

## 2021 年度陕西高校人文社会科学研究优秀成果奖

### 申 报 书

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Investing in IT: A new method for improving  
the efficiency of contract governance in  
interfirm relationships

申报人：张涛

所在学校：西北工业大学

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申报人情况							
姓 名	张涛	性 别	男	出生 日期	1979-07-25		
专业技术职务	副教授			行政 职务			
工作单位	西北工业大学				联系 电话	办公	15029265001
通信地址及 邮政编码	陕西省西安市碑林区友谊西路 127 号管理学院, 710072					住宅	
电子邮件	t. zhang@nwpu. edu. cn					手机	15029265001
本成果主要合作研究人员情况（限 5 人）							
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成果被引用或被采纳情况	<p>本研究一共有两点结论，目前这两点结论已经在多家企业推广并获得认可。具体而言，不但有施耐德电气、西门子这样的世界五百强企业，还有上海炬佑这样的国内高科技民营企业以及装小哥这样的小微企业。这些企业都认可本研究的两点结论并予以采纳。通过事后回访，对方反应一方面有助于企业正确制定信息系统投资策略，另一方面也有助于企业充分利用边界人员私人关系并降低企业合作导向的负面影响。通过推广，目前正有越来越多的企业开始采纳本研究结论。</p>		

## 1. 本成果研究的目的意义

在当前信息技术革命的背景下，企业数字化转型一直以来都是企业管理者非常关注的一个问题，如何顺利、平稳和有针对性的实施数字化转型对于企业来说具有重要意义，不但能帮助企业突破现有经营模式，摆脱原有经营困境，还能帮助企业快速适应新的环境，提升竞争优势，更好的应对多变的环境与激烈的市场竞争。

然而现实中如何切实有效的实施数字化转型则长期困扰着实践者与研究者，尤其是在供应链、战略联盟等更为复杂的跨组织合作场景下。虽然以往研究已经深入的探讨过信息技术对供应链、企业间关系等跨组织协调、一体化、合作的影响，但这些研究结论大多比较抽象或宏观，难以为实践者提供具体可操作的抓手来推进跨组织合作的数字化转型。

针对于此，本研究则从企业间跨组织合作的具体形式与载体——合同制定与合同执行（即合同治理）入手，研究信息技术如何有效提高企业合同治理水平与效果。主要研究问题包括：信息技术如何提高企业制定合同与执行合同的水平，以及如何抑制合作伙伴机会主义？边界人员私人关系与企业合作导向这两个个体与组织层面因素会如何影响信息技术的效果？

相关研究结论可以为企业两点重要指导意义。首先，本研究结论能帮助企业深入了解信息技术对于跨组织合同治理机制的作用与意义，从而帮助企业顺利实施以合同为基础的跨组织合作数字化转型。其次，本研究还指出边界人员私人关系（个人层面）与企业合作导向（组织层面）这两个因素的不同影响，从而帮助企业在实施跨组织合作数字化转型过程中，充分利用有利因素并降低不利因素的影响。

## 2. 篇章结构、基本观点

本研究总体篇章分为引言、理论与假设、实证分析以及讨论与结论四个部分。在引言中，我们首先探讨了企业在跨组织合作中实施合同治理时所面临的困难以及信息技术的作用与价值。在此基础上总结出研究问题与研究模型，并阐述了相应的理论贡献与实践指导意义。

在理论与假设部分，本研究基于交易成本逻辑，提出信息技术可以通过降低各种沟通、协调、监督等成本来提高企业沟通与交流能力，不但帮助企业制定更为细致的合同条款（以尽可能详细的约定彼此责任与权利和覆盖各种意外情况），也帮助企业更为有效的监督合同条款执行情况，从而有效的降低合作伙伴的机会主义行为。在这个过程中，边界人员的私人关系能够提升双方沟通与交流的频率从而有助于信息技术发挥更大作用，而企业合作导向则会抑制双方沟通与交流频率而降低信息技术的效果。最后将上述论述总结为 8 个假设。

在实证分析部分，我们采用基于问卷调查的实证研究方法，首先介绍了数据收集的基本过程，然后对变量的测量进行介绍并检验了其效度与信度，最后用收集的 216 份有效数据样本对上述提出的研究假设进行检验。其中除了假设 H2a 与 H3b 外其余 6 个假设均得到样本数据支持。为了确保假设检验结果的稳定性，本研究还在这一部分做了事后检验。

在讨论与结论部分，首先对本研究的研究发现进行了总结，得出两点主要结论。第一，企业在制定合同时信息技术有助于提高合同条款的细致程度与完善程度，从而覆盖更多意外情况；在合同执行阶段，信息技术可以提供更多的监督与保障措施来确保合同的顺利执行。第二，边界人员之间的私人关系可以加强信息技术对合同条款制定的正向影响，而企业合作导向则会抵消这种正向

的影响。相比之下，私人关系并不能加强信息技术对合同执行的正向影响，而企业合作导向还会抵消这一正向影响。与此同时，这一部分还阐述了企业在推进跨组织合同治理数字化转型过程中可以采取的具体策略与建议。最后总结了本研究存在的局限与未来可供进一步探索的方向与问题。

### 3. 主要理论创新与学术价值

本研究对合同治理理论与研究主要做出了两点贡献。首先，虽然之前研究深入探讨了合同治理的前因，但对于信息技术的作用很少探讨。目前只有一项研究发现信息技术可以提高合同完备性，但该研究并未考虑合同执行阶段，更未提供任何实证证据。而本研究发现则弥补了这一不足，填补了合同治理理论与研究的一个空白。

第二，在上述结论基础上进一步探讨了信息技术对合同治理正向影响的两个权变因素：个人层面的边界人员私人关系以及组织层面的企业合作导向。研究发现这两个因素对上述主效应分别存在不同方向的影响。这一发现厘清了跨组织合作场景下信息技术提高企业合同治理效果的边界条件，从而进一步完善了“信息技术—合同治理”的理论模型。

### 4. 研究方法

本研究采用基于问卷调查的实证研究方法。首先，为了确保问卷质量，在正式调查前两名学术研究人员及 10 名管理者分别对问卷进行了评审，然后研究者据此修正了问卷。接下来，研究者又向 40 名管理者发放问卷进行预测试，并根据反馈意见对问卷进行了微调。

正式调查由第一作者和两名研究助理于 2016 年 7 月至 8 月进行。研究者从中国制造商协会的通讯录中随机选取了 400 家有供应链合作伙伴的制造商，然后以这些制造商中负责分销或供应商管理的经理为目标进行问卷发放。通过



两轮提醒，最终收集了 254 份问卷，其中有效样本为 216 份。

问卷收集结束后，研究者检验了无回应偏差。具体来说，我们随机选择了 20 名拒绝填写问卷的经理，通过电话问了几个简单的问题。通过 T 检验发现回应者和未回应者之间没有显著差异。此外还比较了回应者和未回应者的职位、任期和年龄，也未发现显著差异。

最后使用基于 PLS 的结构方程模型对研究假设进行检验。除了 2 个假设被拒绝外，其余 6 个假设均在一定程度上受到了数据的支持，假设检验通过。

#### 5. 产生的学术影响与社会效益

在学术影响力上，本研究是第一项全面探讨信息技术对跨组织合同治理机制影响的研究，涵盖供应链、营销渠道与战略联盟等各种跨组织合作形式，因此研究结论具有良好的普适性，可以为以后的跨组织合作研究、合同治理理论、信息技术商业价值研究提供基础和参考，体现了较好的学术影响力。接下来，该研究论文发表在 SCI 一区期刊《Industrial Management & Data Systems (工业管理与数据系统)》上，目前已经在 Web of Science 索引并有 10 次使用记录。此外，该论文也收录于 EI Compendex、Cross Ref、Scopus 等国外知名数据库，体现了良好的国际学术影响力。最后，本研究还曾经在国内外有影响力的学术论坛上进行过宣讲，受到与会者的普遍肯定，进一步体现了研究的学术影响力。

在社会及经济效益方面，不但有“施耐德电气”、“西门子”这样的世界五百强企业，还有“上海炬佑”这样的国内高科技民营企业以及“装小哥”这样的小微企业，这些企业都采纳了本研究的两点主要结论。通过推广，目前正有越来越多的企业开始采纳相关结论。具体而言，本研究结论的实践价值主要体

现在以下三个方面。首先，研究针对跨组织管理实践中的实际问题，而且从具体操作层面入手，因而研究结论能为企业提供非常具体的工作切入点。其次，通过借鉴本研究第一点结论，企业能够正确制定信息系统投资策略，从而提高企业制定合同的质量并保证合同顺利执行。最后，本研究第二点结论特别指出两个影响信息技术效果的权变因素。其中边界人员的私人关系有利于信息技术发挥效果，这一发现指导企业应当鼓励边界人员建立私人关系，因而为企业节省信息系统投资（这一点对于资金有限的中小企业尤为重要）。而企业合作导向则会影响信息技术的效果，这一发现指导企业应仔细协调信息技术与企业层面合作导向之间的关系，从而帮助企业制定合理的信息系统战略，提高其资金的使用效率。



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# Investing in IT: a new method for improving the efficiency of contract governance in interfirm relationships

Improving the  
efficiency of  
contract  
governance

1245

Tao Zhang

*School of Management, Northwestern Polytechnical University, Xi'an, China, and*

Liping Qian

*School of Economics and Business Administration, Chongqing University,  
Chongqing, China*

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## Abstract

**Purpose** – This study aims to enhance our understanding of how advanced IT improves the efficiency of contract governance in mitigating partners' opportunistic behaviors in interfirm cooperation and the moderating effects of boundary spanners' personal relationships and cooperative orientation.

**Design/methodology/approach** – Contract governance is divided into two subdimensions: contract completeness and contract execution safeguards. Then, the hypotheses are examined using partial least squares-based structural equation modeling based on survey data collected from manufacturers in supply chain relationships.

**Findings** – The results first demonstrate that advanced IT can improve efficiency in both the design of complete contracts and the provision of contract execution safeguards. Second, the results also show that both the personal relationships between boundary spanners and the cooperative orientation of the firm have different moderating effects. Finally, contract execution safeguards are effective in mitigating partners' opportunistic behaviors, whereas contract completeness is not.

**Originality/value** – This study enriches the contract governance literature in two ways. First, it unveils how advanced IT improves the efficiency of contract governance and the effects of two contingent factors (i.e. personal relationships and cooperative orientation), thus extending the research on contract governance. Second, it reveals the different effects of contract completeness and contract execution safeguards on partners' opportunistic behaviors, thus deepening our understanding of the role of contracts in interfirm cooperation.

**Keywords** Contract governance, Information technology, Personal relationships, Cooperative orientation, Opportunistic behavior

**Paper type** Research paper

## Introduction

Most firms prefer efficient contract governance for interfirm cooperation, especially in a turbulent market (Anderson and Dekker, 2005; Kashyap and Murtha, 2017). Designing a specific and extensive contract can do much to protect the benefits and rights of contracting firms (Banker *et al.*, 2006; Kashyap and Murtha, 2017). When executing a contract, effective safeguards or enforcement measures can safeguard firms from business partners' opportunistic behaviors (OP) (Antia and Frazier, 2001; Mooi and Gilliland, 2013; Kashyap and Murtha, 2017). Generally, the efficiency of contract governance including ex ante contract design and ex post contract execution safeguards (CES) are critical to the success of interfirm cooperation.

Contract governance also receives much attention from researchers in the fields of supply chain management (Shou *et al.*, 2016; Song and He, 2019; Yan *et al.*, 2019) and marketing



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strategy (Mooi and Gilliland, 2013; Kashyap and Murtha, 2017). Based mainly on transaction cost economics (TCE) and the related literature, a great many studies have extensively explored the antecedents and consequences of contract completeness [1] in the interfirm context (Banker *et al.*, 2006; Aulakh and Gençtürk, 2008; Mooi and Ghosh, 2010). In addition, a few researchers have considered the importance of ex post contract management and investigated the effects of contract renegotiation, monitoring and enforcement (Antia and Frazier, 2001; Mooi and Gilliland, 2013; Kashyap and Murtha, 2017).

In general, although previous studies have made a great contribution to the understanding of how to effectively govern interfirm cooperation and partners' behaviors through contracts, firms still face a dilemma. Specifically, previous studies have explicitly or implicitly concluded that effective contract governance inevitably increases transaction costs (Anderson and Dekker, 2005; Mooi and Ghosh, 2010; Mooi and Gilliland, 2013). Namely, designing more complete contract and providing more monitoring or enforcement of contract execution would lead to higher transaction costs. Thus, a practical question for managers: how can effective contract governance be achieved more while limiting transaction costs as much as possible?

In recent years, firms have increasingly employed advanced information technology (IT) to satisfy both sides. Advanced IT has many features that can reduce various transaction costs incurred during contract design and execution to improve the efficiency of contract governance (Han *et al.*, 2017; Ilmudeen and Bao, 2018). For example, professional database management systems that run on advanced computers can efficiently store and manage mega data, thus saving the costs of collecting and managing historical transaction data, which are essential when drafting explicit contract terms or specifying contract details (Bayraktar *et al.*, 2010). Superior network devices combined with collaborative programs can serve as a data transmission expressway, reducing the costs of communication and coordination between exchange partners and resulting in an improved exchange of ideas about contract terms at the contract design stage and data sharing during contract execution (Barkhi *et al.*, 2006). Finally, professional enterprise systems can provide managers with easier and more convenient approaches by automating many operational processes for designing and executing a contract, for example, data preparation and real-time monitoring (Peng *et al.*, 2016; Neirotti and Raguseo, 2017).

To date, although many firms have extensively deployed advanced IT in contract governance, to the best of our knowledge, researchers still know little about how advanced IT influences ex ante contract design and ex post contract execution. Therefore, our first research question is as follows:

- Q1. How does advanced IT improve contract completeness and ensure contract execution?

Furthermore, the boundary of this effect merits investigation. This study explores the contingent effects of personal relationships between boundary spanners and the cooperative orientation (COO) of the firm. Our second research question is:

- Q2. How do personal relationships and COO affect the positive influence of advanced IT on contract completeness and CES?

To investigate these two questions, this study adopts TCE as the basic theoretical framework and draws from the literature on information systems, contract governance and relationships. Additionally, partners' OP, important obstacles to the efficiency and stability of interfirm cooperation, are considered as a consequence of contract governance.

This study makes two major contributions to the contract governance literature. First, although previous studies have extensively investigated the antecedents of contract governance, the role of IT advanced has received little attention. Only one study, Banker *et al.*

(2006), demonstrated that IT could improve contract completeness. However, they did not consider ex post contract management or provide any empirical evidence. Therefore, this study fills a gap in the contract governance literature by investigating how advanced IT improves the efficiency of contract governance to deter partners' opportunism by reducing the transaction costs of contract design and execution. Second, the boundary of the direct influence of advanced IT on contract governance is worth exploring. In this study, we propose that personal relationships and COO both have effects on the direct influence, thus improving the theoretical model of advanced IT–contract governance (see Figure 1).

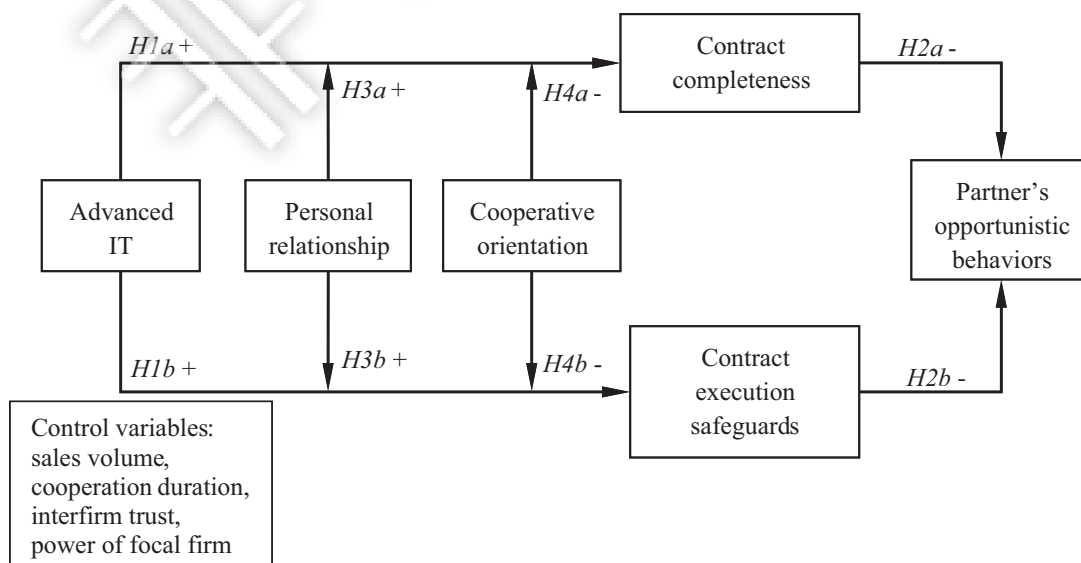
The remainder of this paper is organized as follows. Section 2 provides the theoretical background and describes the conceptual model and the corresponding hypotheses. Section 3 describes the survey process in which the hypotheses were tested. Finally, the main findings, theoretical contributions, managerial implications, research limitations and future directions are presented in Section 4.

## 2. Theory and hypotheses

### 2.1 TCE and the contract governance literature

TCE stresses that governance mechanisms are needed because self-interested exchange partners with bounded rationality are willing to behave opportunistically when exchange hazards are present, including transaction-specific investments, uncertainty and transaction frequency (Williamson, 1985). As a formal governance mechanism, a contract refers to law- and regulation-protected promises or obligations that bind the contracting parties and guide them to perform particular actions within an agreed period (Macneil, 1978; Anderson and Dekker, 2005). A sufficiently complete contract clearly and meticulously specifies the roles and obligations, supervision routines, punishment for violation and corresponding consequences, thus providing strong, formal safeguards for the contracting parties to ensure their future benefits and rights (Banker *et al.*, 2006; Kashyap and Murtha, 2017).

In view of the importance of contract completeness, previous studies have examined in detail the influence of antecedents on the transaction costs incurred in designing a complete contract, such as environmental factors (Aulakh and Gençtürk, 2008), partner characteristics (Mooi and Ghosh, 2010), focal firm characteristics (Banker *et al.*, 2006) and interfirm relationship characteristics (Mooi and Ghosh, 2010). For example, Aulakh and Gençtürk (2008)



**Figure 1.** Conceptual model and hypotheses



demonstrated that market volatility can prevent firms from designing explicit contracts because the costs of investigation, analysis and prediction are enormous, while host market experience and product standardization can save firms substantial learning, coordination and negotiation costs in an international trade context, leading to a more explicit contract. Mooi and Ghosh (2010) argued that an increase in buyer lock-in (transaction-specific investment) and transaction complexity compels firms to design more specific contract terms to protect their investment and benefits, despite the increased costs of such negotiation, coordination and communication. In general, a number of previous studies have implicitly or explicitly suggested that designing a more complete contract raises transaction costs, such as communication and coordination costs, data preparation costs and bargaining costs. Thus, if antecedents can reduce the cost of signing a complete contract, firms will be more likely to design a more specific contract.

However, some researchers have argued that designing a complete contract is just the first step in contract governance and that ex post contract management is equally important (Antia and Frazier, 2001; Mooi and Gilliland, 2013; Kashyap and Murtha, 2017). For example, Antia and Frazier (2001) contended that the effectiveness of a contract depends partially on contract enforcement, defined as the severity of the firm's response to a partner's violation of a contractual obligation, and they developed an integrative framework to reflect the influence of channel systems, dyadic factors and network factors on contract enforcement. Recent studies have begun to focus on both ex ante contract design and ex post ante contract management. For example, Mooi and Gilliland (2013) examined the relationship between contract extensiveness and contract enforcement. Kashyap and Murtha (2017) investigate the moderating effect of the completeness of ex ante monitoring and enforcement terms on the impact of ex post monitoring on franchisee compliance.

Following recent opinion, we define contract governance as contract completeness (ex ante contract design) and CES (ex post contract management). In alignment with previous studies, contract completeness refers to the extent to which the contract terms are completely, extensively and explicitly designed (Wuyts and Geyskens, 2005; Aulakh and Gençtürk, 2008; Mooi and Ghosh, 2010). CES refer to the approaches, methods or mechanisms that ensure the contract is executed properly and strictly, including the severity of execution and monitoring (Mooi and Gilliland, 2013; Kashyap and Murtha, 2017) and further mechanisms such as contract evaluation.

### *2.2 Direct effects of advanced IT on contract governance and partners' opportunistic behaviors*

Advanced IT refers to advanced hardware (e.g. recently released laptops and desktops, premium central servers, high-speed network devices and Internet connections) and professional software systems (e.g. firm-wide data or management systems such as Lotus Notes/Domino [2]) (Armstrong and Sambamurthy, 1999; Byrd and Turner, 2000). Advanced IT has copious features that can trim many transaction costs incurred in interfirm contract governance.

First, the costs of data storage, operation and management can be reduced by advanced hardware, that is, newly released computers with faster CPUs, larger memory and hard disk space and professional database management systems (Bayraktar *et al.*, 2010; Pérez López and Alegre, 2012; Rasouli *et al.*, 2016). When designing a contract, such advanced hardware and professional systems can prepare extensive records of historical transactions as solid references for managers, helping them to consider as many details and contingencies as possible to improve the completeness of the terms of a current contract (Soibelman and Kim, 2002). Similarly, for executing the contract, advanced hardware and professional systems can provide finer and more elaborate data about previous business cooperation, so that managers

can suggest more attention to unexpected events during contract execution and better options and solutions, thus providing more execution safeguards.

Second, high-speed network devices (e.g. wireless routers with 1G bandwidth) can reduce the costs of data transmission, which is critical for end-to-end communication, data access and real-time monitoring (Barkhi *et al.*, 2006; Cheng *et al.*, 2006; Kim *et al.*, 2011). Accordingly, during contract design, high-speed network devices can transmit mega data and information more quickly, helping managers to conveniently exchange ideas about duties and rights and engage in discussions about specific terms (Paulraj *et al.*, 2008; Roberts and Grover, 2012). Thus, it is easier for managers to communicate and negotiate with each other, saving time and energy when developing more complete contract terms. Furthermore, during contract execution, high-speed network devices allow real-time monitoring, such as Internet-based cameras and location-based tracking, to ensure contract execution.

Third, professional software systems have many functions that can reduce operational costs by automating processes in designing contract terms and performing real-time monitoring (Peng *et al.*, 2016; Neirotti and Raguseo, 2017; Wang *et al.*, 2017). For example, Agiloft's Contract and Commerce Lifecycle Management [3] system can automate documentation and data collection processes. Therefore, the firm can prepare more data more easily and thus specify contract terms more clearly. Ariba Supplier Management System [4] can periodically compare supplier data with specific contract terms to detect abnormal or opportunistic events and send immediate automatic alerts if these are detected. Using such systems, the firm can check the contract execution status, providing more powerful safeguards to ensure contract execution.

In general, we hypothesize:

*H1. Advanced IT can improve (a) contract completeness, and (b) CES.*

Next, in a complete contract, both parties clearly specify their respective target and scope (Antia and Frazier, 2001), elaborately define their respective rights and obligations (Wuyts and Geyskens, 2005) and explicitly signify the rules and regulations for resolving disputes and making decisions about joint affairs (Poppo and Zenger, 2002). Furthermore, if the firm has effective CES, for example, specific and detailed historical transaction records, efficient communication and effective contract execution monitoring, such safeguards can reduce uncertainty and prevent partners from behaving opportunistically.

In general, the following hypothesis is set forth:

*H2. Both (a) contract completeness and (b) CES could mitigate partner's OP.*

### *2.3 Moderating effects of personal relationships and cooperative orientation*

Boundary spanners refer to the individuals who are more closely engaged in interfirm business cooperation relative to other individuals in the firm (Cai *et al.*, 2017). Boundary spanners who have better personal relationships with each other are more likely to exchange mutual favors (Su *et al.*, 2009; Yen *et al.*, 2011). Specifically, in designing and executing the contract, they are likely to communicate more frequently with each other, creating more room for equitable compromise in case of disagreement or conflict. In these interactions, advanced IT can be effective in many ways, for example, preparing more data for explicitly specifying the contract terms, providing more efficient communication channels for solving disputes over contract details and automating many operations in constructing detailed contract terms. Thus, better personal relationships should amplify the effects of advanced IT on contract design.

Comparatively, in contract execution, advanced IT can ensure the CES by providing more effective checking, evaluation and monitoring approaches. However, such approaches are impersonal and rigid, which may lead to conflict between exchange partners. For example,

exchange partners may be uncomfortable with the real-time monitoring guaranteed by the advanced IT systems. As an informal communication channel, close personal relationships encourage more frequent communication and coordination between boundary spanners (Gu *et al.*, 2008; Zhang and Li, 2010), which in turn cultivates mutual reciprocity and dependence (Qian *et al.*, 2016). Thus, as a lubricant for business activities, personal relationships between boundary spanners can reduce the potential stresses resulting from advanced IT systems and amplify the positive link between advanced IT and CES.

Taken together, we hypothesize:

- H3.* Personal relationships positively moderate the relationships between advanced IT and (a) contract completeness and (b) CES.

Cooperation orientation refers to the extent to which a firm is willing to work together with another firm toward a shared goal. If a firm is highly cooperation-oriented, it will be generous to its partner (Gundlach *et al.*, 1995; Yen *et al.*, 2011) and focus on the long-term benefits (Poppo *et al.*, 2008; Fu *et al.*, 2018). Accordingly, when designing a contract, the firm will be less apt to specify the contract terms in detail, to demonstrate its sincerity. Similarly, when executing the contract, the firm will decrease the frequency of performing CES to release the pressure on the partner of being supervised or monitored. Therefore, less data, information, communication and negotiation are needed for contract design and execution, implying that advanced IT is less likely to cut the costs of these activities. In other words, the effects of advanced IT on contract completeness and CES are neutralized by firm COO.

In general, we hypothesize:

- H4.* COO negatively moderates the relationships between advanced IT and (a) contract completeness and (b) CES.

### 3. Methodology

#### 3.1 Sample and data collection

In this study, we used the survey method to collect data and test our hypotheses. To ensure the quality of the questionnaire before the formal survey, we undertook a review with two academic researchers and ten managers and then a pilot survey with 40 managers. Specifically, we first invited two professional scholars to verify the accuracy and completeness of measures. Next, we invited ten managers who were involved in exchange relationship with their partners and asked them to evaluate the questionnaire and give us feedback on the design and wording of the questionnaire. Based on their feedback and suggestions, we revised the questionnaire and asked the two professional scholars to reconfirm the revised questionnaire. Finally, a pilot study was conducted with 40 managers who were responsible for distributor or supplier management. They not only finished the questionnaire but also provided the feedbacks. On average, they needed 8 min to finish the questionnaire. In general, their feedbacks were positive and the measurement results were satisfactory. We performed the formal survey with the revised questionnaire.

The survey was performed from July to August in 2016 by the first author and two research assistants. 400 manufacturers that had supply chain partners were randomly selected from the address book of the Chinese Manufacturer Industry Association. The managers of the selected manufacturers who were responsible for distribution or supplier management were chosen as the respondents. With the help of the association, we made an official phone call to each chosen manager to solicit their help. On the phone, we briefly introduced our purpose and then emphasized the academic nature of the survey and the confidentiality of their responses. To encourage participation, we promised them 40 Yuan if their response qualified for inclusion in the study and then sent the questionnaire link to the

managers who agreed. After two rounds of reminders in one month, 254 questionnaires were collected (a 63.5% response rate). After rejecting 38 questionnaires, which were completed in under 3 min or gave the same answer to most questions, the final valid sample was 216 questionnaires (a 54% valid response rate). The manufacturers were located in Changzhou, Suzhou, Chengdu, Guangzhou and Wuhan. Although the data were collected in 2016, the data would be applicable as the research questions of this study are still pervasive since IT was widely deployed in firms in the past two decades.

The descriptive statistics of the sample are presented in [Table 1](#).

Next, we checked for nonresponse bias. Specifically, we randomly selected 20 managers who had refused to participate and asked a few simple questions by telephone. We collected their basic demographic characteristics and opinions on two statements from the questionnaire: “The most advanced IT devices are deployed in our firm” and “In dealing with our major distributor, our contract precisely defines the role of each party.” A *t*-test found no significant differences between respondents and nonrespondents. In addition, we compared the title, tenure and age of respondents and nonrespondents and again found no significant differences. In general, therefore, the nonresponse bias of this sample was not significant.

### 3.2 Measurement

Multi-item scales were used to measure the constructs of advanced IT, personal relationships between boundary spanners, COO, contract completeness, CES and partners’ OP (item details are provided in the [Appendix](#)). Each item was measured on a five-point scale, in which 1 was “strongly disagree” and 5 was “strongly agree.”

Based on [Byrd and Turner \(2000\)](#) and [Jean et al. \(2010\)](#), five items were developed to measure the advancement of IT devices, software and systems including computers and servers, network connections and software and firm-level systems. Taken from the study by [Lusch and Brown \(1996\)](#), contract completeness (CCPT) was measured by three items, for example, the unique and specific roles, duties and rights of both parties and their concrete activities. Developed rigorously for the context of executing a contract, four items were used to measure CES, including the maturity of contract management, the effectiveness of the contract controller and the completeness of contract execution feedback. Five items from [Gundlach et al. \(1995\)](#) were used to capture OP, three items were adapted from [Peng and Luo](#)

Categories	Subcategories	%
Industries	Industrial market	Electronic and electric
		Machinery manufacturing
	Consumer market	Small appliances
		Food
		Bath products
		Garments
Ownership	Public ownership involved	State-owned
		Joint venture
	Nonpublic ownership involved	Collective-owned
		Private-owned
		Wholly foreign-owned
Number of employees	Small and medium enterprises	Below 100
		100–499
	Large enterprises	500–999
		Over 1,000

**Table 1.**  
Sample descriptive  
statistics



(2000) and Su *et al.* (2009) to measure the personal relationships between boundary spanners. Finally, four items were developed to assess COO, developed rigorously according to the definition of COO.

Additionally, four control variables were included to explain the extraneous sources of variation: firm sales amount, which may reflect the firm's competitive advantage; duration of partner cooperation, which may influence respondent perceptions of their partners' OP; interfirm trust, which could affect contract development and execution and partners' OP, as the firm may develop less detailed contracts and hardly monitor or investigate their partner during contract execution; and focal firm power, as this is a key construct influencing exchange partners' behaviors.

### 3.3 Validation of measures

Partial least squares (PLS)-based structural equation modeling (SEM) was used to perform the measurement validation and data analysis for several reasons. PLS can incorporate measurement errors into the measurement model, which is not feasible with the standard regression model (Hair *et al.*, 2011; Peng and Lai, 2012). Furthermore, this method can also easily estimate moderating effects and test models with formative constructs, which is difficult with other types of covariance-based SEM (e.g. AMOS, LISREL) (Hair *et al.*, 2011; Peng and Lai, 2012). Finally, PLS can handle relatively small samples and multicollinearity (Hair *et al.*, 2011; Peng and Lai, 2012).

We first checked the convergent and discriminant validity of the measurements. As shown in Table 2, six average variance extracted (AVE) values were larger than 0.50, indicating satisfactory convergent validity (Gefen *et al.*, 2000). Next, the square roots of the AVE values exceeded the respective correlations among variables, suggesting acceptable discriminant validity. Finally, the composite reliability for the six variables was greater than 0.7, confirming measurement reliability.

For the common method variance (CMV), Harman's single-factor method was first used (Podsakoff *et al.*, 2003). The eigenvalues of all focal constructs were above 1 and explained 73.28% of the total variance. The first construct explained 25.03% of the entire variance; thus, CMV was not significant. Second, the common latent factor method was used to evaluate the CMV among all items (including the control variable items) with one extra factor (respondent age). As the results showed no significant difference, CMV was not a serious concern.

### 3.4 Analyses and results

The hypotheses were tested using PLS, and the results are shown in Table 3. In the full sample, the model explained 48% of the variance in contract completeness, 59% of the

Construct	Mean	AVE	CR	SD	ITADV	PR	Construct correlation		CES	OP
							COO	CCPT		
ITADV	3.48	0.64	0.89	0.79	0.80					
PR	3.22	0.69	0.87	0.83	0.28**	0.83				
COO	3.62	0.50	0.79	0.61	0.31**	0.25**	0.71			
CCPT	3.92	0.55	0.78	0.74	0.38***	0.26**	0.49***	0.74		
CES	3.79	0.51	0.80	0.64	0.46***	0.28**	0.49***	0.70***	0.72	
OP	2.77	0.64	0.89	0.79	-0.01	0.07	-0.15*	-0.08	-0.14*	0.80

**Table 2.**

Means, standard deviations, AVE, CR and intercorrelation

**Note(s):** 1. \*, \*\*, \*\*\* indicate *p*-values of <0.05, 0.01, 0.001 in a two-tailed test

2. Means and standard deviations are based on the average of the indicators for each construct

3. The diagonal of the variable correlation matrix is the square root of AVE

	Contract completeness (CCPT)	Full sample ( $N = 216$ ) Contract execution safeguards (CES)	Partner's opportunistic behaviors (OP)
ITADV	0.15* (0.07 <sup>b</sup> )	0.20** (0.07)	
ITADV $\times$ PR	0.15* (0.07)	0.04 (0.09)	
ITADV $\times$ COO	-0.12 <sup>†</sup> (0.07)	-0.13 <sup>†</sup> (0.07)	
CCPT			-0.08 (0.11)
CEX			-0.16* (0.08)
<i>Control variables</i>			
Sales volume	0.24*** (0.04)	0.00 (0.09)	0.12 <sup>†</sup> (0.07)
Cooperation duration	0.00 (0.04)	0.00 (0.10)	-0.14 <sup>†</sup> (0.08)
Interfirm trust	0.28*** (0.05)	-0.01 (0.08)	-0.19** (0.06)
Power of focal firm	0.20*** (0.05)	-0.02 (0.08)	
CCPT <sup>a</sup>		0.49*** (0.06)	
$R^2$	0.48	0.59	0.24

**Note(s):** 1. <sup>a</sup>indicates that CCPT is the control variable for CES because previous studies have suggested that the ex ante contract design could positively improve ex post contract management, e.g. Kashyap *et al.* (2012)

2. <sup>b</sup>indicates the standard error, the same below

3. <sup>†</sup>, \*, \*\*, \*\*\* indicate  $p$ -values of <0.1, 0.05, 0.01, 0.001 in a two-tailed test

**Table 3.**  
Results of the structural model

variance in contract execution safeguards and 24% of the variance partners' OP, suggesting that our hypothesized model was appropriate for the full sample.

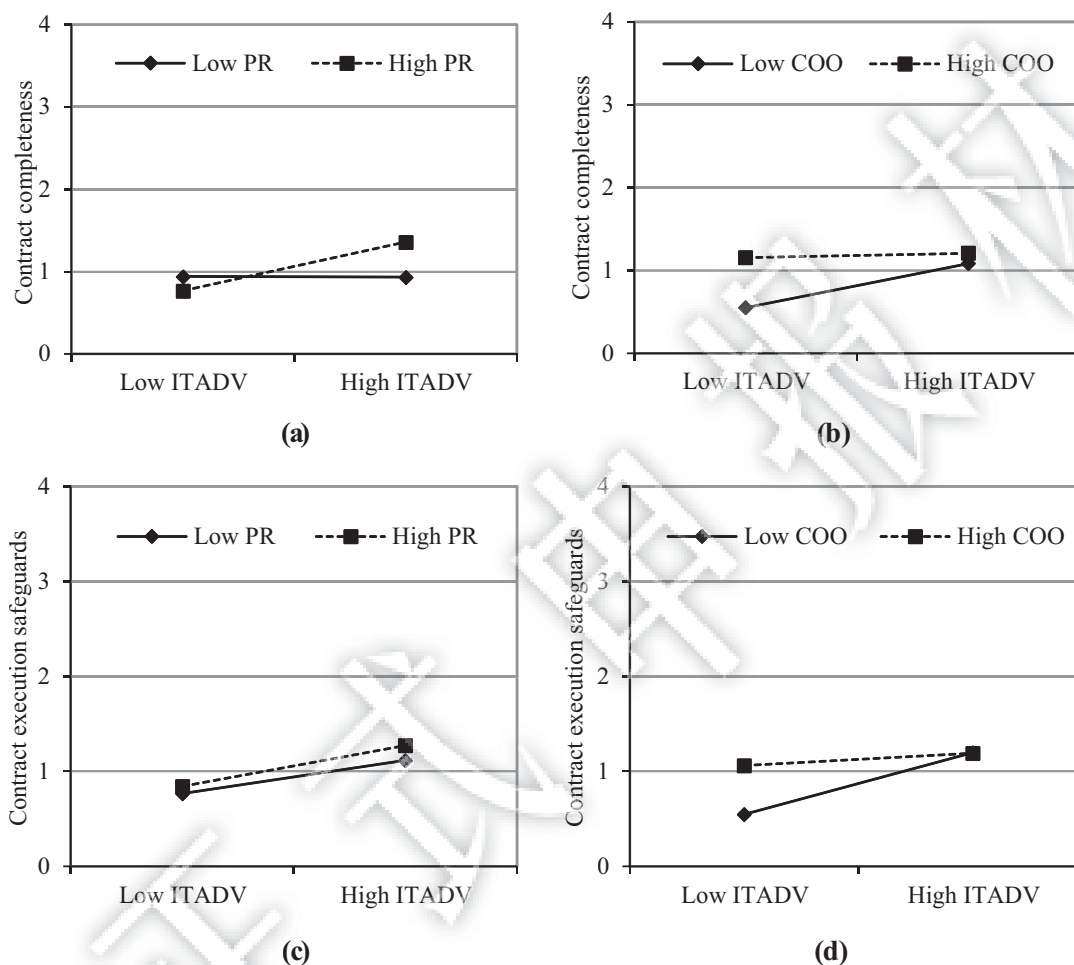
Next, six of the eight hypotheses were supported. Specifically, advanced IT had a positive influence on both contract completeness ( $\gamma = 0.15$ ,  $SE = 0.07$ ) and contract execution safeguards ( $\gamma = 0.20$ ,  $SE = 0.07$ ), indicating that H1a and H1b were supported. The contract execution safeguards had a negative influence on partners' OP ( $\gamma = -0.16$ ,  $SE = 0.08$ ), while contract completeness did not ( $\gamma = -0.08$ ,  $SE = 0.11$ ). Thus the results supported H2b but rejected H2a.

Finally, personal relationships between boundary spanners positively moderated the effect of advanced IT on contract completeness ( $\gamma = 0.15$ ,  $SE = 0.07$ ) but not on contract execution safeguards ( $\gamma = 0.04$ ,  $SE = 0.09$ ), supporting H3a but rejecting H3b. COO negatively moderated the effects of advanced IT on both contract completeness ( $\gamma = -0.12$ ,  $SE = 0.07$ ) and contract execution safeguards ( $\gamma = -0.13$ ,  $SE = 0.07$ ), supporting H4a and H4b. To better convey the moderating effects of personal relationships and COO, Figure 2 shows the effects graphically.

To check the robustness of the results derived from the full sample, we further tested the hypotheses using subsamples (see Table 1 for details). Specifically, we divided the full sample into the industrial market subsample ( $N = 126$ ) versus the consumer market subsample ( $N = 90$ ). The results of the two subsamples were similar to each other and to the results of the full sample. Next, we divided the full sample into public ownership involved subsample ( $N = 93$ ) versus nonpublic ownership involved subsample ( $N = 123$ ) and small and medium enterprises subsample ( $N = 119$ ) versus large enterprises subsample ( $N = 97$ ). The results of the two pairs of subsamples were similar to each other and to the results of the full sample except that H4b was rejected in the nonpublic ownership involved subsample and the small and medium enterprises subsample. These two exceptions suggest that the moderating effect of cooperation orientation on contract execution safeguards is contingent on both public ownership involvement and firm size.

In general, although the results of one hypothesis were unstable in some subsamples, other results derived from the full sample remained stable across subsamples of industry, ownership and firm size, implying acceptable generalizability.





**Figure 2.**  
Moderating effects of  
personal relationship  
and cooperation  
orientation

### 3.5 Post hoc analysis

Our examination of the moderating effects of personal relationships on the relationship between advanced IT and contract execution safeguards showed no significant influence on the full sample or other subsamples. To further understand the effect of personal relationships, we divided the full sample into low ( $N = 102$ ) versus high ( $N = 79$ ) personal relationship subsamples by the median of personal relationship ( $PR_{\text{median}} = 3.33$ ) and used hierarchical multivariate regression to test the effects of advanced IT on contract execution safeguards in each subsample. As shown in Table 4, only in the low personal relationship subsample did advanced IT promote contract execution safeguards.

The reason behind this result may be complicated. One plausible reason may be that in distant personal relationships, boundary spanners follow the “business is business” rule and focus on exchanging task-related information. Under these conditions, advanced IT could play an effective role and thus improve contract execution safeguards. However, as boundary spanners in close personal relationships are willing to exchange favors and communicate informally, thus bypassing the formal IT systems, namely, in such context, the personal relationships would be a substitutive mechanism that replaces the effect of advanced IT (as shown in the high personal relationship subsample).

## 4. Discussion and conclusions

Drawing on TCE and the literature on information systems, contract governance and relationships, this study found that advanced IT can improve the efficiency of

	Contract execution safeguards (CES)				Improving the efficiency of contract governance
	Low PR subsample (N = 102) Model 1	Model 2	High PR subsample (N = 79) Model 3	Model 4	
ITADV		0.40***		0.11	
<i>Control variables</i>					
Sales volume	0.33***	0.18*	0.14	0.15	
Cooperation duration	−0.02	0.03	−0.09	−0.10	
Interfirm trust	0.30**	0.16 <sup>a</sup>	0.26*	0.23*	
Power of focal firm	0.03	0.05	0.14	0.12	
Cooperation orientation	0.14	0.08	0.17 <sup>a</sup>	0.17 <sup>a</sup>	
Model F	13.31***	16.91***	5.02***	4.45***	
R <sup>2</sup>	0.32	0.42	0.16	0.17	
ΔR <sup>2</sup>		0.10		0.01	

**Note(s):** †, \*, \*\*, \*\*\* indicate *p*-values of <0.1, 0.05, 0.01, 0.001 in a two-tailed test

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**Table 4.**  
H3b: Hierarchical multivariate regression of low and high PR subsamples

contract governance. Specifically, in ex ante contract design, advanced IT can help managers design more complete contract terms covering as many contingencies as possible, while in ex post contract management, advanced IT can provide more safeguards to ensure contract execution. Second, this study also demonstrated that personal relationships between boundary spanners can strengthen the positive effects of advanced IT on complete contract term design, while firm COO can neutralize this positive effect. In comparison, personal relationships between boundary spanners did not reinforce the positive effects of advanced IT on contract execution safeguards, and COO neutralized the positive effect. Third, this study demonstrated that contract execution safeguards can mitigate partners' OP, whereas contract completeness did not. In the following section, we discuss the implications of these findings in more detail.

#### 4.1 Theoretical contributions

First, this study contributes to the contract governance literature by improving the understanding of the effect of IT on contract governance. Specifically, although previous studies have extensively investigated different antecedents that affect contract governance (Lusch and Brown, 1996; Wuyts and Geyskens, 2005; Aulakh and Gençtürk, 2008; Mooi and Ghosh, 2010), few studies have paid attention to the effects of IT, a technological antecedent [5]. This study has filled the gap by demonstrating that IT can improve contract completeness and execution safeguards. By accelerating data gathering and exchange and offering an easy approach to managing the operational process, IT can reduce the costs of designing and implementing contracts and promote application of the contract by exchange partners. These results extend the contract governance literature by adding a technological antecedent. In addition, they contribute to transaction cost theory by providing supportive empirical evidence.

Second, this study contributes to the contract governance literature by improving the understanding of the contingent effects of personal relationships and COO. Previous studies have also indicated the interaction effects of various contextual factors, for example, asymmetric commitments (Achrol and Gundlach, 1999), network embeddedness (Wuyts and Geyskens, 2005) and host country uncertainty (Aulakh and Gençtürk, 2008). Our empirical findings indicate that personal relationships (an individual-level factor) and COO (an organizational-level factor) have different moderating effects.

Third, many previous studies examined the effect of contract on OP but have produced conflicting results (Achrol and Gundlach, 1999; Wuyts and Geyskens, 2005). By dividing

contract governance into two dimensions, this study demonstrated that contract completeness is ineffective in mitigating partners' OP, whereas contract execution safeguards are effective. The results provide a plausible explanation for the debate on the role of contracts and also support the previous argument that both ex ante contract design and ex post contract execution are important (Antia and Frazier, 2001; Mooi and Gilliland, 2013; Kashyap and Murtha, 2017).

#### *4.2 Managerial implications*

This study provides several managerial insights into contract governance in interfirm cooperation in the B2B context. First, by deploying advanced IT (e.g. new computers, servers and network routers and programs) and systems (e.g. SAP), a firm can strengthen contract governance and reduce its partners' OP, which can improve the performance and stability of interfirm cooperation.

Second, the findings of this study demonstrate that a formal and complete contract is not enough. Contract execution safeguards play a more crucial role in mitigating partners' OP in interfirm cooperation. Thus, after the contract is signed, checking, monitoring and evaluating the contract is the more important focus.

Third, to strengthen the positive effect of IT, firms could take advantage of personal relationships between boundary spanners, thus improving the effect of existing IT devices, equipment and systems on contract completeness without upgrading to new ones. On the contrary, when using advanced IT to improve contract governance, the firm should be aware of the suppressive role of a cooperative firm strategy and find an appropriate method to reconcile advanced IT and COO to minimize the negative effects.

#### *4.3 Limitations and directions for future research*

Despite great care taken in this study, limitations remain. In collecting the data, we used a subjective measurement of advanced IT, which could have resulted in subjective divergence. Future studies should measure advanced IT using objective indicators of hardware and software, for example, the generation and frequency of CPU, memory size, Internet bandwidth or the version number of the enterprise system. The questionnaire could be split into two parts, with one including professional IT questions addressed to informants from the IT department, for example, the network or system administrator, to acquire objective measurements of advanced IT. Second, we used cross-sectional data that cannot assess cause-effect relationships between constructs; thus, future research should use a longitudinal approach.

Our results also highlight several opportunities for studies focused on interfirm relationship management. First, we did not include transaction cost constructs in the conceptual model. In future research, the influence of advanced IT on the transaction costs of contract governance merits investigation. Second, the relationship between advanced IT and personal relationships and their effects on contract governance may be complicated, indicating that the influence of contingency factors on the effects of IT requires further investigation. Third, we did not consider the influence of mutual dependence. In future research, the extent to which dependence shapes the relationship between IT and contract governance could be an interesting question.

#### **Notes**

1. Although researchers have used different terminology in their respective studies, for example, contract completeness (or incompleteness), extensiveness, explicitness, specificity and complexity, these terms are closely synonymous in definition and measurement.

2. Lotus Notes/Domino is an enterprise-level platform for communication and coordination between users. The platform has features including working process control, database management and security mechanisms for both documents and data. See <https://www.ibm.com/>
3. Agiloft's Contract and Commerce Lifecycle Management is a software system that helps firms manage long-term relationships with business partners and minimize business cooperation risk by managing and integrating the commercial processes agreed on in contracts. See more information on <https://www.agiloft.com/contract-management.htm>
4. Ariba Supplier Management System can manage relationships with suppliers by acquiring, operating and analyzing supplier information, life cycle, performance and risk. See more information on <https://www.sap.com/products/e-procurement.html>
5. Although Banker *et al.* (2006) investigated the effect of IT on contract completeness, their study adopted an analytical model and provided no empirical evidence.

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## Focal variables

**1260***Advanced IT (ITADV)*

ITADV1 The most advanced IT devices are deployed in our firm. (factor loading: 0.75; SE: 0.03)

ITADV2 Every year, our company invests heavily in new IT devices (e.g. desktops, laptops, servers, routers, Internet connections, etc.). (factor loading: 0.78; SE: 0.03)

ITADV3 The network speed and communication program in our firm is satisfactory. (factor loading: 0.75; SE: 0.04)

ITADV4 We have the latest released professional software and enterprise systems (e.g. ERP, SAP, Lotus Notes). (factor loading: 0.88; SE: 0.02)

ITADV5 In our company, software systems are always upgrading timely. (factor loading: 0.82; SE: 0.03)

*Contract completeness (CCPT)*

CCPT1 In dealing with our major distributor, our contract precisely defines the role of each party. (factor loading: 0.76; SE: 0.02)

CCPT2 In dealing with our major distributor, our contract precisely defines the responsibilities of each party. (factor loading: 0.80; SE: 0.02)

CCPT3 In dealing with our major distributor, our contract precisely states how each party is to perform. (factor loading: 0.66; SE: 0.04)

*Contract execution safeguards (CES)*

CES1 Our firm has a perfect contract safeguards mechanism. (factor loading: 0.71; SE: 0.04)

CES2 To ensure the execution of the contract, we build a contract safeguards system. (factor loading: 0.72; SE: 0.03)

CES3 We evaluate the contract that has been executed. (factor loading: 0.75; SE: 0.03)

CES4 During the contract execution, our firm will check the execution of the contract from time to time. (factor loading: 0.67; SE: 0.03)

*Partners' opportunistic behaviors (OP)*

OP1 The distributor exaggerated needs to get what they desired. (factor loading: 0.84; SE: 0.03)

OP2 The distributor was not always sincere. (factor loading: 0.84; SE: 0.03)

OP3 The distributor altered facts to get what they wanted. (factor loading: 0.83; SE: 0.04)

OP4 Good faith bargaining was not a hallmark of the distributor's negotiation style. (factor loading: 0.83; SE: 0.04)

OP5 The distributor breached formal or informal agreements to their benefit. (factor loading: 0.74; SE: 0.03)

*Personal relationships (PR)*

PR1 We have a good personal relationship with the purchasing manager of this distributor. (factor loading: 0.85; SE: 0.03)

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PR2 We have friends who are familiar with the purchasing manager of this distributor. (factor loading: 0.84; SE: 0.02)

PR3 Our channel manager has a good personal relationship with the purchasing manager of this distributor. (factor loading: 0.81; SE: 0.03)

Improving the  
efficiency of  
contract  
governance

*Cooperative orientation (COO)*

COO1 Both of our firms and our distributor are concerned about the benefit of each other. (factor loading: 0.65; SE: 0.05)

COO2 We wouldn't wield a strong posture when negotiating with our distributor. (factor loading: 0.73; SE: 0.06)

COO3 Neither our firm nor our distributor will be too calculative. (factor loading: 0.61; SE: 0.06)

COO4 In order to cooperate, both of us are willing to make some changes. (factor loading: 0.81; SE: 0.05)

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**Control variables**

*Interfirm trust*

InterTrst1 Our firm and our business partner do not trust each other.\* (reverse coded, factor loading: 0.77; SE: 0.06,)

InterTrst2 Our firm and our business partner rely on each other. (factor loading: 0.74; SE: 0.06)

*Power of focal firm*

POW1 If we wanted our business partner to increase (or decrease) their purchasing volume of our products or services, to what extent would they do so? (factor loading: 0.79; SE: 0.06)

POW2 If we wanted our business partner to change their sales promotion ideas, to what extent would they change? (factor loading: 0.76; SE: 0.05)

*Firm information*

1. Your firm belongs to:

- (a) Electronic and electric
- (b) Machinery manufacturing
- (c) Small appliances
- (d) Food
- (e) Bath products
- (f) Garment

2. The ownership of your firm is:

- (a) State-owned
- (b) Joint venture
- (c) Collective-owned
- (d) Private-owned
- (e) Wholly foreign-owned

3. How many employees are there in your firm?

- (a) Below 100
- (b) 100–499
- (c) 500–999
- (d) Over 1,000

4. For how many years has your firm cooperated with the partner you selected earlier?

- (a) Less than 1 year
- (b) 1–3 years
- (c) 3–5 years
- (d) Over 5 years

5. The location of your firm is:

*Demographic information*

1. How many years have you been working for your firm?

- (a) Under 1 year
- (b) 1–3 years
- (c) 3–5 years
- (d) Over 5 years

2. What is your age?

- (a) 18–24
- (b) 25–30
- (c) 31–35
- (d) 36–40
- (e) 41–50
- (f) Over 51

3. What is your title?

- (a) Line manager
- (b) Mid-level manager
- (c) Senior manager

**Corresponding author**

Liping Qian can be contacted at: [qlp@cqu.edu.cn](mailto:qlp@cqu.edu.cn)

# 投资信息技术：提高跨组织关系中合同治理效率的新方法

张涛

西北工业大学管理学院，中国西安

钱丽萍

重庆大学经济与工商管理学院，中国重庆

## 摘要

**目的** – 本研究旨在帮助我们更深入地理解先进信息技术如何提高合同治理效率，以减少合作伙伴在公司间合作中的机会主义行为，以及边界人员的私人关系和合作导向的调节作用。

**设计/方法/途径** – 合同治理分为两个子维度：合同完备性和合同执行保障。然后，使用基于偏最小二乘的结构方程模型检验假设，该模型基于从供应链关系中的制造商收集的调查数据。

**研究结果** – 研究结果首先表明，先进的信息技术可以提高合同的完备性并提供更多合同执行保障。其次，边界人员的私人关系和企业的合作导向都具有不同的调节作用。最后，合同执行保障可以有效地减少合作伙伴的机会主义行为，而合同完备性则不然。

**原创性/价值** – 该研究从两个方面丰富了合同治理文献。首先，它揭示了信息技术如何提高合同治理的效率以及两个权变因素（即私人关系和合作导向）的影响，从而扩展了合同治理的研究。其次，揭示了合同完备性和合同执行保障对合作伙伴机会主义行为的不同影响，从而加深了我们对合同在企业间合作中作用的理解。

**关键词**：合同治理，信息技术，私人关系，合作导向，机会主义

**论文类型**：研究论文

## 引言

大多数公司在跨组织合作中都倾向于采用高效的合同治理，尤其是在动荡的市场中更是如此（Anderson 和 Dekker, 2005；Kashyap 和 Murtha, 2017）。一个具体且完善的合同可以很大程度上保护彼此的利益和权利（Banker 等, 2006；Kashyap 和 Murtha, 2017）。在执行合同时，有效的保障或约束措施又可以保护企业免受商业伙伴的机会主义行为（OP）的影响（Antia 和 Frazier, 2001；Mooi 和 Gilliland,



2013; Kashyap 和 Murtha, 2017)。一般来说,事前的合同设计(CCPT)和事后的合同执行保障(CES)(即合同治理)效率对企业间的成功合作至关重要。

合同治理也受到供应链管理(Shou 等, 2016; Song 和 He, 2019; Yan 等, 2019)和营销策略(Mooi 和 Gilliland, 2013; Kashyap 和 Murtha, 2017)领域研究人员的广泛关注。在现有文献中,大量研究基于交易成本经济学(TCE)和相关研究细致的探索了企业间合同完备性的前因和后果(Banker 等, 2006; Aulakh 和 Gençtürk, 2008; Mooi 和 Ghosh, 2010)。此外,还有一些研究者还考虑了事后合同管理的重要性,并调查了合同重新谈判、监督和约束的效果(Antia 和 Frazier, 2001; Mooi 和 Gilliland, 2013; Kashyap 和 Murtha, 2017)。

总的来说,虽然以往的研究对理解如何通过合同有效地管理企业间合作和合作伙伴的行为很有帮助,但企业仍然面临着两难选择。具体来说,以往的研究已明确或隐含地表明有效的合同治理不可避免地会增加交易成本(Anderson 和 Dekker, 2005; Mooi 和 Ghosh, 2010; Mooi 和 Gilliland, 2013)。也就是说,合同设计的越完备,对合同执行实施的监督或约束措施越多,相应所产生的交易成本就会越高。因此,管理者面临的一个实际难题是:如何在尽可能降低交易成本的同时实现更有效的合同治理?

近年来,越来越多的企业采用先进信息技术(IT)来实现二者的平衡。先进的信息技术功能丰富,能够可以减少合同设计和执行过程中产生的各种交易成本,提高合同治理的效率(Han 等, 2017; Ilmudeen 和 Bao, 2018)。例如,在先进计算机系统上运行的专业数据库管理系统可以高效地存储和管理海量数据,从而节省收集和管理历史交易数据的成本,这些数据在起草具体合同条款或确定合同细节时至关重要(Bayraktar 等, 2010)。先进网络设备与协作程序的结合可以作为数据传输的高速通道,从而降低交易伙伴之间的沟通和协调成本,有助于在双方制定合同阶段充分交换关于合同条款的各种想法,在合同执行期间也能便捷的进行数据共享(Barkhi 等, 2006)。最后,专业企业系统将许多合同设计和执行的操作自动化(例如数据准备和实时监督),从而为管理者带来更多便利(Peng 等, 2016; Neirotti 和 Raguseo, 2017)。

如今,虽然许多公司已经在合同治理中广泛部署了先进信息技术,但就我们所知,研究人员对先进信息技术如何影响事前合同设计和事后合同执行仍然知之

甚少。因此，我们研究的第一个问题如下：

*Q1. 先进信息技术如何提高合同完备性并保证合同执行？*

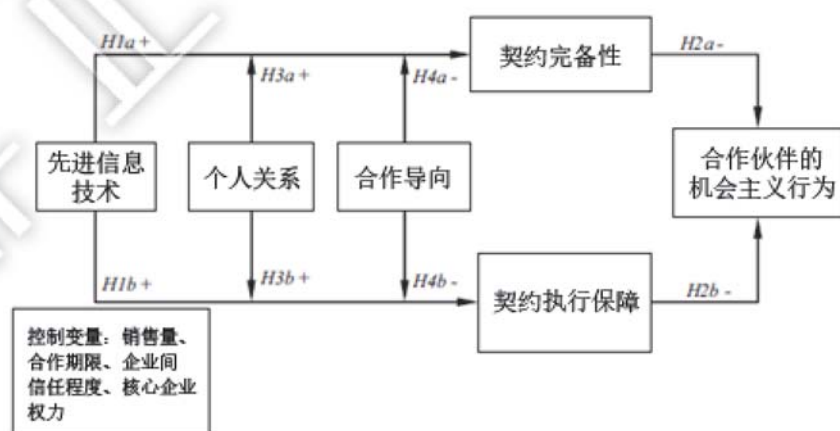
此外，这种效应的边界值得研究。本研究探讨了边界人员之间的私人关系和公司的合作导向的调节效应。我们研究的第二个问题是：

*Q2. 私人关系和合作导向如何权变的影响信息技术对合同完备性和合同执行保障的正向作用？*

为了回答这两个问题，本研究采用 TCE 作为基本的理论逻辑，并借鉴信息系统、合同治理和关系方面的研究。此外，作为企业间合作效率和稳定性的重要障碍，合作伙伴的机会主义被当作是合同治理的结果变量。

本研究对合同治理理论与研究做出了两大贡献。首先，虽然之前的研究广泛探讨了合同治理的前因，但是信息技术的作用很少受到关注。只有一项研究（Banker 等，2006）表明信息技术可以提高合同完备性。然而，该研究没有考虑事后的合同监督，也没有提供任何经验证据。本研究则探讨了信息技术如何提高合同治理的效率，并降低合同设计和执行的交易成本以遏制合作伙伴的机会主义，填补了合同治理文献中的一个空白。第二，信息技术对合同治理直接影响的边界值得探索。在本研究中，我们提出私人关系和合作导向都会对直接影响起作用，从而改进了“信息技术—合同治理”的理论模型（见图 1）。

本文其余部分安排如下。第 2 节阐述了理论背景，论述了概念模型和相应的假设。第 3 节描述了检验假设的调查过程。最后，第 4 节介绍了本研究的主要发现、理论贡献、管理启示、研究局限和未来方向。



## 2.理论和假设

### 2.1 TCE 和合同治理文献

TCE 强调，之所以需要治理机制，是因为有限理性的自利交易伙伴倾向于在存在交易风险时采取机会主义行为，包括专用资产投资、不确定性和交易频率（Williamson, 1985）。作为一种正式的治理机制，合同是指受法律和法规保护的承诺或义务，这些承诺或义务约束缔约方，并指导他们在商定的期限内采取特定行动（Macneil, 1978; Anderson 和 Dekker, 2005）。一份足够完备的合同明确且细致地规定了角色和义务、监督程序、对违规行为的惩罚以及相应的后果，从而为缔约方提供了强有力的正式保障，以确保他们未来的利益和权利（Banker 等, 2006; Kashyap 和 Murtha, 2017）。

鉴于合同完备性的重要性，之前已有研究详细考察了影响因素对设计完备合同所产生的交易成本的作用，影响因素比如环境因素（Aulakh 和 Gençtürk, 2008）、合作伙伴特征（Mooi 和 Ghosh, 2010）、核心企业特征（Banker 等, 2006）和企业间关系特征（Mooi 和 Ghosh, 2010）。例如，Aulakh 和 Gençtürk（2008）发现，由于调查、分析和预测成本巨大，市场波动会妨碍公司设计明确的合同，而东道国市场经验和产品标准化可以显著降低公司在国际贸易背景下的学习、协调和谈判成本，因而有利于形成更明确的合同。Mooi 和 Ghosh（2010）认为，买方锁定（专用资产投资）和交易复杂性的增加迫使公司设计更具体的合同条款来保护自己的投资和利益，哪怕会产生额外的谈判、协调和沟通成本。总体来说，一些已有研究含蓄或明确地表明，设计更完备的合同会增加交易成本，比如沟通和协调成本、数据准备成本和谈判成本。因此，如果影响因素可以降低签署完备合同的成本，企业会更有可能设计更具体的合同。

然而，一些研究人员认为，设计详细完善的合同只是合同治理的第一步，事后合同管理与监督同样重要（Antia 和 Frazier, 2001; Mooi 和 Gilliland, 2013; Kashyap 和 Murtha, 2017）。例如，Antia 和 Frazier（2001）认为，合同的有效性部分取决于合同约定，合同约定是指公司对合作伙伴违反合同义务的反应的强烈程度。他们开发了一个综合框架来反映渠道体系、二元因素和网络因素对合同约定的影响。最近的研究开始关注事前合同设计和事后合同管理两个方面。例如，Mooi 和 Gilliland（2013）研究了合同广泛性和合同约定之间的关系。

Kashyap 和 Murtha (2017) 调查了事前监督和约束条款的完备性对于事后监督对特许经营者合规性的影响的调节作用。

根据最近的观点,我们将合同治理定义为合同完备性(事前合同设计)和合同执行保障(事后合同管理)。与之前的研究一致,合同完备性指的是合同条款设计的完整、广泛和明确程度(Wuyts 和 Geyskens, 2005; Aulakh 和 Gençtürk, 2008; Mooi 和 Ghosh, 2010)。合同执行保障指的是保证合同正确、严格执行的途径、方法或机制,包括执行和监督(Mooi 和 Gilliland, 2013; Kashyap 和 Murtha, 2017)以及其他机制(如合同评估)的力度。

## 2.2 信息技术先进性对合同治理和合作伙伴机会主义行为的直接影响

信息技术先进性指计算机硬件(例如最近发布的笔记本电脑和台式机、高级中央服务器、高速网络设备和互联网连接)和专业软件系统(例如公司层级的数据系统或管理系统,如 Lotus Notes/Domino)(Armstrong 和 Sambamurthy, 1999; Byrd 和 Turner, 2000)在多大程度上是刚刚发布的(即先进程度)。先进的信息技术具有更为丰富和强大的功能,可以削减公司间合同治理中产生的许多交易成本。

首先,先进的硬件(即新发布的 CPU 更快、内存和硬盘空间更大的计算机)以及专业数据库管理系统可以降低数据存储、操作和管理的成本(Bayraktar 等, 2010; PérezLópez 和 Alegre, 2012; Rasouli 等, 2016)。在设计合同时,这种先进硬件和专业系统可以为管理者提供大量的历史交易记录作为可靠的参考,帮助他们考虑尽可能多的细节和意外情况,以提高当前合同条款的完备性(Soibelman 和 Kim, 2002)。在合同执行方面,由于先进硬件和专业系统可以提供关于之前业务合作的更精细、更详尽的数据,使得管理者可以建议更多地关注合同执行过程中的意外事件,并给出更好的选择和解决方案,从而增强执行保障。

第二,高速网络设备(例如 1G 带宽的无线路由器)可以降低数据传输的成本,这对端到端通信、数据访问和实时监督至关重要(Barkhi 等, 2006; Cheng 等, 2006; Kim 等, 2011)。相应地,在合同设计过程中,高速网络设备可以更快地传输海量数据和信息,方便管理者交换关于义务和权利的想法以及就特定条款进行讨论(Paulraj 等, 2008; Roberts 和 Grover, 2012)。随着管理者之间的沟通和谈判变得更容易,就能用更少的时间和精力制定更完备的合同条款。此外,



在合同执行期间，高速网络设备能实现实时监督（例如联网摄像头和位置跟踪）以确保合同的执行。

第三，专业软件系统具有许多功能，可以将合同条款设计和实时监督自动化，以降低运营成本（Peng 等，2016；Neirotti 和 Raguseo，2017；Wang 等，2017）。例如，Agiloft 的合同和商务生命周期管理系统可以自动完成文档和数据收集过程。因此，公司可以轻松获得大量数据，以利于制定更清晰的合同条款。Ariba 供应商管理系统可以定期将供应商数据与特定的合同条款进行比较，以检测异常事件或机会主义行为，并在发现后立即自动发生警报。公司可以通过此类系统检查合同执行状态，以提供更有力的保障来确保合同执行。

综上所述，我们假设：

*H1. 先进信息技术可以提高 (a) 合同完备性和 (b) 合同执行保障。*

在一份完备的合同中，双方明确各自的目标和范围（Antia 和 Frazier，2001），详细规定各自的权利和义务（Wuyts, S. and Geyskens, I., 2005），并明确解决争议和共同事务决策的规则和条例（Poppo 和 Zenger，2002）。此外，如果企业合同执行保障能力较好，例如，拥有具体而详细的历史交易记录、高效的沟通和有效的合同执行监督，这些保障措施可以减少不确定性，并防止合作伙伴的机会主义行为。

综上所述，我们假设：

*H2. (a) 合同完备性和 (b) 合同执行保障 都可以减少合作伙伴的机会主义行为。*

### **2.3 私人关系和合作导向的调节作用**

边界人员是指公司中相对于其他个人而言更密切地参与公司间业务合作的个人（Cai 等，2017）。相互间私人关系更好的边界人员更可能互惠（Su 等，2009；Yen 等，2011）。具体来说，在设计和执行合同时，他们可能会更频繁地沟通，一旦出现分歧或冲突，能留出更多的公平妥协余地。在这些互动中，先进信息技术可以在许多方面发挥作用，例如，为明确规定合同条款准备更多数据，为解决合同细节争端提供更有效的沟通渠道，以及自动完成构建详细合同条款的很多操作。因此，更好的私人关系会加深先进信息技术对合同设计的影响。

相比之下，在合同执行中，先进的信息技术可以通过提供更有效的检查、评

估和监督方法来确保合同的执行。然而,这些方法是僵化的,不带任何个人色彩,因而有可能导致交易伙伴之间的冲突。例如,先进的信息技术系统的实时监督可能会使交易伙伴感到不适。作为非正式沟通渠道,密切的私人关系鼓励边界人员更频繁地沟通和协调(Gu 等, 2008; Zhang 和 Li, 2010),进而促进互惠和彼此间的依赖(Qian 等, 2016)。因此,作为商业活动的润滑剂,边界人员之间的私人关系可以减少先进信息技术系统带来的潜在压力,并增强先进信息技术和合同执行保障之间的正向关系。

综上所述,我们假设:

*H3. 私人关系对于先进信息技术与 (a) 合同完备性和 (b) 合同执行保障之间的关系具有积极的调节作用。*

合作导向是指一家公司希望与另一家公司合作以实现共同目标的意愿度。具有高度合作导向的公司会对合作伙伴表现大度(Gundlach 等, 1995; Yen 等, 2011),并关注长期利益(Poppo 等, 2008; Fu 等, 2018)。因此,在设计合同时,这样的公司不太倾向于规定合同条款细节,以显示其诚意。同样,在执行合同时,也会降低合同监督的频率,不让合作伙伴有受监督的压力。因此,合同设计和执行所需的数据、信息、沟通和谈判更少,意味着先进信息技术不太可能削减这些活动的成本。换句话说,先进信息技术对合同完备性和合同执行监督的影响被公司的合作导向抵消了。

通常,我们假设:

*H4. 合作导向对先进信息技术与 (a) 合同完备性和 (b) 合同执行保障之间的关系具有消极的调节作用。*

### 3.方法

#### 3.1 样本和数据收集

在这项研究中,我们使用调查方法来收集数据和检验我们的假设。为了确保问卷的质量,正式调查前,我们与两名学术研究人员和十名管理者共同进行了审查,然后对 40 名管理者进行了试验调查。具体来说,我们首先邀请了两位专业学者来验证度量的准确性和完备性。然后邀请了十名与合作伙伴有交易关系的管理者,请他们对问卷进行评估,并就问卷的设计和措辞向我们提供反馈。根据他们的反馈和建议,我们修改了问卷,并要求两位专业学者再次确认修改后的问卷。

最后，对负责分销商或供应商管理的 40 名经理进行了预测试研究。他们不仅完成了问卷，还提供了反馈。问卷平均完成时间为 8 分钟。总体来说，反馈都比较积极，评估结果也令人满意。然后，我们使用修订后的问卷进行了正式调查。

该调查由第一作者和两名研究助理于 2016 年 7 月至 8 月进行。我们从中国制造商协会的通讯录中随机选取了 400 家有供应链合作伙伴的制造商。这些选定的制造商中负责分销或供应商管理的管理者被选为受访者。在中国制造商协会的帮助下，我们跟每个选定的管理者进行了正式的电话沟通，表示需要他们的帮助。在电话中，我们简要介绍了调查目的，然后强调了调查的学术性，并承诺对他们的回答进行保密。为了鼓励他们参与，我们承诺如果他们的回答符合纳入研究的条件，会有 40 元的奖励。然后将问卷链接发送给了同意受访的管理者。在这一个月里，我们进行了两次提醒，最终收集了 254 份问卷（回复率为 63.5%）。其中有 38 份在 3 分钟内完成或对大多数问题给出了同样的答案。剔除了这 38 份后，最终有效样本为 216 份（有效回复率为 54%）。这些制造商分别来自常州、苏州、成都、广州和武汉。虽然数据是在 2016 年收集的，但鉴于在过去的二十年里，信息技术在企业中广泛应用，本研究涉及的问题仍然普遍存在，因此这些数据依然适用。

样本的描述性统计数据如表 1 所示。

表 1：样本描述性统计

类别		子类别	百分比
行业	工业品	电子和电气	33.1%
		机械制造	25.3%
	消费品	小家电	31.4%
		食品	3.1%
		卫浴用品	6.8%
		服装	0.3%
	所有制	国有	20.1%
		合资企业	22.7%
	非公有制	集体所有	16.9%
		私营	30.8%
员工人数	中小企业	外商独资	9.5%
		100 人以下	20.3%
		100-499	34.6%
	大型企业	500-999	33.0%
		1000 人以上	12.1%

接下来，我们检验是否存在无回应偏差。具体来说，我们随机选择了 20 名

拒绝参与的管理者，并通过电话问了几个简单的问题。我们收集了他们的基本人口特征，并询问了他们对问卷中以下两个表述的看法：“我们公司部署了最先进的 IT 设备”和“在和主要经销商打交道时，我们的合同明确规定了各方的角色”。T 检验发现回应者和未回应者之间没有显著差异。此外，我们比较了回应者和未回应者的职位、任期和年龄，也没有发现显著差异。因此，总的来说该样本的无回应偏差并不显著。

### 3.2 变量测量

使用多题项量表衡量先进信息技术结构、边界人员之间的私人关系、企业的合作导向、合同完备性、合同执行保障和合作伙伴的机会主义(题项详情见附录)。每个题项都是用五分制来衡量的，其中 1 分是“强烈反对”，5 分是“极其赞同”。

基于 Byrd 和 Turner (2000) 和 Jean 等 (2010)，我们设计五个题项来衡量 IT 设备、软件和系统的先进性，包括计算机和服务器、网络连接和软件以及公司层级系统。从 Lusch 和 Brown (1996) 的研究中得出，合同完备性是通过三个题项来衡量的，例如，双方独有且具体的角色、义务和权利以及他们的具体活动。为执行合同严格确定了四个题项，用于衡量合同执行保障，包括合同管理的成熟度、合同控制者的有效性和合同执行反馈的完备性。Gundlach 等 (1995) 提供了用于测量机会主义的 5 个题项，Peng 和 Luo (2000) 和 Su 等 (2009) 提供了用于衡量边界人员之间的私人关系的 3 个题项。最后，严格按照合作导向的定义确定了四个题项来评估合作导向。

此外，引入四个控制变量来解释变化的外源：公司销售额，这可以反映公司的竞争优势；合作期限，这可能会影响受访者对合作伙伴机会主义的看法；公司间的信任程度，这可能会影响合同的制定和执行以及合作伙伴机会主义，因为公司可能会制定不太详细的合同，并且在合同执行期间很少监督或调查合作伙伴；以及核心企业权力，这是影响交易伙伴行为的关键因素。

### 3.3 度量验证

通过基于偏最小二乘法 (PLS) 的结构方程模型 (SEM) 进行度量验证和数据分析，原因如下。PLS 可以将度量误差纳入度量模型，这点在标准回归模型中无法实现 (Hair 等, 2011; Peng 和 Lai, 2012)。此外，这种方法还可以很容易地估计调节作用，并能够利用形成性结构测试模型，而使用其他类型的基于



协方差的 SEM (例如 AMOS、LISREL) 很难实现 (Hair 等, 2011; Peng 和 Lai, 2012)。最后, PLS 可以处理相对较小的样本和多重共线性 (Hair 等, 2011; Peng 和 Lai, 2012)。

我们首先检查了度量的收敛和判别有效性。如表 2 所示, 六个平均方差提取值 (AVE) 大于 0.50, 表示收敛有效性合格 (Gefen 等, 2000)。AVE 的平方根超过了变量之间各自的相关性, 表示判别有效性可以接受。最后, 六个变量的组合信度大于 0.7, 证明了度量的可靠性。

对于同源方差 (CMV), 首先使用 Harman 单因素方法 (Podsakoff 等, 2003)。所有核心结构的特征值都在 1 以上, 解释了总方差的 73.28%。第一个结构解释了总方差的 25.03%。因此, CMV 不显著。第二, 在所有题项 (包括控制变量题项) 中, 用一个额外因素 (受访者年龄) 采用共同潜在因素法来评价 CMV。结果没有发现显著差异, 因此 CMV 问题不大。

3.4 分析和结果

利用 PLS 检验假设, 结果见表 3。在完整样本中, 模型解释了 48% 的合同完备性变异、59% 的合同执行保障变异和 24% 的合作伙伴机会主义变异, 表明我们的假设模型适用于完整样本。

表 2 平均值、标准偏差、AVE、CR 和组间相关系数

结构	平均值	AVE	CR	SD	ITADV	PR	结构相关性			
							COO	CCPT	CES	OP
ITADV	3.48	0.64	0.89	0.79	0.80					
PR	3.22	0.69	0.87	0.83	0.28**	0.83				
COO	3.62	0.50	0.79	0.61	0.31**	0.25**	0.71			
CCPT	3.92	0.55	0.78	0.74	0.38***	0.26**	0.49***	0.74		
CES	3.79	0.51	0.80	0.64	0.46***	0.28**	0.49***	0.70***	0.72	
OP	2.77	0.64	0.89	0.79	-0.01	0.07	-0.15*	-0.08	-0.14*	0.80

备注: 1.\*、\*\*、\*\*\* 表示双尾检验中 p 值 < 0.05、0.01、0.001  
2.平均值和标准偏差基于每个结构的指标平均值  
3.变量相关矩阵的对角线是 AVE 的平方根

接下来, 8 个假设中的 6 个得到了支持。具体来说, 先进信息技术对合同完备性 ( $\gamma=0.15, SE=0.07$ ) 和合同执行保障 ( $\gamma=0.20, SE=0.07$ ) 都有积极影响, 表明 H1a 和 H1b 得到了支持。合同执行保障对合作伙伴的机会主义有消极影响 ( $\gamma=-0.16, SE=0.08$ ), 而合同完备性没有 ( $\gamma=-0.08, SE=0.11$ )。因此, 结果支持 H2b, 但否定了 H2a。

表 3.结构模型的结果

	契约完备性 (CCPT)	完整样本 (N=216) 契约执行保障 (CES)	合作伙伴的机会 主义行为 (OP)
ITADV	0.15* (0.07 <sup>b</sup> )	0.20** (0.07)	
ITADV × PR	0.15* (0.07)	0.04 (0.09)	
ITADV × COO	-0.12 <sup>†</sup> (0.07)	-0.13 <sup>†</sup> (0.07)	
CCPT			-0.08 (0.11)
CEX			-0.16* (0.08)
控制变量			
销售量	0.24*** (0.04)	0.00 (0.09)	0.12 <sup>†</sup> (0.07)
合作	0.00 (0.04)	0.00 (0.10)	-0.14 <sup>†</sup> (0.08)
期限			
企业间信任程度	0.28*** (0.05)	-0.01 (0.08)	-0.19** (0.06)
核心企业权力	0.20*** (0.05)	-0.02 (0.08)	
CCPT <sup>a</sup>		0.49*** (0.06)	
R <sup>2</sup>	0.48	0.59	0.24

备注：1. a 表示 CCPT 是 CES 的控制变量，因为之前的研究表明，事前合同设计可以积极改善事后合同管理，例如 Kashyap 等（2012）

2. b 表示标准误差，下同

3. †、\*、\*\*、\*\*\* 表示双尾检验中 p 值 < 0.1、0.05、0.01、0.001

最后，边界人员之间的私人关系积极调节先进信息技术对合同完备性的影响 ( $\gamma=0.15$ ,  $SE=0.07$ )，而没有积极调节先进信息技术对合同执行保障的影响 ( $\gamma=0.04$ ,  $SE=0.09$ )，即支持 H3a 但否定了 H3b。合作导向对先进信息技术在合同完备性 ( $\gamma=-0.12$ ,  $SE=0.07$ ) 与合同执行保障 ( $\gamma=-0.13$ ,  $SE=0.07$ ) 方面的影响具有消极的调节作用，即支持 H4a 和 H4b。为了更好地表示私人关系和合作导向的调节作用，图 2 用图表进行了展示。

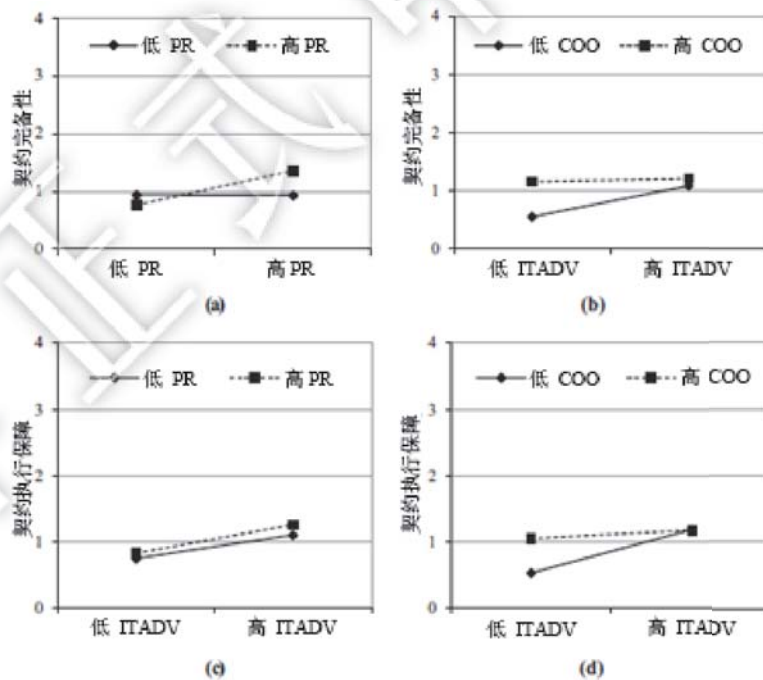


图 2.私人关系和合作导向的调节作用

为了检验从完整样本中得出的结果的稳健性，我们使用子样本进一步测试了假设（详见表 1）。具体来说，我们将完整样本分为工业市场子样本（N=126）和

消费市场子样本(N=90)。两个子样本的结果相似,并且与完整样本的结果相似。接下来,我们将整个样本分为公有制类子样本(N=93)和非公有制类子样本(N=123)以及中小企业子样本(N=119)和大企业子样本(N=97)。两对子样本的结果相似,并且与完整样本的结果相似,但 H4b 在非公有制类子样本和中小企业子样本中被否定。这两个例外表明,合作导向对合同执行保障的调节作用取决于公有制度度和企业规模。

总的来说,虽然一个假设的结果在一些子样本中不稳定,但从完整样本中得出的其他结果在行业、所有制和企业规模的子样本中保持稳定,意味着普遍性是可接受的。

3.5 事后分析

对私人关系对先进信息技术和合同执行保障之间关系的调节作用的研究表明,对完整样本或其他子样本没有显著影响。为了进一步了解私人关系的影响,我们根据私人关系的中位数(PRmedian=3.33)将完整样本分为低(N=102)和高(N=79)私人关系子样本,并使用分层多元回归来测试每个子样本中先进信息技术对合同执行保障的影响。如表 4 所示,只有在低私人关系子样本中,先进信息技术才促进合同执行保障。

这个结果背后的原因可能很复杂。一个可能的原因是,当私人关系疏离时,边界人员遵循“公事公办”的原则,专注于交换与任务相关的信息。这种情况下,先进信息技术可以发挥有效的作用,从而促进合同执行保障。然而,处于密切私人关系中的边界人员愿意互惠以及非正式地交流,从而绕过正式的信息技术系统,即在这种情况下,私人关系是替代先进信息技术效果的替代机制(如高私人关系子样本所示)。

表 4.H3b: 低 PR 和高 PR 子样本的分层多元回归

	契约执行保障 (CES)			
	低 PR 子样本 (N=102) 模型 1	模型 2	高 PR 子样本 (N=79) 模型 3	模型 4
ITADV		0.40***		0.11
控制变量				
销售量	0.33***	0.18*	0.14	0.15
合作期限	-0.02	0.03	-0.09	-0.10
企业间信任程度	0.30**	0.16*	0.26*	0.23*
核心企业权力	0.03	0.05	0.14	0.12
合作导向	0.14	0.08	0.17*	0.17*
模型 F	13.31***	16.91***	5.02***	4.45***
R <sup>2</sup>	0.32	0.42	0.16	0.17
ΔR <sup>2</sup>		0.10		0.01

## 4.讨论和结论

本研究借鉴了 TCE 和信息系统、合同治理和关系方面的文献，发现先进信息技术可以提高合同治理的效率。具体来说，在事前合同设计中，先进信息技术可以帮助管理者设计更完备的合同条款来涵盖尽可能多的意外情况，而在事后合同管理中，先进信息技术可以提供更多的保障来保证合同的执行。其次，本研究还表明，边界人员之间的私人关系可以加强先进信息技术对完备的合同条款设计的积极影响，而企业的合作导向可以抵消这种积极影响。相比之下，边界人员之间的私人关系并没有加强先进信息技术对合同执行保障的积极影响，合作导向抵消了这种积极影响。第三，本研究表明，合同执行保障可以减少合作伙伴的机会主义，而合同完备性不能。在下一节中，我们将更详细地讨论这些发现的含义。

### 4.1 理论贡献

首先，本研究加强了对信息技术对合同治理影响的理解，因而为合同治理文献做出了贡献。具体来说，虽然已有研究广泛调查了影响合同治理的不同前因（Lusch 和 Brown, 1996; Wuyts 和 Geyskens, 2005; Aulakh 和 Gençtürk, 2008; Mooi 和 Ghosh, 2010），但很少有研究关注信息技术这一前置技术因素的影响。该研究通过证明信息技术可以提高合同完备性和执行保障，填补了这一空白。通过加快数据收集和交换，并提供一种简单的方法来管理操作流程，信息技术可以降低设计和执行合同的成本，并促进交易伙伴对合同的应用。这些结果通过添加前置技术因素丰富了合同治理文献。此外，还通过提供支持性的经验证据对交易成本理论做出了贡献。

其次，本研究通过分析私人关系和合作导向权变效应对合同治理文献做出了贡献。具体而言，已有研究揭示了各种背景因素的相互影响，包括不对称承诺（Achrol 和 Gundlach, 1999）、网络嵌入性（Wuyts 和 Geyskens, 2005）和东道国不确定性（Aulakh 和 Gençtürk, 2008）。相比而言，我们的实证结果表明私人关系（个人层面的因素）和合作导向（组织层面的因素）有不同的调节作用。

第三，之前有许多研究调查了合同对合作伙伴机会主义的影响，但得出了相互矛盾的结论（Achrol 和 Gundlach, 1999; Wuyts 和 Geyskens, 2005）。通过将合同治理划分为两个维度，本研究证明了合同完备性在减少合作伙伴机会主义是无效的，而合同执行保障是有效的。这些结果为关于合同作用的争论提供了一个



合理的解释，也支持了之前的观点，即事前合同设计和事后合同执行都很重要（Antia 和 Frazier, 2001; Mooi 和 Gilliland, 2013; Kashyap 和 Murtha, 2017）。

## 4.2 管理启示

本研究为 B2B 环境下企业间合作的合同治理提供了一些管理见解。首先，通过部署先进信息技术（如新的计算机、服务器和网络路由器及程序）和系统（如 SAP），企业可以加强合同治理，减少合作伙伴的机会主义，从而提高企业间合作的绩效和稳定性。

其次，本研究的结果表明，仅有正式且完备的合同是不够的。在公司间合作中，合同执行保障在减少合作伙伴的机会主义方面发挥着更加重要的作用。因此，合同签订后，对合同的检查、监督和评估更加重要。

第三，为了加强信息技术的积极作用，企业可以利用边界人员之间的私人关系来改善现有 IT 设备、装置和系统对合同完备性的影响，而无需升级到新的设备、装置和系统。相反，当使用先进信息技术来改善合同治理时，企业应该意识到合作企业战略的抑制作用，并找到适当的方法来协调信息技术和企业合作导向之间的关系，以最大限度地减少合作导向的负面影响。

## 4.3 局限性和未来研究的方向

本研究虽然非常谨慎，但仍然存在局限性。在收集数据时，我们使用了先进信息技术的主观度量，有可能会产生主观分歧。未来的研究应使用硬件和软件的客观指标来衡量先进信息技术，例如，CPU 的世代和频率、内存大小、互联网带宽或企业系统的版本号。问卷可分为两部分，其中一部分包括向 IT 部门的内部人士（如网络或系统管理员）提出的专业信息技术问题，以获得先进信息技术的客观度量。其次，我们使用了无法评估结构之间因果关系的截面数据。未来的研究应采用纵向方法。

本研究的结果也凸显了以公司间关系管理为重点的若干研究机会。首先，我们没有在概念模型中包含交易成本结构。先进信息技术对合同治理交易成本的影响值得在未来进行研究。其次，先进信息技术与私人关系的关系及其对合同治理的影响可能比较复杂，说明权变因素对信息技术效果的影响需要进一步考察。第三，我们没有考虑相互依赖的影响。依赖在多大程度上决定了信息技术和合同治理之间的关系，这可以作为未来研究的一个有趣课题。

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## 附录

### 度量量表

#### 核心变量

##### 先进信息技术 (ITADV)

ITADV1 我们公司部署了最先进的 IT 设备。(因子载荷: 0.75; SE: 0.03)

ITADV2 我们公司每年都在新的 IT 设备(如台式机、笔记本电脑、服务器、路由器、互联网连接等)上投入巨资。(因子载荷: 0.78; SE: 0.03)

ITADV3 我们公司的网络速度和通信程序令人满意。(因子载荷: 0.75; SE: 0.04)

ITADV4 我们有最新推出的专业软件和企业系统(如 ERP、SAP、Lotus Notes)。(因子载荷: 0.88; SE: 0.02)

ITADV5 我们公司的软件系统总是及时升级。(因子载荷: 0.82; SE: 0.03)

##### 合同完备性 (CCPT)

CCPT1 在与主要经销商打交道时, 我们的合同明确规定了各方的角色。(因子载荷: 0.76; SE: 0.02)

CCPT2 在与主要经销商打交道时, 我们的合同明确规定了各方的责任。(因子载荷: 0.80; SE: 0.02)

CCPT3 在与主要经销商打交道时, 我们的合同明确规定了各方应如何履约。(因子载荷: 0.66; SE: 0.04)

##### 合同执行保障 (CES)

CES1 我们公司有完善的合同保障机制。(因子载荷: 0.71; SE: 0.04)

CES2 为了确保合同的执行, 我们建立了合同保障体系。(因子载荷: 0.72; SE: 0.03)

CES3 我们会评估已经执行的合同。(因子载荷: 0.75; SE: 0.03)

CES4 在合同执行期间, 我们公司会不时检查合同的执行情况。(因子载荷: 0.67; SE: 0.03)

##### 合作伙伴的机会主义行为 (OP)

OP1 经销商夸大需求以获得他们想要的。(因子载荷: 0.84; SE: 0.03)

OP2 经销商有时不真诚。(因子载荷: 0.84; SE: 0.03)

OP3 经销商捏造事实以获得他们想要的。(因子载荷: 0.83; SE: 0.04)



OP4 诚信议价不是经销商的谈判风格。(因子载荷: 0.83; SE: 0.04)

OP5 经销商为了自己的利益违反正式或非正式协议。(因子载荷: 0.74; SE: 0.03)

#### 私人关系 (PR)

PR1 我们与该经销商的采购经理有着良好的私人关系。(因子载荷: 0.85; SE: 0.03)

PR2 我们有朋友与这家经销商采购经理相熟。(因子载荷: 0.84; SE: 0.02)

PR3 我们的渠道经理与该经销商的采购经理有着良好的私人关系。

(因子载荷: 0.81; SE: 0.03)

#### 合作导向 (COO)

COO1 我们的公司和经销商都关心彼此的利益。(因子载荷: 0.65; SE: 0.05)

COO2 在与经销商谈判时, 我们不会摆出强硬的姿态。(因子载荷: 0.73; SE: 0.06)

COO3 我们公司和我们的经销商都不会太精打细算。(因子载荷: 0.61; SE: 0.06)

COO4 为了合作, 我们双方都愿意做出一些改变。(因子载荷: 0.81; SE: 0.05)

#### 控制变量

##### 企业间信任程度 (InterTrst)

InterTrst1 我们公司和我们的商业伙伴互不信任。\*(反向编码, 因子载荷: 0.77; SE: 0.06)

InterTrst2 我们公司和我们的商业伙伴相互依赖。(因子载荷: 0.74; SE: 0.06)

##### 核心企业权力 (POW)

POW1 如果我们希望我们的商业伙伴增加(或减少)对我们产品或服务的采购量, 他们会在多大程度上这样做?(因子载荷: 0.79; SE: 0.06)

POW2 如果我们希望我们的商业伙伴改变他们的促销理念, 他们会在多大程度上做出改变?

(因子载荷: 0.76; SE: 0.05)

#### 企业信息

1. 贵公司所属业务领域:

- (a) 电子和电气
- (b) 机械制造
- (c) 小家电
- (d) 食品
- (e) 卫浴用品
- (f) 服装

2. 贵公司的所有制是:

- (a) 国有
- (b) 合资企业
- (c) 集体所有
- (d) 私营
- (e) 外商独资

3. 贵公司有多少员工?

- (a) 100 人以下
- (b) 100-499
- (c) 500-999
- (d) 1,000 人以上

4. 贵公司与您之前选择的合作伙伴合作了多少年?

- (a) 1 年以下
- (b) 1-3 年
- (c) 3-5 年
- (d) 5 年以上

5. 贵公司的所在地是:

### 人口统计信息

1.您在公司工作多少年了？

- (a) 1 年以下
- (b) 1-3 年
- (c) 3-5 年
- (d) 5 年以上

2.您的年龄？

- (a) 18-24
- (b) 25-30
- (c) 31-35
- (d) 36-40
- (e) 41-50
- (f) 51 岁以上

3.您的职位？

- (a) 基层管理者
- (b) 中级管理者
- (c) 高级管理者

通讯作者

钱丽萍，联系方式：[qlp@cqu.edu.cn](mailto:qlp@cqu.edu.cn)

## 论文检索证明

检索工具	SCI Expanded Web	查证机构	教育部科技查新工作站 (L29)
查证作者	张涛		西北工业大学图书馆
检索时间段	2020	查证方式	收录、分区
收录篇数	共1篇	查 证 人	杨兰 签名 杨兰
作者单位	西北工业大学	查证日期	2020年6月22日
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## 第 1 条，共 1 条

标题: Investing in IT: a new method for improving the efficiency of contract governance in interfirm relationships

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地址: [Zhang, Tao] Northwestern Polytech Univ, Sch Management, Xian, Peoples R China.

[Qian, Liping] Chongqing Univ, Sch Econ & Business Adm, Chongqing, Peoples R China.

通讯作者地址: Qian, LP (通讯作者), Chongqing Univ, Sch Econ & Business Adm, Chongqing, Peoples R China.

电子邮件地址: t.zhang@nwpu.edu.cn; qlp@cqu.edu.cn

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**Authors:** Zhang, Tao<sup>1</sup> ; Qian, Liping<sup>2</sup> 

**Author affiliation:** 1 School of Management, Northwestern Polytechnical University, Xi'an, China

2 School of Economics and Business Administration, Chongqing University, Chongqing, China

**Corresponding author:** Qian, Liping (qlp@cqu.edu.cn)

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**Abstract:** Purpose: This study aims to enhance our understanding of how advanced IT improves the efficiency of contract governance in mitigating partners' opportunistic behaviors in interfirm cooperation and the moderating effects of boundary spanners' personal relationships and cooperative orientation.  
Design/methodology/approach: Contract governance is divided into two subdimensions: contract completeness and contract execution safeguards. Then, the hypotheses are examined using partial least squares-based structural equation modeling based on survey data collected from manufacturers in supply chain relationships. Findings: The results first demonstrate that advanced IT can improve efficiency in both the design of complete contracts and the provision of contract execution safeguards. Second, the results also show that both the personal relationships between boundary spanners and the cooperative orientation of the firm have different moderating effects. Finally, contract execution safeguards are effective in mitigating partners'



opportunistic behaviors, whereas contract completeness is not. Originality/value: This study enriches the contract governance literature in two ways. First, it unveils how advanced IT improves the efficiency of contract governance and the effects of two contingent factors (i.e. personal relationships and cooperative orientation), thus extending the research on contract governance. Second, it reveals the different effects of contract completeness and contract execution safeguards on partners' opportunistic behaviors, thus deepening our understanding of the role of contracts in interfirm cooperation.

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**Number of** 48  
**references:**

**Main heading:** Behavioral research

**Controlled terms:** Efficiency - Least squares approximations - Supply chains

**Uncontrolled terms:** Contract execution - Contract governances - Design/methodology/approach - Inter-firm relationships - Partial least square (PLS) - Personal relationships - Structural equation modeling - Supply chain relationships

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**摘要**

**Purpose** This study aims to enhance our understanding of how advanced IT improves the efficiency of contract governance in mitigating partners' opportunistic behaviors in interfirm cooperation and the moderating effects of boundary spanners' personal relationships and cooperative orientation. **Design/methodology/approach** Contract governance is divided into two subdimensions: contract completeness and contract execution safeguards. Then, the hypotheses are examined using partial least squares-based structural equation modeling based on survey data collected from manufacturers in supply chain relationships. **Findings** The results first demonstrate that advanced IT can improve efficiency in both the design of complete contracts and the provision of contract execution safeguards. Second, the results also show that both the personal relationships between boundary spanners and the cooperative orientation of the firm have different moderating effects. Finally, contract execution safeguards are effective in mitigating partners' opportunistic behaviors, whereas contract completeness is not. **Originality/value** This study enriches the contract governance literature in two ways. First, it unveils how advanced IT improves the efficiency of contract governance and the effects of two contingent factors (i.e. personal relationships and cooperative orientation), thus extending the research on contract governance. Second, it reveals the different effects of contract completeness and contract execution safeguards on partners' opportunistic behaviors, thus deepening our understanding of the role of contracts in interfirm cooperation.

**关键词****作者关键词:** Contract governance; Information technology; Personal relationships; Cooperative orientation; Opportunistic behavior**KeyWords Plus:** SUPPLY CHAIN MANAGEMENT; INFORMATION-TECHNOLOGY INFRASTRUCTURE; FIRM PERFORMANCE; EMERGING MARKETS; BEHAVIOR; COMMUNICATION; COMPLETENESS; CAPABILITIES; FLEXIBILITY; ANTECEDENTS**作者信息****通讯作者地址:**

Chongqing University Chongqing Univ, Sch Econ &amp; Business Adm, Chongqing, Peoples R China.

**通讯作者地址:** Qian, LP (通讯作者)

+ Chongqing Univ, Sch Econ &amp; Business Adm, Chongqing, Peoples R China.

**地址:**

+ [1] Northwestern Polytech Univ, Sch Management, Xian, Peoples R China

+ [2] Chongqing Univ, Sch Econ &amp; Business Adm, Chongqing, Peoples R China

**电子邮件地址:** t.zhang@nwpu.edu.cn; qlp@cqu.edu.cn**基金资助致谢**

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Investing in IT: a new method for improving the efficiency of contract governance in interfirm relationships

Journal Article published 29 May 2020 in Industrial Management & Data Systems volume 120 issue 6 on pages 1245 to 1262

Authors: Tao Zhang, Liping Qian https://doi.org/10.1108/imds-10-2019-0538 Actions



## 研究结论采纳证明

《Investing in IT: A new method for improving the efficiency of contract governance in interfirm relationships》由西北工业大学张涛副教授与重庆大学钱丽萍教授合作研究完成，成果发表在国际信息系统与管理领域权威期刊《Industrial Management & Data Systems》上。该研究具有扎实的理论基础与严密的论证过程，研究发现企业可以通过信息技术来降低双方交易成本，从而提高其与合作伙伴制定合同与执行合同的效果，以此抑制合作伙伴的投机行为；不过企业的合作导向会降低信息技术的作用，而边界人员私人关系则会加强信息技术的作用。上述研究结论可以为企业在供应链、营销渠道或战略联盟等跨组织管理中如何使用信息技术提高合同治理的效果提供了切实可行的建议和指导。

该研究结论提交本公司后，经过公司经验丰富的相关人员分析和论证，认为该研究结论可以有效提高我公司管理分销商的效率与效果，对我公司合同管理提供了非常宝贵的理论启示，具有很高的实践指导意义。我公司予以采纳，并将作为今后开展相关工作的重要依据。具体采纳内容包括：进一步加强合同制定和合同执行方面信息技术的投入，进一步强化边界人员私人关系的建立，同时调整企业与分销商合作的基本思路。

特此证明。

施耐德电气设备工程（西安）有限公司

2020.11.11



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## 研究结论采纳证明

西门子公司是一家拥有上百年历史的德国企业，进入中国以后，与全国各地的供应商、经销商、代理商等合作伙伴有频繁的业务往来。为了保证合作的顺利进行，我们经常需要与这些合作伙伴签订各种类型的合同，然而这些合同的完善程度与执行过程往往并不令人满意。因此，如何提高合同的完善程度，增强合同的可执行性一直以来是我们公司关注的重点问题。

针对于此，西北工业大学张涛副教授与重庆大学钱丽萍教授合作完成的研究《Investing in IT: A new method for improving the efficiency of contract governance in interfirm relationships》，帮助我们了解信息系统会如何提高合同的完善程度与可执行性，以及双方接口人之间私人关系的积极作用和企业合作导向的消极影响。这些研究结论为我们公司的供应链管理提供了切实可行的建议和指导，有效帮助我们提高自身合同制定与执行的水平。

特此证明。

西门子（中国）有限公司西安分公司



2020.11.14

## 研究结论采纳证明

我公司是一家智能传感与人工智能系统服务提供商，专注于开发智能传感与人工智能系统，主要产品包括激光雷达芯片和系统、智能人脸识别、手势识别和姿态识别、智能传感以及人工智能系统等。我公司在日常经营活动中，需要同广泛的供应商与系统集成商进行合作。在与这些企业合作的过程中，与其签订合同并执行合同一直以来都是双方合作的基础与主要形式。因此，如何提高合同制定与合同执行的能力和水平，与合作伙伴顺利开展业务往来是我公司非常关心的一个问题。

由西北工业大学的张涛副教授与重庆大学的钱丽萍教授共同合作完成的研究《Investing in IT: A new method for improving the efficiency of contract governance in interfirm relationships》，针对信息技术在企业合同管理中的作用和意义进行了研究。经我公司评价，该研究的相关结论对于我公司具有重要的指导价值，可以帮助我公司了解信息系统对于合同制定与执行的价值，以及对接人员私下的交往的积极作用和企业文化中强调合作的不利影响，指导我公司提高合同管理与执行水平，改善供应链管理效率。

特此证明。

上海炬佑智能科技有限公司



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## 研究结论采纳证明

我们是西安装小哥网络科技有限公司，一家装修辅料采购平台，致力于为独立装修的消费者打造方便、快捷、低价的装修辅料采购平台。消费者只要通过微信就能一键完成“选材、购买、下单、配送”流程，辅料将直接送达施工现场。

我们公司当前处于上升期，与涂料、管材、板材等许多供应商都是刚刚建立业务关系。为了让双方都能放心，我们会与对方非常细致的探讨订货量、订货种类、发货时间、付款方式等合同内容，然后正式的签订供销合同。不过尽管如此，我们在后续的合同执行中还是会出现各种问题，需要花费大量的沟通与谈判成本。

在我们为此苦恼之际，通过网络搜索我们发现了西北工业大学张涛副教授与重庆大学钱丽萍教授共同完成的研究《投资信息技术：提高跨组织关系中契约治理效率的新方法》。该研究指出，使用信息系统进行合同设计与合同执行管理是一条提高企业合同管理水平与效率的有效手段。我们将全文仔细阅读后，根据文中的建议，调整了原有的信息系统，建立了合同文本的历史数据库，并鼓励销售人员与供应商伙伴建立良好的私人关系。通过一段时间的实践，发现我们公司合同管理水平明显上了一个台阶。两位教授的研究为我们公司的合同管理提供了非常宝贵与有效的建议。

特此证明。

西安装小哥网络科技有限公司

2021.3.22



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# 知情同意书

本人钱丽萍，重庆市重庆大学经济与工商管理学院教授，论文《Investing in IT: A new method for improving the efficiency of contract governance in interfirm relationships（投资信息技术：提高企业间关系中契约治理效率的新方法）》的通讯作者兼第二作者。本人同意西北工业大学管理学院张涛（论文第一作者）以该论文申报“2021 年度陕西高等学校人文社会科学研究优秀成果奖”。

特此说明。

签字：钱 莉 萍

日期：2021 年 5 月 7 日



## 2021 年度拟申报陕西高等学校人文社会科学研究优秀成果

### 奖公示结果证明

由我单位张涛参与完成的成果“Investing in IT: A new method for improving the efficiency of contract governance in interfirm relationships（投资信息技术：提高跨组织关系中契约治理效率的新方法）”（论文）拟申报 2021 年度陕西高等学校人文社会科学研究优秀成果奖，按照相关要求于 2021 年 5 月 8 日至 2021 年 5 月 13 日（5 个自然日）在我单位进行了公示。经公示无异议。

特此证明。

重庆大学

2021 年 5 月 14 日