Effects of Industry Span and Resource Stability on Interorganizational Relations

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***Abstract*—When studying interorganizational relationships, it is very hard to distinguish between different forms of interorganizational relations (IORs) mentioned in the literature since they have some common similarities and differences. This leads researchers to experience difficulties in assessing the appropriate form of IORs for specific industrial settings. In this paper, we drive six new definitions for various IORs forms based on two pure forms of IORs; co-exploration and co- exploitation. Additionally, the effects of two environmental factors- stability of resource structure and span of industry- on construction of these IORs are discussed. Definitions derived according to intention (exploration or exploitation), and discussions on effect of two different environmental factors will move our understanding about interorganizational relations beyond joint ventures, strategic alliances, mergers, vertical integration.**

***Index Terms*—interorganizational relations, co-exploration, co-exploitation**

I. Introduction

In the organization studies literature, organizational environment is not just considered as "outside of the organization" but also is perceived as a system within which the organizations strive for their goals. Leblebici and Salancik [1] described the organizational environment as a field of interorganizational a relation in which focal organization is a member. Undoubtedly, the emergence of interorganizational relations caused by nature of exchange has triggered the prevalence of this perspective. Therefore, the main point here is to understand nature of exchange. Pfeffer and Salancik [2] defined organizations as an open system, depending on contingencies in the external environment. They pointed out that in order to understand a firm's behavior, the "ecology of the organization" should be understood. Moreover, Pfeffer and Salancik [2] stated that exchanges are essential; however, these also cause uncertainty for organizations. Therefore, they proposed that organizations adopt some forms of Interorganizational relations to reduce environmental interdependence and uncertainty such as mergers, vertical integration, joint ventures and so on. There is a vast source of studies focusing on these types. More than the type of interorganizational relations is important the intent before forming the IORs. The study conducted by Parmigiani and Rivera-Sandos [3] employed meta-review of many IORs forms and theories, as a result, defined two pure forms of IORs: co-exploration and co-exploitation. This new approach classifies IORs into two sharply contrasting forms. Depending on mentioned study, my question is formed around "what kinds of industrial attributes motivate the selection between these two forms" or which form has the higher probability of success in dealing with uncertainties and survival in some industrial characteristics.

II. Literature Review

Many studies in the literature of organization theory and organizational economics have tried to discover underlying reasons for the formation of interorganizational relations through various key theories. From an organizational economics perspective, it is acknowledged that firms in the context of "bounded rationality", wherein rationality of decision makers is restricted by the their cognitive limitations, and the finite amount of time and information for making decision [4], seek for efficiency by minimizing production and transaction costs, gaining economies of scale or scope, and trying to achieve value by acquiring assets and resources [3]. Within organizational economics perspective, firms work to enhance efficiency and access valuable assets using IORs as neither hierarchy nor market enabled a better, cost-efficient alternative. According to Transaction cost economics perspectives, IORs are described as a hybrid governance structure that has common features with hierarchies and markets, however, these different structures of governance differ in transactions cost. Transaction costs incurred by disagreements and problems in bargaining become prominent in hybrid governance structure [5]. In the focus of Resource Based View, in which firms regarded as an array of resources and capabilities, firms form IORs so as to achieve complementary resources [6]. With respect to RBV, IORs are one of the four major ways to earn new resources through internal development, external procurement, and full acquisition [7]. Although IORs provides advantages to firms, this form also holds risk because of the possibility that some amount of valuable knowledge escapes to partners. Agency theorists assert that firms adopt IORs in order to align the goals and actions of agents with the demands of principals [3].

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IORs are defined as an organizational form in which a partner (the principal) has a business relationship with another partner (the agent) and needs to set up mechanisms to align agent actions with the principal's needs [3]. To sum up, the organizational economics perspective contends that IORs are formed when conducing an activity within a partner relationship is more productive than conducting it within either own hierarchy or the market.

An organization theory perspective asserts that organizations developed partnership relations with others for more effectively accomplished tasks and for creation of robust interorganizational and interpersonal relationships. By virtue of partnership, firms are able to improve their reputations and legitimacy and access to more diverse sources of social capital. In essence, having strong connections is so vital that they enable firms to benefit from knowledge flows between organizations. According to IORs related studies in organization theory, long-term relationships provide benefits by building trust, collaboration, and learning between organizations [3].One of the prominent theories in the organization theory field, Resource dependence theory, asserts that "power" and "dependence" are main drivers for IORs. According to this approach, firms gain power through employing IORs [2, 6]. The primary assumption in this theory is that organizations are dependent on other organizations because of vital resources, which, in turn, causes power struggles and uncertainty. Firms cope with this uncertainty and dependence by creating robust IORs with firms that control over resources they need. Stakeholder theory asserts that firms develop partnerships with prominent stakeholders in order to reduce uncertainty which is stemming from reputational concerns. Actually, the main motivation in this theory for formation of IORs is gaining legitimacy [8]. Institutional theorists assume that concerns related to legitimacy and symbolic performance induce firms to establish IORs with successful corporations .By virtue of IORs , firms achieve improved legitimacy, status, reputation as and performance gains [3]. In social network perspective, organizations are assumed to be connected with each other through repetitive market relations and social contacts which constitute its network structure. From this perspective, IORs are founded so as to gain information and knowledge. The more trust and collaboration between organizations are there, the more social capital and complex knowledge can be exchanged. By putting forward these assertions, social network perspective emphasizes organizational learning and innovation, which are boosted by IORs and cooperation [3].

The organization theory perspective briefly states that organizations desire to reduce dependency and uncertainty by partnering with successful key firms. In this way, they may gain legitimacy and reputation. Additionally, this perspective acknowledges that the formation of IORs necessitates trust between partners

All forementioned theories reveal a clear list of reasons why firms construct IORs. According to these theories, IORs are developed because of need for increase in efficiency through reducing production and governance cost stemming from inappropriate levels of investment, access to complementary resources, and aligned incentives, enhancement of reputations and legitimacy through partnering with successful firms and benefiting from flows of knowledge through social ties.

It is clear that there is a wide range of different forms of IORs and diverse perspective explaining why IORs are formed. This situation makes assessment of the right strategic form of IORs difficult in specific industry settings. Therefore, more general approach segmenting IORs is necessary to conduct more effective analysis of IORs in the context of industrial dynamics.

Parmigiani and Rivera-Sandos [3] in their study posit a framework in which they categorize IORs with respect to their intent. They state that an IOR include characteristics of the pure forms of co-exploration and co-exploitation with different degrees. The authors defined co-exploration IOR pure form as a bundle of cooperative relationships which concentrates on creating new knowledge, tasks, functions, or activities and innovations. Its main activities are learning from the partner, learning about the partner, and learning about managing relationships. IOR tries to achieve value within its boundary with the help of innovation. The duration of IORs depends on learning process and IORs is terminated when the learning process is completed. The main problem of this pure form is the appropriation due to the emphasis on innovation and a high degree of environmental uncertainty. Interdependence between partners will tend to be reciprocal, in which output of each party becomes the input for the other and coordination is provided through mutual adjustment [9]. The nature of the relationship includes exchanging of ideas to co-develop new knowledge. These characteristics necessitate joint decision making and rich, ongoing communication between partners. Co-exploration IOR pure form contrasts sharply with the co-exploitation pure form. The former contains cooperative relationships which concentrate on executing existing knowledge, tasks, functions, or activities. Main activity of the pure form is expansion. Value creation occurs through the efficient usage of assets, mainly involving explicit knowledge. IORs can last as long as partners find the relationship (combining existing resources and conducting a joint activity beneficial. The key problem in this form is slacking, since partners may rely on each other to perform a distinct task. Therefore, decisions are made separately by partners. Since knowledge and tasks are relatively well understood, it does not require intensive communication. Coordination is provided through standard operating procedures, consistent with independence structure [8]. Focused IORs pay attention either to co-exploration or to co-exploitation, but still do a bit of the other, whereas balanced IORs engage equally in both activities. Focused partners adopt in either exploration or exploitation, while balanced partners adopt both within the IOR. Parmigiani and Rivera-Sandos [3] have developed this framework by considering IORs like firms. They have contended that IORs like firms adopt

exploration and exploitation. Based on this idea, they have drawn on definitions of March's (1991: 71) [10] exploration and exploitation.

III. Suggested Model

Based on the study conducted by Parmigiani and Rivera-Sandos [3]'s, we define six types of IORs with respect to the degree of exploration or exploitation orientation of partner firms during IORs construction. Definitions are given in the Table I.

TABLE I. Definitions of Diferrent IORs

Types of IORs	Abbreviations	Descriptions
Balanced IORs with focusing partners	BFP	Number of exploitation activities equals to number of exploration activities within the IOR. Partners focus on either exploration or exploitation within the IOR.
Balanced IORs with balanced partners	BPB	Number of exploitation activities equals to number of exploration activities within the IOR. Partners pay attention to exploration and exploitation equally within the IOR. Partners manifest same pattern in terms of activities.
Co-Exploration with focusing partners	CRFP	Number of exploration activities is greater than number of exploitation activities within the IOR. Partners focus on either exploration or exploitation within the IOR.
Co-Exploration with balanced partners	CRBP	Number of exploration activities is greater than number of exploitation activities within the IOR. One partner focuses on exploration and the other is balanced.
Co-Exploitation with focusing partners	CTFP	Number of exploitation activities is greater than number of exploration activities within the IOR. Partners focus on either exploration or exploitation within the IOR.
Co-Exploitation with balanced partners	CTBP	Number of exploitation activities is greater than number of exploration activities within the IOR. One partner focuses on exploitation and the other is balanced.

After defining IORs, the questions are followed as "Do industry specific traits cause formation of each type" or in other saying, "Does each type of IORs exists within specific industry circumstances". In this study, two environmental factors affecting IORs -"the span of industry" and "the stability of industry resource"- will be examined.

In this study, "the span of industry" is described as the total number of firms in the industry and its related industries. The number of firms in related industry is incorporated since IORs cover different modes of collaboration towards in the stream. It means that the span of industry covers all strong vertical and horizontal relationships of an industry with other industries. Therefore, in order to determine "span of the industry", the number of firms in a given industry is used to represent horizontal relations [11] and the number of firms in related and supporting industries of the given industry are summed up to represent vertical relationships

As the span of the industry grows, it will get harder to learn about your partners and your potential partners, which leads to increase the set-up (bargaining) and governance cost of relations. Namely, the cost of coordination will increase. According to transaction cost perspective [5], firms strive to economize on transaction costs and therefore choose the most suitable governance structure (hierarchy, market and hybrid). Moreover, resource dependence theory states that firms form IORs in order to reduce uncertainty and indolence. To combine these two approaches, firms choose IORs to gain advantage in terms of dependence; however, among the various types of IORs it chooses the one which causes the least transaction cost. Since co-exploration activities require intense communication and learning about the partner and choosing the right partner, the formation of Co-exploration oriented IORs becomes harder in an industry setting where there are many players. Moreover, when considered resource-based view perspective, which deems organizations as a bundle of resources, large span of industry creates a favorable environment for co-exploitation activities since these activities requires combining existing resources. This leads to lower set-up cost for Co-exploitation oriented IORs. Co-exploitation oriented IORs are more suitable when the span of industry is large, Co-exploration oriented IORs are more suitable when the span of industry is narrow. Based on the discussion above, the following proposition is developed:

Proposition 1: As the span of industry grows, it is more probable to see "Co-exploitation focused" IORs and less probable to see "Co-exploration" focused IORs, ceteris paribus.

"The stability of industry resource structure" is described as the exchange rate of elements in the environment [11]. In a stable environment, each firm has a recognized market positon or niche and uncertainty is low, and distribution of resources is constant [11]. Therefore, when the stability of industry resource structure is low, Co-exploration oriented IORs are more appropriate since this type of IORs concentrate on creating new knowledge and innovation, which in turn leads to find a strong position and a niche in the market. In this way, they reduce uncertainty. Under this circumstance, narrow span of industry also provides opportunity in terms of transaction cost and strengthens the effect of the stability of industry resource structure, and encourages firms to set up Co-exploration oriented IORs. It is not suitable to form Co-exploitation oriented IORs when stability is low since this form requires joint use of existing resources and Co-exploitation oriented IORs founded under low stability cause opportunistic behaviors, which in turn lead to increase in transaction

costs [4]. Moreover, Co-exploitation oriented IORs have a potential problem of slacking, which may be a great issue in a speedily changing environment. Similarly, when stability is high, there is no motivation for firms to create new knowledge. We summarize all arguments in following propositions:

Proposition 2: As the stability of industry resource structure increases, it is more probable to see "Co-exploitation focused" IORs and less probable to see "Co-exploration" focused IORs, ceteris paribus.

Proposition 3: As the stability of industry resource structure increases, it is more probable to see "Co-exploitation focused" IORs. This effect will be greater if the span of industry grows, ceteris paribus.

Proposition 4: As the stability of industry resource structure increases, it is less probable to see "Co-exploration" focused IORs. This effect will be lesser if the span of industry grows, ceteris paribus if the span of industry grows, ceteris paribus.

Based on the prepositions put forward above, the following model in Fig. 1 summarizes the under which industrial conditions, which type of IORs we defined is mostly observed. Actually, it proves itself to succeed in a given context.

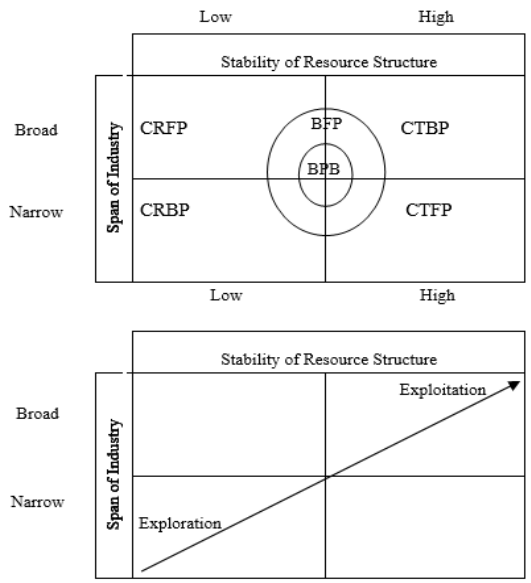

Figure 1. Interorganizational relations model.

CRBP IORs based on its definitions and arguments provided above is located in the model where the span of industry is small and stability of industry resource structure is low, on the other hand CTBP IORs is located where the span of industry is large and stability of industry resource structure is high. For CRFP IORs, again emphasis is on exploration since stability is low. However, some companies in IORs just desire to enjoy with ample resources since industry span is large and some companies just want to benefit from the reduced cost of co-creation of knowledge and concentrate on exploration activities to capture a market position. For CTFB IORs, some companies, again emphasis on exploitation, since stability is high. However, some companies in IORs just desire to benefit from ample resources since industry span is large and some companies just want to benefit from the reduced cost of co-creation of knowledge and concentrate on exploration activities to capture a market position. BPB and BFP are balanced forms so located in the model where all forces have medium effect. However, since BFP IORs include some partners focus on either exploration or exploitation, it does not strictly require medium effect of both factors like BPB.

IV. Discussions

In this section, some examples will be given to pave the way to visualize the prepositions of this study.

Primary goods of semiconductor industry have a large span of industry since its products are widely used in transportation, defense, telecommunication and entertainment industries. Moreover, due to fast knowledge diffusion and creation, the stability of industry is low. Market shares are roughly approximated since the market positions changes significantly each year. It is expected for this industry that the foundation of inter-organizational relations emphasizes exploration (CRFP). However, some companies in IORs desire to benefit from broad range of resources since industry span is large and some companies just want to enjoy with the reduced cost of co-creation of knowledge and concentrate on exploration activities to capture a market position. Hence, while developing IORs, some companies just focus on exploration and some companies focus on exploitation. For example, in many firms in semiconductor industry strive to nano-technological products whereas many firms produce basic products. However, when these companies come together to set-up IOR, they all should focus on developing a relationship where the main focus is creating new knowledge if they want to benefit from the IOR.

On the other hand, primary goods of Food/Beverage industry has small industry span and high stability of resource structure, therefore, IORs are expected to be based on co-exploitation with focusing partners (CTFP). In the industry, some firms tend to focus on discovering new tastes like beverages, whereas many firms depend on heavily exhausting its existing resources like cholate producers.

Health services industry has large span and its resource stability is high since the sector is dominated by major players Therefore, IORs are expected to be based on co-exploitation with balanced partner (CTBP) in which hospitals strive to become a member of international hospital chains. Some has balanced approach and conduct both exploration and exploitation activities.

V. Conclusion

By virtue of complex structure of contemporary business world, the notion of interorganizational relations has attracted greater attention in organizational studies literature. There are many studies explicating underlying reasons of many types of interorganizational relations. However, none of them has attempted to classify them in

terms of intention embraced during formation phrase. Based on typology of co-exploration and co-exploitation, we have generated definitions of possible types of interorganizational relations differing in intentions member organization embrace while involving in the interorganizational relations. Subsequently, we have discussed that under different degrees of span of industry and stability of resource structure, different types of interorganizational relations would be appropriate in order to be sustainable. For future studies, the effects of different factors in addition to the factors employed in present study should be discussed in order to enrich the insights about the different types of interorganizational relations that are defined in present study according to their intentions – exploration or exploitation.

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