Transaction costs theory and coordinated safeguards investment in R&D offshoring

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ABSTRACT

In a multi-case study of R&D offshoring relationships in large manufacturing firms, this study develops an alternative view to that of transaction-cost theory, which argues that safeguard investments during the transition lead to higher transaction costs. This study outlines how fear of opportunism and the potential to violate agreements drive the need for complex safeguard devices. Results show that the sample firms benefit from high initial coordinated safeguard investments, because those investments reduce transactional costs overtime. More specifically, the study lists critical activities of such coordinated self-enforcing safeguard investments and calls for future attention to how firms manage transaction costs in R&D offshoring to secure long-term value.

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1. Introduction

Offshoring refers to “the process of sourcing and coordinating tasks and business function across national boundaries” (Lewin, Massini, & Peeters, 2009, p. 902). Although certain organizational processes are historical targets for offshoring (e.g., information technology), an increasing trend is to offshore high-value processes that relate to advanced engineering services and research and development (R&D) activities. According to several studies (Dossani & Kenney, 2007; Lewin et al., 2009; Varadarajan, 2009), R&D offshoring is the “next generation offshoring practice” and is going to become one of the fastest-growing offshoring segments in BRIC regions (NASSCOM Report, 2006).

Despite these projections, analyses highlighting reasons, outcomes, and governance issues regarding advanced offshore activities are scarce (Hsuan & Mahnke, 2011; Lewin et al., 2009). The lack of extensive empirical studies on the topics necessitates further investigation (Kenney, Massini, & Murtha, 2009). This study focuses on a debate in the literature suggesting that the extent to which companies can achieve long-term value through R&D offshoring is questionable (Parida, Wincent, & Kohtamäki, 2013; Rilla & Squicciarini, 2011). Offshore suppliers may misrepresent their abilities, overstate the possible inputs of their efforts, and attempt to maximize their interests at the investing company’s expense. Such behaviors require greater investments in complex governance structures (i.e., more complex contracts, monitoring, coordination, and enforcement mechanisms) to eliminate behaviors such as shirking, bargaining, and opportunism (Barthélemy & Quelin, 2006; Ellram, Tate, & Billington, 2008).

The transaction-cost theory suggests the need for safeguard investments that increase transaction costs (Williamson, 1985). This perspective paints a negative picture for successful long-term cooperation in an offshore setting. The implication is that once transaction costs increase, the reason for offshoring may disappear in long-term inefficiency (Rilla & Squicciarini, 2011; Williamson, 2008). Thus, this study contributes to low-value-oriented research (Kremic, Tukel, & Rom, 2006) by focusing on transaction costs in the context of offshoring high-value services such as R&D.

This study documents the experiences of four R&D offshore relationships involving six multinational companies. The empirical insights reveal a contrasting picture of the transaction costs to initiate R&D offshoring. By doing so, this study contributes to the discussion in the transaction-cost theory and the debate in the scarce literature addressing R&D offshoring. Specifically, the study contributes to theoretical development by suggesting an operative framework on transaction costs that pinpoints certain safeguard investments and how such investments can help develop sustainable R&D offshore relationships. Importantly, results emphasize that heavy, upfront investments to establishing coordinated safeguards can be a viable strategy and not necessarily drive transaction costs.
2. R&D offshoring, transaction costs, and safeguards

Over the long run, asset-specific investments in offshore competence seem inconsistent with transaction-cost theory. The general literature on transaction-cost theory advocates that investments in specialized assets increase transaction costs by introducing fears regarding exchange problems such as potential bargaining and opportunism (Williamson, 1985). Because customers and their offshore suppliers are striving to gain as much as possible (Das & Kumar, 2007), a risk exists in that they might act opportunistically to secure self-interests. As a result, transaction costs may increase, and the offshoring relationship would risk losing its competitiveness and collapsing over the long-run (Rilla & Squicciarini, 2011). Transaction costs that are potentially bothersome in a offshoring situation include search costs of evaluating offshoring partners, contracting costs when negotiating agreements, monitoring costs to ensure obligations’ fulfillment, and the enforcement costs of ex-post bargaining and sanctioning underperforming partners in the offshoring relationship (Dyer, 1997).

Companies engage into the use of safeguards to protect themselves from opportunism (Williamson, 1985). Safeguards can have many forms, with the most popular being the contract. As asset-specific investments rise and become increasingly complex, as with offshoring R&D rather than simple services, transactors try to formulate complex contracts that leave room for contingencies. According to Barthélemy and Quélin (2006), detailing such contingences is virtually impossible and complicates R&D offshoring management. In that situation, transaction-cost theory predicts that all transaction costs (including search, contracting, monitoring, and enforcement costs) will increase significantly. Although the literature often discusses control mechanisms and other legal forms of safeguards, studies identify trust and goodwill as potential safeguards and investment hostages (Sako, 1991) that may reduce transaction costs (Dyer, 1997). Few studies investigate these conditions’ implication within R&D offshoring as a relationship-management mechanism (Rilla & Squicciarini, 2011).

3. Method

3.1. Research approach and data collection

This study analyzes four R&D offshore relationships involving six multinational companies (Table 1). The research follows an exploratory multiple-case study research design (Eisenhardt, 1989). In total, 49 in-depth, individual interviews, and four group interviews provide the data during different stages of the relationships. More specifically, ten interviews take place in Company A, eleven interviews in Company B, six interviews in Company A1, seven interviews in Company A2, seven interviews in Company B1, and eight interviews in Company B2. Early interviews within the two customer companies focused on factors that motivated these companies to initiate R&D offshore relationships, and on early challenges with the relationships. The following stage involved interviews within four supplier companies in an iterative way to capture their perspective on early drivers, challenges, and safeguard investments examples. Finally, focus group interviews with customer companies (6–10 participants) provided details on the outcomes of investing in safeguards and validated earlier findings. The interviews and workshops included diverse individuals who had significant experience in being active in R&D offshoring engagement.

Observations or archival data provided the secondary data. In particular, the study analyzes offshore pre-study documents, intranet pages, Internet Web sites, offshoring growth progress documents, published news articles, internal documents, and internal company presentations by senior managers to validate and triangulate the findings.

3.2. Data analysis

Using constant comparison techniques (Nag, Corley, & Gioia, 2007), the study identifies grounds for patterns and links within large, complex, empirical data. The data analysis emphasizes the need for a series of iterations leading to different themes and overarching dimensions to develop frameworks with a theoretical and empirical basis. This approach forms the foundation for the first-order codes, which appear mainly in the exact language that the respondents’ used to express their views.

During the next stage, the study divides the identified links into theoretically distinctive groups, the second-order themes. The analysis resulted in four second-order themes, which were at a higher abstraction level in comparison to the first-order categories. Internal validity tests used follow-up interviews and email correspondence. The final stage involved generating third-order dimensions with a higher level of abstraction. The analysis of the second-order categories generated such overarching dimensions (Fig. 1).

4. Findings

4.1. Opportunism and increasing transaction costs in the initial phase

Prior studies on R&D offshoring provide several compelling reasons to use external offshore partners for R&D tasks in comparison to undertaking similar work internally (Parida et al., 2013; Rilla & Squicciarini, 2011); results suggest that transactional costs are quite high at the initial stage because of the need to deal with potential opportunism for both the provider and the supplier. Because of the partners’ inability to stipulate offshoring outcomes clearly in formal contracts, the discussion of the likelihood for opportunism and contractual evasion arises often. Respondents share their concerns regarding relational uncertainties toward the

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<th>Table 1</th>
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<td>Company background information.</td>
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<tr>
<th>Relationship 1</th>
<th>Relationship 2</th>
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<tr>
<td><strong>Total revenue</strong></td>
<td>€209 million</td>
</tr>
<tr>
<td><strong>No. of employees</strong></td>
<td>3500</td>
</tr>
<tr>
<td><strong>Main products/services</strong></td>
<td>Aerospace component provider</td>
</tr>
<tr>
<td><strong>Type &amp; R&amp;D services provided in the particular relationship</strong></td>
<td>Prototype design, engineering support, CAD drawing, and simulations</td>
</tr>
<tr>
<td><strong>Partner evaluation switching time</strong></td>
<td>6–12 months</td>
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<tr>
<td><strong>Total revenue</strong></td>
<td>€1.225 million</td>
</tr>
<tr>
<td><strong>No. of employees</strong></td>
<td>13,000</td>
</tr>
<tr>
<td><strong>Main products/services</strong></td>
<td>Construction equipment and related services</td>
</tr>
<tr>
<td><strong>Type of solutions provided in the relationship</strong></td>
<td>Product development, reengineering, programming, and application development</td>
</tr>
<tr>
<td><strong>Partner evaluation switching time</strong></td>
<td>6 months</td>
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partners with whom they have no prior collaborative history. The uncalculated monitoring and enforcing costs surpasses quickly thoughts of benefits (Dyer, 1997; Yang, Wacker, & Sheu, 2012). More specifically, the examples below of transitional-cost concerns relate to coordination challenges, dissatisfaction toward the relationship, and misalignment of objectives.

We did not take into account the huge coordination costs when we started. This meant that the real cost saving at development project level were significantly lower in the initial phase that several line managers questioned if we should even consider to send tasks to offshore units. (Senior Manager, Company A)

Our staff have been quite dissatisfied with the approach from our customer’s engineers. They have low trust towards us and only provide tasks that are repetitive and simple. This has resulted in experienced and skilled staff working with CAD conversions with no opportunity for engineering-skill development. (Offshore Manager, Company A2)

4.2. Introducing coordinated safeguard investments

The companies avoid significant investments and certain safeguards that would lock-in the companies in an unfavorable situation. Interestingly, these proactive, non-contractual actions are the underlying premises for achieving low transaction costs over time; indeed, these actions have the self-enforcing nature of increasing effectiveness once at use, even though companies implement these actions with raising transitional costs during the initial collaboration stages. The efforts to introduce such safeguards are not one-sided; rather, the examples demonstrate that both provider and supplier coordinate their efforts to reduce chances for opportunism. These coordinated safeguard investments also form grounds for reducing the overall transactional cost of the offshoring relationship. Such an approach is counter to enforcing stringent contracts with heavy penalties to ensure that offshore suppliers fulfill performance requirements; traditionally, the transaction-cost literature would suggest this approach (Dyer, 1997; Williamson, 1985). Below are examples of such coordinated safeguard investments that influence transition costs and value during the R&D offshoring for the case companies.

4.2.1. Coordinated relationship building

As researchers previously acknowledge, developing trust and goodwill among parties engaging in transactions reduces uncertainty and the likelihood of opportunistic behavior (Parida et al., 2013; Sako, 1991). Both provider and supplier apply several simple but efficient approaches separately and jointly during the R&D offshoring relationship. For example, companies encourage project leaders from both sides to work on multiple development projects to enhance the understanding of work approaches and social norms. Repetitive interactions also facilitate the emergence of reciprocal relational commitment (Huikkola, Ylimäki, & Kohtamäki, 2013). For example, suppliers and providers send their key staff members for visits during high-priority project initiations. This action provides opportunities to visit staff and build their personal networks at the visiting site, which in turn provides unit operational efficiency during the project work. Companies initiate joint cultural-learning sessions to promote awareness about national and corporate cultural differences. For example, during early visits, project managers from Company A keep a “travel diary” in which they record work- and non-work-related impressions. These project managers share their observations internally with other project managers. The unique characteristics of the above actions are in the simplicity and ability to ensure reciprocal behavior over time, reducing relational uncertainty and inefficiency. For example,

We made our project manager work with similar people over few projects. This made interaction between the individuals easier. I think...
they began improve understanding of each other better and could express their views freely. This strategy has clearly been a positive for achieving higher project performance. (Line Manager, Company 2)

Since the visit to customer site, I understand better the people working on the other side. It has also made things more personal, which means we became more willing to support and guide them when a problem arises with tasks. (Project Lead, Company B2)

4.2.2. Coordinated communication and monitoring.

A major concern for operational and middle managers in both customer and supplier companies refers to the inability to reduce the costs resulting from communicating and from monitoring the R&D task initiation, progress, and delivery. This concern creates a lack of accountability and opens the door to opportunistic behavior from both sides. For example, suppliers can over-quote the number of necessary hours to complete tasks, and customers may withhold certain key information.

On the customer side, the company establishes new roles and duties, including acting as an offshore coordinator. These individuals maintain an overview on the offshore projects and ensure accountability toward fulfilling the R&D task. Offshore suppliers appreciate such a formal role because that role reduces the potential for miscommunication and reduces transitional inefficiencies. The supplier companies initiate new expert recruitment tactics to cope with the lack of in-house competence toward specialized offshore customers. These experts not only provide training to junior offshore resources, but they also take some responsibility for monitoring reasonable expectations, such as ensuring a good fit between resources and the task at hand and undertaking internal quality checks before delivery. These proactive actions act as safeguarding mechanisms toward reducing transactional costs. For example,

Work-order-definition structure and offshoring communication map were few of those necessary tools there that were placed to ensure that offshore-relationship wastefulness were reduced. (Offshore Manager, Company B)

Since the introduction of offshore coordinators, many coordination difficulties have been resolved. These individuals take responsibility to maintain overview on the relationships and provide quick first response when any problem arises. They also act as a gatekeeper to establish connections between offshore resources and other on-site resources. (Line Manager, Company B)

4.2.3. Coordinated knowledge sharing and building

Offshoring R&D development requires domain-specific knowledge in comparison to offshoring IT or back office tasks. Early on, the companies realize that the knowledge level on the supplier side is insufficient to fulfill the ideal output quality. This situation means that transactional cost investments are much higher than what top management at the customer organization initially perceive. Understanding that building such knowledge demands time and more “learning by doing” is necessary, both sides invest in resources to establish a knowledge-development program. Such an investment indicates that the perception of the relationship is much longer than what the contract defines. For example, supplier resources use a competence-development matrix for which each individual defines his or her area of expertise and areas of interest for future development.

To build knowledge in a new area, individuals could invest 10%–20% of their weekly work time during a low-workload cycle into knowledge-development activities. Such an open approach results in higher job satisfaction and better delivery outputs over time. The companies also initiate other efforts, such as regular interaction with experts to promote learning, to fast-track competence development. Offshore customers introduce joint problem-solving sessions, which provide possibilities for team members from both sides to develop a common understanding and language toward R&D tasks. Finally, the supplier stores much of the learning from completed projects in an internal system to act as a reference point for new employees and as benchmark-design examples for similar development tasks in the future. Thus, using information technology acted as a simple safeguard investment to ensure maintenance of knowledge levels even when the supplier operates in a market with a high attrition rate. For example,

There are no shortcuts to knowledge development. We had to tackle this problem with patience; otherwise, we could jeopardize the entire relationship. Personally, I think this was not much different from how it is when we hire someone new at our office. (Technology Director, Company B)

Over time, we have developed our own design practice library. Here we store all the completed projects and lessons learned. New recruits are asked to use this platform as a learning environment. (Project Leader, Company A1)

4.2.4. Coordinated long-term growth

Stipulation of contractual agreements among the case companies is much simpler than other offshore agreements. According to respondents from customer case companies, the strategy top executives followed leads to establish a strong and future-oriented R&D offshore relationship. To establish an appropriate scale of work within R&D offshoring, companies aim to remove all internal Western consultants and create a pool of low-cost offshore resources that have good skills and can perform similar development work. Companies assure offshore management a certain level of workload over the period of contract. By initiating several governance approaches that clearly signal long-term commitment, suppliers know that the relationship is much deeper than when they simply follow an approach focusing on transaction.

Building on transactional-cost theory, such assurances go a long way to reduce the likelihood of opportunistic behavior and to establish trust among partners, which is a much less expensive alternative than writing a complex legal contract. Additionally, the case companies apply certain specialized investments on which both parties agree to enter a financial hostage situation while ensuring interdependence and a greater outlook for long-term commitment (Dyer, 1997; Dyer & Ouchi, 1993). For example, Company A introduces an entirely revised data management system with different levels of authorization. This system allows offshore resources to directly access necessary information for development tasks. Similarly, suppliers invest in acquiring services from the same IT service provider their customer uses so that suppliers can create a secure tunnel between geographically distant systems. Companies also initiate other simple expenses such as upgrading to newer versions of CAM and CAD software. For example,

We share a vision were the offshore resources will become an extended part of our organization. Over time, they would develop specialized skills meaning that if certain development task requires their competence, it will go directly to them and they may run it independently, like a specialized excellence center. (Director for external resources, Company A)

A common problem for our offshore resources is due to restricted access to benchmark design practices or other relevant material. So we have categorized their internal files into a different levels of authorization. This has been largely improved the need for unnecessary coordination in control. (Process Specialist Company B)

4.3. Effect of coordinated safeguard investments toward decreased transaction costs

Transactional-cost theory focuses primarily on different types of costs that the company needs to reduce to ensure greater value from a
certain transition. This study takes a much broader perspective on transactional costs. Although this perspective acknowledges a reduction in costs across different measurements, more specifically, the perspective points out that the choice of the safeguard investments directly affects the likelihood of creating transitional value (Dyer, 1997). Such value can be “noncontractible” items such as enhanced quality, responsiveness, routine development, higher job satisfaction, and innovation. Several examples highlight that even though safeguard investments might increase in the early stages of the offshoring relationship, the overall transactional costs decrease as both parties acquire greater value:

Reliance on repetitive transactions and sending bulk of work to the offshore resources mean that we benefit from scale of work. Sometimes, we may pass the estimated hours and other times not, but overall we always save money. (Offshore Manager, Company A)

We have several examples in the past when offshore suppliers have been innovative in their suggestions towards the development work. They don’t carry our fixed mind-set and have much different expenses from other industries, which make them quite competent in suggesting changes that could added value to our end products (Line Manager, Company A)

5. Discussion and conclusion

This study investigates offshoring of R&D activities of multinational companies by considering both the customer’s and the supplier’s perspectives. The research contributes to the on-going debate in the offshoring literature on the extent to which long-term value is possible by engaging in R&D offshoring (Hsuån & Mahnke, 2011; Lewin et al., 2009). In contrast to offshoring low-value activities, the threat of extensive bargaining and potential problems with opportunism is likely to drive more substantial investments in governance systems (e.g., contracts, monitoring), which relate to higher transaction costs (Ellram et al., 2008; Rilla & Squicciarini, 2011). Results also suggest, however, that as companies initiate offshore collaborations for R&D and high-valued activities, these companies can actually achieve lower transaction costs and higher value creation by using and investing in coordinated safeguards. Individuals and teams from participating customers and suppliers initiate and manage governance by coordinating safeguards such as building relationships, communicating and monitoring, developing knowledge, and investing in long-term growth. These safeguards create a multitude of benefits including responsibility, quality, and commitment that help reduce long-term costs and improve level of innovation in the project.

Several research pathways seem promising to the background of these findings. First and most importantly, this study presents a different view to the prevalent view on high transactional costs (c.f. Rilla & Squicciarini, 2011). Instead, this study provides empirical evidence of the reduction in transaction costs when the individuals or team members within an R&D offshoring initiative and use coordinated safeguards to operate the relationship in an efficient manner. According to Dyer (1997, p. 536), “[...] understanding how such a condition is achieved may provide important insights to effective interfirm collaboration.” Thus, the findings contribute to transactional-cost theory by presenting conditions when companies can simultaneously achieve the benefits of high safeguard investments and lower transactional costs. Indeed, this finding can be a source for comparative advantage.

Second, the identified safeguards share certain underlying characteristics that allow companies to initiate them without incurring in high transaction costs. For example, companies initiate each safeguard mostly as a joint effort of the customer and the supplier. Because of the coordinated nature of the safeguard investment, the likelihood to reach a common goal becomes higher. This factor together with the “self-enforcing” nature of the safeguards provides fertile grounds for low transitional costs over time. For example, both the customer and the provider benefit in the long-run from investing in relation-building because of operational efficiency and greater job satisfaction. Other examples, such as coordinated efforts to build knowledge, transcend costs when they reach a certain threshold in an organization. Thus, companies can reach low transaction costs without much difficulty.

Finally, safeguards are important and could add numerous value-added benefits beyond generic cost reduction. The analysis yields examples of better responsiveness, quality improvement, routine development, greater innovativeness, and higher job satisfaction. Therefore, if companies manage to develop effective safeguards at a low cost and are able to maintain them, those companies are likely to hold a strategic advantage that could ensure global competitiveness for years to come. Indeed, global operations are becoming a critical part of future growth and competitiveness. Thus, using coordinated safeguards in R&D offshoring creates a fundamental platform for leveraging a global relationship with external offshoring partners. This benefit allows companies to compete, with low transaction costs, in the global business setting and to manage value creation in the future.

This study has some limitations as well as possibilities for future research. First, the qualitative research design prevents the generalizability of the findings. Second, the study focuses on four relationships, which provide a small sample to find only four prevalent examples of safeguarded investments. Clearly, customers and suppliers can use other relational safeguards investments to manage the high transactional costs that R&D offshoring involves. Future studies could use a quantitative design to test the application of the diverse safeguard investments and to analyze how relational or organizational contingents influence these investments (e.g. prior experience). Furthermore, researchers could build on these results by focusing on understanding R&D offshore relationships by taking joint customer and supplier perspectives.

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