



RESEARCH BRIEF 2006

21 September 2006

PROJECT MANAGEMENT PRACTICES ADOPTED BY INTERNATIONAL CONSULTANTS AND CONTRACTORS WHEN HANDLING CONSTRUCTION PROJECTS IN CHINA

Principal Investigator: Florence Yean Yng LING

BACKGROUND

With China's open door policy, international consultants and contractors (foreign firms) are expected to manage more projects there. Hitherto, it is not known what are the more effective *project management practices* foreign firms should adopt in China to bring about *project success*. Following Project Management Institute's definition, *project management practices* are operationalized from the nine functions of project management, namely: management of scope, schedule, cost, quality, risk, human resources, communication, procurement, and integration of these eight functions. A *project's success* is multi faceted, comprising the following performance metrics: cost/budget performance (Y1), time/schedule performance (Y2), quality performance (Y3), owner satisfaction (Y4), profitability (Y5) and public satisfaction (Y6).

RESEARCH OBJECTIVES

The objectives of this study are to: (1) determine the international project management practices of foreign firms when handling construction projects in China, (2) recommend good project management practices, strategies and competencies that foreign firms should adopt at the project level when managing construction projects in China, and (3) propose models to predict the likely success level of projects in China and validate these models.

RESEARCH METHOD AND DATA ANALYSIS

The study collected 33 sets of data of China-based projects that had the involvement of foreign firms. Data were collected using structured questionnaires through the post, emails and face to face interviews. Statistical t-test of the mean and correlation analysis

identified project management practices commonly adopted and those that bring about project success. Factor analysis and regression analysis were undertaken to develop models to predict the likely success level of projects in China. Another 13 sets of data were used to validate these models.

FINDING 1: PERFORMANCE METRICS

The result shows that some performance metrics are correlated with each other (see Figure 1). In particular, Quality Performance (Y3) is significantly correlated with owner satisfaction (Y4), profitability (Y5) and public satisfaction (Y6). This means that by focusing on improving quality performance alone, a foreign firm is likely to also satisfy the owner and the public, and be profitable.

FINDING 2: KEY PROJECT MANAGEMENT PRACTICES

Table 1 shows the project management practices that could bring about different areas of project success. The most important project management practice is the ability to give high quality response to perceived variations. It affects up to five performance metrics. This means that foreign firms should monitor the contract scope carefully and be ready to respond to perceived changes to the contract either by letting owners and consultants know the cost and time implications, and informing staff and subcontractors of changes to their work.

Other important project management practices that affect at least three performance metrics are:

- Providing high quality contract documents
- Preparing high quality project schedule/program
- Managing firm's public image and public

relations.

Different owners would have different project priorities. Some are eager to have their completed facilities, and aim for early project completion. Others are concerned about high quality finished products. Depending on what the owners' priorities are, different project management practices should be adopted. A recommendation of the significant project management practices to be adopted to achieve different project objectives is given in Table 2.

FINDING 3: MODELS TO PREDICT PROJECT PERFORMANCE

Six multiple linear regression models have been developed. For each model, the dependent variable is one of the performance metrics (Y1 to Y6). The independent variables are the project management practices. Those that are used to effectively predict project performance are shown in Table 1 as ●. Validation of the constructed models shows low mean percentage errors, indicating that the models developed in this study may be used to predict the likely success level of a project in China which has the involvement of foreign firms, to a good level of accuracy.

APPLICATION

It is recommended that some of the more effective project management practices identified by this study (Tables 1 and 2) be adopted when managing construction projects in China to achieve successful outcomes. The

models developed in this research may help foreign clients, consultants and contractors predict the likely success level of their China-based projects, based on the project management practices that they are going to adopt.

CONCLUSION

When undertaking projects in China, foreign firms may adopt project management practices that they have always used in their home countries, instead of customizing them for the Chinese environment. This study shows that there are some project management practices that would affect project performance in China significantly, while others may not. It is important to focus on those significant project management practices, so that foreign firms would meet with project success in their China ventures.

Contact details:

Assoc Professor Florence Yean Yng LING (Dr)

Department of Building,

National University of Singapore

4 Architecture Drive, Singapore 117566

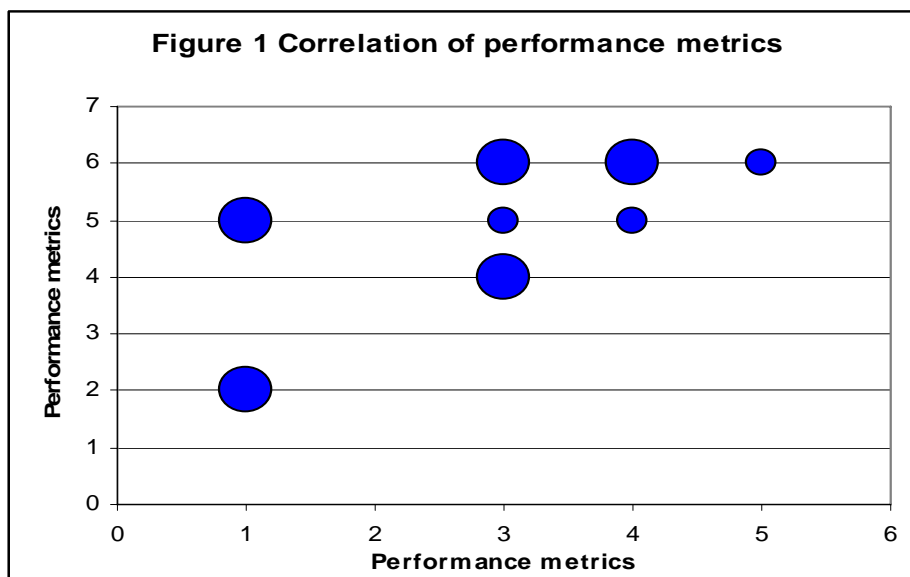
Tel: (65) 6516 3444; Fax: (65) 6775 5502

E-mail: bdglyy@nus.edu.sg

Website: <http://courses.nus.edu.sg/course/bdglyy>

© National University of Singapore, 2006.

All rights reserved; no part of this document may be reproduced, stored in any retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise without prior written permission of the author.



Legend: 1, 2, ..., 6 represent Y1, Y2, ..., Y6 respectively.

Large and small circles represent correlations at 0.01 and 0.05 significance level respectively.

Table 1 Correlation of project management practices to performance metrics

	Project management practices	Performance Metrics						f
		Y1	Y2	Y3	Y4	Y5	Y6	
PM Practices Relating to Scoping of Project								
1	Quality of the contract document			✓	✓	✓		3
2	Quality of response to perceived variations	✓●		✓	✓	✓	✓	5
3	Extent of changes to the contract			✓	✓		✓	3
4	Extent of claims or disputes in the contract	●					✓ ●	1
5	Extent to which contract is subdivided into more manageable components			✓ ●	✓ ●			2
6	Extent to which firm has to monitor the contract scope, to identify changes to scope			●	●			-
PM Practices Relating to Time Management								
1	Timing of acceptance, approval and commitment of the schedule by the project team		✓●				✓ ●	2
2	Quality of the schedule	✓		✓	✓	✓		4
3	Extent to which firm is allowed to control the schedule			✓	✓			2
4	Adequacy of firm's equipment to deliver the service				✓			1
PM Practices Relating to Cost Control								
1	Quality of firm's cost control techniques			✓	✓			2
2	Firm's financial strength	●			✓			1
3	Extent to which firm is able to monitor its activities to detect cost over runs		●					
PM Practices Relating to Quality Control								
1	Standard of quality control and quality management plans			✓	✓			2
2	Extent to which health and safety management in the workplace is practised			✓	✓			2
3	Extent to which owner demanded for quality output						✓	1
4	Extent of compliance with the contract	✓						1
PM Practices Relating to Risk Management								
1	Control of language barrier risk	✓	✓●					2
2	Control of labor issues and management risk					✓ ●		1
3	Control of technology transfer risk	✓						1
PM Practices Relating to Human Resource Management								
1	Extent to which Chinese nationals are engaged as technical staff and workmen			✓	✓			2
PM Practices Relating to Communication								
1	Extent to which face to face communication is carried out			✓	✓			2
2	Likelihood of firm being engaged in future by one of the project team members	✓						1
3	Extent to which firm manages its public image and public relations			✓	✓	✓		3
PM Practices Relating to Procurement								
1	Basis for selecting partners	✓						1
PM Practices Relating to Integration Management								
1	Extent to which prioritized objectives is communicated to staff	✓						1

Legend: ✓ Correlation sig. at 0.05. ● Variable used to predict project performance.

Table 2 Recommended project management practices to improve project performance

Recommended project management practices
Y1 Cost Performance
<p>To enable a project to keep to budget or realize significant cost savings, the following practices are recommended:</p> <ul style="list-style-type: none"> ▪ Provide high quality responses to perceived variations. ▪ Prepare high quality project schedule/program. ▪ Conform to the requirements in the contract. ▪ Control language barrier risk. ▪ Control technology transfer risk. ▪ Work with firms that are likely to engage you in future. ▪ Communicate prioritized objectives to staff.
Y2 Time performance
<p>To enable a project to be completed on time or early, the following practices are recommended:</p> <ul style="list-style-type: none"> ▪ Get the project team to accept, approve and commit to the schedule early. ▪ Control language barrier risk.
Y3 Quality performance
<p>To ensure high output quality, the following practices are recommended:</p> <ul style="list-style-type: none"> ▪ Prepare high quality contract documents. ▪ Provide high quality responses to perceived variations. ▪ Subdivide the contract into smaller and more manageable components. ▪ Prepare high quality project schedule/program. ▪ Be in control of the project schedule. ▪ Institute high quality cost control techniques such as preparing regular cost reports, and close monitoring by HQ in the home country. ▪ Provide high standard of quality control and quality management plans. ▪ Practice health and safety management in the workplace. ▪ Minimize engagement of Chinese nationals as technical staff/worker. ▪ Conduct more informal communication. ▪ Manage your firm's public image and public relations.
Y4 Owner satisfaction
<p>To ensure client satisfaction, the following practices are recommended:</p> <ul style="list-style-type: none"> ▪ Prepare high quality contract documents. ▪ Provide high quality responses to perceived variations. ▪ Subdivide the contract into smaller and more manageable components. ▪ Prepare high quality project schedule/program. ▪ Be in control of the project schedule. ▪ Provide adequate equipment to deliver the service. ▪ Institute high quality cost control techniques such as preparing regular cost reports, and close monitoring by HQ in the home country. ▪ Improve your firm's financial strength. ▪ Provide high standard of quality control and quality management plans. ▪ Practice health and safety management in the workplace. ▪ Minimize engagement of Chinese nationals as technical staff/worker. ▪ Conduct more informal communication. ▪ Manage your firm's public image and public relations.
Y5 Profit margin earned
<p>To significantly improve profit margin derived from the project, the following practices are recommended:</p> <ul style="list-style-type: none"> ▪ Prepare high quality contract documents. ▪ Provide high quality responses to perceived variations. ▪ Prepare high quality project schedule/program. ▪ Control labour and management risk. ▪ Manage your firm's public image and public relations.
Y6 Public satisfaction with the project
<p>To ensure public satisfaction, the following practices are recommended:</p> <ul style="list-style-type: none"> ▪ Provide high quality responses to perceived variations. ▪ Get the project team to accept, approve and commit to the schedule early.

21 September 2006