Achieving Strategic Innovation through Information Technology Outsourcing: A Configurational Approach

Completed Research

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Abstract

Recent Information Technology outsourcing (ITO) literature identifies an inherent tension in outsourcing: firms that use ITO to gain efficiency (e.g., cost reductions) will find it difficult to achieve strategic innovation through ITO. Best practices for efficiency gaining (e.g., having a detailed contract) can in fact inhibit firms’ ability to develop new products, services, or enter new markets. To date, few empirical studies examine this paradox. Our study adds to this growing literature by using a configurational approach to examine 41 large US enterprises of their ITO practices to achieve strategic innovation. Our findings suggest that a “mediated multi-outsourcing” strategy can indeed lead to strategic innovation. Moreover, contrary to the extant literature’s suggestion that detailed contracts can be an inhibitor to strategic innovation, we show that not using detailed contracts will in fact lead to the lack of strategic innovation. Our findings call for further research to understand the enablers and inhibitors of strategic innovation through ITO.

Keywords

Strategic innovation, IT outsourcing, configuration, fuzzy-set

Introduction

When Apple introduced its first iPhone, it did not manufacture it in-house. Rather, Apple worked with more than 30 suppliers to innovatively design, produce, and manufacture different components of the iPhone. These components were then assembled by Foxconn and Quanta in Taiwan. This strategy is not new, and increasingly firms are trying to work with their outsourcing partners to gain strategic innovations (Aubert et al. 2015; Linden and Hovestadt 2017; Linden and Schmidt 2016; Oshri et al. 2015; Sandeep and Ravishankar 2015; Vitasek et al. 2010). These innovations range from new products, services, or even a new market (Kotlarsky et al. 2015). Notably, the Journal of Strategic Information Systems in 2015 devoted a special issue on strategic innovation in outsourcing to investigate this trend (Kotlarsky et al. 2015). Yet, gaining strategic innovation through outsourcing is not an easy issue to address. Scholars have argued that due to the tendency to focus on gaining efficiency in outsourcing, firms that try to gain innovation through outsourcing experience an inherent tension, dubbed the “innovation through outsourcing” paradox (Aubert et al. 2015). The implication is clear: firms have to overcome the innovation-efficiency contradictions to gain strategic innovation through outsourcing.

To solve this paradox, scholars have suggested several strategic maneuvers to increase firms’ flexibility in outsourcing, which would allow them to pursue both efficiency and innovation (that is, being ambidextrous in outsourcing) (Aubert et al. 2015). Several propositions have been suggested; but to date the number of
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We surveyed top outsourcing managers from 41 firms that are currently doing ITO and conducted a fuzzy-set analysis. The findings suggest that a mediated multi-sourcing strategy (Wiener and Saunders 2014) can be effective in enabling strategic innovation through ITO. In addition, while prior studies suggest detailed contracts as a potential culprit for the innovation-efficiency contradictions (Aubert et al. 2015), when firms use a multi-sourcing strategy without detailed contract, it consistently lead to the absence of strategic innovation outcomes. The findings contribute directly to the ITO literature on innovation-efficiency contradictions by suggesting that detailed contracts is in fact a necessary condition for strategic innovation, but not a sufficient one. In other words, while detail contracts can hinder innovation (Aubert et al. 2015), the lacking of detailed contract will surely lead to the lack of strategic innovation.

The rest of the paper is organized as follows. We first provide a theoretical background on the innovation-efficiency contradictions in ITO, then we explain how a configuration approach is appropriate to address this paradox. We suggest five configuration factors for strategic innovation, and use them to conduct our empirical study. The findings are presented, which is followed by discussion on theoretical and practical implications of the study.

**Theoretical Background**

In an editorial note, Kotlarsky et al. (2015) observed a growing trend in outsourcing practices in which clients and suppliers work together to achieve strategic innovation, defined as using outsourcing deals to develop new products, invent new services, or open new markets. These innovations can happen both at the operational or strategic level, and they can be disruptive or incremental. There are several examples: KPN, a telecommunication company in the Netherlands, was able to use their suppliers to design new products (Whitley and Willcocks 2011); Infosys developed new marketing platform for Diageo (Kotlarsky et al. 2015); Cisco transformed architecture for its clients while saving 7-10% in costs (Krishnamurthy et al. 2009); or Grubb & Ellis won Microsoft’s Environmental Supplier of the Year in 2008 for its innovation in environmental sustainability (Vitasek et al. 2010). Across these success stories is a common denominator: the client-supplier relationship was transformed from a buyer-seller relationship to a “win-win” partnership that can achieve both efficiency and innovation.

Why do we need a new outsourcing approach? In traditional outsourcing model, clients outsource in hope of lowering their operational costs (Han and Mithas 2013) or get access to capabilities that they do not have (Quinn 1999). Their goal is to achieve efficiency by leveraging skills, knowledge, and capabilities of suppliers. However, this goal becomes an issue when firms seek to attain innovation. Due to the different interests, suppliers can be reluctant to offer truly innovative solutions. Vitasek et al. (2010) pointed out that because their goal is to sell extra outsourcing services, when asked to solve a problem, suppliers often look for solutions that actually expand the outsourcing services. In addition, when clients use strictly specified contracts to safeguard against contractual hazards, they take away the authority and autonomy of suppliers, making it harder for them to look for innovative solutions (Aubert et al. 2015). Taken together, the traditional outsourcing model encounters an inherent contradiction due to the different interests of client and suppliers, making it difficult to pursue both efficiency and innovation through outsourcing.

This innovation-efficiency contradiction is dubbed the “innovation through outsourcing” paradox (Aubert et al. 2015). Recently, scholars have suggested several solutions for this paradox: combination of contractual and relational governance (Oshri et al. 2015), using arrangements for structural and temporal ambidexterity (Aubert et al. 2015), using strategic out-tasking approach (Krishnamurthy et al. 2009), or vested outsourcing for better relationships (Vitasek et al. 2010). Yet, the number of empirical studies on this paradox remain modest, presenting a research opportunity for further exploration (Kotlarsky et al. 2015).
In this paper, we take up recent suggestions in ITO literature (Fink 2010) and use a configuration approach to empirically explore the paradox.

Configuration approach examines how a constellation of factors can lead to specific organizational outcomes (Fink 2010; Mintzberg and Lampel 1999). Unlike variance-based methods which focus on the linear causality between a set of disaggregated independent variables with dependent variables (Abbott 1988), configuration approach emphasizes complex causality in which outcomes can happen due to combination of multiple factors (conjunction), and that there are many causal paths to same outcome (equifinality), and the paths to the absence of outcomes are not necessarily the mirror opposite of the paths that lead to the presence of such outcomes (asymmetric causality) (Fiss and Zajac 2004; Fiss and Zajac 2006; Misangyi et al. 2017). Subsequently, configuration approach is often praised for its ability to combine multiple theoretical perspective in exploring complex causal relationships such as ITO-organizational outcome relationships (Cullen et al. 2005; Fink 2010; Misangyi et al. 2017). For our purpose, the configuration approach is a good fit because it allows us to examine how dynamics of different factors can contribute to the strategic innovation.

Configuration Factors for Strategic Innovation

We draw from the ITO literature and the emerging studies on strategic innovation through outsourcing to identify some key configuration factors for our study (Aubert et al. 2015; Linden and Schmidt 2016; Oshri et al. 2015). Our factors satisfy two criteria: (1) they are grounded in theories, and (2) they are supported in empirical studies. We acknowledge that there are countless other possible factors, and we encourage future research to extend our study using other factors.

Detailed contracts: Research on strategic innovation through outsourcing has identified detailed contracts as a key reason for the paradox (Aubert et al. 2015). In detailed contracts, clients specify detailed clauses for ITO services such as service scope, service levels, performance measures, exit clauses, and penalties (Lacity and Willcocks 1998). Compared to other types of fee-for-service contracts such as generic contracts, loose contracts, or mixed contracts (Cullen et al. 2005; Lee et al. 2004), detailed contracts offer clients a strong safeguard against moral hazards and have been shown to significantly impact ITO performance (Fitoussi and Gurbaxani 2012; Oshri et al. 2015; Qi and Chau 2012). Yet, detailed contracts can be rigid and offer limited flexibility to suppliers, making it harder for them to innovate or adjust to dynamic changes. Subsequently, firms use additional contractual provisions such as pricing model, contract duration, or service level agreements to increase flexibility of detailed contracts (Tan and Sia 2006). Given those reasons, we include detailed contracts as one of the configuration factor to examine how it may or may not lead to strategic innovation through outsourcing.

Fixed pricing model: As hinted from above, firms use different pricing models to increase flexibility in ITO arrangements, making them less vulnerable from vendor lock-in and easier to adjust to environmental changes (Tan and Sia 2006). A pricing model characterizes the level of shared risks/benefits in an ITO relationship thus directly impact the performance incentives for suppliers (DiRomualdo and Gurbaxani 1998) and significantly impact ITO outcomes (Domberger et al. 2000). Gopal and Koka (2012) suggested that in fixed pricing model when a fixed amount was paid to suppliers in exchange for their services, the risks are shifted toward the vendors since extra costs from fluctuating prices are borne by suppliers. The opposite is true: non-fixed pricing models are risker for outsourcing clients. Thus, these pricing models will have different implications for the profit margins of suppliers, making them an important factors when crafting ITO contracts for either cost savings or innovation (Bhattacharya et al. 2014; Vitasek et al. 2010; Vitasek and Nyden 2012). We thus included (fixed) pricing model as the second configuration factor in our study.

Extendable contracts: Another commonly strategy to increase flexibility for contractual arrangements is to set a flexible contract duration (Cullen et al. 2005; Harris et al. 1998; Lacity et al. 2009; Tan and Sia 2006). By setting the frequency to review contract, clients can control the risk level from incomplete contracts, allow reactive adaptation to changing environment, and motivate continuous improvements from suppliers in fear of termination. Here, clients can choose to a single term contract with no renewable option, an evergreen contract with no expiration clause, and a rollover contract with the ability to continuously extend based on performance assessment (Cullen et al. 2005). Given the likelihood that extendable contracts enable long-term ITO relationships and are more applicable for pursuing strategic innovation (e.g., allowing...
for temporal ambidexterity (Aubert et al. 2015), we include extendable contracts as the third configuration factor in our study.

**Majority outsourcing and diversified suppliers:** In ITO arrangements, clients can outsource IT services at various degree, ranging from majority (more than 80%) outsourcing of their in-house IT services, to selective (between 20-80%) outsourcing of their in-house IT services (Cullen et al. 2005; Lacity and Willcocks 1998). Relatedly, they can choose different supplier strategy such as using one supplier, a few mediated suppliers who sub-contract to others, or direct outsourcing to multiple and diversified suppliers (Cullen et al. 2005; Wiener and Saunders 2014). Combination of both the service level (majority or selective outsourcing) and supplier strategy have been shown to impact ITO performance and impact the flexibility and dynamics of ITO relationships (Cullen et al. 2005; Currie 1998; Krishnamurthy et al. 2009; Lacity and Willcocks 1998; Levina and Su 2008; Poston et al. 2009; Vitasek et al. 2010). Thus, they are included.

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<tr>
<th>Factors</th>
<th>Definitions</th>
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<tr>
<td>Detailed Contracts</td>
<td>Whether the outsourcing contracts include detailed and specified clauses (as opposed to generic, off-the-shelf contracts).</td>
<td>(Benaroch et al. 2010; Benaroch et al. 2016; Cullen et al. 2005; Fitoussi and Gurbaxani 2012; Oshri et al. 2015; Qi and Chau 2012)</td>
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<td>(Fixed) Pricing Model</td>
<td>Whether the outsourcing contract use a fixed cost model.</td>
<td>(Cullen et al. 2005; DiRomualdo and Gurbaxani 1998; Gopal and Koka 2012; Gopal and Sivaramakrishnan 2008; Gopal et al. 2003; Kishore et al. 2003; Tan and Sia 2006)</td>
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<tr>
<td>Extendable Contracts</td>
<td>Whether the outsourcing contract can be renewed.</td>
<td>(Cullen et al. 2005; Domberger et al. 2000; Harris et al. 1998; Lacity et al. 2009; Tan and Sia 2006)</td>
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<td>Majority Outsourcing</td>
<td>Whether the client outsources majority of its ITO services (more than 80%).</td>
<td>(Cullen et al. 2005; Krishnamurthy et al. 2009; Lacity and Willcocks 1998; Levina and Su 2008; Vitasek et al. 2010; Wiener and Saunders 2014)</td>
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**Table 1. Configuration Factors in Our Study**

**Method**

To explore the different configurations through which firms gain strategic innovation through ITO (or the lack thereof), we conduct a cross-sectional survey which is a recommended approach to study ITO arrangements across a medium to large sample size (Fink 2010). Our survey questions were developed toward a crisp-set analysis (Ragin 2000; Ragin 2008; Schneider and Wagemann 2012), thus utilized mostly binary questions rather than variance-focused questions. In additions, the questions were developed using insight from another study on ITO configurations (publication redacted for review purposes). The questions in the first study where developed following survey development principles (Czaja and Blair 2005) and through multiple rounds of feedback (pretest with outsourcing researchers, pilot test with practitioners, and actual test with target subjects). For this study, the questions were reworded into binary questions to fit our purpose. The questions were then reviewed by one outsourcing expert before they were finalized (see Appendix).

The survey was distributed by one of the authors in person to a 2018 workshop for members of the International Association of Outsourcing Professional (IAOP)—a large outsourcing association with more than 10,000 members worldwide. The meeting was held in the US, thus most respondents were from the US. They represent mostly large companies, with the average size at 60,000 employees and over 14 years...
of outsourcing experience. There were about 100 participants in a workshop, and we received 73 responses. After screening for only companies that were currently doing ITO, we had 41 responses left for analysis.

We conduct a fuzzy-set analysis using the software fsQCA 3.0 (Ragin and Davey 2014) following the steps specified by (Liu et al. 2015). The details of the analysis are below:

**Step 1: data calibration.** All configuration factors and outcome variables were transformed into a crisp measure with two types of membership.

- ITO outcome—strategic innovation: value of 1 when the company have had innovative initiatives through outsourcing (e.g., new products, services, or markets)
- Configuration factor 1—majority outsourcing: value of 1 if the company has more than 80% of its activities/services outsourced
- Configuration factor 2—diversified suppliers: value of 1 if the company has multiple outsourcing suppliers
- Configuration factor 3—fixed pricing: value of 1 if the company pays a fixed amount for outsourcing contracts. If a company uses both fixed pricing and variable pricing model (Mani et al. 2013), it has a value of 0.5
- Configuration factor 4—extended contracts: value of 1 if the company allows rollover outsourcing contracts (i.e., extendable contracts)
- Configuration factor 5—detailed contracts: value of 1 if the company uses customized contracts instead of generic contracts. If a company uses both generic and detailed customized contracts, it has a value of 0.5

**Step 2: truth table construction.** We constructed a truth table with all the logically possible configurations, then we used a coverage cut-off point of 1 case and consistency cut-off point of 0.8 to retain important and plausible configurations (Liu et al. 2015; Ragin 2008).

**Step 3: obtain the solution sets.** In crisp-set analysis, three solution sets are possible: complex, parsimonious, and intermediate. Following prior studies, we use the intermediate solution as it provides the most interpretable configurations.

**Step 4: interpret and evaluate the solutions.** Using solution sets, we identified core and peripheral factors in our solutions. Core factors are those that appear in both the parsimonious and intermediate solutions, thus indicating a strong causal relationship with outcomes (Fiss 2011). The final configurations were discussed among authors to make sense of them using the extant ITO literature. Next we present our findings.

**Findings**

Table 2 and 3 show the findings. Following the notation in prior configuration studies, we use black circles (●) to indicate a presence of a factor and open circles (○) to indicate an absence of a factor. The large circles represent core factors while small circles represent peripheral factors.

As can be seen from Table 2, there is one ITO configuration that leads to strategic innovation. The solution coverage is 0.05 while the consistency is 1, above the threshold of 0.75 as suggested by (Ragin 2008). It can be interpreted that this consistency is observed in two different companies (5% of 41) and the configuration is identical in both cases. Here, these companies use a majority outsourcing strategy with detailed and extendable contracts. Notably, they purposely outsource to only a small number of suppliers (as indicated by the absence in core factor “diversified suppliers”), while using a flexible pricing model across the suppliers. Given that these companies are large enterprises with millions of employees, this configuration is similar to cases in which companies outsource their IT services to a number of mega-suppliers who sub-contract to other suppliers. For examples, IBM and EDS served as the mega-suppliers for ABN AMRO and Royal Dutch Shell, respectively (Wiener and Saunders 2014). In this “mediated multi-sourcing” model (Bapna et al. 2010; Wiener and Saunders 2014), firms rely on the expertise of a small group of suppliers to coordinate across sub-contractors. Typically, each vendor will be assigned an area of responsibility to reduce supplier competition and foster some level of cooperation. As such, detailed and
extendable contracts, and flexible pricing models are necessary to afford the mediators flexibility in selecting vendors that are appropriate for the tasks at hand. In the context of strategic innovation, these mediators act as the innovation coordinators, procuring and directing a number of sub-contracts to fulfill the client's needs.

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<th>Majority outsourcing</th>
<th>Diversified suppliers</th>
<th>Fixed pricing</th>
<th>Extensible contracts</th>
<th>Detailed contracts</th>
<th>Raw coverage</th>
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**Table 2: ITO Configuration That Leads to Strategic Innovation**

On the other hand, we also observe two ITO configuration that lead to the absence of strategic innovation. This is indeed a strength of the configuration approach when configurations that lead to the lack of desired outcomes is not necessary the mirror opposite of the configuration that lead to desired outcomes (asymmetric causality) (Fiss 2007; Fiss 2011). As can be seen from Table 3, the configurations have a coverage of 11%, equivalent to four companies that suffer from the lack of innovation in using ITO. In configuration #1, companies used a selective outsourcing model, only outsourcing a portion of their IT services to many suppliers. They had a fixed pricing model, using extendable contracts but mostly generic and standard contracts. Their reliance of fixed pricing model could be interpreted as a hinder to innovation because it shifts the risks to ITO suppliers and demotivate them in long-term investments or innovative and exploratory initiatives (Mani et al. 2013).

In configuration #2, companies used a multi-sourcing model in which they outsourced a majority of their IT services to many suppliers (Levina and Su 2008; Su and Levina 2011; Wiener and Saunders 2014). They also had a variable pricing model, using extendable and mostly generic contracts. The coverage for this configuration is 7%, equivalent to two companies. Similar to configuration #1, these companies suffer from the lack of innovation due to the fact that they outsource a majority of their IT activities/services to many suppliers, but relying on generic contracts. While using generic contracts can reduce coordination costs (e.g., negotiation, customization, enforcement), it exposes the client to potential moral hazards and thus hindering the ability to pursue innovation.

Across the two configurations, majority outsourcing and fixed pricing factor took opposite values, suggesting that they are irrelevant to cause the absence of strategic innovation. However, three factors are consistent: diversified suppliers, extendable contracts, and the lack of detailed contracts (generic contracts). They represent necessary conditions for the absence of strategic innovation. In other words, there is a robust pattern that leads to the absence of strategic innovation when a company use extendable and generic contracts in outsourcing to various suppliers. Notably, the lack of detailed contracts is a core factor, suggesting that it might have been the real culprit in non-strategic innovation. This is intriguing as prior research have suggested that detailed contracts can hinder strategic innovation (Aubert et al. 2015), but our findings reveal that the lack of detailed contracts can also hurt firm innovativeness. In light of the ITO outsourcing, this makes sense as firms need to have detailed and specified contracts when working with multiple vendors to reduce coordination problems and potential moral hazards (Currie 1998), or to reduce competition and encourage innovation across vendors (Cross 1995).

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**Table 3: ITO Configurations That Lead to Negated-Strategic Innovation**

**Discussion and Conclusion**

In this paper, we apply the configuration approach (Fiss 2007; Fiss 2011; Ragin 2000; Ragin 2008) to empirically examine the different ITO configurations that may or may not lead to strategic innovation. Our findings suggest that: (1) a mediated multi-sourcing strategy can allow firms to gain strategic innovation through outsourcing, and (2) contrary to suggestions in the extant literature, the lack of detailed contracts...
when outsourcing to multiple vendors can backfire and result in the absence of strategic innovation outcomes.

Specifically, our findings add directly to recent studies in multi-sourcing strategy (Wiener and Saunders 2014) by suggesting a specific multi-sourcing model that can overcome the innovation-efficiency tension and lead to strategic innovation through ITO. Nevertheless, this strategy has to be accompanied with detailed and specified contracts. Without those contracts, the strategy will lead to the absence of strategic innovation. Furthermore, this observation allows us to depart from the extant literature and suggest that: while prior studies have argued detailed contracts as the key factor inhibiting strategic innovation (Aubert et al. 2015), we see having detailed contracts as a necessary factor to gain strategic innovation. In other words, the lack of detailed contracts will surely lead to the absence of strategic innovation. In fact, our post-analyses of the survey’s answers support the above conjecture. A majority of respondents agreed that to gain strategic innovation, managers from both clients and suppliers have to support the initiative, and the objectives and success measures have to be clearly defined in the contracts.

Like others, our study is not without limitations. First, our configuration approach examined a medium-size sample size, thus we do not aim for generalization with our findings. Rather, our aim is analytic generalization (Yin 2009), adding insight to the extant literature. Second, we only scrutinized a handful of configurational factors as suggested by the ITO literature. Future studies are encouraged to consider other factors to validate our conjectures here. Lastly, we encourage others to duplicate our study to test how the findings hold in other contexts (e.g., non-US companies).

In sum, our study have identified configurations and factors that lead to strategic innovation, and to the lack thereof. We hope others find our conjectures useful theoretically and practically, and that our study have encouraged others to look further into this important emerging phenomenon.

Appendix: Survey Instruments

1. What has your company accomplished through outsourcing? (Choose all that apply)
   a. Cost reduction (e.g., reduced expenses, increased economies of scale)
      If possible, estimate % cost reduction____________
   b. Enhanced core competencies (e.g., access to talents, focus on core business)
   c. Innovative initiatives (e.g., new products, services, or markets)

2. Consider your primary area of outsourcing:
   Do you outsource more than 80% of the activities/services? Yes No
   Do you contract with multiple outsourcing suppliers? Yes No
      How many? __
   Do you usually pay a fixed amount for your outsourcing contracts? Yes No
   Do you allow outsourcing contracts to rollover? Yes No
   Do you use generic off-the-shelf contracts or do you customize contracts for outsourcing suppliers? Generic Customized
REFERENCES

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