

INFORMATION TECHNOLOGY OUTSOURCING CONFIGURATIONS AND ORGANIZATIONAL OUTCOMES

Abstract

Research has reported mixed relationships between different Information Technology Outsourcing (ITO) (e.g. 'total' and 'selective') approaches and organizational performance. Most ITO research takes a reductionist approach, which only examines unidirectional linear relationships between specific ITO attributes and organizational performance. Configurational theory as an alternative approach has been suggested.

This study employs a theory-driven and empirically-grounded list of attributes to construct ITO configurations. Then it uses a set-theoretic method to empirically examine the ITO configuration-organizational outcome relationship. Data were collected through a survey administered to the members of the International Association of Outsourcing Professionals (IAOP). Our findings suggest five different ITO configurations that lead to cost reduction, capability enhancement, and innovation.

The theoretical foundation for ITO research and configurational approach is reviewed next. We then suggest five key attributes of ITO configurations and three common organizational outcomes. Thereafter, we present our findings and put forth several implications for ITO studies.

Keywords: Outsourcing, Configuration, Organizational, Outcomes

1.0 Theory

Configurational theory is concerned with the constellations of strategic, structural, and environmental attributes that can describe a large proportion of high-performing organizations (Miller 1981; Miller 1986; Mintzberg and Lampel 1999). The basis of configuration is the notion that the whole is best understood from a systemic perspective and should be viewed as a constellation of interconnected elements (Ragin 2008). Configuration thus recognizes multiple conjunctural causality, which is proposed as an alternative perspective to the reductionist perspective of unidirectional and linear relationships between external contingencies and organizational attributes (Meyer et al. 1993). In other words, configurational theory takes a holistic synthesis of reciprocal and nonlinear relationships among organizational attributes. It recognizes equifinality, which is the idea of multiple possible paths or configurations toward the same organizational outcomes. Thus, it is a useful lens to study complex phenomena, which often involve interactions of highly-related attributes (Fink 2010; Miller 1986; Mintzberg and Lampel 1999).

Configurational theory has been proposed to address some nagging issues in ITO research (Cullen et al. 2005; Fink 2010; Lacity et al. 2010). It can potentially expose

the complex dynamics of organizational attributes that sometimes lead to contradicting results in ITO studies (Cullen et al. 2005; Fink 2010). It also allows researchers to combine attributes from multiple theoretical perspectives in a more holistic investigation (Lee et al. 2004). Recent ITO review has called for more studies on ITO configurations to reveal the complexity in crafting and carrying out ITO contracts (Lacity et al. 2010).

Following Lee et al. (2004) and Cullen et al. (2005), we focus on ITO strategies and define an ITO configuration as a high-level description of strategic choices that underlie the making of ITO arrangements. Next, we review the extant ITO configuration literature.

1.1 Prior Studies on ITO Configurations and Our Approach

Although configurational theory has been applied in various studies (Ketchen et al. 1997), there is only a handful of ITO studies using configurational theory. Table 1 provides an overview of the three key studies. While these studies are helpful in understanding the complexity of ITO configurations and subsequent outcomes, several limitations remain. First, they are inconsistent in examining empirically the causal relationship between ITO configurations and organizational outcomes. Of the three exemplary studies, one uses regression analysis, one uses case comparison, and the other study suggests set-theoretic approach without empirical analysis. Second, they are inconsistent in constructing the list of attributes for ITO configurations. Two studies rely on a deductive approach to synthesize attributes from theories while one study use an inductive approach to generate attributes from qualitative observations.

To address these limitations, we utilize a theory-driven and empirical-grounded list of attributes to study ITO configurations, and employ a set-theoretic approach to examine the ITO configuration-organizational outcomes relationship (Fink 2010). Our configurational approach allows us to integrate multiple outsourcing theories and reconcile empirical contradictions while addressing issues from a reductionist approach. Prior IT configuration studies have simplified the causal link between IT configurations and organizational outcomes, which abstract away the interdependence of attributes (Lee et al. 2004).

	Lee et al. (2004)	Cullen et al. (2005)	Fink (2010)
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Configuration definition	Configurations of ITO strategy which is the underlying logic for ITO decisions	High-level description of structural choices in crafting ITO arrangements	Combination of strategy, structure, and environmental attributes in ITO relationships
Theoretical foundation	Transaction cost economics Residual rights theory	N/A	Process view Relational view Resource-based view
Attribute development	Deductive approach based on theory	Inductive approach based on data	Deductive approach based on theory
Key attributes	3 key attributes	7 key attributes	13 key attributes
Empirical approach	Survey of 311 South Korean firms	49 case studies of Australian firms	N/A
Analytical approach	Pattern counting and regression analysis	Case comparison	Set-theoretic approach
Identified configurations	3 key configurations: Independent Arm's length Embedded	N/A	3 key configurations: Asset dependence Relational dependence Independence
Performance consideration	Outsourcing effectiveness	N/A	Outsourcing effectiveness

Table 1. Empirical Studies on ITO Configurations.

1.2 Attributes of ITO Configurations

One of the challenges in conducting configurational studies is the difficulty in determining key attributes in configurations (Ketchen et al. 1997; Miller 1996). Employing a narrow scope with an exclusive list of attributes leads to abstract configurations, but employing a broader scope with an inclusive list of attributes can lead to too many configurations that is difficult to interpret. The struggle of finding the right balance between “zooming out” and “zooming in” is prevalent in

configurational studies and require careful considerations in research design. Following prior studies, we review ITO literature to construct a list of core attributes for ITO configurations that satisfy two criteria: 1) they need to be grounded in theories, and 2) they are supported by empirical evidence to have strong causal relationships with ITO outcomes (Cullen et al. 2005; Fink 2010; Miller 1996).

There are various theories used to explain how ITO delivers certain organizational outcomes: resource-based theory, resource-dependence theory, transaction cost theory, agency cost theory, among others (Cheon et al. 1995). In general, two major theoretical camps stand out: the first one includes governance-based theories (e.g., transaction cost theory, coordination theory, contract theory) and the second one includes capability-based theories (e.g., competencies theory, resource-based theory) (Fink 2010). We review the literature of these two major research camps and identify major attributes that have strong empirical evidence to support how such attribute contributes to ITO success. This approach allows us to later construct an inclusive survey instrument while maintaining a coherent structure for the respondents to follow. The details of these attributes are presented next.

1.2.1 Service Level Strategy

Service level strategy describes the degree of outsourcing for various IT functions, including application developments, operations activities, or management and support functions (Cullen et al. 2005). An organization can outsource different IT functions at various degrees. For example, outsourcing only technology supporting help desk or completely the whole help desk service. The degree of outsourced IT functions determines the level of IT capabilities an organization gains through outsourcing. The combination of all IT functions being outsourced and their degree of outsourcing constitutes an outsourcing portfolio, and the nature of this portfolio will have different implications on performance. For instance, organizations with a mostly outsourcing model are often outperformed by organizations with a partial outsourcing or insourcing model (Lacity and Willcocks 1998; Lacity and Willcocks 2001). An organization can be classified as using a mostly outsourcing model if 80% or more of IT services are outsourced; using a partially outsourcing model if between 20% to 80% of IT services are outsourced; and using an insourcing model if less than 20% of IT services are outsourced (Lacity and Willcocks 1998).

1.2.2 Supplier Strategy

Supplier strategy specifies the number of suppliers that provide ITO services. The supplier strategy determines how an ITO contract is carried out, and how IT capabilities are provided. Prior studies have suggested that supplier strategy can mitigate ITO risks (Currie 1998), provide capabilities for specific needs (Cullen et al. 2005), or increase the probability to find the best supplier fit (Levina and Su 2008). Following Cullen et al. (2005), we identify four different supplier strategies. Sole supplier refers to a situation in which one supplier provides all ITO services without any subcontracting. On the other hand, a prime supplier acts as a single point of accountability for the ITO contracts, but has multiple subcontracts with other suppliers to provide ITO services. An organization may also take a best-of-breed model in which it uses multiple suppliers for ITO services. Finally, a panel is where an organization chooses from a list of preferred suppliers for their ITO services. These suppliers compete with each other, and work is not guaranteed.

1.2.3 Commercial Relationship

Commercial relationship describes the high level relationship structure between an organization and its ITO suppliers. Such relationship can be captured in the contractual arrangements of an ITO relationship, that is, ITO contracts. Different ITO contract types have been found to significantly impact ITO performance (Fitoussi and Gurbaxani 2012; Oshri et al. 2015; Qi and Chau 2012). Lacity and Willcocks (1998) identified three types of ITO contracts: fee-for-service, strategic alliance/partnership, and buy-in contract. In fee-for-service contract, an organization pays a fee to a supplier in exchange for the ITO services. There are four major fee-for-service contracts. Generic contracts are off-the-self contract, provided by either the suppliers or the outsourcing organization without much customization. A detailed contract includes specific and detailed clauses for ITO services such as service scope, service levels, performance measures, and penalties. In contrast, a loose contract does not contain detailed clauses, but it does allow some customization as compared to a generic contract. Lastly, a mixed contract is a combination of detailed and loose contracts in which some detailed clauses are provided for service scope, service levels, performance measurement, and penalties.

The second type of contract is strategic partnership in which both the organization and its ITO suppliers pool resources together to create, add to, or maximize joint value.

They share benefits and risks in this collaborative inter-organizational relationship. The last type of contract, buy-in, refers to situations in which an organization buys in vendor resources to supplement in-house capabilities, and the vendor resources are managed by in-house management. This situation is similar to insourcing and therefore is excluded in our study.

1.2.4 Pricing Strategy

Pricing strategy describes the method by which the payment to the ITO suppliers is calculated. It is often considered a legal arrangement in ITO contracts and therefore significantly characterize the client-supplier relationship. Following Cullen et al. (2005), we define three main categories for ITO pricing framework. First, an organization can use a fixed price model in which the organization specifies a fixed amount for an ITO contract (e.g., \$1 million per year for data center operations). In reality, this quoted price is rarely fixed but is often adjusted for fluctuated services or additional fees. The second option is to use unit price model in which outsourcing suppliers charge a price per a specific transaction unit (e.g., \$100 per software update). The last option is to use a cost plus model in which suppliers charge the cost of ITO services plus additional markup (e.g., cost plus 5% markup) or management fee (e.g., cost plus \$1 million fee). This approach is useful when uncertainty is high and the ITO contract needs some flexibility

1.2.5 Contract Commitment

The last governance-based attribute is contract commitment, defined as the frequency with which an organization renews its ITO contracts (Cullen et al. 2005). A frequently renewable contract can provide outsourcing flexibility, mitigate risks from incomplete contracts, and allow reactive adaptation to changing environment (Harris et al. 1998; Tan and Sia 2006). An organization can choose to use a single term contracts with no renewable option; an evergreen contract with no expiry and is only terminated when one party invokes its termination rights; and a rollover contract is one in which it has a fixed initial term but also has options to extend depending on latter assessments (e.g., supplier performance).

Attributes	Definition	Theory	Empirical Evidence
Service	The type of IT	Capability	(Lacity and Willcocks 1998;

Level Strategy	functions being outsourced and how they are provided to business units		Lacity and Willcocks 2001; Willcocks et al. 1999)
Supplier Strategy	The number of suppliers that provide ITO services	Capability	(Currie 1998; Levina and Su 2008)
Commercial Relationship	The high level relationship structure between an organization and its ITO suppliers	Governance	(Fitoussi and Gurbaxani 2012; Grover et al. 1996; Lacity and Willcocks 2001; Lee et al. 2004; Willcocks et al. 1999)
Pricing Strategy	The method by which the payment to the ITO suppliers is calculated	Governance	(Gopal et al. 2003)
Contract Commitment	The frequency with which an organization renews its ITO contracts	Governance	(Harris et al. 1998; Lacity and Willcocks 1998; Lacity and Willcocks 2001; Lee et al. 2004; Tan and Sia 2006)

Table 2. Attributes of ITO Configurations.

1.3 Organizational Outcomes of ITO

Most ITO studies identify two direct organizational outcomes of ITO: cost reduction and capability enhancement (Gwebu et al. 2010; Lacity et al. 2010; Lacity et al. 2011; Levina and Ross 2003). By outsourcing IT functionalities to third-party, organizations can take advantage of economies-of-scale offered by these suppliers, utilize extra capabilities available in their services, and gain resources to focus on their core business activities (Gwebu et al. 2010; Lacity et al. 2010; Levina and Ross 2003; Levina and Su 2008). Recent studies also point out the possibility of using ITO services to create strategic innovation (Oshri et al. 2015). Strategic innovation is defined as ways that significantly enhance a firm's existing product or service or enable the firm to enter new markets (Oshri et al. 2015). A strong outsourcing

relationship can enhance existing relational and contractual governance and allow firms to exploit new and innovative products, services, and markets. In sum, our study examines three organizational outcomes of ITO: cost reduction, capability enhancement, and strategic innovation (through outsourcing).

2.0 Method

To identify ITO configurations, we develop a cross-sectional survey, which is the recommended approach to study existing ITO arrangements across a large sample size (Fink 2010). It is important to note that given our purpose to study ITO configurations, our survey does not use variance-based questions that aim to identify latent variables but rather use questions to identify attributes of ITO configurations. Nevertheless, we follow survey development principles to establish credibility and reliability for our survey instrument (Czaja and Blair 2005; DeVellis 2003). Our survey was developed in two stages (Czaja and Blair 2005). In the first stage, survey design, we develop survey questions for ITO attributes using prior studies (Cullen et al. 2005; Grover et al. 1996; Oshri et al. 2015). All questions for independent variables were developed to capture ITO attributes on various degrees instead of identifying latent variables. For example, to capture the ITO service level strategy, the survey question asks respondents to rank their outsourcing level for different categories such as IT application, operations, management, and support. On the other hands, questions for dependent variables use instruments for latent variables based on prior studies. This approach has been used by prior studies on ITO configurations (Lee et al. 2004). All questions were adjusted to better fit our purposes as well as new ITO advancements, such as cloud sourcing. In the second stage, pretest, we discussed the survey instrument with seven academics with expertise in outsourcing research. We used the feedback to revise the questions. We then conducted a pilot study with four ITO professionals. The results were used to fine-tune the survey instrument. These steps helped validate the instrument and establish its reliability (Czaja and Blair 2005). Table 3 shows a summary of our concepts.

	Measurement description	Reference
ITO Attributes (Independent Variables)		
Service Level Strategy	Degree of outsourcing from “mostly outsourcing” to “never consider” on four categories:	(Cullen et al. 2005)

	Application, Operations, Management, and Support	
Supplier Strategy	Percentage of outsourcing contracts using different types of supplier strategies: One supplier without any subcontracting, One supplier that subcontracts, Multiple suppliers, Pool of suppliers “on call”, and Others	(Cullen et al. 2005)
Pricing Strategy	A 5-point Likert scale on how frequency a company uses the following payment method: A fixed amount for a project, Charge a price per a specific transaction unit, Actual cost plus markup or management fee, and Other	(Cullen et al. 2005)
Contract Commitment	A 5-point Likert scale on how frequency a company uses the following type of contract: Single term contracts-fixed one-term contracts, Rollover-extendable contracts, Evergreen-in perpetuity, and Other	(Cullen et al. 2005)
Commercial Relationship	A 5-point Likert scale on how frequency a company uses the following type of contract: Loose contracts, Mixed contracts, Detailed contracts, Strategic partnership, Generic contracts, and Other	(Cullen et al. 2005)
Organizational Outcomes (Dependent Variables)		
Cost Reduction	A 7-point Likert scale on the degree of cost reduction a company receives from ITO services	(Grover et al. 1996)
Capability Enhancement	A 7-point Likert scale on the degree of capability enhancement a company receives from ITO services	(Grover et al. 1996)
Strategic Innovation	A 7-point Likert scale on the degree of innovativeness a company achieves from using ITO services	(Oshri et al. 2015)

Table 3. Attributes of ITO Configurations.

The survey was then distributed to the member of the International Association of Outsourcing Professional (IAOP)—a large organization with more than 20,000 members worldwide. We also solicited the survey in two chapter IAOP meetings in order to increase response rate. We received 31 responses from companies that have outsourced their IT activities. The reason for the low response rate is that the majority of IAOP members are companies that provide outsourcing services. After reviewing the responses and filtering out unusable or incomplete data, we retained 20 responses for further analysis. Because we do not know the exact number of outsourcing client among IAOP members, we cannot report an exact response rate. However, 20 responses is deemed sufficient for a conference report, and we plan to continue data collection to increase the response number. Table 4 reports the correlation for dependent variables which were developed using survey instruments that aim to capture latent variables.

	Mean	SD	1	2	3	4	5	6	7	8	9	10
1. Cost Reduction 1	5.05	1.19	1									
2. Cost Reduction 2	5.10	0.91	.383	1								
3. Cost Reduction 3	4.80	1.36	.461*	.738**	1							
4. Capability Enhancement 1	5.30	1.08	.478*	.342	.508*	1						
5. Capability Enhancement 2	4.65	1.18	.723**	.278	.314	.457*	1					
6. Capability Enhancement 3	5.00	1.03	.517*	.225	.302	.380	.564**	1				
7. Strategic Innovation 1	4.25	1.37	.572**	.273	.366	.657**	.706**	.374	1			
8. Strategic Innovation 2	4.55	1.23	.589**	.416	.320	.540*	.680**	.499*	.847**	1		
9. Strategic Innovation 3	4.25	1.21	.320	.024	.160	.463*	.359	.509*	.564**	.397	1	
10. Strategic Innovation 4	4.60	1.57	.265	.213	.108	.230	.346	.654**	.342	.527*	.610**	1

Table 4. Correlation for Dependent Variables.

2.1 Data Analysis

The analyses for this study were performed using fsQCA 3.0 (Ragin and Davey 2014) and followed the steps specified by Liu et al. (2015). In the first step, we transformed the collected data into Boolean sets (Liu et al. 2015). For each of ITO attributes, we use cluster analysis to 1) descriptively make sense of the data and 2) transform multiple-scale questions into a single dimension that is suitable for fuzzy-set analysis. For example, the survey questions for supplier strategy ask for the percentage of ITO contracts that utilize different types of supplier strategy such as one supplier with subcontracts or pool of “on call” suppliers. A cluster analysis allowed us to identify

clusters of ITO practices regarding supplier strategy and transform the data into a binary classification. Particularly, the value of 1 represented one cluster while the value of 0 represented another cluster.

In the second step, we used the five transformed variables (or sets) to conduct a crisp set QCA analysis. The ITO outcomes were cost reduction, capability enhancement, and strategic innovation. Our analysis steps were described below:

Step 1: Data calibration. All ITO attributes were transformed into a crisp measure with two types of membership while ITO outcomes were transformed into fuzzy measures.

a. Service level strategy: membership of 1 equals to majority outsourcing strategy while membership of 0 equals to conservative outsourcing strategy. Organizations with majority outsourcing strategy will outsource IT functions in all four categories such as IT application, operations, management, and support while organizations with a conservative outsourcing mostly outsource their IT functions in IT application and operations.

b. Supplier strategy: membership of 1 equals to diversified supplier strategy while membership of 0 equals to flexible supplier strategy. Organizations with a diversified supplier strategy will mostly use multiple suppliers for their ITO services while organizations with a flexible supplier strategy will have a wide range of suppliers from one supplier to pool of on-call suppliers.

c. Pricing strategy: membership of 1 equals to fixed pricing strategy while membership of 0 equals to flexible pricing strategy. The former will set a fixed amount for their ITO contracts while the latter use various pricing strategy including fixed amount, per transaction, or mark-up on actual costs.

d. Contract commitment: membership of 1 equals to extendable contracts while membership of 0 equals to fixed-terms contracts. Organizations with extendable contracts allow their suppliers to extend ITO contracts while organization with fixed-term contracts set time limit to their ITO contracts, or no time at all.

e. Commercial relationship: membership of 1 equals to detailed contracts while membership of 0 equal to mixed-type contracts. The former will mostly use detailed clauses in their ITO contracts while the latter use various contract types with various degrees of details.

f. ITO outcome—cost reduction: a fuzzy measure with 1-4-7 thresholds. In other words, firms with Likert-scale value of 7 (Strongly agree) will have the full

membership of the cost-reduction set while firms with Likert-scale value of 1 (Strongly disagree) will have the full non-membership of the set

g. ITO outcome—capability enhancement: a fuzzy measure with 1-4-7 thresholds

h. ITO outcome—strategic innovation: a fuzzy measure with 1-4-7 thresholds

Step 2: Truth table construction. We constructed a truth table for each of the three organizational outcomes. To identify the most important and possible configurations, we use the suggested frequency of 1 and consistency of 0.7 as the cut off points (Liu et al. 2015; Ragin 2008).

Step 3: Obtain the solution sets. In fs/QCA analysis, three solution sets are possible: complex, parsimonious, and intermediate (Ragin 2008). They are different based on how strict the simplifying assumption is. Typically, the intermediate solution is preferred as it offers interpretable combinations.

Step 4. Interpret and evaluate the solutions. Using solution sets, we identified core and peripheral conditions for further interpretations of the solutions (Fiss 2011; Ragin 2008). Specifically, core conditions are those that appear in both parsimonious and intermediate solutions while the peripheral conditions only appear in the intermediate solutions. The coverage and consistency measures of the final solution were also reported. Our final interpretation is presented in the findings section.

3.0 Findings

In this section, we report the results of fsQCA analyses to identify ITO configurations that lead to three different ITO outcomes: cost reduction, capability enhancement, and strategic innovation.

3.1 ITO Outcome—Cost Reduction

Table 5 shows the result of the fuzzy set analysis of cost reduction outcome for ITO services. Following the notation in previous QCA-based studies (Fiss 2011; Liu et al. 2015; Ragin 2008), we use black circles (“●”) to indicate the presence of a condition, open circles (“○”) to indicate the absence of a condition, and blank spaces to indicate

“don’t care” or irrelevant conditions. The large size circles represent core conditions while small size circles represent peripheral conditions. Core conditions have a strong causal relationship with the outcome while peripheral conditions have a weaker causal relationship (Fiss 2011). In addition, we use the core conditions to further classify solutions into first-order and second-order solutions (Fiss 2011; Liu et al. 2015). Second-order solutions share similar sets of core conditions while first-order solutions have different sets of core conditions.

The results in Table 5 show that there are two major configurations associated with cost reduction in ITO services. All together, they have a consistency value of 0.77, above the threshold of 0.75 suggested by Ragin (2008). The configurations suggest that firms can have diversified suppliers and specified contracts or use majority outsourcing model to reduce cost. In the first configuration (solution 1a and 1b), firms that use diversified suppliers and detailed contracts need to control pricing through a fixed pricing strategy or continuously engage in extendable contracts. These patterns allow firms to engage with many outsourcing suppliers and minimize agency risk. In contrast, in the second configuration (solution 2), firms can use a mostly outsourcing model to focus on a wider range of outsourced IT services. These firms have a flexible strategy for suppliers but they emphasize fixed term contracts to reduce costs. This configuration seems counter-intuitive and we posit that due to the large number of firms involved with mostly outsourcing strategy, these firms use fixed term contracts as a way to standardize ITO management and minimize potential complexity from constant negotiation of new contracts.

Solution	Causal conditions					Raw coverage	Unique coverage	Consistency	Solution coverage	Solution Consistency
	Majority outsourcing	Diversified suppliers	Fixed pricing	Extendable contracts	Detailed contracts					
1a		●		○	●	0.284	0.127	0.786	0.723	0.77
1b		●	●		●	0.379	0.221	0.749		
2	●	○	○	○		0.218	0.218	0.755		

Table 5. ITO Configurations that Lead to Cost Reduction.

3.2 ITO Outcome—Capability Enhancement

Table 6 below shows the result of the fuzzy set analysis of cost reduction outcome for ITO services. There are three sets of first-order configurations. Out of the three, configuration 3 has the lowest coverage and has no particular case with exact fit of

conditions. Thus, it can be an artifact of analysis. We dropped it from interpretation. The remaining two configurations are: 1) firms with diversified suppliers (solution 1a, 1b, and 1c), and 2) firms with majority outsourcing model, flexible suppliers, and fixed term contracts (solution 2). Together, the configurations have a consistency of 0.78, an acceptable value. In the first configuration, firms can use several conditions to complement a strategy of diversified suppliers: fixed pricing strategy, fixed term contracts, or specified contracts. We posit that this configuration uses a supplier diversity strategy to achieve extra capabilities, and other conditions help firms to minimize risk. On the other hand, in the second configuration, firms use an ITO service diversity strategy to outsource a wide range of IT services and therefore gain extra capabilities

Solution	Majority outsourcing	Diversified suppliers	Fixed pricing	Extendable contracts	Detailed contracts	Raw coverage	Unique coverage	Consistency	Solution coverage	Solution Consistency
1a		●		○	●	0.285	0.117	0.796	0.725	0.780
1b	○	●	●	○		0.172	0.057	0.800		
1c	●	●	●		●	0.172	0.120	0.803		
2	●	○	○	○		0.212	0.212	0.740		
3	○	○	●	●	○	0.052	0.052	0.730		

Table 6. ITO Configurations that Lead to Capacity Enhancement.

3.3 ITO Outcome—Strategic Innovation

Table 7 shows the result of the fuzzy set analysis of strategic innovation outcome for ITO services. Only one configuration is identified (solution 1a and 1b). Although it has lower coverage than the other configurations, it has the highest consistency, indicating that the configuration is not common in practice but has a distinctive pattern. Specifically, the configuration suggests that there is a necessary condition for firms to gain strategic innovation outcome from ITO services: they need to have a majority outsourcing model with diversified suppliers and detailed contracts. This configuration makes sense because by using a wide range of outsourced IT services

using a wide range of suppliers, these firms are able to take advantage of the capabilities offered by numerous suppliers to be innovative with their products and services. The finding is consistent with previous studies which suggest that partnership contracts—using very detailed contracts—accommodate high-quality relationships between clients-suppliers to help achieve strategic innovation (Oshri et al. 2015). In our case, the detailed contracts augment the mostly outsourcing models and diversified supplier strategy to allow firms to achieve strategic innovation.

Solution	Majority outsourcing	Diversified suppliers	Fixed pricing	Extendable contracts	Detailed contracts	Raw coverage	Unique coverage	Consistency	Solution coverage	Solution Consistency
1a	●	●	○	○	●	0.070	0.070	0.820	0.213	0.833
1b	●	●	●	●	●	0.143	0.143	0.840		

Table 7. ITO Configurations that Lead to Innovative Achievement.

4.0 Discussions

Our five configurations are summarized in Table 8. Our findings contribute directly to empirical studies on ITO outcomes and configuration studies on ITO management. First, our findings help us understand multiple and conjunctural causalities that can contribute to ITO outcomes. While prior ITO research have identified numerous factors that contribute to ITO success in isolation (Lacity et al. 2010; Lacity et al. 2009), it is not clear how these different factors interact and contribute to ITO success together. The ITO configuration approach aims to address this limitation by identifying different configurations or constellations of attributes instead of examining them in isolation. Second, we integrate across multiple theoretical perspectives and potentially reconcile any empirical contradictions. Prior ITO studies have called for integrated theoretical perspectives to have a more complete view of ITO outcomes (Cheon et al. 1995; Lacity et al. 2011). Our study builds on multiple theories, such as transaction cost theory, resource-based theory, or agency theory. The study offers a more complete view than studies that rely on specific theories.

Our five configurations can be described as follow. In the first configuration, reducing contractual hazards, organizations rely on a diversified number of suppliers to select the best contracts that allow them to save money. To reduce contractual hazards, these organizations use detailed contracts to minimize risks. Prior studies confirm this observation as organizations with detailed contracts often have higher ITO success

rates than other types of contracts (Lacity and Willcocks 1998). In the second configuration, matured outsourcing clients, organizations that have been doing ITO will have a larger number of ITO services to offer various IT services. Due to their experience, they do not rely much on detailed contracts but rather use fixed term contracts as a way to safeguard against agency risks. Fixed term contracts encourage ITO suppliers to perform well in order to warrant future ITO contracts (Cullen et al. 2005; Lacity and Willcocks 2001). As a result, these organizations will likely reduce ITO costs due to the high performance of ITO suppliers.

The third configuration includes organizations that follow a best-of-breed outsourcing strategy. These organizations use a large number of diversified suppliers for their IT functions, and often identify and choose suppliers that seem most appropriate for certain IT functions. As a result, they are able to enhance existing IT capabilities by selecting and using suppliers that can best provide certain IT functions. To safeguard against potential risks, these organizations rely on various tactics such as using fixed pricing to reduce costs, using fixed term contracts to encourage good ITO performance from suppliers, or using detailed contracts to minimize contractual hazards. On the other hand, organization in the fourth configuration are industry leaders that have greater experience with ITO. They outsource a majority of their IT functions and deal with a wide range of suppliers. These are often large companies with more than 10 years of ITO experience and annual revenue from \$500 million up to \$1 billion dollars. Due to the sheer number of ITO contracts they have, these organizations rely on fixed term contracts as a way to safeguard against agency risks and achieve good ITO services from their suppliers.

The last configuration includes organizations that are innovators using ITO services. These organizations outsource most of their IT functions using a diversified number of suppliers and utilizing detailed contracts. This strategy allows them to combine the best attributes from the best-of-breed outsourcing as well as matured outsourcing clients. As a result, these firms are able to leverage best-practices offered by ITO services to be innovative and disruptive, introduce new products, services, or enter new markets. It is not surprising that many of these innovators are companies with the shortest amount of ITO experience but are the largest in terms of size and revenue (more than 10,000 employees and \$1 billion dollars in annual revenue). We posit that these companies are using best-practices in ITO services as a way to overcome their handicap in IT capabilities and break in new markets or areas.

ITO Configurations	Organizational Outcome
1. “Reducing contractual hazards” : diversified suppliers and detailed contracts	Cost Reduction
2. Matured outsourcing clients : majority outsourcing model and fixed term contracts	Cost Reduction
3. Best-of-breed outsourcing : diversified suppliers (fixed pricing or fixed term contracts or detailed contracts)	Capability Enhancement
4. Industry leaders : majority outsourcing model, flexible-type suppliers, and fixed term contracts	Capability Enhancement
5. Innovators : majority outsourcing model, diversified suppliers, and detailed contracts	Strategic Innovation

Table 7. ITO Configurations and Organizational Outcomes.

In addition, we performed post hoc analysis to compare firms with different organizational outcomes in terms of their ITO experience, size, and revenue. We found that firms with high capability enhancement outcome have a lot more ITO experience (10 years) while firms with strategic innovation outcome is much larger in size and revenue (10,000+ employees and \$1B+ in revenue). These findings suggest there are two possible pathways for successful ITO outcome. On one hand, there might be a maturity cycle in ITO – the longer a firm engages in outsourcing, the more capability is developed. The four configurations we identified for cost reduction and capability enhancement are also consistent with our maturity lifecycle interpretation – firms appear to first adopt ITO to reduce cost. As firms gain experience and become more mature, they begin to outsource more of their IT services to the point of using majority outsourcing model. Mature firms then move on to focus on using ITO to enhance capability. On the other hand, we posit that firms can choose to not follow a maturity cycle in ITO. Instead, firms with less ITO experience but have plentiful resources can apply “best practices” of ITO to leapfrog in their IT capabilities and use them as a strategy to disrupt existing markets or to break into new markets. These firms attempt to leverage the expertise of their ITO suppliers to allow them catch up in innovative initiatives and introduce new products, services, or ideas to strategically insert themselves into new markets.

Our findings have a number of implications for practice. For the clients on ITO, the multiple configurations we identified suggest different strategic intents for ITO. One key benefit of using fuzzy-set logics is the ability to identify multiple causal paths to the same outcome, or the idea of equifinality. Our findings suggest that ITO clients should configure their outsourcing arrangements to best fit their strategic intents and level of maturity. Similarly, for ITO suppliers, our findings suggest the need to adjust to these configurations as they pursue business with different clients.

Our study has a number of limitations. First of all, response rate to our survey is still relatively low and hence our sample size remains small, which limit the generalizability of our findings. We plan to continue to collect survey response and hope to increase our sample size in the future. Moreover, future research should explore further how firms use outsourcing as means to implement innovative initiatives. Understanding this emerging ITO objective can shed light on how firms reconfigure their overall organizations as they pursue strategic innovation.

5.0 Conclusion

In this study, we took the configurational approach to examine ITO-outcomes relationships. We adopted a set-theoretic empirical method to study conjunctural causality. Our findings suggest that there are indeed multiple patterns of using ITO to producing specific organizational outcomes, and managers should approach ITO from a configurational perspective, as opposed to managing ITO from the perspective of isolated factors. Our results contribute to a more holistic understanding of ITO, and take the first step toward greater integration of multiple theories and potential reconciliation of conflicting empirical findings.

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