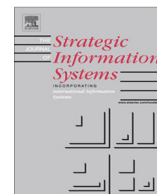




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# Knowledge based transactions and decision framing in Information Technology Outsourcing

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## ABSTRACT

Knowledge based transaction costs (KTC) are knowledge related costs associated with the transfer of an information technology (IT) firm process outside its boundaries to a contractual partner. In this paper, we show that these knowledge based transaction costs are omitted variables in studies of firm boundaries that may reduce the likelihood of outsourcing. KTC arise from the risk of expropriation of firm knowledge by their contractual partners. In addition, KTC arise from the stickiness of knowledge, as transfer tacit and complex knowledge is both difficult to transfer and difficult to assimilate. Finally, KTC decrease with the knowledge and capabilities that contractual partners have, as this increases the partner firm's ability to assimilate knowledge transferred. While all three sources of KTC lower the likelihood of outsourcing, the way managers frame the outsourcing decision is also important. As a result, managers may engage in outsourcing of IT processes even though they risk greater expropriation hazards in order not to lose out on higher expected outsourced performance. We validate these arguments based on a study of 180 IT processes from firms listed on the French (CAC40) and British (FTSE100) stock exchanges.

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## 1. Introduction

Industry surveys and prior research ([Hirschheim and Lacity, 2000](#)) indicate that resources and core competencies ([Jain, 2011](#); [Pralhad and Hamel, 1990](#)), information systems costs ([Aspray et al., 2006](#); [Rottman and Lacity, 2006](#)), mitigation of contractual hazards ([Aubert et al., 2004](#); [Susarla et al., 2009, 2010](#)), skills, activities interdependencies and firm-level characteristics ([Aubert et al., 2012](#)), knowledge ([Dibbern et al., 2008](#); [Kogut and Zander, 1992](#)), and production costs ([Ang and Straub, 1998](#)) influence information technology (IT) sourcing. Even though a lively debate has taken place regarding the relative importance of knowledge and of contractual hazards as determinants of the boundary of the firm ([Foss, 1996a,b](#); [Kogut and Zander, 1992](#)), transaction cost studies do not provide consistent evidence in its support ([David and Han, 2004](#); [Karimi-Alagheband et al., 2011](#)), and empirical knowledge based studies remain relatively sparse. Furthermore, a number of scholars have recently called for an endogenous Information Technology Outsourcing (ITO) theory where practice and behavioral considerations are also taken into account ([Lacity et al., 2011](#)). Accordingly, in this study, we propose that knowledge based transaction costs and managers' decision framing affect the decision to outsource and the performance that follows.

We contribute to ITO literature by developing a model of knowledge based transaction costs. We define knowledge based transaction costs as costs related to the transfer of knowledge during the process of outsourcing. We identify three types of knowledge based transaction costs (KTC). First, KTC are determined by the stickiness of IT knowledge as tacit and

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non-codified knowledge is costly and difficult to transfer (Conner and Prahalad, 1996; Kogut and Zander, 1992; Szulanski, 1996). Second, knowledge based transaction costs increase when a partner firm has relatively less knowledge and expertise, or absorptive capacity (Cohen and Levinthal, 1990; Dibbern et al., 2008; Szulanski, 1996), and it is more difficult to transmit information from one firm to another. Finally, knowledge based transaction costs are related to the perceived risk of expropriation of knowledge transferred (Liebeskind, 1996), as the outsourcing firm will incur costs to safeguard itself. Through a consideration of expropriation, our model of IT outsourcing embraces the possibility of opportunistic behavior and the behavioral assumptions of transaction costs economics. Further, our model gives due credit to the rational of the knowledge based view through a consideration of stickiness and firm capabilities. Using this model of KTC, our research reveals that what are commonly understood to be two opposing theories: transaction costs economics (TCE) and the knowledge based view (KBV), are in fact complementary to each other (Heiman and Nickerson, 2002).

Our second contribution to information systems research is that we incorporate the behavioral assumption of decision framing into a firm's boundary decision. Consider our baseline argument that rational managers economize on their knowledge based transaction costs by insourcing IT processes within the firm. Given this, we observe that managers may violate rational choice to outsource IT processes with *high* knowledge based transaction costs. We propose and show that this observation is consistent with risk taking behavior in a situation of a perceived loss (Kahneman and Tversky, 1979). Managers may decide to outsource activities with higher knowledge based transaction costs in order to avoid the expected performance loss from in-sourcing relative to outsourcing. We show that the framing effects of a potential lost opportunity for higher performance may offset any savings on future higher costs of knowledge related transactions and that this results in outsourcing.

We believe these additions, of knowledge based transaction costs and of managers' decision framing contribute important and new perspectives to ITO, and that they will help decision makers in their reflections on ITO in a number of ways. For one, in addition to taking into consideration production costs and opportunism, managers need to address strategic knowledge based concerns. For example, our KTC framework pushes managers to investigate the characteristics of knowledge that flows out of firm boundaries following outsourcing, and how this affects firm competitiveness. The KTC framework pushes managers to envision the challenges that will arise with respect to the transfer of IT processes to contractual partners. Is IT process knowledge "sticky", that is, complex and tacit, and difficult to communicate to contracting firms? Is communication of sticky IT process knowledge facilitated by the absorptive capacity and capabilities of supplier firms to rapidly get up to speed and become productive? Even though there may be no contractual hazards and the perceived cost related benefits of ITO are high, outsourcing may be inadvisable if transfer of processes to the supplier is characterized by high knowledge based transaction costs. Finally, our study indicates that managers need to weigh KTC concerns against the framing of outsourcing as a gain in productivity and performance in the future. Managers need to be aware of the framing of their choice, and of its competitive implications. Framing might induce risk taking behavior that leads to long term economic suboptimal outsourcing decision.

In sum, this research brings into focus a number of fundamental knowledge based and behavioral concerns pertaining to outsourcing that escape analysis when the focus is limited to production costs and to the threat of contractual hazards.

## 2. Theoretical foundations and hypotheses

TCE provides a powerful explanation of sourcing decisions in which contractual hazards and risk of opportunism are key drivers of outsourcing. Contracts cannot specify all possible contingencies, and since environmental conditions change, this results in contractual hazard and risk of opportunism. Firms anticipating greater contractual hazards incur greater costs ex-ante to safeguard their interests while outsourcing. According to TCE, when costs of governance and production are lower in the market, outsourcing is the preferred option; else in-sourcing is preferred. Furthermore, transaction costs increase with asset specificity as a firm makes transaction specific investments (Williamson, 1999).

A number of studies have used arguments from transaction cost economics in the study of ITO and boundaries of the firm. For one, characteristics of IT activities, notably asset specificity and uncertainty, and firm level particularities such as knowledge intensity, influence the level of outsourcing (Aubert et al., 2012, 2004). Second, while transaction costs play an important role in the ITO decision, production costs play an even bigger role, as shown in a study of ITO by 243 US banks (Ang and Straub, 1998). This suggests a shift in focus from transaction costs to production costs. In this vein, a study using transaction-cost, knowledge-based, and measurement theories (Poppo and Zenger, 1998) analyzed outsourcing of information services in 152 companies and concluded that a theory of firm boundary choice and of outsourcing needs to integrate arguments from each of these theories and that a model emanating from one theory only is insufficient. In addition, a study of 190 information system service projects (Mayer and Nickerson, 2005) found that contracting difficulties arising from opportunistic concerns, measurement costs, and interdependence affect the decision to hire or to contract for knowledge workers. Another study, based on 405 service contracts from an information technology firm (Mayer and Salomon, 2006), stressed the inter-relationship between capabilities and transaction costs.

While contractual hazards encourage internalizing transactions, strong technological capabilities improve a firm's ability to govern transactions and thus increase the likelihood of outsourcing (Mayer and Salomon, 2006). Consistent with review studies (Carter and Hodgson, 2006; David and Han, 2004; Karimi-Alagheband et al., 2011; Lacity et al., 2009), these researches indicate that TCE provides a limited explanation of empirically observed outsourcing decisions and that there

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