

DETERMINANTS OF PROJECT MANAGEMENT SUCCESS

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One of the features of the construction industry over the last two decades or so, has been the use of project management (PM.) concept of building procurement. Evidently, the PM approach has proved its success in certain types of projects. However, statistics show that a significant number of large publicly funded projects, which were managed under the PM concept, have overran on time, overran on cost and performed poorly on safety. This paper presents some findings of a PhD research which sought to identify the causes of success and failure of the PM technique in railway engineering projects. It reports the preliminary results of a pilot study which obtained the views of over 180 different client organisations, project managers, design consultants and contractors, as to what determines project success. A survey questionnaire was designed with 46 factors, covered under four major sections, namely, Managerial, Organisational, Project Control and Project Systems. The initial analysis of the survey suggests that project manager capabilities, cost estimation, work definition, client criteria and project objectives were among the highly rated factors that determine the success of PM projects. Future research will consist of measuring the performance of the success criteria against 32 detailed case studies. The aim is to show the factors that are associated with outstanding, average and familiar projects.

Keywords: Determinant of project success, project management.

INTRODUCTION

Rapidly advanced technology, increasing complexity of construction operations and growing competition in the market have made project management essential for many organisations. For companies with complex organisational structure that require to deliver sophisticated projects with a high level of technology, the need for successful project management becomes very critical. Project management has been defined by the Chartered Institute of Building (1996) as 'the overall planning, coordination and control of a project from inception to completion aimed at meeting a client's requirements in order to produce a functionally viable project that will be completed on time within authorised cost and to the required quality standards. Badiru (1988) points out that 'Companies that consistently deliver products and service in a timely fashion, succeed mainly because of the efforts they commit to project management. Most of the time high technology and complex projects fall because of a lack of adequate project management. Project management techniques also play a major role in the efficient and effective development of new technology and systems'. Project management success is measured by a criteria which means different things to different people depending upon their role within the project itself. It often changes from project to project depending on participants, scope of services, project size, owner design of facilities, technology implications and a variety of other factors. On the other hand, common threads relating to success criteria often develop not only

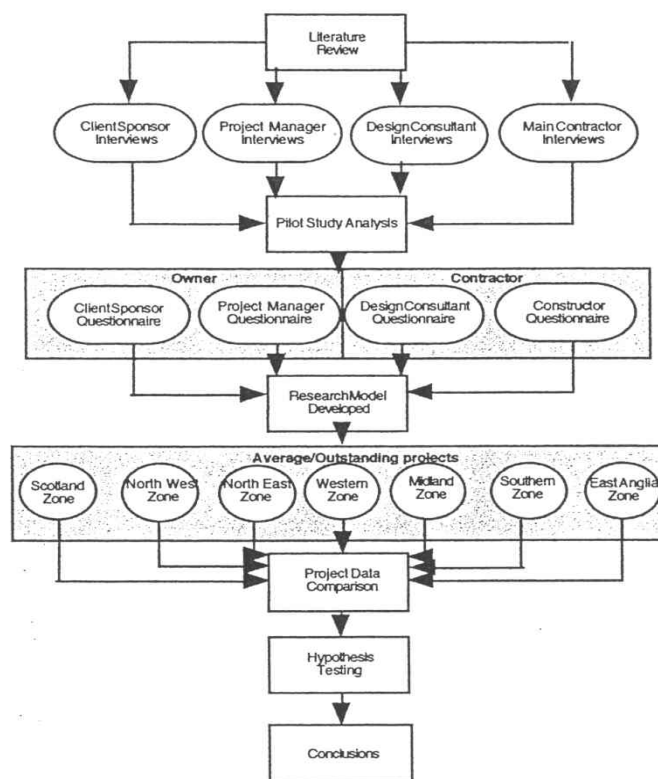
within an individual project, but across the industry, as we relate success to the perceptions and expectations of the client, project manager, designer or contractor. This premise underlies a pilot study which was completed in 1996. The pilot study forms part of a PhD research programme at South Bank University which was set to investigate the determinant success factors of project management within the railway industry. Results from this pilot study show that successful construction projects result from more emphasis in: planning, cost estimation, work definition, client goal/criteria establishment, project objectives defining and project team experience and capabilities.

STUDY SCOPE

The sequence of research is outlined diagrammatically in figure 1. The three main activities of the research are the literature review, the pilot study and the analytical case study approach. This paper reports on the findings of the pilot study which took the form of interviews with different members of the building team including the client, designer and project managers. The interviews were then followed by a wide survey in order to achieve the following objectives:

1. to establish the determinate success factor of project management taking the views of two main subject areas of the research: the owner and contractor represented by the client or / project manager and designer / constructor respectively.
2. to assist in designing the research conceptual model.
3. to prepare the ground for harder and more empirical data collection for the main study of the research i.e. the analytical case studies.

Figure 1



PILOT RESEARCH SEQUENCE

The survey questionnaire was composed of 46 questions which were grouped into four main themes, these are:

Managerial issues; Organisational; Project System; Project Control

Table I lists the 46 factors that were included in the questionnaire together with their definitions. The selection of factors that influence construction project effectiveness was obtained through the literature review of project management material, in particular, using the previous research findings of Ashley, Lurie and Jazelski (1987), Barrie (1980), DeWit (1986), and Kotari (1986). A comprehensive list of possible determinant factors was first compiled and as a result of further interviews with a representative group of owners and contractors, this list was then filtered and reduced to forty-six factors. In the postal questionnaire, the respondents were asked to rate each of the factors shown in Table 1 using a range of 'No Influence on Project Success' (given a value of 1), to 'Major Influence' (given a value of 5). The data gathered were then analysed using the descriptive method of analysis. At this stage, Inferential Statistics such as the 't' test and the 'chi-square' test, were not applied on the data because the purpose of the survey was not designed to test the research hypothesis. It was merely to distinguish the highly rated factors from those that are average and low. The next stage of this research will be to use the highly rated factors for testing the research hypothesis, through 32 case studies (see further research below). In the pilot survey reported in this paper, over 500 questionnaires were sent of which 189 were returned with full use. The sample included 44 clients organisations, 46 work contractors, 54 design consultants and 45 project managers. The following section shows the main findings of the survey.

SURVEY FINDINGS

Data obtained from the survey was coded, analysed and presented as shown in Figure 2. The result shows that there seems to be a general agreement by both main groupings of owner and contractor regarding the impact of the determinate factors on project management success. However, there also seem to be differences in weighting to certain factors, these of which are identified below.

Among the highly rated factors by all groups were 'project manager experience'. This finding supports the previous study by Jaselskis and Ashley (1988) who designed a predictive model to understand project management success. Their model showed that, success is dependent on many characteristics relating to the project managers capability; experience and authority; as well as project team stability. Recent survey seems to refute the earlier work in the field. For example, Rubin and Serin (1967) investigated the impact of a project manager's experience on the projects success or familiar. Technical performance was used as a measure of success. It was concluded that a project manager previous experience has minimal impact on the project performance, whereas the size of the previously managed project does affect the manager's performance. It can be argued, however, that the difference between the earlier and recent studies on project management success, is the framework by which the project management concept was defined and structured.

Among the other highly rated factors in this survey were 'scope and work definition' 'project cost estimate', 'planning', 'establishing client criteria' and 'defining project' objectives. To a large extent these factors seem to fit well within the framework of Kerzner's (1989) and Munns and Bjeirmi (1996) who defined project management as

'planning, organising, directing and controlling of company resources to complete specific goals'. Both studies, and indeed the finding of this survey, are heavily oriented towards the definition and achievement of client and project objectives.

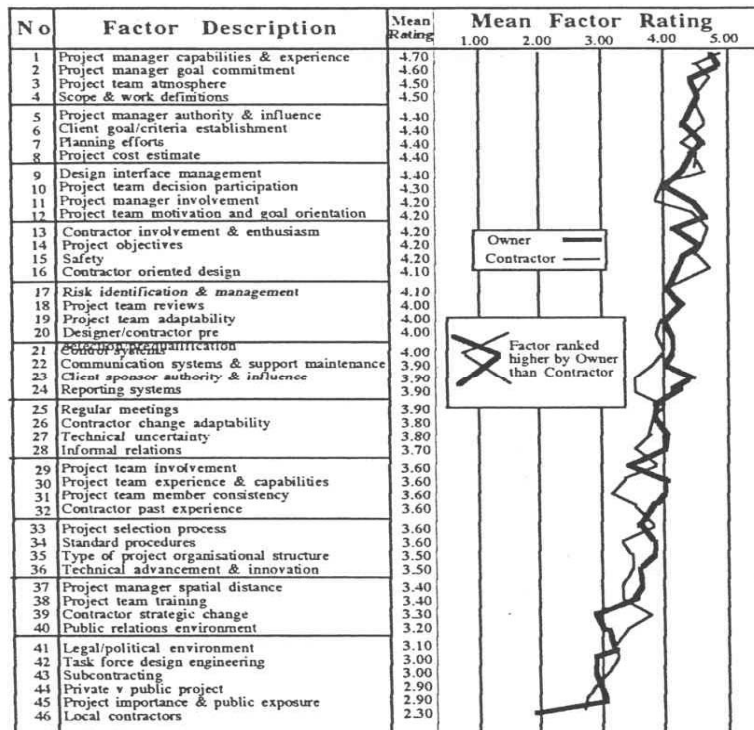


Figure 2 Owner and Contractor factor rating

To this end, it could be argued that these findings are closely linked with the 'partnering' approach and with the early proposition by Schleibach and Hirzel (1990) who introduced the concept of 'building a partnership' as a means of achieving successful project management. The three essential features of a partnering arrangement are 'Mutual Objectives', 'Co-operate Problem Resolution' and 'Continuous Improvement' (Trusting the Team 1995). The difference in views between the two groupings was observed in the area of client authority and influence and project team experience rated higher by the owner grouping and contractor oriented design and strategic change rated higher by the contractor grouping.

Figure 3 shows a listing of the top twenty-five factors grouped by their respective categories. A distinguishing observation that can be made on the grouping is that, most of the factors which were rated highly by the respondents, are found to be associated with the Project System' variable. This is obviously a preliminary result which requires further evidence for support through harder and more empirical data analysis. The next step of this research will examine the validity of this observation by studying details of 32 case studies constructed under the project management approach for the railway industry.

Figure 3

Rank	Mean Rating	Factor Description
		All Categories Mean = 4.22
01	4.70	Project manager capabilities & experience
02	4.60	Project manager goal commitment
03	4.50	Project team atmosphere
04	4.50	Scope & work definitions
05	4.40	Project manager authority & influence
06	4.40	Client goal/criteria establishment
07	4.40	Planning efforts
08	4.40	Project cost estimate
09	4.40	Design interface management
10	4.30	Project team decision participation
11	4.20	Project manager involvement
12	4.20	Project team motivation and goal orientation
13	4.20	Contractor involvement & enthusiasm
14	4.20	Project objectives
15	4.20	Safety
16	4.10	Contractor oriented design
17	4.10	Risk identification & management
18	4.00	Project team reviews
19	4.00	Project team adaptability
20	4.00	Designer/contractor pre selection/prequalification
21	4.00	Control systems
22	3.90	Communication systems & support maintenance
23	3.90	Client sponsor authority & influence
24	3.90	Reporting systems
25	3.90	Regular meetings
		Management Mean = 4.41
01	4.70	Project manager capabilities & experience
02	4.60	Project manager goal commitment
03	4.50	Project team atmosphere
04	4.40	Project manager authority & influence
05	4.30	Project team decision participation
06	4.20	Project manager involvement
07	4.20	Project team motivation and goal orientation
		Organisation Mean = 4.13
01	4.40	Client goal/criteria establishment
02	4.20	Contractor involvement & enthusiasm
03	4.00	Project team adaptability
04	3.90	Client sponsor authority & influence
		Systems Mean = 4.13
01	4.50	Scope & work definitions
02	4.40	Planning efforts
03	4.40	Project cost estimate
04	4.20	Project objectives
05	4.20	Safety
06	4.10	Contractor oriented design
07	4.00	Control systems
08	4.00	Project team reviews
09	4.00	Designer/contractor pre selection/prequalification
10	3.90	Communication systems & support maintenance
11	3.90	Reporting systems
12	3.90	Regular meetings
		Controls Mean = 4.25
01	4.40	Design interface management
02	4.10	Risk identification & management

FURTHER RESEARCH

The main activity that follows this pilot survey will be to measure the twenty-five factors (subjectively and/or objectively, as the case may be) and statistically correlate them with project management performance. This will be accomplished by analysing the results of a selected outstanding, average and familiar projects from the railway industry. Eight areas or zones within the UK will be involved in the next stage of the research. Each zone will provide two outstanding and two average project for analysis; thus a total of 32 projects will be sampled. The case study will be based on interviews with individuals who were involved in the project (i.e. the case studies) and who are known to have experience in railway project management. The Primary objectives of the case study analysis will be:

1. To evaluate the causes of success and familiar in project management projects. Success will be measured by the four 'classical' variables, namely, Time, Cost, Quality and Safety. Obviously, it is extremely difficult to determine causality with a high degree of certainty in any research of a similar kind. However, this research has the advantage over other researches, in that it has been designed to include large number of controlled variables. For instance,
 - (i) all 32 case studies are constructed on 'pure' project management concept;

- (ii) all cases are commissioned by the same client which means similar criteria and organisational structure.
- (iii) the characteristics of the projects are to a large extent the same i.e. nature of work, complexity and technology.
- (iv) the contractual arrangements are usually standard and tailored made for the railway projects.

Therefore, the fundamental differences in the 32 cases will be the four elements of the research, namely, the managerial aspect, organisational, system and control of the project management arrangement. Naturally, there is also the element of 'environmental' influences (external and internal) which can be an important components of the overall success or familiar of a project. These variables are difficult to measure in a cross-sectional study and require a large scale nation-wide longitudinal study to be conducted. However, subjective explanations, related to environmental influences, will be made during the analysis of the case studies.

2. From the analysis of the case studies, a predictive model of project management success is intended to be constructed. This has been considered to be the prime and ultimate 'Aim' of this research.

CONCLUSION

Many of the previous studies in the field of project management, generate lists of critical success factors, each of which varies in its scope and purpose. In this study, the authors intended to classify the determinate success factors and explain the interaction between them, rather than the identification of individual factors. This paper reports the finding of a pilot survey conducted to assess the magnitude of importance of 46 factors on project management success. The factors were classifications under four headings: managerial, organisational, project system and project control. The survey indicated that the 'project managers' managerial experience' is viable and can be as critical as the organisational and the project system factors. With this regard, the survey found that factors classified under the 'project system' heading can be crucial in determining success, in particular, 'scope and work definitions'. It can be concluded, therefore, that investigating determinants of project management success is a fertile area to pursue on a much larger scale. It is established that not only what factors are important for achieving an outstanding project result, but also how they are interrelated and influence the project management success. This of which will be the task of the next phase of this research.

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