

EFFECTS OF RELATIONSHIPS ON PUBLIC PROJECT DELIVERY PROCESS IN CHINA: A CASE STUDY

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ABSTRACT

The significance of relationships among contracting parties to a private project has long been recognised. However, it has not been established if public projects can enjoy the full advantages of relationships. This paper reports a case study of the first upgrading project in China's mass transit rail system, which provides valuable information on how relationships affect the project procurement and project management in a large public project in China. It was found that past good relationship with the client could actually improve the chance of winning a bid in this project, and existing collaboration with the client could also increase the chance of undertaking more work. There was no significant difference in project performance between companies with past collaboration and those without past relationships. However, the project management styles were different. It is suggested that concerted effort should be taken to improve relationships in publically funded construction projects, as relationships do have significant effects.

Keywords: Case Study, China, Public Project, Relationship

INTRODUCTION

Relationships are important in construction projects, which require interaction among contracting parties performing interdependent tasks (Landy and Rastegary, 1989). The use of collaborative relationships could lead to the absence of disagreements and high team harmony, which thereafter may increase project performance (Walker, 1998; Schwenk and Cosier, 1993). On the other hand, relationship conflicts arising from interpersonal problems, friction, and personality clashes cause group members to work less effectively (Argyris, 1962).

Public projects in China have been found to have significantly poor cost and schedule performance (Ke et al., 2013). Hitherto, it is not known if relationships have an effect on project procurement, project management and project performance. Therefore, the aim of this study is to find out the effects of relationships on public projects by conducting a case study of the first upgrading project in China's mass transit rail system, i.e. the upgrading project of Beijing Subway Lines 1 and 2.

Data were collected in September 2012 by archival research, interviews and unstructured discussions with ten project participants, comprising two from the headquarters of the client, four from subsidiary companies of the client, two from contractors and two from consultants. The client interviewees play major roles in the project development. Contractor and consultant interviewees were the contract managers who were responsible for the management of their work packages. The selection of interviewees could provide a good mix of profiles, so that rich and even conflicting views could be obtained.

PROJECT BACKGROUND

Line 1 of the Beijing Subway is the oldest line in Beijing's mass transit rail network. It is also one of the most heavily used lines from the time the subway opened in 1969. Line 2 of the Beijing Subway runs in a rectangular loop around the city centre. Opened in 1984, it is the second oldest subway line and the only one to serve the Beijing Railway Station. Due to the limitation of design and technology at that time, a comprehensive upgrade was required for both lines in order to improve the carrying capacity and eliminate hidden safety defects.

The feasibility study of the upgrading project was initially approved in 2003. Preliminary design of the project was completed in 2005. Thereafter, the project was completely approved and the procurement process started. 2007 was the busiest year when the construction work of all specialities involved in the project was carried out at the same time. The main part of the upgrading project had to be completed before the commencement of the 2008 Olympic Games. Other periphery works were completed by the middle of 2009.

The scope of the upgrading project included vehicle renewal, power supply, mechatronics, line network, civil engineering, and the system for communication, signalling and automated fare collection. The total investment hit 8.58 billion RMB (about AU\$ 1.52 billion). It involved seven design firms, 77 contractors and 115 equipment suppliers from different specialities.

PROJECT CHARACTERISTICS

The upgrading project of Beijing Subway Lines 1 and 2 was the first upgrading project in China's mass transit rail system. There were no strict or standardised guidelines in place at that time. A summary of the characteristics of this project is as follows:

- 1) The upgrading project must be completed before the commencement of the 2008 Olympic Games;
- 2) The daily operation of Lines 1 & 2 must not be affected by the upgrading works, which meant shorter daily working hours and limited effective working space for the various parties involved in the project;
- 3) Because the project involved many participants from different specialities, it increased the difficulty of cooperation and project management;
- 4) The scope of the upgrading project covered many different specialities such as civil, mechatronics and electronic information engineering;
- 5) The upgrading project had to take into consideration not only the function and durability of the new equipment, but also its compatibility with the existing equipment; and
- 6) Because of the location of lines 1 and 2, the upgrading project was of vast concern and had a great impact on the community.

In light of the above project characteristics, project management was naturally very complex in terms of overall planning, communication and the management of relationships, schedule, interfaces and changes. This reinforced the appropriateness of this project as the case study.

PROJECT PROCUREMENT

The overall procurement process was divided into three different types, i.e. design procurement, construction procurement and supply procurement. The common approaches adopted were open bidding and selective bidding. The total number of bids was close to 100.

There are only a few design consultants in the market that were capable of subway design in Beijing. Most importantly, none of the consultants had any direct experience in the upgrading work of a subway line. Due to the complexity and tight schedule of the project, the client handed over the general contract for design directly to Beijing Urban Engineering Design & Research Institute Co., Ltd (BUEDRI), who was the original designer of Lines 1 and 2. With the client's agreement, BUEDRI further transferred some design packages to sub-consultants via open bidding. Thereafter, a three-way contract was signed between the client, BUEDRI and sub-consultants.

In addition, selective bidding was use for the procurement of vehicles, while open bidding was used for the procurement of other equipment and systems. Because of the large project scope and numerous specialities involved, the construction and instalment works were separated into packages taking into account the size of each package, speciality and clear boundary.

PACKAGING OF WORK

The whole upgrading project was divided into various work packages mainly via speciality so as to minimize ambiguities and conflicts during implementation. The client considered the following factors when it designed the work packages:

- 1) Package characteristics, including design, technology, construction method without affecting daily operation of Lines 1 and 2;
- 2) Interfaces and co-ordination requirements;
- 3) Ease of controlling schedule, budget and quality of each package;
- 4) Sequence of the work packages;
- 5) Availability of equipment supply; and
- 6) Availability of contractors and consultants with the necessary expertise.

Based on the above factors, seven types of work packages were formulated as shown in Figure 1, where details of two types (i.e. vehicle and other standalone projects) are presented only.

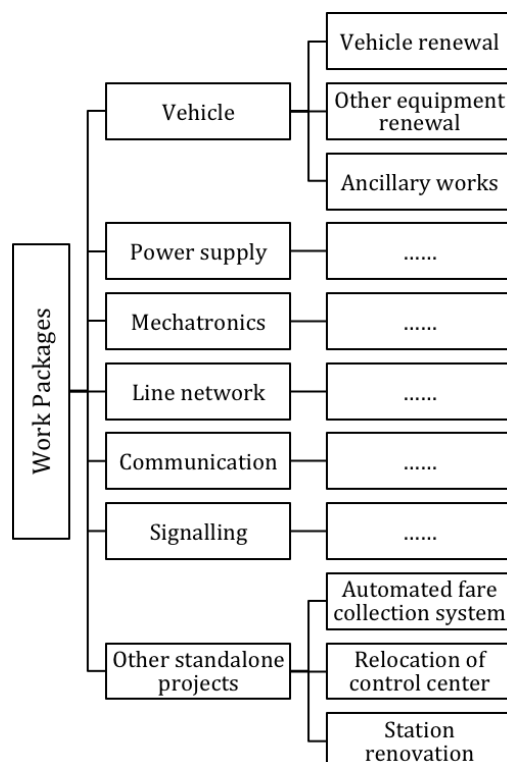


Figure 1 Packaging of Work

RELATIONAL PHENOMENONS

Impact of relationships on procurement

In Beijing, when projects are estimated to cost RMB 3 million or more, or are technically complicated, they must be procured via open bidding, and the experts in technical and economic areas who evaluate the tender should be an odd number greater than five (Ke et al., 2013). However, it seems controversial for the client to hand over the general contract for design to BUEDRI directly. One of the client respondents considered it as a special case, because BUEDRI as the original designer was the only one who hold the whole set of design documents. In addition, the frequent past collaboration with the client made BUEDRI very trustworthy.

In the procurement of other work packages, past experiences could actually improve the chance of winning a bid in this project. According to the client respondents, bidders with past experiences in urban rail projects were given bonus marks, and bidders who had previously worked with the client were allotted an even higher bonus score. Although the bonus score was not dominant, it may become the key competitiveness especially when two bidders offered similar prices. In addition, given a close past relationship with the client, private partners could be able to better understand the call for bidding and thereby prepare more competitive bidding documents.

It was found that existing collaboration with the client could increase the chance of undertaking more work in this project. This is because the client would expand the scope of a current project if the additional work was not too substantial. Contractors were then paid for the extra work as a change order. If the additional work was substantial and an open bidding was required, the contractors could still have a greater chance to win the bid if they performed well in the earlier stage.

Reputation and track record in this project helped in clinching contracts in the future. As this project was the first upgrading project in China's mass transit rail system, the contractor and consultant interviewees shared that a proven track record in this project could give one a significant advantage. One interviewee from the contractor group claimed that his company had gone on to win three more projects in the new metro lines with the same client after this project.

Contracting strategies

According to the interviews, contracting parties focused more on relationship than profit/cost. One of the reasons for the client may be that the most critical performance indicator was time performance but not cost performance. On the other hand, contractors and consultants were keen to build and maintain relationships with the client who was responsible for

the Beijing's mass transit rail system. The impact of relationships on procurement discussed above could be a convincing proof.

Contracting parties were also found to rely more on relationships to guard against trouble instead of contractual or institutional arrangements. The contracts for the project were not drawn up comprehensively enough as this was the first urban rail upgrading project in China. As such, contracting parties without any direct experiences in such projects were forced to deal with disputes using relationships as a platform. For example, one of the civil work packages had a significant cost overrun and schedule delay due to shorter daily working hours and more limited working space than expected. Unfortunately, the contract signed between the client and the contractor did not provide a standard procedure to deal with such a situation. They soon achieved an agreement to continue the collaboration and leave the dispute to be solved at the end of the project so as to avoid a further delay. The contractor interviewee claimed that he was satisfied with the solution at last.

However, most interviewees agreed that it would be much better if there is a well-developed formal contract in future projects. The platform of relationships worked well in this project, because contracting parties shared the common objective (to be explained below), and were then willing to compromise to resolve disputes rapidly. It may be costly and time-consuming in other projects.

Impact of relationships on project management

Overall, there was no significant difference in project performance between companies with past collaboration and those without past relationships. However, the project management styles were different.

According to the client respondents, a higher level of mutual trust, understanding and communication existed among the private partners who had past good relationships with clients. They made behaviours of each other more predictable, and eradicated fears that create difficulties among project participants. Moreover, there were no weak links between the client and private partners, thereby helping in achieving a relationally integrated team. However, the private partners with good past relationships were inclined to assign new staffs to work on the project. Public clients also found it embarrassing to criticize the private partners whom they had prior relationships with. As new staffs did not participate in the bidding stage, it is understandable that it took a longer time for them to be familiar with the project and make real contribution. Interpersonal clashes may occur as well at the start resulting from this issue.

On the other hand, staffs from those private partners without past relationships with clients were found to be relatively more experienced

and proactive so as to make a good impression. However, there was a lack of mutual understanding and trust at the start. The cost and time involved for communication were also much greater. For instance, staffs from contractors without past relationships with the client did not understand the security requirements of Beijing mass transit rail system, and were greatly averse to the strict daily identity checks at first. Another example was that some contractors and consultants neglected to attend the frequent meetings at the start of the project. Thereafter, more meetings had to be held during the project to achieve a common understanding.

Common objective

Because the upgrading project must be completed before the commencement of the 2008 Olympic Games, contracting parties had one common objective, i.e. to complete the project on time. Because of this common objective, they were motivated to work effectively and to resolve problems promptly. In addition, since the client was a source of potential work opportunities in the future, private partners were more willing to compromise on disputes so as to build and maintain a good relationship with the client.

Under the common goal, potential conflicts arising from each party pursuing its own objectives could be then largely avoided. In the face of contingencies, the common goal could also present a set of principles for seeking for solutions. The dispute resolution described in the section of contracting strategies was one of the good examples.

Communication

Communication among the contracting parties in this project was considered relatively effective. According to the interviews, weekly meetings were arranged between the headquarters of the client and its subsidiary companies. The main consultant, BUEDRI, also called for regular meetings with the sub-consultants. Project meetings involving all contracting parties were organized by the client at the beginning and at the end of each work segment. Because of these meetings, project participants were given the opportunity to share and exchange their experiences.

This was a key factor in ensuring the success of the project, as it was the first urban rail upgrading project in China and the contracting parties had hitherto no direct experiences. The effective communication played an instrumental role in problem identification and conflict resolution, prevented problems from becoming disputes, and assisted in avoiding misunderstanding, rework and delays. It also facilitated the exchange of experience, ideas, visions and solutions, which could further nurture mutual trust, and enable a mutually acceptable solution to be developed.

Interpersonal relations

Interpersonal relationship harmony is also vital for project success, as the development and maintenance of relationships are largely at the interpersonal level. The quality of relationships in this project was good because there was an effective communication in place. This good relationship existed both at the individual and organizational levels. However, since the client usually employ a large number of staffs, the good relationship at the individual level that was established in a past project would not continue into a future project if the staffs assigned to the new project are different from those in the previous project.

It was also found that contractors were more concerned about interpersonal clashes. The contractor interviewee explained that being placed lower than clients and consultants on the value chain, contractors are not in a position to ask that a client's representative or a consultant be replaced should any interpersonal clashes occur between them. Interpersonal barriers, originating from an individual's working attitude or a previous contractual relationship, were the hardest to overcome. This was more critical at the start of the project with those consultants who had good past relationships with the client, as they assigned many new staffs to work on the project.

PROJECT OUTCOMES

As explained above, time performance was the most critical factor in this project. The bulk of the upgrading project was completed before the 2008 Olympic Games. All other works done by the various specialities were finished by the middle of 2009. The client was satisfied with the output quality and service quality of consultants and contractors. No significant safety mishap happened during the project while the operation of Lines 1 and 2 continued normally. Although the relational contracting approach was not formally adopted in this project, relationships actually played an important role. The quality of relationships among contracting parties was enhanced.

CONCLUSIONS

The case study demonstrates the effects of relationships among contracting parties on the project management issues involved in a large and complex public project in China. The unique value of the findings to the construction engineering and management community is the identification of effects of relationships, which could be adopted as an initial cause and effect framework to further study the relationships in a public project. Some of the effects are: a greater chance to win a bid; a higher level of mutual trust, understanding and communication; contracting strategies; and interpersonal relations.

One limitation faced in this study is that lessons learnt in this project may be unique. Therefore the results should be interpreted carefully.

ACKNOWLEDGEMENT

The research is made possible by Singapore Ministry of Education's Academic Research Fund Tier 2 funding support (Grant number: MOE2009-T2-2-067) for the project entitled 'Boosting public construction project outcomes through relational transactions'. Special gratitude is extended to the Centre for Interdisciplinary Built Environment Research (CIBER) – School of Architecture and Built Environment to provide a travel grant (CIBER cost centre: 1020360).

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