

THE ROLE OF PROJECT MANAGEMENT IN SUCCESSFUL COMPLETION OF PROJECTS IN CONSTRUCTION

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Abstract - The study aimed to identify and define the role of project management in successful completion of projects in large construction projects. Although project success is the most discussed topic of project management, little is known about the influence of project management success on the success of projects. This paper examines the current status of project management methodologies and their influence on the elements of project success. Project success depends on project management success and the success of the end-product. This represents the micro and macro perspective of project success, the boundary of which inspires polarized reactions. Project success is influenced by many different factors, outside the control of project management. This research concludes that project management success represents one of two essential ingredients for achieving project success, therefore, positively influencing project success.

Key Words: Project management, construction, success factors, project success, tools and techniques.

I. INTRODUCTION

The construction industry is dynamic in nature due to the increasing clients' expectations, technology improvement, time and budget constraints as well as process development (Chan et al., 2004). From start to completion, construction projects undergo a number of phases characterised by many tasks aimed at identifying, planning, designing, and constructing the proposed facility (Thabet, 1999). Project closeout is one of the most important project phases. It is the formal completion of all contracts related to the project. Closeout takes place after all obligations have been fulfilled and the required documents have been executed. It is the most difficult time for the project manager throughout the project life cycle. As the end of the project approaches, the project manager faces a completely new set of challenges in order to bring the project to a successful conclusion.

To some extent, the corner stones of project success achieve general agreement, whereas others have massive disagreements. Apparently, scholars, researchers and

practitioners fail to agree on the influence of project management on project success and a lot of ground is yet to be explored. The project could be completed on time, within budget and according to the quality level required but it is not successful (Sanvido, 1988). This could be attributed to a number of reasons, amongst them the client dissatisfaction with the final product and unprofessional closeout of the project where the project team fails to learn from the accumulated wealth of experience from completed project (Phiri and Haddon, 2000). In order to overcome the challenges of the closeout phase, this paper aims to deliver successful construction projects through enabling project managers achieve successful project closeout.

II. PROJECT DEFINITION

The BS ISO 10006:1997 defines a project as: "a unique process consisting of a set of coordinated and controlled activities with start and finish dates, undertaken to achieve an objective conforming to specific requirements, including constraints of time, cost and resources". Projects have specific characteristics and rules in comparison to operational work. Contemporary literature outlines such findings and offers ample definitions, highlighting the uniqueness of every project. Projects are temporary organizations, established to achieve desired goals and objectives, resulting in project teams being also temporary, redundant or reassigned after the completion of the project. A major drawback in temporary organizations is that project teams know that their contribution is only required for a limited period of time. A project is an activity to meet the creation of a unique product or service and thus activities that are undertaken to accomplish routine activities cannot be considered projects. A project is an activity to create something unique. Of course, many of the office buildings that are built are similar in many respects but each individual facility is unique in its own way.

III. PROJECT MANAGEMENT

Project management is planning, organization, monitoring and control of all aspects of project, with motivation of all included to achieve project goals on safe manner, within

agreed schedule, budget and performance criteria. It can be seen from the definition of project management, that it is focused on project performance, regarding short-term dimensions of project success – adherence to criteria of time, cost and quality. The “iron triangle” model itself was the very first model of project management success, which has later proven to be only a part of overall project success. From this point of view, it is clear to see how it is possible to have a successful project with unsuccessful project management, and vice versa. Namely, project can be successful despite unsuccessful project management because it has achieved higher and long-term goals.

Project management practices attempt completion of the project as intended; getting it done most efficiently by minimizing cost and achieving external goals related to customer needs. Goals appear straightforward and, however, projects continue to run late, exceed their budgets or fail to meet project objectives. Projects are better designed to respond to expected uncertainties, whereas project tasks demand proper planning and may be more challenging to project teams, when compared to routine work. In addition, the PMBOK® Guide (2000) points out that its project management mythology is only “applicable to most projects most of the time”. This leads to the questions “what” shall be used “when?” Most surprisingly, these questions remain unanswered. Project management methodologies are not designed to be generic but applicable to all projects at any given time, as they need to be adapted to individual project objectives, in order to achieve consistent project management success. Therefore, it appears that either PM methodologies are wrongly applied or project management does not directly influence the success of projects.

IV. AN OVERVIEW OF CONSTRUCTION PROJECT SUCCESS

The ultimate purpose of implementing project management practices is to achieve consistency in project success. Yet, there is no agreed definition of project success, which only further complicates the achievement of such. Success came to be defined as accomplishing the project on time, within budget and an acceptable level of quality. But even that updated definition was still incomplete. The problem with defining success as on time, within budget and at the described level of quality is the internal focus of definition. The ultimate customer should decide whether or not the project is successful. Today, the definition of success is stated in terms of five factors:

- Completed on time.
- Completed within budget.

- Completed at the described level of quality.
- Accepted to the customer.
- Resulted in customer allowing contractor to use customer as a reference.

Chua and Kog and Loh (1999) have investigated critical success factor for projects in the construction industry. All in all 67 expected success factors were examined in a questionnaire to get the relative importance for each of the projects objectives; budget, schedule and quality. When analysing the results, they took into consideration what organization each respondent were working for; consultant, contractor; client, or project management. The result is a top ten list of success factors for each objective and perspective, where adequacy of plans and specifications is considered as one of the most important factor for most objectives, by most of the respondent categories. Other top ranked factors are constructability, project manager commitment and involvement, and realistic obligations/clear objectives.

According to Salminen (2005) one important area of success factors for construction projects is Work Behaviour and Leadership. The management style is important, and it is needed to combine focus on people with focus on production, with a slightly higher importance of the latter. Furthermore, for work behaviour – control is slightly more important than flexibility – thus communication and effectiveness & clarity of tasks are more important than community spirit and satisfaction & growth. Other areas of success factors according to Salminen (2005) are Preconditions – defined as the support from client/consultant, designers and company headquarters, and Management Systems defined as the principles and methods of operation and documentation. One interesting result is that management systems are indicated as only slightly important for project success.

V. REVIEW OF CONTEMPORARY PROJECT MANAGEMENT TOOLS AND TECHNIQUES

There are no agreed definitions for the success of projects and project management and based on Dvir et al's observation, there are no universal project success factors to all projects and different projects have different project success factors, resulting in that contemporary research lacks in sufficient hard evidence, for justifying the positive influence of project management on project success. Nevertheless, in project management there is emphasis on the successful application of tools and techniques against project activities to achieve project success. Due to the rich variety of different tools and techniques, which are applicable to different project life cycle phases, it seems of

utmost importance to apply the right tool and technique at the right time. Zeitoun (1998) suggests that the influence of the tools and techniques depends on the practitioners training as well as the implementation process. Hence, several success factors relate to human influenced factors, the so-called soft project management and do not relate directly to tools and technique of the hard project management. Other researchers namely Nguyen et al. 2004; Scott-Young and Samson 2004; Kloppenborg and Opfer (2002) partially confirm these findings. Based on a study of Thamhain (1999), only 50% of project managers are familiar with project management tools and techniques, whereas only 28% implement them effectively. In a study Al-Hajj & Sayers (2014) concluded similarly that around 42% of UAE practitioners do not utilize the WBS (Work Breakdown Structure) in their projects and around 48% do not feature an OBS (Organisation Breakdown Structure). Nevertheless, the investigated projects achieve a success rate (time, cost and quality) of around 66%. Such findings are surprising findings and one may conclude that project management tools and techniques are not directly influencing project success. On the other hand, several studies conclude that properly and timely applied project management tools and techniques may lead to project success. It involves a sensitive decision-making process to choose the right tools or technique for the specific project life cycle phase, in order to produce the demanded deliverables. Moreover, wrongly used project management tools and techniques may trigger the contrary which could even lead to project failure.

According to Globerson and Zwikael (2002), the project manager is fully accountable for the success of the project. The project manager is ultimately responsible for developing the project execution strategy, which shall align with the parent organizations primary strategy, highlighting the importance of properly trained project managers. Eventually, Turner and Müller (2003) conclude that the title "Project Manager" shall be restricted to individuals, possessing professional certificates for creating more confidence and trust to principals or sponsors, during the process of selecting competent project managers. Further studies suggest that competence is essential to achieve project success, but does not guarantee project success

VI. PROJECT LIFE CYCLE

A typical project is divided into following phases. Each phase of the project has its own importance and impact on overall success of the project.

- **Initiation Phase:** In this phase of the project, feedback received from customers is analyzed and

brainstorming is done as to develop new product or modify existing product to meet the new demands.

- **Project Definition Phase:** In this phase of the project efforts are made to define the solution for the problem posed by customers.
- **Feasibility Study:** In this phase, planning of the project is made and definite milestones are established.
- **Project Execution:** In this phase all activities and milestones established in the earlier phase are executed in a timely and orderly manner. This phase utilizes maximum of all resources.
- **Project Conclusion:** This is the last phase of the project. In this phase, final product or service is handed over to the operations team for commercial production.

VII. RESEARCH METHODOLOGY

This research aimed for collecting hard facts. The literature review revealed interesting facts, supporting the conclusion that project management positively influences project success. A project may have individual sets of success criteria and factors. Thus, it is recommended initiating studies on a global scale, for identifying a possible generic set of project success parameters.

For the framework, the following assumptions were made:

- Successfully delivered projects utilize tools and techniques of project management practices.
- Project failures have patterns related to methods adopted to the implementation of project management tools and techniques.
- Competent project managers have a strong command of project management tools and techniques, relevant to produce the project life cycle phase deliverables. Thus, properly trained project managers have influence on project success.

These assumptions are partially based on Turner and Müller (2003) conclusions that the certification of project managers is essential for high performance. Nevertheless, different projects have different success criteria or success factors whereas recent research revealed that different nationalities and cultures perceive project success differently.

VIII. ANALYSIS OF RESULTS — PROJECT SUCCESS

Findings from the survey show that 86.3% of the clients and 89.9% of contractors were satisfied with the work completed on projects. Considering that one-third of the

surveyed project managers failed to keep their projects within the iron triangle shows that stakeholder satisfaction is perceived independently. Hence, this finding may indicate that project management success influences perceived project success. As at the time of the survey, the majority (78.4%) of the projects were still in execution – monitor and control phase, it is doubtful that the project product success influences the rating of the stakeholder satisfaction, a finding which contradicts the observation of previous researchers, who widely agree that project success is a combination of project management success and product success. Moreover, it appears that projects failing in traditional measures may still satisfy stakeholders. Most interestingly, 42.9% of unsatisfied stakeholders are reporting their project being on time, 71.4% are within the budget and 28.6% deliver the project as per contract terms and conditions. None of the unsatisfied stakeholders work for a client organisation, whereas 50% of the respondents work for a contractor. Although, the overall result illustrates projects with satisfied stakeholders, the above finding aligns with the reviewed project management literature. Nowadays, considering time, cost and quality, as primary success measures appears insufficient to assess the success of a project. The survey findings also show that the majority of projects respondents working on are within the planned time (66.7%), within the agreed budget (72.5%) and comply or exceed quality requirements (66.7%). The analysis unambiguously demonstrates that around two thirds of the surveyed projects operate within the iron triangle and achieved stakeholder satisfaction. These projects achieve the broadly agreed definition for project management success.

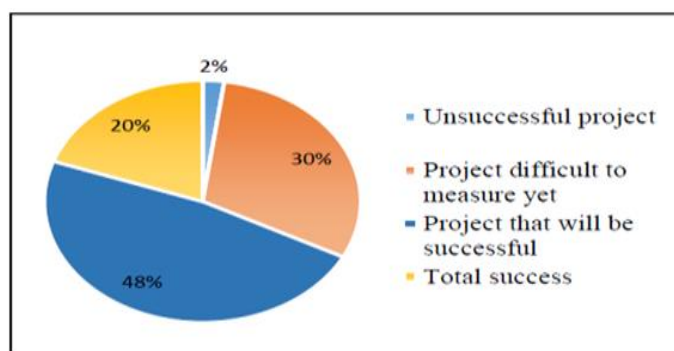


Fig. 1. Project success status.

A. Project Manager Competence

Fig. 2 shows that Competence as a trait of project managers is the most important trait of a good project manager. This finding contradicts what Turner and Muller (2005) [49] who concluded that, there is no impact of the

leadership style and competence of the project manager on project success.

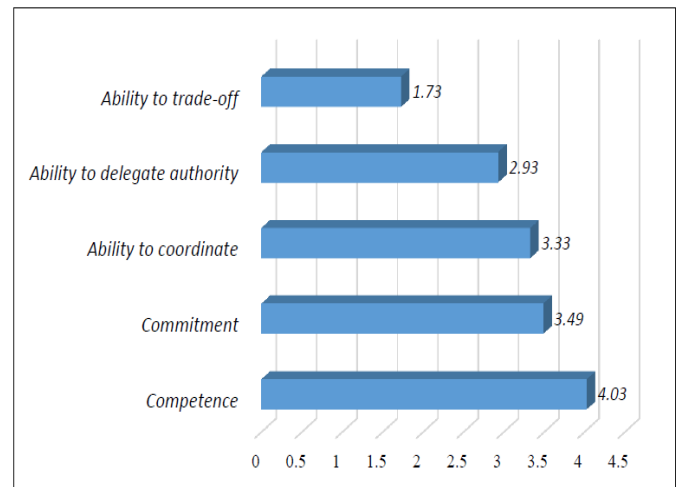


Fig. 2. Project managers traits

B. Project Management Traits

A competent project manager should have a proper training as well as a professional certificate. Surprisingly, 60.9% of respondents stated that they do not have proper project management training, whereas only that practitioners perceive that gaining competence can be professional certification process, which around 20% have an affiliation to a professional project management organization. Such results indicate that practitioners perceive that gaining competence can be achieved without obtaining professional training or through professional certification process, which contradicts the literature. More than three-quarters of participants occupy a manager position, wherein 22.2% of the respondents are senior project managers or project directors. The age range of the participants is between 25 and 65 years, where the majority of participants (55.6%) have a bachelor’s degree or higher, with only one-third of practitioners having less than five year project management experience. Therefore, based on the collected data one may conclude that specific project management training is not necessarily related to project success. The majority of participating project managers entered the project management profession through experience rather than through a professional certification process, a finding that contradicts Turner and Muller’s position in that the title “Project Manager” shall be restricted to individuals, having obtained professional certificates.

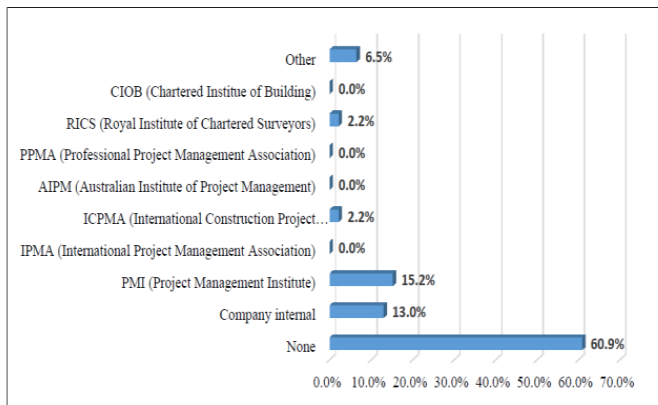


Fig. 3. Professional affiliations.

C. Utilization of Tools and Techniques

The ranking of tools and techniques in the literature broadly agreed that project success factors show certain similarities to the ranking of this survey. Effective project planning and control achieved a rating of 4.78 out of 5, whereas respondents rank a competent project manager within the top eight success factors, indicating that there could be a universal set of factors leading projects to success. Moreover, the respondents rank clear objectives and scope only on sixth rank of the project success factors. A finding which partially aligns with the responses of EVA and WBS in that it appears that contemporary project practitioners perceive project planning and control as independent tool and technique, rather than integrated concept, leading to the assumption that practitioners do not fully appreciate project management tools and techniques, indicating a lack of professional training of the surveyed practitioners.

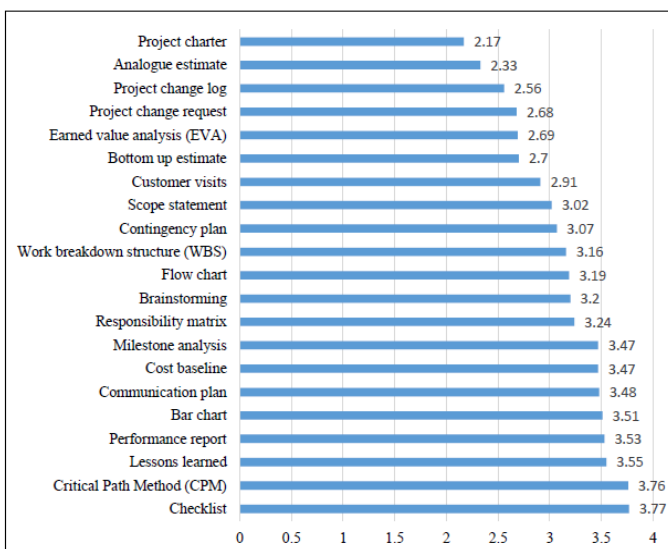


Fig. 4. Use of project management tools and techniques.

IX. CONCLUSION

The first finding established is the complexity in large construction projects, a factor that very much affects the recipe for achieving successful projects. In a large project there is time to harvest investments in education and training of the project personnel, and there is budget for bringing in specialists of different kind instead of trying to solve all obstacles with the permanent crew. Whether this is utilized or not is very much dependent on the attitude of the project management team and on the situation. There is a risk that a project struggling to keep time and budget will try to solve even more issues by themselves to save costs, with the effect that poor decisions are made causing even more costs and further delay. There is a strong correlation between project management success and successful projects. Although, the traditional cost, time and quality criteria remain as the preferred method to measure projects' success it does not guarantee stakeholders' satisfaction. Project success is a perceived measure, irrespective of the individual success criteria and factors. None of the surveyed projects indicate the achievement of project success, without utilizing project management tools and techniques. Thus, experience in general is good – but specific experience from other large projects is essential. Project success is also dependent on the interaction of the success factors; Project Steering Committee, Commission, Process/Phases and Monitoring. A well composed and well functioning project steering committee can be a great support for the project manager, who from the clearly defined commission knows what decisions he/she may effectuate without escalation.

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