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RISK MANAGEMENT AND RISK MITIGATION IN A NATIONAL STRATEGIC PROJECT A CASE STUDY AT SECTION STATION

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EVALUATION OF CONSTRUCTION RISK MANAGEMENT IN THE NATIONAL STRATEGIC PROJECT (PSN) ABCD (CASE STUDY ON SECTION STATION)

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ABSTRACT

This study aims to evaluate risk management in the National Strategic Project (PSN) case study on the section station. The background of this research was due to one of the projects experienced an increasing cost of price and several other problems cause of the lack of optimal risk management. This study uses ISO 31000 because the project becoming the object of research uses the framework as a guidance in performing the project risk management process as an analysis. The data used in this study were obtained from interviews and observations, processing by applying qualitative methods and will be explained through descriptive analysis. The results of this study indicate that the section station has no implementation yet its risk management optimally in each line. It is cause of the risk management and mitigation of section stations only focuses on cost and not involving the quality, time, and safety.

Keywords: Risk management; safety; time; quality; costs; national strategic project of the section station; ISO 31000

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1. INTRODUCTION

One of the business fields playing an important role in helping the economy in Indonesia is Construction Services, as it produces physical products, namely facilities and infrastructure such as buildings, roads, bridges, dams, and others that support the development and growth of various fields. Unfortunately, there is a high-risk level in the construction project, from the beginning to the end. Risks in construction projects may arise in different phases of the project, such as Front-End Engineering Design (FEED) and tender, Project Execution, Commissioning, and Operations. In developing the FEED package, consideration should be given to risk reduction events to limit the Client and the Contractor's risk exposures to achieve the project's objectives (Hydan Fahad, 2018).

Risk management in construction projects must deal effectively with uncertainties and unforeseen events that may affect the successful and timely completion of the project. If risks are not identified early during the project, it will create a lot of exposures and uncertainties of the project life cycle that would affect several aspects, such as costs, schedules, and quality of the project. In addition, the risks can also create exposure in the fields of health, safety, and the environment. Therefore, risk management enables project managers to identify, analyze, respond to, and control project risks. This is the reason why risk management is critical for the achievement of a project. In drafting a contract, the contract strategy should clearly define the responsibilities of the client and contractor, and these should be specific and understandable. Therefore, it ensures that the risks are clear to both the contractor and the client, thereby avoiding future disputes.

Construction service companies are a dynamic and risky field. Risks can affect the project's productivity, performance, quality, and cost constraints (Lambongan, 2011). Delays in the project development implementation often occur due to various risk factors that have not been identified during project implementation, resulting in project delays and increasing unexpected costs. Even though the activity has been planned as good as possible, it still contains uncertainty on whether it will be undertaken entirely according to the plan. However, risks in construction projects cannot be eliminated but can be reduced or transferred from one party to another.

Several authors have reported the importance of risk management in construction projects. It is concluded that risk management is vital for construction activities in minimizing losses and increasing profitability. It is known that risk management, when successfully applied to a project, offers an opportunity to clearly understand the objectives, duties and content of the services and the feasibility of the project. It is stated that risk management will not remove all risks from the project as its main objective is to ensure that risks are managed most effectively (Hydan Fahad, 2018).

Risk management has challenges of getting opportunities in projects for a Company to manage obstacles or risks that arise from uncertainties that pose threats to the Company's business activities. Risk management is an approach

to managing uncertainties arising from hazards and a series of human activities, including risk assessment and strategy development to manage and mitigate risks using the existing available resources (Suroso, J.S, and Rahadi, B, 2017). In addition, risk management is considered one of the useful aspects of building the Company's strategic framework to support the Company in achieving its vision and mission. Furthermore, risk management is also expected to assist the Company evaluates the currently implemented strategies, so that the Company can determine procedures to be implemented in the future.

The PSN project is expected to be a solution to traffic congestion and mass transportation for the Java Island region, especially Jakarta and Bandung. At the beginning of KCJB in 2008, the government proposed a plan to construct the Jakarta – Surabaya high-speed train project to respond to the need for travel within the island of Java. However, following the change of government in 2015, the high-speed train project plan was changed from Jakarta-Surabaya to Jakarta-Bandung to lower the development costs. The Chinese and Indonesian governments agreed on a 50-year concession agreement, while the planned life of the project is 60 years. Therefore, Indonesia will fully manage the high-speed train for 10 years with a project value of US\$ 6.071 billion. The government provides guarantees regarding the consistency of the fast train development policy and legal certainty in the form of a Business Viability Guarantee Letter (SJKU – Surat Jaminan Kelayakan Usaha). One of the conditions for the project to be implemented is the availability of the concession agreement approval between the Indonesian government and PT Kereta Cepat Indonesia China.

The Jakarta-Bandung high-speed rail project (KCJB – proyek Kereta Cepat Jakarta Bandung) is part of the national strategic project in 2016. It receives special attention from Indonesian citizens and foreign countries because it is the first high-speed rail transportation in ASEAN. The report regarding the swelling of project costs was quoted from Bisnis.com.: “The Director of Finance & Risk Management of PT Kereta Api Indonesia (Persero) or KAI, Salusra Wijaya, reported that the investment size of the Jakarta-Bandung high-speed rail project swelled from US\$ 6.07 billion or around Rp86.5 trillion (at US\$ = Rp14,280) to US\$ 8 billion or equivalent to Rp14.24 trillion”. He also reported the delay of the project, whereby it is planned to be completed in December 2022. The project was originally planned to be completed in May 2021 instead. Apart from cost, quality and time, the success of a project can be measured by the low number of work accidents during the implementation of construction projects. Work accidents has become the concern of the Ministry of PUPR, as it shows that the high-speed rail project does not consider the occupational safety aspect.

Through the Presidential Regulation (Perpres – Peraturan Presiden) Number 93 of 2021, the President of the Republic of Indonesia has decided to provide an injection of state funds to this project. “Other funding can be in the form of financing from the State Budget to ensure the continuity of the implementation of National Strategic Projects by taking into account fiscal capacity and sustainability,” said the President of the Republic of Indonesia, as stated in Article 4 paragraph 2 of the Presidential Regulation No. 93/202. (CNN Indonesia article).

It is very rare to find a project that is completed within the time that has been specified (Assaf and Al-Hejji, 2006). On the other hand, it is the responsibility of the contractor to complete the work in accordance with the agreed time (Hansen, 2015), unless it will be subject to a late penalty. Marzouk and El-Rasas (2012) divide the causes of construction project delays into 7 (seven) categories, namely owner, consultant, contractor, material, labor and equipment, project and externals. The risk management department monitors and controls the implementation and reports risk management of a subsidiary company to ensure that the company's vision and mission are accomplished.

Based on this preliminary data, the author is interested in conducting an evaluation National Strategic Project (PSN) risk management and its risks because of problems that make the project delay work, cost overruns and work safety. Especially in the field of related to the author's understanding of the fields of accounting, management risk, finance and taxation. The initial data described above, the authors are interested in knowing how the KCJB project carries out its risk management and control, especially in areas that relate to the author's comprehension, namely accounting, risk management, finance, and taxation.

2. LITERATURE REVIEW

2.1. PREVIOUS STUDIES ON CONSTRUCTION PROJECT RISK MANAGEMENT

Many researchers have conducted research entitled Quality Management in Strengthening the "Three Lines of Defense" in Risk Management - Approach, the beginning of this study aimed to see how the risk management process in an organization would be if it was the opposite with the Three Lines of Defense. entitled Ignoring Scenarios in Risk Assessments: Understanding the Issues and Improve Current Practices, by looking at how the scenarios created by a company have different results, even very different from the actual situation. This study aims to clarify and provide recommendations related to how to handle the event, after research through his research entitled Understanding The Key Risks in Construction Projects in China, but to identify the main risks in projects in China and develop strategies to manage these risks, theory and other research emerged such as through his research related to the causes of delays in large construction projects, differences of opinion on the causes of project delays between the three parties involved in construction projects: project owners, contractors and consultants, through his research entitled The main causes of construction time and cost overrun consultants: The case of selected education sector projects in Ghana, to Identify 34 factors causing delays and 22 factors causing cost overruns in Ghanaian government school projects using this risk management, then in 2014 through research n entitled Risk management in construction projects: a knowledge-based

approach, found that risk management in construction projects is still very ineffective, and lack of knowledge about risk management is the main cause.

2.1.1 RISK

Risk is the variability that can be found naturally in a situation (Fisk, 1997). Generally, risk is associated with the probability (probability) of the occurrence of an undesired event (Soeharto, 1995). Which can be concluded that risk is diversity

which can be found naturally or may arise unintended events that threaten property and profits financially caused by the danger posed.

2.1.2 RISK MANAGEMENT FRAMEWORK

The risk management framework is the principle that composes carried out into five components where one another related to each other :

1. **Governance and Culture:** Governance sets the tone of the organization, reinforce importance, and assign oversight responsibilities on corporate risk management. Culture related to a number of ethical values, desired behavior, and related understanding risk within the entity. For the governance and culture section station that faced is to cooperate with which expatriate colleagues These expatriates have different cultures and rhythms.
2. **Strategy and Goal Setting:** Enterprise risk management, strategy, and goal setting work together in the strategic planning process. Risk appetite is defined and aligned with strategy; business purpose implement the strategy as well as serve as the basis for identify, assess, and respond to risks. strategy that used section station is to achieve four parameters project success.
3. **Performance:** Risk which can have an impact towards the realization of the strategy and business objectives need to be identified and assessed. Risks are prioritized based on severity in risk appetite context. The organization then selects a risk response and take a portfolio view of the amount of risk that has been assumed. The results of this process are reported to stakeholders major risk interests.
4. **Review and Revision:** through a review of the entity's performance, organization can consider how well the components enterprise risk management functions from time to time and considering any substantial changes and revisions required.
5. **Information, Communication and Reporting:** Enterprise risk management requires a continuous process of getting and provide

needed information, from both internal and external sources, flowing up, down, and across organization.



Figure 1 Risk Management Framework

The five components in the picture each component is related to one another. In relation to corporate objectives, ERM is in charge of to ensure that the company's objectives are in line with the vision and mission and risk appetite of the company. Components include everything from governance to monitoring. The size can be regulated, and they illustrate practices whose application can be done differently for different organizations regardless of size, type, or sector. Adhere to a number of principles this can realize a reasonable management and board of deliberations on the expectation that the organization understands and seeks to risk management related to business strategy and objectives.

2.1.3 THREE LINES MODEL

Closely related three lines model with project risk, design The internal control created must be able to identify and assessing significant risks in the implementation of operational activities, detect whether there are inadequate processes, whether there are weaknesses control and have the means to communicate with stakeholders/leaders regarding activities in operational processes company. The Three Lines Model helps organizations identify structures and processes that best assist the achievement of goals and facilitate strong governance and risk management. this model applies to all organizations and is optimized for :

1. Adopt a principles-based approach and adapt the model so that according to the goals and circumstances of the organization.
2. Focusing on the contribution that risk management makes to achieve goals and create value, as well as for problems “defense” and value protection.
3. Clearly understand the roles and responsibilities represented in the model and the relationship between them.

4. Implement measures to ensure activities and objectives aligned with prioritized stakeholder interests

The Eisenhardt Method

The Eisenhardt method is first and foremost about theory building. So it relies on Yin's work 1984 on cases and replication logic and Glaser and Strauss' 1967 iterative process of constant comparison of data and theory and theoretical sampling and saturation, the Method's unique contribution is theory building from multiple cases with particular emphasis on theoretical arguments. By theory, I simply mean a set of constructs linked together in relationships that are supported by theoretical arguments such as mechanisms that seek to explain a focal phenomenon. This emphasis on theory building has several implications that shape the core feature of Method.

3. RESEARCH METHODS

The research conducted in this article is a case study, which contains an analysis relating to a situation within a company, which aims to understand an incident and then make conclusions and suggestions concerning the incident. This study analyses risk management activities in the ABCD section station of Transportation National Strategic Project, and then provides recommendations for the control management. The data used in this study are qualitative and quantitative data. This research uses a case study method, namely a single case study with the unit of analysis in the form of a single unit analysis, namely the section station. The data used in this study are primary data obtained through research instruments in the form of interviews and observations. There is also secondary data that comes from the risk management report of the section station. The primary data and secondary data that have been obtained will be processed using qualitative method and will be explained through a descriptive qualitative analysis. Primary data in this study were obtained through interviews conducted with the operations department, marketing department, accounting and tax finance department, there have been 6 month to interview. observations were made directly to the project site to find out the actual conditions, observations were also carried out on documents and reports used by the source company or informants from 4 section heads and 2 construction managers who have the responsibility to carry out risk registers and monitor them.

4. ORGANIZATION PROFILE

The National Strategic Project (PSN – Proyek Strategis Nasional) for ABCD transportation was initially prepared in 2008 for the Jakarta-Surabaya route.

This route was designed by the National Development Planning Agency (Bappenas – Badan Perencanaan Pembangunan Nasional) and the Ministry of Transportation (Kemenhub – Kementrian Perhubungan). Since to build the Jakarta-Surabaya high-speed train route requires a very large amount of funds, Bappenas then changed the route to Jakarta-Bandung. The latter route was chosen because Bappenas considered that the economic growth that would be passed would be better, and they calculate that there would be a significant increase in per capita income of the people living in the vicinity, whereby it was expected to reach US\$ 10 thousand in 5 years.

Having a track length of 142.3 km that stretches from Jakarta to Bandung, the Jakarta-Bandung ABCD transportation PSN would be having four stopping stations, namely Halim, Karawang, Padalarang, and Tegalluar, with one depot located in Tegalluar. Each station would be integrated with mass transportation modes in each region.

In the construction of the Jakarta-Bandung ABCD transportation PSN, there is an organizational structure for the U section station contractor. This study takes an example from the U section station contractor and conducts research at the Halim station as it can be applied to other stations. There are several sections that are responsible for the work.

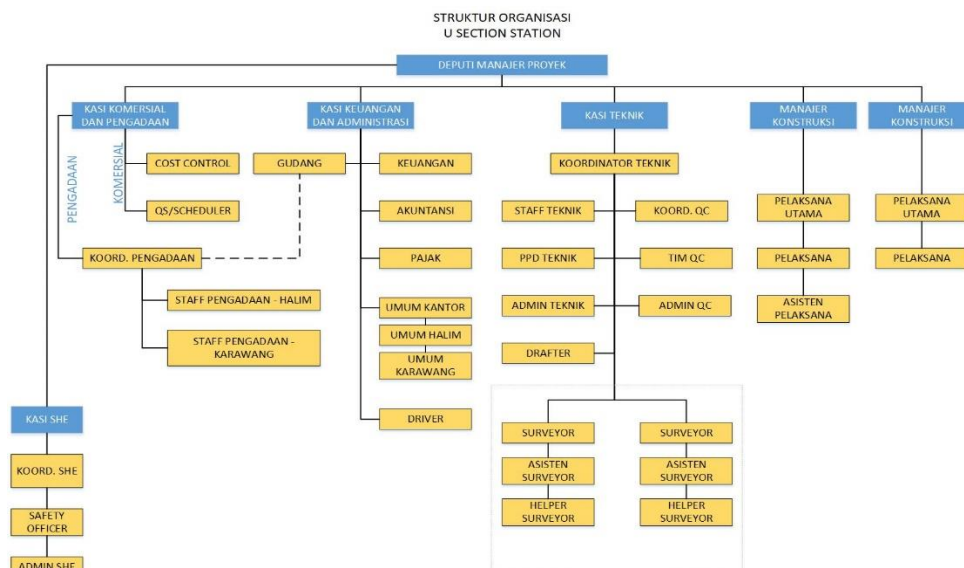


Figure 2. Organization Structure of U Section station

In the work of the ABCD section station transportation National Strategic Project (PSN), there are 4 (four) major work items at the Halim station, namely:

1. Bridge and Culvert
2. Building

3. Subgrade;
4. Provisional sum & Aux. Work

5. RESULT AND DISCUSSION

Based on the interview method used by the authors, it was found out that the work of the section station has performed a risk management process. The risk management process is divided into 4 (four) major stages: the preparation stage (risk register), the risk assessment stage, the risk analysis stage, and the risk monitoring stage.

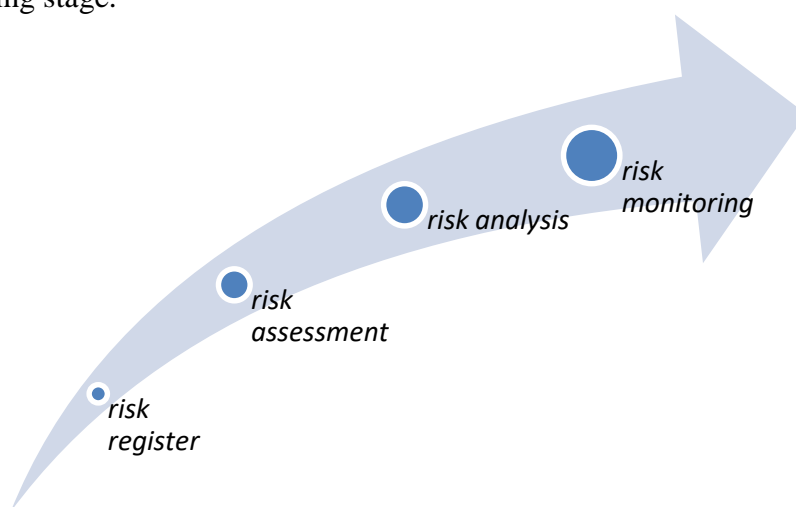


Figure 3. U section station contractor risk management process

Halim station work also divided the risk register stage into 7 (seven) existing risk breakdown structures, namely Commercial Risk, Construction Risk, Contractual Risk, Technical Risk, Procurement risk, Financial risk, and Human Capital Risk.



Figure 4. ISO 31000:2018 Risk Management Process

In addition, the information source also mentioned that the risk management performed by the Project has not been able to effectively support the Project in achieving the Project objectives. To overcome this, the head of the commercial section periodically gives each section head reminders to immediately implement the risk mitigation actions that have been prepared. To find out more about the implementation of risk management at the section

station level, the authors made observations at the Halim section station which was carried out by contractor U.

Meanwhile, based on the observation method, it was found that the Section station was led by a deputy project manager who is in charge of 4 (four) section heads (SHE section head, commercial and control section head, finance and administration section head, and engineering section head) and project manager. The deputy manager, who performs the functions of section head and project manager, prepares the risk management and mitigates the risks associated with each section and monitors it every month.

The making of the risk register is done manually by each section head of internal and external stakeholder analysis that is completed by contractor U using a working paper filled out in a Microsoft Excel document (Table 5.1). The document consists of 5 (five) sheets, of which 3 (three) sheets must be filled out by contractor U, while the remaining 2 (two) sheets are risk breakdown structure sheets and risk registers to be completed by the section station. An explanation regarding the filling out of the risk register is contained in the working paper and can be seen in table 1.

Table 1. Risk Planning & Control

8.1.	RISK CONTEXT/RISK CONTEXT Refer to the Risk Management System Procedure SMR-PM-01.01 Rev.05
8.2.	STAKEHOLDER ANALYSIS/STAKEHOLDER ANALYSIS (EXTERNAL) Refers to the Risk Management System Procedure -SMR-PM-01.01 Rev. 05
8.3.	STAKEHOLDER ANALYSIS/STAKEHOLDER ANALYSIS (INTERNAL) Refers to the Risk Management System Procedure -SMR-PM-01.01 Rev.05
8.4.	RISK LEVEL THRESHOLD Refer to the Risk Management System Procedure -SMR-PM-01.01 Rev. 05
8.5.	RISK BREAKDOWN STRUCTURE Refers to the Risk Management System Procedure -SMR-PM-01.01 Rev. 05
8.5.	RISK REGISTER Refers to Risk Management System Procedure -SMR-PM-01.01 Rev. 05

The section station has carried out initial risk management by taking into account the project's profit for each of the existing risks, which means the section station does not generalize a risk to the existing project profits, especially those relating to the section station project activities. The results of the new assessment also show that the section station has properly mitigated its risks, because all existing risks have shifted in probability, and the impact caused, although some are still in the red zone, the drop in the risk assessment results. The risk that experienced a significant decrease was the risk of negative project cashflow and tax penalties.

The impact of the risk of not achieving section station work progress paid by the Owner according to the unit price in the contract BoQ remains in red in the residual risk matrix. This can indicate that the risk mitigation carried out by the section station is still not sufficient to overcome these risks.

From the description above, the section station carries out its risk management according to the model described by Eisenhardt (1989), namely the Principal is considered to know all the activities carried out by the Agents, so that the Principal does not need to transfer risk to the Agents. Therefore, the deputy project manager and the section head are responsible for monitoring the risks faced by the Halim section.

This stage begins with determining the probability or the possibility of such risk occurring within the Company. To fill in the probability column, the section station makes a range of numbers 1-4 that can be chosen by the risk owner, whereby the risk which is given the number (4) has a very large possibility of occurring. In determining which number to be given for each risk, the PIC or the individual responsible for making the risk register must have quite high analytical skills to avoid or minimize errors in determining the probability of each risk..

Tabel 2. Probability

Degree	Departement	Project		
	Description - general	Description - project	Indicative frequency	
Small	Happens once a year	There's a chance it won't happen	Sd- 10%	1
Currently	Happens every six months	Little chance of happening	10% - 30%	2
Big	Happens every three months	Might happen	30-50%	3
So Big	Happens every month	Almost certainly will happen	≥50%	4

After determining the probability of each risk, the next step is to determine the resulting impact of the risk. The section station groups the risk impacts into 4 (four) Indices, namely from the highest being catastrophic, severe, moderate and mild (Table 5.4.), to find out the impact of each risk in more detail.

Tabel 3. Impact

Impact	Financial - % cost overrun from contract price	Project	Financial - % cost overrun from investment	
Light		Still acceptable	<1%	1
Currently		There must be mitigation	1 - 2%	2
Heavy		Mitigation Strategy	2 - 5 %	3
catastrophic		Escalation	5%	4

MATRIKS ANALISA RISIKO

			Akibat			
			Ringan	Sedang	Berat	Malapetaka
			1	2	3	4
Probabilitas	Kecil	1	1	2	3	4
	Sedang	2	7,8 2	6 4	6	8
	Besar	3	9 3	2,10,11 6	3,4,5 9	12
	Sangat Besar	4	4	8	12	1 16

Figure 5. Inherent Section station risk map

The table shows that the overall risk faced by the section station has a high probability of occurring, with a risk value of 16, namely number 1 (one). Four risks out of these risks have a very significant impact on the profit of the section station. The risk is the swelling of the realization volume (construction drawing) compared to the BoQ volume. There are several BoQ items that have not been detailed in their distribution because the design process has not been completed so that the location, detailed drawings, and specifications are not known. The work volume in the BoQ refers to the basic drawing which still needs detail in the field. The progress of land acquisition made by the owner is behind schedule. The four risks are risks related to section station profits. Therefore, the Section station must carry out appropriate risk mitigation for each risk, especially for the four risks in the Red area

MATRIKS ANALISA RISIKO

			Akibat			
			Ringan	Sedang	Berat	Malapetaka
			1	2	3	4
Probabilitas	Kecil	1	1	2	3	4
	Sedang	2	6,7,8,9,10,11 2	4	6	8
	Besar	3	3	2,3,4,5 6	9	12
	Sangat Besar	4	4	8	12	16

Figure 6. Inherent Section station risk map

From the eleven existing risks, the section station has mitigated the risk of all these risks. For the risk mitigation that has been carried out, the section station reassesses the overall risk to find out whether the steps or mitigations taken are appropriate and correct to overcome these risks. It is known as residual impact.

No	Kategori	Risiko	Mitigasi Risiko	Dampak Inheren	Dampak Residual
1	Claim & Anti Claim	The progress of the section station work is paid by the OWNER according to the unit price in the contract BoQ	<ol style="list-style-type: none"> 1. Submit a proposal for change of price and escalation referring to the latest realized price according to the required specifications. 2. Ensuring the Owner and Contractor Consortium to immediately finalize the change of price to the contract unit price 		
2	Claim & Anti Claim	Claims from Chinese members due to delays in section station work	<ol style="list-style-type: none"> 1. Planning the overall schedule must consider the relocation schedule and its details including permits, land acquisition for relocation, etc. 2. Always inform the Contractor Consortium and OWNER regarding potential delays that are not caused by the construction process, but are caused by other factors such as permits, land acquisition, and outside disturbances. 3. Administrative order regarding U work data for anti-claim basis. 		
3	Claim & Anti Claim	Dispute scope of civil work among consortium members (U, D, E)	<ol style="list-style-type: none"> 1. Reviewing the division of the scope of work on a regular basis, especially whenever there is a new construction drawing issuance 2. Requesting the Contractor Consortium to urge F in accelerating the production of construction drawings, especially items that have not been divided into scope 		
4	Claim & Anti Claim	Swelling of realization volume (construction drawing) compared to BoQ volume	<ol style="list-style-type: none"> 1. Calculating, evaluating, and monitoring the suitability of the BoQ Contract volume with the calculated volume based on the construction drawing. 2. Conducting VA/VE and design reviews of work items that have the potential to be over-volume. 		

Figure 7. Risk Mitigation and Color Shift Probability and Risk Impact of Section station after Mitigation

No	Kategori	Risiko	Mitigasi Risiko	Dampak Inheren	Dampak Residual
5	Claim & Anti Claim	Work progress is late from the schedule plan	1. Actively monitoring the progress of land acquisition by the owner (OWNER and Y) 2. Cooperating with vendors who have experience working on Chinese standard high speed railway projects or similar. 3. To coordinate intensively with other members to synchronize each other's work schedule.		
6	Qualifications of Service Providers & Suppliers	The performance of the U bore pile vendor does not meet the owner's standards	1. Cooperate with vendors who already have experience working with Chinese standards 2. Ask the consortium to conduct training and supervision of local		
7	HR Needs Planning	Personnel competence does not meet the standard	1. Hire several expatriates who are experienced in the EPC and high speed railway fields to be able to educate and supervise new employees 2. Provide continuous training to each employee related to their respective fields of work 3. Increased standard of salary/remuneration so that the potential for recruiting competent and experienced workers is higher.		
8	Claim & Anti Claim	The project was stopped by the government.	Request legal certainty/guarantee for the sustainability of the project as outlined in the contract		
9	Law	The project was disrupted by NGOs and communities around the work area.	Coordinate with local residents and NGOs, and cooperate with officials to anticipate disturbances from outside.		
10	Funding	Negative project cashflow	1. Speed up the billing process / collection period 2. Reserve discount interest according to detailed cashflow projections 3. Charges discount interest from SCF/SKBDN/KMK to related service vendors/partners		
11	Tax	Tax penalties	1. Placing a competent tax PIC in the U project team 2. Monitor the issuance of tax invoices from vendors according to the specified time limit. 3. Orderly administration related to tax data.		

Figure 7. Risk Mitigation and Color Shift Probability and Risk Impact of Section station after Mitigation (Next)

The results of the new assessment also show that the section station has properly mitigated its risks, because all existing risks have shifted in probability and even though the some of the impact caused are still in the red zone, the assessment result has dropped to 9 (nine). The risks that experienced a significant decrease were risks (10) and (11), namely the risks of negative project cashflow and tax penalties.

The risk listed in table 5 is the risk of force majeure which, according to the authors, constitutes the risk that will have an impact on the work, such as the risk of erratic weather whereby the quality of the concrete depends on the weather, and the risk of fire such as the one experienced in January 2022,

whereby the fire was caused by canteen gas cylinders that exploded while in use.

Technology risk is no less important than the risks listed in table 5. The first project in Indonesia should use a brand-new technology. Technology has an important role in the work of the section station and thus, the availability of technology and its infrastructure should be a concern.

Several other risks that are not listed in table 5 are delays in delivery of the materials from suppliers, increase in material prices, inaccurate procurement of materials and tools, improper iron assembly, shortage of human resources in the work implementation, and damage to machine tools and project equipment.

6. CONCLUSION AND RECOMMENDATION

The authors conducted this research with the aim of knowing the process of risk management and risk mitigation in the ABCD Transportation National Strategic Project (Case Study at Section Station). The researcher conducted the research based on a statement from one of the workers in the research object who stated that the application of risk management in the section station was not optimal. To understand the problem more deeply, the researcher conducted interviews and observations to collect the data needed for this study.

The final result of this study shows that the section station has carried out its risk management according to the model described by Eisenhardt (1989), namely that the Principal is considered to know all the activities carried out by the Agents. Thus, the Principal does not need to transfer the risks to the Agents. However, in the implementation of risk management, the section station has not carried out its risk management optimally in each line. With regard to the risk management implementation, the section station has not implemented the risk management optimally in all risk levels. One of the reasons is because it focuses on the risk management process.

The limitation of this research is only used a single case study method, the method is a single case study with a single unit analysis, section station. So the results of the study are only limited to the analysis only looks at the cost, quality, safety and time.

6.1. RECOMMENDATION

For the further reasearch, the author provides the suggestions which is related to the following matters :

1. The next research is better not only review the section station or work items but also use to review a number of work items in order to obtain maximum conclusions which is related to the implementation of risk management in the ABCD national strategic project (PSN)
2. In the next reasearch, hopefully can have a long period of time to obtain more information from a number of sources.

No	Kategori	Risiko	Mitigasi Risiko	Parameter Kesuksesan Proyek				Sudah dilakukan proyek	Belum dilakukan proyek
				Biaya	Mutu	Waktu	Safety		
1	Claim & Anti Claim	The progress of the section station work is paid by the OWNER according to the unit price in the contract BoQ	1. Submit a proposal for change of price and escalation referring to the latest realized price according to the required specifications. 2. Ensuring the Owner and Contractor Consortium to immediately finalize the change of price to the contract unit price	V		V		X	
2	Claim & Anti Claim	Claims from Chinese members due to delays in section station work	1. Planning the overall schedule must consider the relocation schedule and its details including permits, land acquisition for relocation, etc. 2. Always inform the Contractor Consortium and OWNER regarding potential delays that are not caused by the construction process, but are caused by other factors such as permits, land acquisition, and outside disturbances. 3. Administrative order regarding U work data for anti-claim basis.	V		V		X	
3	Claim & Anti Claim	Dispute scope of civil work among consortium members (U, D, E)	1. Reviewing the division of the scope of work on a regular basis, especially whenever there is a new construction drawing issuance 2. Requesting the Contractor Consortium to urge F in accelerating the production of construction drawings, especially items that have not been divided into scope			V		X	
4	Claim & Anti Claim	Swelling of realization volume (construction drawing) compared to BoQ . volume	1. Calculating, evaluating, and monitoring the suitability of the BoQ Contract volume with the calculated volume based on the construction drawing. 2. Conducting VA/VE and design reviews of work items that have the potential to be over-volume.	V		V		X	
5	Claim & Anti Claim	Work progress is late from the schedule plan	1. Actively monitoring the progress of land acquisition by the owner (OWNER and Y) 2. Cooperating with vendors who have experience working on Chinese standard high speed railway projects or similar. 3. To coordinate intensively with other members to synchronize each other's work schedule.	V	V	V		X	
6	Qualifications of Service Providers & Suppliers	The performance of the U bore pile vendor does not meet the owner's standards	1. Cooperate with vendors who already have experience working with Chinese standards 2. Ask the consortium to conduct training and supervision of local vendors.	V	V	V	V	X	
7	HR Needs Planning	Personnel competence does not meet the standard	1. Hire several expatriates who are experienced in the EPC and high speed railway fields to be able to educate and supervise new employees 2. Provide continuous training to each employee related to their respective fields of work 3. Increased standard of salary/remuneration so that the potential for recruiting competent and experienced workers is higher.		V	V	V	X	
8	Claim & Anti Claim	The project was stopped by the government.	Request legal certainty/guarantee for the sustainability of the project as outlined in the contract	V			V	X	
9	Law	The project was disrupted by NGOs and communities around the work area.	Coordinate with local residents and NGOs, and cooperate with officials to anticipate disturbances from outside.			V		X	
10	Funding	Negative project cashflow	1. Speed up the billing process / collection period 2. Reserve discount interest according to detailed cashflow projections 3. Charges discount interest from SCF/SKBDN/KMK to related service vendors/partners	V	V	V		X	

Figure 8. Summary Risk Register

No	Kategori	Risiko	Mitigasi Risiko	Parameter Kesuksesan Proyek				Sudah dilakukan proyek	Belum dilakukan proyek
				Biaya	Mutu	Waktu	Safety		
11	Tax	Tax penalties	1. Placing a competent tax PIC in the U project team 2. Monitor the issuance of tax invoices from vendors according to the specified time limit. 3. Orderly administration related to tax data.	V		V			X
12	Finance	Exchange rate gap	1. Applying the calculation of the exchange rate at the beginning so that the loss / excess of the foreign exchange difference does not have a significant impact on profit. 2. Station work items use the IDR payment method at the agreed exchange rate	V		V			X
13	Law	Force majeure	The weather will affect the quality of the concrete itself, mitigate it by making planing in case of the rainy/dry season to prioritize which item to work on first	V	V	V	V		X
14	Technology	Technology	Availability of technology infrastructure, discuss items in advance with Chinese members and owners related to the application of technology at Halim Station	V	V	V	V		X
15	Qualifications of Service Providers & Suppliers	Delay in material delivery from the supplier	Looking for a committed supplier who is used to working with a good record	V		V			X
16	Qualifications of Service Providers & Suppliers	Material price increase	Negotiate vendors for as much as possible no increase during the project	V		V			X
17	Qualifications of Service Providers & Suppliers	Inaccurate procurement of materials and tools	Monitor procurement items and materials by monitoring each other between the commercial section and construction managers in the field		V	V	V		X
18	Implementation	Improper iron assembly	monitor and provide clear instructions signed together with the foreman to avoid miscommunication		V	V	V		X
19	HR	Lack of human resources at work	Recruit and educate local residents to be able to join so that quality is maintained		V		V		X
20	Implementation	Damage to machine tools and project equipment	Hire technicians for repairs and reserve the cost of replacement parts	V	V	V			X

Figure 8. Summary Risk Register (Next)

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