

DEVELOPING A METHODOLOGICAL APPROACH FOR CRITICAL SUCCESS FACTOR FOR JOINT VENTURE PROJECT IN MALAYSIA

Hamimah Adnan¹, Ismail Rahmat² and Roy Morledge³

^{1,2}Faculty of Architecture, Planning and Surveying, Universiti Teknologi MARA, Shah Alam, MALAYSIA

³Nottingham Trent University, UNITED KINGDOM

Mimad856@gmail.com

ABSTRACT

Construction joint ventures have attracted a lot of research over the last decades. Since the early 1990s, construction joint ventures have developed and are evolving rapidly in Malaysia. There has been relatively little empirical research into the success factors associated with joint venture projects and there is a need to identify these success is to be assured. The authors review the concept of Critical Success Factors and revisit the corresponding methodology to assist in the establishment of a framework of factors considered vital to the local and foreign contractors. A previous study identified some Critical Success Factors (CSFs) of JV projects through literature review and questionnaire surveys. However the concept of critical success factors has been developed further to identify problems associated with the practical application theory in its current form. Concerns are raised regarding subjectivity, bias, and failures in data processing, changing political, economic, social and technological environments, ambiguous definitions, and lack of adequate qualitative performance measures. It is submitted that factors may fall into one of two categories, labelled Failure Reduction Criteria (FRCs) and Critical Success Factors (CSFs).

Keywords: Critical Success Factor, Failure Reduction Criteria, methodology, Joint venture, Malaysia

1. INTRODUCTION

A joint venture is a procedure used to respond to specific business phenomena such as access to new markets, specific government policy, business capacity, technology transfer or economies of scale. An international joint venture is a separate legal organizational entity representing the partial holdings of two or more parent firms, in which the headquarters of at least one is located outside the country of operation of the joint venture.

Construction organizations have extensively used international JVs as a vehicle to enter new construction markets around the world (Mohammed 2002). The number of international construction joint ventures is growing worldwide at an increasing pace, especially in developing countries (Lim and Liu, 2001). The increasing magnitude, complexities and risks associated with major construction projects have brought together organizations with diverse strengths and weaknesses to form JVs to collectively bid and execute projects (Kumaraswamy, 2000). This entity is subject to the joint control of its parent firms, each of which is economically and legally independent of the other.

There are two basic organizational modes of alliance: equity joint ventures (EJVs) and non-equity JVs (NEJVs).EJV are created when two or more partners join forces to create a newly incorporated company in which each has an equity share and expects an appropriate allocation of dividend as compensation. This is represented by the EJVs directors, and the active participation in the decision-making activities of the venture.

NEJVs, in contrast, are agreements between partners to cooperate in some way, but they do not involve the creation of new firms. In NEJV sharing or exchange of equity may occur between partners. In NEJVs the compensation to each firm may be less dependent on the level of profits earned than in EJVs. For instance, it may be based on the percentage of output consumed, but there is at least a moderate degree of inter-organizational dependence.

A joint venture must be assembled by careful analysis of the economic, political, social and cultural environment within which the venture will be implemented and managed. A planned approach necessitates a thorough and careful evaluation of these aspects by both partners to ensure successful implementation. This study will look into critical success factors associated with the successful implementation of JV's within the Malaysian construction industry. This entity is subject to the joint control of its parent firms, each of which is economically and legally independent of the other.

1.1 Theoretical Perspective of Forming a JV

It is important for a company to understand clearly why it wants a JV. Theoretically, there are three approaches, which especially help to clarify the motivations as well as the goals of IJVs. There are as follows;

(1) Transaction Costs Theory

Transaction cost theory is a concept developed by Williamson (1975) to explain why firms acquire some services or goods via the market whilst other activities are absorbed within the hierarchy of the firm, or internalised. Transaction cost theory explained that where the market transaction is costly in terms of price or unpredictability and where the company finds it difficult to assess the correct place for a service then there will be a tendency to create an in-house capability rather than depending on the market. Transaction costs are those which are incurred in arranging, managing and monitoring transactions across markets, such as the costs of negotiations, drawing up contracts, managing the necessary logistics, and monitoring accounts receivable. Williamson proposes that firms choose how to transact according to the criterion of minimizing the sum of production and transactions cost.

Luo (1999) argued that if market transactions are still too uncertain but the costs of acquisition or creating an in-house capability are prohibitive, the appropriate organizational solution in these circumstances might be either a JV (i.e. separate entity with equity owned by both parents) or a legal contract. However, the legal contract as a solution may be flawed because of uncertainty over whether the supplier or contractor is performing efficiently, passing on information or sharing new technology. Transaction cost theory was extended to JV. Kogut (1988) argues that a JV addresses this issue by creating a superior monitoring mechanism and alignment of incentives to reveal information, share technologies and guarantee performance.

(2) Strategic Behaviour Approach

Strategic collaboration between firms in the form of JVs, are seen as necessary in two fundamental ways which are to reduce the costs of investment in entering new markets and in developing new products and to use a joint venture to reduce the threat of new entrants or competition by depriving competitors of valuable allies.

JVs, as a form of alliance, tend to provide strategic strengths to the firm to enter new markets and new areas of technology. "It takes so much money to develop new products and to penetrate new markets that very few companies can go it alone in every situation". The strategic behavior approach focuses on how firms become more competitive based on profit maximization through sustainable competitive advantage. Thus, multinational corporations (MNCs), motivated by this goal, go international primarily to acquire low cost, labour-material, and obtain scale economies.

Strategic and economic benefits are obvious considerations for entering a JV. To achieve these benefits, the parent firm's capability and the readiness of the HR function should also be taken into

consideration since both are essential core competencies of firms that can help IJVs develop above-average performance in a cooperative mode. Commitment to do business in this mode must be realistically addressed throughout all levels of the organization.

(3) Organizational Learning

A modern form of strategic behavior in IJV's includes looking at the sustainable competitive advantage of each firm's core competencies and attempting to develop synergistic power through organizational learning whilst retaining the important aspects of each partner's skills. This approach focuses particularly on the areas of scale economies and the experience curve that can benefit both parent firms through an IJV. Fixed costs such as Research and Design Development, manufacturing, engineering, and marketing can be shared among the partners.

Furthermore, IJVs can benefit from the use of a partner's specialization in, for example, market research, product design and /or low-cost distribution. The process of organizational learning is spread throughout the life cycle of the IJV. Many IJVs have failed because of poor understanding between the partners of either their ways and practices or their business and technical skills. The purpose of organizational learning is to stop this happening.

JVs are good organizational forms when one or both firms need to acquire new capabilities or to acquire the other's know-how, or one firm wishes to benefit from the other's knowledge or other advantage whilst maintaining its own capabilities.

The objectives for forming a joint venture are as follows;

- (1) Market Expansion
- (2) Limiting the Risk Exposure of the Parents Companies
- (3) Sharing resources, including technology know-how, skills and techniques.
- (4) International aspects
- (5) Strategic/Competitive Benefits
- (6) Financial benefits

2.0 AIMS OF THE RESEARCH

The aim of this study is to identify the primary factors, which support the successful application of joint venture arrangements in construction projects in Malaysia. The basic research question focuses on whether it is possible to identify these factors by the adoption of a robust and replicable methodology and if identifiable, whether these factors can be ranked and weighted and considered critical. The results of this study are expected to provide useful guidelines for forming and operating effective and efficient joint ventures both in Malaysia and in other similar economies.

3.0 CONSTRUCTION JOINT VENTURE PROJECTS IN MALAYSIA

Joint ventures are established to take advantage of the economic, political and social condition prevailing in a particular economy. In Malaysia's case, international firms came to its shores mainly because of its political stability, economic growth and a relatively low cost of labour and other resources. Construction joint ventures in Malaysian are becoming increasingly popular both in multinational construction firms and local government in order to achieve their individual objectives. There are already established joint ventures between two or more indigenous contractors (local and local) and also between indigenous local and foreign contractors.

Malaysia's booming economy over the last ten years has spawned massive developments thus, creating, an investment environment. Over the years, Malaysia has managed to attract a good many well-known multinational companies from Japan, Taiwan, Korea, United States, United Kingdom, France, Australia, Germany and others. These projects have included work for public and private clients comprising infrastructure, civil engineering works, residential and non-residential building work. Foreign firms are often required to bid with local partners on large infrastructure projects and a JV bid must have

at least 30% bumiputera (indigenous Malay) participation. The total value of the projects awarded to foreign contractors from 1997-2000 was Ringgit Malaysia 17.5 billion (GBP 117 billion) with a total of 121 projects (CIDB 2002) from the total value of contract works as in year 2000 of Ringgit Malaysia RM 39.4 billion (GBP 264 billion) with 4,162 projects. Foreign Participation in the Malaysian Construction Industry

Foreign investments were encouraged by the government to stimulate the growth of Malaysian industries (Abu Bakar, 1997). She argued that besides stimulating growth, transfer of technology was also expected to accompany these foreign investments. Foreign contractors have been a feature of the Malaysian construction industry since the early years of post independence (Abdullah, 1999, p116).

During the 1960's the Government encouraged towards foreign participation, and observations revealed that the construction industry had also opened its doors beyond domestic construction contractors. The foreign contractors were focusing on housing development. The British and Swedish were brought into the country to introduce the prefabricated housing technology and these firms were partnered with subsidiary companies in the Johor and Selangor State Economic Development Cooperation to undertake the development of several public housing projects.

This tremendous increase in foreign participation was brought about by the implementation of the "Look East Policy" and "Open Door Policy". In the 1990s, the foreign expansion of construction activities following the rapid industrialisation programmes has intensified the participation of foreign contractors. Joint ventures with local contracting firms was encouraged. Major JV projects undertaken with foreign participation in the 1990s to 2004 include:

- The largest package of the Kuala Lumpur International Airport- Consortium of Perspec (Malaysian) and Taisei-Kajima-Shimizu-Hazama (Japanese)
- System 1 of LRT –Taylor Woodrow (British) and AEG (German) provided the specialist works
- Tower 1 of the Petronas Twin Towers-consortium of MMC Engineering Services, Ho Hup Engineering (Malaysian), J.A Jones Construction Co. (American), Hazama Corporation and Mitsubishi Corporation (Japanese)
- Tower 2 of the Petronas Twin Towers- consortium of Syarikat Jasatera (Malaysian), Samsung Engineering & Construction and Kuk Dong Engineering & Construction (Korean)
- Electrified Double Track project between Rawang and Ipoh Infrastructure works-Bored Piling Works for Bridges (Germany)
- Manjung 2100 MW Coal Fired Power Station (Jetty Delivery System) (German)
- Tuanku Jaafar Power Station (Port Dickson) Rehabilitation Project 1 Contract. (Japanese)
- Proposed Multimedia Super Corridor Head Office and R &D Centre, Sepang, Selangor (Japanese)
- Construction of University Malaysia Sarawak, Malaysia Development Project- Stage 1 of Phase A (Japanese)

3.1 Involvement by Country

The number of registered foreign contractors in Malaysia has been showing a steady increase with 104 contractors registering their firms in 2001 and 132 registrations were processed and approved in 2002. These statistics represent 18.3% over these two consecutive years. In terms of 'country of origin', the majority of these contractors were from Japan, Singapore and Germany. In 2001, 33.7 % of the foreign contractor base comprised Japanese contractors, which dropped slightly to 31.1% in the year 2002. Singapore contractors, on the other hand, constituted 20.2% of the total foreign contractors registered in 2001. This representation soon increased to 22.7% during the following year (2002).

Of the remaining majority, 9.8% of foreign contractors who registered in 2002 were German contractors, and this number fell slightly behind the previous year registered percentage of 12.5% (in

2001). In totality, both Japanese and Singaporean contractors were observed to have increased their participation in construction-related opportunities at a composition of 17.1% in 2001 and 38.0% in 2002.

3.2 Foreign Contractors' Awarded Contracts and Contract Value

In 2001, the combined construction turnover of 28 out of the registered base of foreign contractors in Malaysia were awarded a total of 50 construction projects, valued at RM 2.12 billion. This contract value translates into 4.2% of the total contract value secured by contractors within that year. Comparatively, there was a sharp fall in the number of successful foreign contractors who were at securing construction projects (from 28 to 18 contractors) and the overall construction volumes (from 50 projects to 32) in 2002 (CIDB, 2003)

Despite the 35.7% decrease in the number of foreign contractors who were awarded projects, the overall contract value won by them in 2002 was 5.3% higher than the previous year. In 2001, Japanese contractors were awarded 37 out of the 50 contracts that were awarded to foreign contractors. This represents 74% out of the total contract value secured for that year. Singapore contractors who operated in Malaysia, on the other hand secured 4 projects that represented 8% of the total combined contract value. In the following year (2002), both the Japanese and Singaporean contractors continued to dominate other contractors with a combined impressive market share of 65.5%, and an individual track record of 18.8% (CIDB, 2003).

3.3 Foreign Contractors' Performance by Sector

In 2001, two high-value government (public sector) projects, totalling RM 129.50 million, were awarded to Japanese and Singaporean contractors, at a contract value of RM 110 million and RM 19.5 million respectively. In contrast, private sector projects were seen to benefit the foreign contractors tremendously. The Japanese and Singaporean contractors continued to dominate in the Malaysian domestic marketplace – their turnovers in 2001 were RM 1.9 billion and RM 4.48 million respectively. The Japanese contractors impressive track record was the result of private sector awards that contributed to 36 out of the 50 contracts (72%) awarded to foreign contractors while the Singaporean contractors' turnover of RM 4.48 million constitutes 6% of the total combined construction turnover. The remaining group of German and Australian contractors did not fall too far behind the Japanese contractors. They managed to secure their chance of winning 2 private sector contracts valued at RM 102.72 million and RM 3.75 million respectively in 2001.

In 2002, as many as 3 government contracts valued at RM 1.9 billion were awarded to foreign contractors. Two out of these 3 contracts valued at RM 1.2 billion were awarded to contractors from the Netherlands and the remaining contract of RM 750 million was awarded to Japanese contractors. The number of private contracts awarded to Japanese contractors in 2002, was a total of 20 contracts. The total contract value was RM 175.91 million. On the other hand, private contracts awarded to Singaporean contractors rose by 50% in the form of 6 contracts valued at RM 81.04 million. Korean contractors were also awarded 2 foreign contracts valued at RM 13.05 million whereas foreign contractors from other countries were awarded 1 construction contract each.

3.4 Factors Critical to the Success of Construction Joint Venture Projects

Several sources or references have been found for joint ventures but very few sources, highlight any success criteria, particularly in relation to construction joint venture projects. This may create difficulties in identifying adequate sources of data, although it is contended that 'failed' projects should be studied as well as 'successful' ones (Morledge & Owen, 1999). Although there were already established construction joint venture between local indigenous Malaysian companies and Malaysian and foreign contractors in Malaysia, there was no hard data or findings in relation to their relative success or failure.

Due to the additional risk being carried in such projects by both the public and private sectors, as compared to traditional procurement sectors, these factors critical for success need to be identified, and as

far as possible, quantified. This is important for the implementation of successful joint venture projects in Malaysia and similar economies.

Reference was made earlier to a previous study (Adnan and Morledge. 2002) in which the concept of CSFs was used to identify twenty-one CSFs applicable to the construction joint venture projects in Malaysia. These were confirmed through literature review and questionnaire survey. This earlier study has been revisited and questioned in light of the six problems of applying the CSF the methodology as discussed below.

It was found that by identifying the most experienced person in terms of joint venture as a respondent for the questionnaire, the results are in danger in producing individuals' responses and not necessarily the *right* answer. Using a single representative from each organisation should be viewed as being cautionary (Walker & Johannes, 2003,p42) and the response may also depend upon the individual's personal interest and involvement in joint venture projects.

The phrase 'Critical Success Factor' was not defined in the questionnaire; similarly the actual CSFs were never defined fully. This left a potential for difference of opinion and interpretation, although extensive editing and piloting were carried out in an attempt to eradicate different interpretations. The results fail to provide a conclusive across-the-board opinion due to poor response from operating firms. The responses from the questionnaire surveys therefore focused heavily on construction companies replies.

Elements of researcher bias may have entered the earlier study by one or more of the following:

- Original factors were derived from the thorough literature reviews and the author's judgement of what or may not constitute CSFs whilst reviewing the literature, much of which was drawn from construction related sources. Bias may also have been introduced when the factors were selected using the author's subjective opinions of which factors were similar. Therefore, only those factors that were repeated in the literature were selected, i.e. one-offs were discarded.
- The identified CSFs identified were then assembled into a questionnaire survey and was distributed only to the selected construction companies in Malaysia. There were about 40,000 contractors with various Grades registered with the Construction Industry Development Board Malaysia which made the population of the study only comprises Malaysian and foreign contractors working in Malaysia in categories Grade G7 and G6 (with unlimited amount of work – more than GBP 67 million and GBP 34 million). The questionnaire was only distributed to 1630 local Malaysian and 70 foreign contractors identified (companies known for their involvement in JV projects). A response rate of twenty percent (20%) 341 was obtained. However, only 241 (65%) of those involved in joint venture projects.
- Most of the twenty-one CSFs in the study reflected the situation at the time the literature was written. There may be factors which are out of date because of new regulation and improvement in processes and understanding. The Government of Malaysia always encouraged and supported local contractors and builders to participate in the regional and global markets based on their expertise and experience in the construction of buildings and infrastructure projects. There are already construction joint venture projects completed in Malaysia since mid 1980s and numerous projects are on the way with local and international contractors to achieve fully industrialised country by year 2020 (Abdullah, 2000).
- Twenty-one factors were taken from the literature review and these were grouped together and submitted to the respondents. From the CSF study by Rockart (1980), it was argued that the data received is then based on general areas of concern, rather than specific factors.

4. CRITICAL SUCCESS FACTORS: CONCEPT AND METHODOLOGY

The concept of CSF was first introduced and published in 1961 by D.Ronald Daniel in his management literature on the management information system (MIS) industry. From an original theory, which Daniel

presented in 1961[(Daniel (1961)], the concept of CSFs was developed by Rockart and the Sloan School of Management. The phrase, “Critical Success Factors”, was first used in the context of information systems and project management [Rockart (1982)]. Rockart’s definition:

“Those few key areas of activity in which favourable results are absolutely necessary for a particular manager to reach his or her own goals.... Those limited number of areas where “things must go right”.

The Critical Success Factor (CSF) methodology is a procedure that attempts to identify factors or areas vital to the success of the industry, organization or the individual’s work. Goals are identified from the organisation’s strategies and objectives, and from these factors are determined which are critical to obtaining the identified goals.

The procedure begins by conducting interviews with senior management using the “CSF interview process’ [Bullen and Rockart (1981)]. Interviews start with the interviewer outlining the concept and methodology of CSFs, the interviewee then describes the company’s mission and the role, which they play in the company. Following a discussion of the interviewee’s goals, CSFs are developed which are designed to best facilitate the interviewee in meeting their goals. General indications are then sought as to how the interviewee would prioritise the identified CSFs before attempts are made at determining suitable measures for each CSFs. The collective sets of CSFs from all interviewees in the organisations are reviewed to check for areas that some interviews may have failed to cover, this collective set of factors is then analysed to identify the general areas considered as critical for success. In Rockart’s studies, the final set of CSFs was used to develop the required information databases.

Since then the concept of CSFs has been eagerly embraced by business and academe alike. Many sources of can be found, especially on the Internet, whereby large organisations have endeavoured to develop their own particular set of CSFs, to be employed as part of their corporate strategy. Similarly, a number of academics have cited the CSF methodology in research.

Earlier research by authors attempted to adapt the CSF approach for use in construction joint venture projects Adnan & Morledge (2002).

The concept of CSFs has now been further refined and certain potential weaknesses associated with the practical application of Rockart’s method identified, these include:

1. Subjectivity
2. Bias
3. Human inability to process complex information
4. Change in relation to surrounding environments; time dependency
5. Imprecise definitions; generalisation
6. Qualitative performance measures

Each of these areas is discussed in the following paragraphs:

4.1 Subjectivity

Bullen and Rockart (1981) identified that the CSF concept required an interviewee to respond with a ‘subjective judgement at only after some thought’. Rockart (1982) later confirmed that any definition of critical success factors must be, by definition, subjective and this was confirmed by (Henderson, Rockart and Sifonis, 1984) that many responses relate to ‘soft’ issues which required subjective or expert opinion’.

Bullen and Rockart (1981, p58) suggested that the interviewer should check to be sure his involvement is “helpful” but not directive:

“ He should be careful when asking about areas not covered directly by the manager to not indicate a judgement on his part and not to convince the interviewee of his CSFs but to draw them out and should be sensitive to the possibility. The interviewer should be sure that he “stretched” the manager as far as possible in his thinking during the interview. Some [interviewees], however, do not understand the concept and need a great deal of prompting. This is a situation in which one must be extremely sensitive to the problem of “leading the witness”. The interviewer must walk the narrow line of eliciting information without creating the answers”. (Rockart and Bullen, 1981)

Munro and Wheeler (1980) suggested that a structured interview is more favourable than an unstructured interview.

4.2 Bias

Martin (1982) suggested that ‘intensive participation by the interviewer’ during the interviews, might bring about the danger where the interviewer influences the outcome. This may certainly be worrying, especially when the interview process is described as involving ‘a lively exchange of ideas’ (Morledge and Owen, 1999). However, Martin suggested that questionnaires may prove a more appropriate alternative to interviews where producing a “first cut” set of CSFs.

Munro (1983) argued that CSF method was not scientific and therefore, the results obtained were “ in danger of reflecting the interviewer’s perception”. As the study were on descriptive nature, and was necessary and unavoidable in the development of the theory. Rockart did not, however, address the potential of interviewer bias and Boynton and Zmud suggested that this threat could be possibly be removed if skilled analyst carried out in the interview.

4.3 Human inability to process complex information

Davis (1979), on discussing the CSF concept, identified the potential for failure from the executive poor ability to respond with CSFs that are correct, complete and sufficient. He suggested that an interviewee, on listing critical factors, might name some irrelevant or incorrect factors, or responded incompletely and Davis classifies this as bias. He stated that on more recent events, or those remembered are more likely to be recalled than events, which are less recent or less easily remembered. Boynton and Zmud (1984) supported this theory, stating that

“Because of a human’s general limited capacity to process much complex information ... [The identified CSFs would] represent the most pressing concerns and the more recent events”.

Martin (1982) argued that the interviewee might fail to mention some critical factors that may exist. This may be purely by reason that the organization’s systems are perceived to contend with difficulties adequately and thus, it never perceived as a ‘critical factor’. Selection of some factors may therefore occur because an improvement in that area is required; orders should be selected, even though they are being adequately managed, because of their critical nature of the project.

However, Davis (1979) suggested that a model of the organization will be appropriate where the interviewer could use in eliciting responses and with which to evaluate factors for relevance, correctness and completeness. The CSF method may be useful if manipulated within framework of a model and used alongside and awareness of limitations on human ability to identify relevant factors.

Munro and Wheeler (1980) embraced Davis’ arguments and suggested that the interview or discussion be structured by the presence of goals and objectives. They contended that a consequence CSFs would be generated in response to stimuli, i.e. goals and objectives as opposed to relying solely on

the manager's limited ability to process information. Both maintained Davis' argument that a model is required although it would depend upon the ability of the individual manager to articulate an analytical model of the business unit.

“Unfortunately, a valid analytical model of a complex business unit is seldom available”.
(Munro and Wheeler, 1980)

4.4 Change in relation to surrounding environments; time dependency

Bullen and Rockart (1981) suggested that it might be necessary to adjust or customize any generic CSFs identified to fashion them into factors that are more applicable to the particular industry, company, and the individual being interviewed. They contended that CSFs are related to the specific of a particular manager's situation. CSFs will differ from manager to manager due to the subjective nature of CSFs already discussed, but they also vary in line with changes to the particular industry's environment, the company's position, or as particular problems or opportunities arise for a particular manager.

However, the argument above supports the acknowledged theories that the construction industry exists within various and ever-changing PEST environments (Newcombe, Langford and Fellows, 1990). Henderson, Rockart and Sifonis (1984) contended that even if the appropriate factors are identified, events might alter the criticality of this factor, as CSFs are time dependent.

4.5 Imprecise definitions; generalization

A short-term label or expression, as opposed to a narrative statement, which effectively communicates the area of the activity, best describes CSFs. Owen (2002) pointed out that this can result in imprecision which coupled with the subjective nature of the interviews questions the real value to the organizations of those final criteria identified as CSFs. From past studies, when factors have been submitted with a distinct definition, they have been consolidated with other, broadly similar factors into general areas, even though respondents may have reported different aspects of the general area as the key to success.

Martin (1982) suggested that they had to group the specific success factors as stated by the managers into more general areas of concern. The method to identify and employ precisely defined factors, rather than identifying the general areas of concern were required to avoid the dilution of the final set of factors. Owen (2002) contended that a more rigorous method is required that is able to methodically identify factors, possibly by employing triangulation processes by using two or three methods to authenticate the precise definition of each factor.

4.6 Qualitative performance measures

The distinction between hard and soft factors becomes all the more important once the factors have been identified, for the next step is to determine specific performance measures for each CSF. Hard factors can be measure by more rigorous measures using quantitative methods and hard data, for example financial information and statistics (Owen, 2002). Soft factors may require the use of qualitative measures, where the use of indirect surrogate measures that infer progress towards an objective may be considered (Munro and Wheeler, 1980, p32).

4.7 Lessons Learnt From the Survey

There were valuable lessons learnt from carrying out the survey. The issues and weaknesses of the methodology identified by Rockart (1980) and a number of authors have been identified and some potential solutions proposed.

The following is a summary of those points identified in the discussion above:

- It is suggested that using a skilled analyst would benefit the process (Morledge and Owen, 1999), yet it is considered that the skill of the analyst must remain with the field, where the particular industry being studied or the methodology would become very difficult to transfer.
- The ever changing political, economic, social and technology environment must be acknowledged as it contributed an important part in the construction joint venture.
- The concerns identified above detailing subjectivity, bias, human inability to process information, time dependency and generalisation may be mitigated through triangulation in the research to limit the vagueness of using a general statement potentially misconstrued by interviewees.
- Adequate qualitative performance measures must be defined and this is thought to be possible via structured interviews and by way of an expert panel (Morledge & Owen, 1999)

4.8 Critical Success Factors and Failure Reduction Criteria

It is contended that factors identified as critical may fall into one of two categories; (a) necessary for success, but not critical and (b) critical for success. Consequently, some factors, if included in the project, may reduce the chance of failure but will not increase the chance of success and other factors, if included, may increase the chance of success but it left out will increase the chance of failure (Morledge and Owen, 1999). They suggested that the former could be labelled as “Failure Reduction Criteria (FRCs), the latter as Critical Success Factors (CSFs) and argued that the fundamental question at this point concerning FRCs/CSFs, is whether failure will always be the exact and pure opposite of success. Table 1 is an attempt to indicate how some hypothetical factors could be divided into FRCs and CSFs in practice.

Table 1: A speculative view of how factors may be divided into Failure Reduction Criteria and Critical Success Factors.

Factor	FRCs	CSFs
Coordination	X	
Agreement of Contract		X
Profit		X
Mutual understanding	X	
Inter-Partner Trust		X
Motivation For Forming Joint Venture	X	

5. CONCLUSION

The original concept of critical success factors is considered to be robust, but the method of application, which Rockart promoted, contains a number of imperfections. These have been identified and discussed with reference to the authors’ previous studies. Some improvements have been suggested, but other weaknesses require further thought. The CSF concept has been developed and a distinction made between two potential types of ‘success’ factor. These are labeled Failure Reduction Criteria and Critical Success Factors. It is further considered that many of the identified weakness could be suppressed through employing a triangulated methodology which will involve in-depth interview in this case with both Malaysian and foreign contractors. This can be followed by the use of an expert group to validate the final findings. The result of this particular study are expected to provide useful guidelines for forming and operating effective and efficient joint ventures both in Malaysia and in other similar economies.

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