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PERSISTENCE OF IS SOURCING RELATIONSHIP: AN ACCELERATED EVENT-TIME SURVIVAL ANALYSIS

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Abstract

This research-in-progress investigates factors that influence the persistence of IS sourcing. Why do some IS sourcing contracts fail to continue after they mature? On the other hand, why do others succeed in IS sourcing arrangements and renew the contract to further gain mutual profits? To answer these questions, this study tests a multi-theoretic model, using event-time survival analysis.

Introduction

Information Systems (IS) outsourcing has grown to become multi-billion dollar industry since the watershed event of Kodak outsourcing in 1989. However, the fact that firms increasingly turn to external suppliers to meet their IT needs does not mean that outsourcing is a panacea, nor that it is without trouble. Against a general projection of a rising trend in IS sourcing, unsuccessful outsourcing experiences are often reported (Input 1999). Unsuccessful outsourcing practices lead companies to seek costly alterations in their IS outsourcing arrangements. The alterations result in transition costs including setup costs, redeployment costs, relocation costs, transferring equipment and leases, etc.

A review of past IS sourcing research, shows that studies dealing with the duration of outsourcing engagement are few and far between (Nam et al. 1996). This study, attempts to understand factors influencing the persistence of companies' outsourcing arrangements. Specifically, the following research question can be raised at this stage. What forces influence the persistence or dissolution of on-going sourcing relationships? In attempting to answer this question, we also discuss the theoretical foundations that can be utilized to explain the continuation or the termination of on-going sourcing relationships.

Theoretical Background

In order to investigate the dynamic aspects of on-going IS outsourcing arrangement, this study attempts to incorporate strategic, economic, and social perspectives (Cf. Lee et al. 2001).

The strategic perspective of IS sourcing is concerned with how firms formulate and implement outsourcing strategies in order to garner competitive advantages, drawing upon the resource dependence theory and the resource-based theory (Duncan 1998; McFarlan and Nolan 1995). This perspective, however, does not consider how to manage interorganizational ties.

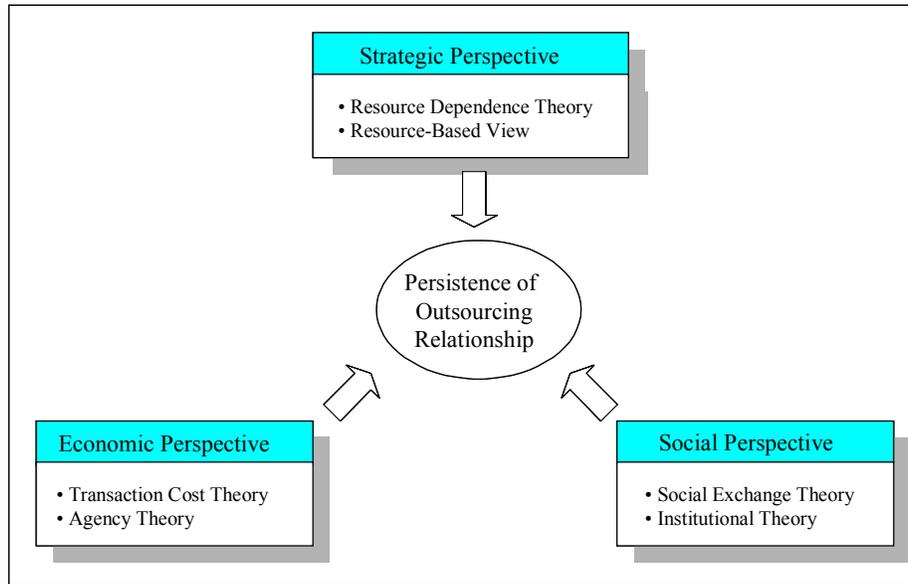


Figure 1. Conceptual Model of the Persistence of IS Sourcing Arrangement

The economic perspective of IS sourcing examines the efficiency, coordination, and governance of economic transactions with one another based on transaction cost theory and agency theory (Ang and Straub 1998; Lacity and Willcocks 1998; Nam et al. 1996). However, often organizations have other reasons to outsource besides cost efficiency.

The social perspective of IS sourcing focuses on the outsourcing relationship between clients and the service providers is grounded on institutional theory and social exchange theory (Ang and Cummings 1997; Lee and Kim 1999; Nam et al. 1996). Although theories in the social aspect provide meaningful implications and suggest frameworks for analysis of partnership relationship, there is a lack of an on-going feedback effect of various partnership practices (Lee and Kim 1999).

Therefore, we argue that a model (figure 1) incorporating theoretical framework from these three perspectives is necessary to explain the persistence of IS sourcing arrangement. The model shown in figure 2 depicts influencing factors of each perspective on the persistence of outsourcing arrangement. This study tries to differentiate from sourcing relationship in general by investigating which factors do play a role in the context of IS sourcing, where IS sourcing is generally the most ambiguous, uncertain and thus difficult to specify (Kishore et al. 2002). Also, the study at this point in time focuses on the variables developed from the client’s aspect although analysis of relationship with the vendor (i.e., communication, conflict, etc.) would be crucial for developing the continuity of IS sourcing relationship over time.

Model and Hypotheses

Strategic Perspective

Resource scarcity: IS sourcing has been recognized as a coping mechanism against resource scarcity and rising costs, without incurring substantial investment which might arise in sourcing arrangements (Lackey, 1994). On the contrary, if a firm is self-sufficient as time progresses, by internalizing IT resources (Goo et al. 2000), it is less dependent on external resources, and, therefore, this availability is likely to mitigate the needs for further adoption of outsourcing contracts. *H1: There is a positive relationship between resource scarcity and the persistence of relationships.*

Importance of IS activity: The importance of the IS activity is in general expected to affect the sourcing decision negatively and limit sourcing only to non-core IS functions (Earl 1996; Lacity et al. 1996; Venkatraman 1997). Thus, we argue that firms are less inclined to continue the outsourcing relationship for certain IS activities outsourced when the activities become important.

H2: There is a negative relationship between the importance of IS activities and the persistence of relationships.

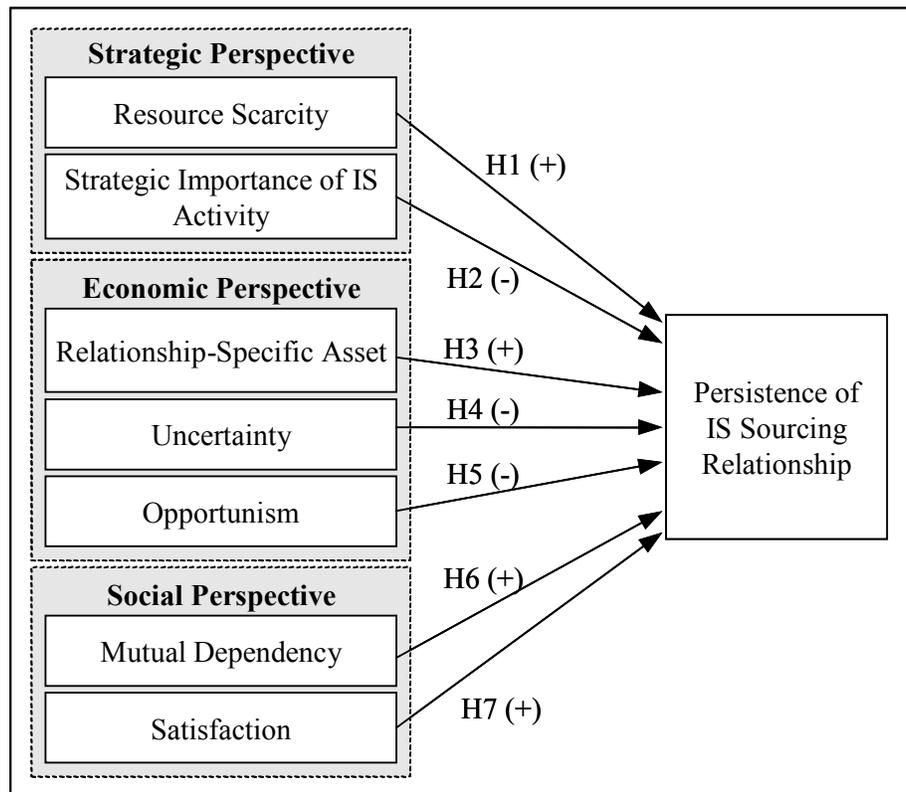


Figure 2. Preliminary Model for the Persistence of IS Sourcing Relationship

Economic Perspective

Relationship-specific assets: These are investments that have a much higher value within the relationship than outside (Joskow 1990). If one party were to breach the contract, the value of the investments would fall, creating a lock-in effect (Walker and Poppo 1991). In IS activities, therefore, routine operations that are not relation-specific can be easily switched to another sourcing vendor while a high impact application that generally has higher relation specificity tends to continue the relationships with the existing vendor to maneuver strategic goals. *H3: There is a positive relationship between relation-specific assets and the persistence of relationships.*

Uncertainty: Both *technological volatility*, unpredictability of changes of relevant technology and *demand uncertainty*, unpredictability of changes in market are imposed by phenomena that are hard to predict and thereby hard to write into the contract in specific terms. Therefore, the higher the level of technological volatility/demand uncertainty, the less likely inclined to continue the relationships with the existing vendor. *H4: There is a negative relationship between uncertainty and the persistence of relationships.*

Opportunism: Opportunistic behavior (Williamson 1979) including withholding or distorting information, failing to fulfill promises, late payment, and delivery of substandard products (Parkhe 1993) impair relationships between vendors and clients, and thereby influences the intention to continue with future relationships. Hence as the vendors' opportunism increases, the

intention to continue the relationships with the existing vendors decreases. *H5: There is a negative relationship between opportunism and the persistence of relationships.*

Social Perspective

Mutual Dependency: Dependency between organizations results from a relationship in which participants perceive mutual benefits from interactions (Anderson and Narus 1984; Emerson 1962; Lee and Kim 1999; Mohr and Spekman 1994). Mutual dependency between participants increases when the size of the exchange and importance of exchange are high, when participants consider their partner the best alternative, and when there are few alternatives or potential source of exchange (Ganesan 1994; Heide and John 1990). Therefore, the higher the degree of mutual dependency, we expect the stronger intention to continue the relationships with the existing participants. *H6: There is a positive relationship between mutual dependency and the persistence of relationships.*

Satisfaction by client firms: This is critical because firms use outside vendors in order to obtain high quality services. If client firms are satisfied with vendor performance, both parties will build mutual understanding and the relationships will be more likely to continue. Therefore as the client firms' satisfaction increases with respect to the vendors' performance, the intention to continue the relationships with the existing vendors increases. *H7: There is a positive relationship between satisfaction and the persistence of relationships.*

Research Method

Data

The data was collected using the survey method. Data were collected through questionnaires using the survey method. A list of IS professionals was obtained from Directory of Top Computer Executives published by Applied Computer Research, Inc. After preliminary tests of the questionnaire and interviews with IS faculty to revise and finalize the questionnaire, 800 questionnaires were sent to top IS managers or CIO in the U.S. In total, 154 usable questionnaires were received representing a response rate of 19.25%. We first checked the respondent bias. No significant differences were found between respondents and non-respondents at a 5 percent level (King and Sabherwal 1992).

Data Analysis

This study will use accelerated event-time analysis, a survival analysis technique that can be accessed through the program PROG LIFEREG of SAS. In accelerated event-time analysis, the dependent variable is the time elapsed until an event occurs—in this study, the time to dissolution (mortality) of the contract. Arrayed with this dependent variable information in figure 2 will be independent variables that describe three clusters of factors that we described in the prior section. The event-time method estimates the effects of independent variables on the time to dissolution. A key advantage of event-time analysis is its incorporation of right-censored data (Ginsberg and Buchholtz 1990; Mitchell 1989). Data are right-censored when the data collection ends before some observations have experienced the event. In this study, 41 percent of the contracts had not been planned to terminate (had planned to continue the current arrangement) when the data were collected. The right censored data are used to estimate the survival function and corresponding probability of the persistence for some time in the future. In contrast, non-censored data are used to estimate the probability of experiencing the event of interest at the present time. The basic model to test the hypotheses is the Cox model of mortality (Cox 1972):

$$r(u)_t = e^{b_0} * e^{c_0(u)t}$$

where r = Mortality rate, u = Covariate matrix, b = Initial mortality, c = Parameter of death process, $c < 0$.

Taking natural logarithm of both sides, we then use additive form to estimate the following parametric model:

$$y = a + XB + \sigma \epsilon$$

where y = the logarithm of persistence of IS sourcing arrangement, X = the covariate matrix (i.e., all independent variables in the model), B = regression parameters, σ = the scale parameter, and ϵ = the errors vector.

Expected Contribution

This study adds value in two ways. First, a study of the persistence of the sourcing relationship would provide an insight into the dynamics of the repetitive relationships. This will be particularly relevant considering that many network-sourcing contracts are currently strategic and long term, and require close interdependent relationships between the client and vendor. Therefore, improved understanding of the factors influencing the persistence of companies' outsourcing arrangements becomes useful in better drawing and managing outsourcing engagement and thus more profiting from IS outsourcing strategy. Second, results obtained from this research are expected to be significant to both researchers and practitioners for providing insights into the dynamics of the persistence of outsourcing relationships between clients and vendors.

References

Available upon request.