



Impact of specific investments, governance mechanisms and behaviors on the performance of cooperative innovation projects

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Abstract

Inter-organizational collaborative innovation projects are increasingly cited as a “best practice” in R&D activities, this study seeks to understand the factors affecting performance of cooperative innovation projects from a new perspective: specific investments. Specific investments is important to the value creation for inter-organizational projects, however which can induce the “hold-up” problem, formal contracts and relational trust are two typical governance mechanisms employed to safeguard specific investments. This paper tests the effects of both mechanisms simultaneously using empirical studies focused on Chinese cooperative innovation projects, exploring the effects of specific investments, governance mechanisms and behaviors on cooperative innovation projects performance. The findings demonstrate that specific investments favor both, the formation of formal contracts and relational trust, and the effect of specific investments to performance is mainly influenced by relational trust. As such, this study contributes to governance theories in cooperative innovation projects management literature by empirically showing how specific investments affect cooperative innovation projects performance.

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1. Introduction

As organizations increasingly engage in joint innovation projects (Eriksson et al., 2016), many studies conclude that cooperative firms have, on average, higher overall performance levels than non-cooperative firms (Abramovsky and Simpson, 2011) since they are able to share investment costs and may take advantage of partners’ resources and capabilities. However, another strand of literature emphasizes that an important issue in project-based environments is the low performance in innovation (Winch, 1998). Others found that firms based on projects do not provide a context supportive of innovation, since they prioritize efficient management of projects (Keegan and Turner, 2002). More recently, Lhuillery and Pfister (2008)

find that 14% of R&D collaborating firms had to abandon or delay their innovation projects due to difficulties in their partnerships by the second French Community Innovation Survey. Thus the concern in this paper is to explore the factors influence the performance of cooperation with other organizations in technological innovation projects.

Based on Bosch-Sijtsema and Postma (2008) and Sandin et al. (2014), cooperative innovation projects (CIPs), or inter-organizational innovation projects, are specific projects designed to create a new idea, product, material, system, or manufacturing processes in cooperation with other firms (suppliers, customers, competitors and other firms) and public research organizations (such as, R&D institutes and universities). In a broad sense, the performance of cooperative innovation projects (PCIPs) is one of the topics of project governance. Although there is an ever-increasing discussion on governance in recent project research, the governance of inter-organizational innovation projects remains

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ambiguous. Few studies investigate innovation projects performed in cooperation with other firms in project-based industries (Gann and Salter, 2000). Transaction cost economics literature and corporate governance literature are two streams of literature prevalent in general governance literature (Ahola et al., 2014). From the perspective of transaction costs economics, this paper aims to study how firms involved in CIP partnerships protect specific asset investments through governance mechanisms (GMs), which include formal contracts (FCs) and relational trust (RT), and how these GMs deal with the opportunistic behaviors (OBs) and cooperative behaviors (CBs) to arrive at a satisfied PCIP.

At a time when organizational networks and collaborative innovation processes are proliferating in many economies (Calamel et al., 2012), a particular institutional environment may encourage or impede the building of relational ties between trading partners (North, 1990). On the one hand, China has functioned as a highly relational network of clans; on the other hand, China is rapidly changing towards a free market operation, providing a context appropriate for testing the impact of RT and FCs on transactions. Smyth and Morris (2007) argue that projects are context-specific and located in open-systems, this paper will test the effects of the specific investments (SIs) and two governance mechanisms to the performance of cooperative innovation projects within the Chinese context.

Based on a sample of 238 questionnaires that provided CIP data in Chinese high-tech enterprises, from the perspective of transaction cost economics, combined project governance and innovation management literatures, we hypothesize and test a proposed model that links specific investments and firm-level PCIPs, considering the role of governance mechanisms and partners' behaviors. The findings demonstrate that specific investments favor both of the formation of FCs and RT, and the effect of SIs to the performance of cooperative innovation projects is mainly influenced by RT in China. As such, this study contributes to project governance theories in CIP management literature by empirically showing how specific investments affect performance of cooperative innovation projects, filling in the gap of our understanding of the impact of SIs to PCIPs. The results provide considerable support for our model and yield important scholarly and managerial implications. The paper also contributes to a more comprehensive understanding of RT by introducing its roles in GMs, examining how such mechanisms influence PCIPs in the Chinese setting.

The rest of this paper is organized as follows. Section 2 proposes theoretical background and hypotheses and describes the model. Section 3 discusses the sample and the statistical methods. Section 4 presents and analyses the results. Section 5 concludes by comparing the results with related studies and stating the contributions and limitations of this study and identifying some future directions.

2. Theory and hypotheses

2.1. Theoretical background

Most of the cooperative innovation literature focuses on the topic of knowledge and learning, neglecting to consider the role

of SIs. SIs are assets that are uniquely dedicated to another firm (Williamson, 1979). These are dedicated assets that are transaction specific because their value in a given transaction is higher than in their next best use (Teece, 1986). SIs is a common feature of cooperative relationships and scholars working in the field have highlighted the importance of SIs as a means to establish and sustain cooperative relationships (Anderson and Narus, 1990; Lui et al., 2006; Morgan and Hunt, 1994). As pointed out by Tripsas et al. (1995), asset specificity is high in collaborative relationships. As a kind of organizational cooperation, the level of asset specificity is high in the partnership of CIPs. Calamel et al. (2012) conclude that collaboration is the product of a process of social construction by observation of the conduct of the collaboration projects, so we think that SIs is very important for social construction. Furthermore, Inemek and Matthyssens (2013) find that relation-specific investments, interfirm knowledge sharing routines and governance mechanisms may promote supplier innovativeness, however, the literature does not consider in an enough detail of their effects to the performance of cooperative innovation projects.

SIs has important value-creation properties, however, transaction cost economics claims that the SIs increase the hazards of opportunism (Heide and Stump, 1995). CIPs are characterized by equivocality (Sakka et al., 2016) and cultural complexity since members from academia, firms and research institutes work together (Sandin et al., 2014), the members of interorganizational innovation teams bring to bear different experiences, knowledge, and resources (Eriksson et al., 2016). All of those will increase the risk and opportunism, to reduce them, necessary GMs are useful, among the diversity of governance approaches (Müller et al., 2015), and FCs and RT are ranked as two vital GMs that can safeguard transactions and SIs (Das and Teng, 1998; Poppo and Zenger, 2002).

In transaction cost economics and relational exchange theory literatures, although the effectiveness of contracts and trust in governing inter-organizational and their effects on cooperation performances have been widely studied (e.g. Luo, 2002; Yang et al., 2011), there is limited empirical evidence as to how they affect PCIPs. From the perspective of transaction costs economics, both the frequency of interactions and the level of uncertainty are high (Tripsas et al., 1995) in the relationship. In addition, information asymmetries are also common in collaborative relationships, all of those will increase the transaction costs in inter-organizational projects. Compared with relationship performance, the outcome of CIPs is unpredictable, which indicate it is difficult to specify the terms and clauses in advance (Wang et al., 2011). Do those facts mean that trust is more important than contract in CIPs? Especially in China — a country rich with *guanxi*? This paper is to test the effect of them in the context of CIP settings.

Similar to transaction cost economics, agency theory relies on the assumption that human beings are self-interested and opportunistic in their behavior (Sundaramurthy and Lewis, 2003), Kadefors (2004) argues that contractual incentives and close monitoring of contractor performance may induce opportunism in client–contractor relationships in construction projects.

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