

Recommendation Analysis of Important Risk Factor in Construction Company "X" on Joint Operation Project with Foreign Company in Jakarta, Indonesia

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Abstract- Regulations in Indonesia requires foreign companies to have local partner in a joint operation if they want to enter Indonesia construction industries. This study will examine company "X", who frequently get joint operation project offers from foreign companies. Within that joint operation, beside many advantages, there are also some risks to manage. Risks in a joint operation project will be more complex than projects in general, because it involve two or more companies with different culture. The purpose of this study is to indentify important risk factors in joint operations project by company "X". The instruments of this study consist of primary data (interview and questionnaire) and secondary data (books and journals of relevant studies). The datas gathered then analyzed using risk analysis method with Risk Significance and Relative Importance Index as to obtain the risk variables with significant influence on these three projects in this study. Based on the study, it is found that the important risk variables in a joint operation projects with foreign companies by company "X" are distrust between employees of each company (X9) and language limitations (X30). Therefore, it is recommended to set a minimum standard of language skills (especially English) for the staff who will assigned in the joint operation project with foreign company also to provide language skills training and it is recommended that the directors from each parent's company could ensure staff commitment, coordination, and trust by enhancing communication quality and a conflict resolution technique. Carefully selecting a staff for joint operation proyek and employing unbiased and experienced staff are effective measures to remove the distrust within the staff

Index Terms- risk, company, construction, joint operation

I. INTRODUCTION

Construction Company "X" as a company which provide service in building construction with specialized in commercial building such as office building and apartment. Construction Company "X" often receive an offer from foreign company to run a joint operation project. Within the joint operation beside many benefit, also facing a risk. The risk in joint operation project is much complex because it involved two or more company with different culture.

In Construction Company "X" joint operation project, turns out that the project performance is not as good as their own projects. One of the reason is because of the high rate of employee turnovers in joint operation project. This high turnover rate is caused by many staff are repatriate to head office, request for transfer to another project or resigned.

II. RESEARCH PROBLEM

The reseatch problem statements that will be analysed in this research are:

1. What are the risk variables that rise in joint operation projects?
2. What is the important risk variable in Construction Company "X" on joint operation projects with foreign company in Jakarta?
3. What are the causes of those risk variable?
4. How to mitigate those risk?

III. LITERATURE REVIEW

A. Risk Management

In project management a risk is some future happening that results in a change, either positive or negative, to the project. Risk management is a sistematic way in viewing a risk and define the right solution to handle the risk. It is tools to identify source of the risk and uncertainty, dan estimate the impact that caused and develop response to control the risk. Risk always related with losses. This losses can be forecast based on two factors which is probability and severity that caused by that event. This estimation can help project manager to plan risk mitigation and decrease the losses that caused.

B. Risk Criteria

Two risk factor that are mention in above is probability of the event from happening and severity that caused by the event is a factor that determine the risk category. Risk criteria is a standard measurement how severe or impact that possible to happen and how likelihood the risk will happen. Risk category can be seen in table below:

<i>Almost never</i>	Medium	High	High	Extreme	Extreme
<i>Unlikely</i>	Low	Medium	High	High	Extreme
<i>Possible</i>	Low	Medium	Medium	High	High
<i>Likely</i>	Low	Low	Medium	Medium	High
<i>Almost certain</i>	Very Low	Low	Low	Low	Medium
	<i>Minor</i>	<i>Moderate</i>	<i>Severe</i>	<i>Major</i>	<i>Worse Case</i>

Figure 1. Risk Criteria

Risk criteria are divided into five category, very low risk, low risk, medium risk, high risk, and extreme risk. Every company have risk tolerance and risk appetite and it determine by the company strategy. Risk tolerance and risk appetite will determine how the company will handle risk.

C. Risk Management in Construction Project

The purpose of project risk management is to increase the probability and positive impact from the event and decrease probability and negative impact from the event in project. The process includes several stages: Risk Management Planning, Risk Identification, Risk Analysis, Risk Response Planning, Risk Controlling

D. Joint Operation

Joint operation can be defined as joint business activity between two or more company to create independent business with joint ownership, operational responsibility, financial risk and reward to each member but keep the separate identity (Lynch, 1989).. For foreign company who will run a project in Indonesia are obliged to form international joint operation with local company. International joint operation is a joint operation which involved two organization with contribute its equity and resources and at least one of the partner have head office in overseas where the international joint operation is operate (Ozorhon et al. 2007). In Indonesia, joint operation develop in form of administrative joint operation where joint operation are consider as separate entity from its mother company therefore the contract from client is signed on behalf of joint operation. Work responsibility to the client is on JO entity, not on each partner. Regarding share capital or project funding, procurement, labor, expense, and profit sharing related to project are based on each share which are agreed in the joint operation agreement.

IV. RESEARCH METODOLOGY

Reseach work begins with literature review for compilation of risks for construction projects and then questionnaire are developed based on this list and send to expert respondents to determine the risk variable for joint operation project. From this risk variable then develop a questionnaire and distribute to 18 respondents in construction company "X" from three different joint operation project. The respondents were required to identify for the probability and severity of each risk variable based on their experience within their project on a 1 – 5 point Likert scale with 0 = very low and 5 = very high.

Data collected from respondents analyzed by validity test, then followed by reliability test. The valid risk variable then mapped on the risk map to identify which risk variable not comply with construction company "X" risk tolerance and risk appetite. Those variable then analyzed by an empirical formula to determine the Relative Important Index (RII). RII is used to rank the risks in order of their importance.

Five highest rank are consider as important risk factor to construction company "X". From these top five risk are re-validated by the expert respondents. Then a risk response plan are recommended for each risks based on literature study.

V. ANALYSIS AND REVIEW

A. Risk Variable in Joint Operation Project

Based on the questionnaire to expert respondent, from 46 variable indetified from literature review, 32 variable are relevant to risks in joint operation project. Variable that are stated relevant by expert respondent in this early survey are used to develop questionnaire for respondent. The variable are as follow:

Table 1. Research Variable

Faktor	Variabel	Referensi
Internal Project	X1. Partner selection	<i>Risk Management in Singapore Construction Joint Ventures</i> , Kwok, H.C.A., (2006)
	X2. Contract agreement	
	X3. Partner bargain position	
	X4. Policy changes in your partner's parent company toward ICJV	<i>Risk Management In International Construction Joint Venture</i> , Li Bing, (1999)
	X5. Partner's parent company in financial problems	
	X6. Disagreement on accounting of profits and loss	<i>Risk Management in Construction Joint Venture Projects in Real Estate</i> , Zirape, L.B., (2016)
	X7. Lack of partners competence in management	
	X8. Disagreement on allocation of staff position	
	X9. Employees from each partner distrust each other	
	X10. Disagreement on work rules	
	X11. Conflict in work ethics	
	X12. Transfer technology dispute	<i>A Study of Joint Venture Formation between Construction Organizations in Tanzania</i> , Minja,S.J., (2012)
Specific Project	X13. Unsufficient technical specification in tender document	<i>A Study of Joint Venture Formation between Construction Organizations in Tanzania</i> , Minja,S.J., (2012)
	X14. Disagree some conditions of contract	<i>Risk Management In International Construction Joint Venture</i> , Li Bing, (1999)
	X15. Poor project relationship	
	X16. Cash flow issue	<i>An Assessment of Risk Management in Joint Venture Projects (JV) in Malaysia</i> , Adnan, H., (2008)
	X17. Price control	<i>Risk Management in Singapore Construction Joint Ventures</i> , Kwok, H.C.A., (2006)
	X18. Deficit in cost estimation	
	X19. Cost over-run	
	X20. Incompatibility of local policies ith international practice	<i>A Study of Joint Venture Formation between Construction Organizations in Tanzania</i> , Minja,S.J., (2012)
	X21. Specialized contractor selection	<i>Risk Management in Singapore Construction Joint Ventures</i> , Kwok, H.C.A., (2006)
	X22. Specialized contrator management	
	X23. Labor productivity	
X24. Lack of material and labor		
External Project	X25. Exchange rate	<i>Risk Management in Singapore Construction Joint Ventures</i> , Kwok, H.C.A., (2006)
	X26. Inflation	
	X27. Changes in regulation toward foreign investment	<i>Risk Management in Singapore Construction Joint Ventures</i> , Kwok, H.C.A., (2006)
	X28. Import restriction	
	X29. Inconsistency in policies, law, and regulations	<i>An Assessment of Risk Management in Joint Venture Projects (JV) in Malaysia</i> , Adnan, H., (2008)
	X30. Language barrier	
	X31. Different social, culture, and religious	
	X32. Force majeure	

B. Validity Test

Based on acquired data through questionnaire to respondents analyze with validity test from 32 risk variable, 17 variable are identified valid and can be used for further analysis as below:

Table 2. Validity Test

Variabel	Validity Test for Probability			Validity Test for Severity			Validity
	T count	T table	Validity	T count	T table	Validity	
X1.	2.268	1.746	VALID	2.497	1.746	VALID	VALID
X2.	2.067	1.746	VALID	4.988	1.746	VALID	VALID
X3.	0.982	1.746	TIDAK VALID	2.667	1.746	VALID	NOT VALID
X4.	2.111	1.746	VALID	3.424	1.746	VALID	VALID
X5.	2.209	1.746	VALID	3.492	1.746	VALID	VALID
X6.	1.613	1.746	TIDAK VALID	4.472	1.746	VALID	NOT VALID
X7.	4.426	1.746	VALID	1.767	1.746	VALID	VALID
X8.	4.740	1.746	VALID	1.575	1.746	TIDAK VALID	NOT VALID
X9.	2.210	1.746	VALID	2.462	1.746	VALID	VALID
X10.	0.083	1.746	TIDAK VALID	2.293	1.746	VALID	NOT VALID
X11.	2.994	1.746	VALID	2.630	1.746	VALID	VALID
X12.	-0.373	1.746	TIDAK VALID	0.539	1.746	TIDAK VALID	NOT VALID
X13.	2.340	1.746	VALID	2.871	1.746	VALID	VALID
X14.	3.025	1.746	VALID	3.933	1.746	VALID	VALID
X15.	2.794	1.746	VALID	2.035	1.746	VALID	VALID
X16.	4.903	1.746	VALID	5.282	1.746	VALID	VALID
X17.	1.513	1.746	TIDAK VALID	4.757	1.746	VALID	NOT VALID
X18.	0.840	1.746	TIDAK VALID	2.432	1.746	VALID	NOT VALID
X19.	2.657	1.746	VALID	5.178	1.746	VALID	VALID
X20.	0.957	1.746	TIDAK VALID	2.038	1.746	VALID	NOT VALID
X21.	2.297	1.746	VALID	1.525	1.746	TIDAK VALID	NOT VALID
X22.	2.729	1.746	VALID	2.900	1.746	VALID	VALID

X23.	0.570	1.746	TIDAK VALID	1.204	1.746	TIDAK VALID	NOT VALID
X24.	0.225	1.746	TIDAK VALID	1.179	1.746	TIDAK VALID	NOT VALID
X25.	0.256	1.746	TIDAK VALID	1.740	1.746	TIDAK VALID	NOT VALID
X26.	1.219	1.746	TIDAK VALID	1.460	1.746	TIDAK VALID	NOT VALID
X27.	1.949	1.746	VALID	0.788	1.746	TIDAK VALID	NOT VALID
X28.	2.627	1.746	VALID	3.412	1.746	VALID	VALID
X29.	3.754	1.746	VALID	2.492	1.746	VALID	VALID
X30.	1.777	1.746	VALID	1.933	1.746	VALID	VALID
X31.	1.123	1.746	TIDAK VALID	2.431	1.746	VALID	NOT VALID
X32.	4.106	1.746	VALID	1.891	1.746	VALID	VALID

C. Reliability Test

Reliability test that used in this research is Cronbach’s Alpha reliability test. Acceptance Cronbach’s Alpha score around 0.7 is acceptable and above 0.8 is good. The test result are shown below:

Table 3. Reliability Test

Reliability test	Number of Variable	Variable Variance	Total Variance	Cronbach's Alpha	Reliability
Probability	17	14.98	88.84	0.88	Reliable
Severity	17	18.17	116.89	0.90	Reliable

D. Risk Mapping

Construction company "X" have a strategy to avoiding risk therefore their risk appetite is on medium – very low. It shown as blue line in risk map.

From 17 variable that pass validity test are mapped in the risk map to show which variable is beyond construction company risk tolerance as shown in below:

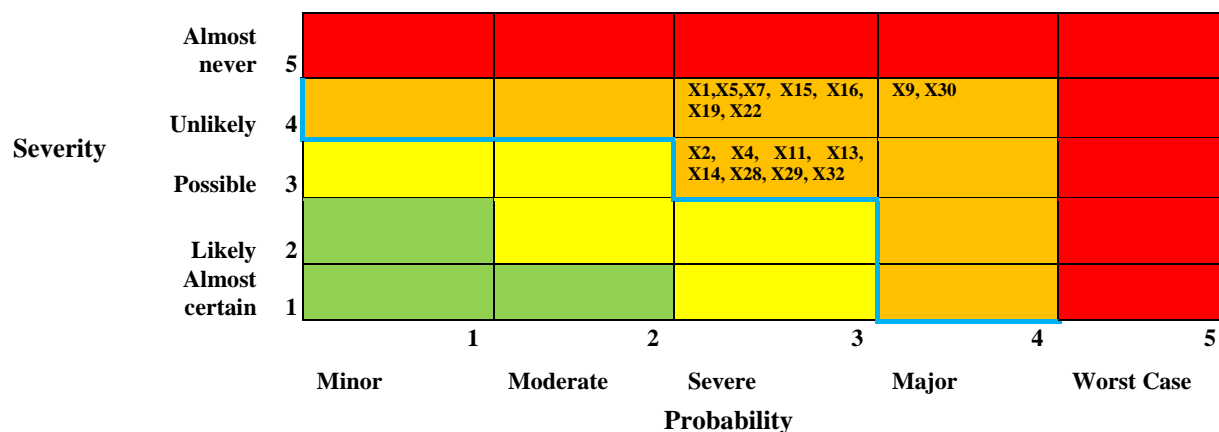


Figure 2. Risk Mapping

E. Relative Important Index

RII analysis are shown on table below:

Table 4. Risk Significance and Relative Important Index

Variable	Risk Significance	Relative Important Index
X30	15.120	0.605
X9	15.111	0.604
X15	12.821	0.513
X7	12.667	0.507
X1	11.994	0.480
X22	11.836	0.473
X19	11.636	0.465
X16	11.235	0.449
X11	10.543	0.422
X5	9.877	0.395
X2	9.506	0.380
X4	9.324	0.373
X13	9.148	0.366
X29	9.130	0.365
X32	8.994	0.360
X14	8.667	0.347
X28	7.978	0.319

VI. ANALYSIS AND RECOMMENDATION

Based on the RII rank, the five highest risk is language barrier (X30), employee from each partner distrust each others (X9), poor project relationship (X15), lack of partners competence in management (X7), and partner selection (X1). This five highest risk then re-validate to the expert respondents and conclude that there are two important risk factor in construction company "X" on joint operation project with foreign company in Jakarta which is language barrier (X30) and employee from each partner distrust each others (X9).

Language barrier is caused by the limitation of communication skill (English language) from the staff which involved in joint operation project. This leads to misunderstanding between each staff between partners. Risk response recommendation for language barrier risk is to recruit local staff with bilingual ability.

Employee from each partner distrust each others is caused of each staff must protect parents company interest and they carry their own agenda therefore its not surprising that the relationship between each staff is not effective and efficient. Risk reponse recommendation for distrust between each partner employee, the director could ensure staff commitment, coordination, and trust by enhancing communication quality and a conflict resolution technique and to carefully selecting a staff for joint operation project and employing unbiased and experienced staff are effective measure to remove the distrust within the JO staff.

VII. CONCLUSION

Based on the research that has been done, it is identified the important risk factor in construction company "X" on joint operation project with foreign company in Jakarta which is language barrier and employee from each partner distrust each others. Risk response recommendation for language barrier risk is to recruit local staff with bilingual ability. Bilingual ability can offer better communication for partners speaking in different languages. And risk reponse recommendation for distrust between each partner employee, the director could ensure staff commitment, coordination, and trust by enhancing communication quality and a conflict resolution technique and to carefully selecting a staff for joint operation project and employing unbiased and experienced staff are effective measure to remove the distrust within the JO staff.

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