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Conceptual Issues in University to Industry Knowledge Transfer Studies: A Literature Review

Lina Anatan*

Maranatha Christian University Bandung, Indonesia Jl. Prof. Drg. Suria Sumantri, MPH no. 64, Postcode 40164, Bandung, Indonesia

Abstract

This paper discusses conceptual issues in university to industry knowledge transfer within university and industry alliance. The literature shows three major theories to analize university to industry knowledge transfer, include Transaction Cost Economic Theory, Resource-based View, and Knowledge-based View which emphasize on motives and benefits of resources accessed through university to industry knowledge transfer. Another issues focus on "alliance dilemma" caused by the debate on cost and time needed in the alliance. Lastly, this paper attempt to propose an institutional theory as an alternative to explain factors that may influence the success of university to industry knowledge transfer activities.

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Keywords: conceptual issues, university to industry knowledge transfer, university and industry alliance

1. Introduction

Knowledge has become the most important source of competitive advantage, this lead to the importance role of university as producers of knowledge. The growing phenomenon shows that many policies are established to promote the transfer of knowledge through university and industry alliance based on the motivation and the resources available.

* Corresponding author. Tel.:(+62 818326207)
E-mail address: lina_anatan@yahoo.com

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This phenomenon increases academia's interest in contributing both conceptual and empirical studies to understand, to explain, and to justify the process of knowledge transfer activities within university and industry alliance.

The discussion on universityy's contribution, beside teaching and research in economic development through the transfer of knowledge from university to industry has received great attention in strategic management literature (Anatan, 2013). According to Bercorvitz and Feldman (2007) in Anatan (2015), strategic alliances will increase organization capability to produce innovative and competitive product based on customer need that lead to the organization productivity and performance improvement. Through alliance the organization's opportunity to access specific knowledge which they do not have will be increased. By linking resource and knowledge between the alliance partner, the synergy between university and industry can be create as a competitive weapon to survive within market competition.

This paper discusses conceptual issues in university to industry knowledge transfer within university and industry alliance studies. The three major theories include Transaction Cost Economic Theory, Resource-based View, and Knowledge-based View are usually use as the perspective to analize university to industry knowledge transfer studies. The theories emphasize on motives and benefits of resources accessed in the process of knowledge transfer activities within university and industry alliance. This paper also attempt to propose institutional theory as alternative to explain factors that might influence the success of university to industry knowledge transfer activities.

2. Perspective Theories in University to Industry Knowledge Transfer Studies

Many empirical studies have been proved that knowledge transfer activities within the university and industry alliance have a positive impact for both universities and industry, however, there is still a dilemma for organizations to decide whether they involve in the alliance or not. This can be explained by the fact that even though the role of formal collaboration within strategic alliances is important and has been increased in these recent years, the collaboration often could not achieve the established goals, and many have failed to achieve it. This circumstance raises a dilemma for organizations to decide their involvement within strategic alliance, on the one hand, the organization is willing to get the benefits through the alliance, on the other hand, the organization has fear that what has been done through alliance did not match expectations (Lin & Chen, 2002). These lead to the debate whether knowledge transfer activities within university and industry alliance will give positive, negative, or no impact to the organizational and alliance performance. This condition leads to the need of costs and benefits analysis in university and industry alliance. From the decision-maker perspective, alliance should be done only if an impact of alliance is valuable, especially in relation to knowledge diffusion process, so as to consider the factors that determine the success of value creation within university and the industry alliance (Anatan, 2013).

Conceptual and empirical literature on university to industry knowledge transfer has been discussed the important implications of knowledge transfer through university and industry alliance debate on policy-making (Pogayo-Theotoky et al., 2002 in Link et al.,2005). As the main objective of strategic alliance is to achieve specific goal though interfirm arrangement, many theoretical perspectives are used to explain various aspects of university to industry knowledge transfer phenomena to fill the gap by analizing factors related to and influencing organization and alliance performance. Each of these theories has a singular contribution to university to industry knowledge transfer study to provide a holistic view of the theoretical foundation of strategic alliance. It can be concluded that the decision regarding strategic alliance choice might influence both the ease of knowledge flow and the incentives to share knowledge (Anatan, 2013).

There are three major theoretical foundations that have been widely used to explain university to industry knowledge transfer, specifically Transaction Cost Economics (TCE), Resource-Based View (RBV), and Knowledge-Based View (KBV) which focused on explaining the motive of resource access motive within strategic alliance formation between university and industry as the advantage of two organization joining their complementary resources to achieve specific goal established in strategic alliance. These theories also discussed that organization involvement within strategic alliance will enable organizations to consider and to take every potential opportunity to promote their products or services at some level within the strategic alliance through some specific strategic alliance formation that has been popular around the decade, such as R&D agreement and co-marketing contract as buyer and seller relationship (Hill, 2005).

TCE belongs to new institutional economics paradigm which complements the traditional neo-classical economics.

Based on TCE, economic activities revolve around antecedents include exchange of goods and services between the economic actors with an appropriate governance mechanism that match with the nature of transaction to optimize the exchange (Williamson, 1985). There are three governance mechanism according to TCE, consists of market governance where price governs, intermediate governance where complex contracts and strategic alliance governs, and hierarchical governance where manager governs within the boundary of the firm (Judge and Dooley, 2006).

This theory also explained that human resources as economic actor is characterized by bounded rationality and opportunism (Williamson, 1975). Kogut (1988) explained that TCE deals with the question of economic organization by focusing on the transaction as the unit of analysis. Minimum transaction cost achievement among various assets, include all the expenses and fees when preparing and implementing contracts and agreements, dealing with incurred legal claims about the terms and conditions, stabilizing the working relationship and expanding the investment channels. Therefore, the appropriate governance mechanism is needed to protect the alliance from moral hazard by optimizing the flow of goods and services related to the transaction within strategic alliance partners. This can be explained by the logic that the biggest potential damage and opportunistic behaviour between the alliance partners, the more elaborate government mechanism which needed, and the higher the transaction cost as a consequence.

According to TCE, there are many reasons behind the economic hazard within strategic alliance that can be explained by two specific reasons, ie. bounded rationality and opportunism. Bounded rationality explained the fact that economic actors have information data and obstacles related to information processing abilities. Economic actors also faced the fact that the future is always unknowable. When there is no bounded rationality, economic activities can be organized efficiently through contract. Opportunism is related to behavior assumption that economic actors are primarily exclusive, has orientation toward personal interest that can be avoided by the partners. In the context of strategic alliances, the moral hazard can be in many different forms such as the alliance partner might be motivated by, information and resource within alliance to protect their core assets such as sub standard technology and or managerial talent.

In term of motivation to involve within strategic alliance in the process of knowledge transfer activities, Kogut (1988) explained that TCE is the most useful theory for integrating the economic implication of organizational behavior on strategic analysis of the firm. The theory emphasized on the use of internal organization to preserve incentives to cooperate and share knowledge via controlling threats of opportunism (Sampson, 2004). Hornet (1991) supported by Kogut (1988) explained that based on TCE perspective, the organization will establish alliances when the cost incurred is perceived to be lower than that involved in full integration of the given activity within the existing corporate hierarchy, in other words, firms will engage in alliance only if inter-organizational knowledge transfers are more efficient than the market.

According to RBV, organizations particularly firm is defined as a set of productive resources and administrative organizations (Penrose, 1959), while resource is considered as important source of competitive advantage which is based on internal firm resources rather than on the basis of firm's products (Wernefelt, 1984). This is because of firm's obligation to exploit their internal strengths through their resources (Barney, 1991). Firm resources considered as sources of competitive advantage when the resources are meet the four attributes include valuable; rare; imperfectly imitable; and substitutability and those resources, assets, and capabilities can be combinative and cumulative in nature.

Das Dan Teng (2000) proposed that RBV is focused on the internal aspect of the firm and following Barney (1991) arguments, said that the strategic model based on the environment and industry has made the assumptions becomes unrealistic. Firms must focus on resources to achieve sustainable competitive advantage. RBV has significant contribution to strategic alliance as firm competitive advantage is determined by a bundle of unique resources and relationship. Many studies have discussed the contribution of RBV such as study conducted by Eisenhardt and Schoonhoven (1996), Kogut (1988), and Lyles and Salk (1997).

Study conducted by Eisenhardt and Schoonhoven (1996) explained that alliance will be developed when organization in vulnerable strategic position, for example when resources are needed and not available by the organization itself or on the other hand in a position when they have valuable resources to share. Kogut's (1988) study focused on organizational knowledge, while Lyles and Salk (1997) developed resource-based on strategic alliance. According to Kogut's study, alliance is established based on resources such as knowledge and technology. There are two factors that influence the alliance decision, include getting and managing organization know how. Many conceptual and empirical studies considered strategic alliance as alternative to internalization in one hand, and exchange on the other hand, which lead to organization choice whether they have to produce its own, buy from spot market, or getting through joint partnership.

Compared with TCE, which focused on minimizing the transaction and produced cost, RBV focused on how to maximize organizational value through pooling and utilization of valuable resources. Therefore, organizations are considered as effort to find resource boundary through value of resources. The major difference between the two perspectives shown by competitive hypothesis between the two perspectives. TCE hypothesis focused on firms partners in the same industry that will influence their choice, while RBV hyphothesis focus on resource integration and do not influence the reationship, and resources integration can be solved through industry affiliation. Organization decision to engage within alliance is based on two reasons either organization has strategic position and need valuable resource or organization need to capitalize their assets.

According to KBV, the primary benefit of strategic alliance is knowledge access. Strategic alliance gave significant contribution on knowledge application through improving efficiency where knowledge is integrated, and how to implement knowledge efficiently. To differentiate more substantial and collaboration, we use strategic alliance, that defined as an aggreement between two or more parties to achieve common goals that pooling resources and capacity (Teece, 1992). This activity can be a supplier-buyer relationship outsourcing agreements, technology collaboration, joint resources, new product development, shared manufacturing, common distribution agreements across selling arrangement and franchising. Strategic alliance also could be a contractual agreement, such as franchising, cross licensing, agreement, ownership link (cross holding and joint venture).

KBV rooted in RBV approach to alliance certain type of resource that influence alliance formation and consentrated in R&D actors. The theory emphasized on the use of firm or internal organization as a means to increase productive knowledge flow (Kogut & Zander, 1992). Many studies of strategic alliance identified high knowledge sharing, know how, and organizational capability. As the outcome, competition for learning where each alliance faster rate compared with partner to achieve positive for organizational competitive advantage. In KBV perspective, knowledge is seen as the strategically most significant resource of the firm (Grant, 1996), where productive integration of knowledge resources and derivative decision-making capabilities influence firm's future growth. Coordination and combination of different knowledge resources at the firm level rather than the individual level through business activities will influence firms competitive advantage.

Many researchers propound that knowledge, especially tacit knowledge (Polanyi, 1967), is the firm's most important and primary resource (Grant, 1996; Mc. Evily & Chakravarthy, 2002). Tacit knowledge defined as "to know more than we can tell," and views this knowledge as largely in-articulable, it is primarily seen through an individual actions rather than through specific explanations of what individual knows. Knowledge has become the most valuable resource for organizations since knowledge has some specific characteristic such as linked to individuals, very difficult to articulate, difficult to transfer and thus can give a sustainable competitive advantage. However, these specific characteristics might arise problem within the knowledge transfer activities process. Barney (1991) explained that problem arise when firms are lack of absorptive capacity because knowledge, especially the complex, tacit and heterogeneous knowledge is hard to imitate, rather than raw materials that provide the driving forces of alliances competitiveness and performance. Therefore, strategic alliance should be developed as a means of learning in the process of knowledge transfer and generation. Strategic alliance as a method of learning can predict that knowledge based partner alliance tend to converge alliance partner to learn from one another.

3. Institutional Perspective on University to Industry Knowledge Transfer Studies

Environment motivate organizations to participate in organizational relationship for some reasons, such as improving the reputation of the organization (Crawford & Gram, 1978). This can be done through participation in inter-organizational relationships, such as a small organization which operates in a competitive business environment might improve its visibility, reputation, image, and prestige through partnerships with large organizations which has been established to gain legitimacy in the industrial environment in which the organization operates (Wiewel & Hunter, 1985). Perrow (1961) in (Dacin, Oliver, and Paul Roy, 2007) defines legitimacy as social justification actor or activity, so that the actor or the activity in the validation and publicly are legalized.

Legitimacy is important for the organization as the key to open cooperation with other organizations to access critical resources and expertise that may not be owned by the organization. Legitimacy is required as an important aspect to survive in the environment in which the organization operates. Meyer and Rowan (1992) suggested that the motive to gain legitimacy is to ensure organization survival in addition to targeting efficiency. The organization establishes strategies to adjust to social rituals and myths to become similar.

Empirical studies in the field of strategic management have been a lot of focus on how the organization's environment is formed, reproduced, and transformed through action and organizational relationships. The key success of organization is to make pragmatic knowledge orientation as institutionalized knowledge, which can be obtained through the process of knowledge transfer from and between organizations as a major resource in the organization’s everyday life (Lawrence, 1999). Bhagat, Kedia, Haveston, & Triandis (2002) argued that the transfer of knowledge between organizations that effectively facilitated by the organization's ability to transfer and the recipient's ability to use the appropriate institutional elements to complete the transfer through cooperation between organizations.

In the context of knowledge transfer through cooperation between organizations, institutional theory explained why organization has particular behavior in institutional environments, such as efforts to gain legitimacy as a strategy for improving social reputation or show eligibility to be accepted and to survive in its environment (Barringer & Harrison, 2000) institutional theory explains how the organization works to shape the environment, and affect the organization to appear legitimate and conform with social norms. Institutional theory is emphasis on how organizations adopt structures, procedures, or idea, is not based on efficiency, but based on the definition of legitimacy from the external environment (Meyer & Rowan, 1977).

Organization directed by elements of legitimacy, ranging from standard operating procedures to professional certification and state requirements (Zucker, 1987). Changes due to adoption of legitimacy elements push the homogenization and increase the probability of organization to be able to survive in a business environment. The trend toward homogenization or inclination resemblance organization with other organization in the environment is known as isomorphism (DiMaggio & Powell, 1983). Meyer and Rowan (1977) describe the condition of isomorphism as a formal organization to align with the environment through interdependence and exchange techniques. Organizational change and homogenization is the result of institutional pressure according to DiMaggio and Powell (1991) derived from coercive isomorphism, normative isomorphism, and mimetic isomorphism.

Coercive isomorphism is the result of political influence that drives the need for legitimacy. Mimetic represents the pressure which arises from the perspective to reduce uncertainty (Davidson et al., 2006). This pressure indicates the mechanism by which the pillars of power and cultural influence behavior resulting isomorphism with institutional environment. The response to uncertainty, for example, an organization adopts the practices of other organizations that have been successful and legitimized the mimetic isomorphism. Normative isomorphism is a change that is followed to meet the standards of profession. Represent normative pressures arising from perfectionism that encourages organizations to adopt processes and structures to gain legitimacy. Therefore, organizations in the same environment will be structurally similar as response to similar institutional conditions.

Scott (1995) identified three pillars of the institutional context which is the institutional strength, based on the typology proposed by DiMaggio and Powell (1983). The three pillars include: a regulator (associated with coercive pressure), normative (related to normative pressure), and cognitive (elaboration of concepts pressure mimetic). Regulative related to coercive pressure which is a bunch of rules that provide a framework for achieving specific outcomes, for example related to the financial, educational, and judicial. Normative, related to expectations about how people behave in specific situation. Cognitive, elaborates the concept of mimetic pressures and specific view of the actor and related information on specific activities performance.

Institutional theory has indeed been widely used in explaining the phenomenon of strategic alliances (Hitt, Ahlstrom, Dacin, Levitas, & Syobomia, 2004), but still very rarely used in explaining university and industry alliance, particularly in explaining the activities of knowledge transfer from university to industry (Poglajen, 2012) because the institutional theory, conceptually "seems" less appropriate to describe the phenomenon of university and industrial alliances since these both organizations have significant differences in characteristics, mission, and organizational culture. While the core of the institutional theory is to explain the organizational homogeneity and stability of the institutional component (DiMaggio & Powell, 1991), therefore the implementation of institutional theory in explaining the transfer of knowledge from university to industry is expected to provide new insights in strategic management literature.

5. Conclusion

The use of institutional theory in explaining knowledge transfer activities from university to industry within university and industry alliance constituted by the organization's decision to engage in cooperation with other organizations, in particular through the activity of knowledge transfer from university to industry. It is driven by the external environment pressure to have innovative capabilities in particular in terms of research and development, as well as to improve the organizational performance (both university and industry) and the alliances performance to remain competitive and survive. This condition can be explained by the institutional theory perspective that emphasizes the organization formed by the external forces through the process of imitation (mimicking) and adherence (compliance) that might explain the existing phenomenon.

References

Anatan, L. (2013). A proposed framework of university to industry knowledge transfer. *Review of Integrative Business and Economics,* 2 (2), 304-325.

Anatan, L. (2015). An institutional perspective of knowledge transfer within university and industry alliance. Proceeding of SIBR Osaka Conference, July, 1st-2nd, 2015.

Barney, J.B. (1991). Firm resources and sustained competitive advantage. *Journal of Management*. 17 (1): 99-120.

Barringer, B.R., Harrison, J.S. (2000). Walking a tighttrope: Creating value through interorganizational relationship. *Journal of Management*. 26 (3). 367-403.

Bhagat, S.R., Kedia, B.L., Harveston, P.D., Triandis, H.C. (2002). Cultural variation in the cross border transfer of organizational knowledge and integrative framework, *Academy of Management Review*, 27 (2), 204-221.

Davidson, P., Hunter, E., & Klafsten, M. (2006). Institutional force: the invisible hand that shapes ventures ideas. *International Small Business Journal*, 24 (2), 115-131.

Das, T. K., & Teng, B. (2000). A resource-based theory of strategic alliances. *Journal of Management*, 26: 31-61.

DiMaggio, P.J., & Powell, W.W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*. 48, 147-160.

Eisenhardt, K.M. & Schoonhoven, C.B. (1996). Resource-based view of strategic alliance formation: strategic and social effects in entrepreneurial firm. *Organization Science, 7*(2), 136-150.

Grant, R. M. (1996). Toward a Knowledge-Based Theory of the Firm. *Strategic Management Journal*. 17, 109-122.

Hennart, J.F. (1991). The transaction costs theory of joint ventures: an empirical study of Japanese subsidiaries in the United States. *Management Science*, 37(4), 483–497

Hill, C. (2005). *International Business: Competing in the Global Marketplace* (5th). New York: McGraw-Hill Irwin.

Hitt, M.A., Ahlstrom, D., Dacin, M.T., Levitas E., & Svobodina L. (2004). The institutional effects on strategic alliance partner selection in transition economies: China vs. Russia, *Organization Science*,15(2): 173-185.

Judge, W. Q. & Dooley, R. S. (2006). Strategic Alliance Outcomes: A Transaction Cost Economics Perspective. *British Journal of Management*, 17, 23-37.

Kogut, B. (1988). Joint venture: theoretical and empirical perspective. *Strategic Management Journal*, 9: 319-332.

Kogut, B., & Zander, U. (1992). Knowledge of the firm, combinative capabilities, and the replication of technology. *Organization Science*, 3: 383–397

Lawrence, T.B., (1999). Just Strategy, *Journal of Management*, 25 (2), 161-188.

Lin, B., & Chen, C. (2002). The effects of formation motives and inter-firm diversity on the performance of strategic alliance. *Asia Pacific Management Review*. 7 (2), 139-166.

Link, A.N., & Scott, J.T. (2005). Opening the ivory tower's door: An analysis of a determinants of the formation of US University spin-off companies. *Research Policy*, 34(7), 1106-1112.

Lyles, M. A., & Salk, J. E. (1996). Knowledge Acquisition Form Foreign Parents inInternational Joint Ventures: An Empirical Examination in the Hungarian Context. *Journal of International Business Studies*. 27, 877-903.

McEvily, S., & Chakravarthy, B. (2002). The persistence of Knowledge-based Advantage: an Empirical Test for Product Performance and Technological Knowledge. *Strategic Management Journal*, 23, 285-305

Meyer, J. W., & Rowan. B. (1975). Notes on the Structure of Educational Organizations. Paper presented at Annual Meeting of the American Sociological Association, San Francisco.

Penrose, E. T. (1959). *The Theory of the Growth of the Firm*. New York: Wiley.

Pogayo-Theotoky, J., B., J., & Siegel, D.S. (2002). Universities and Fundamental Research: Reflections on the Growth of University-Industry Partnership.

Poglajen, M. (2012). University-industry knowledge and technology transfer: isomorphism of university technology transfer organizational units. Paper presented at DRUID 2012, Copenhagen, Denmark.

Sampson, R. (2004). The Cost of Misaligned Governance in R&D Alliances. *Journal of Law, Economics, and Organization, 20*(2), 484-526.

Scott, W.R. (1995). *Institutions and organizations*. London: Sage Publication.

Teece, D. J. (1992). Competition, cooperation, and innovation: Organizational arrangements for regimes of rapid technological progress', Journal

of Economic Behavior and Organization, 18(1), 1-25.
Wernerfelt, B. (1984). A Resource-based view of the firm. *Strategic Management Journal,* 5 (2). 171-180.
Williamson, 0., 1985. The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting. Free Press, New York.
Zucker, L.G., 1987. Institutional theories of organization. *Annual Review of Sociology*, 13, 443-464.