

Supplier integration in complex delivery projects: Comparison between different buyer–supplier relationships

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Abstract

Research on project procurement management has centered on identifying the right suppliers and managing contracts to allocate risks and responsibilities. However, working with suppliers requires continuous integration activities from the buyer during project execution. This paper asks how buyers integrate their suppliers to the project organization during project execution, and how different types of buyer–supplier relationships differ in their supplier integration. We collected interview data in two complex delivery projects, both unique in their buyer–supplier relationships. We explored supplier integration practices from both the buyer's and the supplier's perspective, and sought cross-case differences possibly attributable to the different inter-organizational relationships. Based on the analysis, the nature of the buyer–supplier relationship appears to be associated with the type of integration practices used. The results of the study have implications on how supplier integration should be configured in different buyer–supplier relationships.

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1. Introduction

In project-based industries, delivering complex projects to clients requires that main contractors purchase sub-projects and expertise from external suppliers. Project procurement management focuses on planning acquisitions, identifying and choosing the right suppliers, planning and negotiating appropriate contracts, and administering and closing contracts (Cox and Thompson, 1997; Turner and Simister, 2001; Project Management Institute, 2004). Besides the aforementioned activities, working with suppliers includes various day-to-day activities to ensure that planned work is carried out as agreed. This paper is concerned with such activities that integrate the supplier to the project organization during project execution.

Supplier integration is here defined as collaboration and control between the project contractor and its supplier dur-

ing project execution. Extant literature has examined supplier integration and its mechanisms in various business contexts such as manufacturing (Swink et al., 2007), product development (Stock and Tatikonda, 2004; Petersen et al., 2005; Koufteros et al., 2007; Song and Di Benedetto, 2008), complex products and systems (Hobday, 2000; Davies, 2004; Hobday et al., 2005), and services (Edvardsson and Olsson, 1996). The effects and benefits of integrative mechanisms have received considerable attention. The viewpoint of the buyer has been emphasized as compared to the suppliers' viewpoint.

While extant literature on supplier integration has significantly advanced knowledge on both the means and the importance of integrative practices, it still lacks empirical research carried out in the context of complex project deliveries. Complex projects form the primary mode of organizing production in many of today's project-based industries such as construction (Eccles, 1981), shipbuilding (Tikkanen, 1997), fashion (Uzzi, 1997), oil and gas (Olsen et al., 2005), sport events and festivals (Pitsis et al.,

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2003), and media (Miles and Snow, 1986; Windeler and Sydow, 2001). In addition, extant research on supplier integration has directed only limited attention to exploring how the use of integrative practices may be influenced by the relationship between the main contractor and the supplier. Extant research focusing on inter-organizational relationships has discussed how relationships develop over an extended period of time and how commitment and trust may facilitate cooperation and provide opportunities for learning and innovation (Powell, 1990; Heide and Miner, 1992; Dyer, 1997).

The objective of this paper is to increase understanding on how project contractors integrate suppliers as a part of the project organization during project execution. In particular, we investigate complex delivery projects and the role of buyer–supplier relationships with regards to supplier integration. Our empirical case study is guided by two research questions:

1. With what types of practices do project contractors integrate their suppliers to complex delivery projects during project execution?
2. How do integration practices differ across projects that differ from each other in the duration and commitment of their buyer–supplier relationship?

2. Literature review

In several industries such as construction, engineering, shipbuilding, and television production, deliveries are generally organized as large complex projects that include a complex combination of tangible products and intangible services (Hobday, 1998; Davies, 2004; Hobday et al., 2005). The production of complex products and systems is typically organized as temporary inter-firm projects and project networks (Winch, 1989; Hellgren and Stjernberg, 1995). Project contractors are increasingly concentrating on their core activities while serving their clients, and may outsource other activities to external suppliers (Miller et al., 1995). The contractor often acts as a systems integrator and takes responsibility for actively coordinating a network of upstream suppliers and subcontractors (Davies, 2004; Hobday et al., 2005).

Literature on systems integration and project-based firms acknowledges that integration is required between the firm and its stakeholders. Project-based firms must integrate components, skills and knowledge from other organizations to produce complex solutions (Hobbs and Andersen, 2001; Hobday et al., 2005), and the success of delivering complex solutions depends on the efficient functioning of the entire inter-organizational network (Gann and Salter, 2000). How suppliers are monitored, controlled and integrated in this network is likely to influence the success of the entire project. For example, some of the features of complex systems require the contractors and their suppliers to continue negotiations on the features of the solu-

tion beyond initial contract, throughout the design and delivery of the solution (Hobday, 1998). Also, contractors and their suppliers must continually interact to integrate new knowledge coming from both the client and other stakeholders (Gann and Salter, 2000). The complexity of the delivered system, therefore, requires that suppliers are well integrated in the project not just in contract negotiations, but also during its deployment. In this paper, supplier integration is defined as collaboration and control between the project contractor and its supplier during project execution.

2.1. Supplier integration in complex projects

In complex delivery environments, project-based organizing is seen as an effective way to integrate different types of knowledge and skills across boundaries of several firms to achieve the complex product or system (Hobday, 2000; Gann and Salter, 2000; Brady et al., 2005). Some complex projects involve so many suppliers and stakeholders that the integration task requires a separate project office to deal with various integration challenges (Shenhar et al., 2001). Expertise and expert service centered supplier integration has increasingly been discussed in the context of product development where the degree of uncertainty and technical novelty is typically high, each project is unique and requires a unique configuration of internal and external capabilities.

The need to coordinate external suppliers' and customers' work has been emphasized during product development projects (Millson and Wilemon, 2002; Petersen et al., 2005; Koufteros et al., 2007). Supplier integration is needed to bring in more and better knowledge to the project as early as possible (Petersen et al., 2005; Koufteros et al., 2007; Song and Di Benedetto, 2008), to improve project performance and the quality of the solution (Primo and Amundson, 2002; Ragatz et al., 2002; Koufteros et al., 2007), to generate innovations (Koufteros et al., 2007; Song and Di Benedetto, 2008), to shorten the duration of the project (Hartley et al., 1997), and to co-invest and share risks in the venture (Song and Di Benedetto, 2008). However, the anticipated benefits of supplier integration have not always been supported (Hartley et al., 1997), and also the costs of integration in the form of required effort are frequently mentioned (Primo and Amundson, 2002).

How and through which practices should project contractors integrate suppliers into the project, that is, to collaborate with and to control them? Prior research has directed plenty of attention to supplier assessment and selection (Hartley et al., 1997; Stock and Tatikonda, 2004; Petersen et al., 2005; Ledwith and Coughlan, 2005), timing of supplier involvement (Primo and Amundson, 2002; Petersen et al., 2005; Song and Di Benedetto, 2008), and the nature, quality and embeddedness of the buyer–supplier relationship (Primo and Amundson, 2002; Stock and Tatikonda, 2004; Ledwith and Coughlan, 2005; Petersen et al., 2005; Koufteros et al., 2007; Song

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