Determinants of Inter-Firm Contractual Relations: A Case of Indian Software Industry

Rathinam, Francis

University of Hyderabad

2004

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Francis Xavier R

ABSTRACT

We analyze the impediments to inter-firm contractual relations, existing formal and informal ways of getting around them, especially the role of reputation and trust in mitigating the conflict of interest between the firms. We study it in the context of Indian IT industry. Contract design is specified as a function of reputation (age, repeated contracts and quality certification), asset specificity, complexity and uncertainty. We test the likelihood of observing Time & Material contract, a better propertied contract in the face of uncertainty. Empirical evidence conforms the propositions posited. Reputed firms tend to get highly complicated and uncertain projects. Asset specific investments do not seem to have any implication on contract type and complexity. The results broadly hint that the firms reckon more on creating an understanding through formal quality certifications to solve pre-contractual adverse selection problems and repeated contracting to solve the problems of behavioral uncertainties rather than relying on the court.

Keywords: Transaction Cost, Inter-firm Contractual Relations, Reputation and Outsourcing, Logit models.
JEL Classification: D23, L14, L22, C35

Ph.D. Scholar, University of Hyderabad, India. Currently visiting scholar at the Institute for Law and Economics, University of Hamburg, Germany.

I. Introduction:

New Institutional Economics, particularly the tools of Transaction Cost Economics help unravel the economic rationale behind the inter-firm relations, among other organizational decisions. Inter-firm relations are determined by reconciling the relative cost of transacting within the firm, using the market and a hybrid mix of contractual relations. They adhere not only to technology but also to the available organizational modes resulting from the interaction of transactional characteristics and the external environment[1].

We, here, make an attempt to understand the nature of inter-firm relations in the Information Technology (IT) sector in India. We have chosen the IT sector for its uniqueness in terms of the kind of products it produces and services it renders. Large-scale vertical integration is uneconomical as the industry renders services that are non-core to the buyers. Moreover the spot markets cannot coordinate these transactions, as the production requires asset specific investments and also uncertainty and complexity are pervasive. Thus, contracts perform a vital role in Business Process Outsourcing (BPO) and Information Technology Enabled Services (ITES) outsourcing. In this context we test for the determinants of contract design.

The fountainhead of inefficiency in outsourcing relationships is the difficulty in providing incentives and identifying the capabilities of the agents. Finding a supplier entails both *ex ante* screening and *ex post* adaptation costs. In spite of these hazards, we witness a deluge of outsourcing deals flowing into developing countries, where there are enormous socio-cultural and legal uncertainties. To safeguard against opportunistic behavior, firms in the industry opt for specific contractual choices that could abate the expected total cost of consummating the transactions. The contractual choice that firms adopt to shield against these hazards differs with the nature of the firms, nature of the project and quality of institutions such as contract law regimes and enforcement mechanisms (Williamson, 1979). We posit that the agents would decide upon a particular type and level of complexity of contract contingent on the characteristics of the agents, project characteristics and external environment.

To carry out this empirical study we have collected data on contractual terms and conditions, project and agent characteristics from senior project managers from the firms in Technopark, Thiruvananthapuram, using both structured and semi-structured questionnaires. We have

[1] Transactional characteristics encompass frequency, complexity, uncertainty, idiosyncratic investments and asymmetric information involved in the transaction, while the external environment includes legal mechanism, enforceability of contracts and thinness of the market.

selected cases concerning complex transactions for which a close relationship between partners is necessary over a considerable period of time. Some firms have developed long-term supply relations with their clients; others have spent considerable time and money customizing formal contracts. While some appear to have done both. Using this variation in the structure of outsourcing contracts, we empirically test the relationship between contract design and its determinants.

The rest of the paper is organized as follows. Section 2 lists the determinants of contracts, and the kind of contractual problems prevalent in the IT industry. We also derive testable propositions in this section. Section 3 analyzes the survey data to see if the empirical evidence corroborates the assertion put forward at the onset. In conclusion, we explore possible extensions.

II

Determinants of Contract Design:

There are three major exchange hazards put forward by Transaction Cost Economics (TCE) that necessitate contractual safeguards, namely asset specificity in investment, complexity in measuring effort and uncertainty (Williamson, 1979). Asset-specificity is considered to play the lead role in influencing organizational choice. Asset specific investments[2] generate quasi-rent over and above the next best alternative use. When production requires massive idiosyncratic investments, some sort of assurance by both the parties to comply with the contractual agreement is indispensable. Through threats of termination of the relationship or hold up, one or both contractual parties may seek to appropriate an undue share in the quasi-rent from these specialized investments (Klein, 1988). The optimal investment will be realized only if those relationship specific investments are protected by a formal contract.

Complexity in measuring the efforts may give wrong incentives to the agent to limit their efforts towards fulfilling the contracted obligations (Monteverde and Teece, 1982). Specifying a few standard clauses of conduct like regular meetings, disclosure of documents and incentives for better performance can overcome the problem. Complex contracts that include the above-mentioned contractual clauses obviate unexpected behavioral twists by

[2] Asset specific investments are specific to a project or a line of production and therefore cannot be profitably redeployed in alternative uses. For example man-hours sunk in developing software for a buyer that cannot be sold to others is what is referred as asset specific. It is also referred as idiosyncratic investment.

providing a straightjacket of obligations to perform. Uncertainty is of two types: behavioral and quality uncertainty and uncertainty of business environment (Nooteboom, 1999). Complex contracts, by specifying the clauses and procedures of conduct facilitate negotiations that arise from technological and behavioral uncertainties.

In sum, the exchange hazards discussed above encourage more complex contracts, which check behaviors that could jeopardize the performance of a buyer-supplier relationship. Empirical works in TCE (Joskow, 1988; Klein, Crawford, and Alchian, 1978; Masten, 1996) corroborate the predicted relationship:

Proposition 1: Increase in exchange hazards such as asset specificity, complexity and uncertainty of the project encourages more complex contracts.

Asset specificity, complexity and uncertainty necessitate a strong contractual safeguard. On the other hand, when the project is subjected to uncertainty, a complex contract rendering straightjacket of obligations may be sub-optimal in some of the contingencies, thus, leave the relationship inefficient. As writing a more complete contract is prohibitively costly, there is a trade-off between writing one such contract with high costs and rigidities associated with it on the one hand, and an incomplete contract and a high expected cost of dispute resolution on the other. Economizing on the cost of contracting involves identifying capabilities (e.g. Nelson & Winter, 1982; Nooteboom, 1999) and rendering incentives to fulfill contractual obligations (e.g. Williamson, 1985). In technical terms, they are known as the problems of adverse selection and moral hazard, respectively.

In the absence of full information, the trading parties to identify capabilities and incentivize each other have to incur some amount of real expenditure. Differentiating the unscrupulous players from the more credible ones and conferring her with incentivized contract is costly and at times perilous. Number of devises employed by the agents to achieve this purpose such as making trusted relationship, quality certification etc, have been identified in the literature.

Many scholars have observed that the governance of inter-organizational exchanges involves more than formal contracts (Dyer & Singh, 1998). The critics argue that TEC, being skeptical about “trust” as a safeguard, over-emphasizes opportunism and the need for integration or strong contractual safeguards. Trust economizes on search costs and the costs of drafting and monitoring the contracts by lowering the fear of opportunism. It gives more flexibility to the relation as it does not specify rigid contractual obligations and therefore, facilitates

adaptation to unforeseeable events (Poppo, 2002). Good reputation sets the floor for mutual trust, helps identify scrupulous partners and mitigates the conflict of interest[3]. A good repute can be gained through personal characteristics such as family, kinship, religion or through institutional measures like quality certification, producer associations or it could even be gained from repeated interaction and understanding developed over a period of time.

Proposition 2: Good reputation reduces the cost of writing complex contracts.

In line with Banerjee *et al* (2000) and Arora *et al* (1999) we take quality certification[4] as a measure of reputation. Quality certification is a signal that the agent sends to his potential clients about his "type", which, apart from reducing the client's search cost, triggers the negotiation for remuneration to his "type" of agents. Thus, quality certification can be taken as a device serving the purpose of identifying technologically capable partners.

In the long run *age* serves the function of reputation as only credible players remain in the market. The duration of time that the parties have worked together – termed as *pre-relation* – helps the parties develop some relational norms and understanding (Macneil, 1978) of sharing the risks and benefits of the relation. Thus repeated contracts assuring behavioral credibility and technological capabilities measured by number of years and projects worked till date are taken as a measure of reputation.

The other typical problem in inter-firm relations is to decide on the allocation of risk among the agents and distribution of gains from trade. These interdependent problems influence the contract type as the supplier expects a higher share of return if he were to bear a huge portion of the risk associated. Whereas the typical case would turn out to be where the supplier is a small firm, and therefore likely to be risk averse and would pay a premium to pass the risk to the buyer. Given the complexity and uncertainties associated with the projects, small firms would like to get a T&M contract rather than a fixed-price contract. Time and Material

[3] The conventional wisdom of reputation enhancing commitment has its theoretical foundation in the game theoretic approach to reputation effects pioneered by Kreps and Wison (1989). Reputation effects are argued to enhance long-run pay offs even upto the first best level and in the short run leave the agents at least as well-off as she would be in the complete absence of external incentives.

[4] There are verities of quality certifications available for a IS outsourcing firm such as ISO 9000:2000, Capability Maturity Model (CMM), People Capability Maturity Model (PCMM) emphasizing the product, process quality and labor quality, respectively. But they all generate some information about the service provider, thus serve the purpose of a signaling device. So we do not treat quality certificates differently as they are assumed to serve the same purpose as far as the problem under consideration in concerned.

(T&M) contracts have excellent adaptability[5], but it does not check the problem of moral hazard, whereas a fixed-price[6] contract is rigid enough to check the problem but places the entire risk on the supplier, which may not conducive for trade when the project is complex and highly uncertain from supplier's point of view.

We propose that quality certification is necessary as a signal to separate high ability firms from the low ability firms, but it is not sufficient to identify between the scrupulous and non-scrupulous players. Thus, a Time and Material (T&M) contract that exposes the client to moral hazard problems, implores other reputation measures to identify the conscientious partner and reward him/her with the contract that is less risky and adaptable to unexpected contingencies. The age of the firm and the duration of time it has worked with the client vouch for its credibility. Thus, quality certification would solve the problem of adverse selection, whereas the age and pre-relation guard against the moral hazard problem.

Proposition 3: Quality certification is a necessary condition as it obviates pre-contractual quality uncertainty; whereas *age* and *pre-relations* are sufficient for obtaining a T&M contract as they assure good conduct of the firm.

III

Empirical Analysis:

We examine the survey data to appreciate how well the theoretical propositions posited capture the real world hazards involved in inter-firm relations. We have first looked into the descriptive evidence from the data obtained about 48 contracts from the firms in Technopark, Thiruvanthapuram, to identify the nature of the agents, projects and the contracts they device.

a) Firm Characteristics

Firm characteristics, project characteristics and the external environment in which the firms operate are the determining factors of organizational choice. Firm characteristics encompass their technical capabilities, willingness to bear risk, etc. Descriptive evidence from the survey

[5] When there is a high probability that the project cannot be so accurately defined because of its complex nature and when disputes over the stipulations in the face of unexpected contingencies would be costly, Time and Material contract gives a breathing space for the parties to accommodate the unexpected events.

[6] In a fixed-price contract, the product as well as the deadline for the project is decided. The contract may include penalty clauses for late delivery and for poor quality. In a Time-and-Materials contract, the client pays on a man-hour basis. Conventional wisdom is that fixed price contracts are best at low risk and cost plus as risk (complexity and uncertainty) increases.

is presented in table-I. Although the majority of the firms are fairly young – founded between 1989 and 2002 – we have a considerable number of old firms also in the sample.

Table I: Firm characteristics

	Mean	Mode	Std. deviation
Firm founded	1997.27	2000	3.79
Subsidiary	0.35	0	0.48
Legal Adviser	0.74	1	0.44
Legal Review	0.89	1	0.31
Had any employee with the client	0.19	0	0.39
Quality Certification	0.33	0	0.48

In our sample, business and medical transcriptions account for around 30% of total contracts observed. The rest includes legal transcriptions, networking, web designing and a range of varied sundry services. One of the notable features of Indian software industry is its seasoned human capital. Many of the local entrepreneurs have some work experience abroad and run the business with the help of established networks. However, this feature was observed in only 20% of the firms surveyed. Having quality certification is the rule of the industry, however the majority of the firms in the sample seem to not have one. One of the interesting features to be noted from the sample data is that across the size, age and specialization, firms have their own legal advisers and more than 80% of them seek legal assistance in reviewing the contract. This shows the importance of contracts and the legal requirements for better relational management in Information Services (IS) outsourcing.

b) Project Characteristics

Project characteristics or transactional characteristics are the major concern in Transaction Cost Economics (TCE), as transactions are the unit of analysis. As mentioned there are three major exchange hazards: asset specificity, complexity in measuring effort, and uncertainty (Williamson, 1979).

Asset specificity is defined as dedicated human assets, physical assets and organizational knowledge that could not be redeployed in alternative uses (Williamson, 1985). Since human capital is a critical component of BPO and ITES outsourcing services, our measurement focuses primarily on specialized human assets, such as man-hours sunk in the project specific

to the client. Man-hours dedicated are highly varied[7], but the mode being modest 400 man-hours the average firm in the sample mostly gets short duration projects.

Table II: Project characteristics

	Mean	Mode	Std. Deviation
Man-hours Spent	1874.46	400	3109.15
Complexity*	1.17	3	0.78
Uncertainty*	0.77	2	0.78
Final output well defined*	1.52	2	0.55

Note: * All are categorical variables labeled low (1), medium (2) and high (3).

The contracts in the sample tend to be more complex in nature than uncertain. High complexity of the project indicates that the contracts would be extensive in coverage to make the deal unambiguous.

To summarize, many of the firms in the sample are up and coming young ones and yet to get quality certification. However it is in their expertise, contra to our expectation the firms tend to get more complex projects if not uncertain ones. And also these projects do not have much in stake in terms of asset specific investment.

c) Contract Characteristics

A software project is a set of related tasks executed to achieve a specific objective in a given time limit by the service vendor. Software development project includes, as the popular text books in the subject suggest, the process of execution such as project specification, analysis, design, programming, test and implementation of the software and also a broad definition of the scope of the software intended to be produced etc (Pressman, 1997). A typical contract of an outsourcing relationship may involve contractual terms and stipulations on technicalities such as hardware to be used, a base software license, custom development, training, modifications, implementation, additional product components as they become available, upgrades, and annual support services. Irrespective of the type of the project, software service vendors have to give a project proposal specifying broadly an estimate of the cost and time requirements.

[7] High variation is due to medical and business transcription contracts that are continuous projects unlike the other one-shot software development projects.

Table III: Contract characteristics

	Mean	Mode	Std. Deviation
Total man-hour spent on contracting*	106.71	1**	123.39
% Spent on contracting to total man-hour spent*	0.12	1**	0.11
How detailed the contract was*	0.90	2	0.66
No of pages in the contract	5.77	5	2.20
Contract complexity*	0.58	2	0.50
Compensation package (type)#	0.48	1	0.50
Contract Execution:			
Approx. cost savings [%]	33.64	30	12.64
Cost revision	4.06	0	6.58
Man-days revised	6.63	0	10.26
Approximate total revision	5.34	0	8.42

Note: * all are categorical variables labeled low (1), medium (2) and high (3).
(1) stands for Fixed-price contract, (2) for Time & Material contract and (3) for mix contracts.
** Multiple modes exist. The smallest value is shown.

Total expenditure on contracting encompasses man-hour spent on writing the proposal, specifications and drafting the contract. Expenditure on contracting ranging from zero to 400 man-hours that constitute more than 10% of total man-hours spent in majority of the cases. Majority of the respondents felt that the contracts were, if not highly customized and complex, fairly complex and the average contract length were 5 pages.

The common compensation packages in the industry are Fixed-price contract, Time and Material contract (cost plus), and a mix of these two. A fixed price contract places a huge risk on the supplier even though it gets rid of the nominal price uncertainty. But when relative market prices change, either of the parties may suffer pecuniary losses and face adaptation costs. It stringently expects a complete performance of the services in accordance with the contract terms at a price decided upon at the commencement of the project from the service provider. A T&M contract provides more space for the parties as it provides the materials required within the decided time span and the remuneration will be the cost spent on the project plus a pre-decided rate of profit. A mixed contract, as the name suggests, is a combination of Fixed-price and T&M contracts. We observed that the firms in the sample get more of Fixed-price contracts than T&M.

Despite careful specifications, cost overruns[8] are highly frequent in the industry as the projects are highly complex and have ever changing requirements. One of the major aims of contracting is to device a course of action to share the future costs and benefits of the relation. If at all any dispute arises, even though none in the sample reported any dispute, it will be of

[8] Overruns are the difference between the estimated and actual costs, requirements remaining the same.

sharing the overrun. In more than 50% of the cases the stipulations regarding either man-hour or costs were revised and the mean revision is about 5% of total expenditure[9].

d) Determinants of contract type and complexity

Simple cross tabulation of contract type and complexity according to project characteristics (Table IV) confirms our proposition that highly uncertain and complex projects are protected by T&M contracts. A Fixed price contract would be adequate as simple and well defined projects like web designing pose little threat of unexpected future contingencies, and the terms and conditions, man-hours required could more or less be unambiguously stated at the commencement of the project itself. But, given uncertainty, complexity and huge investment (man-hour) at stake, a risk-averse agent would like to get a T&M contract that gives more space to try his/her hands on risky ventures.

On the other hand, a T&M contract, from the client's perspective, is perilous in the sense that it gives chances to the agent to shirk and blame it all to external disturbances. If only the agent is proved to be scrupulous, tested and trusted, the clients will settle for a T&M contract. Thus highly complex and uncertain projects are, as suggested in the literature, vastly reserved for reputed, well-established firms. Man-hours spent i.e. asset specific investments involved in the project, one of the determinants of inter-firm relations, does not seem to have any correlation with contract type and complexity.

Table IV: Distribution of project characteristics across package type and complexity of contracts

		Package		Complexity of the contract	
		Fixed	T&M	Low	High
Uncertainty	Low	14	7	15	6
		67%	33%	71.4%	28.6%
	High	11	16	5	22
		41%	59%	18.5%	81.5%
Complexity	Low	22	7	17	12
		76%	24%	58.6%	41.4%
	High	3	16	3	16
		16%	84%	15.8%	84.2%
Man hour	Low	18	13	17	14
		58%	42%	54.8%	45.2%
	High	7	10	3	14
		41%	59%	17.6%	82.4%

[9] What is more important in inter-firm relation is how these disputes over cost overruns are solved and ultimately who bears the cost. But many of our respondents were very reluctant to give any information on cost overrun sharing and disputes associated with it.

The second kind of classification of contracts is according to the complexity of the terms and stipulations used in the contracts. Writing a complex contract is costly, but given uncertainty and complexity of the projects, contracts have to be complex i.e. complete enough to include all the relevant conditions and rules of sharing unambiguously. As expected, higher the complexity of the project, higher the uncertainty and man-hour sunk in the relation, more complex the contracts tend to be.

One of the informal ways of economizing on the cost of writing a complex contract, as outlined at the onset, is to develop some understanding with the partner or gather relevant information about the partner's technological and behavioral traits. Creating and nurturing reputation is one among them. Reputation is measured in terms of their age, quality certifications, and previous relations with the client.

Table V: Reputation variables

	Mean	Mode	Std. Deviation
Quality Certification*	0.33	0	0.48
NASSCOM Membership*	0.08	0	0.28
Age	1997	2000	0.38
No. of previous projects	0.83	0	1.28
How old your relationship [years]	0.63	0	0.79

Note: * Both are categorical variables labeled no (1), yes (2)

Given the nature of the transaction in the IT sector the major concern is quality of the services outsourced. Indian software companies relentlessly aspire to acquire the credibility in the international market through highest standards of quality assurance certifications like ISO 9000 and CMMs, thereby gaining an advantage as credible service providers. Our sample supports this, as older firms and firms with either ISO or CMM certification get highly complicated and uncertain projects wherein they often experiment as they proceed.

Table VI: Distribution by reputation across package type and complexity of contracts

		Package		Complexity of the contract	
		Fixed	T&M	Low	High
Previous relations with the client	New client	14	6	7	13
		70%	30%	35.0%	65.0%
	Old client	11	17	13	15
		39%	61%	46.4%	53.6%
Quality Certification	No certificate	22	10	17	15
		69%	31%	53.1%	46.9%
	ISO 9001/CMM	3	13	3	13
		19%	81%	18.8%	81.3%
YEAR	New	20	5	14	11
		80%	20%	56.0%	44.0%
	Old	5	18	6	17
		22%	78%	26.1%	73.9%

We observed from the discussions with the senior project managers of these firms that they did place importance on quality certifications in communicating their quality to their clients as first hand information. It does seem to work, as the ISO/CMM firms get more of T&M contracts, although our data do not show that ISO/CMM firms manage to reduce the cost of writing complicated contracts. A mere quality certification assures the capabilities, but leaves the behavioral uncertainties untackled.

Regression Results:

As proposed in the literature we first estimated the determinants of contract complexity given the project characteristics such as *man-hour spent, complexity* and *uncertainty*. The results seem to corroborate that high asset specificity, complexity and uncertainty require highly pre-emptive, complex contracts. Our results are consistent with the empirical findings of earlier studies (Masten, 1996).

Table VII: Determinants of contract complexity

VARIABLES	MODELS						
	1	2	3	4	5	6	7
CONSTANT	1.18*	0.91**	0.92**	0.98**	1.10*	1.21*	0.94**
UNCRETAINTY	3.37*	2.64*	2.66*	2.73*	3.34*	2.92*	2.67*
COMPLXITY	1.38	2.56*	2.69*	1.81**	0.83	2.78*	2.59*
MAN HOUR	2.03**	1.03	0.93	1.64	1.15	1.18	1.12
PRE-RELATION	-1.67	-	-0.82	-	-	-	-
YEAR	2.50**	-	-	1.68**	-	-	-
CETRIFICATE	1.02	-	-	-	2.55	-	-
RELATION*YEAR	-	-	-	-	-	-2.3	-
RELATION* CETRIFICATE	-	-	-	-	-	-	-0.55
-2LL	33.38	39.92	38.89	37.12	37.75	38.35	39.81
CS R^2	0.48	0.41	0.42	0.44	0.44	0.43	0.41

* significant at the 0.05 level or better.
** significant at the 0.10 level.
-2LL is -2 Log likelihood
CS R^2 is Cox & Snell R^2

Our second proposition is that the firms with high reputation tend to economize on writing stringent, intricate contract vis-à-vis non-reputed firms. The results of our prime model hardly extend any support to our propositions put forward as *age* and *certificate* have wrong sign while all three of them including *pre-relation* turn out to be statistically insignificant even at higher levels of significance. Suspecting multicolinearity among the reputation variables we tried to quantify the impact of each of them separately on contract complexity given the project characteristics. Here too except *pre-relation* the other two have negative signs and none seem to be statistically significant. When we introduced the interactive term of reputation variables, especially *relation* by *age* and *pre-relation* by *certificate,* we got the right sign and the model fit improved, indicating the importance of *pre-relation* coupled with either of the other two reputation variables. This could mean that *pre-relation* was the necessary condition, while either *age* or *certificate* would suffice to minimize the cost of contracting.

Table VIII: Determinants of contract type

VARIABLES	MODELS						
	1	2	3	4	5	6	7
CONSTANT	0.22	0.15	0.07	0.26	0.07	0.3	0.21
UNCRETAINTY	1.67	1.30**	1.54**	1.41	1.55**	1.49**	1.45**
COMPLXITY	1.14	2.93*	3.02*	1.90*	2.14**	3.10*	3.15*
MAN HOUR	1.22	-0.21	-0.15	1.32	-0.22**	-0.26	0.08
PRE-RELATION	1.53	-	1.57**	-	-	-	-
YEAR	2.66**	-	-	3.11*	-	-	-
CETRIFICATE	1.17	-	-	-	1.1	-	-
RELATION*YEAR	-	-	-	-	-	-2.24	-
RELATION* CETRIFI CATE	-	-	-	-	-		-2.49
-2LL	33.74	45.83	41.8	36.07	39.46	43.84	43.41
CS R^2	0.49	0.35	0.4	0.47	0.43	0.38	0.38

* significant at the 0.05 level or better.
** significant at the 0.10 level.
-2LL is -2 Log likelihood
CS R^2 is Cox & Snell R^2

The results of the model that include all reputation variables and project characteristics in determining contract type are not statistically significant. But when introduced individually in the model given project characteristics reputation seems to influence the type of the contract that the firm gets. Firms that are old (*age*), with *certification* and *pre-relation* are 22 times, 12 times and 5 times more likely to get T&M contract comparing to non-reputed firms respectively. On the contrary to the models of contract complexity determinants, here when the interactive terms of reputation variables are introduced, there is no notable improvement in the model fit.

IV

Conclusion:

We aimed to empirically test the determining factors of contract design governing inter-firm relations. The results fairly support the propositions put forward at the outset. The issue was to comprehend the determinants of the type of contracts or level of contract complexity. We posited that highly uncertain, complex projects with huge asset specific investment would be protected by more complex contracts. Cross tabulation results confirm that projects with high

complexity, uncertainty and man-hour sunk in the relation tend to get more complex contracts.

Writing complex contract is costly and notoriously inflexible to unexpected future contingencies. We presumed that firms would try to economize on costly contracting. The other dimension of the problem is to decide upon the type of remuneration, which could be used to incentivize the agent and check unscrupulous behavior. Time-and-Material (T&M) contracts incentivize the agent but expose the client to the perils of hold-ups. Good reputation could be a solution to both the problems discussed above. Firms with high reputation in the sample tend to economize on writing a stringent, complex contract and get T&M contracts that insure the supplier against risk.

The results confirm the significance of all the reputation variables in influencing contract design, but the relative importance of reputation measures is not clear from the sample. It indicates that even without quality certification a firm can economize on cost of contracting and get T&M contract if it has long understanding with its clients and vice versa. These measures appear to work together. *Pre-Relation* seem to have taller effects along with either of the other two variables indicating its importance in outsourcing relations. The significance of pre-relation interactive with the other two reputational variables indicate that it might be a necessary condition for economizing on complex contracting and get a better propertied contract such as T&M. Along with *Pre-Relation* both *Age* and *Certification* manifest themselves to be significant. This indicates that *Age* and *Certification* are the sufficient condition for economizing on contracting and get a T&M contract.

However, our study has not looked into the learning aspect of IS outsourcing relationships. The firms in the sample get projects where they have proven expertise and learning possibilities are fewer. When a relationship involves new learning i.e. dissemination of new technological knowledge and tacit transactional knowledge, the problem becomes even more complicated and the need for more well specified contracts to direct the course of action and the importance of reputation generation increases tremendously. A study of wider scope that includes firms, which execute even hi-end projects, would be more appropriate to look into the learning aspect of the relation.

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