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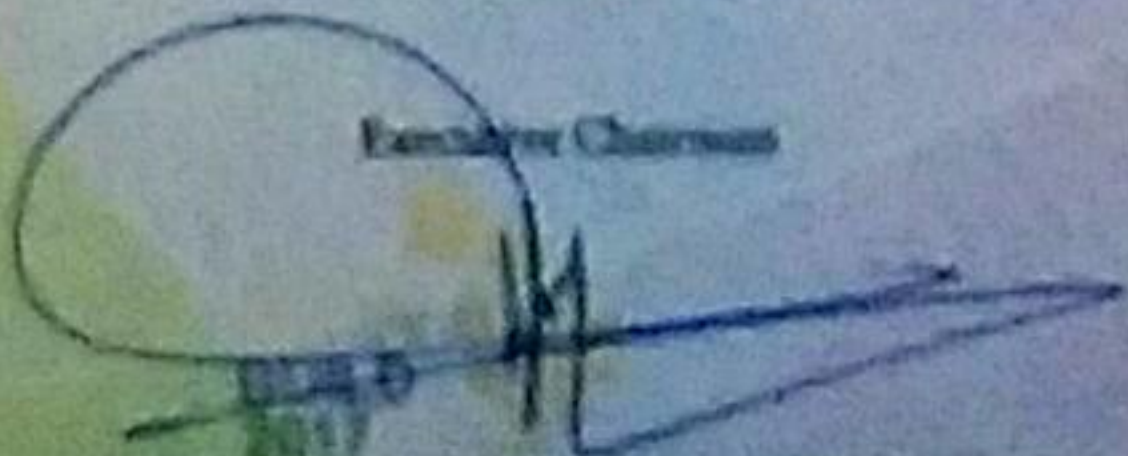
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Joint-operation in water resources project in Indonesia: Integrated or non-integrated

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Joint-Operation in Water Resources Project in Indonesia: Integrated or Non-Integrated

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Abstract. The construction of large water resources infrastructure project often involved a joint-operation (JO) project between two or more construction companies. The form of JO can be grouped into two categories - an integrated type and a non-integrated type. This paper investigates the reason of forming a JO project made by companies. The specific advantages and problems of JO project is also analysed in this paper. In order to achieve the objectives, three water resources infrastructure projects were selected as case studies. Data was gathered by conducting 11 semi-structured interviews to project owners, contractor managers, and project staffs. Data was analysed by means of content analysis. It was found that the most fundamental factor to form a JO is to win a competition or tender. An integrated model is in favour because it can reduce overhead costs and has a simple management system, while a non-integrated model is selected because it can avoid a sleeping partner and make contractor more responsible for their own job.

INTRODUCTION

Project Management Institute [1] describes a project as “a temporary endeavor undertaken to create a unique product, service, or result”. In line with this definition, construction companies sometime also create a temporary partnership in order to carry out a particular project. This kind of partnership is the same with a joint venture project except it does not create a new entity. In Indonesia, this kind of partnership is called a joint-operation (JO) project as two or more contractors only collaborate for a specific project on short time basis.

There is two types of a JO project, an integrated and a non-integrated. An integrated means that the member of a JO pool their resources and the project is carried out by the combining resources. While in a non-integrated JO, a member carry out a specific work which can be based on location or nature of the work.

In Indonesia, a large or a complex water resources project (e.g., dam, river normalization, and irrigation) often carried out using a JO project. The JO is not only between Indonesian Construction Company, but also involves a joint operation between international company and Indonesia Company. However, there is lack of information which types of project is in favor for an integrated or a non-integrated one. A river normalization project sometimes carried out using integrated model or by a non-integrated model by splitting the location of the project. A dam project which difficult to be divided has also been implemented using both models. In Indonesia as developing countries and in the context of water resources project, there is still a very limited academic materials discussing about this phenomenon. Lumeno [2], and Marzuki and Lumeno [3] are not specifically addressed the reason of company forming a JO project. Accordingly, this research aims to find out the reasons of company in deciding JO for conducting the project, identifying the reason for choosing a particular model, and find out the advantages of both models including its problems. The findings of the research contribute the knowledge to this research area by providing the specific reason of company forming a JO project in water resources project in Indonesia.

LITERATURE REVIEW

In this paper, the terminology of JO, collaboration or partnership were used interchangeably. Referring to Lorange and Ross [4] which differentiate four types of alliances (Figure 1), a JO project is a kind of an ad hoc alliance which created only for a particular project. In this type of alliance, contractor in a JO project contributes certain amount of resources, such as funding, project staff, or equipment, for a short time period (as project life) and revenue gained from the project is returned to partner based on the portion of its contribution to JO.

		<u>Input of resources</u>	
		Only as required in the short term	As necessary for long-term operation
<u>Output from operations</u>	Returned to partners	Ad hoc pool	Consortium
	Retained in venture	Project-based Joint Venture	Full-blown Joint Venture

FIGURE 1. Alliance archetypes [4]

The term JO which is normally used in Indonesia is probably not internationally recognized where the term of joint venture (JV) is more widely used. The term JV is widely defined as an enterprise that formed by two or more legally separated interests where there is commitment of funds, facilities, and services for their mutual benefits for a long period of time (Tomlinson [5] cited in Hong & Chan [6]). Norwood and Mansfield [7] defined JV as commercial agreement between two or more companies in order to allow greater ease of work and cooperation towards achieving a common aim. These two definitions imply there are agreements between the ventures to achieve mutual benefits in JV. Study by Hong & Chan [6] defined construction joint venture (CJV) that have temporary nature as it is project based and CJVs are form by contractual agreement rather than the form of equity JV. This temporary agreement in written contract has legal advantages that the ventures do not involve to form jointly owned subsidiary company and has no intention to form a legal partnership [8]

Hong and Chan [6] had reviewed 71 publications in CJV from 1993 to 2012 and have classified JV research into 1. Theory and model development; 2. Identification of motives and benefits; 3. Performance management or measurement; 4. Risk assessment or management; 5. Influential factors for practice; 6. Issues and challenges in practice; and 7. Managerial practices of CJVs. Furthermore, Hong & Chan have identified several motives and benefits for implementation of CJV: technology transfer, risk sharing/transfer, financial strength, pooling resources and skills, bring in outside expertise, and opportunity to have a long-term profitable business development. They also pointed out that international JV is a key method to enter foreign market, but also JV as advantaged to improve local company management skills. For example, some Hong Kong and international contractor company came into China's market by forming joint venture with local Chinese company, and both gain benefits from the JV. Local company supplies information about availability of material, local labor, and equipment and matters related to government approvals; and the international company in the JV offers project finance, advanced building technology, overseas network, market information and management expertise [9].

In achieving goals in JV to get mutual benefits, there are several factors that affect the implementation of JV. Hong & Chan [6] examined critical success factors (CSFs) of JV from previous publications and found similarity in the CSFs which are commitment, co-operation, management control, agreement of JV contract, and partner selection.

There are a number of reasons why contractor forming a JO. Construction Industry Development Board [10] stated that this is because the capacity of the company cannot deal with a very large and complex project, or the project requires a specific skills. In developing countries, Carrillo [11] noted that the main reason for partnership is the limited technical and managerial skills of partner. Other reasons for a joint operation is sharing of risks issue.

The reasons of conducting JO above can be stated as the advantages of a JO. A JO can utilize partner experiment and expertise, share project risk between partners, and an opportunity providing large funding. As a result, a company with lack capacity still can handle a large and complex project.

However, certain disadvantages present in a JO project. As partner came from different culture and has their own characteristics, unifying them can consume project duration. A slow progress in a start-up is a problem that tends to happen. Fail in selecting appropriate partner can also lead to project failure. Tomlinson [5] listed the selection criteria for partner in alliances: specific obligation by owner; specific facilities possessed by local firm; local resources of managerial and technical personnel, materials, components, or local capital; partner status or capability in dealing with local environment; favorable of past partnership; and ability to provide local identity.

METHODOLOGY

The research was conducted using three case studies of water resources infrastructure project in Indonesia, a river normalization project and two dam projects. The location of the river normalization project is in West Sumatra Province. The purpose of the project is for flood control of Padang City and to protect Minangkabau International Airport. The construction has begun since 2013 and will be completed in 2015. The width of the river is 112 m, depth is 6.5 m (highest level), and length of the project is 8.2 km. The type of works include embankment revetment using double corrugated concrete sheet pile (CCSP) 12 m and 7 m, dredging, and earthworks. This project was conducted using an integrated model of JO involving three companies.

The first dam project is located in Central Java Province, constructed between 2009 and 2014, and purposes for irrigation, water supply, and hydro power. The type of dam is rockfill zone dam with central core. The dimension of dam is: height above foundation 74 m; crest width 10 m; crest length 200 m; and embankment volume 13.6 million m³. The reservoir capacity is: gross storage 20.4 million m³, effective storage 13.6 million m³, and dead storage 6.8 million m³. It involved the construction of dam, spillway, service outlet, and intake & outlet tunnel [12]. It carried out by three contractors using a non-integrated model. The works were divided by certain elevation of dam and others by segmental location.

The third case study is also a dam project but in West Java Province. The dam type is a rockfill clay core dam. The height above riverbed, the crest length, and the embankment volume is 96 m, 1,715 m, and 6.80 million m³ respectively. The reservoir capacity is: normal storage 980 million m³; dead storage 194 million m³; and effective storage 796 million m³. This dam was built between 2009 and 2014 and involved one international contractor from China and four local Indonesian contractors [12]. The difference with the latter model of JO is in this project it split by scope of work. Work for diversion tunnel, irrigation outlet, spillway, dam work, headrace tunnel, and hydro-mechanical works was carried by different contractor.

Data was gathered using a semi structured interview. Eleven respondents has been interviewed for this research between April 2014 and May 2014 in West Sumatra, Central Java, and Jakarta. Interviewees had different job allocations: 2 project owners (PO) (government officials); 6 project staff (PS), and 3 company managers (CM). They were asked about the reasons for choosing JO to conduct the project, its advantages, and the problems they faced during the implementation. These questions were constructed based on academic literature, the characteristic of the company, and the nature of the projects under concern. Data was recorded during interview using digital recorder. It is then transcribed and analyzed using content analysis by deploying a qualitative software analysis.

FINDINGS AND DISCUSSION

Reasons for Joint Operation

Three managers interviewed in this research argued that the main underlying factor for JO is to become competitive in order to win a competition or a tender. This view is supported by Norwood and Mansfield [7]. According to managers, if there is a possibility to win a competition without have to create a JO, then the company will go into tender by itself. CM1 stated:

“A Joint Operation is simply a part of strategy to win a tender”

CM 2 added that if the company did not form a JO then the company definitely will not win the tender. The company becoming more competitive is because of several factors. First, as companies combines their resources, their strength increase and become stronger. Limited resources or a lack of specific skills can be avoided. By combining their resources, a JO will have more funding available, more expertise, and more skills as well. They also

can bid lower. For example, if a project was in a remote area and one company had a local partner, by making use of partner's equipment or partner's material quarry, they can bid lower than the competitor that did not have a local partner. The company can reduce the mobilization costs of equipment or a possibility buying materials at high price.

Types of project is also a determinant in forming a JO project. CM3 said that the type of project will influence his decision whether to go alone or need partners. If needed, he will then decides with whom he should forming the alliance. Furthermore, he expressed that the JO should give a win-win solution for its members, so all members can achieve a revenue after completing the project.

Asking about whether in favor for an integrated or a non-integrated model, researcher received a mix response from company managers. CM1 is in favor for an integrated model. This view is supported by project owners. According to them, if a JO implemented an integrated model, management control of the project is easier compare to a non-integrated model. If problem emerged, owners easily pointed out a JO to solve the problems without have to find out whose responsibility the problem is. PO1 stated:

"The spirit of JO is an integrated model. If it is split, then it looks like the same as a work packages. So, it is better from the beginning I divided (the project) into different packages."

However, CM2 and CM3 tend to choose a non-integrated model. They will choose this option if there was a possibility to split the project based on locations or specific work. Several reasons are behind this preferences. In their point of view, by opting to a non-integrated model, the profits that they gain from a JO project is easier to calculate and more clear than the integrated one. In order to increase their profit they will do their best to work as efficient as they can and more serious in doing their task.

Three constructions managers expressed that whether the project will implement an integrated or a non-integrated model, the decision will depend on the deal made by them. First they will consider the technical aspect such as project locations or nature of the work, and second is the financial factor. Whatever the decision to be made, the end goal is to maximize profit.

In term of partner selection, the analysis finds that there are three factors considered by the contractor. First, contractor prefer to select partner that they have already known their character, the one that they have been working with. It is very important for each partner to know each other as the mutual understanding and trust between them is already built. Second is by carefully examining the expertise and reputation of targeted partners. And finally is by analyzing what kind of resources the potential partners have.

Advantages

This sub-section discusses the advantages of an integrated and a non-integrated model of a JO project resulted from interview. Both models has a distinguished benefit compare to a non-JO project. In JO project, the project can be performed faster as all JO's member combine their resources to do the work. A JO project can also improve a cash flow of member's company since the costs to execute the project is shared among members. Other benefit is in terms of sharing experience and transfer technology. One company can share their best practice and transfer their expertise and knowledge especially into a local partner. PS1 has also seen JO as a form of training for a small or middle construction company.

Compare to a non-integrated project, an integrated project has a more simple management. Overhead costs is also lesser so it can enhance profit. For a project owner, having a simple management organization brings an ease on controlling the project. PO2 explained this particular benefit by expressing:

"Once we had a river normalisation project. The project was conducted in a non-integrated model. Equipment for this project used public road for mobilisation of materials. When the public road was damaged because of the project, it was hard to ask the JO to fix the road. One partner blamed other partner for damaging the road. If the project was conducted in an integrated model, it will be easy for me to ask the JO Company to responsible for the damaged."

The non-integrated model also have the advantages that cannot be found in the integrated model. Majority of the project staff interviewed stated that the non-integrated model make them more responsible to finish their tasks and can bring high motivation to finish their job to be delivered on time. Although the acceleration of construction is also present in an integrated model, the reason for fast progress in a non-integrated model has different reasons. The project can perform faster because the company will put their best resources to the project. They will send the best equipment and the staff that they have. The competition to other partner also positively contribute to the project. One company tends to expose that their progress is better than other partner. As company work for a specific task, they do not have to wait for other work to be completed by other parties. Other reason is because company does not

have to get acquainted with their partner, so the time needed to know the habit in working of each partner is not needed. Basically, it can be said that there is no interdependence between companies and they can work freely to perform their own tasks.

Further, one other distinguish advantage of a non-integrated approach is it can avoid a 'sleeping' partner. A sleeping partner is a kind of dummy partner in which their company name is 'borrowed' just for a specific purposes, like to win the tender or just to satisfy specific regulation. As PS2 addressed in a dam project that he involved:

"...in here (a dam project) there is no sleeping partner. Everybody is working to perform their work."

Inevitably this benefit will also help project owners in doing the project monitoring. Owners can review about the company that have a good progress and which is not perform well.

Disadvantages

Although an implementation of a JO project have some advantages, it also has disadvantages. For a company, a JO can reduce its profit compare to the project that carried out by itself. Profit generated from a JO project has to be shared with other partners. Secondly, the amount of project budget cannot be written as company turnover, but profit can be included. Thirdly, on an occasion where a leading partner is present, no matter it is integrated or a non-integrated, a leading partner take a sole responsibility should a project in problems. The leading partner cannot blamed or transfer the responsibility to other partner. A slow start up due to different working habit between companies might also exists.

For a disadvantages on a specific model of JO, in general, an advantage on an integrated JO will be a disadvantage on a non-integrated JO, a reverse case applied. For example, the advantage of avoiding sleeping partner in a non-integrated JO will be a disadvantage for an integrated JO.

Analyzing particularly on dam projects which both carried out using a non-integrated JO, the risk in first dam project is higher than second project. This due to the non-integrated model in former split by certain elevation of dam compare to the latter which clearly divided by scope of work. For example in former case, should failure happened, contractors will blamed each other for the mistake. However, in latter case, it is very easy to define the contractor who responsible for the work. Thus, we recommend that if a non-integrated model implemented, the project should divided by the scope of work.

CONCLUSIONS

The main reason for a contractor forming a JO project is to win competition in order to gain profit. A selection of an integrated JO or a non-integrated JO will depend on both technical and financial factors. Although owners prefer the integrated JO as they argue that this model is the true spirit of a JO project, contractors have a different opinions on selecting the desired model. Contractors perceive the model that can maximize their profit is the better one.

Some benefit of a JO project has been established. In a JO project, the progress of work can perform faster compare to the one without alliances. Risk sharing, making use of partners' expertise and resources, and technology transfer are the obvious advantages resulting from a JO project. An integrated model is in favor because it can reduce overhead costs and has a simple management system, while a non-integrated model is selected because it can avoid a sleeping partner and making contractor more responsible for their own job. The main drawback of JO project is on the financial administration problem as a project budget cannot be included on company turnover.

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