

**The Impact of IT Structure and Firm Interdependency on Relational Rents
in Innovation Collaboration Networks**

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The Impact of IT Structure and Firm Interdependency on Relational Rents in Innovation Collaboration Networks

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ABSTRACT

This paper examines inter-organizational innovation collaboration networks (ICNs) using a relational view of the firm perspective. This study suggests that information technology (IT) structure and firm interdependencies can be significant predictors of relational rent generation for innovation collaboration networks. Furthermore, the authors argue that the alignment of these structural properties – IT structure and firm interdependency - will influence firm performance in terms of relational rents obtained by the innovation collaboration network. The relevant literature will be discussed and hypotheses proposed to empirically examine the relationship between IT structure and firm interdependencies on relational rent generation. Potential theoretical contributions to the relational view of the firm are identified and discussed. Limitations of the proposed study and discussion of the future research opportunities will also be provided.

Keywords

IT structure, firm interdependency, ICNs, relational rents, inter-organizational

INTRODUCTION

Over the last two decades, organizations experienced a growth in demand for inter-organizational collaboration when developing innovations (Chesbrough, 2003; Powell, Koput, Smith-Doerr, 1996). Traditional models of innovation development have focused on utilizing internal R&D resources in order to maximize competitive advantage. However, organizations have begun to value the use of innovation collaboration networks (ICN) for creating additional rent-generating benefits for both the organization and the network within which it participates (Laursen and Salter, 2006).

Research has shown that ICNs increase exposure to diverse knowledge (Powell, et al., 1996) and complementary resources (Teece, Pisano, and Shuen, 1997). This research has focused on the ability for alliances to provide benefits beyond those that an organization could achieve on its own. However, little research has been conducted concerning the structural properties that result in ICNs maximizing relational rents. *Specifically, how do the structural properties of an ICN influence the success of the network for obtaining relational rents?* Limited discussion has focused on the alignment between how ICNs are structured via information technology (IT) capabilities and the interdependencies that must exist for the ICN to maximize its benefits (Bhatt and Grover, 2005).

Researchers of the relational view of the firm have focused on the characteristics of arm's length market and alliance-based relationships (Dyer and Singh, 1998). Specifically, research suggests that investments in relation-specific assets (such as ICNs), effective knowledge exchange (through collaboration activities), combining complementary assets (through functional interfaces), and the reduction of formal governance provide organizations with rent-generating capabilities. This suggests that when an ICN's IT infrastructure complements the interdependencies of the intended innovation, relational rents will be maximized (Bhatt and Grover, 2005; Madhok and Tallman, 1998). Nevertheless, research on this argument has been limited and continues to focus on the theoretical development of the relational view.

The purpose of this study is to examine rent generation in ICNs based on IT structure and interdependencies between organizations for developing an innovation. IT structure is defined as the configuration of IT resources accessible to each member of an ICN. Interdependencies are defined as the firms' perceived need to access complementary resources and the exchanges between firms for developing an innovation. To maximize rents from an ICN, alignment between IT structure and interdependencies needed to derive an innovation must be present. The next section provides a review of the relational view of the firm, IT structure, and firm interdependencies. A research model and hypotheses are proposed examining these constructs for deriving rents. A description of the study design, sample, and statistical analysis technique will also be discussed. Expected contributions will be addressed along with the limitations and directions for future research.

RELATIONAL VIEW OF THE FIRM

The relational view of the firm suggests that additional benefits, termed relational rents, can be gained when an organization pools its resources with other organizations (Dyer and Singh, 1998). Relational rents are defined as "a supernormal profit jointly generated in an exchange relationship that cannot be generated by either firm in isolation and can only be created through the joint idiosyncratic contributions of the specific alliance partners" (Dyer and Singh, 1998, p. 662). In contrast to the traditional relational view of the firm, this study focuses on the rents that can be generated that are beneficial to ICNs as a whole rather than the individual organizations that participate within the ICN.

The relational view of the firm is a challenging perspective due to its focus on network-specific relationships as the source of rents. Rents accrued by an organization can be measured through firm performance and linked directly to firm-specific resources to obtain competitive advantage. However, the relational view posits that additional rents can be found through four sources - interfirm relation-specific assets, inter-firm knowledge-sharing, complementary resource endowments, and governance structures.

Interfirm relation-specific assets are assets that provide relational benefits to an ICN by decreasing search costs (Dyer and Singh, 1998). The focus of this source of rent is on the structure of relationships between firms participating within the ICN. Specifically, Dyer and Singh (1998) suggest that the volume of exchanges and safeguards influence the capability of a network to achieve rents. The use of safeguards has focused on information control and governance mechanisms that are similar to both the structural hole perspective (Burt, 1992) and contract type defined by the interdependency for developing the innovation (Gulati and Singh, 1998).

Interfirm knowledge-sharing focuses on the interactions between knowledge resources in the ICN. The underlying argument is that no organization knows everything nor possesses the resources for developing all innovations (Dyer and Singh, 1998; Madhok and Tallman, 1998). Networks structures that efficiently develop cross-boundary knowledge sharing create opportunities for obtaining rents (Grant, 1996). Network structure focuses on the type of relationships that foster knowledge collaboration. Typically two types of network structure have been examined - strong ties and structural holes (Burt, 1992; Granovetter, 1973). From an IT structure perspective, network ties are created when organizations provide access to IT resources (e.g. knowledge repositories) for sharing firm-specific knowledge in an ICN.

Rents are obtained when organizations leverage complementary resource endowments effectively. The resource-based view argues that individual firms may hold resources that are of some competitive advantage to the individual firm. However, when used in conjunction with the resources of network partners, additional rents can be derived. This would suggest that the use of different firm interdependencies is potentially important to ICNs for generating rents.

The final source of rents is based on effective governance structures. This source uses third-party agreements to ensure that each organization is acting in the interests of the ICN and not opportunistically. When viewed as a governance mechanism, structural holes can enable an organization to manage the flow of information between organizations (Ahuja, 2000). In essence, the structural hole is acting as an intermediary that governs the value creation process of the ICN.

In summary, rents are contingent upon the IT structure for sharing interfirm relation-specific assets and the development of interfirm knowledge-sharing routines in an ICN. These sources of rents along with the IT structure and firm interdependencies are necessary to develop rent-generating innovations for ICNs. The next section proposes a research model (Figure 1) suggesting that structural properties of an ICN directly influence rent-generating potential. This model further suggests that alignment between these structural characteristics will influence the network's rent-generating capability.

RESEARCH MODEL

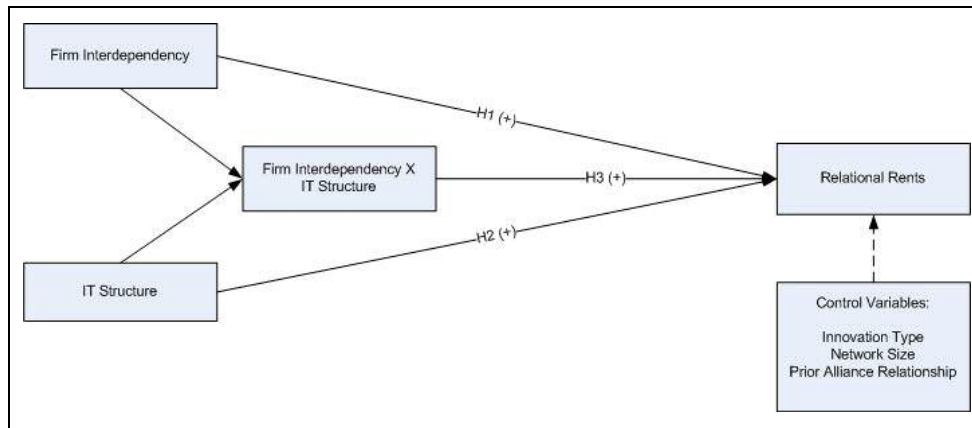


Figure 1. Research Model

Relational Rents

Relational rents are supernormal rents embedded within the relationships organizations leverage to develop an innovation. Determining rents within an ICN requires a dependent variable that focuses on the relationship-specific rents generated from the ICN. At the organizational level, performance measures of rents have focused on patents to identify whether relational ties provide additive benefits to an ICN (Zhang, Baden-Fuller, and Mangematin, 2007). Prior research examining inter-organizational relationships suggests that joint patents are an objective measure of rents because they are issued to ICNs and represent network-specific rents (Schilling and Phelps, 2007).

The structural properties of an ICN outlined in this study can be seen as complementary to each other in that the firm interdependencies and IT structure are dependent upon each other to maximize rent accrual. Figure 2 provides a graphical representation of the two structural properties of an innovation network. The structural properties are two dimensions that can be represented along continuums (Borys and Jemison, 1989; Schilling and Phelps, 2007). Alignment between the firm interdependency and IT structure properties of an ICN is based upon an optimal innovation network for creating rents.

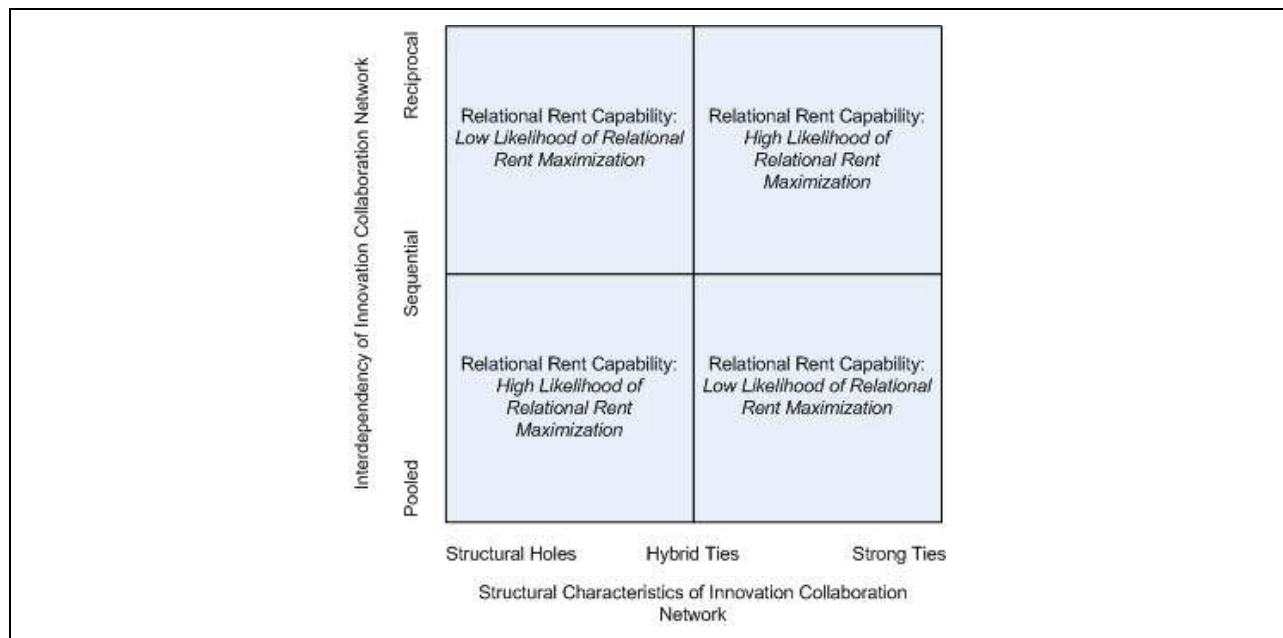


Figure 2. Alignment of Firm Interdependency and IT Structure

Firm Interdependency

Firm interdependency is based upon the form of collaboration structure needed to successfully develop an innovation. Prior research suggests that firm interdependency can be used to predict network structure in terms of organizational controls and the forms of interaction needed to develop an innovation (Gulati and Singh, 1998). Thompson (1967) outlines three forms of interdependency that may exist in an ICN based upon the frequency of interaction needed between organizations.

Pooled interdependence focuses on each organization acting independently of its network partners to make specific contributions of the innovation that when combined with other contributions developed by the network creates an innovation to derive relational rents (Thompson, 1967). Pooled interdependence suggests that the knowledge residing within the individual organization is specialized making transference to the ICN inefficient and thus ICN's should rely on independent resources to develop the networks' innovation. Since the rents gained are based on independent contributions by each individual firm, the rents derived are not necessarily creating relational rents rather are firm-specific (Madhok and Tallman, 1998) meaning rents must be measured in firm issued patents and not relationship-based joint patents. This form of interdependence is likely to lead to a small increase in additional rents achieved by the ICN.

Sequential interdependence is based on a transaction-based perspective where an organization acts as a link within a value chain. Organizations independently develop each component of an innovation where the output from one organization is used as the input to the next organization (Thompson, 1967). As a result, organizations leverage the resources of each organization, but do not share the specialized knowledge residing within each organization (Gulati and Singh, 1998). Sequential interdependence is more aligned with the arguments of the relational view of the firm where rents emerge from the complementarities between network partner assets.

Finally, *reciprocal interdependence* is based on a reciprocal behavior between network partners. Organizations integrate their resources to develop the network innovation with strong dependence upon one another (Thompson, 1967). The frequent interactions between network partners are necessary to develop the innovation which no organization can lay claim to independently. Thus, this form of interdependence should lead to the greatest rents because the development process is relationship-specific.

While general categories of interdependency have been outlined by prior researchers, this research has been conducted at the organizational level of analysis where a single organization's perceived interdependency for participating in an ICN was obtained (e.g. Gulati and Singh, 1998). However, research at the inter-organizational level combines the interdependency of multiple organizations to effectively develop and profit from a network generated innovation. As a result, interdependency itself may be more accurately represented in Figure 2 as a continuous variable that represents the interdependency among the organizations participating in the ICN (Borys and Jemison, 1989). Collectively, rent generation will vary by their degree of interdependency between organizations participating within the network. Thus,

Hypothesis 1: The extent to which firms are dependent upon each other within the ICN will be positively related to the extent to which relational rents can be gained by the ICN.

IT Structure

Research on the IT structure of innovation networks has predominantly focused on an individual organization's position within the innovation network (Ahuja, 2000; Gulati, 1998; Kim and Song, 2007; Powell, et al., 1996; Schilling and Phelps, 2007). Little research has considered how the underlying IT structure of the network creates opportunities for interfirm collaborations that lead to rent generation. Thus, an abstracted view of structural relationships is needed to develop a relationship with rent accrual by ICNs. Based on the literature of structural relationships, three forms of IT structures are applicable to ICNs – structural holes, hybrid, and strong tie networks.

The majority of this research has been conducted on how social relationships between organizations can create the opportunities for interfirm collaboration. However, today's collaboration networks rely on organizations providing access to internal resources to a network member which is predominately done through its IT structure. Under this perspective, the IT structure through which information and knowledge can be efficiently shared may consist of structural holes, which are gaps between organizations in terms of access to knowledge, strong ties reflect overlapping access to resources among all members of the ICN, and hybrid ties represent a varying degree of overlap and gaps between an organization's access to some of the resources available through the existing IT structure of the ICN (see Figure 2).

Structural holes focus on how an individual organization is positioned within the network and how the organization can derive superior benefits by acting as a bridge between two concentrated sub-networks (Burt, 1992). Structural holes have empirically been found to provide a network with greater capabilities for developing rents by providing access to a wider range of knowledge resources (Burt, 1992; Schilling and Phelps, 2007). However, a negative aspect of structural holes is rarely considered for rent-generating capabilities of an ICN as a single entity. Specifically, structural holes may *minimize* the capability of the network to generate rents because of its restriction on the organizations for sharing complementary assets, developing knowledge-sharing routines, and developing effective governance structures.

The second form of IT structure is based on a *hybrid form* of strong ties and structural holes. Within this form of network structure, the relationships between participating organizations in an ICN are mixed between redundant ties for transferring knowledge from one organization to another and structural holes that allow organizations access to diverse knowledge sources for developing innovations. Prior research suggests that these forms of network relationships act in a complementary manner and create the maximum opportunity for creating individual organizational value. Schilling and Phelps (2007) examined a hybrid ICN for deriving innovations and found that organizations that maintained both forms of ties gained access to diverse knowledge and increased cooperation across firm boundaries for developing innovations. Additionally, Tiwana (2008) examined alliance ambidexterity and found that complementary ties positively influenced knowledge integration which mediated the relationship between IT structure and alliance ambidexterity. Collectively, this would suggest that hybrid networks provide opportunities to develop rents beyond those of structural hole networks for individual organizations.

The final form of IT structure exhibited in an ICN is posited by Granovetter's weak tie theory which suggests that in addition to weak ties, an ICN may exhibit *strong ties* which are redundant ties within a network. Several researchers have found that strong tie networks promote knowledge sharing and integration (Schilling and Phelps, 2007; Tiwana, 2008). Tiwana (2008) found that strong ties positively influenced knowledge integration suggesting that strong ties can be useful for developing knowledge sharing routines and fostering interfirm collaboration. Thus, rent-generating capabilities of strong tie networks present the greatest opportunity for deriving rents in an ICN. Thus,

Hypothesis 2: The extent to which the IT structure ties firms together within the ICN will be positively related to the extent to which relational rents can be gained by the ICN.

IT Structure and Firm Interdependency Alignment

In 1999, Henderson and Venkatraman provided conceptual arguments for aligning business and IT structures to achieve strategic value. The authors suggested that alignment would create the potential for organizations "to leverage emerging capabilities of IT for transforming organizations and markets," (Henderson and Venkatraman, 1999, p. 483). In this study, the alignment hypothesis examines this call for research by focusing on how IT structure and firm interdependency must be aligned to maximize an ICN's strategic value, such as generating relational rents.

Within this argument, the organizational strategy dictated by the requirements between the firm interdependencies and the IT operations (operationalized through the IT structure) suggest alignment must be maintained to achieve the intended outcome – rent generation. Traditionally, firm interdependencies focused on the dependencies between the resources held within organizations and the required interactions between organizations to realize an innovation. For example, if an ICN develops an innovation that requires independent contributions from each network partner and these contributions can be made without inter-organizational interactions until each component is completed, the ICN can rely on pooled interdependencies. In contrast, if each organization makes incremental contributions that require access to resources in other organizations, which in turn, require access to resources in another organization, the ICN would rely on reciprocal interdependencies for innovation development.

When combining firm interdependencies with IT structure to create interfirm collaboration, research has typically examined how interdependency drives the coordination structure of an organization (Gulati, 1998; Gulati and Singh, 1998). However, research on alliance relationships has suggested that prior alliance experience, prior relationships with network partners and the development of trust influences the structure of a social network (Ahuja, 2000; Gulati, 1995; Schilling and Phelps, 2007). This would suggest that IT structure is a complex phenomenon to examine and that several factors beyond interdependency may influence an ICN's structure which may alter the communication flows between organizations. For example, Ahuja (2000) suggests positive and negative results of organizations using structural holes because of the heightened likelihood of opportunistic behaviors by an

organization, a point also raised by Gulati and Singh (1998) for coordination mechanisms. Structural holes can be used for reaching diverse knowledge resources (Burt, 1992), but an ICN with an IT structure of strong ties may also be effective for transferring knowledge between organizations (Granovetter, 1973). However, this research has mainly focused on single organizations operating within an ICN and fails to examine the overall effects structural holes or strong ties may have on an ICN's ability to maximize its rent-generating capability.

Similar to the dual outcome of structural holes, firm interdependency and IT structure should interact in order to realize greater rents for an ICN. Pooled interdependence relies on weak tied IT structures between partners to deliver diverse resources and knowledge to effectively develop an innovation suggesting that pooled interdependence would generate optimal rents in IT structures rich in structural holes. Organizations that participate in such networks leverage their unique resources to make contributions to the overall network that could not be achieved by utilizing only resources found within its organizational boundaries (Powell, et al., 1996). Similarly, reciprocal interdependence relies on knowledge transfer from organizational partners in order to efficiently and effectively develop rent-generating innovations. As such, ICNs using reciprocal interdependence should benefit most when the IT structure is rich in strong ties where redundant ties to individual organization knowledge can be leveraged to its maximum.

Based on the IT structure needed from ICNs that operate under different firm interdependency requirements, alignment between the two structural properties would suggest that ICNs that utilize structural holes-pooled interdependence or strong ties-reciprocal interdependence would be more likely to generate greater rents than misaligned ICNs. Misalignment occurs when the IT structure does not provide adequate support to the required firm interdependency for developing the innovation. Two general forms of misalignment outlined in Figure 2 suggest that structural hole-reciprocal interdependence and strong tie-pooled interdependence networks would be less likely to generate rents than aligned ICNs because of the increased difficulty to efficiently transfer knowledge and manage the innovation process.

Ahuja (2000) suggested that structural holes created opportunities for both access to diverse knowledge (Burt, 1992) and opportunistic behavior (Gulati & Singh, 1998). However, when reciprocal interdependencies exist for innovation development, a focus on knowledge transfer between network partners is needed. Restricting information flows between organizations; an outcome related to structural holes (Burt, 1992), reduces the opportunity for knowledge transference and increases the likelihood of network failure for deriving rents. Similarly, strong tie networks developed in ICNs that derive rents from leveraging the diverse knowledge possessed within individual organizations and needing pooled interdependence would increase the coordination costs of the innovation network and limit the exposure of the network to diverse knowledge. Thus, ICNs that exhibit alignment between firm interdependency and IT structure for developing an innovation are more likely to generate greater rents than ICNs that exhibit misalignment.

Hypothesis 3: ICNs exhibiting alignment between structural properties will be more likely to generate relational rents than ICNs that exhibit misaligned structural properties.

RESEARCH DESIGN

This study utilizes a multi-method design to capture firm interdependencies of an ICN and social network analysis to generate a depiction of the network's IT structure for creating interfirm knowledge sharing opportunities at the inter-organizational level. Research on rents has suggested that pharmaceutical organizations can be used as a sample environment because of the acknowledged limitation of individual organizational research and development capabilities (Owen-Smith and Powell, 2004; Zhang, et al., 2007). Pharmaceutical organizations participate in ICNs to mitigate costs for the development of risky or uncertain drug innovations and access superior resources held within other organizations (Schilling and Phelps, 2007).

To identify ICNs, this research will use the Securities Data Company (SDC) database to identify organizations within the pharmaceutical industry engaged in alliance activities over the last ten years. Prior research (Schilling and Phelps, 2007) has used this database to examine alliance relationships within the pharmaceutical industry. The SDC database provides information on alliance partners, activities, types, and industry setting.

A mixed-method design will be used. Table 1 outlines the construct, definition, and brief description of the measures used in this study. A survey will be sent to two individuals within each ICN organization. The first individual will be the contact agent responsible for managing the organization's ICN relationships to obtain a description of the alliance purpose. The second individual will be the IT manager to determine the IT structure within the ICN.

Dependent Variable

Joint patent applications will be used to measure the relational rents of the ICN. Joint patents are patents that have been issued to multiple organizations or patents that have been issued to a separate entity organization that has been created by the ICN organizations to manage the intellectual property of the ICN. Prior research on rents has used joint patent applications as a surrogate for rent accrual because each patent represents intellectual property owned by the ICN partners created through collaboration and sharing of resources across organizational boundaries (Schilling and Phelps, 2007). Joint patent applications will be obtained from the U.S. Patent office and a count measure will be used to assess potential rent accrual.

Construct	Definition	Adapted From:	Measure:
Independent Variables:			
IT Structure	Network density is the average strength of relations.	Burt (1992); Wasserman & Faust (1994)	Density measure
Firm Interdependency	Perceived interdependence between organizations that minimizes coordination costs for achieving specific tasks.	Gulati & Singh (1998)	Strategic rationales for participating in ICN.
Dependent Variable:			
Relational Rents	A supernormal profit jointly generated in an exchange relationship that cannot be generated by either firm in isolation and can only be created through the joint idiosyncratic contributions of the specific alliance partners.	Dyer & Singh (1998)	# Joint Patents issued to ICN
Control Variables:			
Innovation Type	Radical or incremental	Chesborough (2003)	Dichotomous
Network Size	Large networks will produce greater numbers of joint patents and unintentionally skew results.	Ahuja (2000)	# of participating organizations
Prior Alliance Relationship	Prior relationship or no prior relationship	Gulati & Singh (1998)	Dichotomous

Table 1. Research Measures

Independent Variables

The individual responsible for managing ICN relationships will be asked to describe the strategic rationale for participating in the ICN. We will content analyze the strategic rationales based on the overall network's interdependence. For a detailed explanation of the strategic rationale coding procedure, see Gulati and Singh (1998). Cohen's kappa with a 90% consensus minimum will be used to test the inter-rater reliability of the assessments to ensure the classifications are reliable (Cohen, 1960).

IT structure will be assessed using a density measure which defines the proportion of the network that has access to all other ties within the network and serves as an indicator of tie strength of the ICN (Burt, 1992; Wasserman and Faust, 1994). A survey will be sent to IT managers to obtain information on applications used by the ICN. Applications will include knowledge repositories, email distribution lists, and other electronic resources that contribute to the innovation process.

Multiple density measures will be examined to determine overall IT structure of the ICN. For each IT application, a density measure will be obtained and tested individually. Additionally, an overall IT structure density measure will be taken that measures relationships among the organizations without regard to the type of IT application creating the structural tie.

Several control variables must be considered to minimize the effect of external influence on the research findings. As a result, we control for network size, prior alliance relationship and innovation type. Network size will control for large networks which may unintentionally skew results due to a greater numbers of joint patents (Ahuja, 2000). Prior alliance relationship will control for pre-existing ties between organizations (Kim and Song, 2007). Innovation type will be controlled for based upon two dimensions– radical and incremental innovations (Chesbrough, 2003). Incremental innovations present slight modifications to an existing product. Radical innovations create new and creative products for new markets or competitive advantage to the ICN. It is likely that incremental innovations will produce less joint patents than radical innovations which should impact rent generation.

Statistical Analysis

Hierarchical regression models will be used to determine statistical significance. The first model will introduce the control variables to determine an R-square and significance measure. The second model will introduce the firm interdependency measure, controlling for network size, prior alliance relationship, and innovation type. It is expected that the R-square will significantly increase compared to model one. The third model will introduce IT structure density measures to determine whether IT structure has an affect on rent generation through joint patents. Finally, a fourth model will include the interaction between firm interdependency and IT structure; controlling for network size, prior alliance relationship, and innovation type. It is expected that the R-square will increase suggesting that alignment is a positive predictor of joint patents in ICNs.

CONCLUSIONS

Based on the relational view of the firm (Dyer and Singh., 1998), this research proposes that alignment between firm interdependency required for developing an innovation and the inherent IT structure used to realize an innovation must exist in order for an ICN to maximize the potential relational rents it can gain.

Limitations

This study makes several assumptions concerning firm interdependency based upon the initial description made by Thompson (1967). Several assumptions were made concerning how different degrees of interdependency will affect the rent-generating process. Future research should more fully examine the relationship between firm interdependency and performance outcomes. Additionally, this study focused on the reciprocal-strong tie and pooled-structural holes and did not empirically examine the sequential-hybrid tie relationship. This is partially because hybrid structures are more difficult to examine (Schilling and Phelps, 2007) and may require a more complex measure to determine the degree of balance between structural holes and strong ties. Future research should examine the interactions between these two dimensions and the interaction of IT structure and firm interdependency to determine its effect on rent accrual.

Practical Contributions

This study focuses on how IT structure and firm interdependency can influence rent generation for ICNs. Two practitioner implications can be identified for organizations participating in ICNs. First, the individual hypotheses suggest that firm interdependency and IT structure influence rent generation which suggests organizations should focus on specific forms of ICNs that match their internal capabilities. Second, the alignment hypothesis provides decision makers with a general business strategy to guide the decision-making process for choosing which ICNs to participate in to create the most efficient and effective use of the overall network's resources and generate the most rents for the ICN and the participating organizations.

Theoretical Contributions

Several theoretical contributions can be made based upon this research study. First, this study represents one of the first studies to consider an inter-organizational level of analysis for rent generation using structural hole and strong tie networks. Based on the literature reviewed in this study, few studies have been conducted at the inter-organizational level which forced this study to focus on abstract principles of IT structure and firm interdependency. This study suggests that IT structure may influence the rent-generating potential of an ICN. By focusing on how interactions foster cross-boundary collaboration in terms of interfirm assets and efficient knowledge-sharing routines, this study suggests that IT structure is a significant factor within the relational view of the firm perspective.

Second, this study represents an initial inquiry into exploring how firm interdependency affects the rent-generating process. The degree of interdependency is posited to have a positive relationship to rent generation based on the assumptions made by the relational view suggesting that interaction between organizations is vital for rents to

be derived. Future research should examine the use of firm interdependency as a factor influencing rent generation at the inter-organizational level of analysis.

Lastly, this study links firm interdependency and IT structure suggesting an empirical validation of the organizational strategy-IT operations alignment perspective (Henderson and Venkatraman, 1999). Similar to Henderson and Venkatraman's (1999) argument of fit between organizational strategy and IT infrastructure, this study suggests alignment must exist between the firm interdependency and IT structure to maximize rent accrual. Furthermore, misalignment will negatively affect ICNs in terms of inefficient resource usage and coordination costs. Research should examine the misalignment issue by incorporating additional contextual and moderating factors that allow some degree of variation between fully and partially aligned ICNs.

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