

Mitigating the Risk of Chaos Management and Project Management Crisis in Multi Years Project of Indonesian State-Owned Enterprise, PT Hutama Karya

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Abstract

In the realm of construction projects, risk and uncertainty become challenges. Chaos and crises may arise and caused turmoils, specifically in project delays, soared costs, declined quality, even more the destruction of company's image. Therefore, this research is considered important to minimize the negative impact of risks on the project. The research methodology using on this study uses a case study method by collecting data through interviews and documentation. The research results show that a number variables can cause chaos management and project management crises, such as imprecise project plans, lack of team coordination, lack of communication, and ineffective implementation of technology.

Kata Kunci: *chaos management; construction project; project management crisis; risk mitigation; hutama karya*

A. INTRODUCTION

Project management is a way of managing, directing and organizing resources, namely human and material, from the start of a project to its completion to achieve a certain goal, limited by predetermined costs, time and quality (PMBOK Guide, 2008). Construction projects required effective management and punctuality in execution. Particularly, construction projects commonly encounter difficulties such as backlogs, excessive costs, inferior craftsmanship, and even project management crises. Those risk needs to be assessed carefully in order to ensure the deliverables of a project.

Risk management is the process of identifying, assessing and controlling financial, legal, strategic and security risks to an organization's capital and income. These threats or chaos can come from various sources, including economic uncertainty, legal compliance, management strategy errors, accidents, and natural disasters (IBM, 2022).

In construction projects, chaos occurs when short-term developments are unpredictable due to dependency and unpredictability among parties involved (Tavistok, 1966). However, the project's overall progress can be anticipated: the building will be completed on time or close to it. As a result, the amount of earned value is almost always increasing. Fyall (2002) attempts to measure the amount of rework (in the case of design projects) that causes turbulence in information flow (which can be linked to chaos). The research discovers an equation that forecasts when the system will enter a chaotic state by taking into account the probability of errors in tasks, the degree of task interdependence, and the level of centralization.

In the other hand, multi-year project at state-owned construction company PT. Hutama Karya is an example of a construction project that has a high level of complexity and risk. This project involves many parties, such as the government, clients and contractors, in conclusion, good project management and effective risk mitigation is

essential to ensure the smoothness of the project. However, in practice, risk mitigation is often ignored or not implemented properly, which can lead to chaos management and project management crises.

The following cases demonstrate the significance of chaos in construction initiatives. An initial study is conducted to determine the causes of chaos.

1) Sydney Opera House¹

Chaos: The project budget increased from \$7M (Australian) to \$107M, while the development timeline extended from 4 years to more than 14.

Interpretation: The determination on this extremely complex architectural project was made based on sketch designs. The roofs' shape proved difficult to work with both structurally and constructionally. The project's organization was ambiguously constructed, resulting in limited decision-making power.

2) Whoosh – Jakarta-Bandung High Speed Rail²

Chaos: the project cost surged from IDR 86.5 Trillion to IDR 114.24 Trillion, while the finished timeline extended from 2019 to 2023, 4 years backlogs.

Interpretation: Land acquisition, moving utilities such as power cables, using GSM signal frequencies, and geological conditions that make it difficult to build tunnels, moreover, State Capital Participation (PMN) that has not been disbursed.

PT. Hutama Karya is a State-Owned Enterprise (SOE) company which operates in construction and development of infrastructure projects. This company was founded in 1961 and has been involved in critical construction and infrastructure projects in Indonesia, such as the construction of toll roads, bridges, dams, ports, and others. In this regard, there are no clear guidelines or framework for risk mitigation in multi-year construction projects at state-owned construction company PT. Hutama Karya, which can lead to differences in approach and lack of standardization in risk management on multi-year construction projects.

In this context, research on mitigating the risk of chaos management and project management crises in multi-year projects at state-owned construction company PT. Hutama Karya is crucial to improving project management effectiveness, reducing risks on multi-year construction projects, and making recommendations for future risk management on multi-year construction projects. Thus, it is hoped that this research can provide effective risk reduction strategies and help to strengthen project management in Indonesia.

B. METHODOLOGY

Scarcity of existing knowledge dictated that this research be exploratory in nature. A descriptive qualitative and quantitative research method was conducted and seven respondents involved in the data collection and documentation yielded the necessary data. 7 (seven) respondents involved in this research, 2 respondents have Vice President (VP) position, 1 respondent was a senior expert, 2 respondents were managers, 1 respondent held the position of assistant manager, and 1 was staff. Content analysis method was used to interpret the gathered data. The data triangulation method also conducted to validate the findings. Meanwhile, for quantitative descriptive analysis, data obtained from the survey will be processed and analyzed using statistical software. The analysis carried out included descriptive analysis to get a general idea of the characteristics of the respondents and inferential analysis to test the hypotheses proposed in the research. In inferential analysis, statistical tests will be carried out such as the t-test or ANOVA test to test differences between groups of respondents. Furthermore, a regression test will be carried out to test the relationship between one variable and other variables. The data obtained from this analysis is then presented in the form of tables and graphs to facilitate interpretation.

C. RESEARCH RESULTS AND FINDINGS

Chaos management and project management crises in PT Hutama Karya may caused by some factors, as seen on Table 1.

¹ Kharbanda & Pinto, 1996

² Idris, Muhammad (2022)

Table 1. Factors Caused Chaos Management and Project Management Crises in PT Hutama Karya

Risks	Factors
Macroeconomic Risk	Rising inflation rates: This risk has a probability index of 50.00%, which is included in the Medium category. However, it has an impact index of 35.71%, which falls into the No Impact category.
	Currency exchange rate fluctuations: This risk has a probability index of 35.71%, which is in the Low category. Meanwhile, the impact index is also 35.71%, which is also in the No Impact category.
	Increase in tax rates: This risk has a probability index of 39.29%, which is included in the Low category. Meanwhile, the impact index is also 35.71%, which is in the No Impact category.
Contract Issue	Unclear contractual provisions for dispute resolution: This risk has a probability index of 21.43%, which is included in the Very Low category. However, it has an impact index of 39.29%, which is in the Low category.
	Unclear contract provisions for claims and litigation: This risk has a probability index of 64.29%, which is included in the High category. Meanwhile, the impact index is also 35.71%, which is in the No Impact category.
Client Related Risks	Unclear client needs: This risk has a probability index of 71.43%, which is included in the Very High category. Meanwhile, the impact index is 67.86%, which is in the High category.
	Client intervention affects project work: This risk has a probability index of 67.86%, which is included in the Very High category. Meanwhile, the impact index is 71.43%, which is also in the High category.
	Late payments from clients: This risk has a probability index of 75.00%, which is included in the Very High category. However, it has an impact index of 75.00%, which is in the High category.
Design Related Risks	The risk factor "Unclear design details or specifications" has a high probability (60.71%) and a very high impact (82.14%), so it is included in the high risk category (High/High). Other risk factors, such as "Poor design" and "Variations in design", also have a high probability and impact.
Security Risk	Security-related risks, namely "Strict safety and health regulations", have a high probability (57.14%) but their impact is relatively low (35.71%), so they do not have a significant influence on the project implementation time.
Procedures Complexity	Procedures complexity has moderate probability (46.43%) and moderate impact (46.43%). This risk factor is included in the moderate risk category.
Delays in Document Issuance	Delays in document issuance has high probability (57.14%) and high impact (57.14%). This risk factor is included in the high risk category.
Technical Risk	Technical complexity regarding new technologies and construction methods has a low probability (39.29%) and low impact (39.29%). These two risk factors are included in the low risk category.
Resource Problems	Constraints in workforce implementation have low probability (35.71%) and low impact (39.29%). This risk factor is included in the low risk category.
	Shortfalls in management staff have a very low probability (25%) and

	low impact (39.29%). This risk factor is included in the low risk category.
	Lack of training for workers has a low probability (39.29%) and no impact (35.71%). This risk factor is included in the low risk category.
Risks related to material and equipment	Material quality problems have medium probability (50%) and medium impact (50.00%). This risk factor is included in the moderate risk category.
	Availability of equipment and materials has a low probability (39.29%) and a high impact (53.57%). This risk factor is included in the high risk category.
Risks related to project team	Project teams without relevant knowledge have a low probability (39.29%) and no impact (35.71%). This risk factor is included in the low risk category.
	Inefficient communication and coordination has a low probability (39.29%) and no impact (35.71%). This risk factor is included in the low risk category.
	Unprofitable subcontractors have a high probability (64.29%) and high impact (71.43%). This risk factor is included in the high risk category.
Risks related to the risk of cost overruns	Inaccurate cost estimates have a high probability (60.71%) and high impact (67.86%). This risk factor is included in the high risk category.
	Labor and material price fluctuations have moderate probability (50%) and moderate impact (50.00%). This risk factor is included in the moderate risk category.

According to the data result, it can be concluded that proven factors that may put the multi-year projects at PT Hutama Karya at risks, which are delays in procuring construction material and equipment, design or specification changes that may affect the project schedule and cost, inability of subcontractors or suppliers to meet schedule and quality of work, project management's inability to manage human, technological and financial resources, demands from stakeholders or local communities that can affect the project schedule and costs, environmental or natural disturbances that can affect work implementation, errors in cost or schedule estimates that can cause projects to experience overruns or delays, project management's inability to manage risks and take appropriate action in dealing with unexpected situations, quality or safety issues that may affect project performance and company image, dependence on technology or information systems that can experience disruption or failure, these risks can affect the entire project and cause the project to experience delays, cost overruns, and even failure. Therefore, appropriate risk mitigation is needed to manage and reduce the impact of these risks.

After identifying risks in multi-year projects PT. Hutama Karya, several risk mitigation solutions that can be implemented include: 1) Selecting the right contractor: PT. Hutama Karya must choose a contractor who has a good reputation and sufficient experience in handling complex and large construction projects. In choosing a contractor, PT. Hutama Karya can see the history of projects that have been carried out by the contractor, certifications held, and references from previous clients, 2) Selection of qualified workforce: Quality workforce can help reduce risks in construction projects. PT. Hutama Karya must select workers who have the skills, experience and certification that suit the project needs, 3) Use of advanced technology: The use of advanced technology can help reduce risks in construction projects. PT. Hutama Karya must use the latest and best technology to increase efficiency and quality of work, as well as reduce the time needed to complete projects, 4) Proper scheduling: Proper scheduling can help reduce risks in construction projects. PT. Hutama Karya must prepare a realistic schedule and consider the time needed to complete each stage of the project, 5) Employee training and development: Employee training and development can help reduce risks in construction projects. PT. Hutama Karya must provide sufficient training to employees to improve their skills in handling construction projects, 6) Thorough risk planning: Thorough risk planning can help reduce risks in construction projects. PT. Hutama Karya must create a detailed risk plan and consider all possible risks that may occur during the project.

By implementing the risk mitigation solutions above, it is hoped that it can help reduce the risk of chaos

management and project management crises in multi-years projects of PT Hutama Karya.

D. CONCLUSION

Based on the results of this research, it can be concluded that the multi-year project at the state-owned construction company PT. Hutama Karya has quite a large potential risk of chaos management and project management crises. Some of the risk factors identified include delays in material delivery, inability to coordinate between related parties, financial problems, and others. To reduce the potential for this risk to occur, recommended mitigation solutions include strengthening coordination and communication between related parties, using more sophisticated information and communication technology, improving financial management, and implementing training and skills development. In evaluating the effectiveness of mitigation solutions, it was found that the implementation of mitigation solutions had succeeded in reducing potential risks and was able to improve overall project performance. However, regular evaluation efforts and improvement of more effective mitigation solutions are still needed to overcome risks that arise in the future. With the goal of enhancing the effectiveness of risk mitigation in multi-year projects, PT. Hutama Karya should boost comprehensive risk management, which includes risk identification, evaluation, and execution of mitigation measures. In addition, close communication with connected parties, such as contractors and project owners, can assist eliminate potential risks and improve overall project performance.

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