

CLIENTS, CONSULTANTS AND CONTRACTORS' PERCEPTION OF CRITICAL SUCCESS FACTORS FOR CONSTRUCTION PROJECTS IN MALAYSIA

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Construction industry in Malaysia has been increasingly recognising the need for a relationship-based procurement in substitution to the traditional method. Despite the vast number of literatures available on this subject matter, there is a lack of effort to contextualise the findings into local context. Therefore, exploring the factors essential to the success of the local construction project is one of the prerequisites to integrate relationship-based procurement into local setting. The primary objective of this paper is to identify the principal factors that are critical to the success of the construction project, and determine their relative importance as perceived by different respondents. Following a thorough literature search, a total of thirty-seven factors was consolidated and grouped into seven major categories. These factors were assembled into a questionnaire survey that was distributed among clients, consultants and contractors. Since the data collection for main survey is still ongoing, the result and analysis reported were based on the pilot survey carried out. An analysis of the responses from the pilot survey identified fifteen factors to be accepted as critical to the success of construction projects. The results suggest a strong consistency in perception between clients, consultants and contractors in recognising the significance of human-related factors such as competence, commitment, communication and cooperation towards the success of the construction project. These factors being the core element in relationship-based procurement reinforce the need and viability of such procurement method to the Malaysian construction industry. The results of this survey thus provide a strong foundation for further route of the current research on the development of an effective relationship-based procurement model in Malaysia.

Keywords: critical success factors, Malaysia, project management.

INTRODUCTION

The study of project success and critical success factors (CSFs) is often considered as one of the vital ways to improve the effectiveness of project delivery (Chan *et al.*, 2004). One of the reasons of the difficulties in managing a construction project, especially in the government sector is due to the failure in determining the CSFs across project phases (Takim *et al.*, 2004). Numerous studies have been conducted over the years to investigate factors that are really critical towards project success (Cooke-Davies, 2002; Nicolini, 2002; Chan *et al.*, 2004; Anderson *et al.*, 2006; Toor and Ogunlana, 2009), thus highlighting the importance of CSFs study towards construction project success.

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However, the concept of CSFs or project success remained vaguely defined as there is no general agreement achieved despite numerous attempts conducted to determine CSFs of a construction project (Cooke-Davies, 2002; Chan *et al.*, 2004). According to Nguyen *et al.* (2004) the disagreement on the list of success factors is mainly caused by the unique internal features and different boundary conditions of every construction project. Though a number of common variables contributing to project success have been proposed, but specific variables that are unique to the local construction industry have yet to be defined.

Since most of the studies on construction project CSFs are context specific, their implementation and implications are usually limited to countries and the operating environment where these studies were conducted (Toor and Ogunlana, 2006). Therefore, in order to understand the factors 'critical' to the success of the Malaysian construction project, study conducted should consider the nature and structure of the local industry, type and scale of projects, procurement procedures, local working culture, maturity of the organisation involved as well as society norms (Toor and Ogunlana, 2006). Even though several studies have been conducted within the same research boundary (Lim and Mohamed, 1999; Takim *et al.*, 2004), but with the rapid changes happening in the socio-economic landscapes in the country, their findings have become obsolete and unable to reflect the latest development in the industry.

LITERATURE REVIEW

Critical Success Factors

Rockart (1982) defines CSFs as those relatively small numbers of truly important matters where a particular industry should focus her attention in order to achieve success. They represent "factors" which are "critical" to the "success" of the industry. Rockart (1982) further emphasised that CSFs relates to the specific characteristics or conditions of an industry. It will certainly differ from country to country depending on their respective operating environment, policies and legal constraint. In addition to that, CSFs often will change as the industry's environment changes, as the company's position within an industry change, or as particular problem or opportunity arises for that industry. Hence, it is essential to understand what CSFs are not. They are not a standard set of measurement or key indicators, which can be applied to all industry. On the contrary, CSFs are the particular areas of major importance to a particular industry, at a particular point in time. They demand specific and diverse situational measures, many of which must be evaluated through soft, subjective information (Bullen and Rockart, 1981).

Defining CSFs for Construction Projects

Project success is an abstract concept and determining whether a project is successful is subjective and extremely complex (Parfitt and Sanvido, 1993; Chan *et al.*, 2002), therefore, two distinctions must be established at this stage before further discussion can be carried on. De Wit (1988), Lim and Mohamed (1999), Cooke-Davies (2002), and Takim *et al.* (2004) have all differentiate project success (measured against the overall objectives of the project) against project management success (measured against the widespread and traditional measures of time, cost and quality).

On the other hand, there are also distinctions between success criteria (the measure by which success or failure of a project will be judged) and success factor (those inputs to the management system that lead directly or indirectly to the success of the project) (De Wit, 1988; Cooke-Davies, 2002). Success factor can be further classified under

two main categories, one being hard, and objectives, tangible and measurable while the other soft, subjective, intangible, and less measurable (Andersen and Jessen, 2000; Chan *et al.*, 2004; Anderson *et al.*, 2006). As for the former, the criteria of time, cost and quality were widely recognised, but others such as health and safety, environmental sustainability, technical performance are factors with growing importance. As for the later, attainment of goals such as satisfaction, effective communication, relationship between project participants, and absence of conflicts are considered a sign of project success.

Understanding these distinctions will enable the researcher to have a clearer direction on the subject matter and to avoid possible confusion. As part of the wider aspect of an on-going doctoral research and its finding will be used to develop an effective relationship procurement model in Malaysia, the paper will seek to give its attention to the critical success factor of project management in Malaysia. It also aims to establish relationships among the different perceptions of construction participants regarding CSFs for local projects.

RESEARCH METHODOLOGY

Following a thorough literature search, a total of thirty seven factors critical to the success of building construction projects were consolidated. These factors were then assembled into a questionnaire that was distributed among three target groups who were connected with the building construction industry. The respondents were required to identify, from the list of factors, which they agreed to be critical to the success of a construction project in Malaysia.

Population and Sampling Size

The data collection exercise was held in Malaysia from March 2011 until the end of June 2011. Samples were randomly selected from the directory provided by each respective institution. The target population for contractors was based on companies that are registered with CIDB Malaysia under the Class G7 (projects greater than Ringgit Malaysia 10 million) categories.

A total of five hundred (500) questionnaires were sent to different target groups in the Malaysian construction industry. Since the data collection process is still on-going, the result and analysis reported were based on the pilot survey carried out during December 2010.

Table 1: Respond rate (in percentage) by type of organisation

Type of Organisation	Number of questionnaires		Percentage Returned (%)
	Sent	Returned	
Government	-	-	-
Private Clients	8	3	37.5
Consultants	30	7	23.3
Contractors	7	4	57.1
Total	45	14	31.1

As shown in Table 1, a total of forty five (45) questionnaires were sent to different target groups in the Malaysian construction industry for the purpose of pilot survey. Fourteen (14) questionnaires were returned within one month of being sent out, making the total response rate 31.1 %. This response rate was finally achieved after several efforts were made in terms of follow-up emails and letters. The response rate of 31.1% is not uncommon and acceptable. It is in accordance with the opinions of

Akintoye (2000) and Dulami *et al.* (2003). They reported that the normal response rate in construction research for postal questionnaire is around 20-30 percent.

RESULT AND ANALYSIS

Table 2 to 8 present the result of the analysis of the factors that are critical to the construction project in Malaysia. A total of thirty-seven factors from the seven categories were ranked according to the ranking of their mean values. The first category, project related factors, included the four factors presented in Table 2. The second category, project stakeholder’s factors (client), included the five factors presented in Table 3. The third category, project stakeholder’s factors (team leader), included the five factors presented in Table 4. The fourth category, project stakeholder’s factors (consultant), included the five factors presented in Table 5. The fifth category, project stakeholder’s factors (contractor), included the nine factors presented in Table 6. The sixth category, project procurement factors, included the three factors presented in Table 7. Last but not least, the seventh category, external factors, included the six factors presented in Table 8.

Table 2: Ranking of project related factors contributing to the success of construction project

Factor	Mean	Std. Dev.	Ranking
Effective allocation of man power	4.364	0.481	1
Urgency in meeting project deadline	3.909	0.514	2
Complexity of project	3.545	1.076	3
Size and value of project	3.182	1.029	4

Table 2 above indicated the results with regards to project related factors. Four factors were identified in this category. Effective allocation of man power and urgency in meeting project deadline are among the top two factors, having a mean score of 4.364 and 3.909 respectively. While complexity of project scored a mean score of 3.545, size and value of project have a lower mean score of 3.182, suggesting that it has less significant influence on the success of a construction project.

According to Walker (1995) project scope can be seen as a useful predictor and motivation for the successful implementation of a construction project. According to them, the attributes used to measure this factor include type of project, complexity of project, nature of the project, size and value of project.

Table 3: Ranking of project stakeholders' factors (client) contributing to the success of construction project

Factor	Mean	Std. Dev.	Ranking
Financial capability	4.818	0.386	1
Delay of progress payment to consultant and contractors	4.273	0.862	2
Excessive demand and variation during construction	4.182	0.716	3
Ability to brief the project objectives clearly	4.091	0.668	4
Top Management Support	4.000	0.936	5

Table 3 indicates five client-related factors that contribute to the success of the construction project. The results of the analysis show that financial capability and delay of progress payment to consultant and contractors are among the two most important factors, having a mean score of 4.818 and 4.273 respectively. It is essential that a client needs to ensure strong financial capabilities to maintain the cash flow of the project. Financial problem such as delayed payments and financial difficulties are seen to be a major factor that causes delay in the construction project in Malaysia

which in turn jeopardising the overall success of the construction project (Alaghbari *et al.*, 2007).

Excessive demand and variation during construction is the third important factor contributing to the success of a construction project, having a mean score of 4.182. Excessive demand and variation will affect the construction time performance. Walker (1995) argued that client and client's representative have a significant influence on the construction time performance. On the other hand, "ability to brief the project objectives clearly" and "top management support" are ranked fourth and fifth with mean values of 4.091 and 4.000, respectively.

Table 4: Ranking of project stakeholders' factors (project team leader) contributing to the success of construction project

Factor	Mean	Std. Dev.	Ranking
Competence	4.545	0.656	1
Commitment	4.455	0.656	2
Early and continuous involvement in the project development.	4.182	0.575	3
Relationship with other project stakeholders	4.000	0.603	4
Adaptability to changes in the project plan	4.000	0.853	5

Table 4 indicates five team leader-related factors that contribute to the success of the construction project. The results of the analysis show that competency and commitment are among the two most important factors having a mean score of 4.545 and 4.455 respectively. In the context of the Malaysian construction industry, the project team leader is usually the architect in-charge or client appointed project manager. Both played a vital role as their work start from inception stage until completion of a project. Their commitment and competence are critical factors affecting project planning, scheduling and communication (Belassi and Tukel, 1996). In addition to that, early and continuous involvement in the project development is considered the third important factor contributing to the success of the construction project, having a mean score of 4.182.

On the other hand, the project team leader's ability to manage the relationship with other stakeholders is important as well. This factor ranked fourth, having a mean score of 4.000. Adaptability to changes in the project plan was ranked fifth, with mean value of 4.000.

Table 5: Ranking of project stakeholders' factors (project consultant) contributing to the success of construction project

Factor	Mean	Std. Dev.	Ranking
Competence	4.727	0.445	1
Cooperation in solving problems	4.636	0.481	2
Commitment	4.545	0.498	3
Communication among project stakeholders	4.455	0.656	4
Feedback between project stakeholders	4.182	0.575	5

Table 5 presents the results of the analysis of consultant-related factors that contribute to the success of a project. The result suggests that the first component that seemed to capture the respondents' general attention was the consultant's competency level, having a mean score of 4.727. Firms with many years of experience are considered more likely to have the ability to manage and monitor the project more successfully (Agarwal, 1994).

Cooperation in solving problems, commitment as well as communication among the project stakeholders are ranked second, third and fourth, having a mean score of 4.636, 4.545 and 4.455 respectively. The respondents acknowledged that lack of cooperation and commitment towards a project and ineffective communication are among the significant shortcomings in a construction project.

Such weaknesses are usually due to the adversarial nature of the relationship between different project stakeholders (Latham, 1994; Egan, 1998). Without a proper mechanism to mitigate these shortcomings, when conflicts turn into dispute, it could affect the project success and damage the relationship between the parties along the contractual chain. Last but not least, the factor “feedback between project stakeholders” was ranked fifth, with mean value of 4.182.

Table 6 presents the results of analysis of the contractor-related factors that contribute to the success of the construction project. Based on the mean value criterion, the control of subcontractor works seemed to capture the respondents’ general attention. It is the most important factor having a mean score of 4.818. Commonly, in large projects, there are many subcontractors who work under the main contractor. A competent subcontractor can ensure the project to be completed on time as planned; however, if the subcontractor is inexperienced or incapable, the success of the construction project can be put at risk

Table 6: Ranking of project stakeholders' factors (project contractor) contributing to the success of construction project

Factor	Mean	Std. Dev.	Ranking
Control of subcontractors works	4.818	0.386	1
Adequacy of design details & specifications	4.545	0.498	2
Skilful workers	4.545	0.656	3
Involvement to monitor the project progress	4.455	0.656	4
Project Budget Monitoring	4.273	0.617	5
Emphasis on high quality workmanship instead of low and quick construction	4.273	0.617	5
Working relationship with other stakeholders	4.273	0.617	5
Implementing an effective safety program such as SHASSIC	4.091	0.668	6
Implementing an effective quality assurance program such as QCLASSIC	4.000	0.739	7

Adequacy of design details and specification, skilful workers, involvement to monitor the project progress and project budget monitoring are ranked second, third, fourth and fifth, having a mean score of 4.545, 4.545, 4.455 and 4.273 respectively. The respondents acknowledged that contractor’s experience and competency are crucial to the success of a construction project. Odeh and Battaineh (2002) opined that inadequate contractor experience could be linked to the flaw in the tender awarding process where most projects were usually awarded to the lowest bidder. The importance of contractor’s experience was further enhanced by the sixth factor which is emphasis on high quality workmanship instead of low and quick construction, with a mean score of 4.273.

Working relationship with other stakeholder, implementing an effective safety program such as Safety and Health Assessment System in Construction (SHASSIC) and effective quality assurance program such as Quality Assessment System in Construction (QCLASSIC) are ranked seventh, eighth and ninth respectively having a mean score of 4.273, 4.091 and 4.000.

Table 7: Ranking of project procurement factors contributing to the success of construction project

Factor	Mean	Std. Dev.	Ranking
Shared authority and responsibility between the clients, consultants and contractors.	4.364	0.643	1
Transparency in the procurement process	4.091	0.514	2
Competitive procurement and tendering method.	4.091	0.668	3

The result tabulated in Table 7 indicated that “shared authority and responsibility between the clients, consultant and contractors” is the most important factor under the project procurement category with a mean score of 4.364. This is further supported by “transparency in the procurement process” and “competitive procurement and tendering method” which ranked second and third respectively. The results suggest that the industry players are looking for an alternative procurement procedure in substitution to the traditional procurement procedure which soon becoming obsolete and inappropriate (Naoum, 2003).

In traditional procurement procedure, the division of work often leads to detached business relationships, as the construction process is managed by work being subdivided into specific packages. The works are then allocated to different participants to be completed individually (Masterman, 2002). Therefore, it offers little motivation for cooperation to emerge; they are the potential root cause of the adversarial nature that characterised client-contractor relationships (Axelrod, 1984; Cheung *et al.*, 2003).

Table 8: Ranking of project external factors contributing to the success of construction project

Factor	Mean	Std. Dev.	Ranking
Industry related issues (availability of resources)	4.545	0.498	1
Nature (weather conditions)	4.364	0.643	2
Economic (stable economic conditions and sound economic policy)	4.182	0.716	3
Construction Technology	4.000	0.603	4
Political	3.818	0.575	5
Social (public acceptance towards the project)	3.545	0.716	6

The results of the data analysis of the external factors that contribute to the success of the construction project are presented in Table 8. Based on the result tabulated, the most important external factor is “industry related issue” which ranked 1st, having a mean score of 4.545. As construction is a project-based activity, the timely availability of resources (building materials) is of paramount importance. It will affect the construction time performance if certain resources are not available on time.

The factor ranked second in Table 8 is “nature”, having a mean score of 4.364. Weather conditions and site environment can influence the speed of the project completion. Economic situation of the country also affects the success of the construction project, which is ranked third and having a mean score of 4.182. A stable economic condition, inflation rate as well as economic policy friendly to investors will increase the likelihood of the project success. Construction technology, political and social factors are ranked third, fourth and fifth respectively.

Based on the findings, a total of fifteen top critical success factors were consolidated from the thirty-seven factors being examined. The mean value of 4.3 was chosen to

facilitate the short listing of fifteen most critical success factors. It is interesting to note that out of the fifteen factors, ten of them were project stakeholders' factors that revolve around the subject of competence, commitment, communication and cooperation.

CONCLUSIONS

Based on the findings and discussions of the study, it is recommended that more emphasis should be given on improving the human related factors such as competence, commitment and communication in order to ensure the successful implementation of construction project in the future. It is evident that the industry itself recognised the existence of adversarial relationship and opportunistic behaviour in the industry's practice, and they are now demanding a change from the current situation.

The traditional procurement is an inefficient process as they promote delayed payment progress, excessive demand and variation as well as unrealistic competitive bidding. This is due to the nature of the traditional procurement which encourages opportunistic behaviour to form as decisions were made based on human rationality. Therefore, in order to improve on the project performance, the industry needs to look into strategies that alleviate opportunistic behaviours and promote a better working relationship among project stakeholders. This can be done through the development of mutual trust within the industry.

Further research can be carried out to search for an appropriate approach that brings about a fundamental change in the traditional procurement from detached relationships to a mutual working environment that is driven by trust.

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