

## **Factors Influencing Project Success: Perspective From Client, Consultant And Contractor**

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### **Abstract**

Success has always been the ultimate goal for every construction project. The study of project success is considered to be a means to improve the effectiveness of project. Generally, successful project can be defined as the overall achievement of project goals and expectations. This goal and expectation are related to a variety of elements including technical, financial, educational, social and professional issues. However, the definition of project success differs for each construction professionals. Due to this reason, this study is conducted to gather information and feedback from construction professionals to determine the factors influencing the successful completion of a construction project. This paper aims to investigate the perspective of Client, Consultant and Contractors on factors that influence project success where questionnaire survey was conducted throughout Peninsular Malaysia, Sabah and Sarawak. The methodology of the study involved questionnaire survey, administered to the Client, Consultant and Contractor throughout Peninsular Malaysia, Sabah and Sarawak. From the analysis it shows that the factor that has the most influence to the success of construction project is cost overrun. The discussion focuses on the extent of these major factors; types of procurement, types of project and stages of construction that influence the successful completion of construction project. This study also concluded that there is a significant difference in all the three perspectives with the influence factors. The discussion on all of the three different perspectives i.e. Client, Consultant and Contractor would shed some light in achieving successful completion of construction projects in Malaysia.

### **Keywords**

Project Success, Perspective, Client, Consultant, Contractor

### **1. Introduction**

The working relationship between client, consultant and contractor in construction industry commences from the conception to completion of a project. In achieving project success, this three (3) parties' commitment is required throughout the project cycle. Traditionally, project is considered successful if it is delivered at the right time, within budget and quality. However, the definition of project success differs from one participant to another. Due to the ambiguous definition of project success and different perceptions of participants toward this concept, it may be difficult to tell whether a project is successful as there is lack of consensus. As a result, each participant focuses on different project objectives and therefore, led to project failure. Numerous researches on the relationships between clients and contractor's organization on identifying project success have been conducted. The research focused on

factors such as culture, commitment, ethics and communications. Bryde and Robinson (2005) have researched on client's and contractor's perspective on the criteria of project success focusing on effective working relationship. Given that, the factors influencing project success may not be the same for client, contractor and consultant. It is worthy to put more effort in the identification of these factors. For example, the safety problem is more important in client's perspective than in contractor's perspective.

The study was, therefore, conducted to address this gap, and aimed to study the perspective of client, consultant and contractor on (1) major factors influencing completion of project success; (2) types of procurement (3) types of project and (4) stages of construction that have influenced the successful completion of a project. It is expected that this study will give researchers some new insights and for the practitioners, some advice on factors influencing the completion of project success.

This paper consists of 4 sections: review of previous studies on project success, research methods, results and discussion, and conclusion.

## **2. Literature Review**

There has been many efforts in the area of research in determining factors that influence project success where, Ashley et al. (1987) and Pinto and Slevin (1988) are some of the major contributors in identification and examination of critical success factor empirically in the 1980s. Sandivo et al. (1992) examined the contribution of factors such as project team experiences, contracts, resources, and information available to project success. Mohsini and Davidson (1992) tested the influence of a number of conflict-inducing organizational variables on performance of project using traditional procurement method. Tiong (1996) identified six critical success factors for build-operate-transfer projects. Pocock et al. (1997) examined the impact of improved project interaction on performance. Konchar and Sanvido (1998) conducted an empirical study that examined nearly 100 explanatory and interacting variables to explain project cost, schedule, and quality performance of three procurement systems (construction management risks, design and build, and design/bid/build). Mohsinni and Davidson (1992) indicated that attributes of project team cannot be overlooked. Project team refers to the key players, namely, the project manager, client, contractor, consultants, subcontractors, suppliers and manufacturers. The involvement and commitment of project team are also crucial for project success. The active participation and cooperation of the other key players depend significantly on the capability of the key personnel and the overall competency of the team assigned to the project. Furthermore, the level of support from top management (Pinto and Slevin 1987) in their respective organizations is a factor that can determine the ease and the will to resolve difficulties that arise. Hasssan (1995) indicates that a construction project requires team spirit; therefore team building is important among different parties. Team effort by all parties to a contract is a crucial ingredient for the successful completion of a project. Maloney (1990) conducted a study on evaluation of project performance in terms of time, cost and quality in determining whether project objectives are met. However, achieving success in completing a project should be the ultimate which is much more important than simply meeting cost, schedule and performance specifications. Freeman and Beale (1992) and Riggs et al. (1992) suggested that project success criteria should also be recognized from respective viewpoints of different project participants.

There has been numerous research conducted on the relationships between client and contractor organization on identifying project success. The commitment to this relationship has been argued by many construction parties and researchers. Research to date has been conducted and focused on the nature, feasibility, benefits and problem establishing this relationship. Therefore, there is a need to study the perspective from client, consultant and contractor on several important issues in order to develop and establish this relationship.

### **3. Methodology**

In this study, respondents from various organizations including Client, Consultant and Contractor were selected at random throughout Peninsular Malaysia, Sabah and Sarawak. Representing the contractors, the sample was selected among the registered organization with Construction Industry Development Board (CIDB) which is classified under Grade 7. The client's group was selected at random; public as well as private sectors. All of the respondents have had experience in residential projects, infrastructure projects, building projects, heavy construction projects and industrial projects.

The list of factors that led to poor performance of project was identified from the literature review which was conducted through various management journals. These factors were developed and adopted as a framework in this study. In designing the questionnaires, the work of Belout and Gauvreau (2003), Ling (2004) and Ling and Min (2004) were drawn, in terms of developing appropriate survey instruments for measuring factors that influence project success. The questionnaire consists of five (5) sections in which the first part required respondents to indicate their background e.g. job title, years of experience and company profits turnover. The second part of the questionnaires, respondent were required to indicate their perception of major factors that should be placed on the seven (7) influencing factors; cost overrun, time overrun, quality problem, does not meet client's requirement, safety problem, project team dissatisfaction and lack of project objectives. The level of focus associated with each item was measured using a 5-point Likert scale. (1 = low, 2 = slightly low, 3= average, 4 = slightly high and 5 = high)

In section 3, focus on types of contract was sought. A review of the literature highlighted the importance of choosing appropriate type of contract. Bower et al (2002) studied on types of contracts as one of the important mechanism for the project success. Skitmore and Thomas. (2003) included contractual arrangement and project type in his forecast model for actual construction time and cost. This framework is adapted in this study to enable a method to measure the degree of opinion focusing on client, consultant and contractor. Therefore sections 3 (types of contract) were devised to measure the emphasis on the respondents. In section 4, respondents were asked on the types of projects that are influential to the success of a project. Finally, in section 5, stages in project life cycles were sought. All of the items in each section were measured using a 5-point Likert scale. The validity of the data was examined using Cronbach's alpha test. This measure of internal consistency is recommended for the analysis of an appreciation scale such as Likert (Kaplan and Saccuzzo, 1993). In this study, the alpha coefficients were all over 0.70, suggesting that the questionnaire is a valid measure.

Pilot study of the questionnaire is conducted in the three (3) different organizations consist of client, contractor and consultant. In the main survey a total of 1200 Malaysia organizations comprises of 400 nos. of Client organizations, 400 nos. of Consultant organizations and 400 nos. of Contractor organizations were involved. Respondents were selected randomly from the list of CIDB, Ministry of Public Works, Association of Consulting Engineers Malaysia, Ministry of Finance, Real Estate & Housing Developers' Association Malaysia and University Technology MARA Development Centre.

### **3. Results and Discussion**

In total, three hundred-eighty seven (387) respondents returned the completed questionnaires. This represents a reasonable response rate of 33%. The respondents consist of client, contractor and consultant organization which contribute to 27%, 31% and 42% respectively. 36% of the respondents are from public sectors and 64% are from private sectors. The data collected was analysed using techniques of frequency distribution and Kruskal-Wallis analysis of Statistical Package for Social Sciences (SPSS) version 12.0.

### 3.1 Results Of The Significant Difference Between Major Factors And Perspective Of Client, Consultant And Contractor

**Table 1: Mean rank for each major factor based on perspective of all parties**

Ranks			
	type of organisation	N	Mean Rank
cost overrun	Client	102	190.82
	contractor	117	173.26
	Consultant	157	198.35
	Total	376	
time overrun	Client	102	198.38
	contractor	117	174.62
	Consultant	157	192.42
	Total	376	
quality problem	Client	102	189.56
	contractor	117	179.91
	Consultant	153	189.49
	Total	372	
does not meet client's requirement	Client	102	196.10
	contractor	117	198.51
	Consultant	154	172.23
	Total	373	
safety problems	Client	102	210.57
	contractor	117	199.42
	Consultant	157	166.02
	Total	376	
project team dissatisfaction	Client	102	189.57
	contractor	117	192.11
	Consultant	157	185.12
	Total	376	
lack of project objectives	Client	102	207.88
	contractor	117	192.39
	Consultant	155	170.40
	Total	374	

Kruskall-Wallis analysis is adopted in order to determine the significant difference between major factors and perspective of client, consultant and contractor. As shown in Table 2, the chi-square value of perspectives of client, consultant and contractor on cost overrun is 3.965;  $p > 0.05$ . This indicates that there is no significant difference between all three perspectives on cost overrun. It appears that client, consultant and contractor agree that cost overrun influences the successful completion of a project. The chi square value for time overrun (0.198;  $p > 0.05$ ), quality problem (0.725;  $p > 0.05$ ), does not meet client's requirement (5.426;  $p > 0.05$ ) and project team dissatisfaction (0.316;  $p > 0.05$ ). This also indicates that there is no significant difference between all three perspectives on time overrun, quality problem, does not meet client's requirement and project team dissatisfaction. From this value, it appears that client, consultant and contractor agree that time overrun, quality problem, does not meet client's requirement and project team dissatisfaction influence the successful completion of a project. The chi-square value of safety problem and lack of project objectives are 13.329 ;( $p < 0.05$ ) and 8.546 ;( $p < 0.05$ ). This indicates that there is highly significant difference between all three parties' perspectives on safety problem and lack of project objectives. It appears that there is a disagreement of perspective between client, consultant and contractor on safety problems and lack of project objectives that influence the successful completion of a project. Table 1 above shows that client gives higher mean rank (210.57) followed by contractor

(199.42) and consultant (166.02) on safety problems. For lack of project objectives, it shows that client gives higher mean value (207.88) followed by consultant (192.39) and contractor (170.40). This indicates that client strongly agrees that safety problem and lack of project objectives has an effect in influencing the success completion of a project.

**Table 2: The Kruskal-Wallis results between major factors and perspectives of all parties**

Test Statistics <sup>a,b</sup>								
	cost overrun	time overrun	quality problem	does not meet client's requirement	safety problems	project team dissatisfaction	lack of project objectives	
Chi-Square	3.965	3.240	.725	5.426	13.329	.316	8.546	
df	2	2	2	2	2	2	2	
Asymp. Sig.	.138	.198	.696	.066	.001	.854	.014	

a. Kruskal Wallis Test

b. Grouping Variable: type of organisation

### 3.2 Results Of The Significant Difference Between Types Of Contract And Perspective Of Client, Consultant And Contractor

The results of Kruskal-Wallis test in Table 3 shows that the chi-square value for perspective of client, consultant and contractor on traditional contract is 3.553;  $p > 0.05$  while chi-square value for design and build contract is 3.799;  $p > 0.05$ . This indicates that there is no significant difference between perspectives of client, consultant and contractor. All parties agree that both types of contract e.g. traditional contract and design and build contract have influence to the successful completion of a project. Although design and build contract gives the highest for total mean value, there is however, a slight disagreement of perspective between all parties. This is shown in Table 3 where higher chi-square value of design and build contract across the type of contract. Table 4 shows that contractor gives the higher mean rank of 199.49 followed by client (187.66) and consultant (174.91). This indicates that contractor strongly agrees that design and build contract has a higher influence to the successful completion of a project compared to the traditional contract. The possible reason for this could be that the involvements of client after the awarding of contract and during construction slow down the contractor's work progress.

**Table 3: The Kruskal-Wallis results between types of contract and perspectives of all parties**

Test Statistics <sup>a,b</sup>		
	traditional contract	Design & Build contract
Chi-Square	3.553	3.799
df	2	2
Asymp. Sig.	.169	.150

a. Kruskal Wallis Test

b. Grouping Variable: type of organisation

**Table 4: Mean rank for each type of contract based on perspective of all parties**

Ranks			
	type of organisation	N	Mean Rank
traditional contract	Client	96	193.40
	contractor	115	169.14
	Consultant	155	188.02
	Total	366	
Design & Build contract	Client	101	187.66
	contractor	115	199.49
	Consultant	155	174.91
	Total	371	

**3.3 Results Of The Significant Difference Between Types Of Project And Perspective Of Client, Consultant And Contractor**

Table 5 shows that the value of chi-square for infrastructure (7.350;p<0.05), building construction (6.343;p<0.05), residential construction (11.223;p<0.05), heavy engineering construction (0.196;p>0.907) and industrial construction (2.738;p>0.254). It appears that there is a highly significant difference in perspective of client, consultant and contractor on infrastructure project, building construction and residential construction. However, the value of chi-square of residential construction project is higher compared to others types of project which indicate that there is a highly disagreement of perspective between parties. Table 6 shows that client gives the higher mean value of residential construction 202.00, followed by contractor (184.57) and consultant (160.25). This indicates that client strongly agrees that residential construction project gives higher influence to the success completion of a project. On the contrary, the chi-square value for heavy engineering construction and industrial construction is 0.196(p>0.05) and 2.738(p>0.05) respectively. This shows that there is no significant difference between perspectives of client, consultant and contractor. All parties agree that heavy engineering construction and industrial construction have influence in ensuring the successful completion of a project.

**Table 5: The Kruskal-Wallis results between types of project and perspectives of all parties**

Test Statistics <sup>a,b</sup>					
	Infrastructure project	Building Construction	Residential Construction	Heavy Engineering Construction	Industrial Construction
Chi-Square	7.350	6.343	11.223	.196	2.738
df	2	2	2	2	2
Asymp. Sig.	.025	.042	.004	.907	.254

a. Kruskal Wallis Test

b. Grouping Variable: type of organisation

**Table 6: Mean rank for each type of project based on perspective of all parties**

Ranks			
	type of organisation	N	Mean Rank
Infrastructure project	Client	93	195.68
	contractor	107	181.19
	Consultant	152	161.47
	Total	352	
Building Construction	Client	98	191.76
	contractor	107	188.96
	Consultant	152	163.76
	Total	357	
Residential Construction	Client	98	202.00
	contractor	107	184.57
	Consultant	152	160.25
	Total	357	
Heavy Engineering Construction	Client	85	168.46
	contractor	103	168.52
	Consultant	152	172.98
	Total	340	
Industrial Construction	Client	90	187.40
	contractor	103	168.32
	Consultant	152	167.65
	Total	345	

### 3.4 Results Of The Significant Difference Between Stages Of Construction And Perspective Of Client, Consultant And Contractor

**Table 7: The Kruskal-Wallis results between stages of construction and perspectives of all parties**

Test Statistics <sup>a,b</sup>						
	Conceptual and Feasibility Studies stages	Planning stages	design stages	procurement stages	construction stages	completion stages
Chi-Square	3.282	3.711	2.190	7.783	2.910	8.412
df	2	2	2	2	2	2
Asymp. Sig.	.194	.156	.334	.020	.233	.015

a. Kruskal Wallis Test

b. Grouping Variable: type of organisation

In Table 7 shows the chi-square value of conceptual and feasibility study stages (3.282;  $p > 0.05$ ), planning stages (3.711;  $p > 0.05$ ), design stages (2.190;  $p > 0.05$ ) and construction stages (2.910;  $p > 0.05$ ). It appears that there is no significant difference of perspectives among client, consultant and contractor. All parties agree that conceptual and feasibility study stages, planning stages, design stages and construction stages have influence to the successful completion of a project. The chi-square value of procurement stages and completion stages are 7.783 ( $p < 0.05$ ) and 8.412 ( $p < 0.05$ ) respectively. This shows that there is a highly significant difference of perspective between all parties on procurement stages and completion stages.

Table 8 shows that client gives higher mean rank for both procurement (201.48) and completion stages (192.72) followed by contractor and consultant. Although construction stages have the highest influence across the total mean rank, the results also indicate that clients strongly agree that procurement stages and completion stages have influence to the successful completion of construction project.

**Table 8: Mean rank for each stages of construction based on perspective of all parties**

		<b>Ranks</b>	
	type of organisation	N	Mean Rank
Conceptual and Feasibility Studies stages	Client	96	176.39
	contractor	111	192.50
	Consultant	150	170.68
	Total	357	
Planning stages	Client	101	187.05
	contractor	111	192.32
	Consultant	150	169.76
	Total	362	
design stages	Client	101	192.44
	contractor	111	172.07
	Consultant	150	181.12
	Total	362	
procurement stages	Client	101	201.48
	contractor	111	183.60
	Consultant	150	166.49
	Total	362	
construction stages	Client	101	195.51
	contractor	111	174.64
	Consultant	150	177.15
	Total	362	
completion stages	Client	96	192.72
	contractor	109	183.22
	Consultant	145	158.30
	Total	350	

#### **4. Conclusions**

The study reported in this paper identifies four (4) distinct remarks to project management knowledge. Firstly, based on the perspective of client, consultant and contractor on major factors that influence the successful completion of a project, this paper concludes that there has been a highly significant disagreement between all parties on safety problem aspects and lack of project objectives. In this study, it shows that client's perspective on safety problem and lack of project objectives cannot be ignored although cost overrun gives highest influence to the successful completion of a project. Secondly, the study concludes that all parties agree that both types of contract e.g. traditional contract and design and build contract have some influence to the successful completion of a project. However, contractor strongly agrees that design and build contract have higher influence to the successful completion of a project compared to the traditional contract. Thirdly, there is a highly disagreement in perspective of client, consultant and contractor on infrastructure project, building construction and residential construction. Client has strongly agreed that residential construction project gives higher influence to the

success completion of a project. Finally, there is a highly significant disagreement of perspective between all parties on procurement stages and completion stages. Client has strongly agreed that procurement stages and completion stages have influence to the successful completion of construction project. This study provides evidence on the existence of the barrier of perspective between client, consultant and contractor. Further study needs to be conducted to determine in detail all three parties' perspective, focusing on the successful completion of construction project.

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