

The effect of relationship management on project performance in construction

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Abstract

Construction projects often suffer from poor performance in terms of time delays, cost overruns and quality defects. The causes of poor performance have often been analysed. However, few studies have addressed the influence of supply chain relationships on project performance in construction. To fill in this gap, a questionnaire survey is carried out in the UK construction industry to explore the specific characteristics of supply chain relationships in construction and to assess their impact on project performance. In this study, a supply chain relationship is described by key indicators in ten areas: mutual objectives, gain and pain sharing, trust, no-blame culture, joint working, communication, problem solving, risk allocation, performance measurement, and continuous improvement. The analysis reveals that the deterioration of the relationship between project parties may increase the likelihood of poor performance. Poor performance can be effectively reduced by improving some aspects of the relationship. The adoption of supply chain collaboration and partnering helps to solve the performance problems, in which a long-term collaboration is more favourable for performance improvement than a short-term collaboration. In addition to the questionnaire survey, a series of industrial experts are interviewed to provide a deeper insight into the effect of relationship management on project performance.

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1. Introduction

Poor performance, such as time delays and cost overruns, are not uncommon in construction projects (Lo et al., 2006), and the reasons behind these problems have attracted the attention of construction practitioners and researchers. For example, Mansfield et al. (1994) identified the four most important factors leading to time delays and cost overruns as finance and payment problems, poor contract management, changes in site conditions, and shortages of materials. The study by Kaming et al. (1997) showed that the predominant factors influencing time delays are design changes, poor labour productivity, inadequate planning, and resources shortage, while cost overruns are generally attributable to material price increases, inaccurate material estimation, and project complexity. Similarly, Frimpong et al. (2003) suggested that time delays and cost overruns arise primarily as a result of payment difficulties,

poor contractor management, material procurement problems, poor technical ability, and escalation of material prices. On the other hand, some researchers have analysed the major causes of quality defects, one of which Atkinson (1999) identified as human error and another of which Love and Li (2000) described as poor workmanship. These studies discussed project performance from a negative perspective. Combined with project success-specific studies, such as Wit (1988), Munns and Bjeirmi (1996) and Chua et al. (1999), these studies also contributed to the identification of time, cost and quality as the three most important indicators to measure construction project performance.

Other studies, such as Chan and Kumaraswamy (1997) and Assaf and Al-Hejji (2006), have categorised the factors that influence poor performance. For example, Assaf and Al-Hejji (2006) grouped 73 delay factors into nine categories: project-related, client-related, design-related, contractor-related, consultant-related, materials-related, labour-related, equipment-related, and external factors. These studies also divided the

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causes of poor performance into external causes and internal causes. External causes, which are usually beyond the control of project teams, may include adverse weather conditions, unforeseen site conditions, market fluctuation, and regulatory changes. Internal causes of poor performance may be generated by the client, the designer, the contractor, the consultant and various suppliers who provide labour, materials and equipment. These studies looked at the internal project participants in isolation. A few studies, such as Odeh and Battaineh (2002), have considered the contractual relationship as one of the causes of poor performance. However, there is a lack of systematic investigation of the influence of supply chain relationships on project performance although some studies have paid attention to the influence of one particular relationship indicator on project performance, e.g. the influence of mutual objective setting on project performance by Swan and Khalfan (2007).

The concept of supply chain management has originated and flourished in manufacturing (Vrijhoef and Koskela, 2000). According to Christopher (1992), a supply chain is a network of organisations involved through upstream and downstream linkages in the different processes that deliver value in the form of products and services to end users. Christopher (2005) defined supply chain management as the management process of the relationships between different customers and suppliers to deliver better value at less cost to the supply chain as a whole. Both Christopher (2005) and Jespersen and Skjøtt-Larsen (2005) viewed the customer–supplier relationship as the essence of supply chain management. Through the adoption of supply chain management, industry sectors, such as manufacturing, have achieved significant improvement in business performance. Effective supply chain management depends on the collaboration between supply chain partners (Horvath, 2001). Learning from these sectors, the construction industry has gradually accepted supply chain collaboration as a strategy (Briscoe and Dainty, 2005).

Compared to a supply chain in manufacturing, a construction supply chain is more complex and involves a larger number of key participants, such as project client, consultants, main contractor, specialist contractors, and various suppliers. Throughout a construction supply chain, project client is the end customer while the end suppliers provide labour, materials and equipment. Main contractor is both the supplier of project client and the customer of specialist contractors. Client–main contractor relationship is upstream while main contractor–specialist contractor relationship is downstream. Generally, client–main contractor relationship is considered as the main relationship in a construction supply chain (Cox et al., 2006). According to Love et al. (2004), the customer–supplier interfaces link the parties involved in a project together as a construction supply chain. More importantly, the customer–supplier relationship has been interpreted by Saad et al. (2002) and Fernie and Thorpe (2007) to be central to construction supply chain management. As a result, supply chain relationships distinguish one construction supply chain from another.

Supply chain relationships in construction are quite diverse, among which three distinct forms are the traditionally adversarial, the short-term collaborative, and the long-term collaborative

relationships. The traditional adversarial relationship has been criticised by a number of authors, e.g. Larson (1997), Gardiner and Simmons (1998), Wood (2005), and Thomas and Thomas (2005). For example, Larson (1997) saw this relationship as characterised by a focus on win–lose, suspicion of each other, withholding or manipulating information, ineffective problem solving, and unfair risk allocation. Thomas and Thomas (2005) pointed out that this type of relationship often leads to selfish objectives, a lack of trust, confrontation, poor communication, problem escalation, and a lack of continuous improvement. A consensus is that traditional ways of thinking and working form a barrier to construction supply chain management (Vrijhoef and Koskela, 2000; Saad et al., 2002). Successful application of supply chain management in construction requires a major shift from the traditional adversarial to the collaborative relationships in its projects (Egan, 2002).

On the other hand, partnering is widely recognised as a collaborative supply chain relationship. According to the *Trusting the Team* report by Bennett and Jayes (1995) and the *Partnering Toolkit* report by the Construction Industry Institute (CII) in 1996, partnering can be classified into project partnering focused on a single project and strategic partnering based on multiple projects. Project partnering describes a short-term collaborative relationship while strategic partnering represents a long-term collaborative relationship. Many existing studies, such as Hellard (1995), Crane et al. (1999), Black et al. (2000) and Chan et al. (2004), have investigated the critical success factors for construction partnering. According to Hellard (1995), the key elements of successful partnering are commitment, equity, trust, mutual objectives, effective problem solving, timely communication, and continuous measurement and improvement. Chan et al. (2004) identified the top five critical success factors for construction partnering as communication for effective problem solving, sharing culture, clear definition of responsibilities, commitment to win–win attitude, and regular monitoring of the partnering process. The common factors identified by all these studies, from both positive and negative perspectives, can be considered as key indicators of supply chain relationships in construction, including mutual objectives, gain and pain sharing, trust, no-blame culture, joint working, communication, problem solving, risk allocation, performance measurement, and continuous improvement.

This research investigates the impact of supply chain relationships on project performance. It attempts to fill in a gap in the knowledge by answering the questions concerning (1) whether poor performance is more likely to occur following the deterioration of a supply chain relationship, (2) whether the association between the deterioration of a supply chain relationship and the occurrence of poor performance is significant, (3) whether there is a significant increase in the extent of time delays and cost overruns if the supply chain relationship deteriorates, (4) which performance indicator is most likely to be affected by the supply chain relationship, (5) what relationship indicators contribute to the significant improvement of project performance, and (6) whether poor performance can be significantly reduced by adopting partnering approaches. A questionnaire survey is carried out in this study to answer these questions. The analysis of

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