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RESEARCH ARTICLE

Evaluating Risk Management Perspectives of Parties in Construction Projects Funded by Vietnam Government's Budget

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Abstract:

Background:

Risks always go with the activities of construction investment projects. The impact of risks, whether large or small, affects the project results. The proper risk assessment will help managers to have appropriate responses. Project parties with different roles will have different project participation goals. This can lead to a different view of risk between the parties in the project.

Aim:

This study will focus on examining the risk management perspectives of the parties during the project implementation phase for construction investment projects using Government's budget capital in Vietnam.

Methods:

The author will use a multivariate regression model to consider the views of three main actors in the project, including the investor/project management board, the consultant, and the contractor.

Results:

The views of the parties are analyzed based on the parties' assessment of the impact of risks on project results.

Conclusion:

Risks are unavoidable in construction investment projects. Project parties need to assess risks properly and develop appropriate responses.

Keywords: Construction, Implement, Management, Project, Risk, Economic and social infrastructure systems.

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1. INTRODUCTION

In Vietnam, the Government's budget capital mainly focuses on investment in the construction of technical, economic and social infrastructure systems. Annually, the investment capital for these contents always accounts for over 20% of the total Government's budget expenditure (Table **1**). The value of infrastructure investment has reached an average of about 5.7% of GDP. The capacity of the irrigation infrastructure system is focused on investment in construction and upgrading in the direction of multi-purpose. The traffic system is expanded and completed with many projects of radial traffic axes, ring roads, stereoscopic intersections at major intersections, urban bypasses, especially the belts and roads and urban railway. The works of water supply, drainage, solid waste collection and treatment are also renovated, upgraded and newly built. Many investment projects to build educational facilities have been implemented, even in ethnic minority and disadvantaged areas.

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Table 1. Estimates of investment and development expenditures for the years.

Targets	2017	2018	2019	2020	2021
Total Government's budget expenditure (billion VND)	1,390,480	1,523,200	1,633,300	1,747,100	1,687,000
Development investment expenditure (billion VND)	357,150	399,700	429,300	497,260	477,300
Percentage of expenditure on development investment (according to the estimate)	25.69%	26.24%	26.28%	26.94%	28.29%

Source: Government's budget public portal – Ministry of Finance [1].

The peculiarities of construction investment projects are often emphasized by the parties involved [2, 3]:

- Prototypical properties of the building because each place and environment is different;
- The richness and diversity of the number of parties involved;
- The duration of the project increases the likelihood of events that significantly affect dispersion performance (standard change, target change ...), economic, political, social constraints, *etc*.

To face with rapid construction speed, risks also appear frequently and have a clear influence on project results. 100% of projects have big or small risks that change the work plan. In fact, over budget and behind schedule are common phenomena in construction, especially for complex projects in Vietnam. Today, managers have a more optimistic view of risks, and instead of trying to eliminate risks, managers want to face and find suitable risk countermeasures. The basis for developing risk response measures is to properly assess the impact of risks on project outcomes.

2. LITERATURE REVIEWS

There are risks that are objective, but there are risks posed by project stakeholders. Results from relevant studies show that risk occurs in all project implementation activities. Perrenoud *et al*., (2016) [4] reviewed more than 229 projects that recorded 1229 risks. Batson (2009) [5] discovered 15 risk areas that were used to manage 96 potential risk issues. Bruce (2005) [6] studies the effect of risk on the cost of infrastructure projects. And many other studies around the world have shown that risks are inevitable in construction investment projects. Besides, if considered from the viewpoints of the project parties, risks will have many different points in risk assessment and response. Edwards *et al*. (2009) [7] also point out risks related to the relationship of project participants and show that the risk opinions of the parties do not always lead to the same outcome.

In Vietnam, risk management is getting more and more attention as economic integration and investment projects increase in size and number. However, through some research by Thuy (2020) [8], Anh (2006) [9], Trang (2010) [10], also reflects many risks arising in the process of implementing projects using capital sources. There are risks with a high degree of frequency and significant impact on the outcome of the project. There are also risks that are less visible and easier to deal with.

Within the scope of the research, the author will focus on the risks that have been commented through related studies that frequently appear and have a clear influence on the results of construction investment projects using Vietnam Government's budget capital (Table **2**).

3. RESEARCH METHODOLGY

3.1. Research Hypothesis

Risks may arise from objective reasons or cause by parties in the project. However, if the project is centered, the risk is considered as the risk of the project and affects the project, not specifically affecting any specific subject in the project. The question is: Do the three main actors in the project, including the investor, the consultant, and the contractor, have the same view of risk? The different risk perception can lead to many problems such as: Is there an agreement on risk management measures, what conflicts will occur when the parties deal with the same risk, the responsibility for each risk belongs to each other or to either side or to all parties,.

Table 2. Summary of risks frequently appearing in construction investment projects using Government's budget capital.

Code	Risks	References
R1	Changes in relevant laws in construction investment	[4, 5, 8, 10, 11]
R2	Regulations and administrative procedures are complicated, incomplete and unclear	[4, 9, 10, 11]
R3	Change the design many times	[3, 8, 9, 10]
R4	Delay in approving and correcting design	[8 - 10]
R5	Delay in handing over the construction site	[4, 5, 8, 9 - 10]
R6	Organize and coordinate among project participants	[7 - 10]
R7	Poor management capacity of the Investor/Project Management Board	[7 - 10]
R8	Contractor's construction capacity is not guaranteed	[7 - 10]
R9	Process, method of quality management are not guaranteed	[4, 8 - 10]
R10	Construction environment issues	[8 - 10]
R11	Funding for the project is in difficult situation	[6, 8 - 10]

(Table 2) contd.....

Code	Risks	References
R12	Late payment as committed	[8 - 10]
R13	Price changing of inputs	[8 - 10]

Table 3. Project result scale.

Corresponding Points	Scale	Explanation
1	Very low damage	Almost no additional costs; not or cause insignificant delay; nor or has little effect on the quality of the work.
2	Low damage	Low cost extra cost; causes delay but can be easily compensated; the quality of the works has no or negligible influence.
3	Average damage	Consuming costs at an acceptable level; compensable delay; quality effect but can be easily remedied.
4	Great damage	Take a lot for cost; slow progress takes a long time to compensate; affecting the quality of the work and need remedial measures.
5	Huge damage	Take a lot for cost; causing delay requires a lot of time to compensate; seriously affect the quality of the works and need to take remedial measures.

In this study, the authors hypothesized as: 13 risks that frequently appear in construction investment projects using Government's budget capital (Table **1**) have a damaging impact on project results. Risks are measured according to 5 levels: Very low impact, low effect, moderate effect, large influence, and very large influence. Project results are measured on a 5-level scale, as shown in Table **3**.

The remarkable point of this study is that, with the same hypothesis, the authors will perform on three different groups (investors, consultants, contractors) to see if the results are similar and different among each other.

3.2. Research Processes

Step 1: Summarize risks that often appear in construction investment projects using Government's budget capital in Vietnam.

Step 2: Independent survey with three groups, including investors, consulting units, and contractors.

Step 3: Analyze the linear regression model to assess the impact of risks on project results.

Step 4: Expert interview.

3.3. Research Methodology

3.3.1. Surveys and Data Collection

Determining sample size: There are many ways to determine sample size depending on the research purpose. In this study, the author determined the sample size scenario according to Joseph et al. (1998) [12] The minimum sample size should be 50, preferably 100 and the number of observations/measurements should be 5/1, that is, Each measurement variable needs at least 05 observations. The research model has 14 variables, equivalent to a minimum sample size of 70.

Method of data collection: Direct interview.

3.3.2. Linear Regression Model

Check the reliability of the scale by Cronbach's Alpha index [13]. Read the results as follows:

From 0.8 to close to 1: Excellent scale

From 0.7 to close to 0.8: Good scale.

From 0.6 and up: Qualifying scale.

Linear regression model [13, 14]:

The independent variable (X) is 13 risks that have been aggregated across related studies. Each risk corresponds to 1 independent variable. The dependent variable (Y) is the project outcome. The regression model is only built for the independent and dependent variables. Hypothetical regression model:

$$Y = B0 + B1*X1 + B2*X2 + \ldots + B13*X13 \quad (1)$$

In which:

Y is the dependent variable;

X1 – X13 are independent variables;

B0 is the regression constant;

B1 – B13 is the regression coefficient.

Read the results of indexes [13, 14] as follows:

The R Square index and the Adjusted R Square index greater than 50% indicate a reliable model.

The Anova result has a Sig index of less than 0.05, showing that the independent variables affect the dependent variable [1].

Variance Inflation Factor (VIF) is less than 10 to ensure that the factors do not have multicollinearity.

Sig. Less than 0.05 indicates statistically significant data.

Unstandardized Coefficients (Index B) is used to write the regression model.

Standardized Coefficients (Beta index) to evaluate the impact of the independent variable on the dependent variable and compare the independent variables with each other.

The authors use SPSS software, version 22 to perform cronbach's alpha tests, and linear regression models [13].

3.3.3. Expert Interviews

Expert interviews were conducted after the results of the linear regression model were obtained. The purpose of interviewing experts is to learn about the causes of risk and find clearer explanations for the results of the linear regression model. During the survey, the author will select 10 experts for each group of investors, consultants and contractors to prepare for the expert interview step. These experts will be invited to meet together and to discuss and share risk issues in the projects they have participated. Expert selection criteria:

- Possess a bachelor's degree or higher in construction.
- Having over 10 years of experience working in construction investment projects funded by the Government's budget.
- Enthusiastic and willing to participate in interviews.

4. DATA ANALYSIS RESULTS

4.1. Survey Results

Surveys were carried out on three main groups of investors, consultants and contractors in the project. After removing the incomplete questionnaires, leaving many questions blank, and respondents with less than 3 years of experience, the author obtained the number of votes per each group: (1) Investor: 97 votes, (2) Consultant: 93 votes, and (3) Contractor: 101 votes. The number of votes in each group ≥ 70 votes satisfied the requirement of analytical sample size.

Considering working experience on all three groups: The highest percentage are experts with more than 10 years of experience (Investor: 32.12%; Consultants" 37.23%; Contractors.: 28.36%. A low percentage of experts have 3 to 5 years of experience in 3 groups of subjects (Investor: 9.65%; Consultant: 8.78%; Contractor: 11.20%). This information shows that the survey results are highly reliable.

4.2. Analysis Results of Linear Regression Model

4.2.1. Investors ' Results

The results of the reliability assessment of Cronbach's Alpha on the data obtained from the investor are shown in Table **4**. Cronbach's Alpha received a value of 0.897, showing that the scale reached a very good value.

Table 4. Reliability statistics.

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	No of Items
.897	.898	14

The R Square index equal to 0.588, respectively 58.8% and the Adjusted R Square index equal to 0.582, respectively 58.2% are both greater than 50%, showing that the model is reliable (Table **5**).

Table 5. Model summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.767	.588	.582	.44787

Anova results have a Sig index of 0.001, less than 0.05, showing that risks have an impact on project results (Table **6**).

Table 6. ANOVA results.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.223	13	.863	2.956	.001
	Residual	24.242	83	.292	-	-
	Total	35.465	96	-	-	-

Table 7. Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.666	.344	-	4.850	.000	-	-
	R1	.001	.000	.039	2.186	.001	.278	3.603
	R2	.244	.111	.265	2.198	.004	.154	6.484
	R3	.070	.016	.078	4.465	.000	.196	5.096
	R4	.040	.008	.035	5.233	.034	.300	3.334
	R5	.128	.044	.138	2.873	.010	.246	4.059
	R6	.545	.151	.512	3.616	.000	.225	4.436
	R7	.301	.168	.302	1.788	.022	.184	5.423
	R8	.414	.190	.403	2.179	.000	.298	3.357
	R9	.398	.197	.323	2.021	.040	.214	4.669
	R10	.263	.090	.267	2.912	.009	.268	3.728
	R11	.042	.005	.051	7.643	.001	.356	2.808
	R12	.039	.020	.032	1.991	.000	.347	2.879
	R13	.476	.196	.436	2.434	.008	.522	1.917

Note: a. Dependent Variable: Project results

Considering the results of Table **7** there are:

All VIFs are less than 10, showing no multicollinearity.

All Sig indices are less than 0.05 so the data is statistically significant.

The regression equation based on the contractor's opinion is written as follows:

Y = 1,666 + 0,001X1 + 0,244X2 + 0,070X3 + 0,040X4 + 0,128X5 + 0,545X6 + 0,301X7 + 0,414X8 + 0,398X9 + 0,263X10 + 0,042X11 + 0,039X12 + 0,476X13 **(2)**

4.2.2. Consultant ' Results

The results of the reliability assessment of Cronbach's Alpha on the data obtained from the contractor are shown in Table **8**. Cronbach's Alpha received a value of 0.742, showing that the scale has a good value.

Table 8. Reliability Statistics.

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.742	.754	14

The R Square index of 0.697, corresponding to 69.7% and the Adjusted R Square index of 0.688, corresponding to 68.8% (Table **9**) are both greater than 50%, indicating that the model is reliable.

Anova's results have a Sig index of 0.001 less than 0.05, showing that risks have an impact on project results (Table **10**).

Table 9. Model summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.835	.697	.688	.43787

Table 10. ANOVA Results.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.223	13	.863	2.956	.001
	Residual	24.242	83	.292	-	-
	Total	35.465	96	-	-	-

Considering the results of Table **11** there are:

All VIFs are less than 10, showing no multicollinearity.

All Sig indices are less than 0.05 so the data is statistically significant.

The regression equation based on the contractor's opinion is written as follows:

Y = 1,181 + 0,001X1 + 0,254X2 + 0,086X3 + 0,041X4 + 0,132X5 + 0,558X6 + 0,368X7 + 0,376X8 + 0,398X9 + 0,263X10 + 0,494X11 + 0,059X12 + 0,306X13 (3)

4.2.3. Contractors ' Results

The results of the reliability assessment of Cronbach's Alpha on the data obtained from the contractor are shown in Table **7**. Cronbach's Alpha received a value of 0.897, showing that the scale reached a good value (Table **12**).

Table 11. Coefficients[a].

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.181	.244		4.850	.000	-	-
	R1	.001	.000	.099	3.187	.001	.378	2.649
	R2	.254	.111	.245	2.288	.003	.164	6.089
	R3	.086	.016	.091	5.475	.000	.186	5.370
	R4	.041	.008	.035	5.343	.031	.320	3.126
	R5	.132	.044	.159	2.973	.010	.249	4.011
	R6	.558	.121	.512	4.616	.000	.235	4.248
	R7	.368	.168	.333	2.188	.002	.194	5.144
	R8	.376	.190	.346	1.979	.000	.398	2.513
	R9	.398	.197	.319	2.021	.020	.314	3.183
	R10	.263	.090	.229	2.912	.000	.368	2.716
	R11	.494	.106	.461	4.643	.001	.376	2.659
	R12	.059	.030	.056	1.991	.000	.357	2.799
	R13	.306	.126	.316	2.434	.005	.545	1.834

a. Dependent Variable: Project results

Table 12. Reliability Statistics.

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.897	*.896*	*14*

Table 13. Model Summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.730	.533	.521	.51687

Table 14. ANOVA.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.223	13	.786	2.944	.001
	Residual	23.242	87	.267	-	-
	Total	33.465	100	-	-	-

The R Square index of 0.533, respectively 53.3% and the Adjusted R Square index of 0.521, respectively 52.1% (Table **13**) are both greater than 50%, showing that the model is reliable.

Anova's results have a Sig index of 0.001 less than 0.05, showing that risks have an impact on project results (Table **14**).

Consider the results Table **15** has:

All VIFs are less than 10, showing no multicollinearity.

All Sig indices are less than 0.05 so the data is statistically significant.

The regression equation based on the contractor's opinion is written as follows:

$$Y = 1,651 + 0,261X1 + 0,354X2 + 0,693X3 + 0,614X4 + 0,417X5 + 0,592X6 + 0,354X7 + 0,274X8 + 0,312X9 + 0,389X10 + 0,816X11 + 0,322X12 + 0,214X13 \quad (4)$$

5. RISK MANAGEMENT VIEWPOINTS OF THE PROJECT PARTIES

With the results obtained in the above steps, it is found that the three project subjects have differences in the assessment of the impact of risks on the project results. Beta index indicates the degree of influence of the risk on the project outcome is high or low; the higher this index indicates, the higher the degree of influence and vice versa. At the same time, the Beta of a risk with a higher index also indicates that the risk has a stronger influence on the outcome of the project than the risks with a lower index. The table below presents the results of the impact of risks on project outcomes from the individual perspectives of project actors.

Table 15. Coefficients[a].

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.651	.334	-	4.950	.000	-	-
	R1	.261	.131	.199	1.986	.001	.278	3.603
	R2	.354	.161	.345	2.198	.004	.154	6.484
	R3	.693	.156	.693	4.455	.049	.196	5.096
	R4	.614	.118	.635	5.213	.032	.300	3.334
	R5	.417	.144	.459	2.883	.010	.246	4.059
	R6	.592	.164	.516	3.616	.039	.225	4.436
	R7	.354	.178	.368	1.988	.021	.184	5.423
	R8	.274	.120	.246	2.279	.001	.298	3.357
	R9	.312	.147	.409	2.121	.037	.214	4.669
	R10	.389	.133	.359	2.922	.009	.268	3.728
	R11	.816	.105	.961	7.743	.005	.356	2.808
	R12	.322	.120	.356	2.691	.004	.347	2.879
	R13	.214	.096	.276	2.234	.028	.522	1.917

Note: a. Dependent Variable: Project results

Table 16. Impact of risks on project results.

Code	Risks	Beta Index		
		Investor	Consultant	Contractor
R1	Changes to relevant laws	.039	.099	.199
R2	Regulations and administrative procedures are complicated, incomplete and unclear	.265	.245	.345
R3	Change the design many times	.078	.091	.693

(Table 16) contd.....

Code	Risks	Beta Index		
		Investor	Consultant	Contractor
R4	Delay in approving and licensing	.035	.035	.635
R5	Delay in handing over the construction site	.138	.159	.459
R6	Poor organization and coordination among the parties involved	.512	.512	.516
R7	The investor's management capacity is weak	.302	.333	.368
R8	Contractor's construction capacity is not guaranteed	.403	.346	.246
R9	Quality management processes and measures are not guaranteed	.323	.319	.409
R10	Construction environment issues	.267	.229	.359
R11	Funding for the project is difficult	.051	.461	.961
R12	Delayed payment as committed	.032	.056	.356
R13	Price movements of inputs	.436	.316	.276

From the results of Table **16**, it is possible to summarize the following contents:

(1) With 13 risks considered in the study, all parties assessed them to have a positive influence on the project results expressed through the Beta indexes all received positive values. Thus, the risks that occur will jeopardize the results of the project, such as cost loss or delay or deterioration in quality or the simultaneous occurrence of these problems. On all three groups of experts from the investor, consulting unit, and contractor, all reported that they had not encountered any risks that brought positive results to the project. All risks are associated with negative connotations.

(2) Assessing the level of impact of risks on the project results of the contractor is higher than that of the investor and the consulting unit. According to experts from the contractor side, risks happen to the project, but the contractor is the unit that directly creates the project's products, which are construction works. The investor and the consulting unit are indirect parties. Therefore, when the risk occurs, the contractor will be most clearly affected. Especially in the project implementation phase, the contractor's workload is very large, and the damage caused by the risk can be expressed in very specific numbers.

(3) The investor and the consulting unit have a quite similar assessment of the impact of risks on project results. There is not a big difference between the score for 13 risks between the investor and the consulting unit. Opinions from the experts of the investor and the consulting unit emphasize: The consulting unit has an advisory role, helping the investor to make specialized decisions in the project. Therefore, the benefit of the investor is also the benefit of the consulting unit. In projects using Government's budget capital, the rights and responsibilities of the consulting unit are very clear through the legal regulations, so there is little conflict between the investor and the consulting unit. That also affects the perception of risk of these two subjects is quite similar.

(4) The risks assessed by the investor as having high impact include: Poor organization and coordination among the participants; management capacity of the investor is weak; Contractor's construction capacity is not guaranteed; Quality management processes and measures are not guaranteed; price movements of inputs. The investor is interested in issues in site coordination, capacity of project parties, quality assurance process and price fluctuations in the market. Experts from the investor said that they want to create a suitable relationship with the project parties in order to capture clear project information and understand the requirements to ensure construction work, a content they do not have much knowledge and experience in. However, construction works with many jobs in many different fields cause investors to lose control of activities or interfere deeply in the work of the parties.

The weak capacity of the project parties is the source of the wrong decisions in the project. With Government's budget funding, the contractor selection process complies with many strict and detailed regulations that help limit the selection of incompetent contractors. But the reality shows that the main contractors can meet the capacity, but their subcontractors have the weak capacity, leading to many damaging consequences for the project's results.

In addition, construction supervision in construction investment projects with Government's budget capital accounts for a large proportion using the form of package contracts. This means that price movements do not change the contract value. Price fluctuations are borne by the contractor. However, the opinion of experts from the investor reflects: The price fluctuation in the market affects the contractor's time, thereby directly affecting the project. For example, in 2021, the price of construction materials will increase, iron will increase by 30-40%, aluminum and glass will increase by 20-30%, *etc*. material prices will be more stable. Excessive price increases also force contractors to question whether they are profitable anymore, leading to delays in project implementation.

(5) The risks assessed by the consulting unit as having a high impact include Poor organization and coordination among stakeholders; management capacity of the investor is weak; contractor's construction capacity is not guaranteed; quality management processes and measures are not guaranteed; funding for projects facing difficulties; delayed payment as committed. The consulting unit has a highly similar assessment with the investor. The experts from the consulting unit have many explanations similar to the experts from the investor. Their reflection also shows that they pay great attention to the issue of capital. The pandemic that took place from 2020 to 2022 has aggravated the problem of capital sources at projects. Contingency costs have been cut, and funding has been delayed compared to the plan, and social distancing issues have prevented many projects from having to pause or make payments as committed.

(6) The risks assessed by the contractor with high impact include: Changing the design many times; Delays in approval and licensing; Delay in handing over the construction site; Poor organization and coordination among the parties involved; Funding for the project being difficult. The risks assessed as high impact reflect the contractor's concerns about issues around design changes, construction sites, project coordination, and funding. Experts from the contractor said that this result is reasonable and close to the current reality. In many construction investment projects using Government's budget capital, there is always a very frequent design adjustment. These adjustments do not change the structure of the work, but it takes a lot of time to prepare drawings and wait for the approval. When there is a design change, the contractor will be responsible for preparing a drawing to change the menu of the project management consultant, supervision consultant and investor. When approved by the investor, the new contractor can perform at the construction site. Compared with the original plan, the contractor can easily calculate the damage caused by the number of days behind schedule of the work; costs of engineers' salaries, labor used for design changes, adjustments, *etc*.

Currently, the coordination on the construction site is not really effective. Experts found that the coordination model on the construction site often takes place in many stages, and the rights and responsibilities of the parties often overlap, leading to the investor being too deeply involved in the expertise of the supervision consultant and contractors. Meanwhile, project management consultants cannot determine when they decide for themselves or need advice for the investor to decide. This will make the operation on the construction site between the parties not really smooth and time-consuming.

Government's budget capital for construction investment accounts for a large proportion and is allocated in the medium-term capital or from the pre-prepared regular capital. However, the investor is not usually the one making the investment decisions. The investor is only the manager of the allocated capital. In the situation that the Government's budget has to cut and save costs, there may also be an objective reason from the investment decision maker, the source of capital is interrupted or delayed. This will cause many difficulties for the project parties and especially the contractor.

(7) The risk of "Poor organization and coordination among the participants" is unanimously assessed by all three project stakeholders as high impact. This risk shows that there is a need for a drastic change in coordination among project parties to limit negative impacts on project results.

CONCLUSION

Risks are unavoidable in construction investment projects. Project parties need to properly assess risks and develop appropriate responses. Reviewing over 13 risks that frequently appear in construction investment projects using Government's budget capital has shown many interesting points in the risk management perspective of the project parties. The occurrence of risks undermines the outcome of the project. The investor and the consulting unit have similar but lower evaluations than the contractor's assessment. The coordination in the project is a weak problem and is recognized by all parties in the project. The analysis results of the linear regression model based on the views of the investor, consulting unit, and contractor also lead to the following predictions:

- It is necessary to improve and build a model of coordination between the parties in the project in a scientific and reasonable manner.
- From the perspective of each risk subject, it can be viewed in different ways, but the risk is the loss of the project, thereby affecting the subject itself, so the parties in the project consider to find a common voice in risk management.

CONSENT FOR PUBLICATION

Not applicable.

AVAILABILITY OF DATA AND MATERIALS

The data supporting the findings of the article is available within the article.

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CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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