

December 2006

Structure of Service Level Agreements (SLA) in IT Outsourcing: The Construct and Its Measurement

Jahyun Goo
Florida Atlantic University

Dan Kim
Michigan State University

Bongsoon Cho
Kookmin University

Follow this and additional works at: <http://aisel.aisnet.org/amcis2006>

Recommended Citation

Goo, Jahyun; Kim, Dan; and Cho, Bongsoon, "Structure of Service Level Agreements (SLA) in IT Outsourcing: The Construct and Its Measurement" (2006). *AMCIS 2006 Proceedings*. 391.
<http://aisel.aisnet.org/amcis2006/391>

This material is brought to you by the Americas Conference on Information Systems (AMCIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in AMCIS 2006 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

Structure of Service Level Agreements (SLA) in IT Outsourcing: The Construct and Its Measurement

Jahyun Goo

Florida Atlantic University
jgoo@fau.edu

Dan J. Kim

Michigan State University
dankim@msu.edu

Bongsoon Cho

Kookmin University
bcho@kookmin.ac.kr

ABSTRACT

The increased reliance of companies on IT outsourcing has turned management attention to a set of skills of managing relationships with service providers. While practitioners proclaimed that a key to managing outsourcing relationships was with SLA, there existed very little understanding of how effectiveness and impact of SLA on IT outsourcing arrangements was measured. Using a conceptual framework for measurement development as well as contemporary statistical techniques for assessing dimensionality, this study theoretically develops and empirically tests measurement models of SLA in the context of IT outsourcing. While eleven first order constructs are identified, the results suggest that SLA can be operationalized as three second order factor models. The results of the study are framed as a tool for benchmarking SLA structuring efforts as well as a foundation for the future study of IT outsourcing relationships from a contractual perspective.

Keywords

SLA, IT outsourcing, measurement, second-order construct

INTRODUCTION

While there are two prevailing perspectives that underlie most research in interorganizational relationship (IOR) management: a 'contract based economic view' and an 'social exchange based relational view,' most research in IT outsourcing has leaned toward the latter that focuses primarily on the process and behavior based on trust and societal enforcement, leaving the role of the contract in the context of managing outsourcing relationships largely ignored. Prior research on IOR has argued that formal contracts and relational governance function as complements (Poppo and Zenger 2002). For example, interorganizational literature suggests the contract as a way to foster, maintain and assure favorable relationships because in many IOR, contracts serve primarily to define the tone and nature of the relationship (Hui and Beath 2002a). Then, continuity and cooperation encouraged by relational governance may generate refinements in the formal contract that further support greater relational cooperation (Poppo et al. 2002).

A recent practitioner report reveals that many firms have failed to build a skills base to meet the new challenge of managing their outsourcing environment (Scardino 2002). In this regard, practitioners often proclaimed that the key to managing outsourcing relationships was with Service Level Agreements (SLA) (Mingay and Govekar 2002). Although many studies within IT outsourcing have provided anecdotal evidence of the role of SLA in managing IT outsourcing relationships and achieving success (Singleton McLean and Altman 1988b), there is no empirical validation of effectiveness and impact of SLA on IT outsourcing arrangements, a serious omission in the development of IT outsourcing knowledge. Thus, manifesting the factor structure of SLA that a researcher could use to examine the effect of those contractual elements on the management of IT outsourcing relationships and outsourcing success is called. To fill this gap, our study attempts to conceptually develop the factor structure of SLA and then empirically validate operational construct space for latent factors in the context of IT outsourcing.

IT OUTSOURCING SLA AS RELATIONAL CONTRACTS

In outsourcing, firms draft a contract that is necessary to serve as a "safety net" (Sabherwal 1999). The objective of a formal contract is to place credibly enforceable limits on the actions of each party, thereby constraining the ability of one party to extract additional rents from the other by failing to perform as agreed (Williamson 1985). However, incomplete contract theory view that bounded rationality and uncertainty prevent parties from writing detailed and complete contracts that deal with all possible contingencies (Hart 1988). Incomplete contracts focus on offering alternative ways to deal with aspects of relationships that are not easily addressed by specifying all possible contingencies *ex ante*. Thus, in practice, actual contracts

contain both complete and incomplete aspects. To address both aspects, Macneil (Macneil 1980) suggests *relational contracts* to govern the exchange process as interorganizational exchanges transpire over time. Because duties and performance are relatively complex and occur over an extended time period, the parties might not only direct much effort toward carefully defining and measuring the items of exchange. But other customized mechanisms for collaborating and resolving conflict are designed. As such, relational contract views that the basis for future collaboration may be supported by implicit and explicit agreements, trusts and planning. Indeed, these are the contractual concerns and objectives of drafting SLA in IT outsourcing, which is necessarily incomplete.

An SLA is defined as a formal written agreement developed jointly between a service recipient (SR) and a service provider (SP) that specifies a product or service to be provided at a certain level in order to meet business objectives (Singleton et al. 1988b). SLA helps to clarify responsibilities, strengthen communication, reduce conflict, and build trust. As many IT organizations have found, these benefits accrue not just when an SLA is in operation, but even as it is being established because of the power of the communication process that is at the heart of the SLA effort. Therefore, contractual elements of SLA in IT outsourcing relationships may be closely associated with the important topic of relational contracts, where Macneil (1980) characterized a relational archetype of business exchanges on twelve contractual dimensions that differentiated from traditional, arm's length business exchanges. Based on this archetype, this paper explores the factor structure of SLA that might promote cooperative relationships in the context of IT outsourcing arrangements.

RESEARCH FRAMEWORK

We used an amalgam of approaches to discover the contractual elements (or factor structure) of SLA. First, to outline a structure of SLA, MacNeil's (1980) work was utilized. It helped us to identify the eleven contractual issues that could be important in IT outsourcing relationships. Second, we identified the actual provisions used in several actual SLAs as well as SLA templates suggested by experts and mapped these out to the eleven elements of SLA identified in the first step. Next, the axial coding technique (Strauss and Corbin 1990) was employed, in which similar elements were linked together into categories. In doing so, three types of control modes, including outcome-based, behavior-based, and clan controls, were employed to provide theoretical underpinnings for this categorization (Kirsch 1997).

Underlying Themes in Common	Contractual Elements of SLA	Contractual Issues of SLA in IT Outsourcing	Provisions in Practice	Supporting References
Foundation Characteristics: • Publicizing common values, belief, philosophy within a clan • Resulting in sharing a common ideology, internalizing a set of values, and committing to a clan	Service Level Objectives	Spirit of contractual solidarity and publicity of common values, belief, philosophy between organizations to ensure performance	<ul style="list-style-type: none"> • A statement of both SR's and SP's business objectives from the engagement • A statement of overall form from the contract • A statement of expectations and responsibilities of SR and SP 	(Fitzgerald and Willcocks, 1994; Heide, 1994; Simons, 1995)
	Process Ownership Plan	Number of companies taking part in some aspect of the IS portfolios when outsourced	<ul style="list-style-type: none"> • Statement of processes that are delivered via the agreement • Statement of processes directly affected by the services included in the agreement • Statement of process that are required to manage the agreement between the SR and SP • Statement of process ownership roles, authorities 	(Scardino, 2001b; Singleton, et al., 1988)
	Service Level Contents	Specification of Obligations in terms of a statement of work, the associated and required service levels, and the price to be paid into all sourcing agreements.	<ul style="list-style-type: none"> • A general description of the services required, major categories of services and specific service elements • A compilation of the most common service levels completed for each service level • Service-level target, time frame definition, quality statement, etc. 	(Anderson and Narus, 1990; Mohr and Spekman, 1994; Maurer, et al., 2001)
Change Management Characteristic: • Specific rules and procedures, which would lead to desired outcomes if followed. • Methodology that precisely articulate steps to follow to successfully respond to the contingencies to come.	Future Demand Management Plan	Planning the process and methodologies for coping with change and contingencies in a long term engagements: Agreeing to agree	<ul style="list-style-type: none"> • Joint (SR/SP) demand forecasting process • Assumptions made and process for updating the key assumptions that affect demand • Prioritization methodology for current and future demands • Process for scheduling, costing and modifying agreements 	(Grover, et al., 1996; Kern and Willcocks, 2002; Heide, 1994; Scardino, 2001)
	Anticipated Change Plan	The joint development of expectations about perceived uncertainties, especially concerned with anticipated conflicts of interest and potential trouble	<ul style="list-style-type: none"> • Clear definitions of the key categories of change • Roles, responsibilities and decision-making procedures for the SR and SP for each category of change • Top drivers for change - reviewed regularly 	(Bendor-Samuel, 1999; Fontenot and Wilson, 1997; Lee and Kim, 1999)
	Innovation Plan	Cooperative innovation, especially joint efforts at continuous performance improvement and planning	<ul style="list-style-type: none"> • Process for innovation, including implementation and prioritization • Process for technology advancements (scope improvement and technology refreshes/upgrades) • Business-measured innovation (business process improvement) 	(Matus, 2002)

Underlying Themes in Common	Contractual Elements of SLA	Contractual Issues of SLA in IT Outsourcing	Provisions in Practice	Supporting References
Change Management Characteristics:	Feedback Plan	Continuous processes for changing interfaces, approaches and attitudes toward better service delivery states within a deal based on learning by doing	<ul style="list-style-type: none"> Statement of how changes will be implemented based on measurement results The road map for an efficient feedback on the identified drawbacks Prioritization methodology for current tasks and feedbacks 	(Singleton, et al., 1988)
Governance Characteristics: <ul style="list-style-type: none"> Rewards or sanctions for meeting or missing the targets Setting and checking performance targets, interim milestones 	Communication Plan	The approach for disseminating contract related information to all of the parties involved in the relationship through scheduled interaction and communication such as formal meeting and reporting	<ul style="list-style-type: none"> Organizational reporting structure Identified communication initiatives/initiative owners Identified recipients for various communication initiatives Communication schedules & media 	(Grover, et al., 1996; Lee and Kim, 1999; Kern and Willcocks, 2002; Singleton, et al., 1988)
	Measurement Charter	Tactical measurements for calculating and reckoning of service performance as well as success metrics derived from the SR's strategic plan.	<ul style="list-style-type: none"> Statement of measurement methodology Definition of what is to be measured Definition of processes to periodically measure the defined categories Interfaces with the feedback plan 	(Maurer, 2001; Singleton, et al., 1988)
	Conflict Arbitration	Balance of power that imposes one's will on others	<ul style="list-style-type: none"> A statement of the parameters for involving the third party in discussions between the SR and SP Process descriptions to determine how the parties interact A schedule for regular interactions between the parties, and timetables for resolving issues between the SR and SP A statement of the practices and conduct rules required to preserve the independence of the independent advisor 	(Mohr and Spekman, 1994; Dwyer, et al., 1987; Anderson and Narus, 1990; Fontenot and Wilson, 1997; Lewicki and Bunker, 1996)
	Enforcement	Carrot-and-stick; sharing of benefits and burdens	<ul style="list-style-type: none"> Penalty/reward definitions and formula Conditions under which termination may occur Detailed list of all penalty assumptions (e.g., Implementation process, Reporting process, Due diligence process, HR process, Knowledge transfer) 	(Singleton, et al., 1988)

Table 1. Relational Aspects of SLA Elements Derived from the Relational Exchange Perspective (continued)

Based on the underlying theme in common, we named the categories as foundation, change management, and governance characteristics that were similar to clan, behavior-based, and outcome-based controls, respectively (c.f., (Choudhury and Sabherwal 2003). The theoretical implication of categorization is that high-order factors may capture the substantive domain of the SLA structure better than first-order constructs. It is especially meaningful when examining the mediating role of SLA between a consequent and predictor variable in IT outsourcing research although the individual elements of SLA are expected to interrelate and work together regardless of category. Table 1 summarizes the development efforts.

Characterization of SLA and Their Relevance to Theoretical Perspectives¹

Foundation characteristics

Reflecting characteristics of clan control, SLA elements under *foundation characteristics* are collectively publicizing common beliefs between organizations, which intend to build a spirit of agreement among those entities involved with its development. They set clear standards of conduct by defining what objectives the SR and SP are anticipated to deliver. The intent of the relationship must be defined so that the objectives that initially drove the creation of the relationship are at least partially understood and shared by a group of decision makers and the staff members who inherit (Koh Ang and Straub 2004; Ring and Van de Ven 1994); (Choudhury et al. 2003). Transaction cost economics (TCE) also suggest using means to create a general commitment between partners from which desirable actions evolve (Williamson 1985). Contractual elements under foundation characteristics include *service level objectives* (stating key principles and agreements between the parties), *process ownership plan* (identifying key process owners and their roles and responsibilities), and *service level contents* (specifying target service levels to be delivered, how often, to what extent, when and where).

Change Management Characteristics

Similar to behavior-based control themes (Kirsch 1997), elements under *change management characteristics* deal with the ground rules and procedures for future contingencies, which would lead to desired outcomes if followed (i.e., clauses for agreeing to agree). Because the IT environment evolves rapidly and business conditions often require fast response from the

¹ Space limitations preclude a complete discussion of each SLA element and its theoretical perspectives in this paper, which is available upon request.

SP to modify current services or deliver new services, a change management plan is critical in SLA. Previous research in IT outsourcing called for investigation of the possibility that specifications need to be allowed to evolve over time for highly uncertain or unstructured tasks (Choudhury et al. 2003). As noted by Williamson (Williamson 1996), TCE concedes that comprehensive contracting is not a feasible option (by reason of bounded rationality), yet it maintains that many economic agents have the capacity to learn and to look ahead, perceive hazards, and factor these back into the contractual relation, thereafter to devise responsive institutions. In effect, limited but intentional, rationality is translated into incomplete but farsighted contracting. Thus, plans such as future demand management, anticipated change, innovation, and feedback, seek to ensure that the SP continues to deliver valuable inputs to the SR and that the SR/SP relationships remain close although service level delineations may become unrealistic in situations of increasing uncertainty. Contractual elements under change management characteristics include *future demand management plan* (specifies the processes that will be used to manage the implementation of new or modified services), *anticipated change plan* (articulating that the right processes, people and tools are in place to enable change to meet ongoing demands), *innovation plan* (identifying the structure and process for introducing new innovations that is synchronized with enforcement plans), and *feedback plan* (documenting the feedback processes and forming the road map for an efficient adjustment by identifying all affected areas and resources).

Governance Characteristics

Similar to the outcome-based control mode (Kirsch 1997), *governance characteristics* provide a way to manage the relationships through a clear statement of the measurements, conflict arbitration, penalty and rewards and communication channel and method. Thus, the elements in this category set and continually assess the value that the relationship is generating for the various stakeholders. Following the premise of TCE, as exchange hazards rise, contractual safeguards include provisions and administrative procedures aimed at dispute prevention and resolution and the distribution of costs and benefits under various future contingencies (Williamson 1985). Moreover, IOR literature documents the existence of formal systems for conflict resolution relying on two way communication and joint problem solving (Deutsch 1973). Contractual elements under governance characteristics include *communication plan* (documenting communication processes to facilitate consistent knowledge exchange), *measurement charter* (specifying tactical measures of service performance), *conflict arbitration plan* (stating the parameters and conduct rules for involving a third party for resolving issues), *enforcement plan* (states appropriate incentives and penalties based on performance).

METHODOLOGY

Instrument Development

Characterization of the elements of SLA provided a theoretical basis for conceptualizing measurement models of SLA. This work demonstrates that SLA of IT outsourcing seems to be a complex system of interrelated constructs. It suggests that multiple, interrelated contractual elements, which are themselves measured by multiple indicators, are more likely to capture rationalism of SLA in IT outsourcing than all-encompassing scale items. Given the ground work of characterization, all constructs in the survey were measured using multi-item scales.

Three stages of the instrument design were performed to develop a set of items to operationalize the SLA constructs: (1) item creation, (Hui and Beath) scale development, and (3) instrument testing. Contractual clauses mapped out to the related contractual factors of SLA identified in the conceptualization were used as a basis for item creation (see Table 1). In this process, the content validity of the instrument was examined by a panel of SLA experts to check if the questionnaire items captured the different contractual factors of SLA identified in this study. Next, a Likert scale was developed ranging from (1) "not at all" to (7) "very extensively" to determine respondents' perception regarding the extent to which the SLA has the particular feature. Finally, the survey was pilot tested with seven local organizations that had implemented SLA in their outsourcing contracts. After analyzing the pilot responses, a number of minor revisions were made to the questionnaires, such as term clarification, question reordering, and removing instructions that enhance the face validity of the items. After this process, a final set of thirty-three items representing eleven different elements of SLA were presented to the respondents (see Appendix A).

Data Collection

The current study utilized a "key informants" methodology for data collection, a method that relies on a selected set of members to provide information about a social setting (Venkatraman 1989). This methodology has been popular within empirical IS studies. Informants are not chosen at random; rather, they are chosen because they possess special qualifications such as status, experience, or specialized knowledge. In survey research, targeted respondents assume the role of a key informant and provide information on an aggregated unit of analysis (a single contract in this study) by reporting on group or organizational properties rather than personal attitudes and perception. However, in the absence of a strategy to obtain accurate data, results can be confounding, leading to erroneous conclusions (Huber and Power 1985). A particularly

damaging confound in utilizing a key informant is a lack of knowledge by the respondent. Therefore, within the context of this study, it was important to identify organizations that actively engaged in IT outsourcing, implemented through SLA with an IT vendor and to identify respondents within those organizations who were emotionally involved with, and most knowledgeable about, the activity. With this in mind, pre-recruiting calls were made to organizations in the attendee list of a national outsourcing conference in South Korea. We determined which organizations undertook IT outsourcing through SLA within the last five years, the level in the organizational hierarchy where most of the SLA management was concentrated, and the organizational member most knowledgeable about, and with the highest amount of vested interest in outsourcing management using SLA.

One hundred fifty professionals from the list agreed to participate in the survey or directed us to key informants involved in IT outsourcing arrangements using SLA. E-mails containing the URL that linked to the web-based online survey instrument were sent to 150 key informants. To increase the response rate, the respondents were offered financial incentives as well as a report that summarized the results of the study. Of the 150 participants who agreed, 92 (61.3%) completed responses. Although some preliminary steps were taken to ensure appropriate selection of key informants, a formal check was administered as part of the questionnaire (Kumar Stern and Anderson 1993). Specifically, two items regarding key informant quality were used to assess the informant’s knowledge about the SLA chosen and his or her involvement with IT outsourcing arrangements, on a seven-point scale. The mean score for informant quality for each item was 5.60 and 5.80 out of 7, respectively, indicating that respondents were appropriate, thus all responses were retained. To assess potential threats of nonresponse bias, the respondent and nonrespondent firms were compared with respect to sales and the number of employees. No significant differences were found at the significance level of 0.05.

General procedures for assessing measurement models within the realm of CFA suggest that each of the measured factors be modeled in isolation and then as a collective network (Bollen 1989). After assessing each construct, we estimated three separate confirmatory analysis models as collective networks: 1) foundation, 2) change management, and 3) governance. Proceeding in this manner provides the fullest evidence of measurement efficacy and also reduces the likelihood of confounds in full structural modeling which may arise due to excessive error in measurement (Anderson and Gerbing 1988). Working within this context, AMOS version 5 was utilized as the analytical tool for testing statistical estimation of the measurement and structural equation models discussed in the following.

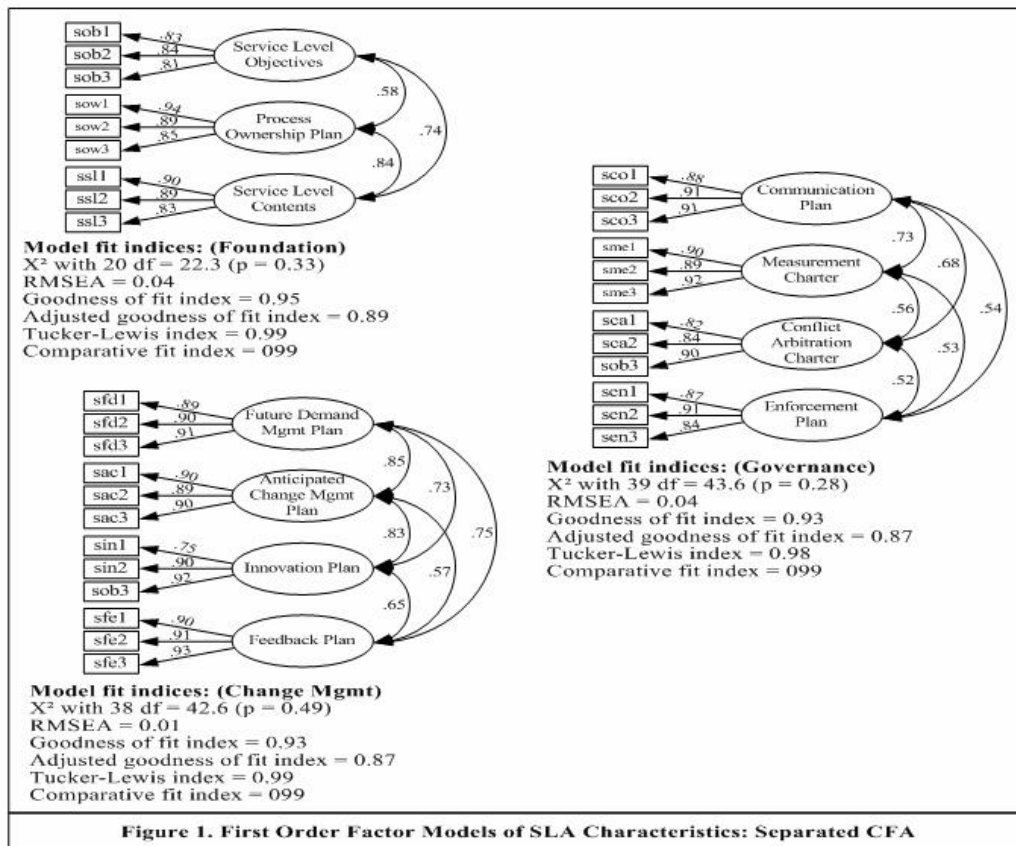


Figure 1. First Order Factor Models of SLA Characteristics: Separated CFA

All the necessary steps in the measurement model validation and reliability assessment were conducted following the validation heuristics recommended for SEM (Gefen Straub and Boudreau 2000). The analysis resulted in a converged, proper solution with a low χ^2 per degree of freedom and a good fit as indicated by all the listed fit indices (see Figure 1 and Appendix A). Statistical evidence of both convergent validity and unidimensionality were also checked through high and significant factor loadings as well as low residuals between the observed and implied covariance matrices. While the confirmatory factor analysis showed no items with either low loadings (<0.50) or high cross-loadings (>0.5), the initial model was found to have poor model fit. Refinements were made to the item error correlations using high standardized residuals and high modification indices as a guide (Kline 1998). In this process, extreme caution was exercised so that modified model could not be capitalizing on "chance" rather than reflecting true sources of variation in the observed covariance matrix. Collectively, the results from reliability, average variance extracted, factor loadings, and t-values (see Table 2) suggest that the indicators account for a large portion of the variance of the corresponding latent constructs and therefore provide support for the convergent validity of the measures (Bollen 1989; Gefen et al., 2000).

Constructs	# of Items	Composite Reliability ^A	Average Variance Extracted	Loadings (t-Statistics) [*]
Service Level Objectives	3	0.87	0.69	0.83 (19.01), 0.84 (17.33), 0.81 (12.47)
Process Ownership Plan	3	0.92	0.80	0.94 (62.93), 0.89 (32.61), 0.85 (22.68)
Service Level Contents	3	0.91	0.77	0.90 (50.49), 0.89 (35.26), 0.83 (20.31)
Future Demand Mgmt Plan	3	0.93	0.81	0.89 (35.81), 0.90 (37.28), 0.91 (39.86)
Anticipated Change Plan	3	0.92	0.80	0.90 (42.75), 0.89 (29.37), 0.90 (35.02)
Innovation Plan	3	0.90	0.75	0.75 (8.94), 0.90 (37.87), 0.92 (52.41)
Feedback Plan	3	0.94	0.84	0.90 (43.50), 0.91 (19.15), 0.93 (52.56)
Communication Plan	3	0.93	0.81	0.88 (29.53), 0.91 (29.34), 0.91 (43.10)
Measurement charter	3	0.93	0.82	0.90 (37.49), 0.89 (33.16), 0.92 (35.83)
Conflict Arbitration charter	3	0.89	0.73	0.82 (14.18), 0.84 (28.00), 0.90 (28.37)
Enforcement Plan	3	0.91	0.76	0.87 (28.70), 0.91 (36.34), 0.84 (14.77)

^AThe composite reliability scores were calculated with the formula prescribed by Fornell and Larcker (1981).

^{*}p < .001

Table 2. The Assessment of the Measurement Models: Evidence of Convergent Validity

	SLO	POP	SLC	ACP	FDMP	IP	FP	CP	MC	CAC	EP
SLO	0.83										
POP	0.52	0.89									
SLC	0.60	0.60	0.87								
ACP	0.35	0.55	0.51	0.90							
FDMP	0.39	0.61	0.61	0.65	0.90						
IP	0.37	0.41	0.45	0.66	0.67	0.86					
FP	0.44	0.48	0.54	0.56	0.69	0.61	0.91				
CP	0.48	0.58	0.64	0.47	0.56	0.46	0.63	0.90			
MC	0.53	0.57	0.70	0.40	0.62	0.50	0.64	0.69	0.91		
CAC	0.42	0.38	0.45	0.50	0.55	0.56	0.64	0.54	0.59	0.85	
EP	0.25	0.43	0.44	0.21	0.34	0.28	0.29	0.43	0.31	0.32	0.87

Note: Bolded diagonal elements are the square root of average variance extracted (AVE).

These values should exceed the inter-construct correlations (off-diagonal elements) for adequate discriminant validity.

SLO=Service Level Objectives; POP=Process Ownership Plan; SLC=Service Level Contents; ACP=Anticipated Change Plan; FDMP=Future Demand Mgmt Plan; IP=Innovation Plan;

FP=Feedback Plan; CP=Communication Plan; MC=Measurement Charter;

CAC=Conflict Arbitration Charter; EP=Enforcement Plan

Table 3. Correlations of Latent Variables and Evidence of Discriminant Validity

Discriminant validity was assessed through confirmatory factor analytic models with every pair of latent constructs (Anderson et al. 1988). Pair-wise χ^2 difference tests were carried out requiring the estimation of 110 covariance structures (55 constrained and 55 unconstrained) and evaluation of the χ^2 differences². In order to establish discriminant validity, the χ^2 value of the unconstrained model must be significantly lower than that of the constrained model. In addition, for satisfactory discriminant validity, the square root of AVE from the construct should be greater than the variance shared between the construct and other constructs in the model. Table 3 lists the correlation matrix, with correlations among constructs and the square root of AVE on the diagonal. Both tables provide strong evidence of discriminant validity.

EVALUATING A COVARIATION MODEL OF SLA

As conceptualized, the factor structure of SLA bears a higher-order phenomenon evidenced through high performance of the constructs across three characteristics. As shown in Table 3, correlations among the cluster of elements (or constructs) associated with each characteristic are statistically significant and of high magnitude, suggesting the existence of such a structure. However, the reported correlations are not a rigorous test of such effects. Rather, a second-order factor modeling perspective can capture these correlations and explain them using a higher order construct, an integrative latent representation of SLA. In essence, this structure is expected to resemble a factor model with correlations among the first-order constructs (constructs classified to each characteristics) governed by one of three second-order factors: *foundation*, *change management*, and *governance characteristics*. The efficacy of such a structure can be tested using a comparative methodology for higher-order factor models (Marsh and Hocevar 1985).

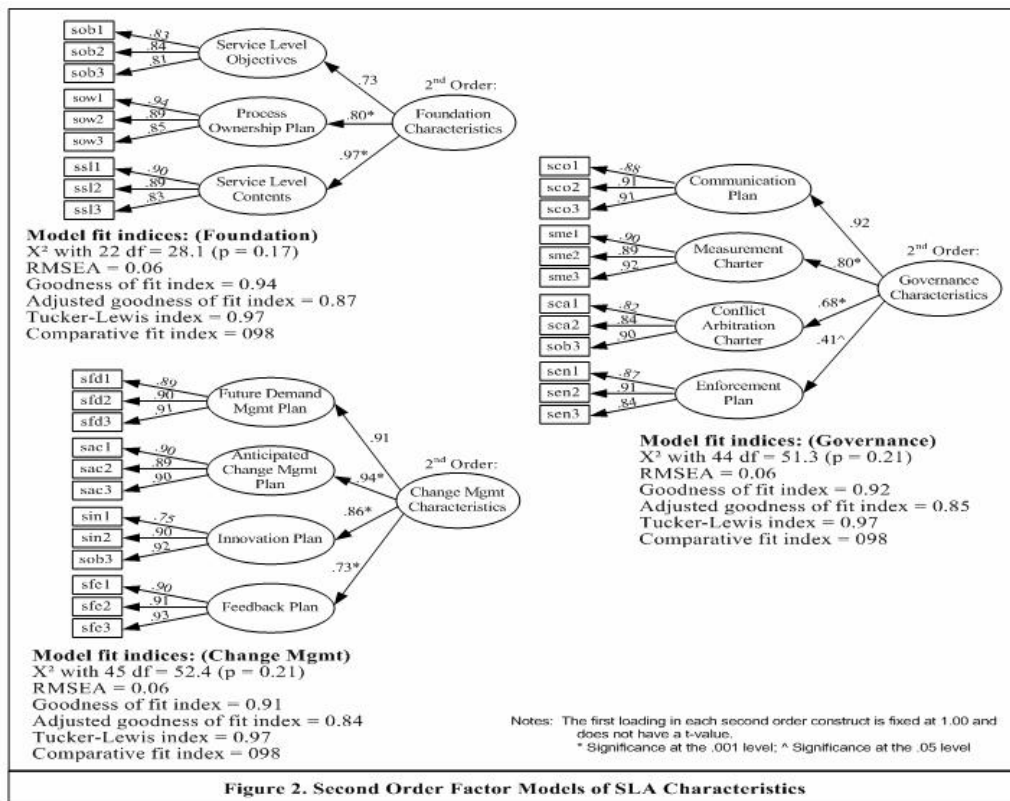


Figure 2. Second Order Factor Models of SLA Characteristics

The baseline model for testing the existence of a second-order factor implies that a set of contract elements (constructs) are associated, but not governed, by a common latent phenomenon, as illustrated in Figure 2. For example, the baseline model of foundation characteristics implies that service level objectives, process ownership plan, and service level contents are associated, but not governed, by a common latent factor, foundation characteristics. In other words, such a model suggests that these first order constructs (contract elements) are independent in their management of IT outsourcing relationships. As evident in Figure 1, validation heuristics supported good model fit for each model. Importantly, the observed item loadings and correlation estimates of Figure 1 mirror the estimates reported in Tables 2 and 3. Such results confirm the strength of measurement inherent within the scale items and the stability of the factor

² Table pertaining to the results of the test was omitted due to space limitations, which is available upon request.

solution.

The alternative model posits a second-order factor governing the correlations among a set of contract elements (first order constructs). The second order factors of these models explain the covariations among first-order factors in a more parsimonious way (i.e., one that requires fewer degrees of freedom). Therefore, even when the higher-order model is able to explain the factor covariations, the goodness-of-fit of the higher-order model can never be better than the corresponding first-order model. In this sense, the first-order model provides a target or optimum fit for the higher-order model. It has been suggested that the efficacy of second-order models be assessed through examination of the target (T) coefficient [$T = \chi^2$ (baseline model) / χ^2 (alternative model)] (Marsh et al. 1985). This coefficient has an upper bound of 1.0 with higher values implying that the relationship among first-order factors is sufficiently captured by the higher-order factor. In the present analysis, the calculated target coefficients between the baseline and second order models for *foundation*, *change management*, and *governance characteristics* are high .79, .79, and .85, respectively. This value suggests that the addition of the second-order factor does not significantly increase χ^2 . Further empirical support for acceptance of the higher-order factor structure is found in the magnitude and significance of estimated parameters. All structural equation parameters are of high magnitude except the relationship between enforcement plan and governance characteristics and exhibit significantly high t-values. These parameter estimates are analogous to the reliabilities of observed indicators to posited constructs. Therefore, their high magnitude and consistency provides strong evidence of convergent validity and unidimensionality for the second-order construct of SLA. In sum, on both theoretical and empirical grounds, the conceptualization of SLA as a multidimensional measure consisting of *foundation*, *change management*, and *governance characteristics* appears justified.

IMPLICATIONS, LIMITATIONS, AND FUTURE RESEARCH

The aim of this paper was to create a conceptual framework by surfacing the factor structure of the SLA in IT outsourcing and provide an instrument for further empirical work. The results of current work lead to two-fold implication.

Implications for Practice

Practitioners should find the scales associated with these characteristics a useful tool for rationalizing and refining the elements of SLA. In many cases, IT organizations have no structured set of SLA upon which to gauge the relationships and activities associated with IT outsourcing (Karten 2004). In other words, SLA is often developed using its own process and format, resulting in many missing essential elements. While it is impossible to create a robust contract that spells out all future contingencies, our conceptualization with eleven constituent elements dramatizes the multidimensionality of exchange. In practice, more than eleven elements may or may not be required. However, the value of focusing on these elements will be reflected by relationships that are more efficiently administered, are capable of improving relationship quality, and are less likely to end in litigation or significant dissatisfaction.

Implications for Research

By developing an archetype of SLA and their operationalized measurement items here, this provides a foundation for the future study of IT outsourcing relationships from a contractual perspective. This study categorized eleven contractual elements into three substantive dimensions including foundation, change management, and governance characteristics. The substantive constructs might provide not only parsimonious structure of SLA but also meaningful insights regarding which characteristics of SLA should be emphasized in its structuration to nurture different relationships. For example, for the development of relationship-specific systems and applications over the years, SLA structure that emphasizes both foundation characteristics and governance characteristics could be desired because they supposedly foster trust relationships between both parties and lure the SP that is undertaking the risks inherent in the relationship-specific investment. If this is confirmed through future studies, then it can lead practitioners to a more appropriate development of outsourcing relationships with different intents.

Limitations

This research has attempted to bring a theoretical and operational definition to a complex contractual context. Such ambitious endeavors contain inherent limitations. Perhaps the most significant potential limitation of the present study is the scope of developed constructs for SLA. No claim is made to have captured every aspect of these complex phenomena. To its credit, the research design has incorporated multiple rounds of theory building through literature review, actual contract benchmarking, and expert opinion. In addition, a rigorous methodological approach of theory testing has been adopted that confirms the adequacy of measurement. However, it is possible that other characteristics of SLA exist but are not conceptualized in the presented models.

Another potential limitation concerned the nature of the sample utilized in this analysis. The survey in this study was aimed

at organizations that implemented IT outsourcing through SLA, and senior executives with vested interest in SLA outcomes. Although the utilized sampling frame has been widely used in IS research and contains organizations which likely participate in the activity of interest, no claim of external validity for this study's findings was made. These findings could only be generalized to populations of firms within the sampling frame. The firms within the sampling frame were the entities of most interest in IT outsourcing because of their current or past involvement. However, the sample was limited to Korean domestic organizations and was selected from the attendee list of an outsourcing conference. Therefore, generalizing the observed structure of SLA to organizations of other nations or beyond the sampling frame may be problematic.

In addition to sampling frame, sample size may represent a limiting aspect of this research. In general, it is recommended that five data points be collected for every estimated parameter in a structural equation model (Hair 1998). To meet this scholarly recommendation, we estimated a separate model for each latent construct (Bollen 1989), but complex models (many indicators, many factors) such as the ones depicted in Figures 1 and 2 may require even larger sample sizes. In general, when models are complex and samples are small, the hypothesized model will often be rejected. Given the consistent convergence across all estimated models and the overwhelming empirical support for each of the models, limitations attributable to sample size did not seem particularly threatening in this analysis. However, their potential effect on measures of fit should be acknowledged in similar research contexts.

Finally, true confirmation of theoretical models is best obtained through model re-estimation on an independent sample. Due to the sophistication of SLA structure in terms of number of indicators and factor complexity, model re-estimation was not feasible. Therefore, while the findings seem strong in terms of content and construct validity, the results of this study must be viewed as preliminary and in need of further confirmation.

In sum, as an extension of past studies emphasizing the importance of the contract (Kern et al. 2002), we viewed SLA as a relational contract that provides the foundation of the outsourcing relationship. However, no claim is made in any way that the SLA is a panacea nor does it ensure successful relations. Instead, the SLA is about getting the foundations right. As Granovetter (Granovetter 1985) points out, structural arrangements affected psychological relationships and related behaviors. So in outsourcing, the relationship issue can be affected by the structure of the SLA, and the workability of SLA can be affected by a psychological relationship that evolves over time. Thus, future research is encouraged to examine the association between relational SLA and the factors of psychological relationship and relational quality.

REFERENCES

1. Anderson, J.C., and Gerbing, D.W. "Structural Equation Modeling in Practice: A Review and Recommended Two-Step Approach," *Psychological Bulletin* (103:3) 1988, pp 411-423.
2. Anderson, J.C., and Narus, J.A. "A model of distributor firm and manufacturer firm working relationship," *Journal of Marketing* (54) 1990, pp 42-48.
3. Bendor-Samuel, P. "Crafting a Better Outsourcing Contract," White Paper, Everest Group, Inc.
4. Bollen, K.A. *Structural Equations with Latent Variables* John Wiley and Sons, New York, 1989.
5. Choudhury, V., and Sabherwal, R. "Portfolios of Control in Outsourced Software Development Project," *Information Systems Research* (14:3) 2003, pp 291-341.
6. Deutsch, M. *The Resolution of Conflict: Constructive and Destructive Processes* Yale University Press, 1973.
7. Dwyer, F.R., Schurr, P.H., and Oh, S. "Developing Buyer-Seller Relationships," *Journal of Marketing* (51:April) 1987, pp 11-27.
8. Fitzgerald, G., and Willcocks, L. "Contracts and Partnerships in the Outsourcing of IS," Proceedings of the Fifteenth International Conference on Information Systems, 1994, pp. 91-98.
9. Fontenot, R.J., and Wilson, E.J. "Relational exchange: A review of selected models for a prediction matrix of relationship activities," *Journal of Business Research* (39:1) 1997, pp 5-12.
10. Gefen, D., Straub, D.W., and Boudreau, M.-C. "Structural Equation Modeling and Regression: Guidelines for Research Practice," *Communications of the AIS* (4:7) 2000.
11. Granovetter, M. "Economic Action and Social Structure," *American Journal of Sociology* (91) 1985.
12. Grover, V., Cheon, M.J., and Teng, J.T.C. "The Effect of Service Quality and Partnership on the Outsourcing of Information Systems Functions," *Journal of Management Information Systems* (12:4) 1996, pp 89-116.
13. Hair, J.F. *Multivariate Data Analysis*, (5th ed.) Prentice Hall, Upper Saddle River, N.J., 1998, pp. xx, 730, I712.
14. Hart, O. "Incomplet Contracts and the Theory of the Firm," *Journal of Law, Economics, and Organization* (4:1) 1988, pp 119-139.
15. Heide, J.B. "Interorganizational governance in marketing channels," *Journal of Marketing* (58:1) 1994, pp 71-85.
16. Huber, G.P., and Power, D.J. "Research Notes and Communications Retrospective Reports of Strategic-Level Managers: Guidelines for Increasing Their Accuracy," *Strategic Management Journal* (6) 1985, pp 171-180.

17. Hui, P.P., and Beath, C.M. "The IT Sourcing Process: A Framework for Research," University of Texas, Austin, 2002a.
18. Hui, P.P., and Beath, C.M.i., 2002. "The IT Sourcing Process: A Framework for Research," University of Texas, Austin, 2002b.
19. Karten, N. "With Service Level Agreements, Less Is More," *Information Systems Management* (21:4) 2004, pp 43-44.
20. Kern, T., and Willcocks, L. "Exploring relationships in information technology outsourcing: The interaction approach," *European Journal of Information Systems* (11:1) 2002, pp 3-19.
21. Kirsch, L.J. "Portfolios of Control Modes and IS Project Management," *Information Systems Research* (8:3) 1997, pp 215-239.
22. Kline, R.B. *Principles and Practice of Structural Equation Modeling* The Guilford Press, New York, 1998.
23. Koh, C., Ang, S., and Straub, D.W. "IT Outsourcing Success: A Psychological Contract Perspective," *Information Systems Research* (15:4) 2004, pp 356-373.
24. Kumar, N., Stern, L.N., and Anderson, J.C. "Conducting Interorganizational Research Using Key Informants," *Academy of Management Journal* (36:6) 1993, p 1633-1651.
25. Lee, J.-N., and Kim, Y.-G. "Effect of partnership quality on IS outsourcing: Conceptual framework and empirical validation," *Journal of Management Information Systems* (15:4) 1999, pp 29-61.
26. Lewicki, R.J., and Bunker, B.B. "Developing and Maintaining Trust in Work Relationships," in: *Trust in Organizations: Frontiers of Theory and Research*, Sage Publications, Thousand Oaks, CA, 1996, pp. 114-139.
27. Macneil, I.R. *The New Social Contract, an Inquiry Into Modern Contractual Relations* Yale University Press, New Heaven, 1980.
28. Marsh, H.W., and Hocevar, D. "Application of Confirmatory Factor Analysis to the Study of Self-concept: First and Higher Order Factor Models and Their Invariance Across Groups," *Psychological Bulletin* (97:3) 1985, pp 562-582.
29. Matlus, R.T. "Developing and Negotiating 'Win-Win' Sourcing Deals," K-18-3658.
30. Maurer, W. "IT Services Contracts -- Measurement Charter," COM-14-3620.
31. Mingay, S., and Govekar, M. "ITIL's Service-Level Management Strength Is in Integration," TG-15-3491, Gartner Group.
32. Mohr, J., and Spekman, R. "Characteristics of partnership success: Partnership attributes, communication behavior, and conflict resolution techniques," *Strategic Management Journal* (15:2) 1994, pp 135-152.
33. Poppo, L., and Zenger, T. "Do Formal Contracts and Relational Governance Function as Substitutes or Complements?" *Strategic Management Journal* (23:8) 2002, pp 707-725.
34. Ring, P., and Van de Ven, A. "Developmental Processes of Cooperative Interorganizational Relationships," *Academy of Management Review* (19:1) 1994, pp 90-118.
35. Sabherwal, R. "The Role of Trust in Outsourced IS Development Projects," *Communications of the ACM* (42:2) 1999, pp 80-86.
36. Scardino, L. "IT Services Contracts -- Process Ownership Plan," COM-14-2876, Gartner Group.
37. Scardino, L. "Managing Your Multisourced Environment," COM-15-8098, Gartner Group.
38. Singleton, J.P., McLean, E.R., and Altman, E.N. "Measuring Information Systems Performance: Experience with Service Level Agreements," *MIS Quarterly* (12:2) 1988a, pp 325-337.
39. Singleton, J.P., McLean, E.R., and Altman, E.N. "Measuring Information Systems Performance: Experience with the Management by Results System at Security Pacific Bank," *MIS Quarterly* (12:2) 1988b, pp 325-337.
40. Strauss, A., and Corbin, J. *Basics of Qualitative Research: Grounded Theory Procedures and Techniques* Sage Publications, Newbury Park, CA, 1990.
41. Venkatraman, N. "Strategic Orientation of Business Enterprises: The Construct, Dimensionality, and Measurement," *Management Science* (35:8) 1989, pp 942-962.
42. Williamson, O.E. *The Economic Institutions of Capitalism* The Free Press, New York, 1985.
43. Williamson, O.E. *The Mechanisms of Governance* Oxford University Press, New York, NY, 1996.

<Appendix A> Operationalization of SLA: Measurement Items	
Constructs	Items
Service Level Objectives	To what extent are the following statements addressed for specifying service level objectives?
	A statement of the SR's management and organizational structure expectations at the end of the contract, once the relationship is fully operational
	A statement of innovation expectations and capabilities of the Service Provider
Process Ownership Plan	To what extent are the following statements addressed for specifying process ownership?
	Statement of process ownership roles and responsibilities
	Inventory of processes that are required to manage the agreements between the SR and SP
Service Level Contents	To what extent are the following statements addressed for specifying service level/quality?
	A statement of the key business measurements required by the SR
	Established service-level/quality targets
Future Demand Management Plan	To what extent are the following statements addressed for specifying the process dealing with future demands?
	Processes for scheduling, costing and modifying agreements with new demand
	The processes used to obtain end-user feedback on the SP's delivery of services that are provisioned to meet new demand
Anticipated Change Management Plan	To what extent are the following statements addressed for specifying anticipated changes in the course of relationship?
	Relevant technology, business and industry drivers for change
	Roles, responsibilities and decision-making procedures of the SR and SP for each category of change
Innovation Plan	To what extent are the following statements addressed for planning of innovation?
	Process for innovation, including implementation and prioritization
	Process for business improvement and technology advancements (e.g., scope improvement and technology refreshes/upgrades)
Feedback Plan	To what extent are the following statements specified and addressed for guiding the feedback and the sequences of the measurements?
	Statement of how changes will be implemented based on measurement results
	The road map for an efficient feedback on the identified drawbacks
Communication Plan	To what extent are the following statements specified and addressed for ensuring communication flow?
	Statement of the communication policy
	Organizational reporting structure
Measurement Charter	To what extent are the following statements specified and addressed for determining how well the services are provided?
	Statement of measurement methodology
	Definition of what is to be measured (e.g., price and service benchmarking clause, customer satisfaction, Definition of processes to periodically measure the defined categories
Conflict Arbitration Charter	To what extent are the following statements specified and addressed for facilitating dialog and trust to work out possible conflicts?
	A statement of the parameters for involving the third party in discussions between the SR and SP
	A schedule for regular interactions between the parties, and timetables for resolving issues between the SR and
Enforcement Plan	To what extent are the following statements addressed for enforcing the service agreements?
	Penalty definitions and formula
	Conditions under which termination may occur
	Statement of exit responsibilities

Model fit indices:

Goodness of fit (X²) with 380 degrees of freedom = 491.7 (p = 0.00)
 Root mean square error of approximation (RMSEA) = 0.57; Goodness of fit Index = 0.87
 Adjusted goodness of fit index = 0.84; Tucker-Lewis index = 0.94; Comparative fit index = 0.95