

INTERNATIONAL JOINT OPERATION ORGANIZATIONAL STRUCTURE DESIGNS OF INFRASTRUCTURE CONSTRUCTION PROJECTS

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This paper analyzes various international joint operation organization (IJO) structure designs of infrastructure projects in Indonesia. Organization structures of important infrastructure projects are studied. Surveys are conducted to collect primary and secondary data that also include interviews with key persons in each project's management team. The results show that both integrated and non-integrated joint operation organizations exist in these infrastructure construction projects. The organization structure adopted depends on the type of the project, complexity of the construction, and type of joint operation agreements between partners. Authority distribution in each type of organization structure is also studied. In some cases, a shift in organization structures happened. It is revealed that more complicated construction projects mostly adopt a non-integrated IJO organization where the foreign partners have the responsibility to execute high technology construction parts. The position of General Manager in the two IJO organization types is mostly held by a foreign partner officer.

Keywords: Integrated IJO, Functional organization, Strategic alliance.

1 INTRODUCTION

The development of large-scale infrastructure that requires specific engineering expertise in Indonesia is often done through a project-based international construction joint venture, which in Indonesia is known as an international joint operation (IJO). According to Ozorhorn et al. (2007), an IJO is a partnership cooperation that involves at least two organizations in which both partners contribute their equity and resources, and at least one partner has its head office outside the country where the joint venture operates. As stated by Aldrich (1979) and Lorange and Roos (1992), in a strategic alliance as a joint venture or operation, competence and resources of participating companies can be combined to achieve work objectives or aims. In terms of manpower, this combination of resources is reflected in the setting and positions of each company's human resources, according to their skills and competencies in the new joint-operation organization structure.

Baccarini (1996) mentioned that the establishment of organizational structures includes three main aspects: a) the definition of the relationship in terms of

communication and reporting, b) allocation of responsibility and authority for decision-making, and c) the allocation of tasks. IJO organizational structures are generally designed by mutual agreement of involved partners on those aspects.

This research explores the types of IJO organization structure of large and complex infrastructure projects in Indonesia. Six IJO organization structures are studied. Data were collected through project site survey and interviews. Two types of IJO organization structures are identified, i.e., non-integrated and integrated.

2 TYPICAL NON-INTEGRATED IJO ORGANIZATION STRUCTURES IN INDONESIAN CONSTRUCTION PROJECTS

In a non-integrated IJO, the whole project work is clearly divided into parts carried out separately by the IJO's local and foreign partners. These IJO partners or contractors agree from the start of the project to be responsible for each share of construction work. The organization structure is then designed according to each contractor's project execution needs. The whole structure shows distinctively separate divisions under each contractor's coordination. Each contractor supplies relevant manpower needed in the parts of organization under each one's responsibility.

Figure 1 depicts a typical non-integrated IJO organization structure designed for the execution of a bridge built across the Madura strait connecting Surabaya, the capital city of the East Java Province, and the island of Madura in Indonesia. The project was started in 2004 and completed in 2009. The IJO for construction execution involved a consortium of four local contractors (Consortium of Indonesian Contractors, or CIC) and a Consortium of Chinese Contractors (CCC). A functional organization structure was adopted. The organization consisted of three management levels (General Superintendent, managers, and construction operations level).

The CCC had the responsibility to build the Main Bridge, while the CIC was responsible for the construction of causeways and approach bridges on the Surabaya and Madura sides. Full authority was given to each of the contractors' consortia in construction work execution. However, only the General Superintendent had the authority to make decisions on changes in design and major engineering matters. The General Superintendent served as the head of the whole IJO organization as well as the CCC's part of the organization.

This type of organization structure design has advantages and disadvantages. One advantage is the absence of intervention of one IJO partner towards another in work execution. However, a transfer of knowledge between partners cannot be realized. This is a disadvantage for the local partner (CIC), as the construction of the main bridge (under the full responsibility of CCC, i.e., a foreign partner) requires capabilities and knowledge of sophisticated construction technology that could have been transferred to the local partner had the organization been of an integrated type. Due to internal problems of the local partner, an organization shift from non-integrated to integrated IJO occurred. The foreign partner then took over most of the authority and responsibility in construction execution.

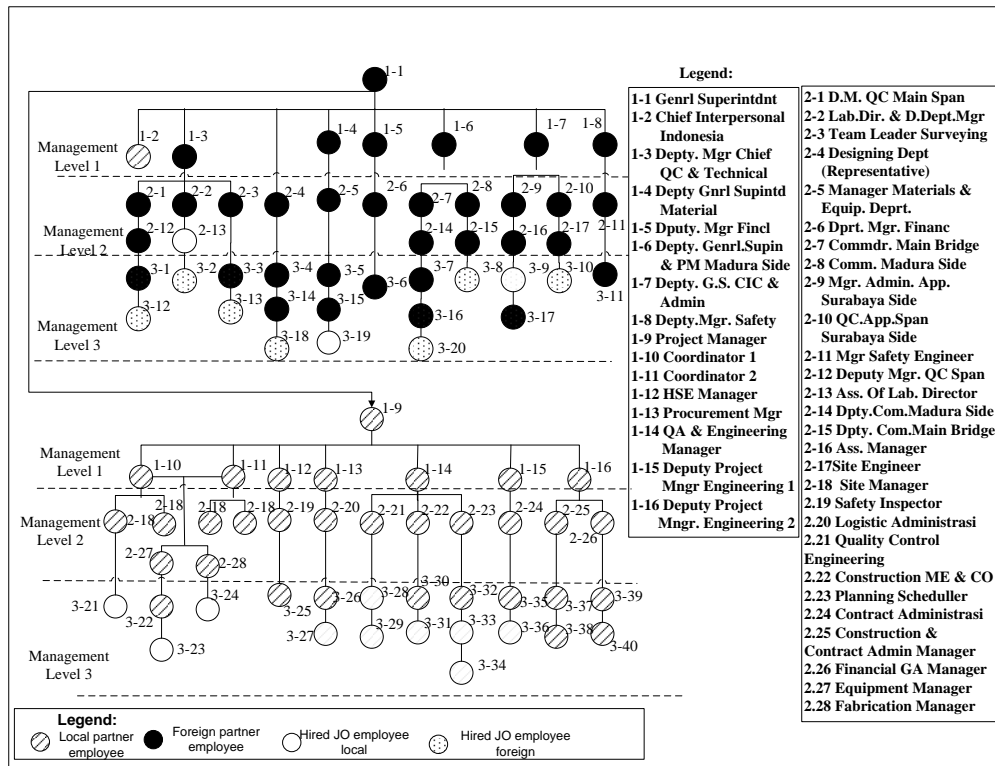


Figure 1. Typical non-integrated IJO organization structure.

Another infrastructure project in Indonesia that adopted a non-integrated IJO organization structure is a power plant construction project in West Java. The joint operation consists of a partnership between Chinese contractors and local state-owned joint contractors. The foreign partner has the responsibility to build, among other things, the main dam and the hydro-mechanical system; the local partner is responsible for the construction of the spillway, diversion tunnel, and irrigation outlet. A General Project Manager heads the whole IJO project organization, and this position is held by an officer of the foreign partner. The difference with the organization depicted in Figure 1 is that under the General Managers there are two Project Managers, each leading the foreign partner's and the local partner's part of the organization. The transfer of knowledge from the foreign partner to the local has not been facilitated in this organization structure.

Joint leadership in a non-integrated IJO was also adopted in toll highway construction projects in West Java. Chinese and Indonesian contractors are the partners in this IJO. The General Project Manager's position is held by an officer of the foreign partner, while the local partner shares the project's leadership by filling in the position of Deputy Project Manager. This joint leadership enhances good communication between the partners, and thus internal problems could be more effectively solved.

3 TYPICAL INTEGRATED IJO ORGANIZATION STRUCTURE IN INDONESIAN CONSTRUCTION PROJECTS

In an integrated IJO, partners work jointly in one solid functional organization and combine their resources in the organization's divisions according to mutual agreement. A number of highway construction projects in Indonesia adopt this type of IJO. Most have joint leaderships. They have three management levels: General Superintendent or General Manager, managers, and construction operations level. Besides having employees from each partner's company, these organizations generally also have workers who are specially hired by the IJOs. Figure 2 and Figure 3 depict examples of this type of IJO organization structure.

Figure 2 describes the IJO organization structure of a toll road construction project. This toll road is one of the accesses to Jakarta's port of Tanjung Priok. The IJO consists of a partnership between Japanese contractors and local state-owned contractor companies. Joint leadership at level management 1 is adopted. The foreign partners also share managerial positions at level 2. Meanwhile, the Indonesian partners provide manpower for almost all of level 3. Good horizontal and vertical communication is managed at each management level, thus few internal problems are encountered during project execution.

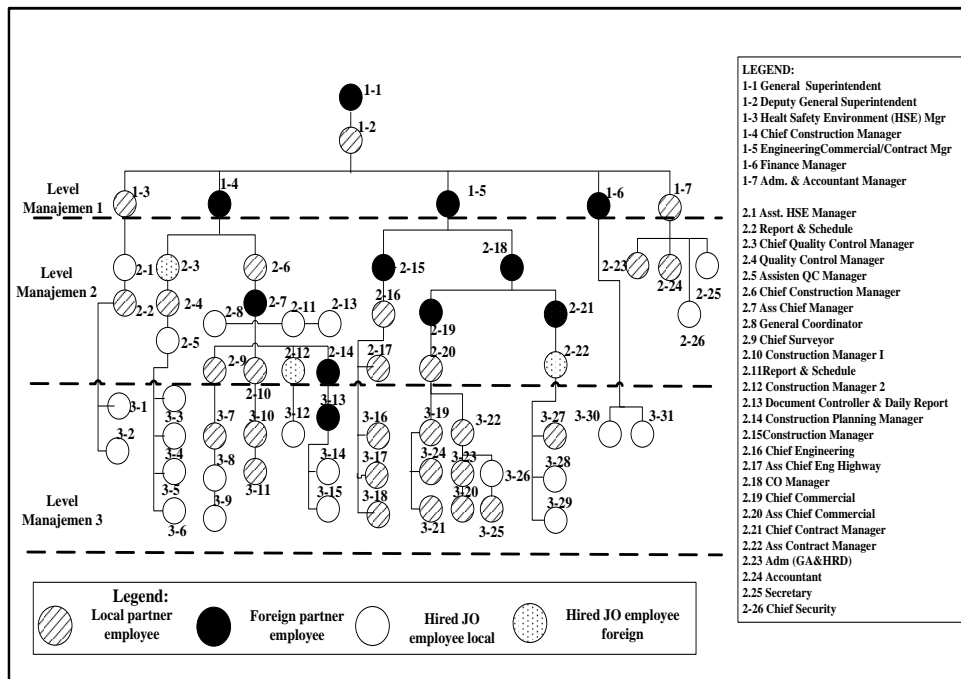


Figure 2. Typical integrated IJO organization structure – Type 1.

Figure 3 shows the IJO organization structure of another toll road construction project in Jakarta. Japanese contractors and state-owned contractor companies form a partnership in this IJO. Managerial positions are shared in all three levels. Some work

items are sub-contracted to local sub-contractors. But even though the foreign partners are also actively involved in the construction operations level, little transfer of knowledge occurred because the local partners had already mastered toll road construction technology.

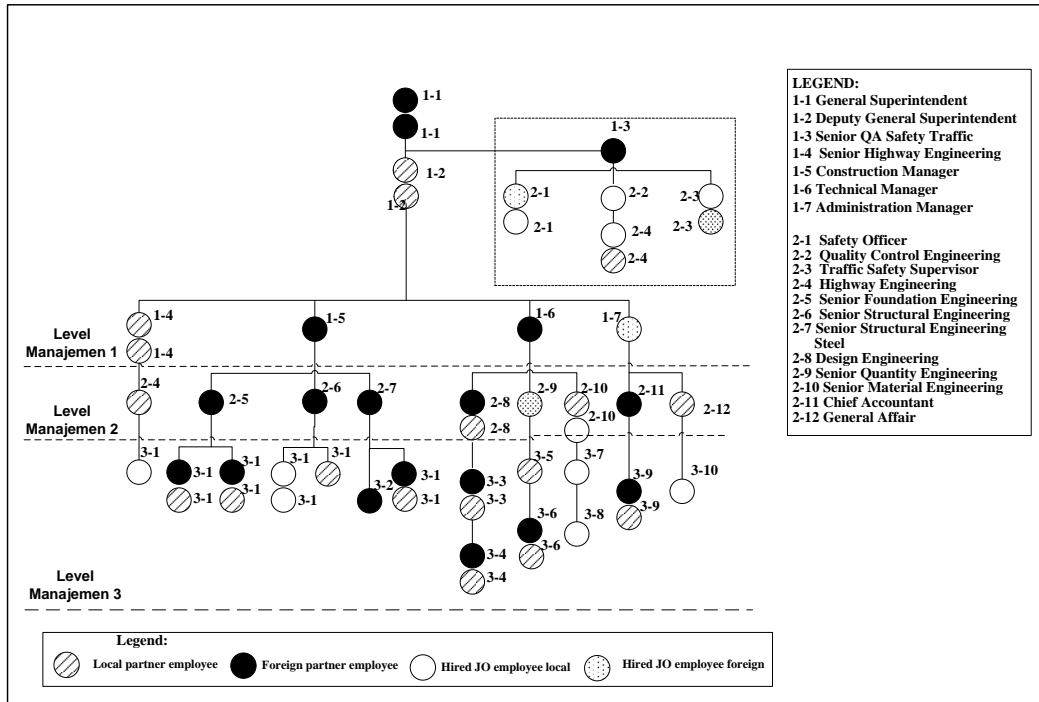


Figure 3. Typical integrated IJO organization structure – Type 2.

4 CONCLUSION

In Indonesia, integrated IJO organization structure has been mostly adopted for important highway construction projects. Meanwhile, for more complicated constructions, such as long-span bridges across the sea and power plants that include big dams, a non-integrated IJO organization is preferred. Foreign partners in this type of IJO organization are mostly responsible for the more complicated parts of the construction. A transfer of knowledge is not facilitated in non-integrated organizations due to lack of communication and interaction opportunities between the foreign and local partners.

The position of General Manager in the two IJO organization types is mainly held by a foreign partner officer. Good communications among partners mostly exist in integrated IJO organizations handling highway constructions. No transfer of knowledge is expected in these projects, as both partners have mastered the technology involved in highway construction.

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