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Substance Evaluation Study of Construction Safety Plan Implementation and It's Implementation

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ABSTRACT

Universitas Negeri Padang has experienced rapid student enrollment growth, driving the need for new infrastructure. Most of the buildings have more than 3 floors, and one of the ongoing projects reaches a height of 32.05 meters with 6 floors, contributing to higher construction risks. This research was conducted to evaluate the implementation of Construction Safety Plans (CSP) on projects over the past two years in accordance with the Ministry of Public Works and Housing Regulation No. 10 of 2021 and the Circular Letter of the Ministry of Public Works and Housing No. 10 of 2022. Data collection methods for this study involved two approaches: compliance audits and performance audits. Compliance audits involved document-based inspections of CSP, while performance audits included on-site observations and project work evaluations. The research results revealed that the construction of the central information and library building achieved the highest CSP implementation rate, with compliance rates of 93.33% in compliance audits and 91.42% in performance audits. In contrast, the rehabilitation project for the Faculty of Sports Sciences and the Dean's office showed lower compliance rates, scoring 37.14% in compliance audits and 35.34% in performance audits. The study also found that project contract values correlated with CSP compliance levels. Higher contract values were associated with higher CSP compliance. Contractor qualifications also played a crucial role in ensuring compliance with safety regulations. Based on these findings, it is recommended that UNP exercise greater selectivity in contractor selection processes. This study highlights the importance of construction safety in construction projects.

Keywords: *Construction Safety; Construction Safety Plans; Compliance Audits; Performance Audits.*

INTRODUCTION

The number of construction accidents that occur is due to the lack of maximization in the planning and implementation of construction safety in this case called the Construction Safety Management System (CSMS) on the project. Construction Safety Management System is a component of the work implementation management system that focuses on construction safety. Construction safety is all safety implementation activities to assist construction work in achieving safe limits including security, safety, health, and sustainability in ensuring safety on construction projects, safety and health of people working on construction projects, safety of the community around the project, and safety in the surrounding environment. (PUPR ministerial regulation No. 10/2021).

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The implementation of Construction Safety Management System can be a reference that regulates and covers all aspects of safety management on construction projects in a comprehensive management system. This is expected to reduce the impact of construction accidents, starting from the highest level to the lowest level. If this system is implemented according to procedures, it can build trust and confidence in construction service users, the community, and the surrounding environment.

In essence, construction safety aims to maintain the safety of workers, communities, machinery, and the surrounding environment by preventing accidents. The implementation of construction safety in a project is organized through a Construction Safety Plan. Construction Safety Plan is a document that contains a construction safety implementation plan and is an important component in the construction work contract between service providers and service users which serves as a means of communication between the two parties in implementing Construction Safety Management System. The implementation Construction Safety Plan is an update of the Construction Safety Plan which is adjusted to the conditions of work aimed at achieving the implementation of construction safety.

Padang State University is one of the state universities in Padang, West Sumatra. As the number of students increases, starting in 2021 there are several building construction projects at Padang State University. With the development of the number of developments, the author uses a case study on building projects at Padang State University because buildings at Padang State University generally have more than 3 floors. One of the largest building projects under construction has 6 floors with a height of 32.05 meters. The project is one of the risky projects because it is at a high enough height. Therefore, Padang State University requires the implementation of construction safety in every development project carried out in order to realize zero accidents.

This research is to evaluate the substance of the implementation Construction Safety Plan and its implementation as stipulated in the Regulation issued by the Minister of PUPR No. 10 of 2021 and Circular Letter issued by the Minister of PUPR No. 10 of 2022 on building projects at Padang State University in the last 2 years.

METHOD

Preparation of evaluation instruments

Research instruments are devices selected and used by researchers in collecting information so that this action becomes easy and simple. The instruments used in this study were made based on the guidelines from the checklist of the implementation of the Construction Safety Plan which is regulated based on the Regulation issued by the Minister of PUPR Number 10 of 2021 and the Circular Letter issued by the Minister of PUPR Number 10/SE/M/2022. The evaluation instrument is made in the form of an excel macro which aims at efficiency in research. The instrument made by the author is intended for service providers, in this case contractors. This instrument will be used in evaluating the implementation of the Construction Safety Plan for construction carried out by the contractor. Furthermore, this instrument will be filled based on the table of criteria for assessing the fulfillment of the implementation of the Construction Safety Plan that has been made.

Construction Safety Plan compliance assessment implementation

Compliance assessment of Construction Safety Plan implementation is an activity to encourage

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compliance with construction safety standards in the implementation of Construction Safety Plan implementation in construction work to ensure the achievement of construction safety. Compliance assessment of the implementation of the Construction Safety Plan is carried out by conducting an inspection and scoring. The examination is divided into 2 (two), including compliance audit and performance audit. Compliance audit is an assessment process carried out by examining certain evidence used to determine whether the evidence has followed certain established procedures, standards, policies and rules. This compliance audit aims to determine whether what will be tested is in accordance with certain circumstances, guidelines and regulations. The assessment criteria used by researchers come from secondary data, namely the Construction Safety Plan document. This is done by examining the implementation of the Construction Safety Plan documents on filling out the instrument that has been made. Performance audit includes whether the project has properly carried out construction safety and whether the project has been carried out in the right way. Performance audits were conducted on the 2021 and 2022 projects. In the 2021 project, the performance audit will be carried out through examination of project implementation reports, reporting on the results of work implementation and photo documentation. Meanwhile, in the 2022 project, field observations will be carried out. Some of the activities carried out in field observations are carried out by interviewing, taking pictures, recordings and videos of the implementation of activities on the project related to the implementation of the RKK for the implementation of construction work.

Interview

After the compliance audit and performance audit, the researcher will conduct interviews with the parties involved in the project. According to Sugiyono (2016: 317) besides researchers will learn more in-depth information from respondents, they also use interviews as a data collection method to identify problems that require investigation. This interview aims to confirm the truth of the data obtained through the assessment of the compliance of the implementation Construction Safety Plan obtained from the compliance audit and performance audit.

Data processing

The data processing technique in this study uses a Likert scale. According to Sugiyono (2012: 93) Likert Scale is a scale used to determine how individuals or groups feel about social characteristics. For each answer choice that is scored, the researcher must describe whether the answer upholds the statement (positive) or does not uphold the statement (negative). The Likert scale used in this study is a 5-point Likert Scale. According to Hertanto (2017), the 5-point Likert scale can accommodate answers that are neutral or undecided. Meanwhile, the Likert scale with four points where neutral or undecided answers do not exist in the questionnaire. By having a "Neutral" option in the middle, the 5-point Likert scale provides a wider space for researchers to express the level of assessment of the substance of the implementation Construction Safety Plan. In this study, each evaluation instrument statement will be given a score or value according to the assessment criteria for each statement.

Then it will be seen how many scores from the fulfillment of the assessment criteria and will be entered into the instrument table. Each score on each instrument will be summed up, so that the overall total score is obtained. Then the percentage score will be calculated and changed according to the statement score value in table 1 below.

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Table 1. Construction Safety Plan compliance assessment level Implementation

Value	Indicator	Assessment Criteria Score	Compliance Percentage
1	Very Compliant	5	81 - 100
2	Compliant	4	61 – 80,99
3	Compliant Enough	3	41 – 60,99
4	Less Compliant	2	21 – 40,99
5	Very Disobedient	1	0 – 20,99

Data Analysis

Data analysis is completed after information is obtained through the selected instruments and used to answer the problems in the research. Information from the collected data will be used to show what actually happened according to the research theme. The results of data processing on each instrument will be analyzed and information will be generated in the form of the level of implementation of the Construction Safety Plan on each project. Furthermore, the results of the interviews will be analyzed and then the results obtained will be linked to the results of the assessment of the application of construction safety obtained from the instrument. The two answers will be analyzed whether the results of both have similarities or differences.

RESULTS AND DISCUSSION

Based on the data obtained from the assessment of compliance audit and performance audit of the Construction Safety Plan implementation of 4 (four) projects at Padang State University can be seen in table 2 below.

Table 2: Compliance Assessment Results of the Implementation Construction Safety Plan

No	Project Name	Contract Value (IDR)	Compliance Audit (%)	Category	Performance Audit (%)	Category
1	Construction of laboratory building for Faculty of Social Sciences	24.579.615.446	41,90	Compliant Enough	38,09	Less Compliant
2	Construction of Faculty of Engineering lecture hall	40.064.390.624	44,76	Compliant Enough	43,81	Compliant Enough
3	Rehabilitation of lecture/deanate building of Faculty of Sport Science	6.539.539.265	37,14	Less Compliant	35,34	Less Compliant
4	Construction of Information Building and Library of Padang State University	82.780.488.268	93,33	Very Compliant	91,42	Very Compliant

The table shows that the construction project of the information center and library building achieved the highest level of implementation of the Construction Safety Plan, with a

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compliance rate of 93.33% in the compliance audit and 91.42% in the performance audit. Meanwhile, the rehabilitation project of the FIK lecture / deanery building shows a lower level of compliance, namely 37.14% in the compliance audit and 35.34% in the performance audit. In the construction project of the information center and library building, the same category is obtained between the compliance audit assessment and the performance audit, namely both categories are very compliant. Meanwhile, projects with low compliance levels both obtained the less compliant category. In contrast to the two projects with results between the two, the category results obtained are quite diverse.

The research results obtained from the compliance audit and performance audit assessments can be depicted through the graph shown in Figure 1 below.

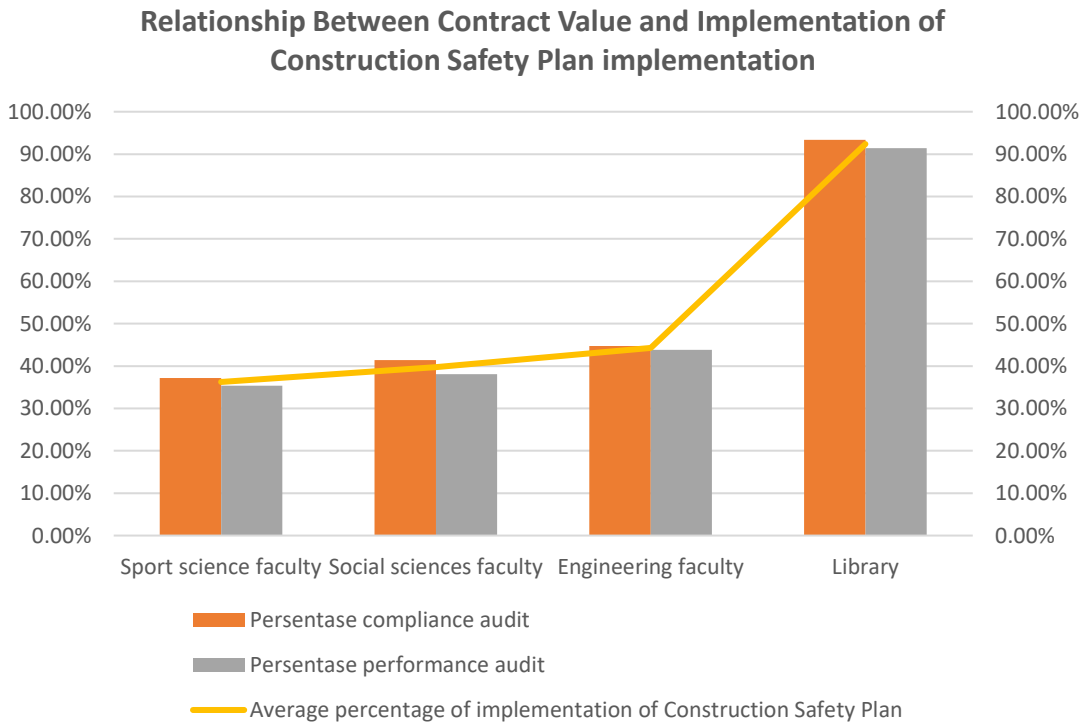

Figure 1: Graph of relationship between contract value and implementation of Construction Safety Plan implementation

This graph helps to clearly visualize the comparison of compliance levels on various projects. This can assist Padang State University in identifying projects that require further attention in terms of construction safety and enable them to take appropriate actions to improve compliance on those projects. From this analysis, it appears that projects with higher contract values tend to achieve higher levels of compliance. However, it is also important to consider other factors such as supervision, available resources, and contractor commitment to construction safety.

The qualifications of construction businesses, whether small, medium or large, are very important in the implementation of construction safety. The implementation of construction safety should be a top priority in all construction projects. The qualifications of large businesses have a high commitment in ensuring that construction projects can be carried out to ensure that construction projects can be completed safely and reduce the risk of accidents or events that can harm workers and other parties involved in the business as shown in table 3 below.

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Table 3. Construction Safety Plan Compliance Assessment Results Implementation

No	Project Name	Contract Value (IDR)/ Owner Estimate (OE)	Construction Services Qualification	Contract Value vs OE (%)	Compliance Audit (%)	Performance Audit (%)
1	Construction of laboratory building for Faculty of Social Sciences	24.579.615.446 30.724.519.554	Medium	80	41,40	38,09
2	Construction of Faculty of Engineering lecture hall	40.064.390.624 48.954.538.908	Medium	81,84	44,76	43,81
3	Rehabilitation of lecture/deanate building of Faculty of Sport Science	6.539.539.265 8.187.733.511	Small	79,87	37,14	35,34
4	Construction of Information Building and Library of Padang State University	82.780.488.268 86.702.612.927	Big	97,14	93,33	91,42

The data in the table illustrates that contractors with high owner estimate values tend to show better achievement levels in compliance and performance audits. This phenomenon may reflect that the larger scale of operations and higher financial capabilities enable such contractors to meet higher audit standards. On the other hand, small and medium-sized qualified contractors may have difficulty in achieving the same level of accomplishment due to limited resources and capabilities.

This research highlights the importance of scale of operations and financial stability in the construction industry. Contractors that are able to manage projects with high owner estimate tend to have more mature management systems and the ability to comply with applicable regulations. On the other hand, small and medium-sized contractors may need to improve their capacity in financial and operational management to reach the same level of achievement as large contractors.

The results of this study also provide insight into the role of business qualifications in contractor success in the construction industry. Contractors who are able to improve their qualifications and capacity may experience improvements in compliance and performance audit achievements. Therefore, it is important for small and medium-sized contractors to

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continue developing their qualifications in order to compete more effectively in the construction market. This can be seen in figure 2 below.

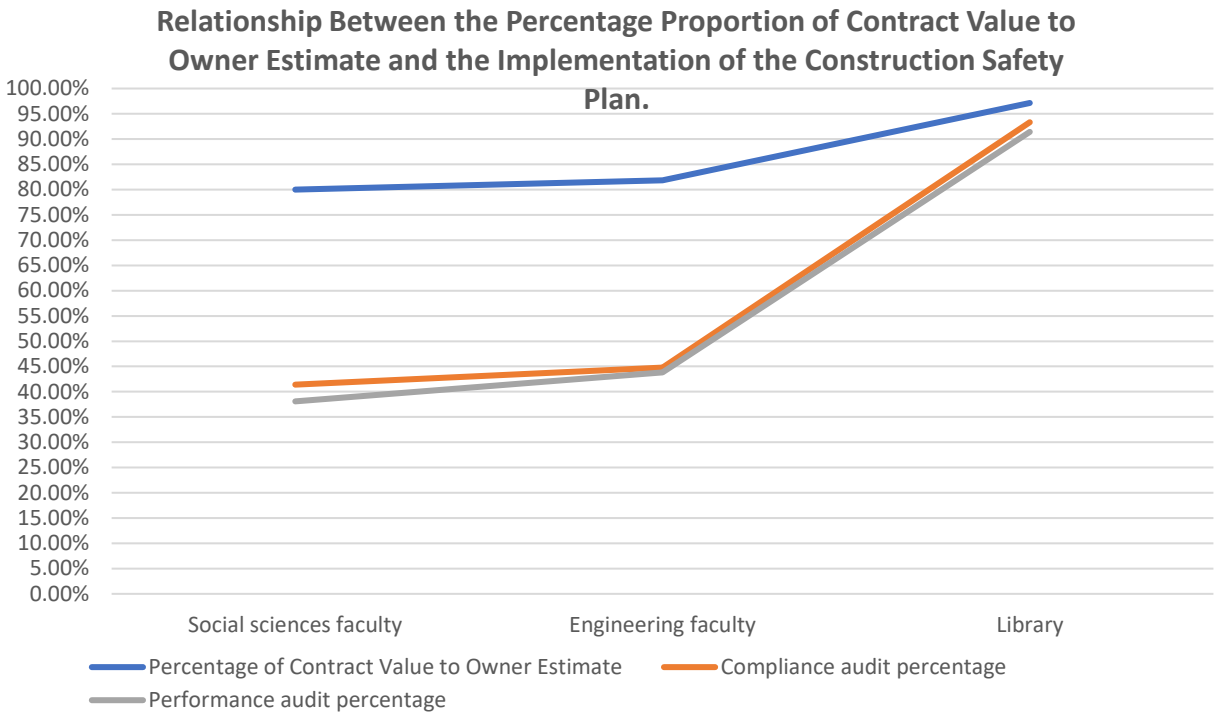

Figure 2. Graph of the relationship between the percentage proportion of contract value to owner estimate and the implementation of the Construction Safety Plan.

In the graph it can be seen that projects that have a percentage proportion of the contract value to the owner eatimate of 97.14% have a high application of construction safety plans as well, and vice versa, projects that have a small percentage proportion of 79, 87%, the application of construction safety plans is also small. Based on the graph above, it can be concluded that the self-estimated price and contract value are interrelated, especially in the construction safety plan. The self-estimated price becomes the basis for contractors to offer prices in their bids, while the contract value reflects the agreement between the project owner and the contractor specifically regarding the cost of implementing construction safety to be carried out. This reflects the extent to which the project has adhered to the budget that has been set and this relationship can affect the fulfillment of the construction safety plan, among others:

a. The project is awarded at a lower contract value than the original owner estimate, hence there is likely to be more limited resources to apply to various aspects of the project.
b. The project is awarded at a low price and there is pressure to complete the project quickly, so there is likely to be less time available to develop and implement a good safety plan.
c. When the contract value is lower than the owner estimate, there is a risk that the contractor or delivery team may look for ways to save costs, including reducing safety costs.
d. Projects with low contract values may receive less attention or close supervision, which could negatively impact the implementation of the safety plan.

CONCLUSION

Based on the results of the analysis and discussion, it can be concluded as follows:

a. The construction project of the information center and library building achieved the highest level of implementation of the Construction Safety Plan, with a compliance rate of 93.33% in the compliance audit and 91.42% in the performance audit. Meanwhile, the rehabilitation project of the lecture / deanery building of the Faculty of Sports Science shows a lower level of compliance, which is 37.14% in the compliance audit and 35.34% in the performance audit.
b. The amount of the project contract value is directly proportional to the application or implementation of the Construction Safety Plan implementation where the higher the project contract value, the higher the application or implementation of the Construction Safety Plan implementation. This situation is influenced by several things, namely the involvement of the project owner, available resources, the application of strict safety standards, higher risk awareness, and contract demands.

The qualifications of construction businesses, whether small, medium or large, are very important in the implementation of construction safety. The implementation of construction safety should be a top priority in all construction projects. The qualifications of large businesses have a high commitment in ensuring that construction projects can be carried out to ensure that construction projects can be completed safely and reduce the risk of accidents or events that can harm workers and other parties involved in the business. This can be seen in construction businesses (contractors) with high Own Estimate Prices having higher compliance audit and performance audit achievement scores than construction businesses with small and medium business qualifications.

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