Analyzing IT Outsourcing Contract Outcomes: The Role of Intermediaries

Ravi Bapna, Alok Gupta, Gautam Ray, Shweta Singh
Carlson School of Management, University of Minnesota

Abstract

In spite of the prevalence of IT outsourcing, the outcome of IT outsourcing contracts have been less than stellar. However, despite industry reports about dissatisfaction with the performance of IT outsourcing initiatives, there is a lack of research examining the outcome of IT outsourcing contracts. Given the difficulties in selecting appropriate vendors and designing outsourcing contracts, specialist third party intermediaries are often used in IT outsourcing. This research examines how intermediaries influence the outcome of outsourcing contracts. Conventional wisdom associates intermediaries with lowering search costs in the presence of information asymmetry between the client's needs and the vendor's capabilities. We contend that this view of intermediaries has to be counter-weighed by considerations of competitive intensity and endogenous entry. Contrary to the received view of the positive role of intermediaries, our analysis using 700 large IT outsourcing contracts from 1989-2009 suggests that the likelihood of IT outsourcing contract failures is higher in the presence of intermediaries, as intermediaries make vendor selection overly competitive. Our conjecture is that in the process of getting the best deal for clients, increase in competitive intensity causes the winning vendor to suffer from winner's curse or that high-quality vendors are dissuaded from participating in the bidding process. While contract choice misalignment has been studied at the contracting stage, our analysis is the first to link contract misalignment with higher contract failures at the outcome stage.

Keywords: IT outsourcing outcomes, IT outsourcing contracts, intermediaries, winner's curse, endogenous entry.

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1. Introduction

IT outsourcing is a very large industry. Gartner's 2007 analysis sized the worldwide IT services market at 748 billion dollars per annum. The three largest US based IT services firms, IBM Global Business Services, Accenture, and HP Enterprise Services, together have of revenue of over 100 Billion dollars per year. Similarly, the three largest offshore firms in this industry, Infosys, TCS, and Wipro have annual revenue of over 15 Billion dollars. In spite of the volume of IT outsourcing, the outcome of IT outsourcing contracts have been less than stellar. A 2005 McKinsey study [Craig and Willmort, 2005] conducted on 30 outsourcing deals worth more than 20 billion dollars found that 50% of the outsourced projects failed to deliver their expected goals. Similarly, a Deloitte Consulting survey indicated that 40% of the IT outsourcing engagements didn't save any money. An InformationWeek survey of 420 business technology professionals also suggested that there is disappointment with the value delivered by outsourcing [McDougall, 2006]. Half the respondents in this survey indicated disappointment with the customer service with 17% of the respondents characterizing their experience as a disaster.

Despite industry reports about the dissatisfaction with the outcome of IT outsourcing initiatives, there is a lack of scientific research that systematically examines the factors that influence the outcome of IT outsourcing contracts. A large body of literature examines how client, vendor, and project level variables influence the choice of a fixed price or time and material contract [e.g., Bajari and Tadelis, 2001; Gopal et al., 2003; Mani et al., 2010; Susarla et al., 2010; Susrala and Barua, 2009]. This literature, however, does not examine whether the choice of the contract matters when it comes to contract outcomes i.e., does correct (incorrect) contract choice lead to contract success (failure). Mani et al [2010] examine the impact of client, vendor, and process characteristics on customer satisfaction and process efficiency. Susarla et al. [2010] study the impact of contract parameters on contract extendibility, and Susarla and Barua [2009] examine the impact of ASP

contract characteristics on the survival of ASPs. However, the relationship between contract type and contract outcome has not yet been examined using large sample empirical studies. *This paper attempts to bridge this gap by studying different drivers of contract outcomes.*

Industry reports commonly blame poor customer service, lack of flexibility on the part of the vendor, and hidden costs, for clients' inability to achieve the goals of outsourcing initiatives [Craig and Willmort, 2005; McDougall, 2006]. Poor service, lack of flexibility, and hidden costs, can be attributed to the tension that exists in a typical outsourcing relationship where the client seeks a service at lower than the in-house cost and the vendor who wants to maximize its profits [Tadelis, 2007]. Given this competitive tension between the client and the vendor, the outsourcing contract must be designed carefully to ensure a successful outcome for the client as well as the vendor. If the scope and quality of the outsourced activity is difficult to define and measure, then the client and the vendor may have different expectations about the deliverable. Differences in expectation about the scope of work and quality of the deliverable may lead to failure in meeting the client's goals from the outsourcing engagement. Given the information asymmetries between client requirements and vendor capabilities, difficulties in defining the scope and performance of outsourced work, and challenges in selecting appropriate vendors (a growing fraction of whom are offshore); specialist third party intermediaries, such as TPI, Everest and NeoIT are often used in setting up the IT outsourcing engagements. These intermediaries match clients' needs with vendor capabilities, help with contract type choice, and in many cases negotiate prices on behalf of the client.

If third party intermediaries, by virtue of their better market knowledge, are able to match clients with the right vendors and design appropriate contracts, then intermediaries can help in achieving a positive contracting outcome. This is the conventional wisdom regarding the role of intermediaries [e.g., Bailey and Bakos, 1997]. Intermediaries create value by lowering search costs in the presence of information asymmetry between the clients and the vendors. We contend that this

largely positive view of the intermediaries has to be counter-weighed by considerations of competitive intensity and endogenous entry. For instance, in our conversations with multiple senior executives at leading vendors, the phrase "bidding war" was often associated with deals that materialized through intermediaries. Such bidding wars may lead to winner's curse for vendors, who may over time reallocate key resources to more profitable projects. Further, it could be the case that high-type vendors, in the presences of bid-preparation costs, may be dissuaded from entering into the bidding process. These effects, as they play out over contract lifetime, are not observable in the literature that looks at contract choice. These factors motivate us to examine if intermediaries influence the outcome of outsourcing contracts, and if so, how.

Contrary to the received view of the positive role of intermediaries, our analysis using 700 large IT outsourcing contracts from 1989-2009 suggests that the likelihood of IT outsourcing contract failures is higher in the presence of intermediaries, as intermediaries make vendor selection overly competitive. For instance, in the process of getting the best deals for clients, if intermediaries make vendor selection so competitive that the focus of vendor selection moves from vendor capabilities to cost savings, then IT outsourcing projects may fail. In this regard, even if the intermediary is able to help the client select the right vendor and the right contract type (i.e., fixed price or time and material contract), but if the intermediary makes the fixed price or time and material rate too low, the project may fail as after securing the contract the vendor may reallocate resources to a more profitable project. The analysis indicates that misalignment in the choice of the contract type is also associated with negative contract outcomes.

The remainder of the paper is organized as follows. The second section provides the conceptual background; section three discusses our empirical approach, data and the results; and section four discusses the implications of the findings.

2. Conceptual Background

The conventional wisdom in IS, economics and marketing literature is that intermediaries, such as those used in IT outsourcing, economize on the transaction cost between clients and vendors. In a fully connected and dis-intermediated market p vendors need to connect to all q clients leading to a total of $p*q$ connections. In other words, in a fully connected and dis-intermediated market a client has to incur the cost of searching and evaluating p vendors to find the best outsourcing partner. Thus, if the cost of each search is high, the client may make a suboptimal choice. However, in the presence of intermediaries, information search and transaction space is reduced from $p*q$ to $p+q$ [Bailey and Bakos, 1997]. If the intermediary evaluates the p vendors then the client can reduce its cost of identifying the most appropriate vendor. In this regard, since the information about each vendor is useful for multiple clients, there are economies of scale in intermediary operations, even when the information search and evaluation cost is same for clients and intermediaries (Chan 1983). The intermediary also has a greater incentive to invest in developing capabilities to learn about, evaluate the quality of, and monitor the performance of a vendor, than an individual client since the intermediary evaluates more vendors and carries out more transactions than individual clients. In addition, the intermediaries' incentive to report accurately on the quality of vendors stems from returns to building its own good reputation for having "market knowledge." Thus, intermediaries are better able to distinguish between high and low quality vendors. In this way intermediaries are able to use their market knowledge to reduce the transaction space [Bailey and Bakos, 1997]. The intermediaries' knowledge of market demand and supply helps them to better match clients and vendors at lower transaction cost.

The presence of intermediaries also affects the behavior and performance of vendors, as vendors know that it's more likely that higher quality vendors will get chosen. For instance, the mere presence of the intermediary with knowledge of the market makes it less likely that a fly-by-night

operator can be chosen. Thus, vendors are induced to offer better service when the market has intermediaries that help clients with vendor evaluation and selection. Further, intermediaries also have the ability to reduce opportunistic behavior and asymmetries in the bargaining power of clients and vendors [Bailey and Bakos, 1997]. A client and vendor may decide to not engage in future business with each other; however, they are likely to work with the same intermediary again due to the long term market participation and reputation of intermediaries. Thus intermediaries act as a trust agent by preventing opportunistic behavior of both buyers and sellers [Bailey and Bakos, 1997]. When the characteristics of clients and vendors are unobservable, intermediaries generate market information and provide guarantees of quality by monitoring and evaluating the behavior of clients and vendors. Thus, intermediaries prevent market failures [Akerlof 1970] by guaranteeing quality. The market for lemons fails to realize potential grains from trade. Clients would be willing to pay for a service if they could observe quality. An intermediary can capture some of this value (of foregone returns) by certifying the quality of service. Figure 1 below presents a conceptual model of the role of third party intermediaries in IT outsourcing.

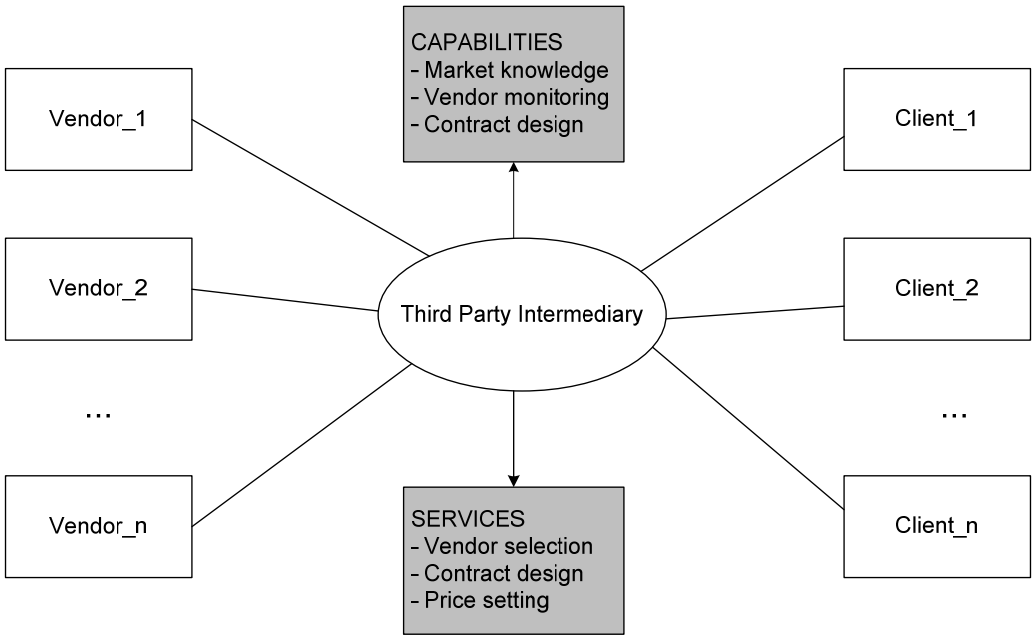

Figure 1 – Conceptual Model of IT Outsourcing Intermediation

In the IT outsourcing area also, intermediaries are used by clients and vendors to facilitate matching client needs with vendor capabilities, and to get the best deal available in the market for both clients and vendors. Vashistha and Vashistha [2006] describe what an intermediary may do to match a client's requirements with a vendor with appropriate capabilities. For example, an intermediary may visit an offshore vendor to assess a vendor's capabilities (beyond what can be judged by process-oriented quality management system certifications). These efforts are also intended to discover information about supplier's domain knowledge, technological capabilities, business continuity plans (e.g., disaster recovery and data privacy), management skills (e.g., ability to manage geographically apart projects or projects of varying size), financial stability, and flexibility in service level agreements and pricing models. For example the intermediary NeoIT, when assessing a call center vendor, not only evaluates the processes the vendor follows while handing calls (issues), but also the number of calls the vendor can handle and it's promptness while responding to issues. It is clear that these search and evaluation activities are costly. If these activities were costless, then clients themselves could perform these activities to evaluate every vendor, and then select the optimal vendor. Thus, as discussed above, intermediaries provide value by developing specialist skills in search, evaluation, and monitoring of vendors. This is especially important with the global sourcing of IT services with clients and vendors that are thousands of miles apart. As the cost of search increases, so does the importance of intermediaries.

In addition to matching client requirements with vendor capabilities, intermediaries also facilitate price discovery to get the best deals available in the market for both clients and vendors. For example, the intermediary TPI aims at helping clients lower costs using its negotiation skills. TPI helps clients' measure internal practices i.e., uses clients' financial data to arrive at the current cost and service levels that form the baseline for the negotiation with the vendors. This model is then used to get price quotes from vendors and to compare prices from various vendors. In our

conversations with multiple senior executives at leading vendors, the phrase "bidding war" was often used in conjunction with deals that materialized through intermediaries. In this regard, intermediaries often strive to get a better deal for their clients by encouraging a greater number of vendors to participate in the bidding process. The expectation is that an increase in the number of bidders will increase competition for the contract that will lead to a lower price and cost savings for the client.

Increase in the number of potential bidders has two effects on the bidding process: (i) competition effect and (ii) entry effect (Li and Zhen, 1999). On one hand, as the number of bidders increase, the bidding process becomes more competitive and the client may receive a lower price bid. However, a lower price bid may not necessarily lead to a positive project outcome (which is measured in the long-run) for the client. A vendor after winning the bid may divert resources to a more profitable project, thereby affecting the project outcome. The issue of resource (re)allocation is related to the literature on internal capital markets (e.g., Stein 1997). The firm may reallocate scarce resources to more profitable projects (winner-picking, or loser-sticking). This is akin to the winner's curse[1] phenomenon, where after winning the project the vendor feels ex post regret from excessive price pressure.

The second affect of increase in the number of potential bidders is the "entry effect." The probability of winning a contract decreases with an increase in the number of potential bidders. As

[1] Winner's curse is traditionally associated with common value information settings. IT outsourcing projects have both private (vendor capabilities) and common value (project characteristics) components. Thus, this setting what is called an affiliated values setting, where also winner's curse type phenomenon can be expected. Pinske and Tan 2005 study the monotonicity of the equilibrium bid with respect to the number of bidders n in affiliated private value auctions and find that the equilibrium bid function is not increasing in n. Affiliation effect can occur in both private value and common value auctions, thus affiliation effect is different from winners curse (that happens in common value auctions). This implies that a negative relationship between bid level and the number of bidders in common value models is not necessarily only due to bidders taking account of the winners curse.

there is a cost associated with submitting a bid, increase in the number of potential bidders reduces a bidder's incentive to join the bidding process. If the entry effect dominates the competition effect, the client's procurement cost may increase with an increase in the number of potential bidders. In fact, Hong and Shum (2002) find that average procurement cost is strictly increasing in the number of bidders. They find that the optimal number of potential bidders that would minimize the procurement cost is three.

In addition to increasing procurement cost, entry effect may also influence the outcome of the project, if it discourages the participation of high quality vendors in the bidding process. If high quality vendors are not the most cost effective vendors, an increase in the number of potential bidders disproportionately decreases their probability of winning the contract. Given that there is a cost involved in submitting a bid – we know from our conversations with senior executives familiar with this process that bid submission is more elaborate and costlier when conducted by intermediaries -- if high quality vendors keep away from participating in the bidding process, the project outcome is likely to be negatively influenced.

The above mentioned factors motivate us to examine the role of intermediaries in influencing the outcome of IT outsourcing contracts. We classify the role of intermediaries in the IT outsourcing engagement into (i) matching client requirements with vendor capabilities, and (ii) price discovery i.e., getting the client the best deal the client could get. It is clear that matching client requirements with vendor capabilities to formulate the appropriate IT outsourcing contract is a key responsibility of the intermediary. Prior research has extensively examined the influence of client, vendor and project characteristics on the choice of contract type. Gopal et al [2003] argue that larger clients (or clients with higher bargaining power and promise of future business) are more likely to sign fixed price contracts. They also suggest that client's with prior IT outsourcing experience and more experienced MIS departments are associated with fixed price contracts. Bajari and Tadelis

[2001] suggest that more complex projects that have greater requirement uncertainty are likely to be time and material contracts. Similarly, Gopal et al [2003] find that projects that are more complex and mission critical are associated with time and material contracts. Banerjee and Duflo [2000] find that vendor reputation is associated with time and material contracts. Mani et al [2010] contend that prior cooperative association serves as a channel for better/easier information exchange and that prior relationship is associated with fixed price contracts. In this regard, Susarla and Barua [2009] suggest that the alignment between vendor, client, and project characteristics is associated with the survival of the vendor; however, this literature has not specifically examined the relationship between contract type alignment and project outcome.

Clients often want to reduce their costs by outsourcing IT work. Intermediaries are also intimately involved in price negotiations once the contract type choice is made. Thus, the second goal of the intermediary is to secure a good deal for the client. However, there is a fine line between securing a good deal for the client and achieving a win-win project outcome for the client and the vendor. To the best of our knowledge, prior research has not paid any attention to the influence of intermediaries and the impact of associated competitive intensity on contract outcomes.

In the next section we describe our data and develop our estimation strategy.

3. Empirical Analysis

3.1 Econometric Approach

Our overall approach is to isolate the effect of intermediaries over and above other factors that are likely to influence contract outcomes. Prior literature [e.g., Gopal et al., 2003; Mani et al., 2009; Susarla et al., 2010] has studied the antecedents of contract choice, whether fixed price or time and material. The implicit implication here is that given the client, vendor, and project characteristics, the choice of an appropriate contract type will lead to successful outsourcing engagement. This

literature suggests that the size and complexity of the work, and whether the client-vendor dyad has had prior interactions will influence the nature of the contract. For instance, complex engagements are likely to be undertaken using time and material contracts as the complexity of the project increases the cost of writing fully-contingent fixed-price contracts. On the other hand, if the client has had a prior relationship with the particular vendor, they are more likely to enter into fixed-price contract. This is because of the ostensible ease of specifications the second time around. The prior relationship gives the vendor a better understanding of what the new project entails. We measure fit to contract choice theory, and use the deviation between the predicted contract choice and the observed contract choice as a measure of contract misalignment.

It is natural to assume that the decision to use an intermediary is endogenous and that this choice is likely to be influenced by the size of the contract, the number of different types of activities and the number of different partners who will be in multi-sourcing engagement. A client may need the help of an intermediary for larger projects that are likely to be more complex, as against needing help in executing smaller projects. For large projects, the intermediary can help in identifying best-of-breed vendors for the various types of activities in the contract. It is also expected that clients that are relatively inexperienced in outsourcing will be more likely to use an intermediary. Such clients have lesser awareness of the overall vendor landscape and their specific capabilities. Thus, they are more like to need the market knowledge of intermediaries.

Given the advisor selection process, controlling for contract misalignment, we next hypothize the possible mechanism through which the intermediary could impact project outcome. Recall that intermediaries often strive to get a better deal for their clients by encouraging a greater number of vendors to participate in the bidding process. However, an increase in competitive intensity also brings with it vendor-side issues of winner's curse and endogenous entry. For instance, Hong and Shum (2002) find that average procurement cost is strictly increasing in the number of

bidders. These negative outcomes related to increased competitive intensity arise because, over time, vendors have an incentive to focus their energies and reallocate resources towards their more profitable projects. A vendor can engage in winner-picking – shifting resources from one project to another. By doing a good job in the winner picking dimension, a vendor can create value even when it cannot relax the overall firm-wide resource constraint – by allocating resources more efficiently. Vendors can take resources from less profitable projects and put them on projects where returns are higher [Stein, 1997].

It is also likely that in the expectation of an intermediary induced higher level of competitive intensity, high quality vendors may resist participating in bidding-wars with low quality vendors. This naturally decreases the likelihood of the best matching vendor getting assigned to the project, and is likely to result in negative project outcomes. Jap and Haruvy [2008] find that vendors that are willing to make buyer-specific investments make fewer price concessions. That is, a competitive bidding process may dissuade vendors willing to make client-specific investments that may be required to achieve contract success. The competitiveness of the bidding process may leave the client and the intermediary choose from a list of low quality vendors that are willing to engage in competitive bidding, but are not willing to make the specific investments necessary for a successful project outcome.

In modeling the impact of competitive intensity, we also consider the effect of prior client-vendor relationships. Higher values of prior relationship are expected to reduce competitive intensity. For the purpose of identification we include regional dummies and firm size as exogenous covariates. This makes sense as the number of potential bidders for a project is likely to be influenced by the overall vendor pool in the signing region. Similarly, larger clients with more future business potential are likely to attract more bidders.

The above discussion lays out the ground-work for us to model contract outcomes. Our focal effect is that of advisor selection and competitive intensity. We need to control for contract misalignment. It is also natural to expect that vendor capabilities are likely to positively influence contract outcomes.

Figure 2 below depicts the overall empirical estimation framework.

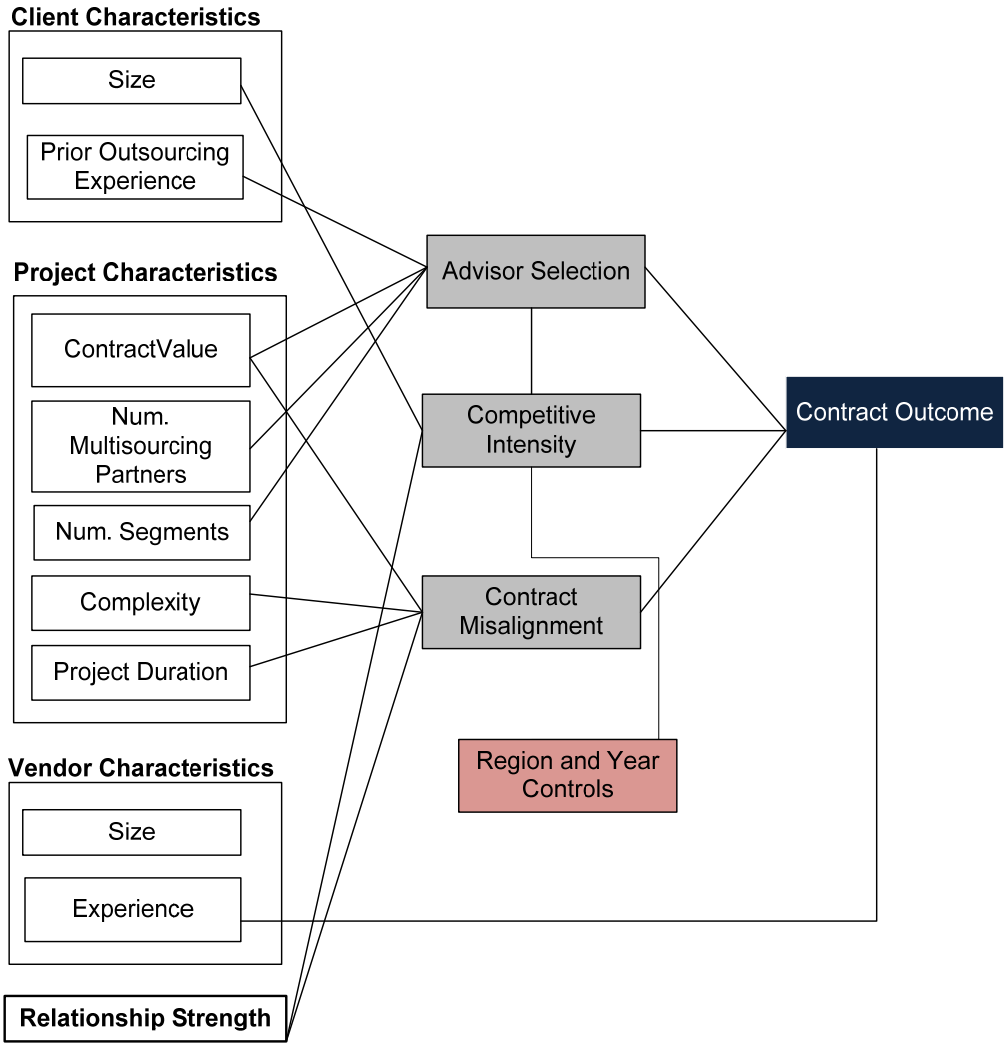

Figure 2 – Empirical Model Depicting Endogenous Covariates

It should be noted that the **Contract Misalignment** box in the above figure reflects a derived measure that is based on the fit to contract choice theory. Prior research suggests that the choice of

a fixed price contract can be predicted by contract value, project complexity, project duration and existing relationship strength. We estimate this relationship and use the deviation between the predicted contract choice and the observed contract choice as a measure of contract misalignment.

In the figure above the endogenous variables, **Advisor Selection**, **Competitive Intensity** and **Contract Misalignment**, are represented as shaded boxes, signifying that they have to be instrumented before factoring into the determination of the dependent variable. Also note that because we are modeling these multiple relationships using the same data, we need to account for correlated errors across the endogenous variable equations.

3.2 Data and Measures

We use IDC's services contract database (SCD) for our analysis. This database includes over twenty two thousand large IT outsourcing contracts signed from 1989-2009. Our analysis includes seven hundred contracts where the outcome of the outsourcing contract is indicated.

We measure contract outcome (**Contractoutcome**) as a binary variable. If the contract was extended or expanded since signing, the contract is considered successful, and if the contract was renegotiated or cancelled, it is considered as a failure. We exclude contracts from our dataset if the contract has expired or its status is unknown. The database indicates the name of the intermediary, if an intermediary was used in the contract. The presence of an intermediary (**Advisor (Y/N)**) is a binary variable that takes the value of one, if an intermediary was used in the contract. The size of the project is measured as the dollar value of the contract **(ContractValue**). The number of outsourcing partners (**NumberofMultisourcingPartners**) is the count of the number of primary contractors on the project. **NumberofSubsegments** is the number of distinct IT tasks/activities that are involved in the outsourcing project. The client's experience with IT outsourcing (**CustomerOutsourcingExperience**) is measured as the dollar value of all the projects outsourced

by the client, before signing the contract under consideration. Similarly, the experience of the IT outsourcing vendor (**VendorExperience**) is measured as the dollar value of all the IT projects executed by the vendor, before signing the contract under consideration.

Competitive(Y/N) measures the competitive intensity of the bidding process. This is a binary variable that is coded as one if the bidding process is competitive bidding, and coded as zero if the contract was awarded to the incumbent or if the contract was sole-sourced. The strength of the client and vendor prior relationship **(ExistingRelationshipStrength)** is measured as the count of the number of different projects the client and the vendor have done, before signing the contract under consideration. The number of potential bidders for a project is likely to be influenced by the current and future business potential of a client. Thus, firm size measured as customer revenue (**CustomerRevenue**) is used as a proxy for the future business potential of a client. The number of potential bidders for a project is also likely to be influenced by the number of vendors available in the geographic location of the client. Thus, **RegionDummies** are used to control for the vendor population in the geographic location of the client.

The database indicates the nature of the outsourcing contract i.e., whether the contract was more like a fixed price contract or more like a time and material contract. We use the variable, **Fixedprice(Y/N)**, to classify contracts. This variable takes a value of one if the contract is more like a fixed price contract and a value of zero if it is more like a time and material contract. **LengthinMonths** measures the total length of the contract in months. **EngagementTypeComplexity** is a categorical variable that measures the complexity of the project. This variable takes a value of three for Application Development, Business Consulting, IT consulting, and Systems Integration engagements; a value of two for Learning and Education, IT Education and Training, and Business Outsourcing; and a value of one for Deploy and Support,

Contract Labor and Capacity Engagement, and Business Support Engagements. This classification follows Susarla et al (2010).

Table 1 presents summary statistics and the correlation among the variables used in the analysis. Note that these data represent the fraction of the overall SCD database for which we have known outcomes. The average contract size in our dataset is $358 million and the average length is little over five and half years. Thus, these represent significantly large contracts carried out by large companies. For instance, the average client's revenue is over $22 billion and the average vendor is also quite experienced. On average, a vendor has transacted roughly $30 billion worth of IT outsourcing contracts prior to a given deal. At first glance the correlation table indicates that most of our constructs are orthogonal to each other, other than contract length and contract value, which are expected to be correlated positively. Likewise, we also observe that client's outsourcing experience is somewhat correlated with the strength of the relationship between client and vendor.

3.3 Econometric Model and Results

We treat advisor selection, competitive intensity, contract type choice and contract outcome as endogenous and use a three-stage-least-squares (3SLS) model with appropriate identification as indicated below. The 3SLS procedure is used to derive the parameters of the full system because endogenous variables in some equations of the model are used as explanatory variables in other equations. It is also likely, in such systems of equations, that the error terms across the equations are correlated as they capture different aspects of the same underlying contract. First, predicted or instrumented values of the endogenous variables are generated, using all exogenous variables in the system. Second, a cross-equation covariance matrix is estimated. Third, the equation with the contract outcome as the dependent variable is estimated with generalized least squares using the instrumented variables, other exogenous variables as well as the estimated covariance matrix. A good

example of this approach in IS research is Kurozovich et al 2008. In summary, three stage least squares combines two stage least squares and seemingly unrelated regression (SUR) to account for both endogenous regressors and cross-equation correlation of errors. Our system of equations is shown below.

(1) $Advisor\ Selection = ContractValue + NumberofMultiSourcingPartners + Numberof\ SubSegments + CustomerOutSourcingExperience + e1$

(2) $Competitive\ Intensity = Advisor\ Selection + ExistingRelationshipStrength + regionDummies + Customer\ Revenue + e2$

(3) $FixedPriceY/N = ContractValue + LengthinMonths + EngagementTypeComplexity + ExistingRelationship + e3$

(4) $Contract\ Outcome = Advisor\ Selection + Competitive\ Intensity + ContractMisalignment + VendorsExperience + e4$

$$where\ ContractMisalignment = |Predicted\ Contract\ (as\ per\ (3)) - Actual\ Contract|$$

To get some initial insights into the impact of third party intermediaries on IT outsourcing contract outcomes, we contrast the probability of contract failure between contracts with and without intermediaries. Figure 3 below indicates that the proportion of contracts that are intermediated have a significantly higher likelihood of negative outcomes ($Z = 1.98$, P-Value = 0.047). Contracts that are un-intermediated have a 71% likelihood of success as opposed to intermediated contracts that only have a 52% probability of success.

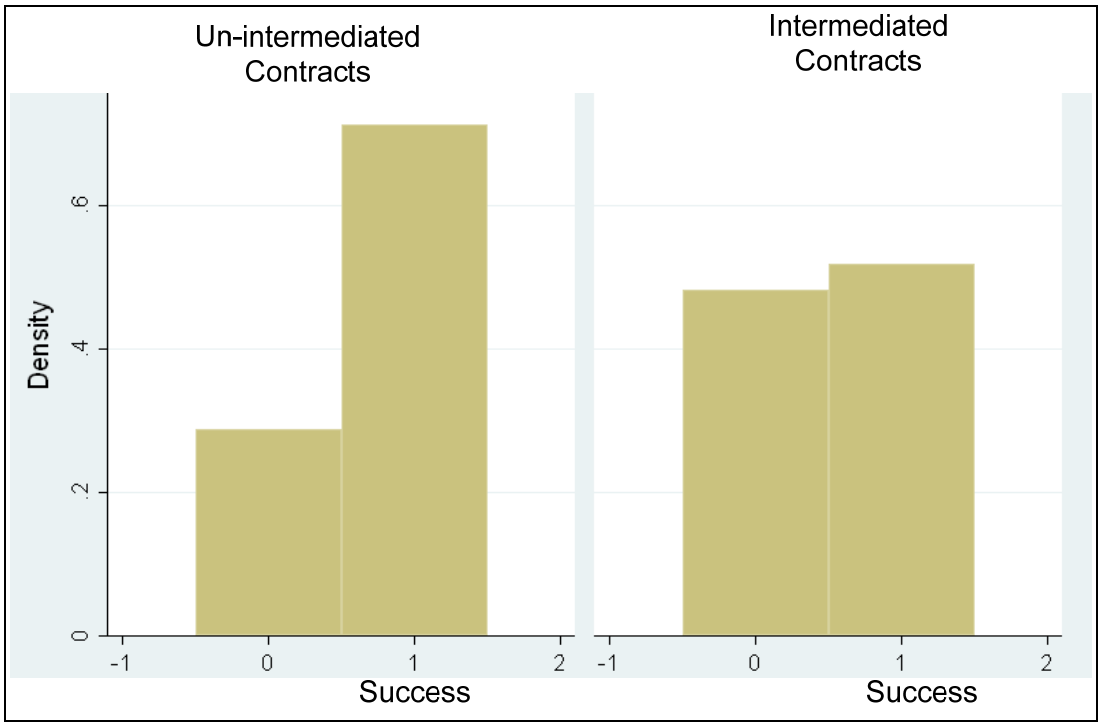

Figure 3 – Outcomes by Intermediation

Table 2 presents the results of the empirical analysis. The advisor selection model (model (1)) indicates that larger contracts (ContractValue), and contracts with more outsourcing partners (NumberofMultiSourcingPartners) are positively associated with use of third party intermediaries. The competitive intensity model (model (2)) indicates that the presence of an intermediary (Advisor Selection) leads to a more competitive bidding process (CompetitiveIntensity), whereas existing relationship between the client and the vendor (ExistingRelationshipStrength) leads to a decrease in likelihood of competitive bidding. The contract type model (model (3)) suggests that larger contracts (ContractValue), longer contracts (LengthinMonths), and more complex contracts (EngagementTypeComplexity) are more likely to be time and material contracts, whereas existing relationship between client and vendor is likely to be associated with fixed price contracts. These findings about contract type are consistent with prior theory [e.g., Gopal et al., 2003; Mani et al., 2010; Susrala et al., 2010; Susarla and Barua, 2009]. Thus, following Susarla and Barua [2009] we

calculate the difference between the contract type predicted from model 3 and the actual contract type, as the misalignment in contract type (ContractMisalignment).

Model 4 is our focal model, where we attempt to explain contract outcomes. It relates the competitiveness of the bidding process (CompetitiveIntensity) and misalignment in contract type (ContractMisalignment), with contract outcome. The analysis indicates that the competitiveness of the bidding process as well as misalignment in contract type are negatively associated with project outcomes. To the best of our knowledge, while misalignment has been studied at the contracting stage, our analysis is the first to link greater misalignment to higher contract failures. We find that IT outsourcing projects fail if the client, advisor, and vendor fail to select the appropriate type of contract for the given situation. More interestingly, the effect of competitive intensity is negatively related to contract outcomes, even after accounting for contract type misalignment and the experience of the vendor.

It should be noted that 3SLS assumes that the dependent variable is continuous. Some of our endogenous variables, however, are binary and not continuous. Unfortunately, there is no readily available maximum likelihood estimation technique that can account for the simultaneous structure accounted for in our 3SLS estimations. Thus, while applying a linear probability model such as 3SLS to a binary dependent variable unfortunately suffers from some shortcomings, Aldrich and Nelson (1984) demonstrate, however, that this is not necessarily a fatal problem. Given that our key econometric concern was to capture the underlying endogeneity in the intermediary selection and contract outcome process, and the issue of correlated errors, we believe that the adopted 3SLS approach is appropriate.

In the next section we discuss the implications of our findings.

4. Discussion and Conclusion

IT outsourcing is a very large industry. However, the outcomes of IT outsourcing initiatives have not been great. A number of industry studies have documented the dissatisfaction with the failure to achieve the goals and objectives of IT outsourcing initiatives [e.g., Craig and Willmort, 2005; McDougall, 2006]. However, the literature has not systematically examined IT outsourcing failures. Though the literature has examined customer satisfaction with IT outsourcing [e.g., Mani et al., 2010] and the survival of IT outsourcing vendors [e.g., Susarla and Barua, 2009], we are not aware of studies that specifically focus on the outcome of IT outsourcing initiatives.

IT outsourcing projects are hard to scope. There also exist significant information asymmetries between client requirements and vendor capabilities. This gives rise to opportunities for third party specialists to intermediate between clients and vendors. Such intermediaries use their knowledge of the vendor space to match client requirements with vendor capabilities. Similarly, by increasing the competitive intensity of the bidding process, intermediaries can secure their clients a more favorable deal. However, an intermediary can make the bidding process so competitive that the winning vendor suffers from winner's curse and subsequently underperforms on the project. Similarly, an excessively competitive bidding process can dissuade high quality vendors from participating in the bidding process that negatively affects the outcome of the IT outsourcing contract. Support for the latter arguments is found in the empirical analysis.

We find that the use of intermediaries is linked to a bidding process that is more competitive, and such a bidding process is associated with negative project outcomes. The IT outsourcing literature studies how vendor, client, and project characteristics influence the nature of the outsourcing contract. However, this literature does not examine if the choice of the contract has any implications for the outcome of the contract. This study demonstrates that the choice of the matters, if the contract choice is misaligned with the received theory, the contract is more likely to

have a negative outcome. Thus, intermediaries need to make sure that they not only match the client with the right vendor, but that the intermediary also move the client and vendor towards a more appropriate contract type, given the circumstances surrounding the outsourcing task at hand.

The empirical analysis suggests that though it is helpful to make sure that the client and vendor have the right contract type – fixed price or time and material – an appropriate contract type is not sufficient. As the negative impact of competitive intensity on contract outcome suggests, a correct choice of contract type should also be at the right price that makes it a win-win for both the client and the vendor. A correct choice of the contract type at too low a price may be just as likely to lead to project failure, as an incorrect choice of the contract type.

The analysis raises the question: why do intermediaries make the bidding process more competitive. One plausible answer is offered by the multi-tasking literature [e.g., Holmstrom and Milgrom, 1991]. As discussed earlier, the intermediaries deliver value in two broad ways: (i) matching client requirements with vendor capabilities and designing appropriate contracts, and (ii) getting the client a good deal. The performance of the intermediary on the second dimension is known at signing: how does the contract price compare with in-house cost. By lowering the contract price, intermediaries demonstrate their value in the immediate term. The performance of the intermediary on the first dimension is not assessed accurately as it can only be judged fairly at the end of the contract. The empirical analysis suggests that clients should reward intermediaries not on the basis of the difference between in-house cost and vendor price, but rather reward intermediaries at the end of the project based on project outcome.

The analysis also raises the question: why do clients use intermediaries if intermediaries are associated with negative contract outcomes. One plausible answer is that the average project duration is over five years. However, average CIO term is much shorter [Leaver, 2010]. Thus, CIOs may have a short-term focus where they sign contracts to 'demonstrate' that they outsourced IT

work and achieved cost savings. In this regard independent third party intermediaries can help CIOs achieve their goals by attracting vendors who are willing to bid aggressively to show savings at the contracting stage, but are not willing to make client-specific investments to achieve successful project outcomes. In this way, "short-termism" [Laverty, 1996; Bushee, 1998] may lead CIO's to sign contracts that are not in the long-term interests of the client.

This study has certain limitations that suggest avenues for future research. This study suggests that competitive intensity is linked with contract failure. However, this research does not examine why competitive intensity is associated with contract failure. The paper presents two theoretical arguments: (i) winners curse – after winning the bid, the vendor reallocates resources to more profitable projects, and (ii) because of the excessive competition, high quality vendors do not participate in the bidding process. Further research is needed to examine which of the above two, or other reasons, lead competitive intensity to be associated with contract failures.

Intermediaries, because of the information asymmetries in the IT outsourcing market, can play an important role in matching clients with vendors. However, as the IT outsourcing market matures and a stable set of vendors get established and build a good reputation, the search cost for clients may go down. If there is no entry of new entrepreneurs in the IT service market, the intermediaries' role may change from matching clients and vendors to focusing more on high end services such as contract design. Similarly, as clients also mature and develop specialist skills in searching for vendors with right capabilities and specifying and managing outsourcing contracts, and build long term relationships with a set of vendors, the role of intermediaries will evolve.

In this research contract outcome was measured in terms of contracts' extension and cancellation. This study provided a first cut analysis of IT outsourcing contract failures, specifically focusing on the role of intermediaries. It is clear that more refined measures of IT outsourcing contracts are needed, as well as the need to examine other determinants of contract performance.

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Construct	Mean	Std. Dev	1	2	3	4	5	6	7	8	9	10	11	12
1. Advisory/N	.03585	.1860	1											
2. CompetitiveY/N	.5905	.4920	0.03	1										
3. Misalignment	.9593	.6211	0.17	0.15	1									
4. Vendorexpvalue	29.5b	49.1b	0.01	0.03	0.16	1								
5. Contractvalue	358m	823m	0.12	0.09	0.39	0.19	1							
6. Lengthinmonths	67.2629	34.6254	0.11	0.21	0.30	0.27	0.45	1						
7. Engagementtypecomplexity	1.3227	-.5537	-.01	0.02	0.11	-.11	-.11	-.16	1					
8. ExistingRelationshipStrength	1.4023	.9792	-.01	-.25	-.06	0.08	0	-.03	0.01	1				
9. CustomerRevenue	22.1b	65.7b	-.01	0.05	0.03	0	0.19	0.08	-.02	0.03	1			
10. Numofmultisourcingpartners	.0066	.0812	0.08	0.06	0	-.04	0	0.08	-.01	0	0.10	1		
11. Numberofsubsegmentstotal	2.3413	1.4232	0.10	-.03	-.04	0.14	0.14	0.18	-.31	0.06	-.11	-.03	1	
12. CustOutsourcingExperience	114m	466m	0.05	-.20	0.29	0.19	0.12	0.07	-.02	0.46	0.03	-.02	0.07	1

Table 1: Summary Statistics and Correlations.

VARIABLES	(1) AdvisorY/N	(2) CompetitiveY/N	(3) FixedPriceY/N	(4) ContractOutcome
AdvisorY/N		0.8636*** (0.1752)		-0.3262 (0.2033)
ExistingRelationshipStrength		-0.2100*** (0.0370)	0.0833** (0.0357)	
CustomerRevenue		0.0418 (0.0349)		
ContractValue	0.1188*** (0.0332)		-0.0737* (0.0417)	
NumberofMultisourcingPartners	0.0788** (0.0340)			
NumberofSubsegmentsTotal	0.0360 (0.0328)			
CustumerExperience	-0.0099 (0.0315)			
LengthinMonths			-0.2144*** (0.0429)	
EngagementTypeComplexity			-0.1327*** (0.0382)	
CompetitiveY/N				-0.4276*** (0.1031)
Misalignment				-0.1639*** (0.0539)
VendorExperience				0.0041 (0.0391)
Constant	0.0090 (0.0388)	0.0257 (0.1122)	0.0272 (0.0376)	0.0295 (0.0393)

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 2: Empirical Results