impacts, they will check the "yes" box. If they disagree, however, they will fill in the "no" column. They also expressed their thoughts on the correlation and its impact on the discussion.

The experts agreed that the strategy does not correlate with the organization's performance based on the validation process. However, the experts disagreed that the strategy has a negative impact on the performance of the organization. They made some suggestions regarding the impacts. Rather than having a negative influence on the performance, they stated that strategy has no impact at all on the performance. They also stated that all these correlated strategies should have a positive impact. As a result, most well-planned strategies have a beneficial impact on the organization's performance. Several strategies also do not correlate to performance. Table 4 shows each stakeholder's engagement strategy and its correlation with organizational performance.

Each stakeholder has a strategy to make them stay involved in the implementation of OHSEMS at XYZ University. Since all stakeholders are categorized as Manage Closely, the strategies are similar. The stakeholders need to be involved in decision-making. Based on the strategy, they will be involved by having regular meetings with other stakeholders. However, not all strategies have a positive impact or correlate to the organization's performance. A strategy that does not correlate with the organization's performance can be ignored.

After arranging the stakeholder engagement strategy, the next step is to determine the relationship between the strategy and the organization's performance. The stakeholder engagement strategy that does not correlate with the performance indicates that the strategy has no impact or influence on the performance. That is due to the incorrect explanation of the strategy. The strategy will not correlate with the organization's performance if the description is unclear or incorrect. One of the strategies for the Consultant does not correlate to performance. It is because of the imprecision of the strategy. Based on the result of the analysis, one of the strategies for the Consultant is having meetings with them. However, in fact, the Consultant will not have any meeting with the Top Management. The top management is the people with high positions, such as the Head of the University, Vice of the University, and Secretary of the University. The Top Management will send one representative. It is either the Secretary of the University, or their staff. They will collaborate with the Facility Operation and Maintenance Directorate. Then, the Directorate will coordinate with the Contractor and the Consultant. Since the Top Management has a high position structurally, they will not hold meetings with Contractor or Consultant. They will coordinate according to the hierarchy of the university management. That is why the result of the analysis showed that strategy for the Consultant does not correlate to the organization's performance.

Furthermore, as shown in Table 4, most stakeholder engagement strategies have a beneficial impact on the organization's performance. However, some of them also have no effect on the performance. The strategies that have a positive effect can be implemented or carried out to improve the organization's performance. The organization can use the

strategy as a reference or guide in managing the stakeholders. Meanwhile, the strategies that have no impact on performance can be neglected and do not need to be implemented.

Obtaining the relationship between the strategy of the stakeholder and the organization's performance is expected to help in improving the organization's performance.

**Table 4.** Stakeholder engagement strategy and their correlation with organization's performance

Stakeholder	Strategy	Correlation	Effect
Head of Occupational, Safety, Health, and Environment	Hold meetings with the University's top management to discuss the project's HSE evaluation.	Correlated with Organizational Performance	Positive Impact
	Request reports on the implementation of the K3L program on a regular basis and report them to the Vice Head of the University and the Facility Operation and Maintenance Directorate.	Correlated with Organizational Performance	Positive Impact
Facility Operation and Maintenance Directorate	Hold meetings to discuss the project's current state of OHSEMS implementation.	Correlated with Organizational Performance	Positive Impact
	Coordination with the Facility Operation and Maintenance Directorate, the Contractor, and other parties is required to guarantee that the OHSEMS implementation goes smoothly.	Correlated with Organizational Performance	Positive Impact
Contractor	Organize internal meetings with the Consultant and HSE personnel.	Correlated with Organizational Performance	Positive Impact
	Hold coordination meetings with the Area Authority, XYZ University's HSE Organization, and the Facility Operation and Maintenance Directorate to discuss the present state of OHSEMS implementation and project evaluation.	Correlated with Organizational Performance	Positive Impact
	Organize internal meetings with the contractor and HSE personnel.	Correlated with Organizational Performance	Positive Impact
Consultant	Hold coordination meetings with the Top Management, Area Authority, XYZ University's HSE Organization, and the Facility Operation and Maintenance Directorate to discuss the present state of OHSEMS implementation and project evaluation.	Does not Correlate with Organizational Performance	No Impact

#### 4. CONCLUSION

Stakeholders are crucial parts of the success of a project. In achieving project success, stakeholder management must be done well so that the stakeholders have good relationships with the organization and will not obstruct the organization's performance.

During the construction phase, 36 stakeholders were involved in the OHSEMS implementation. It consists of 30 primary and six secondary stakeholders. All stakeholders involved in the OHSEMS implementation were categorized as Manage Closely. The stakeholders have one or more strategies to keep them involved in the OHSEMS implementation. However, several strategies have no impact on the organization's performance. In the meantime, the other strategies have a positive impact on the organization's performance. The strategies that do not correlate to the performance do not need to be applied. However, the correlated strategies can be used to improve the performance of the HSE organization at XYZ University.

The stakeholder engagement strategies that improve the organization's performance can be implemented in the construction industry's HSE management. The findings of this study might be used as a reference or guide to manage stakeholder engagement. For example, to keep the Head of Occupational, Safety, Health, and Environment involved in the HSE implementation, they can be invited to the meeting to discuss the HSE management evaluation. Another example is that the Consultant can be invited to several meetings. They may be required to make evaluation reports. It can make the Consultant stay involved in the HSE implementation. Both HSE and Consultant monitor the construction projects, and the result of the monitoring process can be discussed in a meeting.

If the stakeholder actively involves in the implementation of HSE management during the construction phase, they will play their role effectively. This has the potential to improve the organization's performance.

Although this study suggests strategies that can improve the organization's performance, it still has numerous limitations. Some strategies have an insignificant impact on performance. Some strategies also do not correlate with the organization's performance. Future work can discuss why the strategies do not correlate with the organization's performance. It can also arrange a new strategy to improve the organization positively. The findings of future work can give some further insight into why the strategy cannot have an impact on performance and how to make impactful strategies.

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