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EFFECTIVE PARTNER SELECTION MODEL FOR CONSTRUCTION JOINT VENTURES IN SRI LANKA

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ABSTRACT

Construction Joint Venture (CJV) is a response to the complex and competitive environment which characterised the nature of construction industry. However, various disputes arose in CJVs which impede the successful completion of the construction project especially as a result of the ineffective partner selection. Nevertheless, the literature thus far has failed to provide an effective partner selection for the CJVs since none of the studies subjected to partner selection in CJVs. Hence, the research is aimed to investigate the existing practice of partner selection in order to develop a model for avoiding disputes in CJVs in Sri Lanka. Three rounds of Delphi survey were conducted through the adoption of quantitative approach with the participation of experts who have plenty of experience and adequate knowledge on CJVs. The identified joint venture (JV) partner selection criteria from literature synthesis were the base for the adoption of the CJV partner selection criteria developed using the relative importance index. Consequently, effective CJV partner selection model was proposed based on the effect of dispute avoidance. The concern of literature and industry experts proved the absence of the standard partner selection criteria for the CJVs. However, guidelines for selecting partners provided in tender documents were followed by only contractors in order to fulfil the required criteria merely towards winning the project. Thus, the partner selection model proposed in this research provides a basis to select the most appropriate and the best partner for CJVs by evaluating all particular skills and capacities which may avoid having the future disputes.

***Keywords**: Construction Joint Ventures; Disputes; Partner Selection; Selection Model.*

1. INTRODUCTION

Creating JVs is a response to the challenges of complex business environment in order to succeed in this global arena (Tatoglu, 2000). Hence, the JV approach is necessitated for construction organisations for fulfilling their desire to enter new construction markets around the world (Mohammed, 2003). Thus, due to the growing scale and complexity of construction projects, organizations have begun to set up CJVs to utilize the resources of

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partners (Zhao *et al*., 2013). However, Habib and Burnett (1989) found that managing the JV has proven to be particularly difficult. CJVs are identified as one of common sources cause conflicts in construction industry (Kumaraswamy, 1997).

If conflicts are not well managed, they turn in to disputes (Cakmak and Cakmak, 2014). Disputes that occurred in CJVs may cause project delays, undermine team spirit, increase project costs, and damage continuing business relationships (Cheung andSuen, 2002). Disputes are main factor which prevent the successfully completion of the construction project (Cakmak and Cakmak, 2014). The dispute avoidance is the best technique to deal with the disputes (Kumaraswamy, 1997). However, potential reason for dispute occurrence in any JV is the differences between partners (Williams and Lilley, 1993; Munns *et al*., 2000). In order to gain success towards the JVs, the paramount importance lies with the selection of an appropriate partner (Williams and Lilley, 1993). Thus, Gale and Luo (2004) identified that the selection of a suitable partner is the most crucial factor and the first step leading JVs towards success after deciding to form a JV. Furthermore, Geringer (1991) demonstrated that partner selection is an important variable in the formation and operation of JVs. Therefore, Habib and Burnnet (1989) argued that JVs should select partners carefully much like a marriage (Geringer, 1991).

Even though partner selection has been recognised as a critical factor that affect to the disputes in construction industry, none of researches have been explored on the disputes in CJVs. Hence, literature gap remaining on the partner selection method on CJV especially as a method of avoiding disputes. Therefore, the purpose of this research is to propose a partner selection model for CJVs with the aim of assisting construction firms to prevent the disputes that adversely affect to the performance of the firms.

2. LITERATURE SYNTHESIS

2.1 CONSTRUCTION JOINT VENTURES

The desktop literature on CJVs in building and construction unveils that there is no consentient definition for CJVs (Hong and Chan, 2014). Thus, the scope and definition of CJV are not internationally standardised (Prasitsom and Likhitruangsilp, 2012). Ashley (1980) defined that "CJV is a partnership of contractors who have formed a business alliance for the purpose of undertaking a project" (p.267) only respect to CJVs formed by contractors. Girmscheid and Brockmann (2009) specified that CJVs are non-equity alliances which are based on contracts and non-ownership relationships. However, CJV differs from the concept of alliance as it is based on project agreements (Badger *et al*., 1993). By collaborating and analysing all related circumstances of CJVs, in this research the CJV can be defined as a temporary project based contractual arrangement or agreement between two or more parties of construction such as AEC firms for operating and obligating specific construction project.

2.2 PARTNER SELECTION IN CONSTRUCTION JOINT VENTURES

The detailed partner-selection process is considered as an important role in ensuring continued cooperation between the two companies (Williams and Lilley, 1993). The choice of the most suitable partner is vital to the partner selection process (Hitt *et al*., 2000) since performance outcomes of the JV will be more significantly considerably influenced by the nature of the chosen partner (Geringer, 1991; Glaister and Buckley, 1997). Furthermore, specific chosen partner can affect in the entire mix of available skills

and resources, the operating policies and procedures, and the short- and long-term viability of JV (Geringer, 1991).

2.2.1 Partner Selection Criteria

Several criteria need to be considered while choosing partners for a particular project (Ozorhon *et al*., 2007). Two-fold typology of partner selection criteria as task related and partner related criteria is introduced by Geringer (1991) for partner selection as task related criteria and partner related criteria. The task related and partner related dimensions are distinguished in partner selection criteria for providing better understanding on partner selection process and procedures used by firms to select partners (Tatoglu, 2000). In particular, criteria associated with operational skills and resources that JV requires for competitive success are considered as task related criteria and criteria associated with efficiency and effectiveness of partners' cooperation treated as partner related criteria (Geringer, 1991).

Almost all researchers who have studied on JV partner selection such as Al-Khalifa and Peterson (1999), Glaister, 1999, Glaister and Buckley (1997) and Tatoglu (2000) use the two-fold typology that Geringer (1991) introduced as a base in reviewing. Therefore, the partner selection criteria stated in Table 1 is adopted in this research.

Table 1: Partner selection criteria

Task related partner selection criteria	Partner related partner selection criteria
• Access to technology	• Experience in technology applications
• Access to knowledge of production process	• International experience
• Access to knowledge of local culture	• Financial status/resources
• Access to knowledge to local market	• Management in depth
• Access to regulatory permits	• Partner's ability to negotiate with government
• Access to labour	• Relatedness of partner's business
• Access to product itself	• Complementarity of partner's resource contribution
• Access to distribution channels	• Established marketing and distribution system
• Access to materials/natural resources	• The partner company's size or structure
• Access to links with major buyers	• Trust and compatibility between the top management teams
• Access to brand names	• Degree of local favourable past association between partners
• Access to capital	• Reputation
• Partner's ability to raise funds from local institutions	• Partner's national or corporate culture

Sources: Geringer (1991); Glaister and Buckley (1997); Tatoglu (2000)

As per Table 1, the partner related criteria which comprised of thirteen number of task-related criteria and thirteen number of partner-related criteria was selected for this research based on the criteria reviewed by the authors above-stated. However, all the criteria Table 1 includes, result of the criteria that introduced by Geringer (1991), Glaister and Buckley (1997) and Tatoglu (2000).

3. RESEARCH METHODOLOGY

Quantitative techniques applied for this research as the research is aimed to identify partner selection criteria that effect on dispute avoidance. Delphi technique was adopted as data collection technique which provides collaborative data at the aim of obtaining most reliable census from group of experts. The expert panel for carrying out the Delphi questionnaire survey was selected through convenience sampling method in non-probability sampling technique as according to cost/time basis approach since the research has to be done in limited cost and time constraints. Thus, 30 experts were selected from the construction industry including Project Managers (6), Contract Administrators (5), Quantity Surveyors (12) and Engineers (7), who have more than five years of working experience in the construction industry especially in CJVs. Kincaid (2003), Skulmoski *et al*. (2007) and Xia and Chan (2012) stated that three round Delphi is typical and usually used by most of researches. Thus, three or more rounds are required only for the researches which are conducted by heterogeneous sample (Skulmoski *et al*., 2007). Furthermore, Delbecq *et al*. (1975) demonstrated that two or three iteration Delphi is sufficient for most research. Table 2 illustrates the entire format of the tree Delphi rounds in terms of instrument, purpose, experts and database.

Table 2: Format of Delphi rounds

	Round one	**Round two**	**Round three**
Instrument	Questionnaire 1	Questionnaire 2 And CJV Partner selection model	CJV Partner selection model
Purpose	Gathering partner selection criteria which are applied in Sri Lankan CJVs	Ranking CJV partner selection criteria on dispute avoidance	Developing and validating CJV partner selection model
Number of experts selected	30	30	30
Data base for the design of Questionnaire/ model	Literature review	Results gained from round one	Results gained from round two questionnaire survey

In Delphi round one and two, the questionnaires were used to collect the data. Thus, the results of round one was validated in round two and results of round two validated in round three through the model. The purposes of every round were pointed out how the objectives of the research are accomplished with proceeding Delphi rounds. The data collected through questionnaire surveys in Delphi method and document reviews were analysed using relative importance index (RII). RII was used as an analysis technique for questionnaire responses, which has been used by many researchers to determine the relative significance of the attributes (Tayalan *et al*., 2014). RII is calculated using equation (01).

$$RII = \frac{\Sigma W}{A \times N}, (0 - index < 1) \qquad (01)$$

Where, w = weighting given to each factor by the respondents; A = highest weight; N = total number of respondents.

In the research, the criteria's RII values more than 0.80 considered as 'Most Important', more than 0.6 recognized as 'Important', more than o.4 considered as 'Somewhat important', more than 0.2 considered as 'Little important' and values less than 0.2 considered as 'Not important' which obtained from using Five-Likert scale (Anuruddhika *et al*., 2016).

4. DATA ANALYSIS AND FINDINGS

4.1 INVESTIGATING THE EXISTING PRACTICE OF PARTNER SELECTION: DELPHI ROUND ONE

The current practice of partner selection investigated through the questionnaire survey results that obtained by the experts on evaluating the base used to select the partners (refer Table 3), the disputes arisen due to ineffective partner selection and exploring documents that they used to select partners.

Table 3: Existing partner selection practice

Base of CJV partner selection	Number of responses	Percentage of responses (%)
Previous experience	28	93.33%
Contacts	27	90.00%
Other	0	0%
Contacts and previous experience	27	90.00%
Non response	2	6.67%

According to Table 2, it is confirmed that the Sri Lankan CJVs are not practised any standard process for partner selection in forming CJVs as the contacts and previous experience cannot be considered as proper partner selection practice. Therefore, it is established that providing a CJV partner selection model is an essential need for the construction industry. As a result of not practising standard procedure to select partners, various disputes are arisen in the CJVs due to the ineffective partner selection. The common disputes occurred in CJVs due to inefficient partner selection which was contented by the experts are listed in Table 4.

Table 4: Common disputes occurred in CJVs

Reasons	Disputes
Inefficient partner selection	• Disputes about the scope of works • Disputes regard to work and profit sharing • Clash of cooperate culture /Cultural disputes • Financial disputes • Disputes about the intended capabilities and actual capabilities of the partner • Disputes on coordination • Disputes with clients due to inappropriate partners • Dispute arising in Construction stage regards to responsibility matrix • Dispute arising regards to warranties and undertaking

Hence, it is confirmed that effective partner selection leads to dispute avoidance of CJVs since more disputes occurred due to the inefficient partner selection. Thus, the experts demonstrated that ineffective partner selection affects every project circumstance interrupting effective project completion. Moreover, the disputes that occurred due to ineffective partner selection effect all aspects of the project; time, cost and quality. Hence, practising effective partner selection, the project can be completed in a profitable and dispute avoidable nature as the CJV performance is enhanced. Although it is found that no any standard guidelines practised by the construction organisations in order to select the partners for the CJVs, the guidelines provided in the tender documents are fulfilled by contractor organisations in selection of CJV partners. Thus, it is essential adhere criteria as according to the tender documents of projects especially in funded projects and public projects in order to win the project. The guidelines that provided by the tender documents can be listed as Asian Development Bank (ADB) guidelines, National Procurement Agency (NPA) guidelines, guidelines on government tender procedure and world bank guidelines. However, these guidelines are limited to contractor organisations as well the tender guidelines only used in CJVs which form to bid for projects. Therefore, it demonstrates that any standard guideline of organisation which can be used for forming CJVs in any circumstance is not practised by the organisation to select the CJV partners.

4.2 IDENTIFICATION OF PARTNER SELECTION CRITERIA APPLIED IN CONSTRUCTION JOINT VENTURES: DELPHI ROUND ONE

In the same Delphi round, the gathered JV partner selection criteria (refer Table 1) were surveyed, analysed and ranked on the applicability in the CJVs. The findings of the survey are presented in Table 5.

Table 5: Applicability of JV partner selection criteria in CJVs

Category	Partner Selection Criteria	RII	Rank
Task related criteria	Access to capital	0.87	1
	Access to technology	0.85	2
	Access to links with major clients	0.80	3
	Access to regulatory permits	0.78	4
	Partner's ability to raise funds from local institutions	0.77	5
	Access to materials/natural resources	0.73	6
	Access to transportation	0.72	7
	Access to product itself	0.70	8
	Access to brand names	0.69	9
	Access to labour	0.68	10
	Access to knowledge to local market	0.35	11
	Access to knowledge of local culture	0.33	12
	Access to knowledge of production process	0.32	13
Partner related criteria	Financial status/resources	0.94	1
	Management in depth	0.88	2
	Experience in technology applications	0.85	3

Category	Partner Selection Criteria	RII	Rank
	Reputation	0.84	4
	Complementarity of partner's resource contribution	0.83	5
	Degree of favourable past association between partners	0.79	6
	The partner company's size or structure	0.75	7
	Partner's national or corporate culture	0.74	8
	Trust and compatibility between the top management teams	0.73	9
	Established marketing and distribution system	0.69	10
	Partners ability to negotiate with government	0.61	11
	International experience	0.33	12
	Relatedness of partner's business	0.32	13

According to Table 5, access to capital is the top rank in task-related criteria, showing the highest RII (0.87). Subsequently, access to technology and access to link with major clients are the top ranks donates to RII of 0.85, 0.80 in sequence. In task-related criteria, access to knowledge of production process has the lowest rank contributed to lowest RII (0.32) values. Thus, the partner-related criterion of financial status/ resources is the highest rank in partner-related criteria showing RII of 0.94. Further financial status/ resources is the topmost criteria of all partner selection criteria which takes highest RII values of analysis. Relatedness of partner's business is given the lowest rank in partner-related criteria due to its lowest RII (0.32) values. The criteria which have more than RII value 0.60 are selected for the Delphi two round considering the lesser values other criteria have. Since the criteria which have RII values more than 0.4 comprised of 'most important', 'important' and 'somewhat important' criteria, the selected partner selection criteria for Delphi round two are comprised above-stated criteria, not including 'little important' and 'not important' criteria.

4.3 EVALUATION OF PARTNER SELECTION CRITERIA ON DISPUTE AVOIDANCE: DELPHI ROUND TWO

The analysis of selected partner selection criteria in Delphi round one in term of applicability in CJVs on dispute avoidance is illustrated in Table 6.

According to Table 6, the topmost partner selection criteria of the task-related criteria is exacted by the criterion of access to capital with the highest RII value (0.73). Access to transportation is the lowermost criteria that effects avoiding disputes in CJVs respect to having lowest RII value (0.45) in task-related criteria. Besides this criterion can be considered as the minimally effected criterion to dispute avoidance in CJVs compared to all task-related and partner-related criteria. In partner-related criteria, the topmost criterion is obtained by financial status/ resources regard to its RII value of 0.87. The partner-related of financial status/resources, experience in technology applications and complementarity of partner's resources are having high WMR and RII values rather than the task-related criteria. Hence these criteria become topmost criteria in partner selection which effects dispute avoidance in CJVs. Established marketing and distribution system is the bottom criterion which has 0.48 RII value. The criteria that have RII values more

than 0.6 which considered as 'important' criteria selected for the model development of research.

Table 6: Evaluation of partner selection criteria on dispute avoidance

Category	Partner Selection Criteria	RII	Rank
Task-related criteria	Access to capital	0.73	1
	Partner's ability to raise funds from local institutions	0.69	2
	Access to materials/natural resources	0.65	3
	Access to technology	0.62	4
	Access to brand names	0.60	5
	Access to regulatory permits	0.59	6
	Access to links with major clients	0.58	7
	Access to labour	0.55	8
	Access to product itself	0.47	9
	Access to transportation	0.45	10
Partner-related criteria	Financial status/resources	0.87	1
	Experience in technology applications	0.86	2
	Complementarity of partner's resource contribution	0.81	3
	Degree of favourable past association between partners	0.75	4
	Partners ability to negotiate with government	0.74	5
	Management in depth	0.73	6
	Reputation	0.72	7
	Partner's national or corporate culture	0.68	8
	Trust and compatibility between the top management teams	0.67	9
	The partner company's size or structure	0.58	10
	Established marketing and distribution system	0.48	11

4.4 DEVELOPMENT AND VALIDATION OF PARTNER SELECTION MODEL: DELPHI ROUND THREE

Table 7 demonstrates the developed partner selection model for CJVs in construction industry. Hence, the model was developed with regards to the minor changes supposed in the validation by the experts.

Table 7 depicts the partner selection model that developed from the analysis of the criteria are arranged in a successive manner based on the dispute avoidance in CJVs. Thus, the RII value obtained from the data analysis and the percentages which gained from the selected criteria's RII values shown in Table 7. Hence, the effect of disputes avoidance regard to each criterion is delivered in terms of RII and percentage from the partner selection criteria model contained. Therefore, adhering to the model, the organisation

gains the ability to value the dispute avoidance that CJV can encounter in terms of the criteria which they used for the CJV partner selection.

Table 7: Construction joint venture partner selection model

Partner Selection Model		
	RII	**Percentage**
Task-related criteria		
Access to capital	0.73	7%
Partner's ability to raise funds from local institutions	0.69	7%
Access to materials/natural resources	0.65	6%
Access to technology	0.62	6%
Access to brand names	0.60	6%
Partner-related criteria		
Financial status/resources	0.87	9%
Experience in technology applications	0.86	9%
Complementarity of partner's resource contribution	0.81	8%
Degree of favourable past association between partners	0.75	7%
Partners ability to negotiate with government	0.74	7%
Management in depth	0.72	7%
Reputation	0.70	7%
Partner's national or corporate culture	0.68	7%
Trust and compatibility between the top management teams	0.67	7%
Total	**10.09**	**100%**

5. CONCLUSIONS AND RECOMMENDATIONS

CJV is a popular collaborative form of establishment in the construction industry due to the numerous benefits it accumulates in order to sustain in the competitive complex business environment. The partner selection is a crucial step in CJV formation as the success of the CJV highly depends on it. The partner selection global practice of JV was comprehensively analysed through literature and the JV partner selection criteria which are in general context of JVs gathered from the current literature. Based on the JV partner selection criteria of the research gained as literature outcome, the CJV applied partner selection criteria developed in Delphi round one. In addition, the existing partner selection process identified in same round. Therefore, it was confirmed that any standard or regular guideline or criteria not practised by the construction organisations to select CJV partners. However, the contractor organisations adhere to the CJV partner requirements of tender documents when provided in order to bid for a project. Thus, the disputes arisen due to ineffective partner selection identified confirmed that the effective partner selection lead a CJV to dispute avoidance.

As a result of Delphi round two, the partner selection criteria evaluated on the dispute avoidance in CJVs and effective partner selection criteria for model development was gained accomplishing the objectives of the research. Therefore, in order to provide effective CJV partner selection for construction industry, an effective partner selection

model is developed as an ultimate outcome of the research together with the expert validation in Delphi round three. The model was presented as an effective partner selection model for CJVs with the aid of experts' suggestions that encountered through the validation for the betterment of the construction industry. Thus, this partner selection model will be a guideline for CJVs in order to succeed in the construction industry where no any standard or effective guideline was found. Accordingly, the partner selection model proposed in the research provides a base to select the most appropriate and best partner evaluating his all particular skills and capacities together with avoiding disputes in CJVs.

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