Association for Information Systems
AIS Electronic Library (AISeL)

AMCIS 2007 Proceedings

Americas Conference on Information Systems (AMCIS)

December 2007

Network Governance in the E-Lance Economy

Robert Hooker

Carmen Lewis

Molly Wasko
Florida State University

James Worrell
Florida State University

Tom Yoon

Network Governance in the E-Lance Economy

Robert Hooker*
reh04C@fsu.edu

Carmen Lewis
ccs05f@fsu.edu

Molly Wasko
mwasko@cob.fsu.edu

James L. Worrell
jworrell@fsu.edu

Tom Yoon
tey05@cob.fsu.edu

Florida State University
College of Business
Tallahassee, Florida 32306-1110

*Authors contributed equally and are listed in alphabetical order

Abstract

To date, the primary focus of global information technology management has been to examine how technologies facilitate the coordination and completion of work within multi-national organizations and improve efficiencies across global supply chains. However, the true global potential of advanced technologies is just starting to emerge. We have discovered that global connectivity has made the world flat. The future of work, especially knowledge work, might not only occur in large, command-control organizations, but through decentralized, fluid networks where individuals largely self-organize and manage themselves, in an "e-lance" economy. The goal of this paper is to develop and test a theory of network governance specific to this new emerging e-lance economy by integrating transaction cost economics with the concepts of social controls. Transaction costs are assessed by measuring demand uncertainty (# of projects and % of projects that were awarded), human asset specificity (# of bids), task complexity (average $ amount of bids and average time projects are open) and frequency (% of repeat customers and % of repeat suppliers). Social controls are assessed by measuring reputation (average supplier reputation), collective sanctions (% of suppliers getting flamed) and restricted access (projects that restrict access to who can bid). We use three measures of e-lance success: the number of project posted to the network, the average number of bids per project, and the total dollar amount exchanges on the network. We empirically test our hypotheses using data from 14,644 projects across a two-month time frame on the website www.elance.com – separating data collection of the independent variables and dependent variables across time. In terms of social controls, restricting access by sealing bids and not

disclosing budget amounts leads to lower levels of bidding, but not disclosing budgets is associated with more projects being posted. In terms of transaction costs, higher average project values lead to more projects and more money being exchanged, but more bids leads to less monetary exchange. We find that the best predictor of e-lance success across all measures is the number of projects posted in the prior time period – thus active networks where there are lots of projects are the most successful over time.

Keywords: e-lance, network governance, transaction cost economics, social network theory

Introduction

We are experiencing the "dawn of the e-lance economy," where the falling costs of communication have made it possible for individuals to change the way they organize themselves to accomplish complex tasks (Malone and Laubacher 1998 p. 145). While there are many forms of "free-lance" or networked organizations, this research focuses on e-lance networks that are aggregations of autonomous e-lancers (free-lance employees integrating their efforts through networked ICTs) communicating and collaborating primarily through information and communication technologies to achieve common goals. Based on this definition, e-lancers are autonomous in that they do not share a common organizational affiliation, are goal-directed as they come together to accomplish a specific task, and virtual due to reliance upon computer-mediated communications to coordinate efforts. In an e-lance economy, intellectual capital can be shared regardless of location or organizational affiliation, giving companies and individuals new power to compete globally. While still largely unnoticed, there has emerged a vibrant and successful e-lance economy. For example, over $90 million in projects have been awarded on the website www.elance.com in areas such as website development, graphic design and art, and writing and translation (http://www.elance.com). The website www.guru.com has over 568,000 registered professionals in 160 different professional categories, and 30,000 registered buyers (employers), including organizations such as Hewlett Packard, IBM, Motorola and Haagen-Dazs (http://www.guru.com/about_guru.cfm). There are e-lance network sites devoted to programming (scriptlance.com, rentacoder.com, developreneurs.com), art and design (selectadesigner.com) and general free lance work (getafreelancer.com, freelanceauction.com. ifreelance.com).

However, even though we have the global technical infrastructure to create an e-lance economy, to most people, this vision of the future of work is difficult to imagine. First of all, there are significant issues related to getting people to embrace the changes necessary to succeed in an e-lance economy. People are not comfortable with the idea of abandoning the security and social stability associated with traditional organizations and striking out on their own. A major difficulty will be convincing people to embrace and migrate to an e-lance economy, where much of what they know about "doing business" no longer applies (Malone and Laubacher 1998). Second, research consistently finds that there are significant challenges associated with accomplishing complex, knowledge-intensive work through arms-length relationships and computer-mediated communication. In the e-lance economy, work is conducted by individuals who are spatially and/or temporally distant from each other, who must rely upon collaborative communication technologies to connect across space, time, and organizational boundaries. These conditions often create situations that are prone to miscommunication (Cornelius and Boos 2003).

Undertaking research on the mechanisms driving and facilitating the e-lance economy is critical for individuals, organizations and nations concerned with maintaining a competitive edge in the global economy. In this research, we focus on the role of brokers as the essential facilitators of the e-lance economy. E-lance brokers are web-based and serve as online clearinghouses for information about customers and their projects, as well as suppliers of services seeking work, allowing knowledge work to be traded like a commodity. Brokers bring together those seeking services and those who can provide those services to meet the particular needs of the customer. The purpose of this research is to examine the dynamics of e-lance networks (the broker networks set up to facilitate exchanges between customers in need of services and suppliers of those services) in order to better understand the exchange conditions under which these networks are likely to succeed, as well as the social mechanisms that are needed to govern transactions between independent, globally dispersed, electronically linked e-lancers.

Network Governance in the E-lance Economy

The first step in understanding the e-lance economy is to change our current beliefs about how economic transactions are managed. The basic economics of organizations suggests that when it is cheaper to conduct transactions within the boundaries of an organization, the organization will grow. Conversely, when it is cheaper to transact externally

with independent entities in the open market, organizations remain small or shrink (Williamson 1994). Therefore, current organizational and strategic theories focus primarily on examining internal organizational dynamics (e.g. the resource-based view of the firm), the creation of alliances between firms (e.g. research on when to merge, acquire or create alliances), and industry structure (e.g. Porter's 5 forces) to improve a firm's competitive advantage. However, the question that needs to be addressed in the e-lance economy is how transactions can be governed when the unit of the economy is the individual, not the firm. Because information can be shared instantly and inexpensively among many people regardless of location, the value of centralized decision making and expensive bureaucracies decreases – individuals can manage themselves, coordinating their efforts through electronic links with other independent parties (Friedman 2005). Yet, because knowledge-intensive work requires oftentimes extensive coordination, markets are often not the most efficient means to conduct these transactions (Nahapiet and Ghoshal 1998).

For any governance form to emerge and thrive it must address the problems of adapting, coordinating and safeguarding exchanges more efficiently than other forms of governance under certain exchange conditions (Williamson 1994). Networks provide an alternative between either relying on the open market or vertical integration for conducting business activities (Thorelli 1986). This network form of governance has been increasingly adopted since the 1980s, when organizations were faced with increasingly competitive global demands (Miles and Snow 1992). Coupled with these changing competitive demands, information and communication technologies (ICTs) are driving down the costs associated with acquiring, processing and sharing information. Effective ICTs reduce external coordination costs, leading to the ability to coordinate exchanges more effectively through market transactions with value-added partnerships (Gurbaxani and Whang 1991). The ability of ICTs to significantly reduce transaction costs, especially the costs of coordination and the costs associated with risks, facilitates the development of stable, tightly coupled relationships among actors through network forms of governance (Clemons and Row 1992).

The main difference between networks as a form of governance and firms or markets is the reliance of networks on social controls. Traditional organizational hierarchies use power structures, rewards and punishments to facilitate internal transactions. Markets rely on formal contracts to govern transactions between firms. In network governance, the use of the term "network" reflects that these organizations are characterized by organic or informal social systems. In networks, "governance" is based on ***social controls***, rather than bureaucratic structures and/or formal contractual relationships. Therefore, network governance theory is built upon the premise that the social and relational structures underlying the network create effective social controls that facilitate adapting, coordinating and safeguarding exchanges among independent entities. Network governance is a dynamic process of organizing, rather than a static entity, and the sequence of exchanges between network members create and recreate the network structure over time (Jones et al. 1997). The purpose of network governance is to enable independent entities to accomplish tasks requiring joint activity, allowing these networks to, in essence, operate as a single organization. These networks rely more on social norms and punishments than formal contracts to coordinate activities and facilitate exchanges. In the e-lance economy, given the complexities of coordinating knowledge-intensive work through networked technologies, and the greater potential for reliance on social rather than formal controls for adapting and safeguarding exchanges, the basic research question examined in this research, ***under what conditions will e-lance, as a form of network governance, provide a comparative advantage over organizations or markets, and therefore be likely to succeed?***

Exchange Conditions and Network Governance

For any governance form to emerge and thrive it must address the problems of adapting, coordinating and safeguarding exchanges more efficiently than other forms of governance (Williamson 1994). TCE focuses on the exchange conditions of: demand uncertainty, human asset specificity, and task complexity to determine which governance form is most efficient. Demand uncertainty makes vertical integration risky, and drives the need for adaptation. Customized, or asset specific exchanges create dependencies between entities, requiring high levels of coordination and rigid safeguards to protect against miscommunication and/or opportunism. Task complexity refers to the number of specialized inputs needed to create a product or service, and heightens the need for coordination. Network governance theory suggests a fourth exchange condition, frequency, is also likely to effect governance (Jones et al. 1997). Frequency refers to how often entities interact, where repeated interactions and reciprocity create shared perceptions of mutual interest and determine the amount of informal control that can be exerted over exchanges. Network governance balances the competing demands of these exchange conditions, as well as adds an additional mechanism, social controls, to facilitate and safeguard economic exchanges (Jones et al. 1997). Based on the theoretical integration of transaction costs and social controls, we predict that e-lance networks will be more successful if they can balance the need to reduce transaction costs while enabling the use of social controls to help coordinate and safeguard exchanges. By successful, we refer to networks that generate: more project postings, more suppliers bidding on projects, and higher levels of monetary exchange.

Demand uncertainty is defined as the lack of a predictable level of demand for services (Jones et al. 1997). The primary source of uncertainty in e-lance networks involves suppliers (individuals/organizations who bid on projects) being able to accurately predict potential customer demands (individuals/organizations who post projects). E-lance networks aid in

the coordination of customer needs with the services offered by suppliers by offering an open marketplace for services. E-lance networks also help create and support an efficient link between customers and suppliers, without incurring many of the costs associated with negotiating formal contracts. However, if there are few projects available to bid on, or if customers are not willing to award projects to suppliers and decide to withdraw their proposals without hiring a supplier from the network, suppliers are likely to look elsewhere to provide their services. Thus, we predict:

H1a – *Greater demand uncertainty for services in the network is negatively associated with network success.*

Human asset specificity represents the knowledge assets individuals possess in the form of specific skills or expertise regarding a particular area of interest for the firm (Miles and Snow 1992). In an e-lance network, these assets are available for exchange, and extend beyond conventional forms of hierarchical controls. The customized exchanges inherent with investments in human asset specificity create interdependencies between customers and suppliers, and intensify the need for coordination and integration (Jones et al. 1997). According to TCE, it is imprudent to think that the parties of an exchange will forgo opportunistic behavior, and act in a manner that is of pure efficiency. Without network governance, e-lancers expose themselves to various forms of opportunistic expropriation, as there would be a lack of coordination and good-faith behavior between the parties involved (Ang and Cummings 1997). People possessing the required level of human asset specificity may have higher levels of bargaining power than their customers. Thus, networks where there are more suppliers (indicating less human asset specificity) are more likely to attract customers in need of services and more likely to succeed.

H1b – *Greater human asset specificity in the network is negatively associated with network success.*

Complex tasks require greater levels of coordination (Williamson 1994). Task complexity refers to the need for specialized inputs and processes, resulting either from an increased scope of activities, number of unique functions that need integration, the complexity of the products or services being created, or the number of different markets being served. However, the coordination of complex tasks may be difficult to achieve through e-lance networks. The e-lance economy, by definition, requires the fulfillment of projects through the use of electronically connected e-lancers. It has been found that individuals working through electronic links struggled until their organizational and group structures were aligned, providing preliminary evidence that complex tasks require network governance structures to succeed (Majchrzak et al. 2000). Higher levels of task complexity require more interdependence between e-lancers, which may or may not be conducive to lean media.

H1c – *Greater task complexity of the projects posted in the network is negatively associated with network success.*

Frequent exchanges within networks lead to the development of informal controls to help manage transactions. Ultimately, more frequent exchanges facilitate collaborative behaviors in order to achieve desired outcomes. Behavior is embedded in networks of interpersonal relations (Granovetter 1983), and frequent communication builds and reinforces the relationships between parties and leads to reciprocity and obligation (Williamson 1994), increasing the level of informal control over exchanges. Frequent interactions also facilitate the development of human asset specificity through mutual engagement, which deepens through continued exchanges, enhancing the transfer of knowledge. By facilitating human asset specific exchanges and transforming the orientation of e-lancers to that of a shared destiny, frequency serves as the basis for informal control and safeguarding network exchanges.

H1d – *More frequent interactions among customers and suppliers in the network is positively associated with network success.*

Social Controls and Network Governance

According to Jones et al. (1997) "these conditions involve *high adaptation* needs, owing to changing product demand; *high coordination* needs, owing to integrating diverse specialists in complex tasks; and *high safeguarding* needs, owing to overseeing and integrating parties' interests in customized exchange (Jones et al. 1997 p. 923). These exchange conditions make it untenable to use either markets or hierarchies as governance forms. The need for adaptation is best handled through markets, and inhibits the use of hierarchies. On the other hand, market mechanisms are not efficient for coordinating and safeguarding complex tasks that are customized. In contrast to hierarchies with formal power structures and markets with contractual obligations, network governance relies primarily on social controls as the primary source of influence on the behavior of actors in the network. For instance, social controls include negative gossip by network members about the uncooperative behavior of another network member, which significantly reduces the likelihood of transacting future business with that member, whereas positive gossip increases the demand for that member (Burt and Knez 1995). In some instances, social controls are even more effective for controlling individual behavior than authority, bureaucratic rules, or

standardization (Ouchi 1979). In e-lance networks, network governance is more likely to succeed as an alternative governance form when social controls are present. Primary sources of social control include concerns about reputation, imposing collective sanctions, and restricting access to certain types of exchanges (Jones et al. 1997).

Concern for reputation, the first of three social mechanisms examined in this study, increases the likelihood of exchanges (Jones et al. 1997). Specifically, concern about reputation helps to safeguard exchanges by increasing the amount of information network members have regarding the behavior of other network members. Furthermore, because of this increased information, uncertainty regarding other members is reduced, helping to deter deceptive behavior (Parkhe 1993). Although reputations can have negative economic consequences (Jones et al. 1997), they can also serve to enhance knowledge sharing by increasing the status of those members who make valuable contributions (Malone 2004). Uncertain exchange conditions have been shown to increase the importance of one's reputation (Jones et al. 1997). E-lance environments are characterized as uncertain partially because there is no face-to-face interaction that enables members to form opinions of one another. At the end of a project, reputations are affected when the customer and supplier rate one another (Malone 2004). These ratings are important because they assist other customers in deciding which supplier to select, and vice versa. Hence, in an e-lance environment, customer feedback helps to form e-lancers' reputations, which improves the coordination of future exchanges. Along with enhanced coordination, this process also facilitates safeguarding because e-lancers are less likely to act inappropriately for fear of loss in future exchanges.

H2a – *Networks with suppliers who have better reputations will be more successful.*

The second social control examined in this study, collective sanctions, also increases the likelihood of network governance success by safeguarding exchanges in the network. "Collective sanctions involve group members punishing other members who violate group norms, values, or goals, and range from gossip and rumors to ostracism (exclusion from the network for short periods or indefinitely) and sabotage" (Jones et al. 1997 p. 931). Social controls such as collective sanctions are important as they safeguard exchanges by increasing the costs of opportunism and encouraging the monitoring of network members. By employing collective sanctions, the network members guard against opportunistic behavior. In an e-lance environment, collective sanctions safeguard exchanges and promote network governance success by establishing and enforcing the norms of acceptable behavior. One benefit of electronic environments is that the amount of monitoring is decreased for each member because interactions are transparent and available to everyone in the network. Flaming is one mechanism used by e-lancers to punish those who violate the norms. It involves posting nasty or insulting feedback messages about a network member for others to view. By establishing the consequences of stepping outside the bounds of what is allowed (Jones et al. 1997), e-lancers are deterred from misconduct. In extreme instances, e-lancers can be banned from the network. Thus, collective sanctions help to further deter opportunistic behavior in an e-lance environment by increasing the likelihood of exclusion from future transactions.

H2b – *Networks with members who hold each other accountable through collective sanctions will be more successful.*

The final social control examined in this study is restricting access to the exchange. Restricting access facilitates network governance by reducing the number of individuals requiring coordination. This decrease in the number of active network members enhances coordination by reducing the amount of variance brought to an exchange (Jones et al. 1997). In an e-lance environment, restricting access reduces the number of e-lancers invited to engage in an exchange. There are many benefits associated with this type of social control in e-lance networks. The first benefit is that it increases the number of interactions among the network members, leading to higher levels of cooperation. An e-lance site also benefits from restricting access by minimizing efforts associated with monitoring, which enhances rational behavior between the customers and suppliers. Finally, restricting access reduces the amount of coordination required by establishing routines through repeated exchanges, allowing more efficient transactions when posting and bidding on projects. This leads to our second hypothesis:

H2c – *Networks with greater restricted access to project bidding will be more successful.*

Method and Data Collection

In order to test the hypotheses, we first performed an initial search of websites that serve as e-lance networks, brokering exchanges between customers with projects and suppliers of services to complete those products. We started with an internet search using the words "e-lance" and "free-lance" and came up with an initial list of over 100 e-lance broker websites. In order to be considered an e-lance network, the brokers had to actually facilitate requests for proposals and help coordinate services. Websites that were more akin to help wanted ads were not included in the sample. After reviewing each of these sites, we discovered 15 viable sites that are actively serving as e-lance brokers on the internet. Of these 15, we selected one e-lance broker, elance.com, that divided work into 11 different major networks based on characteristics of the

work, and then further subdivided into 150 subnetworks based on the original 11 networks (see table 1 for descriptions of the 11 networks, and Appendix A for the listing of networks and subnetworks). While focusing on one e-lance site affects the generalizability of the findings, we felt that at this early stage of development it was more important to control for differences that may be introduced across e-lance brokers (such as different infrastructures for supporting exchanges) and standardize data collection. The unit of analysis is the 150 subnetworks. The constructs were assessed through objective measures based on longitudinal data that was publicly available on e-lance.com. This data includes customer data, supplier data, and project data within each of the 150 networks. The data were collected longitudinally to ensure the independence of our independent and dependent variables. The data assessing the independent variables were collected in April, 2006. The data assessing the different dimensions of the dependent variable, success, were collected in May, 2006.

Dependent Variables

The dependent variable is the e-lance network's success. For the purpose of this paper, we define e-lance success along three dimensions: the number of projects (work) posted to the network in May, the number of bids posted to the network in May (quantity of the services provided), and the total dollar amount exchanged on the network in May (financial success).

Independent Variables

Demand Uncertainty, indicating whether there is enough work available to sustain the network, was assessed by two measures, the number of projects posted in April for each subnetwork (indicating that there is work available in the subnetwork) and also by assessing the extent to which customers awarded projects in the subnetwork. The percentage of projects awarded indicates the extent to which the projects that were posted were actually contracted out to a supplier in April. More projects posted and awarded indicate lower levels of demand uncertainty.

Human Asset Specificity refers to the specialized knowledge and skills needed, and was assessed by taking the number of bids in the subnetwork in April. Subnetworks with more bids indicate more available suppliers with the knowledge and skills needed to accomplish the task. More suppliers are likely to be indicative of less human asset specificity.

Task Complexity indicates the scope of activity and time pressures, and was assessed by examining the average time a project is open and the average bid amount of the projects in the subnetwork in April. Subnetworks where the average projects are more expensive are likely to indicate higher levels of task complexity.

Frequency, indicating how often specific parties use the network to exchange with one another, was assessed by examining the percentage of repeat customers posting projects, and the percentage of repeat suppliers bidding on projects in the subnetwork during April. More repeat customers and repeat suppliers indicate greater frequency.

Reputation is the estimation of one's character/skill, and was assessed by taking the average subnetwork supplier rating in April. The supplier ratings were an average of all ratings over the prior 6 months.

Collective Sanctions indicate the extent of punishing members for violating norms, and was calculated by taking the number of suppliers in the subnetwork with below average feedback ratings.

Restricted Access limits who can engage in the exchange and was assessed by taking the sum of exchanges where visibility of the contents is restricted. There are 4 methods of restricting exchanges on e-lance.com. First, there is an elite customer status, "select customers". Second, customers can invite only certain suppliers to bid. Third, customers can choose not to disclose the budgeted amount for a project. Finally, customers can choose not to disclose the bidding among suppliers (sealed bids). Thus we took the sum of projects along each of this attributes (treated as 4 separate variables in the analysis) to assess restricted access.

In addition to these social controls, elance.com provides an additional safeguard for ensuring payment. Project payment can be secured by a credit card, indicating to suppliers that the customer will pay at the end of the project. In order to assess safeguarding, we took the percentage of projects in the subnetwork in April that had been secured by a credit card.

Results

Descriptive statistics for each of the 11 main network areas of e-lance.com are provided in table 2. Descriptive statistics for each of the 150 subnetworks are available from the authors. In April, 2006, there were 7,286 projects receiving 59,620 bids for an economic exchange of $3.9 million. All of these indices increased in May, indicating a vibrant e-lance network that is growing over time. Table 2 contains the means, standard deviations, and correlations among the variables in the study. We note that the number of projects posted to the subnetworks in April are almost perfectly correlated with the success variables in May. Therefore, the greatest indicator of a subnetwork's success is its level of activity in the prior time

period. In order to understand how the remaining variables impact success, the number of projects posted in April (an indicator of demand uncertainty) was removed from the regression analysis. We use hierarchical regression analysis to examine the significance of social controls on subnetwork success above and beyond exchange conditions. The results of this analysis are presented in table 3.

Table 1 – Descriptive Statistics for the 11 Main Networks

		April			May		
	Newtork Name	# Projects	# Bids	$ Amount	# Projects	# Bids	$ Amount
1	Administrative Support	325	3,555	$46,575	296	3,298	$40,844
2	Architecture & Engineering	56	135	$52,239	49	97	$46,407
3	Audio, Video and Multimedia	132	661	$57,024	143	743	$124,786
4	Graphic Design & Art	1,243	13,570	$251,389	1,307	16,201	$383,929
5	Legal	84	229	$32,991	75	186	$12,560
6	Management & Finance	57	248	$7,837	46	174	$11,723
7	Sales & Marketing	161	438	$100,914	160	497	$353,458
8	Software & Technology	737	4,597	$930,055	777	4,896	$877,906
9	Training and Development	27	18	$12,676	26	37	$10,327
10	Website Development	3,477	29,871	$2,116,283	3,462	32,609	$2,206,276
11	Writing and Translation	987	6,298	$291,244	1,009	6,674	$331,448
	Totals:	**7,286**	**59,620**	**$3,899,227**	**7,350**	**65,412**	**$4,399,662**
				% Increase in May	**1%**	**10%**	**13%**

Table 2 – Means, Standard Deviations and Correlations

		Mean	Std Dev	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	# of projects	48.57	116																
2	% projects awarded by customers	0.46	0.28	.18*															
3	# bids	397	1074	.97**	.18*														
4	avg $ bid amount	182	425	-.10	-.07	-.10													
5	avg time projects open	7.41	16.4	.00	.08	-.01	-.02												
6	% of repeat customers	0.49	0.19	.02	.23**	.01	.20*	.03											
7	% of repeat suppliers	4.15	3.58	.30**	.52**	.38**	-.29**	.02	.07										
8	avg rating of supplier	3.49	1.41	.19*	.43**	.18*	.05	.07	.31**	.46**									
9	% of suppliers getting flamed	0.21	0.22	-.11	-.06	-.11	.07	.00	.22**	-.20*	-.50**								
10	# projects posted by select customers	7.36	21	.91**	.14	.91**	-.07	.00	.01	.24**	.15	-.09							
11	# projects restricted to invited bidders	5.55	18.30	.89**	.13	.85**	-.07	-.02	.02	.22**	.14	-.08	.91**						
12	# projects with undisclosed budgets	9.29	24.27	.98**	.15	.94**	-.08	.00	.02	.26**	.16	-.09	.93**	.92**					
13	# projects with sealed bids	8.41	22.04	.97**	.17*	.96**	-.09	-.01	.01	.29**	.17	-.11	.94**	.85**	.94**				
14	% of projects with grntd payment	0.31	0.18	-.08	-.41**	-.07	.22**	-.02	.10	-.22**	-.07	.19*	-.04	-.06	-.06	-.04			
15	# of projects - May	49	118	1.00	.18*	.96**	-.09	.00	.00	.30**	.19*	-.12	.92**	.88**	.97**	.97**	-.07		
16	avg bids per project - May	5.83	4.52	.28**	.47**	.36**	-.27**	.00	-.04	.86**	.33**	-.17*	.23**	.21**	.24**	.27**	-.28**	.28**	
17	Total $ exchanged - May	29331	91707	.85**	.07	.79**	-.04	.00	-.01	.15	.13	-.08	.87**	.86**	.89**	.83**	-.02	.86**	.14

N=150 subnetworks

* p<.05

** p<.01

Table 3 – Results of Hierarchical Regression Analysis

	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
	# of Projects May	**# of Projects May**	**Avg Bids per Project May**	**Avg Bids per Project May**	**Total $ Exchngd May**	**Total $ Exchngd May**
% projects awarded by customers	.026	.016	.338**	.320**	-.010	-.009
# bids	.688**	.166**	.511**	1.617**	-.034	-0.222*
avg $ bid amount	.320**	.132**	-.292*	.280	.984**	.884**
avg time projects open	.007	.007	-.027	-.021	.004	.003
% of repeat customers	-.035	-.034*	-.223**	-.217**	-.036	-.039
% of repeat suppliers	.029	.013	.240**	.259*	.040	.059
avg rating of supplier		.012		.010		-.024
% of suppliers getting flamed		.002		.004		.007
# projects posted by select customers		-.321		-.037		.047
# projects restricted to invited bidders		.059		-.086		.012
# projects with undisclosed budgets		.417**		-.701*		.098
# projects with sealed bids		.549		-.853*		.134
% of projects with guaranteed payment		-.005		-.066		.007
R^2_{adj}	.955**		.367**		.915**	
F	526.720		15.395		269.013	
R^2_{adj}		.98**		.44**		.914**
Change in R^2_{adj}		.025**		.093**		.003 (ns)
F		26.790		3.506		.827

N=150 subnetworks

* p<.05

** p<.01

Discussion

Overall, we find some support for hypothesis 1, that exchange conditions lead to subnetwork success, but in ways that were not necessarily as predicted. Demand uncertainty, in terms of the percentage of projects awarded by customers (actually indicating less demand uncertainty) was a significant predictor of the average number of bids per project in May. This seems to indicate that more suppliers are willing to bid on projects when a higher percentage of customers follow through and actually award contracts. In terms of human asset specificity, as indicate by the number of bids (suppliers) in a subnetwork, this had a positive, significant impact on both the number of projects posted in May and the average number of bids per project in May. Thus, subnetworks with more suppliers (less human asset specificity) have higher levels of activity. However, fewer suppliers (higher human asset specificity) lead to higher prices in terms of total dollars exchanged in the subnetwork. Taken together, these findings suggest that subnetworks where there are fewer suppliers will generate higher valued projects, but overall less activity. In terms of task complexity, we find that the average bid amount significantly impacts both the number of projects posted in May, and the total dollars exchanged in the subnetwork. However, there is evidence (although only significant in the first model) that higher average bids per project in dollar value lead to fewer projects being posted. This could indicate that as projects increase in terms of complexity and expense, although these projects are more lucrative for a supplier to pursue, there are fewer suppliers capable of providing the requested service. The average time a project is open (another indicator of task complexity), was not significant. Contrary to expectations, subnetworks with a higher percentage of repeat customers (frequency) lead to fewer projects posted and fewer bids per project. This could indicate that fewer new customers are attracted to the subnetwork, and more of the projects are dependent upon repeat customers. The percentage of repeat suppliers was a significant predictor of the average number of bids per project, indicating stability in terms of suppliers over time.

As for support for hypothesis 2, that more social controls will lead to greater success, it seems that only restricting access to parts of the exchange is significant. The number of projects posted with undisclosed budgets leads to more projects being posted in May, but with fewer bids. Thus, although this seems to be an effective tool for customers, it serves to deter

supplier bidding. Additionally, the number of projects posted that seal the bidding process from view by the suppliers also reduces the number of suppliers bidding on projects. Thus, these two methods of restricting access to the exchange seem to work, in terms of fewer suppliers bidding on projects, but this may be a detrimental strategy for customers seeking the most competitive bids. It is possible that customers are willing to pay higher prices for the contract to reduce the transaction costs of sorting through a large number of supplier bids. Surprisingly, subnetworks with suppliers with higher reputation scores, more use of collective sanctions, or with more projects safeguarded with guaranteed payment did not outperform other subnetworks. One potential explanation is that given the high amounts of variance explained by the variables underlying the exchange conditions, there is little additional variance in success to explain. In fact, these social controls do appear to make a significant impact in terms of their bivariate correlations with success. Thus, although not significant in our regression analysis, social controls should not be discounted as unimportant to network success, but deserve further development and research focus.

Conclusion and Implications for Future Research

The objective of this study was to illustrate how network governance theory could be used to explain the new and emerging "e-lance" economy by integrating transaction cost economics with the concepts of social controls. We found that e-lance success was driven primarily by the exchange conditions predicted in TCE. Surprisingly, we found that only one social control, restricting to access to the exchanges, facilitated e-lance success. These results however are not sufficient for concluding that social controls are unimportant for facilitating e-lance success. We believe that further study on social controls is needed. Since we used data available on the website for this study, future study could conduct a survey to substantiate the findings of this study. The survey might provide us new findings, especially in the area of e-lancers perceptions of the effectiveness of social controls. Overall, this study has contributed to a better understanding of mechanisms driving and facilitating the e-lance economy. The method used to model the exchange conditions and social controls of e-lance networks likely generalizes across other forms of "free-lance" or networked organizations and provides a useful lens for examining such effects at the individual level of analysis. Hence, an opportunity for future research utilizing network governance theory in a freelance context exists and should be encouraged to provide further insights regarding the reliance upon virtual mechanisms to facilitate this revolutionary type of work environment.

References

Ang, S., and Cummings, L. "Strategic Response to Institutional Influences on Information Systems Outsourcing," *Organization Science* (8:3) 1997, pp 235-256.

Burt, R.S., and Knez, M. "Trust and Third-Party Gossip," in: *Trust in Organizations: Frontiers of Theory and Research,* L. Kramer and T. Tyler (eds.), Sage, Thousand Oaks, CA, 1995.

Clemons, E.K., and Row, M.C. "Information Technology and Industrial Cooperation: The Changing Economics of Coordination and Ownership," *Journal of Management Information Systems* (9:2) 1992, pp 9-29.

Cornelius, C., and Boos, M. "Enhancing Mutual Understanding in Synchronous Computer-Mediated Communication by Training: Trade-Offs in Judgmental Tasks," *Communication Research* (30:2) 2003, pp 147-178.

Friedman, T. *The World Is Flat: A Brief History of the Twenty-First Century* Farrar, Straus and Giroux, New York, 2005, p. 496.

Granovetter, M. "The Strength of Weak Ties: A Network Theory Revisisted," *Sociological Theory* (1) 1983, pp 201-233.

Gurbaxani, V., and Whang, S. "The Impact of Information Systems on Organizations and Markets," *Communications of the ACM* (34:1) 1991, pp 59-73.

Jones, C., Hesterly, W.S., and Borgatti, S.P. "A General Theory of Network Governance: Exchange Conditions and Social Mechanisms," *Academy of Management Review* (22:4) 1997, pp 911-945.

Majchrzak, A., Rice, R.E., Malhotra, A., King, N., and Ba, S. "Technology Adaptation: The Case of a Computer-Supported Inter-Organizational Virtual Team," *MIS Quarterly* (24:4) 2000, pp 569-600.

Malone, T.W. *The Future of Work* Harvard Business School Press, Boston, 2004.

Malone, T.W., and Laubacher, R.J. "The Dawn of the E-Lance Economy," *Harvard Business Review* (76:5) 1998, pp 144-153.

Miles, R.E., and Snow, C.C. "Causes of Failure in Network Organizations," *California Management Review* (34:4) 1992, pp 53-72.

Nahapiet, J., and Ghoshal, S. "Social Capital, Intellectual Capital, and the Organizational Advantage," *Academy of Management Review* (23:2) 1998, pp 242-266.

Ouchi, W.G. "A Conceptual Framework for the Design of Organizational Control Mechanisms," *Management Science* (25:9) 1979, pp 833-848.
Parkhe, A. "Strategic Alliance Structuring: A Game Theoretic and Transaction Cost Examination of Interfirm Cooperation," *Academy of Management Journal* (36:4) 1993, pp 794-829.
Thorelli, H.B. "Networks: Between Markets and Hierarchies," *Strategic Management Journal* (7:1) 1986, pp 37-51.
Williamson, O.E. "Transaction Cost Economics and Organization Theory," in: *The Handbook of Economic Sociology,* N.J. Smelser and R. Swedberg (eds.), Princeton University Press, Princeton, NJ, 1994, pp. 77-107.