

Insights on critical management aspects in construction projects – evidences from large Portuguese companies

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Abstract: - Failures in construction projects are very frequent, in part because of the great specificity of the construction industry and in another part because of the lack of adequate management procedures. Even though Portuguese constructions have improved in the last years, cost and schedule overruns, low productivity and lack of quality of final products are still very common. Throughout a comprehensive survey applied to medium and large Portuguese companies, it was possible to identify the main management aspects which are critical for the project success. In this paper are presented the main results obtained. They enable companies to focus their efforts in the more relevant aspects of project management.

Key-Words: - Construction, project, success, critical aspects, Portugal, large companies.

1 Introduction

The construction sector presents a set of characteristics which make the implementation of efficient projects more difficult. Unlike other industries, the construction one is much less predictable and it entails a large complexity.

The construction sector is often criticized because of its delays, budget overruns (examples are the construction of Oporto's Music House 2005 and the construction of Bridge of Europe in 2004), low

productivity or product quality problems, revealing some inefficiency in the use of project management. Pires et al. (1) show that construction companies with projects above 10 million Euros have, in average, a delay of 40% on the predicted schedule for delivering the construction, 14% of budget overrun and several non compliances of quality.

There are several management aspects, like project design, quality, or communication efficiency, that can influence significantly the success of a project, being

important to identify which ones are the most relevant to enable companies to focus their efforts on them. Since in Portugal there is scarce information related to this field, this article aims at making a contribution in this area presenting the results of a survey conducted with the participation of managers from medium and large Portuguese construction companies with the objective of identifying the most critical management aspects in construction projects. In the following sections, after a literature review, the general methodology is presented and the results obtained are discussed.

2 Literature Review

The concepts of project and project management are often confused. According to Munns and Bjeirmi (2) a project is the achievement of a specific objective, which involves several activities and tasks using available resources. Project management is the process of planning and controlling the achievement of the project objectives. According to various authors (2, 3, 4), project management can be distinguished from traditional management essentially for the following reason: a project represents a temporary effort undertaken to create a product, service or specific result, with an exclusive program meant to be achieved in a determined time, with limited costs, using resources and developing previously defined tasks (5). It consists in the use of dynamic processes of optimization of resources and methods based on an integrated system of actions designed to achieve specific objectives. Although the use of project management tools has been spreading in all industrial or services sectors, including the construction sector, this sector presents a particular set of characteristics, related to the production process and to the diversity of its market segments (e.g. roads, bridges and buildings) which makes the implementation of project management procedures more difficult when not well applied. The efficiency of project management depends therefore on its adaptation and on the knowledge of its success factors and of the most critical ones.

In the literature, success factors for project management are often related to the traditional triangle elements (cost, time and quality) (6). Some authors like Doloi and Lim (7), Nguyen et al. (8), White and Fortune (9), Belout and Gauvreau (10), Chan and Chan (11), Munns and Bjeirmi (2), Carú et al. (12), add other aspects to these ones, like customer satisfaction. Belassi and Tukul (13) considered that depending on the success factor which is being considered and prioritized, specific critical factors will be the most important, showing that the critical

factors are very interrelated with the success factors being considered.

In Portugal, little work has been done on this field. One of the few examples is presented by Pires et al. (1). These authors highlight that the critical factors vary with each success factor. For the success factor “time” the most related critical factors are design and client responsibility. For the factor “cost”, design (conception) is also a critical factor, as well as client’s changes and sites conditions. Concerning “quality”, inadequate design solutions, poor work execution and inadequate material resources are pointed out as critical factors.

3 Method

A survey was conducted to investigate several aspects of project management practice in construction.

The general methodology involved a questionnaire sent to a target group of project managers of 750 medium and large companies provided by Portugal’s Instituto Nacional da Construção e Imobiliário (National Institute of Construction and Real Estate), using a casual sample method. The survey was undertaken from January to June 2009.

This type of companies seemed more appropriate, since the smaller ones have less probability to use a comprehensive set of project management tools. After three rounds, 40 usable questionnaires were received concluding the data gathering process.

The structure of the questionnaire addressed several key aspects of project management with nominal scale, Likert scale and ordinal scale. The questionnaire was divided into several sections, each one with well defined objectives.

The proposed questionnaire was based on a previous survey (14) and was pre-tested with a sample of six project managers to validate its content and readability and to improve some aspects of the questions. The necessary changes were made to the final questionnaire, which was edited in an online survey tool. A briefing letter was subsequently sent by email to the project managers regarding the scope and goals of the study, including a link to the Internet home page which allowed the completion of the questionnaire online.

In this work, the survey aimed to determine the most critical management aspects in construction project management in medium and large Portuguese companies, from a set of identified factors in literature.

4 Discussion

A brief characterization of the responding project managers shows that the majority of them are male (82.5%), with less than 36 years old (52.5%), although 40% of them are more than 40 years old. 55% of them have been working in their current companies for less than 11 years and 25% for more than 15 years. The majority of them (60%) have more than 5 years of experience in project management, although 37% have more than 10 years experience (table 1). Results show that 85% of the participants have a university degree, which is, for 70% of them, in the construction field.

The respondents were asked to classify several management factors that influence the success of a construction project management, according to their importance level. The results presented in Figure 1 were compiled using a Likert scale (ranging from 1 to 5).

Analyzing the figure it is possible to distinguish a first set with the more relevant critical factors, which can be divided into three major areas of project management: conception (project design quality, project planning and objectives and standards definition), human resources (manager efficiency, human involvement and communication efficiency) and control (cost control and monitoring of the construction project). On the bottom of the graphic, but still important, we find “construction project strategy”, “way of solving conflicts”, “customer involvement throughout the process”, “involvement

of top management” and “frequent control checkpoints”.

Table 1: Characteristics of project managers.

Sex	No.	%
Male	33	82.5
Female	7	17.5
Age	No.	%
Less than 30 years	12	30
30 to below 35	9	22.5
36 to below 40	2	5
41 to below 45	5	12.5
Greater than 45	12	30
Time working in current company	No.	%
Less than 5 years	13	32.5
5 to below 10 years	9	22.5
11 to below 15 years	6	15
Greater than 15 years	10	25
Without answer	2	5
Experience in project management	No.	%
Less than 2 years	7	17.5
2 to below 5 years	9	22.5
6 to below 10 years	9	22.5
Greater than 10 years	15	37.5

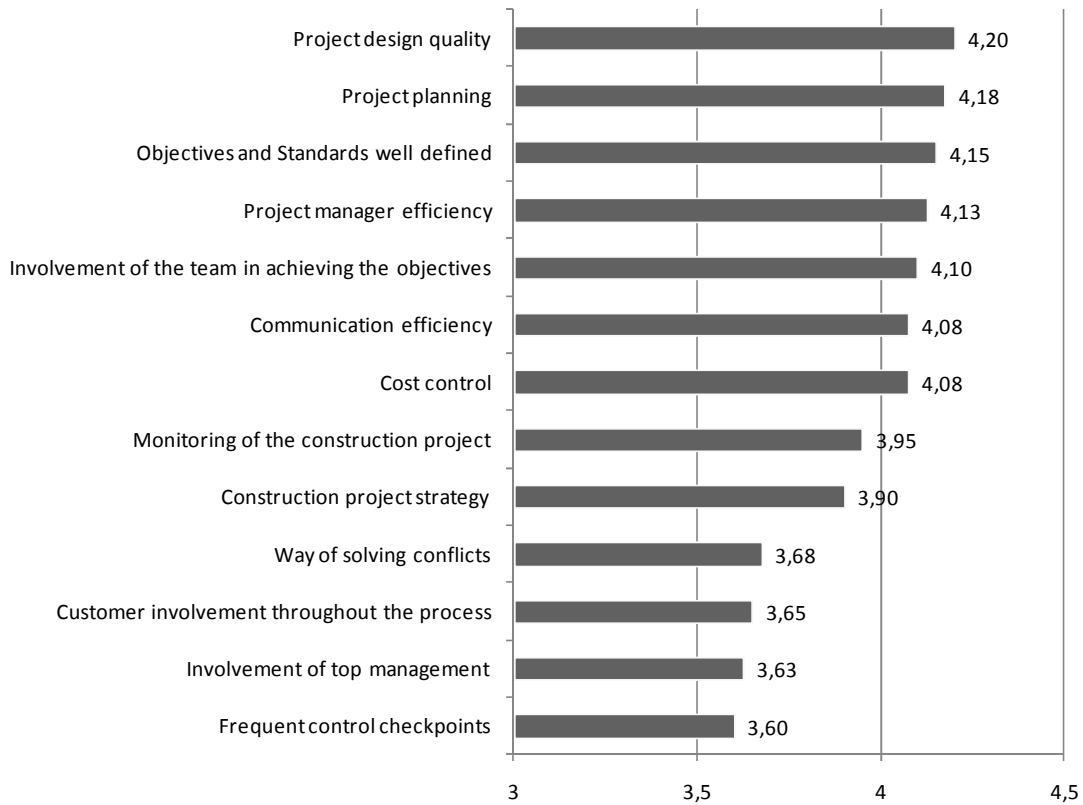


Fig. 1: Critical aspects which influence the success of a construction project management.

Although the different management aspects lay very close in terms of their relative importance, the ones related to planning appear in the top 3, being identified as most critical for project success.

Nevertheless, starting with project design, going through project planning until project control, not avoiding the relevance of the manager competences in communication and team management, the results show that all the project stages are considered of great importance in order to project management to succeed.

5 Conclusion

Through the results of the survey conducted to medium and large Portuguese construction companies it was also possible to identify a group of more important success critical factors, like project planning and project quality. However, the difference between all the critical factors is very small. So, all of them must be considered in construction project management in order to succeed. All the main stages of a project, as planning and controlling have to be well implemented. Inner management of the team and other resources, as well as outer management with the customers are critical factors for the success of a construction project management. Finally, the choice

of an efficient project manager seems to be fundamental for the achievement of successful project management. These results are according to the most recent guidelines delivered by the PMI (2004) which enhances the importance of integrated management of projects with all aspects being worked out. It would be interesting to know, in other studies if these results depend on the dimension of companies. We suggest therefore that further investigation should be done in smaller companies than the studied ones, in order to identify if their needs in terms of project management practices are the same as in large companies.

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