FINAL PROJECT

RISK ANALYSIS OF UNIT PRICE CONTRACT (STUDY CASE: IFC NEW FACTORY PROJECT, CILEGON)

Aimed to Islamic University of Indonesia Yogyakarta to Fulfill the Requirements to Obtain a Bachelor's Degree in Civil Engineering

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DEPARTMENT OF CIVIL ENGINEERING
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UNIVERSITAS ISLAM INDONESIA
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AUTHENTICITY STATEMENT

I certify the Final Project report that compiled as a requirement for fulfilling one of the requirements in the Civil Engineering Study Program at the Universitas Islam Indonesia is my own work. As for certain parts in writing the Final Project report that I quoted from the others work it has been written in the source clearly in accordance with the norms, rules, and ethics of writing scientific papers. If later it is found that all or part of this Final Project is not my own work or there is plagiarism in certain parts, I am willing to accept sanctions, in accordance with applicable laws.

Yogyakarta, 24 October 2022

Who make the statement,



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PREFACE

Alhamdulillahirabbil'alamin, praise the author to Allah The Almighty and The Merciful that because of His blessing I could finally finish the Final Project report entitled with Risk Analysis of Unit Price Contract (Study Case: IFC New Factory Project, Cilegon). This Final Project report is one of the academic requirements in completing undergraduate studies at the Program Study of Civil Engineering, Universitas Islam Indonesia, Yogyakarta.

In the preparation of and during the Final Project, there are many obstacles faced by the author, but thanks to the suggestions, criticism, and encouragement from various parties, thank Allah the Almighty this report can be finished. In this regard, the author would like to express my deepest gratitude to:

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Hopefully, this Final Project report can give many benefits for the author, public readers and next researchers in general.

Wassalamu'alaikum Wr. Wb.

Yogyakarta, 24 October 2022

Author,



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ABSTRACT

Risk is always present in every project work process and if this risk is not anticipated properly and appropriately, it can hinder project implementation, or may even result in losses. This Final Project aims to know about the risks that can occur in the unit price contract in the IFC New Factory Project and also furthermore to find out the most dominant risk that can occur in the unit price contract.

Data collection techniques using interviews and questionnaires using a Likert scale for severity and occurrence scoring as data. Then the data analysis used the House of Risk and Pareto Diagram method to determine the dominant risk in the IFC New Factory Cilegon project.

The results obtained from interviews and questionnaires are the discovery of 10 risk. Then from the next result, namely the pareto diagram analysis, it was concluded that 8 of the 10 risks were the dominant risks in this project.

CHAPTER I
INTRODUCTION

1.1 Background

Construction project sector in Indonesia always increases every year (BPS, 2020). This is because construction project, which is an infrastructure unit, is the driving wheel of Indonesia's economic growth (Haris, 2009). Construction project is divided into 4 types, residential, building, civil work, and industrial construction projects. Each type of construction project has its characteristics. The various construction project characteristics have the possibility for the emergence of risks.

Risk is the variation in things that may occur naturally or the possibility of unexpected events that threaten property and financial benefits due to the danger that occurs (Labombang, 2011). All construction projects will always have risks in every work process. The larger the scale of a construction project, the greater the risks encountered. Risk is related to uncertainty. It can happen because of the type of project, the location of the project, the complexity of the work, the level of ability (experience), etc. (Suwandi, 2010). The type of contract used can minimize that uncertainty.

Contracts on construction projects or commonly called construction work contracts are all documents that regulate the legal relationship between service users and service providers in the implementation of construction work (Djatnika, 2018). The construction work contract aims to ensure the smooth implementation of the project. There are several types of construction work contracts, build contracts, fixed-price contracts, lump-sum contracts, unit price contracts, and prime cost/reimbursable contracts (Kementerian Pekerjaan Umum dan Perumahan Rakyat, 2019). Each type of contract selection has its advantages and disadvantages, according to the factors that can influence it.

In unit price contracts, one of the disadvantages is the amount of re-measurement work that must be done to determine the volume of work that is actually carried out (Yasin, 2003). This will be inconvenient for clients because they have to provide energy and costs for re-measurement. The joint hospitalization of the results of this work also creates opportunities for collusion between client and contractor. That disadvantage can cause several risks that can affect the unit price contract that used in a project.

PT. MC PET Film Indonesia (MFI) as a company engaged in the production of polyester film seeks to meet market needs by increasing factory efficiency. Currently, the factory is only able to produce 20,000 tons of polyester film annually. Taking into account the projected demand for growth, MFI decided to build a new factory facility that can produce 25,000 ton annually. After expansion, company expected the production capacity will be doubled to 45,000 tons per year (CNBC Indonesia, 2019). This expansion project is called IFC new factory project.

In the IFC new factory project that uses unit price contracts, there are differences in the calculation of the number of pile points, between project drawings and sub-contractors. This can pose some risks to the project.

This Final Project aims to know about the risks that can occur in the unit price contract in IFC New Factory Project and also furthermore to find out the most dominant risk that can occur in the unit price contract. Hopefully, this research can be used as a reference in the future when considering using unit price contract on a project.

1.2 Problem Statements

Based on the background above, the problem can be formulated as follows:

1. What are the risks that can occur in the unit price contract in this project?
2. What is the most dominant risk that can occur in unit price contracts in this project?

1.3 Research Objectives

The objectives of this research are as follows:

1. To know what are the risks that can occur in the unit price contract in this project.
2. To know what is the most dominant risk that can occur in unit price contract in this project.

1.4 Research Significance

The significances of this research are as follows:

1. For student, this research can be used as learning material to find out about unit price contracts.
2. For project parties, the results of this Final Project can be used as a reference by project parties when considering using unit price contract on a project.
3. For construction contract research, this research can be used as a reference to conduct further research about construction contracts.

1.5 Research Limitation

The limitations in this research are:

1. This research is conducted in IFC new factory project, Jl. Raya Merak, Grogol, Gerem, Cilegon, Kota Cilegon, Banten.

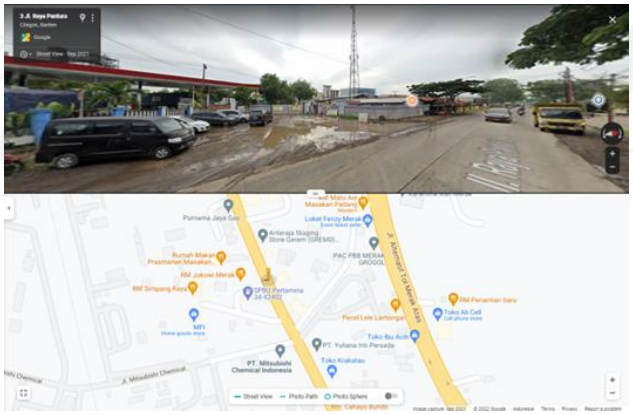


Figure 1.1 IFC New Factory Project Location

CHAPTER II
LITERATURE REVIEW

2.1 Risk of The Construction Contract to The Cost

Research on the risk of construction contracts to the costs has been carried out by Mulyarko et al. (2015). As the object of this research, the Bogor Ring Road Toll Road Development Project Section II-A was selected. The research method used is a survey method. The analysis begins with risk identification through a literature study, then questionnaires are distributed to respondents related to the project. Furthermore, risk analysis is carried out by estimating the possibility of the significant risk occurring and the resulting impact on costs using the Severity Index (SI) method and the probability and impact matrix. After knowing a significant risk, then the risk response can be done by interviewing the same respondent in the previous survey.

From the results of the analysis, it is known that there are 4 significant risk variables, namely the contractor gets clear information about field conditions during field visits, the method of measuring the quantity of work is explained clearly and completely in the specifications, the quantity of work contained in the quantity and price list has a high level of accuracy, the plan drawings provide complete information about the scope of work (Mulyarko, Hartono, & Sugiyarto, 2015).

2.2 Risk in The Implementation of Construction Project Using FIDIC Contract

Research on risk in the implementation of construction projects using FIDIC contracts has been conducted by Jaya et al. (2020). This research that conducted in Bali aims to analyze the risks that occur in the implementation of building construction projects using the FIDIC Condition of Contract for Construction for Building and Engineering Works Designed by The Employer 1999 (RED BOOK) contract, to

determine the impact on costs, quality, and time, and to formulate mitigating actions against the major risks caused. Data was collected using interviews and surveys using questionnaires. Respondents were determined using a purposive sampling method covering 40 respondents (contractors, consultants, owner representatives) on building projects using FIDIC contracts.

The results showed that the identified risks were 51 risks. 13 of them are categorized as a major risk. Of the 13 major risks, 6 of them affect cost and time, 4 risks affect the cost, 1 risk affects quality and time, 1 risk affects time, and 1 risk affects cost, quality, time. Mitigation actions consist of the pre-construction stage, the need for good coordination between stakeholders in determining the design and costs, as well as in the construction implementation where there is a need for good, fast and directed coordination between stakeholders in completing design deficiencies or information according to the contractor's schedule (Jaya, Putera, & Simanjutak, 2020).

2.3 Lumpsum Contract Risk on Construction Project

Research on lumpsum contract risk on a project has been conducted by Arifin and Soepriyono (2019). As the object of this research, the Surabaya K3 Building Construction Project was chosen. The aims and objectives of the research are to find out the most dominant risk factors and to mitigate the existing risks. Data collection techniques using questionnaires and interviews through Likert scale instruments, data analysis using SPSS 24 application assistance analysis, and this study using the probability impact matrix method.

The results of the study found 2 dominant factors, namely management planning errors and material availability. These risks are included in the category of risks that must be prevented with a risk response to avoid severity (Arifin & Soepriyono, 2019).

2.4 Risk Analysis Comparison between Lumpsum Contract and Unit Price Contract on Construction Project

Research on risk analysis comparison between lumpsum contract and unit price contract on construction project has been conducted by Wulandari and Tenriajeng (2018). The purpose of this research is to analyze the types of construction service contracts that are used to avoid or reduce the risk of contract procurement so that effective results can be achieved. The analysis is carried out by comparing the risk of cost, time and quality of lump sum contract construction with unit price contracts from the perspective of the contractor as the service provider. The method used is the Analytic Hierarchy Process (AHP) method. The analysis process begins with defining the problem, and creating a hierarchical structure. This hierarchy consists of 3 levels, namely goals (level I), criteria (level II), and alternatives (level III).

Based on the data analysis that has been carried out, it is obtained that the risk comparison for the building project, which can be cost-efficient on the unit price contract is higher than the lump sum contract with a ratio of 68%:32%. Time efficiency risk unit price contract is more time efficient than lump sum with a ratio of 62.1%:37.9%. Meanwhile, the resulting quality between unit price and lump sum contracts obtained a ratio of 60.4%:39.6%. Meanwhile, for the comparison of road project risks, the cost efficiency of the lump sum contract is higher than the unit price contract with a ratio of 73.1%:26.9%. The time efficiency risk of the lump sum contract is more time efficient than the unit price with a ratio of 73.8%:26.3%. While the resulting quality between the lump sum contract and unit price obtained a comparison of 73.3%:26.7% (Wulandari & Tenriajeng, 2018).

2.5 Analysis of Owner's Employment Contract Against Contractor by Using Unit Price Contract

Research on Analysis of Owner's Employment Contract Against Contractor by Using Unit Price Contract has been conducted by Hayati and Musnadi (2020). This

research aims to identify the factors that influence the unit price contract and analyze the aspects contained in this type of contract. The method used in this study uses qualitative data with random sampling technique. Questionnaires as research instruments were distributed to 77 respondents. Data processing is done by analyzing the validity, reliability, correlation and multiple linear regression.

Based on the results of the research, the results of the validity test r arithmetic = 0.722 > r table = 0.1888, which shows that each variable is valid. The result of the reliability test is 0.8, which is reliable/reliable because the Cronbach alpha value is > 0.6. From the correlation analysis, the R value is 0.695, so this value implies that all variables are related to the unit price contract with a coefficient of determination of R^2 = 48.4%. The model obtained from multiple linear regression analysis is: Y= 7.319 – 0.102.X1 + 0.432.X2 + 0.299.X3 + 0.420.X4 - 0.516.X5 - 0.034.X6 - 0.820.X7 - 0.002.X8, where the dominant factor is on the X4 variable, namely the time factor which has a contribution of 0.420, due to frequent design changes, schedule changes, the number of projects being handled at the same time, late construction completion due to external factors and environmental conditions when the project will start (Hayati & Musnadi, 2020)

2.6 Risk Management on Construction Project with Lumpsum Contract and Unit Price Contract

Research on risk management on construction project with lumpsum contract and unit price contract has been conducted by Suwandi (2010). This study took samples, namely projects with a lump sum contract system, namely the Indosat Semarang Building Project, the Cakung Township Road and Bridge Project Phase II and Dock 21 Nusantara, Jakarta. While the sample for the project with a unit price contract system is the addition of the South Sentul – Bogor Interchange section lines A and B of the Jagorawi Toll Road, the Pekalongan Hospital Project and the Marina Ship Dock Project. Risk analysis is carried out by structuring the risk using the RBS (Risk Breakdown Structure) method and multiplying the value impact and frequency to get the risk level value for each risk factor.

The results of the analysis obtained from RBS, were further analyzed based on the empirical experience of project managers to determine their actions in overcoming risks, then analyzed and discussed again using a flow chart to determine the relationship between risk factors, a table for comparison of the number of risks, a comparison of the level of importance of risk (importance level), comparison of risk level based on project owner and risk level based on payment system.

The results obtained from this research are the type of risk and the level of risk at each stage of the project for projects with a lump sum contract system and unit price also depend on the type of project, project location, work complexity and level of ability (experience) of the contractor, not only on the type of contractor. The contract used, in addition based on the level of importance (importance level) of each type of project, proves that it is not certain that a project with a unit price contract system has a lower risk than a project with a lump sum contract system. Meanwhile, from the analysis based on the level of risk on the risk factors of government or state-owned and private project owners, the risk of government or state-owned project owners is much smaller than that of the private sector. Meanwhile, based on the term payment system, there are two types of term payment systems, namely monthly payments and progress payments, in general the progress payment system is riskier than the monthly payment system. Meanwhile, the thing that distinguishes risk management in lump sum and unit price projects is the anticipation of the market price (Suwandi, 2010).

2.7 Comparison with Previous Research

The results of comparing this research topic with previous research topics reviewed from several kinds of literature can be seen in Table 2.1 below.

Table 2.1 Comparison with Previous Research

	Previous Research						Research That is Being Conducted
Researcher	Mulyarko et al. (2015)	Jaya et al. (2020)	Arifin & Soepriyono (2019)	Wulandari & Tenriajeng (2018)	Hayati & Musnadi (2020)	Suwandi (2010)	Ansori (2022)
Title	Analisa Pengaruh Risiko pada Kontrak Kerja Konstruksi Terhadap Biaya Pekerjaan (Studi Kasus: Proyek Pembangunan Jalan Tol Bogor Ring Road Seksi II A)	Analisis Risiko pada Pelaksanaan Proyek Konstruksi yang Menggunakan Kontrak FIDIC di Bali	Analisa Risiko Kontrak Kerja *Lumpsum* pada Proyek Gedung k3 Surabaya	Analisis Perbandingan Risiko Sistem Kontrak *Lumpsum* dan Sistem Kontrak *Unit Price* pada Proyek Konstruksi	Annalisis Kontrak Kerja Owner Terhadap Kontraktor dengan Menggunakan Kontrak *Unit Price*	Kajian Manajemen Resiko pada Proyek dengan Sistem Kontrak *Lumpsum* dan Sistem Kontrak *Unit Price* (Studi Kasus pada Proyek Jalan dan Jembatan, Gedung, Bangunan Air)	Risk Analysis of Unit Price Contract (Study Case: IFC New Factory Project)
Research Method	Quantitative	Quantitative	Quantitative	Quantitative	Quantitative	Quantitative	Quantitative

Continuation of Table 2.1

Previous Research						Research That is Being Conducted
Researcher	Mulyarko et al. (2015)	Jaya et al. (2020)	Arifin & Soepriyono (2019)	Wulandari & Tenriajeng (2018)	Suwandi (2010)	Ansori (2022)
The Object under Study	The risk of the construction work contract to the cost of the work	Risks in the implementation of construction projects using FIDIC contracts in Bali	Lumpsum contract risk on the K3 Building Project, Surabaya	- Lumpsum contract risk on 16 projects in Jabodetabek - Unit price contract risk on 16 projects in Jabodetabek	- Lumpsum contract risk on Indosat Semarang Building Project, Cakung Township Road and Bridge Project Phase II and Dock 21 Nusantara, Jakarta - Unit price contract risk on Additional lanes for the South Sentul–Bogor Interchange section lines A and B of the Jagorawi Toll Road, Pekalongan	Unit Price contract risk on the IFC New Factory Project, Cilegon

Continuation of Table 2.1

Previous Research						Research That is Being Conducted
Researcher	Mulyarko et al. (2015)	Jaya et al. (2020)	Arifin & Soepriyono (2019)	Wulandari & Tenriajeng (2018)	Suwandi (2010)	Ansori (2022)
The Object under Study					Hospital Project and Marina Ship Dock Project	
Research Results	It can be concluded that the risk variables that are significant to the cost aspect in the construction work contract of the Bogor Ring Road Toll Road Construction Project Section IIA are that the contractor gets clear information about field conditions during field visits.	The risks identified in this study are 51 risks, namely 8 risks originating from regulations and politics, 6 risks originating from the environment, 6 risks originating from financial and economic sources, 2 risks originating from social and cultural sources, 7 risks originating from security and OSH, and 22 risk originating from technical and project risk sources.	From the stages of data collection and analysis that have been carried out, it can be explained that there are 6 risk variables, there are dominant factors to determine what risks affect the Lumpsum work contract. Each risk scale from the results of the study has a probability of occurring with a different percentage. Likewise, the impact of the occurrence of risk has a different percentage.	Based on the data analysis that has been carried out, it is obtained that the risk comparison for the building project, which can be cost-efficient on the unit price contract is higher than the lump sum contract with a ratio of 68%:32%. Time efficiency risk unit price contract is more time efficient than lump sum with a ratio of 62.1%:37.9%.	The results obtained from this research are the type of risk and the level of risk at each stage of the project for projects with a lump sum contract system and unit price also depend on the type of project, project location, work complexity and level of ability (experience) of the contractor, not only on the type of contractor.	Based on risk analysis there are 7 priority risk of 10 risk obtained.

Continuation of Table 2.1

Previous Research						Research That is Being Conducted
Researcher	Mulyarko et al. (2015)	Jaya et al. (2020)	Arifin & Soepriyono (2019)	Wulandari & Tenriajeng (2018)	Suwandi (2010)	Ansori (2022)
Research Results	From these variables it is known that there is uncertainty there is uncertainty in the contract this will affect the cost of the work where the higher the uncertainty factor, the higher the cost of construction work.			Meanwhile, the resulting quality between unit price and lump sum contracts obtained a ratio of 60.4%:39.6%. Meanwhile, for the comparison of road project risks, the cost efficiency of the lump sum contract is higher than the unit price contract with a ratio of 73.1%:26.9%. The time efficiency risk of the lump sum contract is more	The contract used, in addition based on the level of importance (importance level) of each type of project, proves that it is not certain that a project with a unit price contract system has a lower risk than a project with a lump sum contract system. Meanwhile, from the analysis based on the level of risk on the risk factors of government or state-owned and private project owners, the risk of government	

Continuation of Table 2.1

Previous Research						Research That is Being Conducted
Researcher	Mulyarko et al. (2015)	Jaya et al. (2020)	Arifin & Soepriyono (2019)	Wulandari & Tenriajeng (2018)	Suwandi (2010)	Ansori (2022)
Research Results				time efficient than the unit price with a ratio of 73.8%:26.3%. While the resulting quality between the lump sum contract and unit price obtained a comparison of 73.3%:26.7%.	or state-owned project owners is much smaller than that of the private sector. Meanwhile, based on the term payment system, there are two types of term payment systems, namely monthly payments and progress payments, in general the progress payment system is riskier than the monthly payment system. Meanwhile, the thing that distinguishes risk management in lump sum and unit price projects is the anticipation of the market price.	

CHAPTER III
THEORETICAL BASIS

3.1 Construction Project Definition

Project is a planned piece of work that is designed to find information about something, to produce something new, or to improve something. (Oxford Advanced American Dictionary). Construction is the process or method of building or making something, especially roads, buildings, bridges, etc.

A construction project is a series of activities to achieve a goal (building or construction) with certain time, cost and quality constraints (Kerzner, 2002). A construction project can be defined as an activity that aims to construct a building that requires resources, both costs, labor, materials and equipment (Dannyanti, 2010). Construction projects are carried out in detail and are not repeated.

3.2 Type of Construction Project

In general, construction project categories can be divided into 4 categories as follows:

3.2.1 Residential Construction

Residential construction projects are divided into detailed building projects based on the construction class together with the delivery of supporting infrastructure, therefore infrastructure planning for the housing is required (transfusion network, water network, and other facilities). This residential construction project consists of very simple houses to luxury homes, and flats.

3.2.2 Building Construction

Building construction projects include office buildings, schools, shops, hospitals, residences and so on. From a cost and technology perspective, it consists of low, medium, and high scale. Usually, the planning for a building project is more complete and more detailed.

3.2.3 Civil Work or Heavy Construction

Civil work or heavy construction are infrastructure projects such as dam projects, highway projects, bridges, tunnels, railways, ports, and others. This type of project is generally large-scale and requires high technology.

3.2.4 Industrial Construction

Industrial construction projects are projects that require special specifications and requirements such as for oil refineries, heavy industry or basic industry, mining, nuclear, and so on. Planning and implementation require specific rigor, expertise, and technology.

3.3 Construction Work Contract

According to Article 1 point 8 UUJK, a construction work contract is an entire document that regulates the legal relationship between service users and service providers in the implementation of construction work. The construction work contract is a legal document/product. All construction works or businesses that are bound by a work contract will have their legal rights and obligations determined, for that a work contract must be made properly and legally. There are 4 types of construction work contracts (Kementerian Pekerjaan Umum dan Perumahan Rakyat, 2019), one of that is Build Contract. This type of contract only implements an existing project plan. Service Providers only carry out or build the physical only. It is further divided into 2 types, namely:

3.3.1 Fixed Contract

A contract that requires the service provider to complete construction work based on an agreed fixed price according to predetermined specifications. There are 2 types of fixed contract, namely:

1. Lumpsum Contract

   Contract to carry out construction work according to specifications and drawings within a definite time and contract value. For this reason, accurate plans and interpretations are needed for both parties.

2. Unit Price Contract

   Contract to carry out construction work according to specifications and plan drawings within a predetermined time and contract value which is still an estimate but at a fixed unit price. The volume of work is still an estimate, the exact amount of volume can only be known at the end of the work.

   The sorts of tasks being performed, as well as the materials used on those tasks, are usually highlighted in unit price contracts. This type of classified pricing makes it easier for owners to evaluate each cost and for contractors to charge more properly for each category.

3.3.2 Prime Cost Contract

A contract in which the service provider carries out construction work at their own expense, then the submission of fees from the service provider will be paid by the service user plus a fee as the company's profit. There are 3 types of prime cost contract, namely:

1. Cost Plus Fix Percentage Contract

   Payment includes both project expenditures as well as the contractor's profit and overhead. The amount paid to the contractor for profit and overhead is based on a set percentage of the total project cost.

2. Cost Plus Fixed Fee Contract

Payment consists of a fixed price that covers the contractor's profit and overhead, as well as payment of the connected project's costs.

3.4 Risk

A risk is an uncertain event, if it occurs it has a positive or negative impact on the final results and objectives of the project (*PMBOK@ Guide*, 2008). Risks are activities or factors that, if they occur, will increase the likelihood of not achieving project objectives, namely in accordance with time, cost, and performance (Kerzner, 2002). Another definition explains that risk is a condition where there is a possibility of economic or financial gain or loss, physical damage or injury, delays, as a consequence of uncertainty during the implementation of an activity (Chapman & Cooper, 1983).

In general, risk can be mean the probability of loss, the chance of loss or uncertainty and the dispersion of actual from expectation result. Based on some of these understandings, it can be concluded that risk is a condition that arises because of uncertainty with the probability of certain events which if they occur will have unfavorable consequences.

There is formula to calculate Risk

$$Risk = Severity \times Occurence$$

3.4.1 Risk Analysis

Risk analysis is the process of developing an understanding of risk (Jasamarga, 2020). Risk analysis provides input for the risk evaluation process and in making decisions whether a risk needs to be controlled and selecting the appropriate control strategy and method. Risk analysis is part of the risk assessment stage in the risk management process and is carried out on the risks that have been identified in the risk identification process.

Risk analysis includes an analysis of the causes and sources of risk, the positive or negative impact of a risk, and the possibility that a risk may occur. Factors that influence the impact and likelihood of risk events must be identified. The efficiency and effectiveness of the previously implemented risk controls should also be considered. The possible linkages between the identified risks also need to be considered.

3.5 Pareto Diagram

The Pareto diagram is a data histogram sort from greatest frequency to the smallest (Evans & Lindsay, 2007), as well also calculated the cumulative. This diagram is helpful management quickly identifies the most areas critical who need special and prompt attention. When analyzing events, it is common to find that approximately 80% of the eventus are caused by 20% of the potential causes.

CHAPTER IV
RESEARCH METHODOLOGY

4.1 Research Subject and Object

4.1.1 Research Subject

Research subject is the limitation of the research where the researcher can determine it with objects, things, or people for the attachment of research variables (Arikunto, 2016). The research object here is 3 experts.

4.1.2 Research Object

The research object is a variable or something that becomes the attention point of research (Arikunto, 2016). The research object in this project is unit price contract risks on the IFC New Factory Project, Cilegon.

4.2 Research Data

There are 2 types of research data in this research, namely:

4.2.1 Primary Data

Primary data is research data obtained directly from the source in the form of interviews, polls from individuals or groups as well as the results of observations of an object, event, or test result (Prabandari, 2020). In this research, primary data were obtained from interviews and filling out questionnaires by respondents. The results of filling out the questionnaire by the respondents are:

1. Severity Score of Risk Event
2. Occurrence Score Risk Agent

4.2.2 Secondary Data

Secondary data is research data obtained through intermediary media or indirectly in the form of books, records, existing evidence, or archives, both published and unpublished in general (Prabandari, 2020). In this project, there are several secondary data which is merged as a project document.

4.3 Data Collecting Method

Data collecting method in this research are conducted as follow:

4.3.1 Observation

This research was started by observing the location of the IFC New Factory Project, Cilegon. Directly observe the location there and estimate the risks that maybe can occur.

4.3.2 Literature Review

In addition to observation, the researcher also conducted a literature review to identify risks that could occur in the project.

4.3.3 Interview

After identifying the risks that can occur in the project, verification is carried out by interviewing experts.

4.3.4 Questionnaire

After conducting interviews and being verified by the experts, make a questionnaire containing a risk assessment which will also be filled in by the expert.

Below are the scoring rules for the questionnaire:

1. Severity Score
   a. Very Low = 1
   b. Low = 2
   c. Moderate = 3
   d. High = 4
   e. Very High = 5
2. Occurrence Score
   a. Very Rare = 1
   b. Rare = 2
   c. Sometimes = 3
   d. Often = 4
   e. Very Often = 5

4.4 Data Processing Method

After knowing the score of the Severity of Risk Event and Occurrence of Risk Agent from the results of the respondent's questionnaire, then proceed to risk calculation. Then, it can be seen what the dominant risks occur in the Unit Price contract in the IFC New Factory Project.

4.4.1 Risk Calculation

The risks that have been identified are then assessed for the level of severity and the level of occurrence. The risk assessment is based on the real conditions that exist in the IFC New Factory, so that the output of this study is by the initial objectives of the research. In addition, at this stage, the risk selection that gets priority is also carried out to design a handling strategy. Risk selection is based on the risk values.

4.4.2 Pareto Diagram Analysis

The next step is to analyze the Pareto diagram which is an image that sorts the classification of data with the aim of giving the highest to lowest ranking from left to right data based on an 80/20 ratio which means that about 80% of the effect is the result of 20% of the causes. This can help to find problem that must be resolved immediately, from the highest ranking to problems that do not have to be resolved immediately or the lowest ranking.

4.5 Research Flow

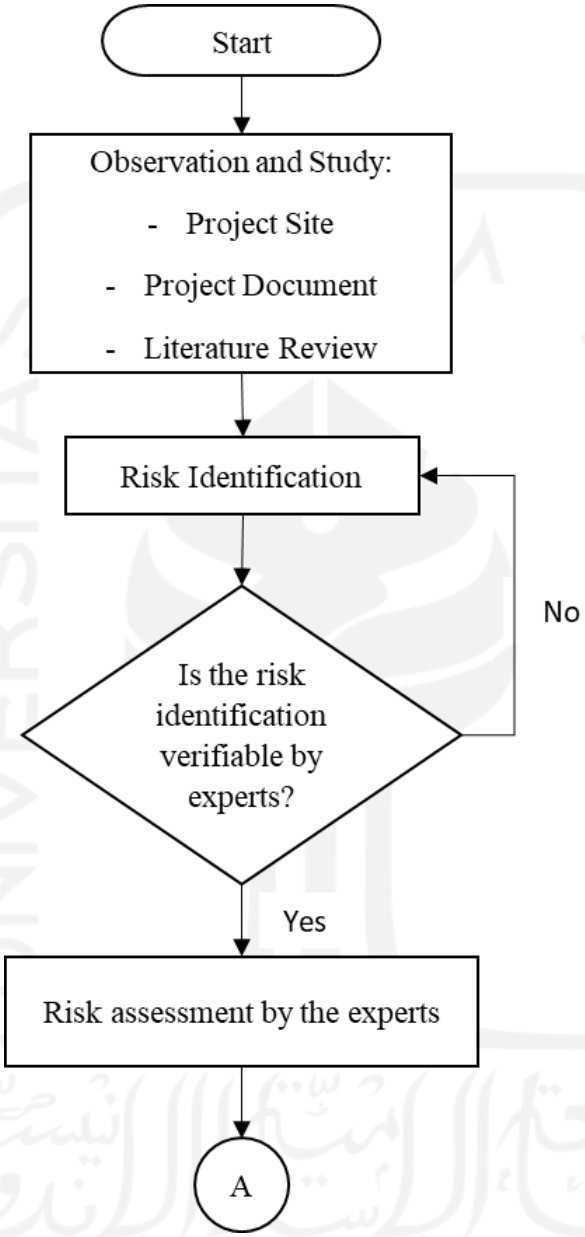
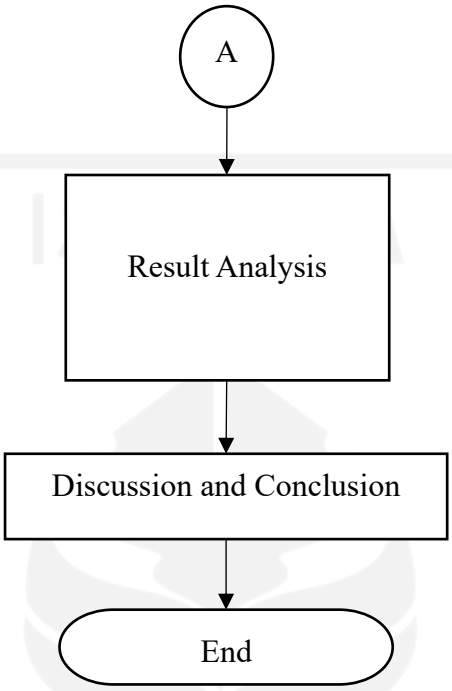


Figure 4.1 Research Flowchart

Continuation of Figure 4.1



CHAPTER V
DATA, ANALYSIS, AND DISCUSSION

5.1 Data

5.1.1 Severity and Occurrence

Below are the severity and occurrence values obtained from interviews with experts regarding risk events and risk agents.

Table 5.1 Severity and Occurrence

R_i	Risk	Severity	Occurrence
R_1	Incompetent surveyor	3.17	4.17
R_2	Incompetent estimator	3.89	3.81
R_3	There is a request for acceleration of work carried out by the Owner	4.5	4.33
R_4	The language used for writing clauses in contracts is not good	3.89	3
R_5	Lack of references in reviewing contracts	4.33	3.33
R_6	There is a change in orders from the Owner	3.33	4.33
R_7	Difficulty communicating in a foreign language	2.67	4
R_8	Low quality of human resources	3	3.5
R_9	The number of workers and equipment does not meet predetermined standards	2.67	4
R_{10}	Failure in material orders caused by unexpected factors (location, weather, traffic, etc.)	3	3.83

5.2 Data Analysis

5.2.1 Risk Calculation

The next step is to calculate the Risk. The value of Risk is obtained from multiplication of the magnitude of the disturbance or risk severity (severity) and the multiplication of the probability of the occurrence of a risk cause (occurrence).

$$Risk = Severity \times Occurence$$

R_1 = 3.17 x 4.17 = 13.19

R_2 = 3.89 x 3.81 = 14.81

R_3 = 4.5 x 4.33 = 19.50

R_4 = 3.89 x 3 = 11.67

R_5 = 4.33 x 3.33 = 14.44

R_6 = 3.33 x 4.33 = 14.44

R_7 = 2.67 x 4 = 10.67

R_8 = 3 x 3.5 = 10.50

R_9 = 2.67 x 4 = 10.67

R_{10} = 3 x 3.83 = 11.50

Table 5.2 Risk Calculation

R_i	Risk	Risk Value
R_1	Incompetent surveyor	13.19
R_2	Incompetent estimator	14.81
R_3	There is a request for acceleration of work carried out by the Owner	19.50
R_4	The language used for writing clauses in contracts is not good	11.67
R_5	Lack of references in reviewing contracts	14.44
R_6	There is a change in orders from the Owner	14.44
R_7	Difficulty communicating in a foreign language	10.67
R_8	Low quality of human resources	10.50
R_9	The number of workers and equipment does not meet predetermined standards	10.67
R_{10}	Failure in material orders caused by unexpected factors (location, weather, traffic, etc.)	11.50

Table 5.3 Risk Value Sequencing

Kode	Risk Agent	Risk Value	Rank
R3	There is a request for acceleration of work carried out by the Owner	19.50	1
R2	Incompetent estimator	14.81	2
R5	Lack of references in reviewing contracts	14.44	3
R6	There is a change in orders from the Owner	14.44	4
R1	Incompetent surveyor	13.19	5
R4	The language used for writing clauses in contracts is not good	11.67	6
R10	Failure in material orders caused by unexpected factors (location, weather, traffic, etc.)	11.50	7
R7	Difficulty communicating in a foreign language	10.67	8
R9	The number of workers and equipment does not meet predetermined standards	10.67	9
R8	Low quality of human resources	10.50	10

5.2.2 Risk Evaluation

In order to determine which risk will receive priority treatment based on the Pareto diagram, the outcomes of the risk calculations will now be reviewed. The Pareto Risk diagram of all current risk is shown in the figure below.

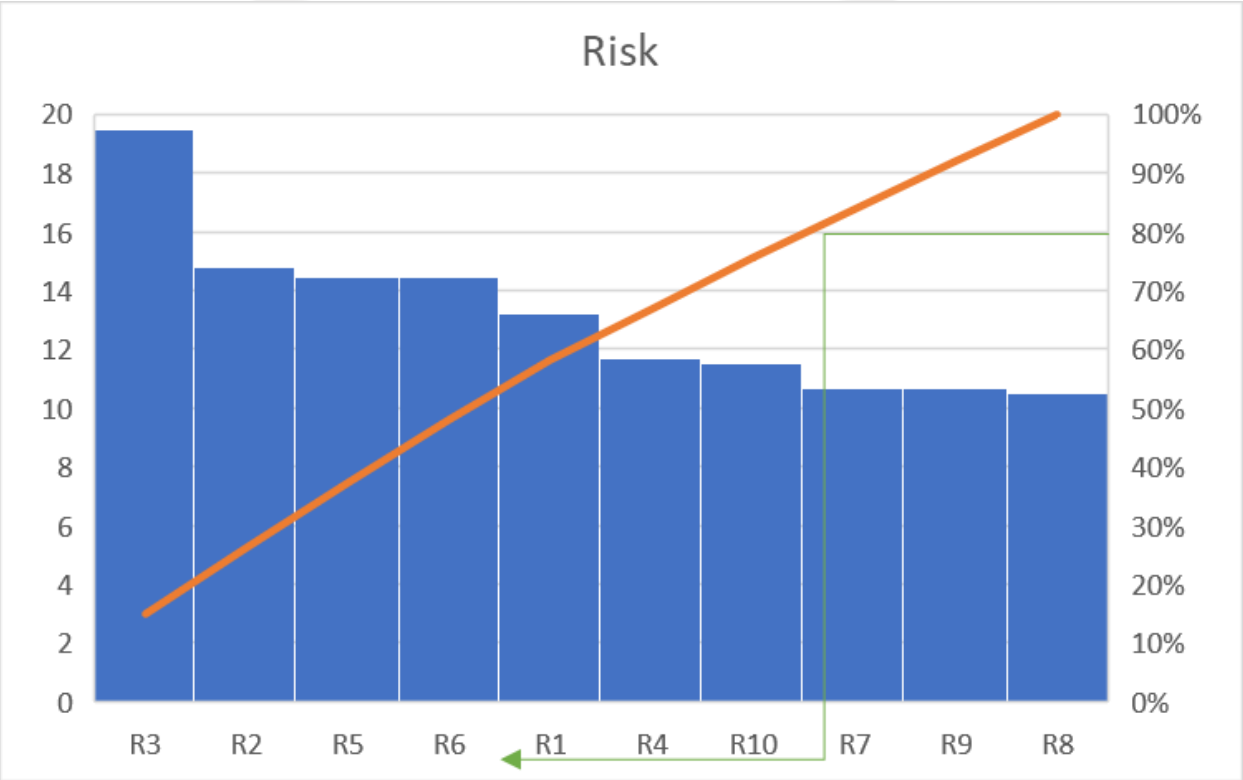


Figure 5.1 Pareto Chart

The 80/20 rule, which states that 20% of risk agents are responsible for 80% of risk events, is the basis for the Pareto principle. The primary aspects that generate the most issues in this project's unit price contract are all located to the left of the 80% line.

- R3 (There is a request for acceleration of work carried out by the Owner)
- R2 (Incompetent estimator)
- R5 (Lack of references in reviewing contracts)

- R6 (There is a change in orders from the Owner)
- R1 (Incompetent Surveyor)
- R4 (The language used for writing clauses in contracts is not good)
- R10 (Failure in material orders caused by unexpected factors (location, weather, traffic, etc.)
- R7 (Difficulty communicating in a foreign language)

5.3 Discussion

5.3.1 Risk Evaluation

In order to determine the level of risk priority, Pareto diagram is used according to its principal which is 80/20 rule. All elements to the left of the 80% line are the key elements that cause the most problems in this project's unit price contract.

According to figure 5.1, there are 8 risk points that must be followed up for further mitigation which are: R3 (There is a request for acceleration of work carried out by the Owner) with value 19.50. R2 (Incompetent estimator) with value 14.81. R5 (Lack of references in reviewing contracts) with value 14.44. R6 (There is a change in orders from the Owner) with value 14.44. R1 (Incompetent Surveyor) with value 13.19. R4 (The language used for writing clauses in contracts is not good) with value 11.67. R10 (Failure in material orders caused by unexpected factors (location, weather, traffic, etc.) with value 11.50. R7 (Difficulty communicating in a foreign language) with value 10.67.

CHAPTER VI
CONCLUSION AND SUGGESTION

6.1 CONCLUSION

Based on the results obtained from research that has been carried out, the conclusions are:

1. There are 10 risks identified through interview and questionnaire. Namely:
   a. There is a request for acceleration of work carried out by the Owner
   b. Incompetent estimator
   c. Lack of references in reviewing contracts
   d. There is a change in orders from the Owner
   e. Incompetent surveyor
   f. The language used for writing clauses in contracts is not good
   g. Failure in material orders caused by unexpected factors (location, weather, traffic, etc.)
   h. Difficulty communicating in a foreign language
   i. The number of workers and equipment does not meet predetermined standards
   j. Low quality of human resources

2. Then based pareto diagram, there are 8 priority risk obtained. Namely:
   a. There is a request for acceleration of work carried out by Owner
   b. Incompetent estimator
   c. Lack of references in reviewing contracts
   d. There is a change in orders from Owner
   e. The language used for writing clauses in contracts is not good

f. Failure in material orders caused by unexpected factors (location, weather, traffic, etc.).
g. Difficulty in a foreign language

6.2 SUGGESTION

Recommendations or suggestions that may be submitted based on this research are:

1. This research can be further developed to the next level, namely risk management by referring to the results of the risk analysis that has been obtained.
2. This research can also be continued by comparing unit price contracts with other types of contracts, the results of which can later become a reference for owners, contractors, or parties related to construction project.

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APPENDIX

Unit Price Contract Risk Analysis

The following survey is a source of data that will be used in the Unit Price Contract Risk Analysis study to fulfill the Final Project of:

Name : Irsyad Hanif Ansori
NIM : 17511078
University : Universitas Islam Indonesia
Faculty / Department : Faculty of Civil Engineering and Planning / Civil Engineering (IP)

Respondent's Name *
Nama Responden

Muh Erry Sugiharto

Company's Name *
Nama Perusahaan / Instansi

PT Pertamina (Persero)

Position *
Jabatan

Direktur

Work Experience (year) *
Pengalaman Kerja (tahun)

23 Tahun

Unit Price Contract Risk Potential Survey

Unit Price Contract Risk Potential Survey

Participants are asked to answer the questions below by choosing between a value of 1 (very low/not severe) to a value of 5 (very high/severe) based on **how influential** the potential risk is if it occurs in the unit price contract.

Partisipan dimohon menjawab pertanyaan di bawah ini dengan memilih antara nilai 1 (Sangat rendah/tidak parah) hingga nilai 5 (Sangat tinggi/parah) berdasarkan **seberapa berpengaruhnya** potensi resiko tersebut jika terjadi pada kontrak unit price.

1. The specifications in the tender document are not clear *
(Spesifikasi dalam dokumen tender tidak jelas)

	1	2	3	4	5	
Sangan tidak parah	○	○	○	◉	○	Sangat parah

2. The design does not match the scope of work *
(Desain tidak sesuai dengan lingkup kerja)

	1	2	3	4	5	
Sangat tidak parah	○	○	◉	○	○	Sangat parah

3. Bill of Quantity (BoQ) details are incomplete *
(Detail Bill of Quantity (BoQ) tidak lengkap)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

4. Scope of work is not clearly defined *
(Scope of work tidak terdefinisi dengan jelas)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

5. The implementation schedule from the Owner is not realistic *
(Schedule pelaksanaan dari Owner tidak realistis)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

6. An error occurred in the calculation of the initial estimate *
(Terjadi kesalahan dalam perhitungan estimasi awal)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

7. The estimates that have been made do not match the actual conditions in the field *
(Estimasi yang sudah dibuat tidak sesuai kondisi sesungguhnya di lapangan)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

8. There was an error in the construction method in the bid *
(Terjadi kesalahan metode konstruksi dalam penawaran)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

9. Tender calculation is not good *
(Penghitungan tender yang kurang bagus)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

10. Incomplete scheduling clause *
(Tidak lengkapnya scheduling clause)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

11. Incomplete specifications *
(Tidak sempurnanya spesifikasi)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

12. The Order Giver changes the work method that is not stated in the contract *
(Pemberi Order mengubah metode kerja yang tidak tercantum dalam kontrak)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

13. Field data does not match the data in the contract *
(Data lapangan tidak sesuai dengan data dalam kontrak)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

14. Incomplete contract clause *
(Klausal kontrak yang tidak lengkap)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

15. Unclear contract clauses causing confusion *
(Klausal kontrak yang tidak jelas sehingga menimbulkan kerancuan)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

16. There has been a change in drawings and specifications *
(Terjadi perubahan gambar dan spesifikasi)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

17. There has been a change in regulations *
(Terjadi perubahan peraturan)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

18. It is difficult to make a claim due to changes *
(Sulitnya melakukan klaim karena terjadi perubahan)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

19. There was a redesign *
(Terjadi re-design)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

20. There is a change in material specifications *
(Terjadi perubahan spesifikasi material)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

21. There was a delay in submitting data caused by the Owner *
(Terjadi keterlambatan penyampaian data yang disebabkan oleh Owner)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

22. The contract has not been effective yet *
(Kontrak belum berlaku secara efektif)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

23. There is a design delay from the Designer *
(Terjadi keterlambatan desain dari pihak Designer)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

24. Slow and protracted decision making *
(Pengambilan keputusan yang lambat dan berlarut-larut)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

25. There is a re-work *
(Terjadi re-work)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

26. There is a delay in the implementation of construction work *
(Terjadi keterlambatan dalam pelaksanaan perkerjaan konstruksi)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

27. There is a delay in work administration *
(Terjadi keterlambatan administrasi pekerjaan)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

28. There is a delay in project needs *
(Terjadi keterlambatan kebutuhan proyek)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

29. There is a delay in the procurement process *
(Terjadi ketermabatan dalam proses procurement)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

Unit Price Contract Risk Agent Identification Survey

Participants are asked to answer the questions below by choosing between a value of 1 (Very rarely) to 5 (Very often) based on **how often** the causes of the risks in the previous question occur in unit price contracts.

Partisipan dimohon menjawab pertanyaan di bawah ini dengan memilih antara nilai 1 (Sangat jarang terjadi) hingga nilai 5 (Sangat sering terjadi) berdasarkan **seberapa seringnya** penyebab dari timbulnya resiko - resiko yang terdapat pada pertanyaan sebelumnya terjadi pada kontrak unit price.

1. Lack of information on the requested contract specifications *
(Minimnya informasi terhadap spesifikasi kontrak yang diminta)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

2. Lack of employer experience *
(Kurangnya pengalaman pemberi kerja)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

3. Low design maturity level complete at the time of tender *
(Level kematangan desain rendah lengkap pada saat tender)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

4. The complete design is not available at the time of tender *
(Desain tidak tersedia lengkap pada saat tender)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

5. Lack of time for design preparation *
(Kurangnya waktu untuk penyiapan desain)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

6. Lack of data for design preparation *
(Kurangnya data untuk penyiapan desain)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

7. There is no BoQ that describes the scope of work *
(Tidak tersedianya BoQ yang menjabarkan lingkup pekerjaan)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

8. The scope of work does not match the drawings and specifications *
(Lingkup kerja tidak sesuai dengan gambar dan spesifikasi)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

9. The boundaries of the scope of work are not clear *
(Batas-batas lingkup kerja yang kurang jelas)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

10. Inaccurate calculations and lack of competence and experience from the Owner *
(Tidak akuratnya perhitungan serta kurangnya kompetensi dan pengalaman dari Owner)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

11. The estimator does not understand the scope of work *
(Estimator kurang memahami scope of work)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

12. The estimator does not understand in reading material and work specifications *
(Estimator kurang paham dalam membaca spesifikasi material maupun pekerjaan)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

13. The estimator does not recalculate the entire quantity based on the tender drawing *
(Estimator tidak menghitung kembali seluruh quantity berdasarkan gambar tender)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

14. The estimator does not analyze the unit price of each job *
(Estimator tidak menganalisa harga satuan setiap pekerjaan)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

15. The estimator did not conduct a site visit to understand the condition of the location *
(Estimator tidak melakukan site visit untuk memahami kondisi lokasi)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

16. The estimator did not review the construction method used in the tender document *
(Estimator tidak membuat review tentang metode konstruksi yang digunakan dalam dokumen tender)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

17. Lack of qualified personnel in calculating tenders *
(Kurangnya tenaga yang qualified dalam penghitungan tender)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

18. Very limited tender calculation time *
(Waktu penghitungan tender yang sangat terbatas)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

19. The estimator does not include price fluctuations in the market *
(Estimator tidak memasukkan faktor fluktuasi harga di pasaran)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

20. Lack of experience of managers in scheduling and planning *
(Kurangnya pengalaman manajer dalam pengaturan jadwal dan perencanaan)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

21. Irregular job meetings so work is not well coordinated *
(Job meeting yang tidak teratur sehingga pekerjaan tidak terkoodinir dengan baik)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

22. Lack of experts because the time provided is limited *
(Kuranganya tenaga ahli karena waktu yang disediakan terbatas)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

23. There is a request for acceleration of work carried out by the employer *
(Adanya permintaan akselerasi pekerjaan yang dilakukan oleh pemberi kerja)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

24. The actual conditions in the field will only be known after the work takes place *
(Kondisi sebenarnya yang ada di lapangan baru diketahui setelah pekerjaan berlangsung)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

25. There is no clause related to any changes that occur in the contract *
(Tidak adanya klausal yang berhubungan dengan adanya perubahan-perubahan yang terjadi dalam kontrak)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

26. Lack of references in reviewing contracts *
(Kurangnya referensi dalam mereview kontrak)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

27. The language used for writing clauses in the contract is not good *
(Bahasa yang digunakan untuk penulisan klausal dalam kontrak kurang bagus)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

28. The contract does not clearly state the limits of responsibility of each party involved in the contract *
(Di dalam kontrak tidak menyebutkan secara jelas batasan tanggung jawab dari masing-masing pihak yang terlibat dalam kontrak)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

29. There is no explanation of changes in work caused by the Owner *
(Tidak adanya penjelasan tentang perubahan dalam pekerjaan yang disebabkan oleh Owner)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

30. There is no clause regarding changes in work caused by changes in laws and regulations *
(Tidak adanya klausal tentang perubahan dalam pekerjaan yang disebabkan oleh berubahnya hukum dan perundang-undangan)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

31. Unclear scheduling clause in a contract document *
(Tidak jelasnya scheduling clause dalam suatu dokumen kontrak)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

32. Real conditions in the field do not match what is in the contract *
(Kondisi nyata di lapangan tidak sesuai dengan yang ada di dalam kontrak)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

33. There is work that is different from the specifications in the contract *
(Adanya pekerjaan yang berbeda dengan spesifikasi yang ada di dalam kontrak)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

34. Design does not match at the time of implementation *
(Desain tidak cocok pada saat pelaksanaan)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

35. Specifications that are less detailed and accurate *
(Spesifikasi yang kurang detail dan akurat)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

36. There was an error in mentioning the specifications in the contract *
(Terjadi kesalahan dalam menyebutkan spesifikasi di dalam kontrak)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

37. Late in processing requests for data or information related to project implementation *
(Terlambat dalam memproses permintaan data atau informasi yang berhubungan dengan pelaksanaan proyek)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

38. There is a change in orders from the Owner *
(Adanya perubahan perintah dari Owner)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

39. Delay in approval of design review *
(Keterlambatan dalam persetujuan review desain)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

40. Defective documents or supporting data in the contract *
(Cacatnya dokumen atau data pendukung yang ada dalam kontrak)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

41. Ineffective design contract documents *
(Dokumen kontrak desain yang belum efektif)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

42. Incomplete design *
(Desain yang belum lengkap)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

43. Difficulty communicating in a foreign language *
(Kesulitan berkomunikasi dalam bahasa asing)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

44. Low quality of employee performance *
(Rendahnya kualitas kinerja karyawan)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

45. Lack of experience in project work *
(Kurangnya pengalaman dalam pengerjaan proyek)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

46. The number of workers and equipment does not meet the predetermined standards *
(Jumlah tenaga kerja dan peralatan tidak memenuhi standar yang sudah ditentukan)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

47. Low work productivity *
(Produktivitas kerja rendah)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

48. Lack of planning, coordination and management at work *
(Kurangnya perencanaan, koordinasi, dan manajemen dalam pekerjaan)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

49. Slow in processing the required materials or equipment *
(Lambat dalam memproses material atau peralatan yang dibutuhkan)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

50. Failure to order materials and equipment on time to meet the needs of the work schedule (Kegagalan dalam order material dan peralatan yang tepat waktu untuk memenuhi kebutuhan schedule pekerjaan) *

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

Thank You For Taking The Time To Fill Out The Questionnaire And Participate In Our Survey

If there is something that needs to be asked or explained further, please contact us:
Mobile no. : 082137352244 (Anif)
Email : anif.ansori27@gmail.com

This form was created inside of education.

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Unit Price Contract Risk Analysis

The following survey is a source of data that will be used in the Unit Price Contract Risk Analysis study to fulfill the Final Project of:

Name : Irsyad Hanif Ansori
NIM : 17511078
University : Universitas Islam Indonesia
Faculty / Department : Faculty of Civil Engineering and Planning / Civil Engineering (IP)

Respondent's Name *
Nama Responden

Inonu Ferryanto

Company's Name *
Nama Perusahaan / Instansi

PT Adhi Karya (Persero) Tbk

Position *
Jabatan

GM Departemen Sistem , IT dan Inovasi

Work Experience (year) *
Pengalaman Kerja (tahun)

28 Th

Unit Price Contract Risk Potential Survey

Unit Price Contract Risk Potential Survey

Participants are asked to answer the questions below by choosing between a value of 1 (very low/not severe) to a value of 5 (very high/severe) based on **how influential** the potential risk is if it occurs in the unit price contract.

Partisipan dimohon menjawab pertanyaan di bawah ini dengan memilih antara nilai 1 (Sangat rendah/tidak parah) hingga nilai 5 (Sangat tinggi/parah) berdasarkan **seberapa berpengaruhnya** potensi resiko tersebut jika terjadi pada kontrak unit price.

1. The specifications in the tender document are not clear *
(Spesifikasi dalam dokumen tender tidak jelas)

	1	2	3	4	5	
Sangan tidak parah	○	○	○	◉	○	Sangat parah

2. The design does not match the scope of work *
(Desain tidak sesuai dengan lingkup kerja)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	○	◉	Sangat parah

3. Bill of Quantity (BoQ) details are incomplete *
(Detail Bill of Quantity (BoQ) tidak lengkap)

	1	2	3	4	5	
Sangat tidak parah	○	○	◉	○	○	Sangat parah

4. Scope of work is not clearly defined *
(Scope of work tidak terdefinisi dengan jelas)

	1	2	3	4	5	
Sangat tidak parah	○	○	◉	○	○	Sangat parah

5. The implementation schedule from the Owner is not realistic *
(Schedule pelaksanaan dari Owner tidak realistis)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	○	◉	Sangat parah

6. An error occurred in the calculation of the initial estimate *
(Terjadi kesalahan dalam perhitungan estimasi awal)

	1	2	3	4	5	
Sangat tidak parah	○	◉	○	○	○	Sangat parah

7. The estimates that have been made do not match the actual conditions in the field *
(Estimasi yang sudah dibuat tidak sesuai kondisi sesungguhnya di lapangan)

	1	2	3	4	5	
Sangat tidak parah	○	○	◉	○	○	Sangat parah

8. There was an error in the construction method in the bid *
(Terjadi kesalahan metode konstruksi dalam penawaran)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	○	◉	Sangat parah

9. Tender calculation is not good *
(Penghitungan tender yang kurang bagus)

	1	2	3	4	5	
Sangat tidak parah	○	○	◉	○	○	Sangat parah

10. Incomplete scheduling clause *
(Tidak lengkapnya scheduling clause)

	1	2	3	4	5	
Sangat tidak parah	○	○	◉	○	○	Sangat parah

11. Incomplete specifications *
(Tidak sempurnanya spesifikasi)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

12. The Order Giver changes the work method that is not stated in the contract *
(Pemberi Order mengubah metode kerja yang tidak tercantum dalam kontrak)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

13. Field data does not match the data in the contract *
(Data lapangan tidak sesuai dengan data dalam kontrak)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

14. Incomplete contract clause *
(Klausal kontrak yang tidak lengkap)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

15. Unclear contract clauses causing confusion *
(Klausal kontrak yang tidak jelas sehingga menimbulkan kerancuan)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

16. There has been a change in drawings and specifications *
(Terjadi perubahan gambar dan spesifikasi)

	1	2	3	4	5	
Sangat tidak parah	○	○	◉	○	○	Sangat parah

17. There has been a change in regulations *
(Terjadi perubahan peraturan)

	1	2	3	4	5	
Sangat tidak parah	○	◉	○	○	○	Sangat parah

18. It is difficult to make a claim due to changes *
(Sulitnya melakukan klaim karena terjadi perubahan)

	1	2	3	4	5	
Sangat tidak parah	○	○	◉	○	○	Sangat parah

19. There was a redesign *
(Terjadi re-design)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

20. There is a change in material specifications *
(Terjadi perubahan spesifikasi material)

	1	2	3	4	5	
Sangat tidak parah	○	○	◉	○	○	Sangat parah

21. There was a delay in submitting data caused by the Owner *
(Terjadi keterlambatan penyampaian data yang disebabkan oleh Owner)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

22. The contract has not been effective yet *
(Kontrak belum berlaku secara efektif)

	1	2	3	4	5	
Sangat tidak parah	○	◉	○	○	○	Sangat parah

23. There is a design delay from the Designer *
(Terjadi keterlambatan desain dari pihak Designer)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

24. Slow and protracted decision making *
(Pengambilan keputusan yang lambat dan berlarut-larut)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

25. There is a re-work *
(Terjadi re-work)

	1	2	3	4	5	
Sangat tidak parah	○	○	◉	○	○	Sangat parah

26. There is a delay in the implementation of construction work *
(Terjadi keterlambatan dalam pelaksanaan perkerjaan konstruksi)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

27. There is a delay in work administration *
(Terjadi keterlambatan administrasi pekerjaan)

	1	2	3	4	5	
Sangat tidak parah	○	○	◉	○	○	Sangat parah

28. There is a delay in project needs *
(Terjadi keterlambatan kebutuhan proyek)

	1	2	3	4	5	
Sangat tidak parah	○	○	◉	○	○	Sangat parah

29. There is a delay in the procurement process *
(Terjadi ketermabatan dalam proses procurement)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	○	◉	Sangat parah

Unit Price Contract Risk Agent Identification Survey

Participants are asked to answer the questions below by choosing between a value of 1 (Very rarely) to 5 (Very often) based on **how often** the causes of the risks in the previous question occur in unit price contracts.

Partisipan dimohon menjawab pertanyaan di bawah ini dengan memilih antara nilai 1 (Sangat jarang terjadi) hingga nilai 5 (Sangat sering terjadi) berdasarkan **seberapa seringnya** penyebab dari timbulnya resiko - resiko yang terdapat pada pertanyaan sebelumnya terjadi pada kontrak unit price.

1. Lack of information on the requested contract specifications *
(Minimnya informasi terhadap spesifikasi kontrak yang diminta)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	◉	○	○	Sangat sering terjadi

2. Lack of employer experience *
(Kurangnya pengalaman pemberi kerja)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	◉	○	○	Sangat sering terjadi

3. Low design maturity level complete at the time of tender *
(Level kematangan desain rendah lengkap pada saat tender)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	○	◉	Sangat sering terjadi

4. The complete design is not available at the time of tender *
(Desain tidak tersedia lengkap pada saat tender)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	○	◉	Sangat sering terjadi

5. Lack of time for design preparation *
(Kurangnya waktu untuk penyiapan desain)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

6. Lack of data for design preparation *
(Kurangnya data untuk penyiapan desain)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	◉	○	○	Sangat sering terjadi

7. There is no BoQ that describes the scope of work *
(Tidak tersedianya BoQ yang menjabarkan lingkup pekerjaan)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

8. The scope of work does not match the drawings and specifications *
(Lingkup kerja tidak sesuai dengan gambar dan spesifikasi)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

9. The boundaries of the scope of work are not clear *
(Batas-batas lingkup kerja yang kurang jelas)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

10. Inaccurate calculations and lack of competence and experience from the Owner *
(Tidak akuratnya perhitungan serta kurangnya kompetensi dan pengalaman dari Owner)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

11. The estimator does not understand the scope of work *
(Estimator kurang memahami scope of work)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

12. The estimator does not understand in reading material and work specifications *
(Estimator kurang paham dalam membaca spesifikasi material maupun pekerjaan)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

13. The estimator does not recalculate the entire quantity based on the tender drawing *
(Estimator tidak menghitung kembali seluruh quantity berdasarkan gambar tender)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	○	◉	Sangat sering terjadi

14. The estimator does not analyze the unit price of each job *
(Estimator tidak menganalisa harga satuan setiap pekerjaan)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	◉	○	○	Sangat sering terjadi

15. The estimator did not conduct a site visit to understand the condition of the location *
(Estimator tidak melakukan site visit untuk memahami kondisi lokasi)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	◉	○	○	Sangat sering terjadi

16. The estimator did not review the construction method used in the tender document *
(Estimator tidak membuat review tentang metode konstruksi yang digunakan dalam dokumen tender)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

17. Lack of qualified personnel in calculating tenders *
(Kurangnya tenaga yang qualified dalam penghitungan tender)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

18. Very limited tender calculation time *
(Waktu penghitungan tender yang sangat terbatas)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	○	◉	Sangat sering terjadi

19. The estimator does not include price fluctuations in the market *
(Estimator tidak memasukkan faktor fluktuasi harga di pasaran)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	◉	○	○	Sangat sering terjadi

20. Lack of experience of managers in scheduling and planning *
(Kurangnya pengalaman manajer dalam pengaturan jadwal dan perencanaan)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

21. Irregular job meetings so work is not well coordinated *
(Job meeting yang tidak teratur sehingga pekerjaan tidak terkoodinir dengan baik)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	◉	○	○	Sangat sering terjadi

22. Lack of experts because the time provided is limited *
(Kuranganya tenaga ahli karena waktu yang disediakan terbatas)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

23. There is a request for acceleration of work carried out by the employer *
(Adanya permintaan akselerasi pekerjaan yang dilakukan oleh pemberi kerja)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

24. The actual conditions in the field will only be known after the work takes place *
(Kondisi sebenarnya yang ada di lapangan baru diketahui setelah pekerjaan berlangsung)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

25. There is no clause related to any changes that occur in the contract *
(Tidak adanya klausal yang berhubungan dengan adanya perubahan-perubahan yang terjadi dalam kontrak)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

26. Lack of references in reviewing contracts *
(Kurangnya referensi dalam mereview kontrak)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	○	◉	Sangat sering terjadi

27. The language used for writing clauses in the contract is not good *
(Bahasa yang digunakan untuk penulisan klausal dalam kontrak kurang bagus)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	◉	○	○	Sangat sering terjadi

28. The contract does not clearly state the limits of responsibility of each party involved in the contract *
(Di dalam kontrak tidak menyebutkan secara jelas batasan tanggung jawab dari masing-masing pihak yang terlibat dalam kontrak)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	◉	○	○	Sangat sering terjadi

29. There is no explanation of changes in work caused by the Owner *
(Tidak adanya penjelasan tentang perubahan dalam pekerjaan yang disebabkan oleh Owner)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	◉	○	○	Sangat sering terjadi

30. There is no clause regarding changes in work caused by changes in laws and regulations *
(Tidak adanya klausal tentang perubahan dalam pekerjaan yang disebabkan oleh berubahnya hukum dan perundang-undangan)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	◉	○	○	Sangat sering terjadi

31. Unclear scheduling clause in a contract document *
(Tidak jelasnya scheduling clause dalam suatu dokumen kontrak)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	◉	○	○	Sangat sering terjadi

32. Real conditions in the field do not match what is in the contract *
(Kondisi nyata di lapangan tidak sesuai dengan yang ada di dalam kontrak)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	◉	○	○	Sangat sering terjadi

33. There is work that is different from the specifications in the contract *
(Adanya pekerjaan yang berbeda dengan spesifikasi yang ada di dalam kontrak)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	◉	○	○	Sangat sering terjadi

34. Design does not match at the time of implementation *
(Desain tidak cocok pada saat pelaksanaan)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	◉	○	○	Sangat sering terjadi

35. Specifications that are less detailed and accurate *
(Spesifikasi yang kurang detail dan akurat)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

36. There was an error in mentioning the specifications in the contract *
(Terjadi kesalahan dalam menyebutkan spesifikasi di dalam kontrak)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	◉	○	○	Sangat sering terjadi

37. Late in processing requests for data or information related to project implementation *
(Terlambat dalam memproses permintaan data atau informasi yang berhubungan dengan pelaksanaan proyek)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

38. There is a change in orders from the Owner *
(Adanya perubahan perintah dari Owner)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

39. Delay in approval of design review *
(Keterlambatan dalam persetujuan review desain)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

40. Defective documents or supporting data in the contract *
(Cacatnya dokumen atau data pendukung yang ada dalam kontrak)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	◉	○	○	Sangat sering terjadi

41. Ineffective design contract documents *
(Dokumen kontrak desain yang belum efektif)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	◉	○	○	Sangat sering terjadi

42. Incomplete design *
(Desain yang belum lengkap)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

43. Difficulty communicating in a foreign language *
(Kesulitan berkomunikasi dalam bahasa asing)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	◉	○	○	Sangat sering terjadi

44. Low quality of employee performance *
(Rendahnya kualitas kinerja karyawan)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	◉	○	○	Sangat sering terjadi

45. Lack of experience in project work *
(Kurangnya pengalaman dalam pengerjaan proyek)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	◉	○	○	Sangat sering terjadi

46. The number of workers and equipment does not meet the predetermined standards *
(Jumlah tenaga kerja dan peralatan tidak memenuhi standar yang sudah ditentukan)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

47. Low work productivity *
(Produktivitas kerja rendah)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	○	◉	Sangat sering terjadi

48. Lack of planning, coordination and management at work *
(Kurangnya perencanaan, koordinasi, dan manajemen dalam pekerjaan)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	○	◉	Sangat sering terjadi

49. Slow in processing the required materials or equipment *
(Lambat dalam memproses material atau peralatan yang dibutuhkan)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

50. Failure to order materials and equipment on time to meet the needs of the work schedule (Kegagalan dalam order material dan peralatan yang tepat waktu untuk memenuhi kebutuhan schedule pekerjaan) *

	1	2	3	4	5	
Sangan jarang terjadi	○	○	◉	○	○	Sangat sering terjadi

Thank You For Taking The Time To Fill Out The Questionnaire And Participate In Our Survey

If there is something that needs to be asked or explained further, please contact us:
Mobile no. : 082137352244 (Anif)
Email : anif.ansori27@gmail.com

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Unit Price Contract Risk Analysis

The following survey is a source of data that will be used in the Unit Price Contract Risk Analysis study to fulfill the Final Project of:

Name : Irsyad Hanif Ansori
NIM : 17511078
University : Universitas Islam Indonesia
Faculty / Department : Faculty of Civil Engineering and Planning / Civil Engineering (IP)

Respondent's Name *
Nama Responden

Tatang Sontani, ST.

Company's Name *
Nama Perusahaan / Instansi

Sekretariat Daerah Kab. Batang

Position *
Jabatan

Kepala Bagian Pengadaan Barang/Jasa Setda Kab. Batang; plt Kepala Bagian Adminitrasi Pembangunan Setda Kab. Batang

Work Experience (year) *
Pengalaman Kerja (tahun)

24

Unit Price Contract Risk Potential Survey

Participants are asked to answer the questions below by choosing between a value of 1 (very low/not severe) to a value of 5 (very high/severe) based on **how influential** the potential risk is if it occurs in the unit price contract.

Partisipan dimohon menjawab pertanyaan di bawah ini dengan memilih antara nilai 1 (Sangat rendah/tidak parah) hingga nilai 5 (Sangat tinggi/parah) berdasarkan **seberapa berpengaruhnya** potensi resiko tersebut jika terjadi pada kontrak unit price.

1. The specifications in the tender document are not clear *
(Spesifikasi dalam dokumen tender tidak jelas)

	1	2	3	4	5	
Sangan tidak parah	○	○	○	○	◉	Sangat parah

2. The design does not match the scope of work *
(Desain tidak sesuai dengan lingkup kerja)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	○	◉	Sangat parah

3. Bill of Quantity (BoQ) details are incomplete *
(Detail Bill of Quantity (BoQ) tidak lengkap)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	○	◉	Sangat parah

4. Scope of work is not clearly defined *
(Scope of work tidak terdefinisi dengan jelas)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	○	◉	Sangat parah

5. The implementation schedule from the Owner is not realistic *
(Schedule pelaksanaan dari Owner tidak realistis)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	○	◉	Sangat parah

6. An error occurred in the calculation of the initial estimate *
(Terjadi kesalahan dalam perhitungan estimasi awal)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	○	◉	Sangat parah

7. The estimates that have been made do not match the actual conditions in the field *
(Estimasi yang sudah dibuat tidak sesuai kondisi sesungguhnya di lapangan)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	○	◉	Sangat parah

8. There was an error in the construction method in the bid *
(Terjadi kesalahan metode konstruksi dalam penawaran)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	○	◉	Sangat parah

9. Tender calculation is not good *
(Penghitungan tender yang kurang bagus)

	1	2	3	4	5	
Sangat tidak parah	○	○	◉	○	○	Sangat parah

10. Incomplete scheduling clause *
(Tidak lengkapnya scheduling clause)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	○	◉	Sangat parah

11. Incomplete specifications *
(Tidak sempurnanya spesifikasi)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	○	◉	Sangat parah

12. The Order Giver changes the work method that is not stated in the contract *
(Pemberi Order mengubah metode kerja yang tidak tercantum dalam kontrak)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	○	◉	Sangat parah

13. Field data does not match the data in the contract *
(Data lapangan tidak sesuai dengan data dalam kontrak)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	○	◉	Sangat parah

14. Incomplete contract clause *
(Klausal kontrak yang tidak lengkap)

	1	2	3	4	5	
Sangat tidak parah	○	○	◉	○	○	Sangat parah

15. Unclear contract clauses causing confusion *
(Klausal kontrak yang tidak jelas sehingga menimbulkan kerancuan)

	1	2	3	4	5	
Sangat tidak parah	○	○	○	◉	○	Sangat parah

16. There has been a change in drawings and specifications *
(Terjadi perubahan gambar dan spesifikasi)

	1	2	3	4	5	
Sangat tidak parah	◉	○	○	○	○	Sangat parah

17. There has been a change in regulations *
(Terjadi perubahan peraturan)

	1	2	3	4	5	
Sangat tidak parah	◉	○	○	○	○	Sangat parah

18. It is difficult to make a claim due to changes *
(Sulitnya melakukan klaim karena terjadi perubahan)

	1	2	3	4	5	
Sangat tidak parah	○	○	◉	○	○	Sangat parah

19. There was a redesign *
(Terjadi re-design)

	1	2	3	4	5	
Sangat tidak parah	◉	○	○	○	○	Sangat parah

20. There is a change in material specifications *
(Terjadi perubahan spesifikasi material)

	1	2	3	4	5	
Sangat tidak parah	◉	○	○	○	○	Sangat parah

21. There was a delay in submitting data caused by the Owner *
(Terjadi keterlambatan penyampaian data yang disebabkan oleh Owner)

	1	2	3	4	5	
Sangat tidak parah	○	○	◉	○	○	Sangat parah

22. The contract has not been effective yet *
(Kontrak belum berlaku secara efektif)

	1	2	3	4	5	
Sangat tidak parah	◉	○	○	○	○	Sangat parah

23. There is a design delay from the Designer *
(Terjadi keterlambatan desain dari pihak Designer)

	1	2	3	4	5	
Sangat tidak parah	◉	○	○	○	○	Sangat parah

24. Slow and protracted decision making *
(Pengambilan keputusan yang lambat dan berlarut-larut)

	1	2	3	4	5	
Sangat tidak parah	◉	○	○	○	○	Sangat parah

25. There is a re-work *
(Terjadi re-work)

	1	2	3	4	5	
Sangat tidak parah	◉	○	○	○	○	Sangat parah

26. There is a delay in the implementation of construction work *
(Terjadi keterlambatan dalam pelaksanaan perkerjaan konstruksi)

	1	2	3	4	5	
Sangat tidak parah	◉	○	○	○	○	Sangat parah

27. There is a delay in work administration *
(Terjadi keterlambatan administrasi pekerjaan)

	1	2	3	4	5	
Sangat tidak parah	◉	○	○	○	○	Sangat parah

28. There is a delay in project needs *
(Terjadi keterlambatan kebutuhan proyek)

	1	2	3	4	5	
Sangat tidak parah	◉	○	○	○	○	Sangat parah

29. There is a delay in the procurement process *
(Terjadi ketermabatan dalam proses procurement)

	1	2	3	4	5	
Sangat tidak parah	◉	○	○	○	○	Sangat parah

Unit Price Contract Risk Agent Identification Survey

Participants are asked to answer the questions below by choosing between a value of 1 (Very rarely) to 5 (Very often) based on **how often** the causes of the risks in the previous question occur in unit price contracts.

Partisipan dimohon menjawab pertanyaan di bawah ini dengan memilih antara nilai 1 (Sangat jarang terjadi) hingga nilai 5 (Sangat sering terjadi) berdasarkan **seberapa seringnya** penyebab dari timbulnya resiko - resiko yang terdapat pada pertanyaan sebelumnya terjadi pada kontrak unit price.

1. Lack of information on the requested contract specifications *
(Minimnya informasi terhadap spesifikasi kontrak yang diminta)

	1	2	3	4	5	
Sangan jarang terjadi	◉	○	○	○	○	Sangat sering terjadi

2. Lack of employer experience *
(Kurangnya pengalaman pemberi kerja)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	○	◉	Sangat sering terjadi

3. Low design maturity level complete at the time of tender *
(Level kematangan desain rendah lengkap pada saat tender)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	○	◉	Sangat sering terjadi

4. The complete design is not available at the time of tender *
(Desain tidak tersedia lengkap pada saat tender)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	○	◉	Sangat sering terjadi

5. Lack of time for design preparation *
(Kurangnya waktu untuk penyiapan desain)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	○	◉	Sangat sering terjadi

6. Lack of data for design preparation *
(Kurangnya data untuk penyiapan desain)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	○	◉	Sangat sering terjadi

7. There is no BoQ that describes the scope of work *
(Tidak tersedianya BoQ yang menjabarkan lingkup pekerjaan)

	1	2	3	4	5	
Sangan jarang terjadi	○	◉	○	○	○	Sangat sering terjadi

8. The scope of work does not match the drawings and specifications *
(Lingkup kerja tidak sesuai dengan gambar dan spesifikasi)

	1	2	3	4	5	
Sangan jarang terjadi	○	◉	○	○	○	Sangat sering terjadi

9. The boundaries of the scope of work are not clear *
(Batas-batas lingkup kerja yang kurang jelas)

	1	2	3	4	5	
Sangan jarang terjadi	◉	○	○	○	○	Sangat sering terjadi

10. Inaccurate calculations and lack of competence and experience from the Owner *
(Tidak akuratnya perhitungan serta kurangnya kompetensi dan pengalaman dari Owner)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	◉	○	○	Sangat sering terjadi

11. The estimator does not understand the scope of work *
(Estimator kurang memahami scope of work)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	◉	○	○	Sangat sering terjadi

12. The estimator does not understand in reading material and work specifications *
(Estimator kurang paham dalam membaca spesifikasi material maupun pekerjaan)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	◉	○	○	Sangat sering terjadi

13. The estimator does not recalculate the entire quantity based on the tender drawing *
(Estimator tidak menghitung kembali seluruh quantity berdasarkan gambar tender)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

14. The estimator does not analyze the unit price of each job *
(Estimator tidak menganalisa harga satuan setiap pekerjaan)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

15. The estimator did not conduct a site visit to understand the condition of the location *
(Estimator tidak melakukan site visit untuk memahami kondisi lokasi)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

16. The estimator did not review the construction method used in the tender document *
(Estimator tidak membuat review tentang metode konstruksi yang digunakan dalam dokumen tender)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

17. Lack of qualified personnel in calculating tenders *
(Kurangnya tenaga yang qualified dalam penghitungan tender)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

18. Very limited tender calculation time *
(Waktu penghitungan tender yang sangat terbatas)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

19. The estimator does not include price fluctuations in the market *
(Estimator tidak memasukkan faktor fluktuasi harga di pasaran)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

20. Lack of experience of managers in scheduling and planning *
(Kurangnya pengalaman manajer dalam pengaturan jadwal dan perencanaan)

	1	2	3	4	5	
Sangan jarang terjadi	◉	○	○	○	○	Sangat sering terjadi

21. Irregular job meetings so work is not well coordinated *
(Job meeting yang tidak teratur sehingga pekerjaan tidak terkoodinir dengan baik)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

22. Lack of experts because the time provided is limited *
(Kuranganya tenaga ahli karena waktu yang disediakan terbatas)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

23. There is a request for acceleration of work carried out by the employer *
(Adanya permintaan akselerasi pekerjaan yang dilakukan oleh pemberi kerja)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	○	◉	Sangat sering terjadi

24. The actual conditions in the field will only be known after the work takes place *
(Kondisi sebenarnya yang ada di lapangan baru diketahui setelah pekerjaan berlangsung)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	○	◉	Sangat sering terjadi

25. There is no clause related to any changes that occur in the contract *
(Tidak adanya klausal yang berhubungan dengan adanya perubahan-perubahan yang terjadi dalam kontrak)

	1	2	3	4	5	
Sangan jarang terjadi	○	◉	○	○	○	Sangat sering terjadi

26. Lack of references in reviewing contracts *
(Kurangnya referensi dalam mereview kontrak)

	1	2	3	4	5	
Sangan jarang terjadi	◉	○	○	○	○	Sangat sering terjadi

27. The language used for writing clauses in the contract is not good *
(Bahasa yang digunakan untuk penulisan klausal dalam kontrak kurang bagus)

	1	2	3	4	5	
Sangan jarang terjadi	○	◉	○	○	○	Sangat sering terjadi

28. The contract does not clearly state the limits of responsibility of each party involved in the contract *
(Di dalam kontrak tidak menyebutkan secara jelas batasan tanggung jawab dari masing-masing pihak yang terlibat dalam kontrak)

	1	2	3	4	5	
Sangan jarang terjadi	◉	○	○	○	○	Sangat sering terjadi

29. There is no explanation of changes in work caused by the Owner *
(Tidak adanya penjelasan tentang perubahan dalam pekerjaan yang disebabkan oleh Owner)

	1	2	3	4	5	
Sangan jarang terjadi	◉	○	○	○	○	Sangat sering terjadi

30. There is no clause regarding changes in work caused by changes in laws and regulations *
(Tidak adanya klausal tentang perubahan dalam pekerjaan yang disebabkan oleh berubahnya hukum dan perundang-undangan)

	1	2	3	4	5	
Sangan jarang terjadi	◉	○	○	○	○	Sangat sering terjadi

31. Unclear scheduling clause in a contract document *
(Tidak jelasnya scheduling clause dalam suatu dokumen kontrak)

	1	2	3	4	5	
Sangan jarang terjadi	○	◉	○	○	○	Sangat sering terjadi

32. Real conditions in the field do not match what is in the contract *
(Kondisi nyata di lapangan tidak sesuai dengan yang ada di dalam kontrak)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	○	◉	Sangat sering terjadi

33. There is work that is different from the specifications in the contract *
(Adanya pekerjaan yang berbeda dengan spesifikasi yang ada di dalam kontrak)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

34. Design does not match at the time of implementation *
(Desain tidak cocok pada saat pelaksanaan)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

35. Specifications that are less detailed and accurate *
(Spesifikasi yang kurang detail dan akurat)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	○	◉	Sangat sering terjadi

36. There was an error in mentioning the specifications in the contract *
(Terjadi kesalahan dalam menyebutkan spesifikasi di dalam kontrak)

	1	2	3	4	5	
Sangan jarang terjadi	○	◉	○	○	○	Sangat sering terjadi

37. Late in processing requests for data or information related to project implementation *
(Terlambat dalam memproses permintaan data atau informasi yang berhubungan dengan pelaksanaan proyek)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	○	◉	Sangat sering terjadi

38. There is a change in orders from the Owner *
(Adanya perubahan perintah dari Owner)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	○	◉	Sangat sering terjadi

39. Delay in approval of design review *
(Keterlambatan dalam persetujuan review desain)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

40. Defective documents or supporting data in the contract *
(Cacatnya dokumen atau data pendukung yang ada dalam kontrak)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	○	◉	Sangat sering terjadi

41. Ineffective design contract documents *
(Dokumen kontrak desain yang belum efektif)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	○	◉	Sangat sering terjadi

42. Incomplete design *
(Desain yang belum lengkap)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	○	◉	Sangat sering terjadi

43. Difficulty communicating in a foreign language *
(Kesulitan berkomunikasi dalam bahasa asing)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	○	◉	Sangat sering terjadi

44. Low quality of employee performance *
(Rendahnya kualitas kinerja karyawan)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

45. Lack of experience in project work *
(Kurangnya pengalaman dalam pengerjaan proyek)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	◉	○	○	Sangat sering terjadi

46. The number of workers and equipment does not meet the predetermined standards *
(Jumlah tenaga kerja dan peralatan tidak memenuhi standar yang sudah ditentukan)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

47. Low work productivity *
(Produktivitas kerja rendah)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

48. Lack of planning, coordination and management at work *
(Kurangnya perencanaan, koordinasi, dan manajemen dalam pekerjaan)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

49. Slow in processing the required materials or equipment *
(Lambat dalam memproses material atau peralatan yang dibutuhkan)

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

50. Failure to order materials and equipment on time to meet the needs of the work schedule (Kegagalan dalam order material dan peralatan yang tepat waktu untuk memenuhi kebutuhan schedule pekerjaan) *

	1	2	3	4	5	
Sangan jarang terjadi	○	○	○	◉	○	Sangat sering terjadi

Thank You For Taking The Time To Fill Out The Questionnaire And Participate In Our Survey

If there is something that needs to be asked or explained further, please contact us:
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