A Two-Level Investigation of Information Syst

Outsourcing relationships between clients and vendors are diverse and complex. Here, the authors explore the impact of organizational, environmental and economic factors on two dimensions of outsourcing decisions.

Outsourcing is the contracting of various systems to outside information systems (IS) vendors. Ever since the Eastman Kodak–IBM partnership was reported in 1989 [15], outsourcing has emerged and has been recognized as a key method of managing IS.

In previous studies of outsourcing [4, 5, 12, 15, 17, 20], two gaps are noticeable. The first relates to the fact that requirements for outsourcing are not uniform, and managers have different approaches to the process. Yet most previous research studies have phrased their inquiries unidimensionally in terms of the extent or degree of outsourcing: either as a binary variable or as size of contract in terms of the percentage of total IS budget [5, 15]. Neither unidimensional gauge is sufficiently expressive; neither allows representation of diverse patterns of outsourcing.

Second, even though the IS industry had not used the term “outsourcing” explicitly in the past, outsourcing is not a new concept and has existed for many years in one form or another. Even though firms have repetitively used outside vendors for years, researchers have neither considered prior relationships in their studies of IS outsourcing nor studied the intentions of client firms to continue the partnership with the outsourcing vendors in the future.

In this study, IS outsourcing decisions are investigated at two levels. The first level deals with the initial outsourcing decision of client firms. The second level pertains to the intention to continue the relationships with current outsourcing vendors in the future.

The following three research questions are explored at these two levels (in contrast to the single-level approach taken by most researchers):

- What are the dimensions of outsourcing decisions? Two dimensions, extent of substitution by vendors and strategic impact of IS applications, are proposed in order to conceptualize the diverse types of outsourcing relationships between clients and vendors. Based on these two dimensions, four types of outsourcing relationships are proposed.
- What are the determinants that affect the dimensions of outsourcing decisions at the first level? The concepts derived from incomplete contracts [2, 9] and transactions cost economics [23, 24] theory are used with information technology (IT) organizational contexts and processes as a foundation to study the determinants of the two dimensions of outsourcing decisions.
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Outsourcing

- What are the determinants at the second level that affect the client firms’ intention to continue the existing outsourcing relationships with the current vendors?

Theoretical Background
The theory of transaction cost economics (TCE) [24] was originally formulated to address the “make or buy” choice. Recently, the theory of incomplete contracts (IC) [2, 9] has emerged; it owes its intellectual roots to TCE but is more rigorous. This theory focuses on property rights and the issues that arise when contracts are incomplete.

According to TCE and IC, there are several factors that determine the efficient governance mode: asset specificity, uncertainty, potential number of vendors, and frequency, among others. Williamson [24] argues that individuals have a limited information-processing capacity in an uncertain world amid opportunistic behavior. Each individual discloses information in a selective and distorted manner for his or her own interest. This self-interest-seeking attribute is called “opportunism.” The existence of a firm-specific asset (an asset whose value for alternative uses is significantly lower than its value for its current use) allows opportunistic vendors to make the company worse off. In particular, if the client firm has a tied-in relationship with a vendor, the vendor’s opportunistic behavior can result in significant loss to the client.

While the property rights approach [9] and TCE recognize the limited information processing capabilities of human beings (bounded rationality), opportunistic behavior, and hold-up problems, it is also important to examine how the existing IS environmental context and processes influence outsourcing decisions. For example, powerful IS departments may oppose any move to outsource certain IS activities. Similarly, large firms may simply be inertial to any outsourcing opportunity. While an exhaustive list of process variables is beyond the scope of this study, we do explore how the influence of IS departments, heterogeneity, and extent of decision analysis efforts affect the dimensions of outsourcing.

In addition, outsourcing relations between vendors and clients can be either one-time or repetitive. Toward the end of the initial contract, many firms make decisions regarding continuation of the outsourcing relationships with existing vendors. Factors that affect this decision are different from factors that affect the initial outsourcing behavior, because client firms may have locked-in relationships with vendors and switching costs may be high. However, most prior research has treated each sourcing decision as an independent event and thereby disregarded the prior relationships that affect ongoing sourcing decisions. Research must explicitly incorporate the role of priorities in an analytical framework [13, 22].

Two Dimensions of Outsourcing Decisions
Two dimensions are proposed as richer descriptors in order to represent and conceptualize the important features of diverse patterns of outsourcing relationships. The proposed two dimensions (inspired in part by the well-known McFarlan-McKenny strategic grid [3]) are the extent of substitution by vendors and the strategic impact of IS applications.

The two dimensions, while not collectively exhaustive, give us fairly complete descriptors that can be utilized by managers in their outsourcing decisions. The extent-of-substitution dimension may be thought of as encompassing vendors’ capabilities and behavior. This dimension explains how much in-house operations are transferred to outside vendors. For
instance, Kodak transferred most of its in-house data center operations to IBM, while the traditional IS contracts transfer only a part of such operations.

The strategic-impact dimension takes into account the effect on business goals and operations of the outsourcing decision. It represents the importance of IS applications to be sourced in terms of two types of competitive advantages: product differentiation and cost reduction. Traditionally, firms have looked for “operations vendors.” Today, they are looking for “strategic partners.” Vendors whose traditional role has been limited to only non-core and commodity functions are gradually handling strategic applications [7].

<table>
<thead>
<tr>
<th>Table 1. Four types of outsourcing relationships</th>
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Four Types of Outsourcing Relationships

Four types of outsourcing relationships are proposed in order to categorize the diverse patterns of outsourcing based on the two dimensions described. The types are labeled support, reliance, alignment, and alliance. In Table 1, each cell is named based on the characteristics of the two dimensions.

The support cell has a low extent of substitution and low strategic impact. This cell corresponds to the traditional IS vendors’ service and the most primitive type of outsourcing relationships. Vendors are usually restricted to non-core IS activities, and the size of the contract is small. Examples are contract programming, maintenance of hardware, minor technical services, and installation of hardware or software, among others. Duration of outsourcing is usually short, and it is relatively easy to find alternative vendors.

The reliance cell has a high extent of substitution and low strategic impact. This cell corresponds to the most popular form of outsourcing reported in the 1990s. The IBM-Kodak outsourcing arrangement corresponds to this cell. IS functions outsourced are mostly non-core activities, and cost reduction is one of the major motivations. Length of contract is longer than in the support cell, because outsourcing in this cell requires more commitments from vendors and clients.

The alignment cell has a low extent of substitution and high strategic impact. Examples of this cell are IS consulting or technical supervision for IS planning and design, and system conversion. Even though vendors are not significantly involved with client firms’ IS operations, vendors’ impact lasts longer than in the support cell. The popularity of this type of outsourcing relationship has been second only to that of the support type. The only difference is that vendors are involved with more strategic IS functions.

The alliance cell has a high extent of substitution and high strategic impact. Outside vendors not only substitute for in-house IS operations but also are completely responsible for highly strategic IS activities. Examples are IS planning and design for new product development or systems that help penetrate a new market. This type of outsourcing evolves based on mutual relationships. Term of contract is usually longer than with other types of relationships. Highest commitments from vendors and clients are required.

Hypotheses at the First Level

Four factors derived from the IC and TCE theories are hypothesized to affect the two dimensions: asset specificity, uncertainty, potential number of vendors, and tacit knowledge. Three IS environmental factors we believe influence the sourcing behavior of firms are also investigated here: IS influence, heterogeneity of systems, and decision analysis effort. Finally, firm size is included as a control variable. The objective is to illustrate how different theoretical bases can be drawn together to investigate the phenomenon of outsourcing.

Incomplete Contracts and Transactions

Cost Economics Theory

Asset specificity is a key issue in an IC or TCE relationship [9, 24], referring to the degree to which an asset can be redeployed to alternative uses and by alternative users without sacrificing productive value. An asset that has lower asset specificity can be used elsewhere without difficulty. Client firms can obtain less specific assets immediately without difficulty from the market. That is, contracts for these assets are likely to be complete. Examples of less specific assets are inventory systems and payroll systems. Even though client firms can develop these types of applications, they purchase them from outside vendors simply because of lower costs and greater convenience.

On the other hand, it is difficult to obtain assets highly specific to clients without sustained efforts because vendors are wary about making such client-specific investments. An example of highly client-specific activity is IS planning and control. The contractibility of assets with high client specificity is low. Since the return of such assets is also highly specific to the client, vendors are likely to be reluctant...
about investing in these assets, and such applications would need to be developed in-house. Moreover, a highly client-specific IS asset means it is highly complementary to assets used in the production of goods and services. High complementarity of assets also requires ownership of IS assets [9]. We therefore have:

**Hypothesis 1a:** As asset specificity of the relevant IS functions increases, the extent of substitution by vendors decreases.

One of the major characteristics of a highly specific asset is that it has less value to alternative users. Since alternative users do not demand this asset, the market for primary users is not well developed. The distinctive feature of the highly specific asset is that it cannot be purchased from the market directly. Since the contractibility of non-client-specific assets is high, it follows that an asset with low specificity can be easily imitated and is substitutable. A highly specific asset may provide some competitive advantage even if all the conditions are not simultaneously satisfied. Clearly, the impact on competitive advantage [1] of a highly specific asset is expected to be higher than that of an asset of lower specificity. Hence:

**Hypothesis 1b:** As asset specificity increases, the strategic impact of IS applications increases.

*Uncertainty* refers to the volatility of the environment that cannot be anticipated. Uncertainty is imposed by phenomena that are hard to predict and thereby hard to write into the contract in specific terms. Thus, higher transaction costs are encountered in uncertain environments, and there is greater incentive to internalize transactions. High uncertainty also increases the need for centralized coordination. As Brynjolfsson [2] argues, centralized coordination is more efficiently carried out in firms than in markets. Therefore, the higher the level of uncertainty, the greater the preference for the hierarchical structure (insourcing). That is, it is better for firms to insource IS operations when uncertainties with respect to IS operations are high. Therefore:

**Hypothesis 2:** As the uncertainty of IS functions increases, the extent of substitution by vendors decreases.

The number of available vendors is an important factor. As the number of available vendors increases, the extent of competition among vendors increases. It also implies increased contractibility and standardization of IS assets required by client firms. Increased standardization of products and services decreases the need for centralized coordination of these assets within firms and reduces incentives for client ownership. It is easier for firms to find alternative vendors without incurring high search costs. Hence:

**Hypothesis 3:** As the number of available vendors increases, the extent of substitution by vendors increases.

*Tacit knowledge* [18] refers to the pool of technical ability, expertise, knowledge, and skills available within client firms. This kind of knowledge does not reside in one place but permeates the entire organization. Tacit knowledge in the IS area of a firm is built over a period of time from an intimate understanding of the firm’s production processes, information requirements, and idiosyncratic developments. Thus, it is unique to the firm and its transmission to potential vendors is difficult because, by definition, tacit knowledge is difficult to articulate. Potential vendors are unlikely to have a complete understanding of the requirements of the client firm. Therefore, tacit knowledge is inalienable; and when information is not alienable, the physical assets and the information assets should be owned by the same firm [2]. Hence:

**Hypothesis 4a:** As a firm’s tacit knowledge in the IT area increases, the extent of substitution by vendors decreases.

Further, since tacit knowledge is difficult to articulate and unique to a firm, it is a source of competitive advantage. This knowledge resides in the repertoires of capabilities possessed by the client firm, and there is no shelf of technologies external to the firm and freely available to its competitors [18]. Since competitors do not have open access to such knowledge, if a competitor tries to copy the routines of the focal firm, the copy will be imperfect. When such conditions of uncertain imitability prevail, imitative attempts by competitors fail, providing a competitive advantage to the focal firm [14]. These arguments suggest the following hypothesis:

**Hypothesis 4b:** IS has a higher strategic impact in firms with high tacit knowledge of IT than in firms with low tacit knowledge.

**Intra-Firm IS Environment**

As already pointed out, TCE theory neglects important organizational and IS-related factors that may
influence outsourcing decisions. Further, consideration of transaction costs alone leads to inconsistent conclusions. For example, based only on TCE theory, we predicted in Hypothesis 1a that the extent of substitution by outside vendors will be lower with increasing asset specificity. However, the alliance type of outsourcing is likely to call for highly client-specific assets (because it is characterized by a high level of strategic impact of IS applications) and yet entails a high degree of substitution by vendors. This apparent anomaly may be a result of the neglect of some of the intra-firm IS factors governing IS practices and IS-related decision-making processes.

In this article, we argue that the intra-firm IS environment persistently influences IS sourcing practices of firms, while TCE and IC theory factors govern the economics of IS outsourcing. IS environment has been viewed as a combination of factors that influence IS context (e.g., power of the IS department [19]) and the IS process of the firm (e.g., comprehensiveness of the decision-making process [21, 25]). Because outsourcing decisions represent an important (often strategic) part of IS processes, such contextual and process factors are likely to affect outsourcing behavior of firms significantly.

IS influence refers to the IS department's power. An influential IS department affects important decision problems relevant to the department or corporate IS strategy. It is often reported that IS executives who have an influence over the corporate strategy frequently decided to insource—even though they could outsource—in order to preserve their authority over the IS department. Therefore, firms in which the IS department has a high degree of power tend to use outside vendors for only limited purposes [11]. Hence:

**Hypothesis 5:** Firms with a high extent of IT influence have a lower extent of substitution by vendors than firms with a low extent of IT influence.

Heterogeneity of IS refers to many differences in types and numbers of hardware, software, and vendors in the relevant IS activity. A high level of heterogeneity can result in different goal orientations across departments. The different goal orientations can become a series of constraints on the firm’s decision process. In order to deal with the broad array of members' preferences, the organization can seek a specialist's help from vendors who have the capabilities to consider the multiplicity of dimensions that face the organization [8]. Hence:

**Hypothesis 6:** As the heterogeneity of systems increases, the extent of substitution by vendors increases.

Decision analysis effort refers to the extent of effort during the decision-making process by IS managers. It reflects the comprehensiveness of the decision-making process and indicates the amount of analysis and planning done specifically during the decision-making process leading to the strategic IS application [21, 25]. This is a primary factor in strategic decision making. Therefore:

**Hypothesis 7:** The greater the IS managers' efforts in the decision analysis process, the greater the strategic impact of the IS application to be sourced.

**Hypotheses at the Second Level**

Levinthal and Fichman [13] studied the determinants of persistent relationships based on past exchange relationships, which increase the likelihood of future exchanges. When the relationship is more specific in terms of capital, the continuation of the relationship persists and the benefit increases because the parties have developed a common understanding. Thus, if the relation-specific capital and skills accrue over time and the market for these assets is incomplete, the probability of the relationships ending decreases as the duration of the attachment increases.

In the outsourcing context, the relation specificity, complexity, and attachment can be explained by four types of outsourcing relationships, which conceptualize diverse types of outsourcing relationships between vendors and clients. For instance, outsourcing in the support cell is less relation-specific and less complex than outsourcing in the alliance cell, because the extent of substitution by vendors and the strategic impact of IS applications in the support cell are lower than they are in the alliance cell. Outsourcing relationships in the support cell are easy to manage, and client firms can change the existing vendors without much effect on the IS activities. Outsourcing relationships in the alliance cell are more complex and develop based on mutual understanding. As the intensity of either one or both dimensions increases, the relationships between vendors and clients become more specific, more complex to manage, and more attached. The intensity of each of the two dimensions acts as an inertial force that contributes to the intention to continue with the existing relationships. Based on this reasoning, three hypotheses are proposed:

**Hypothesis 8a:** Client firms are more inclined to continue the outsourcing relationship in the reliance cell than in the support cell.

**Hypothesis 8b:** Client firms are more inclined to continue the outsourcing relationship in the alignment cell than in the support cell.

**Hypothesis 8c:** Client firms are more inclined to continue the outsourcing relationship in the alliance cell than in the support, reliance, and alignment cells.

**Performance of vendors:** If client firms have very specific relationships with vendors, opportunistic behavior of the vendors (e.g., withholding or distorting information, shirking or failing to fulfill promises or obliga-
tions) result in significant ex post facto loss to the client firms. Vendors may not abide by the terms of the contract and may exploit clients for short-term gain. Opportunistic behavior impairs relationships between vendors and clients and thereby influences the intention to continue with those relationships in the future. Hence:

**Hypothesis 9:** As the client firms’ perceptions of vendors’ opportunism increase, client firms are less likely to be inclined to continue the relationships with their existing vendors.

*Duration of prior relationships:* Duration is a TCE factor that affects make-or-buy decisions. If firms interact with a certain vendor frequently for a certain specific IS function, firms can outsource that function at lower costs on a routine basis. Likewise if they have long-term relationships, both parties can build an understanding and eliminate the need for detailed formal agreements. Vendors with a long history of relationships are likely to continue in the future. Hence:

**Hypothesis 10:** As the duration of prior relationships with existing vendors increases, clients are more likely to be inclined to continue the relationships with the existing vendors.

In addition, we control for the client firm’s satisfaction [10] through a control variable to account for sources of heterogeneity in a client’s intentions to continue with the outsourcing contract.

Three equations are established within model specifications. The first two equations correspond to the first level and include both outsourcing and insourcing firms. In the third equation, three dummy variables are used to compare the differences among four cells. Ordinary least squares are employed for the first two equations, while logistic regression is used for the third equation, since the dependent variable is binary.

- **Strategic impact of IS applications = F** (asset specificity, tacit IT knowledge, decision analysis effort)
- **Extent of substitution by vendors = F** (asset specificity, uncertainty, number of potential vendors, tacit IT knowledge, IS influence, heterogeneity, size of firm)
- **Intention to continue or not = F** (three dummy variables from four cells, vendors’ opportunistic behavior, satisfaction with vendors’ performance, duration of prior relationships)

### Research Method

The data was collected using the survey method. The list of IS professionals was obtained from *Directory of Top Computer Executives* published by Applied Computer Research. Questionnaires were sent to senior IS managers in North America, and they were asked to choose one IS activity that had been targeted for sourcing within the past five years.

A preliminary version of the questionnaire was developed based on interviews with five IS professionals in western New York state and Toronto. The questionnaire was then pretested within the western New York area. A number of measures were revised based on the pretest.

Following the pretest, 800 questionnaires were sent to senior IS people in North America. Follow-up questionnaires were later mailed and non-respondents were contacted by phone to encourage their participation in the study. In total, 154 usable questionnaires were received, representing a response rate of 19.25%.

Two types of respondent bias were tested: non-response bias and bias between early and late respondents. No significant differences were found. The respondent characteristics are summarized in Table 2 in terms of annual sales and classification of IS activities.

The multi-item constructs method was used, and each item was measured based on a seven-point Likert scale. (Instruments are in an Appendix available on request.)

Factor analysis was conducted first to check the unidimensionality among items. Items whose factor pattern was loaded into other factors or were lower than 0.4 were abandoned from further analysis.

### Table 2. Characteristics of samples

<table>
<thead>
<tr>
<th>Classification of annual sales</th>
<th>Frequency (Percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales (in $ millions)</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>7 (4.5%)</td>
</tr>
<tr>
<td>30 - 40</td>
<td>30 (5.2%)</td>
</tr>
<tr>
<td>40 - 50</td>
<td>6 (3.9%)</td>
</tr>
<tr>
<td>50 - 100</td>
<td>12 (7.8%)</td>
</tr>
<tr>
<td>100 - 250</td>
<td>24 (15.6%)</td>
</tr>
<tr>
<td>250 - 500</td>
<td>22 (14.3%)</td>
</tr>
<tr>
<td>500 - 750</td>
<td>7 (4.5%)</td>
</tr>
<tr>
<td>750 - 1,000</td>
<td>13 (8.4%)</td>
</tr>
<tr>
<td>1,000 - 2,500</td>
<td>14 (9.1%)</td>
</tr>
<tr>
<td>2,500 - 5,000</td>
<td>7 (4.5%)</td>
</tr>
<tr>
<td>5,000 - Above</td>
<td>8 (5.2%)</td>
</tr>
<tr>
<td>Unknown</td>
<td>27 (16.9%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of outsourcing vs. insourcing respondents with respect to IS activities</th>
<th>Insourcing Frequency (%)</th>
<th>Outsourcing Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application development/maintenance/implementation</td>
<td>37 (24.03%)</td>
<td>28 (18.18%)</td>
</tr>
<tr>
<td>Network installation/maintenance</td>
<td>8 (5.19%)</td>
<td>5 (3.25%)</td>
</tr>
<tr>
<td>Data center operation</td>
<td>1 (0.65%)</td>
<td>8 (5.19%)</td>
</tr>
<tr>
<td>System maintenance</td>
<td>0 (0%)</td>
<td>3 (1.95%)</td>
</tr>
<tr>
<td>System conversion</td>
<td>8 (5.19%)</td>
<td>16 (10.39%)</td>
</tr>
<tr>
<td>System integration</td>
<td>5 (3.25%)</td>
<td>10 (6.49%)</td>
</tr>
<tr>
<td>PC maintenance</td>
<td>2 (1.3%)</td>
<td>4 (2.6%)</td>
</tr>
<tr>
<td>Consulting/technical service</td>
<td>0 (0%)</td>
<td>16 (10.39%)</td>
</tr>
<tr>
<td>Disaster recovery</td>
<td>0 (0%)</td>
<td>3 (1.95%)</td>
</tr>
<tr>
<td>Total</td>
<td>61 (39.61%)</td>
<td>93 (60.39%)</td>
</tr>
</tbody>
</table>
Cronbach’s alpha was investigated to assess the reliability of measurement and was found to be above the minimum required value of 0.6. The item-to-total correlation for all items was higher than 0.35. For the strategic impact of IS applications, three factors emerged from 15 items: market differentiation, product differentiation, and cost reduction. Finally, all the items were factored in order to test the discriminant validity. Market differentiation and product differentiation loaded into one factor. Hence, the dimension of strategic impact was found to have two types: cost reduction and differentiation. Differentiation is the average score of product differentiation and market differentiation. All other variables were operationalized based on average scores of each construct.

**Results and Discussion**

At the first level, (see Table 3 and Table 4) the results indicate that asset specificity, tacit IT knowledge, and decision analysis effort affect the strategic impact of IS applications in terms of differentiation. However, none of them is significant when the strategic impact of IS applications is operationalized in terms of cost reduction. It is interesting that the three variables seem to affect the two types of strategic impact in different ways, probably because the differentiation advantage is more sustainable than the cost reduction advantage. Such a clear distinction is probably an indication of the validity of the variables used in the model.

The results of the first level indicate that with respect to the extent of substitution, uncertainty and tacit IT knowledge are significant while asset specificity and number of potential vendors are not. The insignificance of asset specificity is not consistent with the transaction cost economics framework. One possibility is that this result is an artifact of our data. A second possibility is that the result is due to the measurement of the specificity of IT assets without regard to the information on the use of these IT assets. Brynjolfsson [2] points out that if the information needed to use certain assets (information assets) is inalienable, then the information assets and the physical assets should reside with the same owner. This is confirmed by the significant negative effect of tacit IT knowledge. When control of information is determinative, specificity of physical IT assets alone does not affect the distribution of ownership of the physical assets [2]. The specificity of knowledge having been captured by the tacit IT knowledge variable, the specificity of physical IT assets was probably not significant.

The four significant variables—uncertainty, tacit knowledge, heterogeneity of information systems, and size (see Table 5)—are further investigated in order to study the magnitude of impact to the extent of substitution by vendors. In order to compare the magnitude of impact, we compared parameter estimates, the level of significance, and the improvement of R-square. This comparison indicated that tacit IT knowledge and system heterogeneity are more significant factors than uncertainty and firm size. This probably implies that outsourcing contracts are likely to be incomplete and that the intra-firm IT environment and processes are equally important.

In this study, IS influence is found to be an insignificant factor. It is often reported in trade literature that powerful IS departments behave as deterrents to large-scale outsourcing. In contrast, in other cases, outsourcing decisions are often initiated by powerful IS departments. The results of this study reflect the complexities of reality. A further refined research design that investigates only the power factors needs to be developed in order to study its effect.
on outsourcing.

At the second level, 18 of the 93 outsourcing firms subsequently dropped from analysis had no specific plan, 39 firms planned to continue with the current vendor, and the rest intended to possibly discontinue the relationship with the vendor.

The 75 outsourcing firms were then classified into four groups—support, reliance, alignment, and alliance—depending on the types of strategic impact of IS applications and the extent of substitution. In order to classify the samples into four groups, a median value of each dimension was used. Dummy variables, DUM1, DUM2, DUM3, and DUM4, were formulated with respect to the support, alignment, reliance, and alliance cells, respectively. (See Table 6 and Table 7.)

There are four major findings in the second level with respect to the four cells. The first finding is concerned with two types of strategic impact: cost reduction and differentiation. Regardless of whether outsourcing vendors are involved in cost reduction functions or differentiation functions, the same factors affect the intention to continue with the relationships.

The second finding has to do with the intention of a client firm to continue with the relationship at the end of the current outsourcing contract. One of the most interesting issues in outsourcing is whether outsourcing for strategic functions is a good practice or not. This question is equivalent to the query whether the alliance cell is a good and viable option for client firms. The study results indicate that outsourcing relationships tend to persist when either the strategic impact of outsourced IS activities or the extent of substitution by vendors is high. It implies that outsourcing vendors are successful in reliance and alignment cells regardless of whether IS applications are for cost reduction or for differentiation. However, when both strategic impact and extent of substitution by vendors is high, there is no evidence of the intention to continue the relationships. It is probably difficult to comment on the persistence of alliance relationships due to the recency and instability of such relationships.

The third finding provides implications regarding IS vendors. Vendors' performance was characterized in terms of opportunistic behavior. This is clearly an important factor in determining the continuation of the vendor-client relationship. The control variable, satisfaction with vendors [10], is almost equally important in determining the intention to continue with the existing relationships. This suggests that IS vendors should be sound in terms of technical competency and management of relationships.

The fourth finding is concerned with duration. The result indicates that duration of prior relationships with vendors has no effect on the intention to continue with the relationships.

This is quite counterintuitive, and we venture to put forth a reason. Currently, many of the outsourcing relationships fall into the support, reliance, and alignment cells. It is possible that here the switching costs are very low and the barriers to exit not high. Hence, every time the contract is due to expire, the bidding process allows the achievement of greater efficiency than if the client firm were to stick with the original vendor. Perhaps with the movement of the types of relationships into the alliance cell, switching costs would increase and barriers to exit would be created in the partnership process. Once firms have established relationships with certain vendors, it is not easy to switch vendors unless the relevant services are pure commodity. For instance, client firms in alliance relationships with vendors will find it difficult to move to support relationships because of tied-in relationships. Client firms in support relationships can switch vendors with greater ease than those in alliance relationships. Firms should develop their future plans depending on the types of outsourcing relationships.
Conclusion
This study has synthesized the concepts of incomplete contracts and transaction cost theory and IT organizational contexts and processes to study the determinants of outsourcing. We proposed two dimensions and four types of outsourcing relationships in order to investigate diverse types of outsourcing. The advantage of the categorization into four types of vendor–client relationships can be summarized in the words of Dess et al. [6]: "The configuration approach is compatible with a variety of theoretical perspectives on organizations. It can be used to depict both static and dynamic aspects of organizations and their environments."

This study provides three important conclusions. First, incompleteness of contracts and IT organizational contexts and processes may be equally important for client firms' decisions to outsource. Second, in order to continue the existing relationships, vendors should be trustworthy as well as technically competent. Prior relationships do not contribute either to continuation of current relationships or to increase in extent of role in subsequent contracts, at least not in the present context. Third, the alliance cell corresponds to the most extensive type of outsourcing relationships in terms of two dimensions. However, according to our study, this type of outsourcing relationship is not likely to extend beyond the end of the current contract. Outsourcing vendors need to exploit the alliance type of outsourcing relationships in the future.

Future research is needed to further investigate the dynamic features of outsourcing relationships within and among the four cells.

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