Civil and Environmental Research
ISSN 2224-5790 (Paper) ISSN 2225-0514 (Online)
Vol.6, No.1, 2014

Ranking the Factors that Influence the Construction Project Management Success: Malaysian Perspective

Jolowo Micheal[1]
Student, School of Civil Engineering, University of East London, Linton University College,
PO box 71700 Mantin, Negeri Sembilan Malaysia

Deepak T.J.[2] (Corresponding author)
Deputy Dean, School of Civil Engineering, University of East London, Linton University College
PO box 71700 Mantin, Negeri Sembilan Malaysia
Tel: 6067587888 E-mail: tjdeepak@gmail.com

Venishri .P[3]
School of Business and Management, University of East London, Linton University College
PO box 71700 Mantin, Negeri Sembilan Malaysia

Ir. Siow Yun Tong[4]
Professional Engineer, Member – Board of Engineers Malaysia.

Abstract

There is need for the construction industry in Malaysia in all levels to be aware of project management and to efficiently practice project management principles in the construction industry. This paper seeks to explore the extent of knowledge which the construction companies have on the use of project management principles in the Malaysian construction industry as a whole and rank these project management principles with the aim of finding out the most commonly used in the construction industry. It is also aimed at finding the importance of construction project management and the factors responsible for the success of construction project in general. A total of 55 questionnaires were filled and returned. The targeted groups of respondents were contractors, site engineers, project managers and project site supervisors who have knowledge on construction project management. The data collected were based on the premise of the implementation and the usefulness of project management methods in the various construction companies. The findings from this study revealed that majority of the construction companies in Malaysia have the knowledge of construction project management and its importance in successful project execution.
Keywords: Project, Management, Success, Questionnaires, Knowledge, Execution,

1. Introduction

The fundamental objective of the use of project management principles is to reduce the time lag and excessive budgets at the time to promote the quality of the final product and services provided. One of the reasons of the difficulties in managing a construction project, especially in the government sector is the failure in the application of project management strategies across project phases (Takim *et al.*, 2004). Numerous studies have been conducted over the years to investigate factors that are 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 the use of construction project management principles towards the actualization of construction project success.

1.1 Construction Project Management

The management of construction projects requires modern managerial knowledge as well as the understanding of the design and construction processes. Construction projects have specific sets of aims, objectives and constraints such as a required time frame for completion (Ngoc 2010), PMBOK, (2008). In other words, it is the process of guiding a project from the very beginning along with its performance to the closure, (Stanley 2007). While the relevant institutional arrangements, processes and technology will differ, the management of such

projects has much likeness with the management of similar kinds of projects in other fields such as aerospace, pharmaceutical and energy developments. Project management is defined as the process of planning, scheduling and controlling all of the project activities to achieve it aims and objectives (Ngoc 2010).

1.1.1 Project Success

A standout amongst the most critical factors of project administration and management is about the success of the project. Since evry individual included in a project has distinctive requirements, it is not amazing that elucidation they give to project success in their own specific method for comprehension (Cleland & Ireland, 2004). The success of a project in the field of project management is ordinarily considered as fulfilling the objectives (Lim & Mohamed, 1999,). The overall population has distinctive perspectives. An excellent illustration of diverse view of project success is the Sydney Opera House project (Thomsett, 2002), which went 16 times out of the definitive plan and took 4 attempts to finalize than initially arranged. Yet the effect of Opera House overwhelmed the missed objectives making it, one of the biggest successful project.

1.1.2 Success Criteria and Factors

Various researchers in the last decades have brought lists of success criteria. In all of these success criteria, primal success criteria of project management is the so called 'Iron Triangle' success criteria – cost, time and quality (Atkinson, 1999). A more structured approach to project success is grouping the criteria into categories. Wideman (1996) describes four groups, all of them time dependent: internal project objectives (efficiency during the project), benefit to customers (effectiveness in the short term), direct contribution (in the medium term) and future opportunities (in the long term). The characterization of 'time dependent' is based on the fact that success varies with time.

Success factors are those inputs to the administration framework that lead straightforwardly or in a roundabout way to the prosperity of the project (Cooke-Davies, 2002). Most project supervisors or managers and project team leaders instinctively and casually figure out their own success factors. Then again, if these components are not unequivocally distinguished and recorded, there is the chances that they could not come to be part of formal project management reporting process nor be part of the authentic undertaking information (Rad & Levin, 2002).

2. Research Methodology

The method adopted for this research work was based on a structured questionnaire survey which targeted the construction companies within the Malaysian construction industry. The data collection process was held in Malaysia over a period of one month in 2013. A seven-page structured questionnaire was distributed to the various companies in Malaysia specifically in the states of Negeri Sembilan, Selangor and the capital city of Kuala Lumpur. The targeted population was based on companies that are registered with the Construction Industry Development Board (CIDB) Malaysia under the class G7 (projects greater than RM10 Million) from the CIDB directory. The states of Negeri Sembilan, Selangor and Kuala Lumpur were chosen since the Class G7 contractors registered in these regions are competitive and professionally sound according to CIDB.

Based on a comprehensive literature review, lists of 20 questions pertaining to the study was designed: (1) The level of knowledge construction companies have on project management principles, (2) The contribution of project management principles on the success of projects and (3) The factors that are responsible for the success of construction projects. Respondents were required to rate some of the questions on a four-point Likert scale and others were multiple choices from which respondents were to pick one, two or more, as the case might be. The results were analysed using the Statistical Package for the Social Sciences (SPSS) software.

2.1. Response Rate

A total of 55 questionnaires were filled from the construction companies in Malaysia. The questionnaires were given to those in the managerial level with knowledge on construction management and those who work within the field of project management. Questionnaires were also given to site engineers and project managers.

3. Data Analysis and Discussion

There are two stages of the method of analysis. The first stage was to prepare data while the second stage was to analyze the data. Data preparation involves several processes and steps including editing, coding, interpreting and summarizing (Corbin & Strauss, 2007) while data analysis involves gathering and collection of information from the various questionnaires which had been formed into real data then can be analyzed and interpreted.

Miles & Huberman (1994) described method of analysis as the process of analyzing the raw data while Corbin & Strauss (2007) mentioned that data entry is the process of converting the information obtained from primary sources into a medium for viewing and manipulation. Descriptive statistics such as pie charts, tables, and figures were chosen as a means to display and show the analyzed data.

3.1. Percentage Distribution Of Respondants On Single Choice Questions

The pie charts shown below mainly analyses the single choice questions from the questionnaires that were used in this survey.

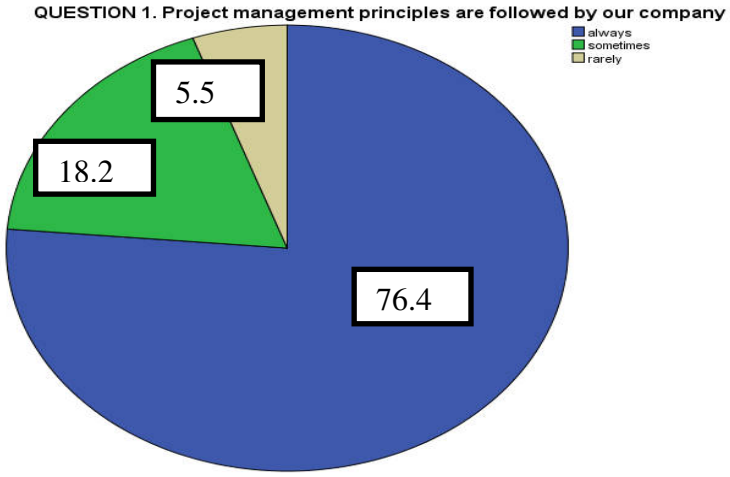

Figure 1: Project management principles followed by the company.

The study shows that 76.4% agreed to always follow project management principles, 18.2% says their companies follow management principles sometimes while the remaining 5.5% says their companies rarely follow project management principles.

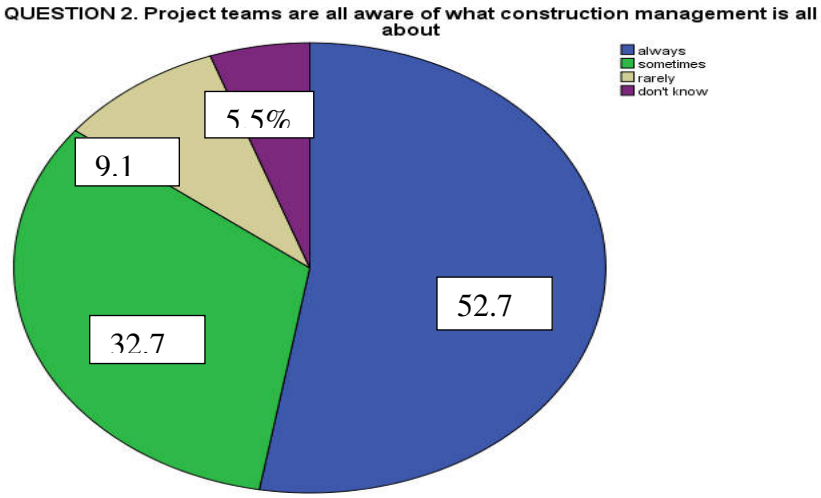

Figure 2: Awareness of what construction management is all about.

As shown above, 52.7% of the companies always are aware of what construction management is all about, 32.7% said the awareness is not always but sometimes. 9.1% said the awareness rarely occur. The least percentages are 5.5% don‘t know what it‘s all about.

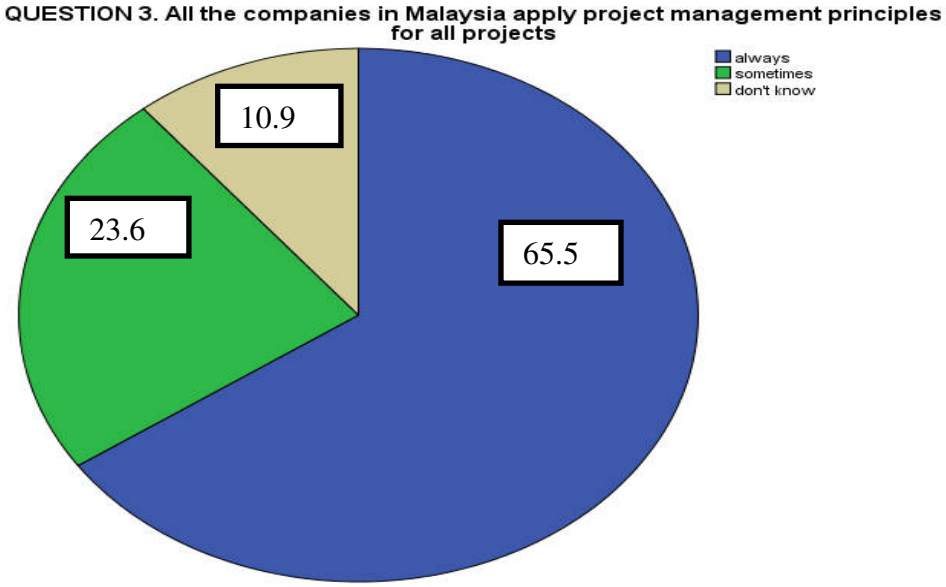

Figure 3: Application of project management principles for all projects.

The findings surgested that 65.5% of companies in Malaysia always apply project management principles for all projects they undertake followed by 23.6% of construction companies in malaysia apply management principles sometimes and 10.9% says they do not apply project management principles.

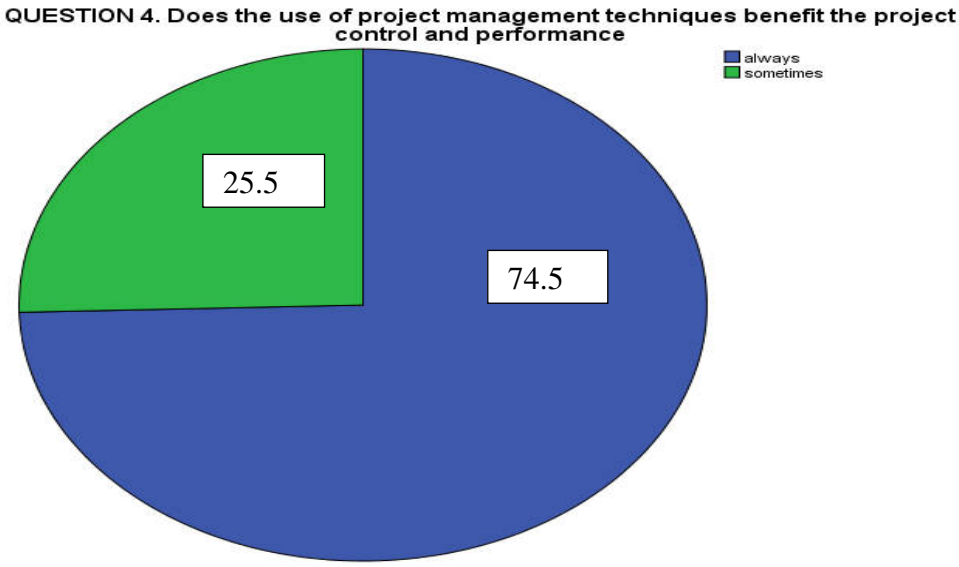

Figure 4: Benefits of project management techniques on project control and performance.

From the survey conducted, 74.5% of the population agree to the fact that project management techniques benefit project control and performance in every level throughout the life span of the project. 25.5% says project management techniques benefit project control and performance sometimes.

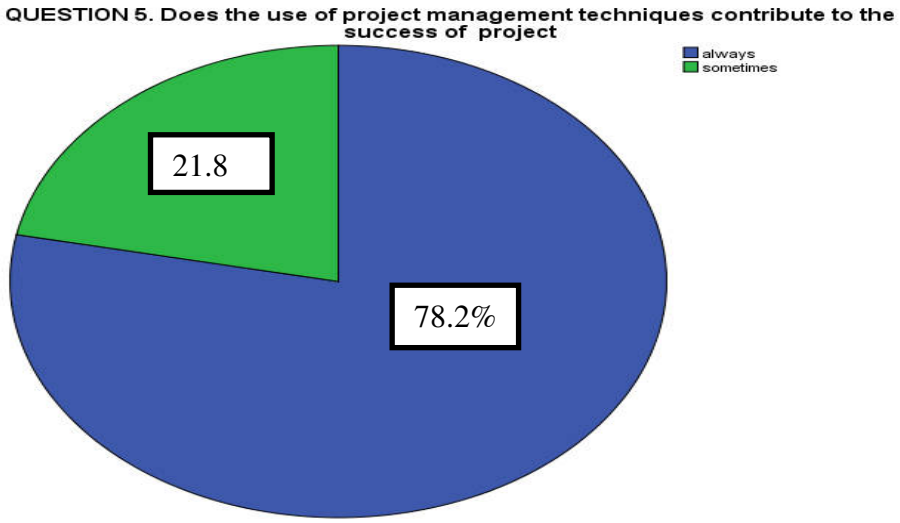

Figure 5: Contribution of project management techniques to the success of construction project

A wooping 78.2% in this analysis of the bebefits of project management techniques contributes to the success of construction projects says project management techniques always contributes to the success of projects. The remaining 21.8% says sometimes management techniques contributes to the success projects. This goes a long way in justifying the fact that project management techniques play important role in bringing about a successful completion of construction projects.

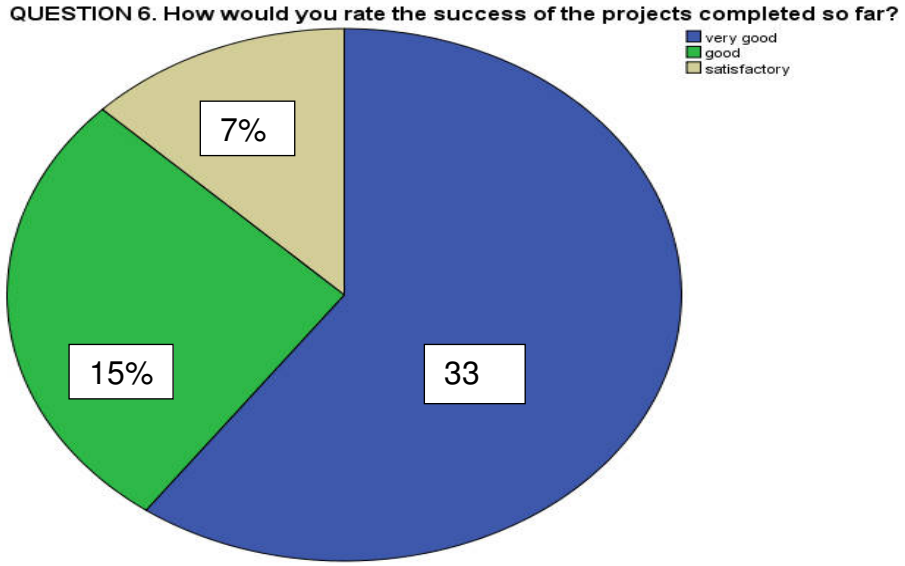

Figure 6: Success rate of project completed so far in the surveyed areas.

The figure above shows the success rate of projects completed so far the areas the survey was conducted. Among the surveyed companies, 7% of the companies said their completed projects are satisfactory, 15% said projects they have completed are good while the remaining 33% said the projects they have completed so far are very good.

3.1.1 Ranking of Respondents on Multiple choice questions

Table 1 to 9 present the result of the analysis of the multiply choice questions based on the factors contributing to the success of construction projects and the importance of the application of construction project management. A total of 46 variables were ranked in the different tables according to the ranking of their mean scores based on the area they cover as specified in the questionnaire.

The first category, project management tools and techniques used in the various companies, includes eight management tools and techniques presented in Table 1. The second category, reasons for the implementation of project management tools and techniques includes seven reasons ranked according to their mean values as presented in Table 2. The third category is made up of the benefits identified due to the use of project

management as they are ranked based on their mean scores in Table 3. The fourth category, project stakeholder's factors (client), includes the five factors presented and ranked in Table 4. The fifth category, project team manager, includes the five factors as they are ranked in Table 5. The sixth category, project related factors include the four factors presented in Table 6. The seventh category, project procurement, includes two factors presented in Table 7. The eighth category includes five external factors as they are ranked in Table 8 based on their mean value. The last category (ninth category), includes three ways in which organization solve problems.

Table 1: Ranking of project management tools and techniques used in the various companies

Management tools & techniques	Mean	Std Dev.	Ranking
Brainstorming	0.7455	0.43962	1
Network Diagram	0.6727	0.47354	2
Bill of Quantities / Materials	0.6000	0.49441	3
Work Breakdown Structure (WBS)	0.5636	0.50050	4
Critical Path Method (CPM)	0.5818	0.49781	5
Project Evaluation and Review Techniques	0.5818	0.49781	6
Planning software e.g. Gantt chart & MS project	0.5091	0.50452	7
Drawing & Analysis / Design software e.g. AutoCAD and Staadpro	0.4545	0.50252	8

Table 2: Ranking of the reasons for implementing project management tools and techniques

Reasons	Mean	Std Dev.	Ranking
Lack of organization	0.7273	0.44947	1
Unsuccessful Scheduling	0.6182	0.49031	2
Failure to meet completion date	0.5636	0.50050	3
Poor overall performance	0.5091	0.50452	4
Delay in receiving materials	0.3636	0.48548	5
Communication problem	0.3091	0.46638	6
Unstable man-power needs	0.2182	0.41682	7

Table 3: Ranking of the benefits identified due to the use of project management tools and techniques.

Benefits Identified	Mean	Std Dev.	Ranking
Better time Utilization	0.8364	0.37335	1
Good management of human resources	0.7091	0.45837	2
Better work organization	0.6000	0.49441	3
Goals and objectives were defined earlier	0.5636	0.50050	4
Better communication between stakeholders	0.4364	0.50050	5
Flexible approach to changes	0.4000	0.49441	6
Prior identification of risk	0.2727	0.44947	7

Table 4: Ranking the project stakeholder's factors (client) contributing to the success of construction project.

Factors	Mean	Std Dev.	Ranking
Financial capability	0.8909	0.31463	1
Top management support	0.5385	0.50338	2
Delay of progress payment to consultant and contractors	0.3455	0.47990	3
Ability to brief the project objectives clearly	0.2885	0.45747	4
Excessive demand and variation during construction	0.2182	0.41682	5

Table 5: Ranking the project stakeholder's factors (project team manager) contributing to the success of construction project.

Factors	Mean	Std Dev.	Ranking
Commitment	0.8000	0.40369	1
Competence	0.6182	0.49031	2
Early and continuous involvement in the project development	0.5636	0.50050	3
Relationship with other project stakeholders	0.3273	0.46638	4
Adaptation to changes in the project plan	0.3091	0.46638	5

Table 6: Ranking the project related factors contributing to the success of construction project.

Factors	Mean	Std Dev.	Ranking
Effective allocation of man-power	0.6182	0.49031	1
Size and value of project	0.6182	0.49031	2
Complexity of project	0.5455	0.50252	3
Urgency in meeting project deadline	0.3091	0.46638	4

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

Factors	Mean	Std Dev.	Ranking
Transparency in the procurement process	0.8000	0.4369	1
Competitive procurement and tendering method	0.6364	0.48548	2

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

Factors	Mean	Std Dev.	Ranking
Availability of resources	0.8000	0.40369	1
Construction technology	0.5273	0.50386	2
Stable economic condition and sound economic policies	0.4727	0.50386	3
Weather condition	0.4182	0.49781	4
Public acceptance towards the project	0.3273	0.47354	5

Table 9: Ranking of how the various organization solve problems

How problems are solved	Mean	Std Dev.	Ranking
Teams are set up for each problem	0.8545	0.35581	1
A permanent team is set up to tackle problems	0.4182	0.49781	2
Assign individual to solve problem	0.3818	0.49031	3

4. Discussion

From the project management tools and techniques listed in table 1, brainstorming happens to be the most used technique without ignoring the fact that the other ones listed below brainstorming are also very important, that some companies might not do without them. Such as the network diagram, the planning and drawing software, bill of quantities etc. Furthermore, in table 2, lack of organization is the main reason why companies go for the implementation of project management principles with unsuccessful scheduling, failure to meet completion date, poor overall performance and delay in receiving materials among the other reasons. Talking about the benefits identified due to the use of project management principles, Table 3 shows that better time utilization captures the minds of most companies and their workers as the most important benefit identified as a result of the use of management tools and techniques.

Table 4 shows the project stakeholder's (client) factors contributing to the success of construction projects and among the factors identified, the financial capability of the client is considered most important. It is important and essential that a client needs to ensure a strong financial capability to maintain the cash flow of the project. Top management support and ability to brief project objectives clearly were seen as some of the important factors. Similarly, Table 5 also shows project stakeholder's (project team manager) contributions towards the

success of construction projects. And among the five factors listed in the table, the commitment of the project team manager is the most important factor or effect a team manager can have on the success of a project; with the like of competence, early and continuous involvement in the project development, relationship with other project stakeholders and adaptation to changes in the project plan ranked accordingly as some of the factors.
Tables 6 presents the project related factors contributing to the success of project of which effective allocation of man-power had the highest ranking as the most essential project related factor. Size and value of project, complexity of project and urgency in meeting project deadline got the mean scores of 0.6182, 0.5455 and 0.3091 respectively. Similarly, project procurement factors which are more or less like the project related factors were also presented in Table 7, whereby only two factors were recorded in this survey which are ‘‘transparency in the procurement process’’ and ‘‘competitive procurement and tendering method’’ the former had the highest ranking with a mean value of 0.8000 compared to the later with a mean score of 0.6364. This made it clear that transparency in the procurement process is important as it will make the right organization get the right job which in turn will determine if the project will be successful or not.
In every project, there are external factors. In consideration of these external factors, five factors were listed in Table 8 and were ranked based on the mean scores they got from the analysis of the results during the survey. Availability of resources was ranked first and seen most important among the other factors leaving construction technology as the second most important factors with ‘stable economic condition and sound economic policies’, ‘weather condition’ and ‘public acceptance towards the project’ ranked 3rd , 4th and 5th . Lastly, unlike the factors contributing to the success of construction projects, Table 9 focuses on the ways organizations (construction companies) solve their problems within and outside the organization. Setting up teams to tackle each problem is the most common method applied by the surveyed companies, followed by setting up permanent team to tackle every problem and last but not the least, assigning individual to solve problems.

5. Conclusion and Recommendation

Based on the findings and discussions of the study, it is clear that the Malaysian construction industry have high level of knowledge on project management which has benefited the companies that believe in increasing construction project success rate. There are a lot of reasons why project management principles were implemented and among these reasons, emphasis were laid more on lack of organization which is the most important in an organization. It is recommended that more attention should be given to the human related factors such as competence, commitment and communication among project stakeholders. The other factors being financial capability of the clients and the project related factors are among the factors that need particular attention. The empirical findings of this study will hopefully offer an insight to project-oriented companies in Malaysia for future strategies and guidelines for the development of construction projects. It is recommended that more emphasis should be laid on the application of project management principles. More time should be allocated for trainings on project management and its influence on construction projects and focus should be on each project individually by reviewing it records to obtain understanding on the standard of project controlling with the help of project management principles used in the project.

References

Akintoye, A. (2000). Analysis of factors influencing project cost estimating practice. *Construction Management and Economics*, 18,pp 77-89
Atkinson, (1999), Project management: cost, time and quality, two best guesses and a phenomenon, it’s time to accept other success criteria, *International Journal of Project Management* Vol. 17, No. 6, pp 337-342, [Electronic].
aiu.edu (2013) *Project Management in the Construction Industry*. [online] [Accessed: 28 May 2013].
Belassi, W. and Tukel, O. I. (1996), ‘‘A new framework for determining critical success/failure factors in projects’’. *International Jounal of Project Management,* 14(3), 141-151
CIDB (2003a). *CIDB Contractors Registration Report, Construction Industry Development Board, Malaysia. Kuala Lumpur: CIDB Publications*
Cleland & Ireland, (2002), p210, Project Management: Strategic Design and implementation, McGraw-Hill Professional, USA
Cooke-Davies, TJ. (2002). The ‘‘real’’ success factors on projects. *International Journal of Project Management*, 20, pp. 185-190.
Corbin, J. and Strauss, A. (2007), *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory.*
Harvey. M. (2010), *Project Management, Pearson Education Limited, England.*
Lim C. S. and Mohamed M. Z. (1999), ‘‘Criteria of Project Success: an exploratory re-examination’’,

International Journal of Project Management, 17(4), 243-248.
Maylor, H. (2010) *Project Management Past And Present*. [online] [Accessed: 28 May 2013].
Miles, B. and Huberman, M. (1994). *An Expended Sourcebook Qualitative Data Analysis. India: Sage Publication.*
PMBOK (2008). *A guide to the Project Management Body of Knowledge. Fourth edition. Newton square, USA*
Russell. D. (2011). *Succeeding in the Project Management Jungle: How to Manage the People Side of projects, New York, American Management Association*
Sean H. H. (2010). *A Simple and Effective Approach To Managing Projects. In: pmsimplicity.com The PM simplicity method*
Stanley E. P. (2007*). Project Management: For Dumies. Canada. Wiley Publishing, Inc*
Pmhut.com (2013) *Project Management Articles - PM Hut*. [online] Available at: http://www.pmhut.com/ [Accessed: 5 Jun 2013].
Nicolini, D. (2002). "In search of 'project chemistry'", *Construction Management and Economics*, 20(2), 167-177.
Rad & Levin, (2002), The Advanced Project Management Office, St.Lucie Press, USA, page 18
Takim, R., Akintoye, A. and Kelly, j. (2004), "Analysis of measures of construction project success in Malaysia", in Khosrowshahi, F. (Ed.), *Proceedings of the 20th Annual ARCOM Conference*, Heriot Watt University, 1-3 September, Association of Researchers in Construction Management, 2, 1123-1133
Thomsett. M. C. (2002), The Little Black Book of Project Management, New York, American Management Association.
Toor S.R. and Ogunlana, S.O. (2009), "Construction professionals' perception of critical success factors for large-scale construction projects", *Construction Innovation: Information, Process, Management,* 9(2), 149-167.
Wideman, R.M. (1996), Improving Project Management: *Linking Success Criteria to Project Type*