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FACTORS CAUSING COST OVERRUNS IN CONSTRUCTION PROJECTS

Anita Rauzana [1]

[1] Department of Civil Engineering, Universitas Syiah Kuala, Aceh, Indonesia

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Corresponding Author
Anita Rauzana,
anrauzana@unsyiah.ac.id

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ABSTRACT

The complexity of a project often causes differences in what has been planned and its implementation in the field, resulting in delays and cost overruns. The successful implementation of a construction project is the target and expectation of the project owner and contractor, who has an effective time with a budget that is according to plan. But, in project implementation, there are often problems with the emergence of cost overruns that can cause losses. The purpose of this study was to analyze the dominant factors causing cost overruns in irrigation projects in Aceh Besar District. This study uses questionnaire data addressed to irrigation contractors, the total population obtained was 46 contractor companies, through the Slovin equation, the research sample obtained was 32 contractors. Data processing uses descriptive statistics. The results showed that the dominant factor causing the cost overrun of irrigation projects was the increase in material prices, with a mean value of 4,531.

Keywords: Cost Overrun, Construction Project, Contractor Company, Project Cost

1. INTRODUCTION

Construction project development in Indonesia is growing with the increasing need for infrastructure facilities and infrastructure, as well as other facilities to support the activities of the population in Indonesia. The construction project is the process of converting plans or designs and specifications of planners into physical structures and facilities. Success in carrying out construction projects, namely projects that have effective time, economical costs, and good quality are the goals and expectations of project owners and contractors. In practice, many parties are involved in construction projects, this can potentially cause problems in implementing the project. The larger the size of a project, the more complex the mechanism, which means more problems to deal with. If the project is not handled

properly, various problems will have an impact, namely cost overrun, one of the causes of cost overrun is inflation Rauzana et al. (2015), and materials Alaghbari et al. (2007), Rauzana et al. (2016).

In project implementation, many projects experience cost overruns Rauzana et al. (2016). Therefore, project financing is the main consideration, because it usually involves large amounts and is vulnerable to the risk of project failure Yap and Skitmore (2018). The implementation of construction projects requires good project management, which aims to avoid or minimize various project risks that may occur, including the risk of cost overruns and delays in implementation time Aziz and Abdel-Hakam (2016), Mpofu et al. (2017), Mahdi and Soliman (2019). A project will be successful if it is by the planned cost or budget, on time, and according to specifications.

In project planning, a high level of expertise, knowledge, and experience is needed in estimating project costs to managing project cash flows during the implementation phase Aidil et al. (2021), expertise in coordinating project resources, and good project control are needed so that there is no cost overrun that can harm the contractor Frimpong et al. (2003), Le-Hoai et al. (2008). However, in reality, there are often problems with the emergence of cost overruns in construction projects during the work implementation stage, which are caused by several factors. To minimize the cost overrun in the next project, every factor should be considered properly or always considered at the initial estimation stage, so that cost overruns and losses can be prevented. Based on the described background, the purpose of this study is to determine the dominant factor causing cost overrun in irrigation projects in Aceh Besar District.

2. MATERIALS AND METHODS

2.1. RESEARCH DATA

The primary data used in this research were interview data and questionnaire data. Secondary data was data collected from other parties to complete primary data. The secondary data used in this study was a list of large irrigation contractor companies at the company association of the Aceh Province Construction Services Development Agency. Questionnaire data were collected by giving a set of questions or written statements to respondents to answer.

The research population was a contractor company domiciled in Aceh Besar Regency with as many as 46 contractors, based on Slovin's formula, the sample size was 32 contractors. The questionnaire used in this study was a closed questionnaire, that is, respondents only choose from the answers that have been provided.

2.2. DATA PROCESSING

This descriptive statistic was conducted to obtain the dominant factors causing cost overrun in irrigation projects in Aceh Besar District, based on the opinion of respondents. Narbuko and Achmadi (2004) argue that descriptive research is research that seeks to describe problem-solving based on data, and also presents data, analyses, and interprets. The descriptive analysis provides the mean and ranking of each parameter discussed and is presented in tabular form.

3. RESULTS AND DISCUSSIONS

3.1. FACTORS CAUSING COST OVERRUN

Based on the contractor's answers regarding perceptions on the questionnaire, the mean value for each indicator was obtained, and the mean value was obtained through the score dividing the number of respondents (n). In this case, the score can be obtained directly from the sum of all forms of answers that have been multiplied by the weight of the answers on each indicator. The contractor's perception of the factors causing cost overruns in irrigation projects is summarized in Table 1.

Table 1

Table 1 Mean Values for the Factors Causing Cost Overruns

Factor	n	Score	Mean
Material (X1)			
X1.1	32	145	4,531
X1.2	32	142	4,438
X1.3	32	141	4,406
X1.4	32	144	4,500
X1.5	32	141	4,406
X1.6	32	144	4,500
X1.7	32	136	4,250
X1.8	32	128	4,000
X1.9	32	141	4,406
Labor (X2)			
X2.1	32	140	4,375
X2.2	32	138	4,313
X2.3	32	130	4,063
X2.4	32	140	4,375
X2.5	32	136	4,250
X2.6	32	135	4,219
X2.7	32	130	4,063
Equipment (X3)			
X3.1	32	134	4,188
X3.2	32	135	4,219
X3.3	32	140	4,375
X3.4	32	140	4,375
Project finance (X4)			
X4.1	32	138	4,313
X4.2	32	130	4,063
X4.3	32	128	4,000
X4.4	32	140	4,375
Execution time (X5)			

X5.1	32	133	4,156
X5.2	32	137	4,281
X5.3	32	142	4,438
X5.4	32	141	4,406
X5.5	32	144	4,500
X5.6	32	138	4,313
X5.7	32	135	4,219
X5.8	32	137	4,281

Table 1 shows the results of the identification of the mean value on the factors that cause cost overrun, which have a mean value with an interval that is close to. This shows that from the contractor's perspective, all of these factors can lead to cost overruns in irrigation projects in Aceh Besar District, which have an approaching priority level. The results showed that the mean value from the highest to the lowest, the factors causing cost overrun which had the highest mean value were caused by the increase in material prices (4,531).

Figure 1

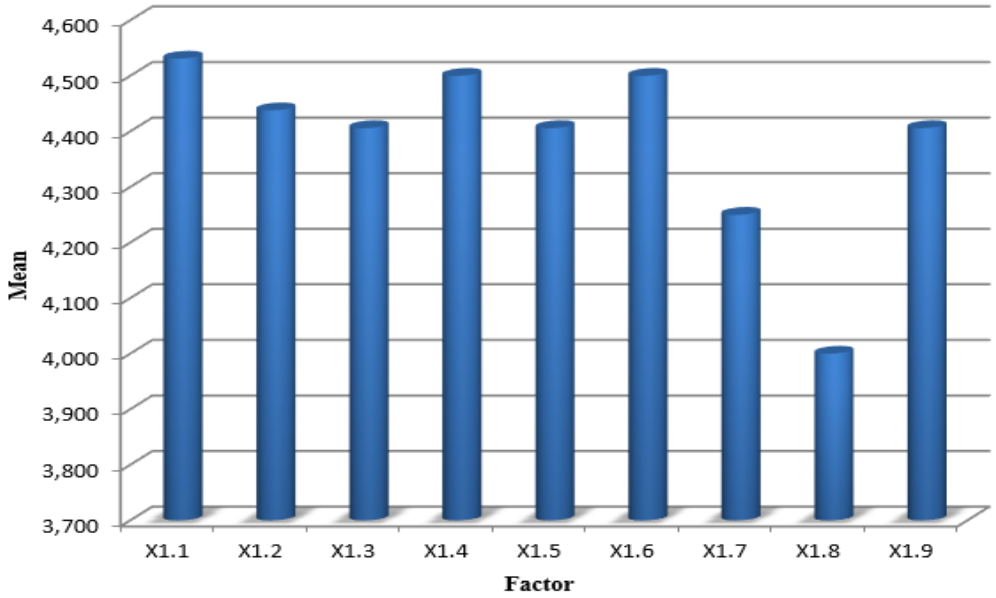

Figure 1 Mean Values for Material Factors (X1)

Figure 1 shows that the material factors that have the highest mean value were an increase in material prices which have a mean value of 4,531. Material inventory in a construction project is a very important factor, material costs are the largest costs incurred by contractors. In the implementation of construction projects, common problems that are often faced are excessive material orders, overstock, too few material orders, and inflation, which can cause cost overruns and losses.

Figure 2

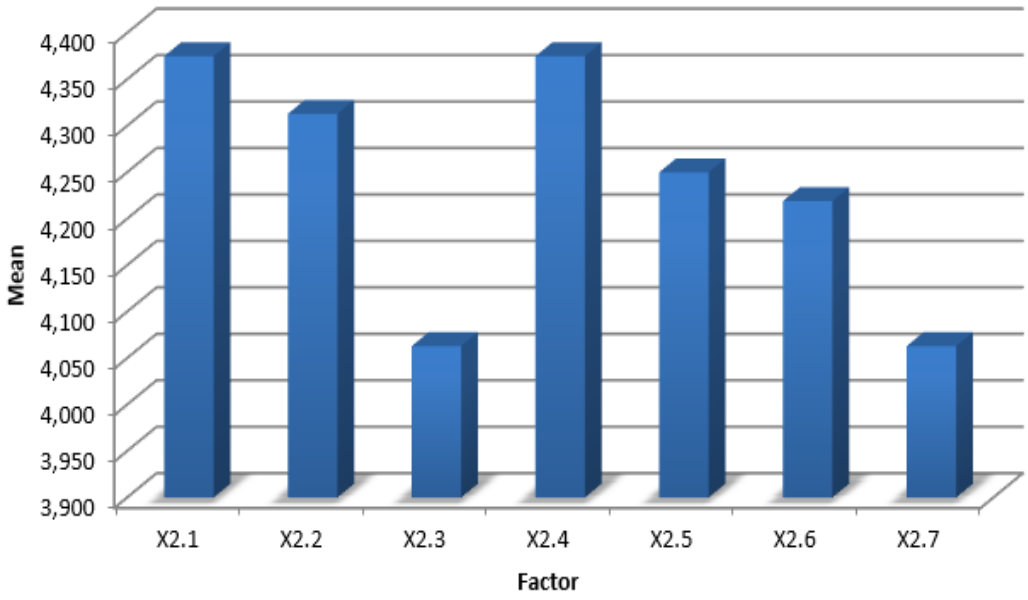

Figure 2 Mean Value for Labor Factor (X2)

Figure 2 shows that labor factors that have the highest mean value were labor shortages (4.375), and poor quality of labor (4.375). Human Resources is one of the most important factors in a construction project. Human resources that have poor quality and effectiveness can provide suboptimal and unsatisfactory results in a project. In fact, due to the inappropriate use of human resources, it can result in a large loss in construction projects. Lack of manpower and poor quality of manpower can cause cost overrun for the project.

Figure 3

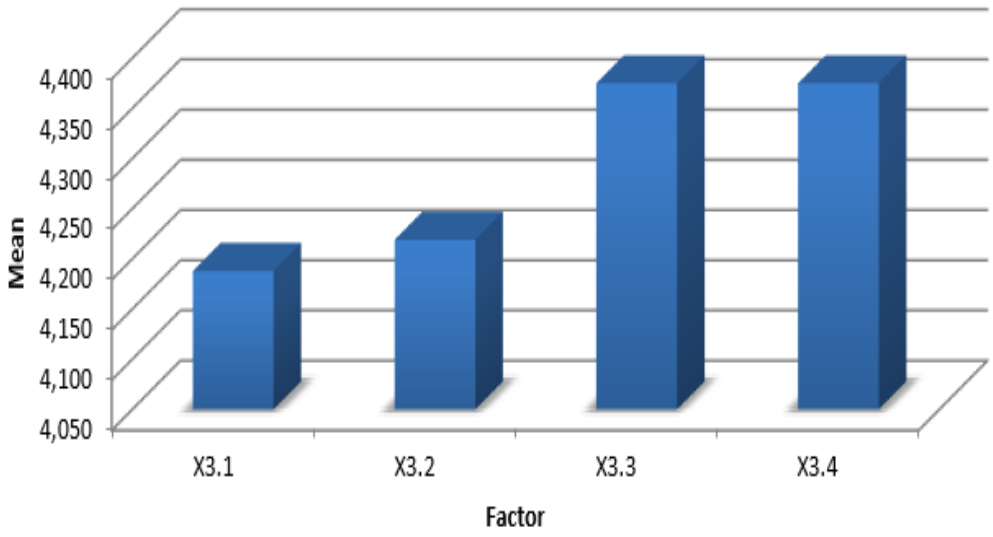

Figure 3 Mean Value for Equipment Factor (X3)

Figure 3 shows that the mean value for the highest equipment factor was an indicator of equipment maintenance costs not according to plan (4.375), and errors in managing equipment storage (4.375). Equipment needed in project implementation. To complete the project work, it is necessary to select and determine the composition of heavy equipment, where this selection depends on the characteristics of each tool. This is necessary so that the tool can work optimally, so that the work can be completed on time at an efficient cost. If an error occurs in the selection of equipment or is not observant in calculating its capacity, it can cause the tool to be idle and will cause an increase in equipment rental costs, high equipment maintenance costs, and equipment storage errors can cause cost overrun for the project.

Figure 4

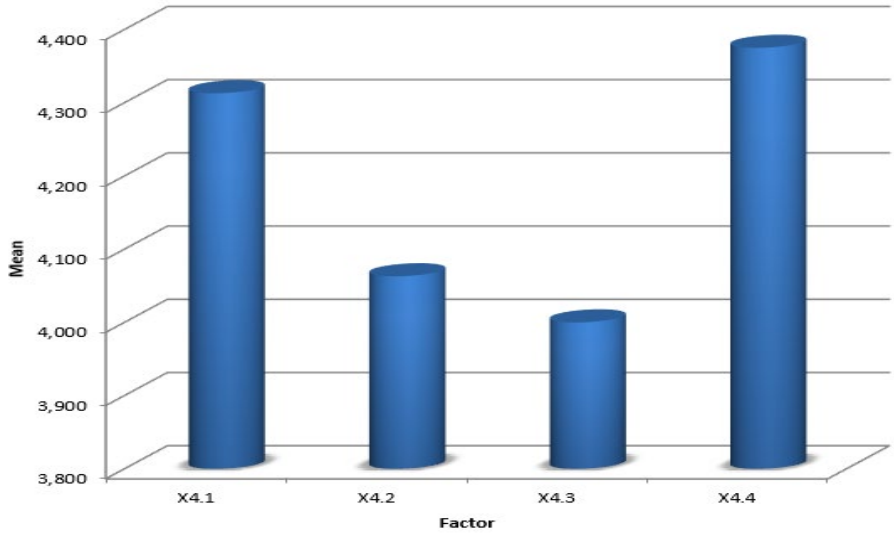

Figure 4 The Mean Value for the Project Finance Factor (X4)

Figure 4 shows that the highest mean value for the project finance factor was an indicator of the absence of financial control of (4.375). Financial management is the process of obtaining and managing financial resources on a project, especially the income from these resources, and analysing or updating cash flows for a construction project which is more than just managing costs. In the project there are many obstacles, one of which is important to control is the financial circulation in the project. If finances are not controlled, this can result in losses as well as poor work results. To avoid losses, the contractor needs to plan and control the cost and time of the project properly.

Figure 5

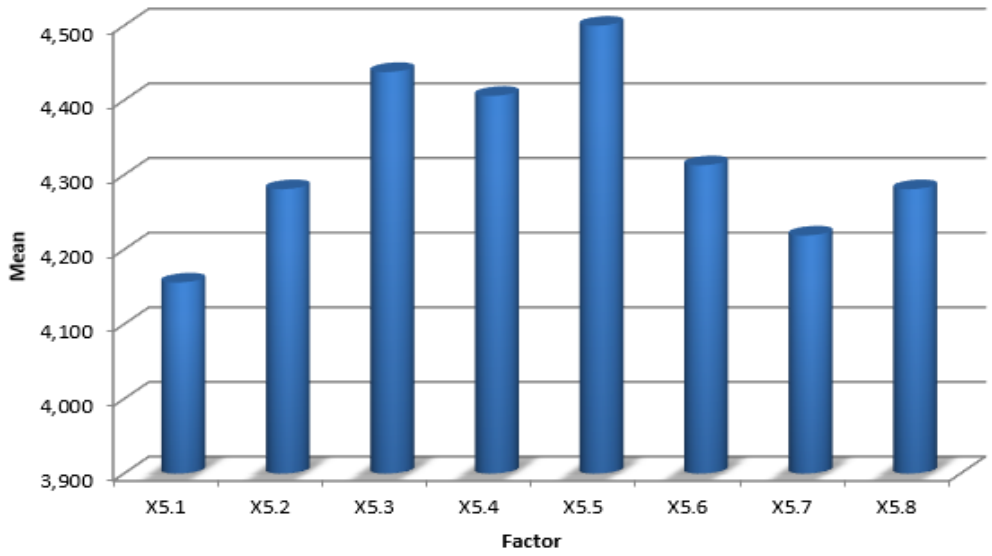

Figure 5 The Mean Value for the Execution Time Factor (X5)

Figure 5 shows that the highest mean value for the execution time factor was the natural disaster indicator which has a mean value of (4,500). Indonesia is a country that has a high level of vulnerability to the threat of natural disasters such as floods, earthquakes, and tsunamis. The Indonesian archipelago is located at the confluence of three world plates which can cause natural disasters. Disaster risk must be a serious concern for stakeholders. A series of disasters can destroy physical structures, delays, and losses in projects.

4. CONCLUSIONS

Based on the results of the study, it was found that the dominant factor causing cost overrun in irrigation projects in Aceh Besar District was the increase in material prices, with a mean value of (4,531). Material costs are one of the factors that can lead to increased costs in project, which can cause losses and delays Flanagan and Norman (1993), Shahsavand et al. (2018), Zarei et al. (2018). Therefore, it is necessary to identify the things that cause an increase in costs and make the right decisions to overcome them. With effective handling, it is expected that the negative impact of the risk of rising costs can be minimized, so that project implementation goes according to the schedule and budget that has been set. The cause of the increase in material costs on the project is the lack of accuracy and thoroughness in material planning, and inaccurate in predicting the market situation, and the occurrence of inflation. To reduce the impact of the increase in material costs, contractor companies need to make efforts/corrective actions that need to be taken to reduce the impact of increasing costs, including making good and clear plans regarding the time and amount of material used, making a periodic report system for each period, so that every problem can be identified, and problem-solving can be done more quickly and avoid losses.

CONFLICT OF INTERESTS

None.

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