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Introduction to the Organizational Economics of Inter-organizational Systems

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Abstract

This paper describes the current research approaches and directions on the organizational economics of inter-organizational systems, and suggests an alternative perspective to the conventional approach, transaction cost economics. This paper concludes with suggestions on incorporating other theories to the organizational economics researches.

Introduction

Information technology, especially Internet, has been changing the way firms do business. Information technology enabling easy and cheap connections between firms blurs the boundaries of the firm, and thus making firms cooperate and compete in an unprecedented way. Firms could enjoy the producing efficiencies of the markets and the operating efficiencies of the hierarchies at the same time.

Inter-organizational system is defined as “information and communication technology-based systems that transcend legal enterprise boundaries” (Bakos, 1991) and as yet, the studies on the organizational economics of inter-organizational systems were performed mainly from the viewpoint of transaction cost economics (Malone, Yates, and Benjamin, 1987; Clemons, Reddi, and Row, 1993; Gurbaxani and Whang, 1991; Hess and Kemerer, 1994; Zaheer and Venkatraman, 1994). Transaction cost economics provides a firm ground to investigate various aspects of inter-organizational relationship with well-defined constructs although it has some limitations caused from its rationality assumptions and market failure approach. However, to investigate into the organizational economics of inter-organizational systems all the relevant theories and propositions need to be integrated so as to come up with a comprehensive view.

We briefly review the transaction cost economics approach and suggest an alternative approach to organizational economics of inter-organizational systems. Then suggestions on incorporating other relevant theories follow.

Transaction Cost Economics

Transaction cost economics is a comparative institutional approach to economic organization, in which technology is de-emphasized in favor of organization, and the economizing action resides in the details of transactions and the mechanisms of governance. That is a predictive theory of economic organization in which a large number of apparently dissimilar phenomena are shown to be variations on a few key transaction cost economizing themes (Williamson, 1996).

In his article, Coase views the firm as a governance structure, and market as an alternative means to conduct similar transactions (Coase, 1937), which is the beginning of the transaction cost economics. Williamson has made considerable contributions to transaction cost economics by identifying types of exchanges that are more appropriately conducted within firm boundaries than within the market and by augmenting Coase's initial framework (Williamson, 1975, 1985, 1996).

Williamson's framework is based on assumptions of human behavior (bounded rationality, opportunism) and dimensions of transactions (asset specificity, uncertainty).

Bounded rationality is the assumption that decision makers have constraints on their cognitive capabilities and limits on their rationality. Although decision makers intend to act rationally this intention may be circumscribed by their limited information processing and communication ability (Simon, 1957). Williamson defines opportunism as “self-interest seeking with guile” (Williamson, 1975). It is the assumption that, given the opportunity, decision makers may seek to serve self-interests.

Asset specificity refers to the transferability of the assets that support a given transaction (Williamson, 1985). Assets with high amount of specificity represent sunk cost that has little value outside of a particular exchange relationship. Uncertainty means not-known and/or not-determined condition and classified into environmental and behavioral uncertainties. Environmental uncertainty raises an adaptation problem, which is difficulty with modifying agreements to changing circumstances. The effect of behavioral uncertainty is a performance evaluation problem, which is difficulty with verifying whether compliance with established agreements has occurred (Rindfleisch and Heide, 1997).

The basic premise of transaction cost economics is that if transaction cost is low or absent – that is cost incurred from adaptation, performance evaluation, and safeguarding cost – economic actors would favor market governance (Rindfleisch and Heide, 1997). If transaction cost is too high then, economic actors would resort to hierarchy governance. The implicit assumption behind this basic premise is that hierarchy has more operating efficiencies than market and market has more producing efficiencies than hierarchy.

Transaction cost economics has been widely applied to many inter-organizational information systems researches. Because of its nature transaction cost economics is used mostly to exploratory studies that predict the future of inter-firm relationship. Previous exploratory predictive researches focus on the changes of transaction cost with inter-organizational systems, eventual changes of inter-organizational relationship, and performance impact of the change of governance mode.

Below are some of the researches accomplished in the transaction cost economics framework.

Application of Transaction Cost Economics to Inter-organizational Systems

Malone, Yates, and Benjamin predicted market-like arrangement would prevail because electronic brokerage effect would exceed electronic integration effect (Malone, Yates, and Benjamin, 1987). Several researchers tried to predict the changes of inter-organizational relationship differently after this hypothesis was formulated.

Bakos and Brynjolfsson included non-contractible investments in their economic model and argued that market-like inter-organizational relationship would not be effective considering incentive implication of the non-contractible investments (Bakos and Brynjolfsson, 1997). Clemons, Reddi, and Row argued the move to the middle hypothesis (Clemons, Reddi, and Row, 1993). Their idea was that electronic commerce would not only reduce transaction cost but also transaction risk. Increasing market transactions due to the reduction of transaction cost means more outsourcing and also more transaction risk, and thus the relationship will move to the middle. Gurbaxani and Whang incorporating agency theory and transaction cost economics predicts the size of the firm (Gurbaxani and Whang, 1991).

Hess and Kemerer examined the electronic market hypothesis using finance industry subject in a proprietary system environment and failed to verify the electronic market hypothesis (Hess and Kemerer, 1994). Zaheer and Venkatraman tried to empirically find the determinants of electronic integration and found asset specificity, trust and size of the firm influenced the electronic integration (Zaheer and Venkatraman, 1994).

Limitations of Previous Research Based on Transaction Cost Economics

Until now, the empirical researches are rare and exploratory, theoretical, predictive studies are the usual case. That is because of the predictive nature of transaction cost economics and measurement problems of its constructs. It is not easy to develop instruments to measure such constructs as opportunism and asset specificity, and if good instruments are developed and validated, it is often limited and only applicable to the specific research context.

Information technology provides the opportunities that firms could reduce transaction costs when they interact with partner firms, and also internal transaction cost when they operate. Previous researches applied transaction cost constructs to the electronically connected environment, and the focus lied on the effects of changes of transaction cost structure on the change of governance mode. However, inter-organizational systems research should also investigate into the ex-post problems such as development of efficient control mechanisms.

To investigate into the adoption and use of inter-organizational systems and eventual changes in the inter-organizational relationship, all the relevant theories should be integrated and provide a comprehensive view. Recent development and application of information technologies write different stories from the previous researches. Many virtual organizations, electronic business communities appear and disappear just for one day. The comprehensive researches on the organizational economics of inter-organizational systems should be provided to explain the present status and to predict the future development.

Alternative Approaches

It is also important to incorporate relevant theories into the inter-organizational systems research. Transaction cost economics is just one of the theories modeling inter-organizational economics. Below are some of the theories applicable to organizational economics of inter-organizational systems research. Each theory views inter-organizational relationships from different perspective, and provides a firm ground to study organizational economics of inter-organizational systems. All the relevant theories should be incorporated into the study of inter-organizational systems for comprehensive understanding of organizational economics of inter-organizational systems.

Network Perspective

As an alternative approach to the mode of governance, network perspective could give valuable insights to the inter-organizational systems research. In his article, Powell pointed out the limitations of transaction cost approach.

It fails to capture the complex realities of exchange. The continuum view also misconstrues patterns of economic development and blinds us to the role played by reciprocity and collaboration as alternative governance mechanisms. By sticking to the twin pillars of markets and hierarchies, our attention is deflected from a diversity of organizational designs that are neither fish nor fowl, nor some mongrel hybrid, but a distinctly different from them (Powell, 1990). Table 1. summarizes some of the key differences among markets, hierarchies, and networks.

Table 1. Stylized Comparison of Forms of Economic Organization (1990, Powell)

Key Features	Forms		
	Market	Hierarchy	Network
Normative Basis	Contract Property Rights	Employment Relationship	Complementary Strength
Means of Communication	Prices	Routines	Relational
Methods of Conflict Resolution	Haggling	Administrative fiat	Norm of Reciprocity
Degree of Flexibility	High	Low	Medium
Amount of Commitment	Low	Medium to High	Medium to High
Tone or Climate	Precision, suspicion	Formal, Bureaucratic	Open-ended Reciprocity
Actor Preference or Choices	Independent	Dependent	Interdependent

Network perspective could be an alternative approach to view the inter-organizational relationships and could be a useful framework to investigate into inter-organizational information systems.

Resource Dependence

Resource dependence theory views inter-firm governance as a strategic response to conditions of

uncertainty and dependence (Pfeffer and Salancik, 1978). Few organizations are internally self-sufficient with respect to critical resources, and in this sense problems are dependence on the parties who obtained focal resources, and difficulties of decision-making based on accurate prediction caused by out of full resource control.

The main premise of resource dependence theory is that firms will seek to reduce uncertainty and manage dependence by purposely structuring their exchange relationships by means of establishing formal or semiformal links with other firms (Ulrich and Barney, 1984).

Resource dependence perspective could be an alternative approach to view the inter-organizational relationships and could be easily incorporated into the inter-organizational systems researches.

Others

Trust and commitment are important constructs explaining inter-firm relationships and trust is proved to have relations with relationship commitment. Trust is a multi-faceted construct. Rational perspective of trust centers on the calculus of self-interest and the social perspective of trust centers around moral duty. Rational perspective of trust is the obverse of opportunism, and it has been used several times in the inter-organizational systems researches that are mainly based on transaction cost economics. Transaction cost economics assumes bounded rationality, and social perspective of trust was naturally excluded from the researches. Power is also an important construct to explain inter-firm relationship.

Power/Dependence model would be useful to explain adoption and use of inter-organizational systems. Dependence is a function of the proportion of the dependent organization's need for resources or services that the other organization can provide, and the inverse proportion of the ability of any other organization to provide the same resources or services (Emerson, 1962). The more dependent a firm is to the partner, the greater the partner's power to influence a firm's decision making.

So far, inter-organizational systems research focus on the rational aspects of inter-organizational relationships and it should incorporate the social aspect of the relationships.

Conclusion

We have shown the current status of the organizational economics research of inter-organizational systems. Previous researches in this field usually applied transaction cost economics to investigate the various aspects of inter-organizational systems. We pointed out some of the limitations of transaction cost approach to this area. Also we suggested some good relevant theories to incorporate for comprehensive understanding of the inter-organizational economics of inter-organizational information systems.

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