

Project Management Success for Contractors

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Abstract—The aim of this paper is to provide a better understanding of the implementation of Project Management practices by UiTM contractors to ensure project success. A questionnaire survey was administered to 120 UiTM contractors in Malaysia. The purpose of this method was to gather information on the contractors' project background and project management skills. It was found that all of the contractors had basic knowledge and understanding of project management skills. It is suggested that a reasonable project plan and an appropriate organizational structure are influential factors for project success. It is recommended that the contractors need to have an effective program of work and up to date information system are emphasized.

Keywords—Project management, success, contractors.

I. INTRODUCTION

PROJECT management (PM) can be used as a tool to maximize the success of projects and ultimately, the success of construction companies [1]. Effective project management practices by the contractors are crucial to guarantee the success of projects. Good project management should be implemented by the contractor to ensure that projects satisfy the client's requirements and can be completed within the scheduled time. The overall planning, co-ordination and control of a project from inception to completion, aims at meeting a client's requirements in order to produce a functionally and financially viable project that will be completed on time, within authorized cost and to the required quality standards [2]. The Project Management Institute defined project management as the art of directing and coordinating human and material resources through the life of a project by using modern management techniques to achieve predetermined goals of scope, cost, time, quality and participant satisfaction.

Project Management involves project planning, monitoring, and control and includes definition of work specifications, determination of quantity of work, and estimation of resources required. It is facilitated by the identification and successful application of methodology for tradeoff analyses in addition to time, cost and quality, customer satisfaction and overall satisfaction of stakeholders [3][4]. Project team's ability to manage project risks and resolve problems encountered as a means of evaluating project success [5].

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The following KPIs are suggested for construction projects, i.e., client's appreciation: users' appreciation: contracting partners' appreciation: and finally stakeholders' appreciation [6]. If a construction project is not successful, poor performance is reflected in time delays, cost overruns and quality defects. In addition, clients also expect their projects to have high flexibility, particularly in design and construction work approaches which may have to continuously innovate to keep up with new demands and technologies.

Although time, quality and cost are easy and timely to measure [7] [8] [9], they have been criticized for being inadequate for several reasons. Project success is a strategic management concept where project efforts must be aligned with both short and long-term goals of the company. Likewise, strategic project management has been comprehended as a critical, antecedent for project success [10] [11] [12].

Time, quality and cost are considered temporary criteria for measuring effectiveness during the delivery stage [13]. A project constitutes a collection of activities to accomplish a specific objective [14].

Even though, there is a need to recognize the need for different management approaches, the literature, by and large, does not question whether different success criteria are relevant to different types of project, and whether they will perform differently against these different success criteria [15]. In choosing a project management methodology, the project sponsor or project manager should identify the relevant success criteria and subsequently determine appropriate success factors to increase the chance of achieving those criteria. They should then select a project management methodology that delivers those success factors [16] which are as follows:

- 1) Different success criteria are relevant for different types of projects or for projects from different industries [17].
- 2) Different types of projects perform differently against the different success criteria[18].
- 3) Project managers focus on different success criteria depending on their traits [18].
- 4) Project managers perform differently against the different success criteria depending on their traits [19].
- 5) Project success varies according to the importance attached to the success criteria[19].

The project management literature agrees that there are two components of project success [19], [20], [21], [22], and [23], which are:

- 1) Project success factors that can be influenced to increase the likelihood of success; these are independent variables that make success more likely;
- 2) Project success criteria, the measures by which we judge the successful outcome of a project; these are dependent

variables which measure project success.

Project success is also an important issue in view of the different perspectives on the success concept; that there was no proper distinction made between success criteria and success factors. Some of the listed measures were more likely to be the success factors rather than success criteria. Some examples are effective, direct communication; minimal or no surprises during the project; minimal aggravation in producing a building; and minimal construction problems [24]. There is growing recognition that different types of projects require different management approaches, requiring management procedures tailored to the needs of the project, and the need to select project managers with the relevant competencies [25].

It is suggested that a categorization system for projects to identify the appropriate methodologies for projects is needed although they offered no guidance on whether different success criteria will be relevant for different types of projects, and hence different success factors, and whether different projects will perform differently against those different success criteria. In addition, when selecting project managers to manage projects, project sponsors want to know that the manager will focus on the relevant success criteria of the project, and will be skilled in implementing the appropriate success factors. Thus the sponsor wants a project manager not just with appropriate competencies, but also with a specific focus [26]. A good project management practice by the contractor is very important in construction industry to ensure the success of project is guaranteed without major problems occurred and should be implemented by them to enable the projects achieved client's requirements and can be completed within the time schedule. Thus, the purpose of this study is to identify the implementation of project management practice among UiTM contractor registered under Development Department Universiti Teknologi MARA, Malaysia.

II. METHODOLOGY AND FINDINGS

A. Questionnaire Structures

A set of questionnaires was prepared for UiTM contractors registered under the UiTM Development office in Shah Alam, Malaysia. Structured questionnaires were designed and (120) sets were sent to the Class Grade 1 to Grade 7 companies by post and by hand. Questionnaires were distributed in early January 2012 and the feedback was collected within a month. 28 replies were received, contributing to the sample of 20%. They were returned using enclosed stamped and self-addressed envelopes. The questionnaire survey consisted questions which cover responses on the following terms.

III. CONTINUOUS PROFESSIONAL DEVELOPMENT

Most of the respondents were registered under Class A with the Contractors Service Centre (CSC) and the Construction Industry Development Board Malaysia (CIDB). The information retrieved from the Contractors Service Centre portal revealed that they had undergone various training and workshops organised by other government agencies. The workshops were conducted to help those contractors with less

technical knowledge as CSC aims to help interested contractors to participate in these workshops.

Ninety eight percent (98%) of the respondents had attended project management seminars, talk and classes. All Malaysian contractors are required to attend the project management programs organized by CSC or other related programs from other controlling bodies such as CIDB.

Continuous improvement implies constantly delivering greater value and increasing mutual competitive advantage [27]. The use of learning mechanisms helps the parties address their need for continuous improvement [28].

Therefore, it could be concluded that most of the contractors are continuously acquiring and updating knowledge on their project management. All of the contractors have basic understanding of project management skills, tools, techniques and knowledge. This is a standard requirement for contractors since they need to undergo training programs regarding project management and other related matters as organized by common controlling bodies such as CSC and CIDB. They also need to understand the implications of failure to perform any jobs given to them in a proper manner. Thus, they realize the need to implement project management in their projects.

IV. THE APPLICATION OF PM SKILLS, KNOWLEDGE, TOOLS

Eighty six percent (86%) of the respondents agreed that failure to implement efficient project management will cause failure in the projects being carried out. This shows that most of the contractors realized the importance of the implementation of PM skills, tools, techniques and knowledge in their business.

All respondents applied project management skills, tools and techniques and knowledge in their projects. It is very important to apply project management skills, tools and techniques to any projects as it involves project planning, monitoring and control. Project planning includes definition of work specifications, determination of quantity of work and estimation of resources required.

Critical Path Method and S-Curve tools showed the highest percentage at 10% (7 respondents), followed by effective decision making process and organization chart with 8 % (6 respondents). Gantt chart had 7 % in third place while controlling bodies (CIDB, CSC, etc), emotional intelligence and project activity flow chart received 6% and was ranked fourth.

Total project management, project network analysis received 4% at 5th place with only three (3) respondents. Program evaluation review technique (PERT) and total quality management, cost effectiveness and effective problem solving approach received 3% (2 respondents each).

It was found that MS ISO 9000, cost benefit analysis, fast track implementation, others (Microsoft projects), matrix chart, multi-level project scheduling, and facilities management received only 1 % (1 respondent).

Critical Path Method (CPM) provides an excellent way of calculating the shortest completion time and the critical activities for a project however, the success of construction

projects is frequently by attempts to crash the completion time with additional budget. The CPM Method is inadequate to help the project managers to make informed decisions on project progress and performance.

CPM provides interrelationships of activities and scheduling of cost and resources. It is also an effective technique for overall project scheduling and detailed scheduling of construction. However, it differs from the Gantt chart which represents a graphical time schedule. However, in the project network analysis method, both critical and non-critical (float) activities have been located in the schedule and thus, allows for additional scheduling information on non-critical tasks.

Most of the contractors complied with the requirements of controlling bodies such as CSC and CIDB in implementing PM in their projects. Other common PM tools used are the cash flow projection, Gantt chart, project activity flow chart and organization chart. These are common PM tools being applied by the whole construction community as easily acceptable communication tools.

Facilities management, fast track implementation, total project management, multi-level project scheduling, and emotional intelligence are other PM tools available. However, the implementation of these PM tools requires high overhead costs and detailed planning. It is suggested that the allocation of high costs to implement PM for the project may make contractors lose out in the tendering stage due to stiff competition.

MS ISO 9000, cost benefit analysis, cost effectiveness, matrix chart, an effective problem solving approach and an effective decision making process are among the PM tools that UiTM contractors implemented, if at all, in their organizations. This stems from the realization of the benefits of such a system, particularly, ease in the flow of project execution. The smooth flow in project execution may in turn reduce time and cost.

Cost limitations was an influential factor in choosing not to implement PM skills, tools, techniques and knowledge so as to maximize profits from their project execution by reducing the overhead costs.

Yet another limitation was the manpower required for the implementation of the system. An average of 4 persons will be required to implement PM in their organization. Besides costs, this is a major problem because some contractors argued that they represented small organizations. In these organizations, the same person usually plays a lot of different roles. They revealed that the project manager could also be the company contract executive and the managing director of the company.

V. PROJECT MANAGEMENT TOOLS

15% (4 respondents) applied project management tools at the planning process, design documentation, off-site construction management and on-site management. Another 35% (9 respondents) applied the project management tools in their projects while 4% (1 respondent) revealed that they never applied project management in their projects.

The construction phase is important because the quality of the completed project is highly dependent on the workmanship and management during this phase. The quality of the site operation phase depends on the completeness and quality of the contract documents that are prepared by the designer and three other factors, namely, labourers who have the necessary skills to produce the work, field supervisors who have the ability to coordinate numerous activities that are required to construct the project in the field and the quality of materials that are used for construction of the project. Skilled labourers and effective management of the skilled labourers are both required to achieve a project with quality.

VI. ADVANTAGES AND DISADVANTAGES OF PROJECT MANAGEMENT

46 % (5 respondents) estimated that the average cost would be at 1% of the total project contract value/sum followed by 36% (4 respondents) and 18% (2 respondents) who stated that the average cost would depend on the size and contract sum of the project and that a hypothesis can be assumed for the cost involved. The greater the contract sum for a project (the greater size of the project), the greater cost required to implement project management.

28% of the respondents agreed that the implementation of PM in the organization will ease the flow of the project execution. Another 24%, 24% and 22% of the respondents agreed that implementation of PM will help in the reduction in project duration, reduction in project cost and enhancement of quality in the construction, respectively. 2% of them answered Others for the question. Generally, most of them obtained more or less the same benefits through the implementation of PM.

VII. ORGANISATION STRUCTURE OF THE CONSTRUCTION COMPANIES

14% of the respondents stated that their organization comprised project managers. Another 13%, 13%, 11% and 10% stated that their organizations comprised project engineers, accountants and contract executives, clerks, foremen, general workers, quality control and planners. The lowest percentage is 4% which accounted for the position of superintendent. The data denotes that the organizations are simple organizations and that the project manager wears many hats, and is usually the same person that holds responsibility as the company managing director.

88% (12 respondents) verified that their company had standard guidelines and methods for PM while another 12% (17 respondents) did not have standard guidelines or methods for PM in their organization.

In effect, almost half of them had standard PM guidelines in their project execution. Their ability to execute PM will be much enhanced through the implementation of the said guidelines while the lack of guidelines may hinder PM implementation in their projects. 58% of the respondents stated that they did not have any experience as sub-contractors. Another 42% that had experience as sub-

contractors identified cost as the cause of failure to implement PM.

Each of the UiTM contractor's company has its own organizational structure. Some of them consist only of project managers, clerical and general works while others included a separate quality controller. The latter set-up may be considered as more organized in terms of organizational management.

Some of the respondents stated that their organizations had their own standard guidelines for a project management system while some others did not have those guidelines. Those that possessed such guidelines would likely implement PM in their projects, through not a formal manner. Another difference is in the form of their experiences as sub-contractors. Some of them did not have any experience as sub-contractor. For others, the problem of implementing PM in their projects during their involvement as sub-contractors arose then the main contractor failed to make the necessary payment for their works. The issue of delayed payments had a "tsunami effect" in that they would abandon the projects if the main contractor, at the same time, failed to execute the project properly due to their lack of project management skills.

VIII. PROMOTING PROJECT MANAGEMENT AMONG CONTRACTORS

The respondents stated that:

- 1) The contractors were unaware and used standard applications.
- 2) The contractors did not have knowledge of PM and experience in construction works, depended entirely on sub-contractors who work according to experience rather than use technical tools. Besides, they considered PM unimportant and costing time and money, had no intention to do construction works, did not appreciate quality and had no pride in their work.
- 3) There was lack of competent personnel assigned for the projects.
- 4) There was lack of experience and information.
- 5) Each project should be run by engineers as they can manage projects well due to their familiarity with the sequence and ability to apply appropriate management tools like Microsoft Project, Primavera etc.
- 6) Time factor and work complexity were the challenges faced and that contractors should attend seminars concerning the management process.
- 7) UiTM should conduct a course on management techniques for contractors.
- 8) Increased awareness and training were required.
- 9) There was lack of interest as none of the workers were knowledgeable about PM techniques. A training course was suggested for Project Managers to enable each company to fulfil contract requirements.
- 10) The contractors should attend Project Management workshops more often. More effective help and support should also be provided for them.

IX. THE CONSTRAINTS OF IMPLEMENTING PROJECT MANAGEMENT

It was suggested that the contractors did not have much interest to maintain quality in their jobs as they think that they can easily get jobs from the government. Furthermore, they think that it is not worth to practice PM in their projects as the value of their work is small compared to that of higher class contractors. This is because the cost involved in implementing PM is estimated to be about 30% of the total work value which is considered quite high. Thus, they suggested that they need to participate as active contractors by participating in PM seminars, talks or courses to increase their knowledge and to readjust their mindsets in terms of the cost limitations. They need to realize that stiff competition due to globalization will eventually create problems if they fail to perform PM skills, tools, knowledge and techniques in their business.

X. CONCLUSION AND RECOMMENDATIONS

It can be concluded that all of the contractors have basic understanding of project management skills, tools, techniques and knowledge. This constitutes the standard requirement for contractors since they need to undergo training programs on project management and other related matters as organized by common controlling bodies such as CSC and CIDB. They also need to understand the implications of failure to perform any jobs given to them in a proper manner. Thus, they realize the need to implement project management in their projects, if at all, in their organizations. It is recommended that a reasonable project plan and appropriate organisational structure is crucial for the project. Contractors were recommended to produce their Key Performance indicators of the completed project. They need to have a good and proper programme of work and suitable project management system with an updated information system.

This stems from their realization of the benefits of such a system, particularly, in easing the flow of project execution and the consequential reduction of overhead costs.

REFERENCE

- [1] Isik, Z (2009), A conceptual performance measurement framework for construction industry, Unpublished PhD Thesis METU
- [2] Chartered Institute of Building (2005),UK.
- [3] Pinto, M.B., Pinto, J.K.(1991) Determinants of cross-functional cooperation in the project implementation process. *Project Management Journal*, vol 22, pp. 13-20.
- [4] Bryde, D.J., Robinson, L.(2005) Client versus contractor perspectives on project success criteria. *International Journal Project Management*, vol 23, no 8, pp. 622-629.
- [5] Belout, A and Gauvreau, C (2004) Factors Influencing Project success; the impact of human resources management- *International Journal of Project Management*, Vol.22, No.1.
- [6] Westerveld (2003) The project excellence model: Linking success criteria and critical success factors. *International Journal of Project Management*, vol 21, no 6, pp. 411-418.
- [7] Chan, A.P.C., Scott, D. Lam, E.W.M. (2002). Framework of success criteria for design/build projects. *Journal of Management in Engineering* 18(3): 120-128.
- [8] Willard, B.K. (2005). Project success - a different view. Retrieved Feb. 15, 2008 from: <http://maxwideman.com/guests/metrics/view.htm>.

- [9] Rodrigues, A., Bowers, J. (1996). System dynamics in project management: a comparative analysis with traditional methods. *System Dynamics Review*, vol 12, no 2, 121–139.
- [10] Atkinson, R. (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. 337-343.
- [11] Dweiri, F.T., [2006]. Using fuzzy decision making for the evaluation of the project management internal efficiency. *Decision Support Systems*, vol 42, no 2, pp. 712–726.
- [12] Shenhar, A.J., Dvir, D., Levy, O., Maltz, A.C. (2001). Project success: a multidimensional strategic concept. *Long Range Planning*, vol 34, no 6, pp. 699-725.
- [13] Babu, A., Suresh, N. (1996). Project management with time, cost, and quality considerations. *Journal of Operational Research*, vol 88, no 2, pp. 320–327.
- [14] Turner, J.R. (1999). *The Handbook of Project-based Management: Improving the Process for Achieving Strategic Objectives*. Second Edition. McGraw-Hill, London.
- [15] Wateridge, J.H. (1995). IT projects; a basis for success. *International Journal of Project Management*, vol 13, no 3, pp. 169-172.
- [16] Muller and Turner (2010) Leadership competency profiles of successful project managers. *International Journal of Project Management*, 28(5), 437-448.
- [17] Crawford, L., Hobbs, B. and Turner, J.R. (2005) *Project Categorization Systems*. Project Management Institute, Newton Square, PA, USA.
- [18] Müller, R. and Turner, J.R. (2004) Cultural Differences in Project Owner – Manager Communication. In *Innovations: Project Management Research*, (eds) D.P.
- [19] Jugdev, K., Müller, R. (2005). A retrospective look at our evolving understanding of project success. *Project Management Journal*, vol 36, no 4, pp. 19–31.
- [20] Morris, P.W.G., Hough G.H. (1993). *The Anatomy of Major Projects*. John Wiley and Sons, Ltd, Chichester.
- [21] Elattar, S.M.S. (2009). Towards developing an improved methodology for evaluating performance and achieving success in construction projects. *Scientific Research and Essay*, Vol 4, No 6, pp. 549-554.
- [22] Müller, R. Turner, R. (2007). The influence of project managers on project success criteria and project success by type of project. *European Management Journal*, Vol 25, No 4, pp. 298-309.
- [23] Ju, J. and Kwon, H. (2011). Critical success factors for urban regeneration projects in Korea. *International Journal of Project Management* 29(7): 889-899.
- [24] Pinto, M.B., Pinto, J.K. (1991). Determinants of cross-functional cooperation in the project implementation process. *Project Management Journal*, Vol 22, pp. 13-20.
- [25] Pinto, J.K., Slevin, D.P. (1988). Critical success factors across the project lifecycle. *Project Management Journal*, Vol XIX, pp. 67-75.
- [26] Kulanga, G.K (1999), Learning Mechanisms employed by construction companies. *Journal of Construction Engineering and Management*, 125 (2). 30-35.
- [27] Oberlender, G.D. (1993). *Project management for engineering and construction* (Vol. 2). New York: McGraw-Hill.
- [28] Khang and Myint (1999), Time, cost and quality trade-off in project management: a case study, *International Journal of Project Management*, np.4, pp. 249-259.