A Comparative Study of Construction Joint Ventures in Australia and Malaysia

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Abstract

A Construction Joint Venture (CJV) refers to the collaboration of at least two construction organisations with a view to accomplishing mutually-agreed-upon objectives, wherein they share project risks, knowledge and resources. The Governments of Australia and Malaysia are encouraging and supporting local contractors to implement CJV approaches based on their expertise and experiences in construction. Although both countries fall into the Asia-Pacific region, but their experiences with CJVs might be different. A comparative study would help to indicate how well both countries have fared using this method. The aims of this research are to identify the reasons, perceived benefits and potential difficulties of implementing the joint venture approach, and to understand how the project performance on joint ventures are being measured.

Four in-depth case studies of CJV projects were carried out by means of interviews with project or contractor representatives to compare their perceived project performance and cost risk allocations. The results suggest that the most common barriers to CJV success in both Australian and Malaysian construction industries include differences in organisational policies, inconsistent management styles, a lack of mutual understanding between joint venture team members and a lack of mutually-agreed-upon conflict resolution mechanisms between joint venture contracting parties.

Keywords: Construction joint ventures, success factors.

Introduction

In construction industry today, the construction joint ventures (CJVs) have become one of the major organizational forms utilized in large-scale projects (Lin and Ho 2012). Due to the growing scale and complexity of construction projects, as well as technological advancements, organizations have begun to set up CJVs to utilize partner resources (Famakin *et al*. 2012; Zhao *et al.* 2012). Joint venture (JV) formation between construction companies has become one of the most commonly adopted methods in both developed and developing countries.

It has been argued that CJVs are very sensitive to regional conditions, as well as to the uncertainties of external environments such as political, economic, cultural and legal risks. There is also a wide variety of types of ventures, and the formation and operation of CJVs are different across countries (Park et al. 2011). Australia is a developed country whereas Malaysia is a developing country. However, both of them fall into the Asia-Pacific region; a comparative study would help to indicate how well both countries have fared using this

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joint collaboration method. The various experience of CJV in Australia has captured the authors' interests to pursue a study of PPP in Malaysia.

The overall aims of this research are to identify the perceived benefits and potential difficulties of implementing the joint venture approach, and to measure the impact of joint ventures on the project performances in Australia and Malaysia. It also attempts to examine the process and implementation of joint ventures in both Australia and Malaysia.

Construction Joint Ventures in Malaysia

Bank Negara's statistics indicate that Malaysia's construction sector remained robust in the third quarter of 2012 at 18.1% (BNM 2012). The Malaysian construction industry is expected to play a vital role in nation's economy, contributing 11.2% to the GDP growth in 2013, driven by the civil engineering sub-sector (CIDB 2013). The Malaysia government implemented the 10th Malaysia Plan (10MP), the Government Transformation Programme (GTP) and the Economic Transformation Programme (ETP), that will set the stage for a major national structural transformation towards that of a High-Income Economy. The plan which covers the period from 2011-2015, will potentially have a high impact on the Malaysian construction sector (RSM RKT Group 2012; PMD 2010).

Since the early 1990s, construction joint ventures in Malaysia evolved rapidly in order for both multinational construction firms and local government to achieve objectives (Mahmud and Yu 2009). There are established joint ventures between local contractors and foreign contractors (Adnan & Morledge 2004; Mahmud and Yu 2009). Malaysia is one of the leading countries in Southeast Asia involved in international joint ventures (Adnan & Morledge 2004; Adnan 2008). Over the years it has managed to attract a great deal of well-known multinational companies from around the world, for projects in both the private and public sectors focusing on infrastructure, civil engineering works, airports and hospitals (Mahmud and Yu 2009). Many large-scale construction projects in Malaysia have intended to be used the joint venture collaboration method for delivery including the Petronas Twin Towers, the Kuala Lumpur International Airport (KLIA), the Likas Specialist Hospital and Klang Velley Mass Rapid Transit (Adnan 2008; Adnan2004).

The Malaysian government is both encouraging and supporting local contractors to participate in regional and global markets based on their expertise and experience of building construction, infrastructure works, civil engineering works, mixed developments and airport works (Mahmud and Yu 2009; Adnan 2008). Malaysian construction sectors participate in a variety of construction projects in India, China, Singapore, Australia, South Africa and the United States (Adnan & Morledge 2004; Adnan 2008).

Construction Joint Ventures in Australia

The construction industry is the fourth largest contributor to Gross Domestic Product (GDP) in the Australian economy and plays a major role in determining economic growth. Prior to the 2008-09 financial year, the construction industry had steadily increased its share in the GDP from 6.2% in 2002-03 to 7.0% in 2007-08 (Australian Bureau of Statistics 2010). The rate of increase of total value of engineering and commercial construction work is expected to settle to 10% in 2012-13, after an increase of 14% in 2011-12, and an expected increase of 8% for the 2013-14 (Australian Industry Group 2012). Public investment in infrastructure projects has increased significantly as well, adding to the growth momentum of the Australian construction industry.

Joint ventures between construction organizations in Australia, both international and local partnerships, have become increasingly popular when delivering large-scale infrastructure construction projects. Example projects include the New Royal Adelaide Hospital (NRAH), the Southern Expressway Duplication, the Gateway Upgrade road and bridge project, and the Orange Hospital NSW (Cheung 2009; SA Health Partnership 2013; Infrastructure 2012). It is no secret that all levels of Australian government are finding it difficult to raise funds for critical and major infrastructure projects. Local governments encourage the private sectors to work together and to enter into joint venture arrangements for better outcomes (Australian Construction Resources 2013). The Australia Japan Business Co-operation Committee has undertaken a programme of activities to encourage the use of joint ventures for works in Australia and Japan (AJBCC 2011).

Four Case Studies by Interviews

The case study methodology has been adopted to identify the effectiveness of the joint venture approach used in Australian and Malaysian construction industries. Four case studies have been selected to explore how the practice in the construction industry compares to information obtained from the literature review, and to examine perceived benefits of joint ventures between parties. In order to obtain a better understanding of and up-to-date information using real-life examples of CJVs in both Malaysia and Australia, a series of interviews were conducted with joint venture contractors of the case study projects to examine current practices. Both quantitative and qualitative approaches were adopted and integrated in the interviews. The following projects have been selected and summarized in Table 1 below:

Table 1. Brief summary of CJV projects in Malaysia and Australia

Joint Venture Project	Description
MALAYSIA	
Sabah Women and Children's Nuclear Medical Centre and Radiotherapy Hospital (Likas Specialist Hospital)  **Figure 1 Likas Specialist Hospital** (Source: Yusof 2013)	Sabah Women and Children's Nuclear Medical Centre and Radiotherapy Hospital (Likas Specialist Hospital) is a completed joint venture project that incorporated the design, construction, completion, equipping, commissioning and maintenance of the Nuclear & Radiotherapy Medical Centre at Kota Kinabalu, Sabah, Malaysia. The design and construction of the project was delivered by Health Solutions (Malaysia) Sdn Bhd and Warisan Harta Property Development Sdn Bhd (Yusof 2013).
Client	Sabah Public Works Department
Commission Date	April 2008
Actual Completion Date	December 2012
Contract Sum	MYR223 million (AUD$74.3 million)
Private Consortium	Builder: Health Solutions (Malaysia) Sdn Bhd

	(Kuala Lumpur) and Warisan Harta Property Development Sdn Bhd (Sabah) (WPD – HSS JV) Quantity Surveying: Prokosman Konsultant
Location	Kota Kinabalu, Sabah, Malaysia.
Type of Contract	Design and build, Selective Tendering
Progress	Completed six months behind schedule due to design changes in façade of hospital
Extension of Time (EOT)	Granted according contract requirements. The original practical completion was June 2012. A penalty of MYR40,000 was enforced due to the delay.
Overall Performance	Behind schedule, within budget
Kuala Lumpur International Airport 2 (KLIA2)  **Figure 2 Entrance view of KLIA2** (Source: Malaysia KLIA2 2013)	The KLIA2, with a total area of 242,000 square meters, is built to be Malaysia's next-generation international airport hub, intended to provide seamless connectivity for both local and international low-cost and full-service carriers. It provides business-class services to accommodate AirAsia Airline's needs. The development of the new KLIA2 and Associated Works is located at KLIA Sepang, Selangor, Malaysia. The new KLIA2 terminal is being delivered by UEMC-Bina Puri Joint Venture, which consists of UEM Construction Sdn Bhd (UEMC) and Bina Puri Holdings Bhd.
Client	Malaysia Airports Holdings Berhad (MAHB)
Commission Date	2006
Expected Completion Date	April 2014
Contract Sum	MYR4 billion / AUD$1.33 billion
Private Consortium	UEM Construction Sdn Bhd (UEMC) and Bina Puri Holdings Bhd working together as UEM-Bina Puri JV
Location	KLIA Sepang, Selangor, Malaysia
Type of Contract	Design and Construct, Open Tendering
Progress	On-going. Behind schedule, previous practical completion was June 2013. 90% of construction is completed.
EOT	Granted until April 2014, due to design changes and ground conditions. No penalty of LAD.
Overall Performance	Time overrun and costs overrun due to upgraded the design to boost the capacity of 45 million passengers per year, up from original plan of 30 million.
AUSTRALIA	
New Royal Adelaide Hospital (NRAH)	The new Royal Adelaide Hospital (new RAH) will be the most advanced hospital in Australia and the single largest infrastructure project in the state's history. It is located at North Terrace, Adelaide. The new RAH has been designed to be a world-class health facility, and will lead South Australia's new patient-centred model of care, delivering safe,

Figure 3 New Royal Adelaide Hospital
(Source: SA Health Partnership 2012)

quality health services to the local community and throughout the state. The design and construction of the New Royal Adelaide Hospital is being delivered as a public-private partnership (PPP) and is managed by joint-venture partners Hansen Yuncken and Leighton Contractors (SA Health Partnership 2012).

Client	SA Health Partnership
Commission Date	2011
Expected Completion Date	2016
Contract Sum	AUD$1.85 billion
Private Consortium	Builder: Hansen Yuncken and Leighton Contractors (HYLC Joint Venture)
Location	North Terrace, Adelaide
Type of Contract	Design and Construct
Progress	On-going and on schedule, completion anticipated in 2016
Any EOT	None EOT as of November 2013
Overall Performance	On schedule; on budget

South Road Superway

Figure 4 Elevated road way of South Road Superway (Source: Adelaide Now 2012)

The South Road Superway project is the biggest single investment and the most complex road engineering construction project in South Australia. It is undertaken by a joint venture of John Holland and Leed Engineering and Construction. The project involves upgrading the stage two of the north-south transport corridor to deliver a 4.8 km non-stop corridor, including a 2.8 km elevated roadway from the Port River Expressway to Regency Road (Government of South Australia 2013).

Client	Department of Planning, Transport and Infrastructure (DPTI)
Commission Date	April 2011
Expected Completion Date	December 2013
Contract Sum	Overall Contract Sum AUD$842 million (including Property Acquisition). Contract sum of project: AUD$650 million
Private Consortium	John Holland (80%), Leed Civil & Engineering (20%)
Location	South Road, connecting the Port River Expressway to Regency Road north of Adelaide
Type of Contract	Design and Build, Open Tendering
Progress	On schedule, anticipated to completion in December 2013
EOT	EOT has not been required
Overall Performance	On schedule; on budget (budget very tight)

In order to understand the reasons of using CJV, the potential barriers and the critical success factors in adopting a CJV approach in construction projects in both Malaysia and Australia, as well as to measure the performance of CJV projects in both countries, the key findings from the four cases are summarised in Table 2 below which provides a brief summary based on the headings of reasons of establishing CJV, efficient risk allocation, project delivery, key performance indicators (KPIs) and critical success factors.

According to the individual ranking by the interviewees, the critical factors that lead to the success of the CJV projects were the Agreement of contract, financial stability, commitment, inter-partner trust, cooperation, communication and partners' experience. These critical success factor methodologies provide a good basis to identify possible solutions in seeking ways to improve CJV experiences.

Analysis of Project Outcome in Australia and Malaysia

The natures of the selected Australian and Malaysian case studies are same. Each case study projects has been or is being delivered by two building contractors. For companies to implement the CJV approach for project delivery, the reasons must be viable and the benefits evident. All case studies have demonstrated clear reasons for establishing CJVs for the projects. Reasons for establishing CJVs were discussed with building contractors' representatives as a part of the interviews. Their main reasons included the sharing of expertise or of resources, the transferring of technology and knowledge, the sharing of risks, and to strengthen financial capabilities. It is seen that both companies in the partnerships are enthusiastic about co-managing risks and having better corporate oversights, which could be due to the size and characteristics of management in the joint venture organization.

The optimum risk allocations have depended on the types and size of the projects. For Likas Specialist Hospital and South Road Superway, the optimal risks have been appropriately transferred to the party who can best manage it. Meanwhile, the risks in the KLIA2 and new RAH projects have been equally shared between the joint venture contracting parties.

All case studies are valuable in measuring the performance of the CJV projects through the identification of KPIs to indicate the success of the project. The success of a CJV project can be identified through time performance, cost performance, safety performance, and quality and risk management of the projects.

These include the importance of the agreement of contract between the joint venture contracting parties, the financial stability of the organizations, commitment, inter-partner trust, cooperation, communication and partners' experience.

The four case studies have delivered distinct project outcomes due to the different risk allocations, and the effectiveness of project risk management. It is seen that in both Australian case studies are on schedule and within budget. In comparison, both Malaysian case studies suffered delays in the construction project and overran costs. This is due to different management styles, design changes and an unstable project scope. According to the interviewee of the hospital project in Adelaide, the most important lesson that he has learnt from the joint venture project is the mutual understanding of the new JV organisation, including the organisational cultures of the partners. Whereas in Malaysia, one interviewee indicated that contractors have faced some different opinions in construction methods and communication delays. Table 2 below illustrates more in-depth comparative studies based on four interviews:

Table 2. Comparison of case study project outcomes in Australia and Malaysia

Case Study	Malaysia		Australia	
	Likas Specialist Hospital	**Kuala Lumpur International Airport 2 (KLIA2)**	**New Royal Adelaide Hospital (new RAH)**	**South Road Superway**
Interviewee	Interviewee A	Interviewee B	Interviewee C	Interviewee D
Tendering Method	Selective	Open	Open	Open
Procurement Method	Design and Build	Design and Build	Design and Build	Design and Build
Reasons for Establishing CJV	• Sharing of expertise • Sharing of resources • Transferring of technology and knowledge • Sharing of risks	• Sharing of experience • Sharing of resources • Strengthen financial capability • Sharing of risks	• Sharing of experience • Sharing of resources • Sharing of risks	• Transferring of technical expertise • Sharing of resources • Achieve financial backing
Efficient Risk Allocation	The risks have been allocated to the party most appropriate to efficiently manage the risks.	The risks are shared equally between joint venture contracting partners.	The risks are being shared equally between joint venture partners. HYLC had prepared a risk profile and risk management plan in advance for the new RAH.	The risks of this project, including construction and cost risks, sharing and transferring risks to the partner best equipped to manage the risk.
Project Delivery	The project was not completed on time due to design changes and delayed delivery of treatment equipment. A penalty of MYR40,000 (AUD$13,333) for liquidated damages was enforced.	Several components of the construction works were not completed on time due to unexpected ground conditions and variation works on the baggage handling system that necessitated extra time and cost.	The project is on schedule; there have been neither delays nor EOTs to date.	The project is anticipated to be completed in December 2013; no EOT has been required to date.
Key Performance Indicators (KPIs)	• Time performance • Cost performance	• Time performance • Cost performance	• Health and safety • Risks management • Quality control • Project time-line to agreed-upon schedule	• Safety consideration • Risks allocation • Cost • Quality • Program

Ranking of Critical Success Factor	Inter-partner trust Financial stability Communication Cooperation Commitment Partners' experience Agreement of contract Profit Management control Mutual understanding	Agreement of contract Commitment Communication Cooperation Financial stability Inter-partner trust Management control Partners' experience Profit Mutual understanding	Agreement of contract Mutual understanding Financial stability Cooperation Profit Commitment Inter-partner trust Communication Management control Partners' experience	Partners' experience Financial stability Agreement of contract Profit Management control Inter-partner trust Commitment Communication Mutual understanding Cooperation

Conclusion

The case study of Likas Specialist Hospital demonstrated that although Health Solution Contractors has experience with the construction of health care buildings, they were not familiar with the rules and regulations of the Sabah Government. Thus, they chose to establish a joint venture approach with Warisan Harta to share knowledge. The case study of Kuala Lumpur International Airport 2 illustrated that the major reasons of using the joint venture approach were to share capital and resources. Due to financial limitations, they decided to implement a joint venture approach with Bina Puri Holdings. The case study of the new Royal Adelaide Hospital illustrated that the reasons for implementing a joint venture approach were to share expertise, resources and risks between partners. The case study of the South Road Superway noted that John Holland was not familiar with the South Australian legislation for road projects; therefore, they chose to work with Leed Civil and Engineering in order to share knowledge as well as risks.

An appropriate risk allocation is essential for CJV efficiency, where risks must be well-managed by joint venture contracting parties. This can be done either by transferring the risks to the most appropriate party, or sharing risks equally among the joint venture contracting parties. The case studies of the Kuala Lumpur International Airport 2 (Malaysia) and the new Royal Adelaide Hospital (Australia) prepared risk management plans, and risks were being shared equally between joint venture partners. Meanwhile, risks in the Likas Specialist Hospital (Malaysia) case study and the South Road Superway (Australia) were allocated to the party best-equipped to bear it from commission to completion of the projects.

Data collected via case studies for projects in both Australia and Malaysia show that the major KPI elements used to indicate project performance are safety, cost and time performance, client satisfaction and quality of projects. It is seen in both Australian case studies, which both achieved positive outcomes, which the projects are on schedule and within budget. In comparison, both case studies from Malaysia suffered delays in the construction project and cost overrun.

In conclusion, the findings indicated that both Australian case studies achieved positive outcomes, measured by the fact that the projects are currently on schedule and within budget as of this report's finalization. In comparison, both Malaysian case study projects suffered delays in the construction project delivery and overran costs. Aside from these

differences, however, it is clear that views from both countries regarding specific attributes of collaboration in joint venture projects do not differ significantly, and the association between responses from the two countries is low.

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