



## Occupational Safety And Health (K3) Through The Risk Evaluating Process For Pt Cozy Boarding House Project Workers Prima Land In Malang

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### Abstract

Construction companies must focus on occupational health and safety (K3) and must cover the safety and welfare of workers. JKK (Work Safety Committee) has carried out various safety assessments and risk assessments to improve worker safety and health. Comfortable Housing Boarding House PT. has carried out a risk assessment using the Prima Land method to assess the risk and safety of construction projects. The study found 13.3% of risks were classified as extreme, 30% high risk, 13.3% moderate risk, and 43.34% low risk. Risk assessment methods will be used in this research to further improve K3 working conditions and ensure worker safety. This study identified three main factors that influence OHS health and safety: organizational culture, environment, and risk assessment methods. By implementing these measures, construction companies can improve their OSH safety and health management section and reduce the risk of accidents and injuries.

**Keywords:** Risk Assessment, Work Safety, Worker Health

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### INTRODUCTION

The main problem relevant in this study is the high risk of work accidents in the construction sector, especially in the Cozy Boarding House Boarding House construction project by PT. Prima Land in Malang. Based on risk evaluation results, it was found that 13.3% of the potential risk was classified as extreme, 30% high risk, 13.3% moderate, and 43.34% low. These findings indicate that most work activities contain significant levels of danger and require immediate treatment. Two dominant factors that trigger work accidents are workers' behavior that deviate from work safety rules and dangerous work environment conditions. The



lack of anticipation of workers to the potential hazards and weakness of supervision also exacerbates the situation, so it is necessary to improve a more effective K3 management system and the application of appropriate risk evaluation methods to reduce the number of accidents and improve the welfare of workers in the field.

Construction companies need to prioritize occupational health and safety (K3) to ensure the safety and welfare of workers [1]. According to the OHSAS occupational health and safety assessment series, work accidents are events related to work activities and can result in injury, illness, or even death [2]. K3 is defined as a process for identifying potential hazards and implementing effective risk management. The construction industry faces various risks, including the danger of fire which requires quick handling [3].

This research aims to increase the effectiveness of the K3 management system by dealing with potential fire hazards in the workplace. The results showed that 13.3% of the risks were extreme, 30% had high risk, 13.3% had moderate risk, and 43.34% had low risk. These findings emphasize the importance of taking risk into account as well as safety measures in the operational planning of the Cozy Kos project. This research also highlights that risk assessment is an important step in reducing fire hazards in the construction sector. Risk assessment techniques will be applied in the Cozy Kos study to improve working conditions related to K3 and employee safety.

Lack of worker anticipation can cause work accidents. Therefore, supervision must be tightened so that work accidents can be prevented, so that they do not harm workers or the company [4]. The two main causes of work accidents are human behavior that violates work safety rules (dangerous behavior) and dangerous workplace conditions [5].

This study aims to identify potential work hazards, assess the level of risk based on possibilities and impacts, and determine appropriate control steps to reduce the number of work accidents. In addition, this research also wants to test the effect of variables such as hazard identification, risk assessment, risk control, OSH training, and OSH supervision of accident frequencies, severity, and worker's health and safety. By using a quantitative approach and statistical analysis aids such as SPSS, this study is expected to provide data -based recommendations for continuous improvement in the K3 system that is applied in the field.

## Literature Review

### Occupational Accidents and Safety (K3)

The topic of accidents and work safety is very useful in industry and the work environment. Various theories and approaches have been developed to understand, prevent and manage accidents and promote occupational safety [6].

The aim of Occupational Safety and Health (K3) activities is to improve occupational safety and health and create a work environment that is free from



accidents [7]. Some K3 objectives include:

- a) Providing protection to workers for their rights and safety while working, as well as improving the quality of life and production capacity.
- b) Monitor the safety of other people around the work environment.
- c) Optimizing the use of production resources.

In the context of construction work, this activity includes the entire process or part of the activities related to the construction, operation, maintenance, demolition and reconstruction of a building [8].

In theory, Occupational Safety and Health (K3) is defined as a form of concept and method to maintain the unity and completeness of the physical and mental conditions of workers, which basically also includes humans in general, this aims to protect the results of work and culture in the context of building society which is safe and peaceful. In scientific terms, K3 is science that is applied to avoid possible dangers and disasters that can occur because of workers [9].

[10] In accordance with Minister of Public Works Regulation no. 05/PRT/M/2014, Guidelines for Occupational Safety and Health Management Systems (SMK3) in the public works construction section include elements such as K3 rules, preparation of K3, functional control, analysis and assessment of K3 performance, and evaluation of K3 skills.

#### a) Risk Assessment

Risk assessment is an evaluation process regarding the possibility of events occurring that could hinder the government from achieving their goals [11].

The following are several theories related to Risk Assessment:

1. Probability and Impact
2. Risk Management
3. Psychology of Risk

[12] All State Officials are required to carry out risk evaluations, which include Knowing Risks and Investigating Risks, in accordance with Republic of Indonesia Government Regulation Number 60 of 2008 concerning Government Internal Control Systems (SPIP) [13].

#### b) Risk Introduction

Risk Recognition aims to reveal potential events that may occur when carrying out actions or activities that could prevent achieving targets. This principle of Risk Identification must always be present and inherent in every activity within the Government Agency. However, activity implementers are often less aware of the existing risks, so that controls cannot be anticipated appropriately [14].

## METHOD

Quantitative research methods are approaches that use quantitative numbers and data to measure and analyze phenomena [15].



This theory examines the behavior of individuals and groups in dealing with risks, including risk perceptions, ambivalent behavior of risk, and other psychological factors that affect decision making related to risk [16].

By identifying the probability and impact of various scenarios, risk managers can assess the level of risk associated with each scenario and take appropriate action [17].

The quantitative method approach in risk assessment involves the use of numerical data and statistical analysis to measure and model risks [18].

The steps to use the quantitative method in this context:

**Hazard identification:** The first step is to identify hazards that have the potential to cause risk to the work environment. This data can be collected through surveys, interviews, or direct observations at the project site to get information about activities that can threaten the safety of workers [19].

**Risk Assessment:** After identification, each danger is given a risk score based on two main factors: Severity and the possibility of occurrence (likelihood). These two factors are judged quantitatively and processed to provide an objective picture of the level of risk.

**Risk score calculation:** Quantitative methods allow risk calculation by multiplying severity scores and possibilities. The results of this calculation will indicate the level of risk, whether low, medium, or high. For example, if a danger is considered to have a severity of 3 (scale 1-5) and possibly 4 (scale 1-5), then the risk score is 12 (3 x 4).

**Priority Handling Risk:** Based on risk scores, the highest risk of risk is prioritized to be handled first. This quantitative method helps in determining effective precautions or mitigation according to risk level [20].

**Evaluation of the effectiveness of risk control:** After the control action is applied, the risk is re-evaluated to see whether there is a decrease in the risk level. This evaluation is carried out quantitatively to assess the effectiveness of the K3 steps that have been applied [21].

### 3. Analysis using SPSS

SPSS (Statistical Package for the Social Sciences) is a statistical application that is commonly used in describing quantitative data [22].

The steps to use SPSS in this study:

**Data input:** Data results of hazard identification and risk assessment are entered into SPSS. This data includes variables such as the type of hazard, severity, possibilities, risk scores, as well as worker demographic information if relevant [23].

**Descriptive Statistics:** use descriptive statistics features in SPSS to get an initial picture of data, such as average, median, frequency, and standard deviation of risk scores. This descriptive statistics help understand the level of risk in general in the work environment [24].



**Reliability Analysis:** If a questionnaire or scale is used to assess the perception of risk or compliance with K3, SPSS can be used for reliability analysis to ensure that the measurement instruments are consistent [25].

**Hypothesis Test:** SPSS allows the implementation of various statistical tests to analyze research data (such as t-test, anova, or regression) if there are certain hypotheses related to factors that affect the risk of K3. For example, research can test whether there is a significant relationship between the type of work with the level of risk experienced by workers [26].

**Regression Analysis:** If the researcher wants to see predictor factors that affect the level of risk, regression analysis can be applied to see how factors such as work experience, type of work, or environmental conditions affect risk scores [27].

**Interpretation Results:** After the analysis is complete, SPSS provides an output that contains a summary of the results of the analysis, graph, and statistics tables. This data is then interpreted to make conclusions related to the effectiveness of risk management and factors that need to be improved in the implementation of OSH in the project [28].

The use of SPSS in quantitative analysis is very helpful for processing data and getting accurate results, as well as supporting the making of data -based recommendations to improve occupational safety and health [29].

Construction work, including housing developments such as Cozy Kos, is an activity that involves a high risk of accidents and health problems for workers. So, it is very meaningful to implement basic occupational safety and health (K3) at every stage of the construction process [30].

The location of this research is at PT. Prima Land is located in Sigura-Gura Barat Gang 1. Investigations at this location are important because of the Cozy Kos housing construction activities carried out by PT. Prima Land will be the main object in risk analysis related to K3. Location Description PT. Prima Land is a construction company involved in housing development in Sigura-Gura Barat Gang 1 [31].



Figure 1 Research Location

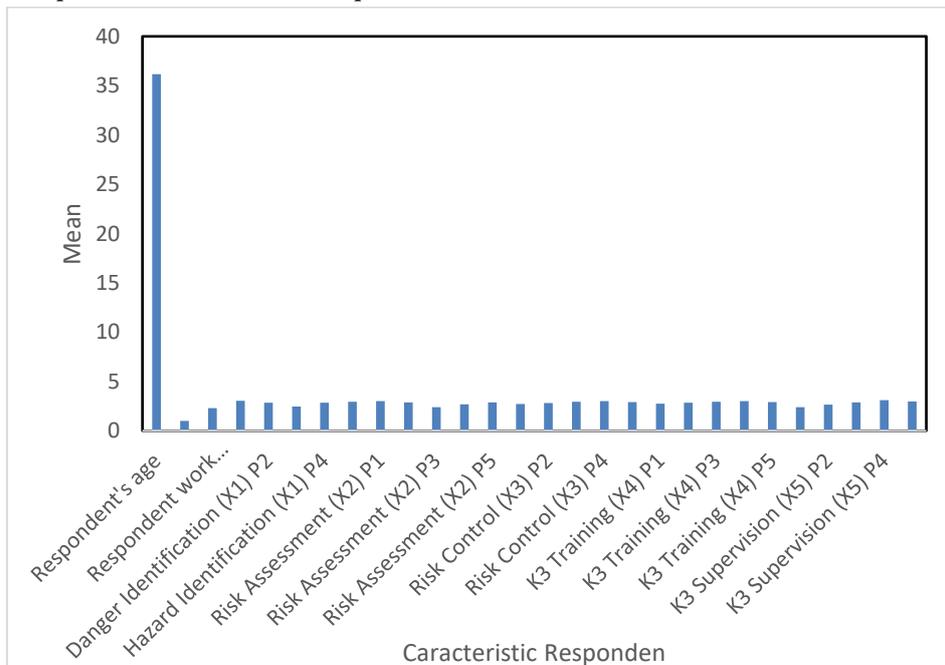
### RESULT AND DISCUSSION

#### Hazard Identification in the Cozy Kos Housing Project

Output regression descriptive statistics" refers to descriptive statistics resulting from regression analysis. When performing regression analysis, descriptive statistics

Figure 1 shows that characteristic Responden results in the form of SPSS graphs are used to illustrate various regression model variables.

Graph 1 Characteristic Responden Results





A. From the data provided, we have a number of variables that are measured on a sample of 100 respondents. The following is a detailed explanation for each variable:

#### Descriptive Statistics

##### 1. Respondent's age

- a) Number of Samples: 100
- b) Minimum: 21
- c) Maximum: 50
- d) Average: 36.15
- e) Standard Deviation: 8.183

Explanation: Respondents' ages varied from 21 to 50 years with an average age of 36.15 years. The standard deviation of 8.183 indicates that there is quite a large variation in the ages of respondents.

##### 1. Gender

- a) Number of Samples: 100
- b) Minimum: 1
- c) Maximum: 1
- d) Mean: 1.00
- e) Standard Deviation: 0.000

##### 2. Gender

- a) Number of Samples: 100
- b) Minimum: 1
- c) Maximum: 1
- d) Mean: 1.00
- e) Standard Deviation: 0.000

Explanation: All respondents in this sample have a value of 1 for gender, indicating that only one gender was included in this study.

##### 3. Respondent's work experience

- a) Number of Samples: 100
- b) Minimum: 1
- c) Maximum: 3
- d) Mean: 2.31
- e) Standard Deviation: 0.662

Explanation: Respondents' work experience varies from 1 to 3 years with an average of 2.31 years. The standard deviation of 0.662 indicates that the respondents' work experience has moderate variations.

##### 4. Hazard Identification (x1) (P1 - P5)

- a) Number of Samples: 100
- b) Minimum: 1
- c) Maximum: 5
- d) Mean: varies from 2.47 to 3.04



e) Standard Deviation: varies from 1.061 to 1.317

Explanation: Assessment for hazard identification in five variables (P1-P5) shows that the average assessment ranges from 2.47 to 3.04 with a standard deviation indicating moderate to high variation in assessment.

5. Risk Assessment (x2) (P1 - P5)

a) Number of Samples: 100

b) Minimum: 1

c) Maximum: 5

d) Mean: varies from 2.40 to 3.01

e) Standard Deviation: varies from 0.932 to 1.160

Explanation: The assessment for risk in five variables (P1-P5) shows that the average assessment ranges from 2.40 to 3.01 with a standard deviation indicating moderate variation in assessment.

6. Risk Control (x3) (P1 - P5)

a) Number of Samples: 100

b) Minimum: 1

c) Maximum: 5

d) Mean: varies from 2.70 to 3.02

e) Standard Deviation: varies from 0.980 to 1.207

Explanation: The assessment for risk control in five variables (P1-P5) shows that the average assessment ranges from 2.70 to 3.02 with a standard deviation indicating moderate to high variation in assessment.

7. K3 Training (x4) (P1 - P5)

a) Number of Samples: 98-100

b) Minimum: 1

c) Maximum: 5

d) Mean: varies from 2.74 to 3.01

e) Standard Deviation: varies from 0.975 to 1.207

Explanation: Assessment for K3 training in five variables (P1-P5) shows that the average assessment ranges from 2.74 to 3.01 with a standard deviation indicating moderate to high variation in assessment.

8. K3 Supervision (x5) (P1 - P5)

a) Number of Samples: 100

b) Minimum: 1

c) Maximum: 5

d) Mean: varies from 2.39 to 3.11

e) Standard Deviation: varies from 0.984 to 1.136

Explanation: The assessment for K3 supervision in five variables (P1-P5) shows that the average assessment ranges from 2.

Overall, the data shows that there are quite significant variations in respondents' assessments of various aspects related to occupational safety and health (K3)



covering several stages, starting from knowing the causes of accidents, evaluating risks, risk control, K3 training, to K3 supervision. This indicates the need for a more focused and perhaps more tailored approach in every aspect to improve the effectiveness of OSH programs.

9. Number of Work Accidents (y1)

- a) P1: Mean 3.12 with standard deviation 1.085
- b) P2: Mean 3.30 with standard deviation 1.096
- c) P3: Mean 2.87 with standard deviation 1.160
- d) P4: Mean 2.99 with standard deviation 1.307
- e) P5: Mean 2.89 with standard deviation 1.118

Explanation: This data shows that the average work accident rate in the five questions ranges from 2.87 to 3.30. Question P2 has the highest average of work accidents, while P3 has the lowest average.

10. Frequency of Work Accidents (y2)

- a) P1: Mean 2.54 with standard deviation 0.937
- b) P2: Mean 3.29 with standard deviation 1.076
- c) P3: Mean 3.19 with standard deviation 1.032
- d) P4: Mean 3.35 with standard deviation 1.019
- e) P5: Mean 2.99 with standard deviation 1.176

Explanation: The highest frequency of work accidents occurred in P4 with an average of 3.35, while the lowest was in P1 with an average of 2.54.

11. Accident Severity Level (y3)

- a) P1: Mean 2.99 with standard deviation 0.937
- b) P2: Mean 3.20 with standard deviation 0.985
- c) P3: Mean 3.20 with standard deviation 1.015
- d) P4: Mean 3.38 with standard deviation 0.908
- e) P5: Mean 3.25 with standard deviation 1.201

Explanation: The highest level of accident severity is in P4 with an average of 3.38, while the lowest is in P1 with an average of 2.99.

12. Number of Working Days Lost (y4)

- a) P1: Mean 3.25 with standard deviation 1.123
- b) P2: Mean 3.15 with standard deviation 1.038
- c) P3: Mean 3.25 with standard deviation 0.951
- d) P4: Mean 3.16 with standard deviation 1.098
- e) P5: Mean 3.39 with standard deviation 1.053

Explanation: P5 has the highest average for the number of working days lost (3.39), while P2 has the lowest average (3.15).

13. Worker Health (y5)

- a) P1: Mean 2.37 with standard deviation 0.906
- b) P2: Mean 3.06 with standard deviation 0.983
- c) P3: Mean 3.21 with standard deviation 0.967



d) P4: Mean 3.36 with standard deviation 1.059

e) P5: Mean 3.51 with standard deviation 1.141

Explanation: Question P5 has the highest average value for worker health (3.51), while P1 has the lowest value (2.37).

The conclusions from the analysis results are described as follows:

1. Number of Work Accidents (y1):

a) The average work accident in five companies ranges from 2.87 to 3.30.

b) Question P2 has the highest average of work accidents (3.30), while P3 has the lowest average (2.87).

2. Frequency of Work Accidents (y2):

a) The highest frequency of work accidents occurs in P4 with an average of 3.35.

b) The lowest frequency of work accidents occurred in P1 with an average of 2.54.

3. Accident Severity Level (y3):

a) The highest level of accident severity is in P4 with an average of 3.38.

b) The lowest accident severity level is in P1 with an average of 2.99.

4. Number of Working Days Lost (y4):

a) Question P5 has the highest mean for number of work days lost (3.39).

b) Question P2 had the lowest mean for number of work days lost (3.15).

5. Employee Health (y5):

a) Question P5 has the highest average worker health score (3.51).

b) Question P1 has the lowest average worker health score (2.37).

Overall:

a) Question P2: There tends to be an increase in the incidence of work accidents and a lower number of lost work days.

b) Question P4 has the highest frequency and severity of work accidents.

c) Question P5 has the best worker health and also the highest number of lost work days.

d) Question P1 consistently has lower accident and worker health rates compared to other companies.

B. Influence of Variable (X) on Variable (Y):

Based on the data provided, we can conclude the influence of variable. The following is the order of influence from largest to smallest, with explanation:

Sequence of Results from Variable X to Variable Y:

1. K3 supervision (x5) on workers' health (y5)

a). Biggest Influence:

Better OSH monitoring tends to improve worker health by ensuring compliance with safety and health procedures.

b.) Supporting Data:

-The average health score of workers varies between 2.37 to 3.51.

-Question P5 has the highest average worker health score (3.51), while P1 has the lowest score (2.37).



## 2. Risk Control (x3) on Accident Severity Level (y3)

### a). Major Influence:

Better risk control tends to reduce the severity of accidents by reducing the impact of existing risks.

### b). Supporting data:

- The highest level of accident severity is in P4 with an average of 3.38, while the lowest is in P1 with an average of 2.99.

## 3. Risk Assessment (x2) of Frequency of Work Accidents (y2)

### a) Significant Influence:

Better risk assessment can reduce the frequency of work accidents by evaluating and managing risks more effectively.

### b) Supporting Data:

The highest frequency of work accidents occurred in P4 with an average of 3.35, while the lowest was in P1 with an average of 2.54.

## 4.K3 Training (x4) on Number of Working Days Lost (y4)

### a) Significant Influence:

Better OSH training can reduce the number of lost work days by developing workers' awareness and skills in dealing with dangerous situations.

### b) Supporting Data:

Question P5 had the highest mean for number of work days lost (3.39), while P2 had the lowest mean (3.15).

## 5. Identification of Hazards (x1) on the Number of Work Accidents (y1)

### a) Influence:

Better hazard identification tends to reduce the number of work accidents, because potential hazards are more quickly recognized and dealt with.

### b) Supporting Data:

-The average work accident in five companies ranges from 2.87 to 3.30.

-Question P2 has the highest average of work accidents (3.30), while P3 has the lowest average (2.87).

## Conclusion

The greatest influence on occupational safety and health (K3) results comes from K3 Supervision (x5) on Worker Health (y5), followed by Risk Control (x3) on the Severity of Accidents (y3), Risk Assessment (x2) on the Frequency of Work Accidents (y2), K3 Training (x4) on the Number of Working Days Lost (y4), and finally, Hazard Identification (x1) on the Number of Work Accidents (y1). This shows that good supervision and effective risk control have a significant impact on worker health and the severity of accidents, while risk assessment and OSH



training are also important to reduce the frequency of accidents and the number of lost work days. Hazard identification remains important, although its influence is relatively smaller compared to other variables.

#### Risk Assessment

Output "Correlations" in the context of regression analysis refers to a table or output that shows the correlation between the variables involved in the regression model. Usually, this output includes the correlation between the dependent variable (Y) and the independent variable (X) used in the analysis.

### CONCLUSION

Organizational cultures that emphasize productivity over safety tend to reduce compliance with K3. On the other hand, organizations prioritize K3 and build workplaces that help increase employee awareness and well-being.

So that awareness and compliance regarding Occupational Safety and Health (K3) increases, as well as K3 management at Cozy Kos Housing PT. Prima Land becomes more effective, managers need to show a strong commitment to K3. And the variable with the highest influence The greatest influence on occupational safety and health (K3) results comes from K3 Supervision (x5) with a value of 3.51 on Worker Health (y5) with a value of 2.37 and the variable with the lowest influence is Hazard Identification (x1) with value 3.04 for the number of work accidents (y1) with a value of 2.37

The Risk Assessment method begins by finding possible sources of danger in the work environment through observation, interviews and document analysis.

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