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## Determining Critical Success Factors of Project Management Practice: A conceptual framework

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### Abstract

Critical success factors (CSFs) are inputs to project management practice which can lead directly or indirectly to project success. It encompasses many elements, which have to be synchronized to ensure the project delivery on time. The purpose of this study is to identify the extent of the relationship between CSFs and project performance. The research findings will be expected to assist the organization in evaluating the performance of project management. Finally, the conceptual framework was developed by identifying five (5) variables for project success namely Project Management Action, Project Procedures, Human Factors, External Issues and Project Related Factors.

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*Keywords:* Project management; critical success factor; criteria of best practices; project success

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### 1. Introduction

Success on a project means that certain expectations for a given participant were met, whether owner, planner, engineer, contractor or operator. However, these expectations may be different for each participant (Sanvido, V. et al. 1990) and 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.,

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2004). By its nature, construction is a risky business. Current project management practices of organizations in the construction industry sector do not always ensure project success. Successful construction project greatly depends on how the project has been managed and controlled. The main problem with projects management practices have always been mentioned as planning, project implementation, cost and time overruns and quality non-achievement. The critical success factors (CSFs) are more useful in decision-making support; more player-based research studies should be conducted. Architectural, engineering and construction (AEC) firms are main players in the design and construction stages of building projects, and their decisions can significantly affect performance of building projects (Forcada, et al. 2008). To date, there is no comprehensive study that explores the important critical success factors from the perspective of project management practitioners. Thus, comprehensive studies on this problem are necessary.

## **2. Problem statement**

A great number of decisions need to be taken during the project management process and as usual, the decisions at the earlier phases of the design have a bigger impact on the project management practice as compared at later stages or during building operation or construction. If project managers are not aware of the criteria that would influence their goals set from the inception phase then the project will not be successful. Hence, this study will identify the CSFs that affect the level of project performance through a project management practice and rank those CSFs that will enable the project management companies to evaluate the project outcome. CSFs will become a gauge by which project managers can evaluate their companies. CSFs allowed the company to implement standard organizational management skills to improve the company and project performance. Rockart (1982) mentioned that to ensure future success, a company and its industry should identify its CSFs. CSFs thus are, for any business, the limited number of areas in which result, if they are satisfactory, will ensure competitive performance of the organization (Rockart, 1982). Currently, many academic and industrial researchers in identifying project critical success factors (CSFs) have resulted in less attention given to corporate management practices. For instance, Pinto and Slevin (1988) identified several factors related to successful implementation of numerous types of projects. They are project schedules/plans, client acceptance, monitoring and feedback, communication, trouble-shooting, and characteristics of the project team leader. However, according to industry literature outside the construction industry, CSFs should include issues important to the activities of the organization's current operations and future success. The construction stage is where all the project goals of the contractual parties like time, cost, performance, quality, safety and so on are established and put to the test. The degree of effectiveness of the project management functions and the degree of success of the project goals will determine the degree to which the individual party will perceive the project as being successful from its own viewpoint (Lim and Mohamed, 1999). Therefore, this study will identify the extent of the relationship between CSFs and project performance to determine the success of a construction project.

## **3. Literature review**

### *3.1. Project management*

Project management has evolved over the past couple decades as researchers and practitioners have attempted to identify the causes of project failure and the various factors that lead to project success. Traditional project management skills were developed from the requirements of construction and defence industries to plan, control and manage large and complex 'tangible' projects (Morris, 1994; Bourne and

Walker, 2004). From these arose the so-called “hard” concepts of project success criteria in the form of controlling and managing schedule, cost and scope. Project Management can also be seen as being about managing change (Cleland, 1995; Bourne and Walker, 2004) and project managers should consider themselves as change agents adding to the Project Management role an additional focus on so-called ‘soft’ aspects of relationship management (Bourne and Walker, 2004). Moreover, according to Bourne and Walker (2004) in most organizations, project managers are accountable for the successful delivery of complete projects. Increasingly, this success depends on project managers’ processing and utilizing skills and competencies that may initially appear contradictory. A successful project manager must demonstrate flexibility and competency in many area, hard and soft skills, introverted and reflective, extroverted and social behavior. Many of the initiatives for improving the practice and profession of project management have been focused on enhancing techniques and method associated with skills that included effective management of time, cost and scope. Hendrickson and Au (1989) pointed out that the management of construction project requires knowledge of modern management as well as an understanding of the design and construction process. Specifically, project management in construction encompasses a set of objectives which may be accomplished by implementing a series of operations subject to resources constraints. Subsequently, the functions of project management for construction generally include the following:

- Specification of project objectives and plans including delineation of scope, budgeting scheduling, setting performance requirements and selecting project participants.
- Maximization of efficient resource utilization through procurement of labour, materials and equipment according to the prescribed schedule and plan.
- Implementation of various operations through proper coordination and control of planning, design, estimating, contracting and construction in the entire process.
- Development of effective communications and mechanisms for resolving conflicts among the various participants.

### *3.2. The practice of project management*

According to Tan (1996), project management concept and techniques can be applied to any project ranging from simple task, office renovations or refurbishment to complex and complicated projects like the design and construction of an airport or hospital complex. Almost any project requires the application of art and science of project management. The level of technology needed the degree of sophistication of the tools and techniques plus the types and number of personnel involved will depend on the size complexity or nature of the project. Hendrickson and Au (1989) pointed out that the management process approach emphasizes the systematic study of management by identifying management functions in an organization and then examining each in detail. There is general agreement regarding the functions of planning, organizing and controlling. The project manager’s job is regarded as coordinating a process of interrelated functions that are neither totally random nor rigidly predetermined but are dynamic as the process evolves. Furthermore, the management science and decision support approach contributes to the development of a body of quantitative methods designed to aids managers in making complex decisions related to operations and production. In decision support system emphasis is placed on providing managers with relevant information.

### *3.3. The objectives of a project management*

One of salient objectives of project management is to contribute to nation building and in the process, assist in providing shelters to house the various residential, commercial, industrial and recreational

activities of its people. Most clients would be satisfied with work that is superior in quality, gives the most in quantity, cost the least, quick off mark, yields the highest return and easy to build and maintain (Tan, 1996). The objectives of project management include enhancement of the built environment, preservation of the natural eco-system and habitat, end users comfort and satisfaction. Contributions to nation building and the economy also constitute the overall objectives of project management on a more macro global basis. Another subsidiary set of project objectives include technical excellence in other aspects of project management such as infrastructural planning and various other essentials aspects of professional expertise (Tan, 1996).

### 3.4. Critical success factors (CSFs)

From a Project Management perspective, critical success factors (CSFs) are characteristics, conditions, or variables that can have a significant impact on the success of the project when properly sustained, maintained, or managed (Milosevic and Patanakul, 2005). Different studies have identified different CSFs and a lack of consensus of opinion among researchers on the criteria for judging project success and the factors that influence that success (Fortune and White, 2006). In addition, several studies addressing CSFs have observed the impact of context on which factors are considered most critical as well as whether certain CSFs are indeed related to success. In most construction companies, management activities in construction project can be a better understanding by exploring the critical success factors (CSFs) for improving the performance of their building projects. The CSFs approach has been established and popularized over the last 20 years (Chan, et al. 2004). Nevertheless, the majority of the studies focus on the traditional “iron triangle” which are cost, quality and schedule (criteria for measuring project success) of conventional construction process rather than sustainable buildings (Walker & Shen, 2002). Most of the studies (refer to Table 1) only emphasized the critical project attributes unique to green building projects, such as early involvement of the project team members (Lapinski et al. 2006) and integrated project delivery methods, which are usually not identified as important success factors for improving project performance in terms of cost, time and quality by most previous researchers.

Table 1. Critical success factors from previous literature

Critical success factors	Reference
Support from senior management	White and Fortune (2002, 2006)
	Jha and Iyer
Skilled designers	Chua et al. (1999)
Skilled project managers	Chan et al. (2001)
	Jha and Iyer
Troubleshooting	Belout and Gavreau (2004)
Project team motivation	Chua et al. (1999)
Commitment of all project participants	Chua et al. (1999)
	Chan et al. (2001)
	Munns and Bjeirmi
Strong/detailed plan effort in design and construction	Chan et al. (2001)
	Munns and Bjeirmi
Adequate communication channels	White and Fortune (2006)
	Chan et al. (2001)

Effective control, such as monitoring and updating plans	Chan et al. (2001) Chua et al. (1999)
Effective feedback	White and Fortune Chan et al. (2001) White and Fortune
Adequate financial budget	Chan et al. (2001) White and Fortune

### 3.5. Project performance

Projects can be considered as a set of activities that must be completed in accordance to specific objectives which involve the utilization of a company's resources (Bakar, A.H.A. et al. 2011). According to Pinto and Slevin (1989), project success can be described as a complex and often illusory construct, but nonetheless it is of crucial importance to effective project implementation. Table 2 shows the project performance indicators that should be on project success.

Table 2. Project Performance indicators

Project performance indicators	Reference
Construction cost	Enshassi, et al. (2009) Takim, and Akintoye, (2002) Cho et al. (2009)
Construction time	Enshassi, et al. (2009) Takim, and Akintoye, (2002) Cho et al. (2009)
Quality	Enshassi, et al. (2009)
Construction predictability, Time predictability, Defects predictability, Client satisfaction with the service	Takim, and Akintoye, (2002)
Client satisfaction with the product	Enshassi, et al. (2009) Takim, and Akintoye, (2002)

From the previous study, a number of variables influencing the success of the project implementation were identified. Chan et al. (2004) suggested that CSFs can be grouped under five main categories. These include human-related factors, project-related factors, project procedures, project management actions and external environment (refer to Figure 1) (Chan et al. 2004). Variables within each group can influence a variable in others, and vice versa.

## 4. Research methodology

The tool used to achieve the relationship between the critical success factor and project performance in this study is by developing a conceptual framework. Critical success factor is a variable that can have a significant impact that delivers measurable improvements to the project success. Organisations/companies look to forecasting tool to help them speed their progress toward performance improvement, and to guide them around pitfalls that might otherwise slow or even halt their initiatives of project performance. Therefore, in order to improve the project performance, it is essential to determine the critical success factors in the current project management practices. In order to achieve this, the variables for project success are essentially important to be identified and established towards achieving the objective of this

study. The target population of the questionnaire survey will be the project manager, architect, engineer, builder and who have experienced in the construction industry in Malaysia. This research is limited to Peninsular Malaysia only since this country running many construction projects. Sets of the questionnaire will be distributed to identify the critical success factors project management practice in Malaysia. A questionnaire will be designed with the objective of ranking the important factors for achieving successful building projects. The analysis of data from the questionnaires responses can provide precise data from which tables can be produced. Pilot survey will be also being conducted to view the current scenario of construction industry and feedback on the process and procedure in the respective organization. A pilot study will be carried out to test the relevance and comprehensiveness of the questionnaire before it will send to the respondents in the industry. Interview will be conducted to the target group of main players in the design and construction stages of building projects in organizations such as the project manager, architect, engineer and builder. A workshop of discussion and debate will be conducted at the end of year two of the research. This will involve project managers and attempt to get more inputs on the critical success factor of each different organization.

**5. Discussion**

Determining critical success factors will give organization/company a competitive edge and is the bottom line of success in fulfilling the responsibility of a project management companies. This in turn will give rise to satisfied investors, professional bodies and make the project management company prosper. Drawing on literature of the project management, project management practices, the objectives of project management, critical success factors and the performance of the project, this study has been identified five variables of project performance as shown in Figure 1. There are Project Management Action, Project Procedures, Human Factors, External Issues and Project Related Factors.

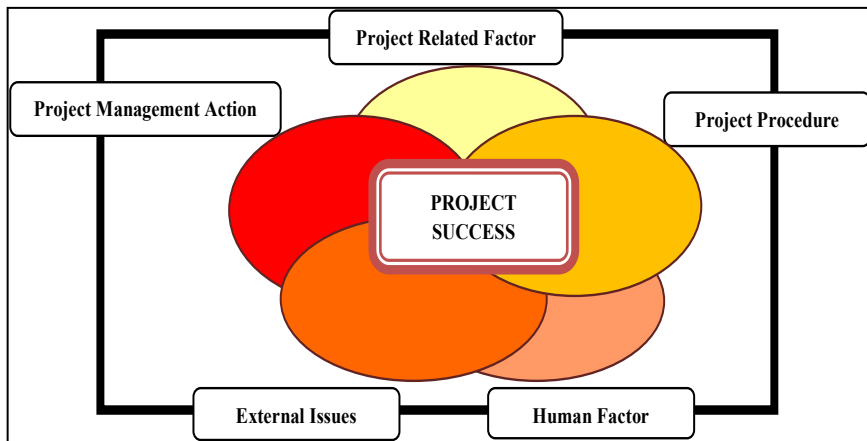


Fig. 1. Variables for Project Success  
 Source: Chan et.al (2004)

- Project Management Actions
- Project management action will focus on the communication system, planning effort,
- developing an appropriate organization structure, implementing an effective safety programme, implementing an effective quality assurance programme, and managing and control of sub-contractors' works
- Project Procedures
- Project procedures are including the procurement and tendering methods and strategies
- Human Factors
- Human-related factors involve client's experience, nature of client, size of client's organization,
- client's emphasis on low construction cost/ high quality of construction/ quick construction, and client's ability to brief including to make decision; to define roles; contribution to design; contribution to construction.
- Project Related Factors
- Project related factor will focus on the project type, the nature and complexity of project and also the size of the project.
- External Issues
- External issues are including factors such as economic, social, political issues, physical, and technology advance.

Having identified variables for project success it is easier for the researcher to determine critical success factor for successful of project management practice. The conceptual framework for this study is shown in Figure 2.

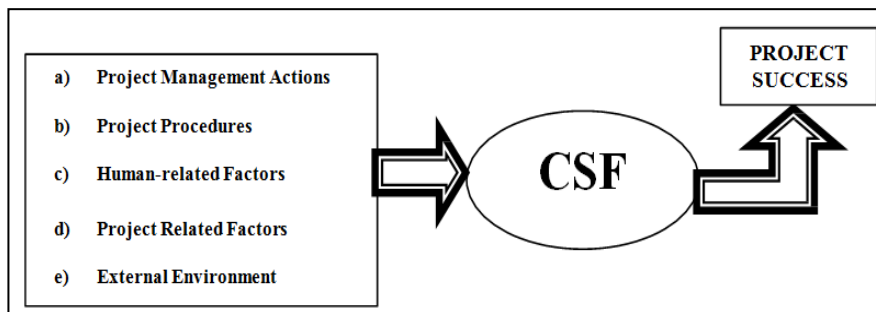


Fig. 2. Conceptual framework

The conceptual framework for this study will be extended in the future research and critical success factor will then be determined after the data collection. This conceptual framework illustrates the variables for project performance which were applied to capture the relevance data. In the conceptual framework, the relationship between variables for project performance, CSF and the project outcome was used in this study.

## 6. Conclusion

Results from this study are expected to help project management practitioners to achieve specific construction performance level. Then it will define the critical factors that lead to project success and provide a forecasting tool to enable parties to rapidly assess the possibility of a successful project from their viewpoint. This study also elaborates a conceptual framework for determining critical success factors in project management practices based on five (5) variables for project success, which should be

taken into consideration during the project management phases from inception until project completion in order to enhance project success. Thus, the context of the critical success factors (CSFs) to be considered when examining project management practices and project outcomes. Finally, it is hoped that this study will be beneficial to all parties involved in construction industries and would stand as a good basis for future research.

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