

Investigating the Relationship Between Outsourcing and Innovation

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Abstract The linkages between outsourcing and innovation are complex. Some findings suggest that outsourcing is a way to generate increased levels of innovation. However, some recommendations extracted from the IT outsourcing literature do not seem to favor innovation through outsourcing arrangements. By understanding the different types of innovation and combining this knowledge with the IT outsourcing body of knowledge, it is possible to conjecture the potential effect of outsourcing on innovation in various circumstances.

Keywords IT outsourcing • Innovation

1 Introduction

In an increasingly computerized world, information technologies (IT) are often believed to be rewriting the rules of competition and changing the very nature of organizations. Information technologies enabled new forms of organizations, changing production modes and employment relationships (Malone 2004). Firms have to adapt to heighten competition and find new ways to innovate (Chesbrough 2003).

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One could think of the IT field as one in which innovation is constant. Changes happen quickly and continuously. The fast pace of change is observable when assessing the technology itself, as well as when observing the changes introduced in business. IT change the way we do business.

Perhaps surprisingly, innovation has not been a very important component in the information systems discipline. The IS literature concentrated its efforts to explain user satisfaction, usage, individual or organizational impact (Delone and McLean 2003), but left the innovation itself relatively under-studied (Yoo et al. 2010).

In the IT Outsourcing field, innovation has not been a main concern either. Most efforts in the IT outsourcing community focused on explaining the decision to outsource, the reasons behind outsourcing decisions, the outcomes of outsourcing arrangements, or the management mechanisms leading to successful outsourcing (Lacity et al. 2011).

However, other fields, notably in the innovation literature, looked at the role of outsourcing in the innovation process. Interestingly, some of the findings suggest that outsourcing is a way to generate increased levels of innovation. This might seem at odds with findings in the IT outsourcing field, which has often argued for tight contracts in low uncertainty environment—which would not be conducive of innovation.

The paper reviews and contrasts findings coming from the innovation and the IT outsourcing literatures. By understanding the different types of innovation and combining this knowledge with the IT outsourcing body of knowledge, it is possible to conjecture the potential effect of outsourcing on innovation in various circumstances. The goal is to explain the apparently conflicting elements and provide a series of propositions that would guide research on the linkages between innovation and outsourcing.

The literature review presents the main elements linking innovation to outsourcing, from the innovation and the IT outsourcing fields. Then, the characteristics of innovation—modularity, explorative or exploitative—are reviewed. These characteristics are used to develop propositions explaining the various interactions between outsourcing and innovation.

2 Literature Review

In order to understand the relationship between innovation and outsourcing, two groups of papers are reviewed. The first one comes mostly from the literature on innovation. Following this first segment, findings from the papers in the IT outsourcing literature are presented.

2.1 Looking at Outsourcing from an Innovation Perspective

A stream of literature in innovation suggests that outsourcing, and the repeated interactions between multiple partners in general, should increase innovation. This stance has also found some support in the information systems literature. The following paragraphs explain this point of view.

Traditionally, innovation was done by a sole party. The innovator assumed the risks associated with innovation, and benefited from the rewards, often through patents (Arrow 1962; Arthur 2006). The traditional model of innovation is a closed one. It could follow a linear path; ranging from the emergence of an idea until its arrival on the market in the form of a good or service. In this view, innovation may be pushed by supply and technical progress in particular (Schumpeter 1934), or it can be pulled by demand (Schmookler 1966). Innovation could also be obtained through controlled interactions. This model is based on the fact that innovation comes from the interactions between the different spheres of business, influencing each other to bring out the best possible solution (Rosenberg 1982; Kline and Rosenberg 1986). Closed innovation models are based on the idea of control. In this context, a company, if it wants to be innovative, must be able to control the process of generating new ideas, while effectively managing the functions of production, distribution, and marketing of these ideas.

Information technologies have paved the way for new approaches, which have undoubtedly changed the way to innovate. These approaches are based on the collaboration, sharing, and active participation of individuals and working groups (Tapscott and Williams 2008). In this wave of changes, outsourcing rose significantly. The organization now fits at the heart of a dynamic system where collaboration with suppliers, customers, and competition is necessary to innovate.

In this open model, organizations cannot solely rely on their internal skills. Accessing the skills of external partners is a *sine qua non* condition for the success of the innovation process, (Chesbrough 2003, 2006). These models acknowledge the fact that firms use and integrate in a systematic way both internal and external knowledge in order to innovate, and rely on internal and external distribution circuits (Von Hippel and Von Krogh 2003; Christensen et al. 2005). The boundaries of the firm are permeable. Therefore, outsourcing is one of the way to open up the innovation process and access outside ideas (Chesbrough and Kardon Crowther 2006).

These elements have important strategic implications in terms of sharing and acquiring knowledge, but also in terms of development of creative capabilities (Woodman et al. 1993; Drazin et al. 1999). The firm does not innovate alone, it uses its network of suppliers to access their knowledge (Amin and Roberts 2008). IBM is an example of such a firm. It uses a large set of alliances and outsourcing arrangements to create new products or services (Ghemawat 2007).

This open process is not without consequences. A new category of innovators made its appearance: copiers, imitators, pirates, and other hackers (Himanen 2001; Lessig 2004, 2008; Mason 2008; Anderson 2009).

Outsourcing contributed to change the sources of value. It fostered the creation of value networks, in which organizations have access to a multiplicity of information sources, and cannot control this knowledge inside their boundaries. In a sense, outsourcing contributed to the emergence of bazaar of innovations (Raymond 1999). Work division has increased in the world of innovation and there is a trend toward more R&D outsourcing and alliances (Gassmann et al. 2010). This is not without consequences and these go beyond the impact on the level of innovation. For example, the improvement in the efficiency of outsourcing-targeted R&D, which increases globalization, raises the aggregate rate of innovation but at the same time it reduces the wage gap between high cost and low cost countries (Sner and Zhao 2009).

The information systems outsourcing literature investigated the collaborative aspect of innovation. While basic outsourcing is not necessarily linked with innovation, Whitley and Willcocks (2011) found that a collaborative innovation framework comprising four practices (Leading, Contracting, Organizing, and Performing) can achieve the “step-change” in outsourcing maturity that is needed to make collaborative innovation a reality.

It is difficult to assess if the innovation process changed in part because of the growth of outsourcing, or if outsourcing has grown at least in part because organizations wanted to open the innovation process. Maybe these two trends are sustaining each other. One thing seems to emerge: the organization is no longer a sole entity involved in the innovation process. It relies on the contributions of a multitude of interconnected agents (Pittaway et al. 2004; Bjork and Magnusson 2009).

2.2 *IT Outsourcing Literature*

In contrast to the literature looking at open innovation, the outsourcing literature is more restrained when linking outsourcing with innovation. In fact, when looking at the IT outsourcing literature, innovation does not seem to be a major research topic. Lacity et al. (2010), in a review of the IT outsourcing literature, found only one study that looked at innovation as the motivation to outsource IT services. This observation paralleled the outcomes variables identified in Dibbern et al. (2004). These were centred on cost, service performance, realization of expectations, satisfaction, and relationship quality. Innovation did not appear to be a major issue.

Noticing the scarcity of studies focusing on strategic elements, Lacity et al. (2010) suggested that it was probably not because outsourcing had no linkages with innovation or strategic intent. They suggested that this aspect of IT outsourcing might be an under investigated area. Clearly it was not the focus of IT researchers. The bulk of the research efforts were around the explanation of outsourcing decisions, or the explanation of contract outcome (Lacity et al. 2010).

This bias toward one set of outcomes might be at least in part explained by the choice of theoretical background adopted by IT researchers when investigating outsourcing. The most popular approach used to analyze IT outsourcing has been Transaction Costs Theory (Karimi-Alagheband et al. 2011). This approach,

narrowly concentrated on the decision to outsource an activity, did not provide space to assess elements like innovation. The focus of IT outsourcing research on ITO decision (to outsource or not) or ITO outcomes (success/failure) is probably limiting the diversity of findings. Increasing the variety of elements considered, including the inclusion of additional dependent variables (for instance the level of innovation) would probably provide interesting contributions (Lacity et al. 2011).

Outsourcing has been mostly analyzed under a contracting or relationship lens, even when investigating the motivations of managers (Seddon et al. 2007). The key results obtained reflect this focus on contract and traditional contractual outcomes. For example, elements like measurability of the activities or low uncertainty have been positively linked with the likelihood of outsourcing (Aubert et al. 2012). When looking at outsourcing success (instead of the decision to outsource), process standardization, measurability, and contract completeness were associated with outsourcing success (Wüllenweber et al. 2008).

In the outsourcing literature, contracts are mostly discussed as protection mechanisms between clients and suppliers who are likely to have divergent interests. The contracts entail clauses defining monitoring, property rights protection, dispute resolution, and contingency planning (Chen and Bharadwaj 2009). These authors note that contracts typically include audits, reviews, benchmarking procedures, etc. These elements are not usually associated with innovation.

The attention given to the contractual aspect of outsourcing also led to efforts to define and understand the service level agreements (SLAs) (Goo 2010) and how SLA characteristics impacted relational outcomes (Goo et al. 2009). SLAs are a central element of the contract (and the IT outsourcing relationship) since they specify, usually in great details, the activities that will be performed by the parties. Interestingly, change attributes (one aspect that would be expected in the case of innovation) was found to be detrimental to trust and commitment in the relationship (Goo et al. 2009). This suggests a view of the outsourcing arrangements that is closer to a standardized delivery of services than an innovation-driven relationship.

Even when analyzing the strategic elements associated with IT outsourcing relationship, the focus was more on the protection of the client than on the attainment of specific objectives like innovation. For example, Barthelemy and Quelin (2006) indicated that the firms outsourcing activities that were close to their core business had to be careful and try to control the vendor as much as they could, by developing tight and precise contracts.

When trying to achieve innovation, outsourcing was looked at with caution. Willcocks et al. (2006) mention that extracting innovation from outsourcing is difficult. It requires significant in-house capabilities. It also demands strong business leadership. This suggests that outsourcing is not an easy path to innovation. This is corroborated by Levina and Vaast (2008). They observed that innovation (in a bank) came mostly from the client firm, and that managers from the bank had to provide their suppliers with the new ideas for innovation. They also noted that boundaries of various forms (power distance, organizational boundaries, and geographical boundaries) could inhibit the collaboration between parties. This would also lower innovation.

Recommendations offered to managers from research results were along similar lines. Lacity et al. (2008) indicated that outsourcing, whether it was global or not, was still more suited for non-core elements and structured activities that could be easily controlled. In a similar vein, Rottman and Lacity (2006) indicated that an efficient manner to protect intellectual property was to separate projects into a series of segments, given to different suppliers. This prevented any of them to have a clear view of all the elements associated with the activities. It is likely that it could also limit the innovation potential of the outsourcing arrangement. They also indicated that adequate knowledge transfer, when required to conduct outsourced activities, was difficult and costly.

2.3 Outsourcing as a Threat to Innovation

In addition to the contractual view, outsourcing was often analyzed with respect to the knowledge it entailed and the knowledge and capabilities required for innovation. These papers relied strongly on the Resource-based view (Espino-Rodriguez and Padron-Robaina 2006). According to this perspective, outsourcing an activity meant losing the knowledge associated with the activity. This could lower the capacity of the firm to innovate.

If one looks at the innovative capability of the organization, literature suggests that this capability is dependent on the accumulation of knowledge in the organization. This knowledge cannot be easily bought and sold (Hoecht and Trott 2006). This suggests that it has to be developed in the organization, thus making outsourcing at odds with the development of the innovative capacity of the firm when it involved IT. This view was expressed by Straub et al. (2008, p. 202): *IT-enabled competitive advantage requires continuous innovation, environmental scanning and a corporate mindset that understands the strategic use of IT. Such an environment is difficult to cultivate when control over strategic asset is handed over to an integrator or service provider.*

This suggests that while outsourcing has the potential to offer efficiency gains, it might be at the expense of innovation capacity related to the outsourced activities (Gewald and Dibbern 2009). It would explain why a negative relationship was observed between outsourcing and financial performance as product and process innovations increased (Murray et al. 1995, reported in Espino-Rodriguez and Padron-Robaina 2006).

2.4 Linking IT Outsourcing and Innovation

Combining the findings from the literature on innovation about outsourcing and the findings coming from the IT outsourcing literature raises several questions. There seems to be two different views of outsourcing, supported by different

theories. Both approaches are backed by strong empirical support. In order to understand if or how these sets of findings can be true at the same time, new investigation is required. It will demand the combination of what is known both about innovation and about contracts.

The following pages explore ways in which the relationship between IT outsourcing and innovation can be investigated. By looking at various characteristics of innovation, and by assessing contractual implications, some propositions are extracted. First, the modular or systemic character of the innovation is discussed to assess its relationship with outsourcing. Following that, the exploitative or explorative nature of innovation, and the ensuing implication for outsourcing, is discussed. Finally, additional elements linked with the type of ties established between the client and the suppliers are discussed.

2.5 Modular or Systemic Innovations

One path that might lead to an explanation of the puzzle is the type of innovation sought by the organization. Innovations can be differentiated as modular or systemic. In a modular innovation, the innovation is performed on a component of a larger product, improving this component while not affecting its interactions with the other components of the larger products. Conversely, a systemic innovation is one in which all the components at once are transformed, including how they interact (Langlois and Robertson 1992; Robertson and Langlois 1995).

A classic example of modular innovation is the type of innovation occurring constantly in the computer industry. Computers are made of standard components. The modularity of the computer architecture enables manufacturers like Intel to improve their processors or Toshiba to introduce a new hard drive while staying compatible with the other components of the computer systems (Langlois and Robertson 1992). This works well since all the interfaces are standardized. All these innovations are modular innovations.

A systemic innovation is one requiring a change in all the components associated with the product. For example, the introduction of the vinyl record required a change in all the components of the stereo system, and thus demanded the collaboration of record companies and record players manufacturers (Langlois and Robertson 1992). Systemic innovations are much more difficult to introduce because of the coordination over multiple elements they require. However, once introduced, they are likely to create a new standard. For instance, it took 50 years to replace the vinyl disk by the CD.

Modularity makes it easier to vertically disintegrate the value chain (Argyres and Bigelow 2010). In information systems, the systemic character of activities has been shown to lead to internal governance rather than outsourcing (Aubert et al. 2012; Dibbern et al. 2012). When activities are not modular, firms tend to keep them inside their boundaries.

This differentiation between modular and systemic innovation might explain why in some cases authors have argued that outsourcing could lead to less innovation, and other authors said that outsourcing could lead to more innovation.

If the innovation required is modular, it would make sense to seek specialized knowledge outside the firm to innovate on one of the component of the product or system. A supplier would have control over the activities required to introduce the innovation, as long as the interfaces with the other activities or components do not change. A company could select the most competent supplier in a field to benefit from its knowledge on an independent group of activities.

P₁: Outsourcing will increase the level of innovation in cases where the innovation is modular

If however the innovation required is systemic, outsourcing would impede innovation since it would split the control over the components between two companies, thus removing easy coordination required to change all the components at the same time.

P₂: Outsourcing will reduce the level of innovation in cases where the innovation is systemic

2.6 *Exploitation or Exploration*

Another way to look at innovation and outsourcing is through the exploitation—exploration lens. Innovation can be split into two types. The first one, exploitation, includes all the refinements and improvements on activities (March 1991). Typically exploitation involved applying existing capabilities in order to innovate (Tushman et al. 2010). It is an incremental type of innovation. The second type, exploration, is a more radical form of innovation. It relies on a departure from existing capabilities and the development of new ones in order to create something radically new (Tushman et al. 2010).

Considering the Resource-based view and the alleged immobility of resources (Barney 1991), it might be difficult for an organization to develop on its own the new knowledge required for explorative innovation. This would mean that an organization might use outsourcing to access new knowledge and capabilities. This approach would be in line with the open-innovation ideas stated earlier in the paper. Outsourcing an activity does not necessary mean that the organization will lose the ability to integrate this activities with the other things it does. It can retain the knowledge through its network, even when the firm is not performing all the activities in-house (Brusoni et al. 2001).

P₃: Outsourcing will facilitate the access to the knowledge and capabilities required to pursue exploration and facilitate this type of innovation

Conversely, if an organization seeks to pursue exploitative type of innovation, it is likely to have already the required knowledge and capabilities in-house to pursue these activities. In these situations, the contribution of an outsourcing partner might prove less valuable than it would be for explorative innovation, since this partner will not bring essential capabilities to the organization.

P₄: When pursuing exploitative innovation, outsourcing will not change the ability of the firm to innovate

Each organization needs to pursue at the same time exploration and exploitation. Exploration is required to guarantee the long-term survival of the firm. It is through exploration that the organization will bring new products or services to the market. At the same time, it has to perform exploitative innovation in order to ensure its short term survival. It is through exploitation that the organization generates the cash flow required for exploration (March 1991).

A challenge faced by organizations is the difficulty to manage simultaneously both types of activities. As noted by Tushman et al. (2010, p. 1336): *Exploitative subunits are organized to be efficient, while exploratory subunits are organized to experiment and improvise*. This means that different sub-units in the organization have to be managed differently. This might create several difficulties since these sub-units are likely to develop very different management practices, cultures, and be rewarded differently (Smith and Tushman 2005). In these situations, isolating the two groups of activities, for example by outsourcing one of them, is likely to facilitate the management of the remaining unit.

P₅: When an organization is pursuing both exploration and exploitation, outsourcing one group of activities (exploitation or exploration) will facilitate the management of the other group of activities

Interestingly, while the use of outsourcing for explorative innovation activities might bring benefits, this type of relationship is likely to be difficult to manage, which might lower the expected benefits of outsourcing for these types of activities. As March (1991, p. 75) mentions, *The search for new ideas, markets, or relations has less certain outcomes, longer time horizons, and more diffuse effects than does further development of existing ones*. When one looks at the contract view of outsourcing described earlier, the ideal activities to outsource are measurable and involve low uncertainty. This description (measurable and certain) fits exploitation activities, not exploration activities. This would suggest that outsourcing exploration activities might generate more contractual difficulties than outsourcing exploitation activities.

P₆: The outsourcing of exploration activities will generate more contractual difficulties than outsourcing of exploitation activities

This would mean that the benefits extracted from outsourcing in the case of explorative innovation might be offset by the contractual difficulties associated with the contractual elements of the relationship.

2.7 *Weak Ties and Strong Ties*

Finally, a third set of considerations that need to be addressed when looking at the linkages between outsourcing and innovation is the nature of the ties between the client and its suppliers. Clients can have long-term relationships with suppliers, developed through renewed contracts, or they can seek new suppliers. The type of innovation that is more likely to be generated might depend on the client's selection strategy when deciding which supplier to work with.

The choice between a new supplier and a supplier with which the firm had a series of previous interactions is not without consequences. Choosing a new supplier would mean transacting with a supplier with which the firm has weak ties. Picking a supplier with which the firm has a long history of collaboration would mean transacting with one with which the firm has already strong ties.

Weak ties indicate low commitment and infrequent contact between parties (Granovetter 1973). Weak ties are expected to carry information that is less redundant than information coming from partners with whom the firm has strong ties (Granovetter 1973). New information is likely to come from parties that are met less frequently (Gisling and Nooteboom 2005).

This would suggest that in order to make explorative innovation, when seeking new capabilities, weak ties would be more likely to bring the required new knowledge and capabilities (Gisling and Nooteboom 2005). These authors also suggest that exploration would require multiple of information sources, which would enable triangulation and comparison of different information. This would suggest a series of propositions.

P₇: In order to achieve exploration type of innovation, the client would be better to select a new supplier, with which it has no existing relationship, than an existing one

P₈: In order to achieve exploration type of innovation, the client would be better to select multiple suppliers rather than contracting with a single one

In the case of exploitation, the need for new information is less important than it is for exploration since exploitation seeks to innovate incrementally using the same knowledge-base and existing capability. Therefore, it is likely that the costs incurred for the search for new suppliers, and the transaction costs associated with contracting multiple ones, would offset the (low) benefits associated with the new information new suppliers would provide.

P₉: In the case of exploitation, the value of the new information generated by the use of new and multiple suppliers would be lower than the transaction costs generated by such a sourcing strategy

Table 1 Summary of Influences

	Impact of outsourcing on		Suggested contracting strategy to increase innovation	Impact of outsourcing on innovation/modularity	
	Level of innovation	Contractual difficulties		Modular	Systemic
Exploration	+	+	<i>Multiple new suppliers in flexible contract</i>	+	–
Exploitation	=	–	<i>Single supplier in tight contract</i>	+	–

3 Discussion and Conclusion

The various propositions illustrate the fact that the relationship between outsourcing and innovation is a complex one. It is difficult to argue that a simple question like “Does outsourcing increases the level of innovation?” make sense. The answer, in classic academic fashion, would be “it depends”. However, by examining the various sources of literature, it is possible to guess on which elements it depends.

Table 1 summarizes the main influences extracted in the forms of propositions. By looking at the table, it seems clear that the relationship between outsourcing and innovation is complex and multi-layered. For each type of innovation, we can observe that some effects are positive, while others are negative. It is difficult to guess what the net effect would be.

For example, if we outsourced an activity linked with explorative innovation, the simultaneous effects would be:

- An increased level of innovation coming from the new ideas provided by the suppliers
 - This increased effect is expected with the caveat that the suppliers chosen are ones with which the company was not already dealing with (and ideally multiples suppliers)
 - The increased effect is also more likely to be observed if the innovation is modular. If it were a systemic innovation, it would mean that even if the ideas are collected, they would be difficult to implement.
- This increased level of innovation would be accompanied with increased contractual difficulties.

This clearly shows that the relationship between innovation and outsourcing is a complex one. It suggests limits to the idea of open innovation and stronger externalization to foster innovation. While it might be a good approach in some cases, it might be detrimental in other instances.

Implementing IT and taking advantage of IT to innovate is likely to remain a key survival tool for organizations. Because of the complexity of the IT field, IT suppliers will remain an important source of knowledge and capabilities for client companies. It will be important to understand how to take advantage of these capabilities in the best possible way in order to innovate. Future research efforts on innovation and outsourcing could dissect the types of innovations, and test the propositions offered in the paper. This would provide an interesting contribution for managers, and enrich our understanding of the outsourcing phenomenon.

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