INDERSCIENCE PUBLISHERS
Linking academia, business and industry through research

International Journal of Economic Policy in Emerging Economies

2018 Vol.11 No.4

Special Issue on: Market Structure and Resource Allocation in Emerging Economies

Guest Editor: Assoc. Prof. Michael K. Fung

Editorial

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The papers published in this *IJEPEE* special issue were presented at the SIBR-RDINRRU 2015 Conference on Interdisciplinary Business and Economic Research, which was held on July 2–3, 2015 in Osaka, Japan. The conference was jointly organised by The Society of Interdisciplinary Business Research and The Research and Development Institute of Nakhon Ratchasima Rajabhat University.

The papers appearing in this special issue were peer reviewed following the procedure outlined as follows. The guest editor initially evaluated all manuscripts nominated for the special issues. Papers rejected at this stage were outside the aims and scope of the journal or were insufficiently original. Papers that met the minimum criteria were forwarded to at least two experts for further review. This special issue employed double blind reviewing, where both the referees and author(s) remained anonymous throughout the process.

This *IJEPEE* special issue strives to stimulate cross-disciplinary interest in market structure and resource allocation in emerging economies. Specifically, Wachirapanyapong applied both qualitative and the quantitative methodologies to create a business development plan for Thai traditional massage. Dheera-aumpon studied resource misallocation in Thailand's manufacturing industries. Moreover, Wisuttisak and Rahim investigated the roles of private public partnerships and challenges related to the competition law and policy in ASEAN infrastructure. Raharja's study focused on the opportunistic behaviour in the Indonesian textile industry. Vacca and Onishi tried to show the benefits of transparency in environmental issues under the current EU framework. In addition, Kim et al. were concerned about the outplacement program and system for career transition of middle-age or elderly retirees in Korea. Denziana and Octavianto argued that corporate social responsibility is an investment that may enhance growth and sustainability of a company. Similarly, Withisuphakorn examined the relationship between CSR and financial return. Anatan was interested in knowledge transfer between universities and industry alliances. Arifianti documented the retail mix

strategy of Hypermarkets in Indonesia. Finally, Amelia and Ronald attempted to estimate the effects of macroeconomic variables on the number of active cooperatives in Indonesia. The emergence and development of the above interdisciplinary business and economic issues is well celebrated throughout this thematic issue.

An institutional perspective of knowledge transfer within university and industry alliance

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Abstract: University to industry knowledge transfer within university-industry alliance has become an essential element of the research endeavours both in academic institutions and industrial sectors. It contributes significant resources, not only financial resources but also intellectual resources, to the companies related. By managing it, they expected to invest on the development of university research and business research capabilities on current research strength, and to link the research strength to solve the problem within the industry which leads to the improvement of performance, not only of the companies, but also the academic institutions' performance. This paper discusses and develops some propositions of university to industry knowledge transfer within university and industry alliance that explain antecedents (knowledge attributes, organisational attributes, network attributes) and consequence of university to industry knowledge transfer and the role of uncertainties that might affect the relationship between university to industry knowledge transfer and the alliance performance. Institutional perspective is used to develop some proposition to explain the relationships between variables in the proposed framework of university to industry knowledge transfer.

Keywords: university to industry knowledge transfer; alliance performance; institutional theory.

Reference to this paper should be made as follows: Anatan, L. (2018) 'An institutional perspective of knowledge transfer within university and industry alliance', *Int. J. Economic Policy in Emerging Economies*, Vol. 11, No. 4, pp.378–395.

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This paper is a revised and expanded version of a paper entitled 'An institutional perspective of knowledge transfer within university and industry alliance' presented at the Society of Interdisciplinary Business Research (SIBR), Osaka, 2–3 July 2015.

1 Introduction

In recent years the discussion of universities contribution to economic development through universities to industry knowledge transfer beside its contributions in teaching and research, has received great attention in organisational and strategic management literature. University to industry knowledge transfer within university and industry alliance has become an interesting issue in conceptual and empirical literature on inter-organisational knowledge transfer. It refers to extensive interactions at different levels that involve different activities for knowledge and technology exchange (Rossi, 2010). These activities include the creation of a start-up company, associated with commercial exploitation of the university, joint research performance, academic advising, development and commercialisation of intellectual property rights, and other activities such as cooperation in education, company staff training, and researcher exchange.

University and industry alliance is expected to have positive impact in improving innovation capabilities and overall company performance through increasing company's ability to produce innovative products which are useful to industry and public. Through strategic alliances, industry may increase the ability of organisations involved in alliances to improve internal efforts in achieving strategic objectives and providing access to specific knowledge that may be difficult and impossible to obtain (Bercovitz and Feldman, 2007). To improve access capabilities, strategic alliances are needed through knowledge transfer by linking resources and knowledge with business partners (Nohria and Garcia-Pont, 1991). A similar opinion was expressed by Harryson et al. (2008) who suggests that the alliance creates synergies between resources and knowledge that enhance or establish competition in the market.

Even though there are a lot of conceptual and empirical literature which discuss alliance between industry and university, research centre, or public research institution, there is still few studies that use different theory perspective, for example institutional theory based on comprehensive data (van Wijk et al., 2008), especially in dyadic level analysis (Caloghirou et al., 2003). Table 1 summarised gaps in conceptual, empirical, and methodology in the study of university to industry knowledge transfer within university and industry alliance.

Table 1 Gaps in the study of university to industry knowledge transfer

	Gaps	*References*
Conceptual	Perspective of theory: institutional theory	Meyer and Rowan (1977), Kraatz (1998), DiMaggio and Powell (1983), Baum and Oliver (1991) and Daghfous (2007)
Empirical	Examining moderating variable to explain the inconsistency result of knowledge transfer effect on organisational performance	Tsai (2001)
Methodology	Examining intergrative model of university to industry knowledge transfer	van Wijk et al. (2008) and Martinkeinate (2011)
	Dyadic level analysis	Tijssen et al. (2012) and Caloghirou et al. (2003)

Institutional theory focuses on the problem of legitimacy and compliance with norms. According to institutional theory, institutional environment give pressure to organisations to obtain legitimacy, and in accordance with the norms applicable to gain access to the required resources and expertise. Moreover, legitimacy is also required to gain membership in an organisation that can improve an organisation's reputation. In relation alliance decision, the alliance is based on organisational effort to gain legitimacy or as a result of isomorphic pressure which responds by imitating company that has built alliances (DiMaggio and Powell, 1983).

Institutional theory has indeed been widely used in explaining strategic alliances phenomenon (Hitt et al., 2004), but still very rarely used in explaining the university and industry alliance (Poglajen, 2012). This can be explained by the fact that conceptually, institutional theory 'seems' less suitable to explain university and industry alliances phenomenon which refers to organisations that have a significant difference in the vision, mission, and organisational culture, while the core of institutional theory is to explain the homogeneity and stability of institutional components (DiMaggio and Powell, 1991). Institution is seen as a group of principles and models, and classification rules, which define the nature and purpose of the perpetrator and the action (Boli and Thomas, 1999).

Empirical test on the integrated role of antecedents, consequences, and moderating variables in the process of knowledge transfer within university and industry alliances are still very rare (van Wijk et al., 2008; Martinkeinate, 2011). van Wijk et al. (2008) and Martinkeinate, 2011) conducted a literature review to provide a critical review related to inter-organisational knowledge transfer studies. The literature review show that an understanding of the antecedents and the consequent remains unclear and there have been no quantitative studies that provide empirical evidence to describe the relationship between antecedent and consequent variables in knowledge transfer process (van Wijk et al., 2008). To understand how organisations organise and gain benefit through transfer of knowledge, empirical studies that focuses on antecedent and consequent of knowledge transfer need to be done, but in fact there are still lack of a systematic overview that explain the underlying mechanisms of knowledge transfer and its outcomes. Therefore the development of an integrative model is needed to examine how the antecedent, moderating, and its consequence relates each other to influence the university to industry knowledge transfer activities within university and industry alliance.

Previous studies classify antecedents of knowledge transfer into three categories: knowledge attributes, organisational attributes, and network attributes (Lyles and Salk, 1996; Adler and Kwon, 2002; van Wijk et al., 2008), and the consequent of knowledge transfer into two categories: financial and innovative performance (Lyles and Salk, 1996; Szulanski, 1995). In this study, the antecedents of knowledge transfer refers to previous studies, which include knowledge attributes, organisational attributes, and network attributes, while the consequence of knowledge transfer does not use financial and innovative performance due to the difficulty to get the data to measure both performances, particularly to measure the university performance. Therefore in this study, the consequences of knowledge transfer are measured by the institutionalisation of knowledge transfer activities (Santoro and Gopalakrishnan, 2000).

Hedges and Olkin (1985) and Hunter and Schmidt (1990), in Sanchez-Meca et al. (2003) show that the result of the study reveal the differences in the effects of homogeneity in relationship between the antecedent of organisational knowledge transfer, and its consequence. It can be concluded that there might be many other variables that influence the effect of homogeneity in the study. The difference in the results of the

previous studies in explaining the relationship between the homogeneity effect of organisational knowledge transfer and its consequence became the main reason for the need of empirically test to prove the role of moderating variables in explaining the relationship between variables in the integrative model of knowledge transfer. Referring to study conducted by Daghfous (2007), this study examines the moderating role of uncertainty in explaining the relationship between knowledge transfer and alliance performance.

The difference results of knowledge transfer effects on alliance performance requires empirical evidence to investigate the role of other variables in explaining the relationship between knowledge transfer and organisational performance, and the fragmentation of previous studies used as the basis to develop a proposed framework of university to industry knowledge transfer which some modifications in the classification of antecedent, moderating, and the consequent of university to industry knowledge transfer within university and industry alliances. This study developed a proposed framework of the antecedents and consequences of university to industry knowledge transfer based on literature review as a measure to test the antecedent variables that affect the knowledge transfer and its consequence, level of institutionalisation of knowledge transfer activities, as well as examine the role of uncertainties which include technical and organisational uncertainty as moderating variable that explains the relationship between knowledge transfer and level of institutionalisation of knowledge transfer activities

2 Institutional theory perspective on strategic alliance

According to Boli and Thomas (1999), institution is seen as a group of principles and models, and classification rules that define the fundamental nature and purpose of economic actors and the actions of economic agents attached to the existing reality. Formal organisation formed by social factors, cultural, and symbolic arrangement seen as elements in standardisation (DiMaggio and Powell, 1983) or as a description of role structure, activity, and the relationship in explicit way (Meyer, 1992a).

Institutional theory provides a view of complex organisation. Based on this theory, organisational actions are controlled by social justification, i.e., by the actors in the organisation wishes to provide any meaningful action (DiMaggio and Powell, 1983; Scott, 1995). Strategic and economic activity inherent in the social context of normative and motivate the economic actors to seek legitimacy or approval of their actions, especially the actions of economic actors that heavily dependent on physical capital, human resources, financial, or reputation (Amburgey et al., 1996). Institutional theory also suggests that the institutional environment, such as government, community, and social groups, providing real pressure for organisations to justify the strategic actions they did (Dacin et al., 1999). These pressures motivate organisations to take measures that increase the legitimacy of the institutional constituents to conform to institutional rules, regulations, norms, and expectations (Dacin, 1997).

One way that can be done by an organisation is through participation in interorganisational relationships. For example, small organisation that operates in a competitive business environment can improve visibility, reputation, image and prestige through partnership with large organisation that has been established to gain legitimacy in the industrial environment in which the organisation operates (Wiewel and Hunter, 1985). Increasing legitimacy is important for the organisation and it becomes the key to

open the collaboration with other organisations to access critical resources and expertise that may not be owned by the organisation. Institutional pressures also motivate firms to participate in inter-organisational relationships for other reasons, such as improving the organisational reputation (Crawford and Gram, 1978).

Meyer and Rowan (1977) argued that the motive to gain legitimacy is to ensure the organisation survival, in addition to target efficiency. Organisations define strategies to customise a social ritual and myth to become similar. Organisation directed by elements of legitimacy, ranging from standard operating procedures to professional certification (Zucker, 1987). Adoption of legitimate elements, lead to isomorphism process with the institutional environment and increase the probability of an organisation to survive in business environment.

Organisational change and homogenisation is the result of institutional pressure that derived from coercive isomorphism, normative isomorphism, and mimetic isomorphism (DiMaggio and Powell, 1991). Coercive isomorphism is the result of political influence that drives the need for legitimacy. Response to uncertainty, for example, an organisation adopts other organisations practices that have been successful and legitimised a mimetic isomorphism, while normative isomorphism is a change that followed to meet professional standards. Structural isomorphism increased through the process of top-down rather than bottom-up (Boli and Thomas, 1999). Based on the classification by DiMaggio and Powell (1991), a top-down approach is similar to coercive isomorphism is done primarily by the state to determine the legal framework (Goldfarb and Henreksen, 2003), whereas the bottom-up approach similar to mimetic isomorphism, where organisations are explicitly respond to environmental uncertainty adopting behaviours and practices that apply other organisations. Normative isomorphism can be viewed as a combination of the two approaches in which professional organisations define standards that are not imposed by the state, but seen as a model for other organisation to emulate practices to gain legitimacy.

Table 2 Institutional theory

	Institutional theory
Concept	Institutional Theory suggests that institutional environments impose pressures for organisations to look for legitimacy and in accordance with prevailing norms. This is done to open the way for an organisation to gain access to the resources and expertise required. Another reason is to gain membership in an organisation that can improve an organisation's reputation.
Focus	Legitimacy and compliance with norms
Rationale for alliance	Decision-making in alliances based on an attempt to gain legitimacy or as a result of isomorphic pressure responds by imitating the company has built alliances
Assumption	University and industry alliance is developed as a result of the three types of isomorphism, not as a follow-up between the rational selection of the most appropriate models for the existing business environment.
Researchers	Meyer and Rowan (1977), Meyer (1992b), DiMaggio and Powell (1991), Baum and Oliver (1991) and Kraatz (1998)

Institutional theory becomes the theoretical background in examining the organisation similarities and the reasons for the organisations involved in the development of university and industry alliances as a means to support the process of university to

industry knowledge transfer. Basic assumptions used in the analysis of university to industry knowledge transfer within t industry and industry alliances is that although there are differences in the vision, mission, and culture between university and industry, university and industry alliances is developed as a result of the three types of isomorphism, not as a rational follow-up selection the most appropriate model for existing conditions of the business environment. An explanation of institutional theory is summarised in Table 2.

3 Research on university to industry knowledge transfer: empirical findings

The literature review shows that the effect of knowledge transfer on organisational performance, both the university and the industry, are inconsistent and conflicting (Anatan, 2013). Studies conducted by Breschi et al. (2006) and van Looy et al. (2006) showed a positive relationship between knowledge transfer and alliances performance. While Nelson (2004) states that UIKT is a time consuming activities with a very high cost, which in turn will hamper the development of research and knowledge in the university, in other words, there is a negative relationship between knowledge transfer and alliance performance. Moreover, Nelson (2004) explained intensive cooperation between university and industry that might lead to changes in university focus related to research activities to resolve short term problems in the industry, which in turn might reduce the university's intellectual freedom in research agenda and the application of the research results. Martin and Etzkowitz (2000) supported Nelson's argument and explain that a close relationship between university and industry would eliminate the university autonomy in setting the research agenda in focusing academic-oriented activities of public benefit.

Lee (1996) also found alternative funding from industry through university and industry alliance has declined the government's obligation to provide financial support for research activities in university. Consequently, applied research will be more developed than basic research, which is primarily focused on university research agenda (Anatan, 2013). Problems often arise because of the different priority between university and industry; the university priority is to share knowledge to public, while the industry priority is to get patent from the results of collaborative research (Jelenik and Markham, 2007). An empirical study conducted by Dasgupta and David (1994) concluded that optimising dissemination of research results will likely hampered by the differences of interest between university and industry, where the university intends to publish the research results, on the other hand the industry attempted to block publication based on the reason to protect intellectual property (Anatan, 2013).

The empirical studies result regarding the effect of knowledge transfer on the industry performance is different as well. Knowledge transfer from university to industry majority occur informally through citation, patent (Hall and Ziedonis, 2001), and spin-offs company (Link and Scott, 2005). Monjon and Waelbroeck (2003) found that collaboration with universities in an alliance will enhance the company's radical innovation, however the further research conducted by Sung (2005) showed that cooperation within the alliance was not a significantly effect on the company's innovation in general in Korea due to the characteristics of knowledge and the means of knowledge transfer process occurs on an informal basis.

Anatan (2013) summarised that the empirical studies on UIKT have greater emphasis that aimed to investigate the effect of knowledge transfer on outcome variable, such organisational performance (Tsai, 2001; Pedersen et al., 2003; Kotabe et al., 2003; Szulanski et al., 2004; Dhanaraj et al., 2004; Echols and Tsai, 2005; Smith et al., 2005; Kabanoff and Brown, 2008); competitive advantage (Liao and Hu, 2007); new product development (Yli-Renko et al., 2001; Smith et al., 2005); innovation (Tsai, 2001; Ramasamy et al., 2006; Rothaermel and Hess, 2007; Weterings and Koster, 2007; Kang and Kang, 2009); technological capabilities (Mowery et al., 1996; Yli-Renko et al., 2001; Baba et al., 2009), and quality improvement (Levin, 2000). Many study of knowledge transfer performed to examine the role of mediating variable on knowledge transfer and performance relationship, such as the effect of learning capacities that mediate the relationship between knowledge transfer and performance (Levin, 2000; Simonin, 2004; Smith et al., 2005). Other study focused on investigating the effect of moderating variable such as the causal uncertainty (Daghfous, 2004) moderate the relationship between knowledge transfer and performance. The further development of conceptual and empirical literature of UIKT within university and industry alliance should focus on explaining the inconsistent results in knowledge transfer and performance relationship, and to consider other factors that might affect the relationship, such as the need for moderating variables consideration within the proposed model of university to industry knowledge transfer (Anatan, 2013).

4 Antecedents of knowledge transfer

Knowledge attributes based on the institutional theory perspective, the involvement of organisation within alliance is motivated by the need to gain legitimacy (Wiewel and Hunter, 1985) and reputation (Crawford and Gram, 1978), which in turn will increase resources ownership protection, such as knowledge. The higher the level of protection, the more difficult the knowledge transfer process will be. Bealing et al. (1996) discuss how the theory is used to explain the institutional restructuring at academic institution. Legitimacy in educational institutions is needed in the development process so that institutions can collaborate with other parties such as industry, to meet and to serve public needs through restructuring activities. Restructuring plan in educational institutions is to adopt the industry real action to reshape the allocation of intellectual property.

Ayyagari et al. (2008) examine how well the institutional theory explained the perceptions of company's intellectual property rights protection. Institutional theory is used to explain firm level characteristics such as a legal organisation and ownership structure in comparison with institutional factors such as legal origin, natural endowment, cultural, and ethnic aggregation in explaining the variation in intellectual property protection. The result of the study indicate the origin of legality to predict the variation in intellectual property rights better than natural endowment, cultural, and ethnic separation.

Antecedent of knowledge attribute is knowledge transfer as measured by knowledge ambiguity (Birkinshaw et al., 2002; Simonin, 1999). In the context of this study, knowledge ambiguity refers to conditions that complicate or hinder the process of knowledge transfer. Ambiguity of knowledge contribute to the protection of knowledge so difficult to be imitated by competitors and blocking transfer of knowledge within and

between organisations. Ambiguity refers to the ambiguity of causal knowledge proposed by Simonin (1999) include:

1 tacitness

2 asset specificity

3 complexity

4 experience

5 partner protectiveness

6 cultural distance

7 organisational distance.

Tacitness is source of destabilisation or conflict in the alliance as a result of the difficulty and frustration manifestation in the process of knowledge transfer. When the level of tacitness associated with a very high technology is not fit to be imitated or obtain a license, the close cooperation as a joint venture may be the only way to learn specialised R&D regularly and directly from the company that has mastered them, because the high level of tacitness will inhibit the process of knowledge transfer in strategic alliances (Simonin, 1999). High level of tacitness in alliance indicates the low level of knowledge transfer capabilities that will improve imitation barriers and hinder the process of knowledge transfer.

Knowledge to be transferred may not only have a high level of tacitness, but also specific, such as transaction costs of specific assets is durable investments undertaken in support of particular transactions (Simonin, 1999); transaction specific skills and assets used in the production process and the provision of certain services for viola gan, so it can not be easily to replicate or purchase. Therefore, asset specificity is considered as a source of ambiguity and become an obstacle to the process of knowledge transfer.

Complexity refers to the amount of interdependence technologies, routines, individuals, and resources which are interrelated in knowledge or special assets that affect the overall assets and weaken the ability of transfer. Increasingly complex human resources or technology system will generate a higher level of ambiguity so as to prevent imitation and complicate the process of knowledge transfer. As the increase in the complexity of existing technology, knowledge would just be easier to transfer the subsidiary compared to the third parties.

Previous organisation's experience associated with the asset or knowledge-base are used to determine the level of closeness and comfort with the content and context of the information and ability to transfer knowledge (Simonin, 1999) as an important factor in understanding the new technologies. Cooperation in the context of related technology experience with alliance partners will affect tacitness in understanding the technology transferred. Significant differences in the basic knowledge and skills between the alliance partners will create gaps that complicate the process of knowledge transfer.

Partner protectiveness indicated the openness between fellow alliance partners to seek and to supply information in transparent and open to other alliance partners. However, organisational cultural differences often cause significant differences in the absorptive capacity and willingness to share information between the alliance partners. This became a major bottleneck in the process of knowledge transfer between alliance partners

(Mowery et al., 1996). High degree of protection will increase the conflict between alliance partners that lead to the bottleneck in the process of knowledge transfer.

Cultural distance shows a lack of language skills to recognise and to understand the same information, giving rise to difficulties and challenges for managers who must allocate more time on communication and design right with alliance partners and organisational culture, which in turn had an impact on the depth kolabarasi in all aspects of the both parties, including the process of knowledge management (Tiemessen et al., 1997). Cultural differences between alliance partners become bottleneck in the transfer of knowledge, not only cultural conflicts and misunderstandings that arise in cultural differences resulting in minimal movement of the flow of information, but also the learning process that is hindering the process of transfer of knowledge (Lyles and Salk, 1996). Cultural distance or asymmetry that occurs not only makes it difficult to identify market opportunities and describe the market mechanisms, but also increase the barriers of communication and understand the nature of competitive advantage alliance.

The greater the organisational distance in managing professional culture among alliance partners, the more difficult to transfer knowledge through alliance and lead to negative impact on knowledge transfer activities. Organisational distance defined as the level of inequality between alliance partners practices, institutional, and organisational culture (Simonin, 1999). As a whole shows that the level of tacitness, asset specificity, complexity, experience, partner protectiveness, cultural distance, and organisational distance is high, not only would be 'imitation barrier' for the competitors, but it will become an obstacle to the process of knowledge transfer in alliances between university and industry, therefore this study developed the following proposition:

- *Proposition 1:* transfer of knowledge is influence by the level of knowledge ambiguity

5 Organisational attributes

Previous research assessing decentralisation and absorptive capacity as measure of organisational attributes which have an important role as an antecedent in knowledge transfer (van Wijk et al., 2008).

5.1 Decentralisation

Institutional theory means not in physical sense, but in values, regulations, norms, customs or culture, which is reflected in all economic activities. Organisation may be forced to change its organisational structure due to government regulation pressure, politics, norms, and culture, or mimic the structure and strategy of the organisation to another as a result of competitive pressures. The existence of formal and informal networks within organisation has influence on the intensity of knowledge transfer within and between organisations. In this situation, the decision to become decentralised or centralised organisation will have influence on the success of knowledge transfer. Decentralised organisational structure is one form of action or strategy to mimic the other organisations structure as a result of competitive pressures.

Decentralised organisation in the context of knowledge transfer is identical to the grant of autonomy to each unit in the organisation for the development and creation of

knowledge within the business unit. The higher level of autonomy will be positively related to the creation and development of knowledge (Gupta and Govindarajan, 1991). This is because a decentralised organisation will tend to be more adaptive, innovative, and able to adapt to the complex business environment than organisations with a centralised structure. Decentralised organisation has a strong orientation to the use, acquisition, and transfer of knowledge.

To achieve the benefits, young and small organisation will do disaggregation operations through decentralised decision-making and to improve their unit autonomy. Decentralisation involves hierarchy locus of power and decision-making that resulted in the decision-making can be deployed within an organisation to expand communication channels with increasing reliance on mutual adjustment unit of coordinated activities, which in turn have consequences on the improvement of the quality and quantity improvement ideas and knowledge which may be distributed. Decentralisation also had an impact on the perception of freedom between the unit and increase the motivation and desire to share knowledge within the organisation (Damanpour, 1991; Sheremata, 2000 in van Wijk et al., 2008), therefore the proposition developed in this study as follows:

- *Proposition 2a:* transfer of knowledge is influenced by organisational decentralisation.

5.2 Absorptive capacity

Absorptive capacity relates to the ability of an organisation to identify, assimilate and apply new external knowledge (Cohen and Levinthal, 1990). Perspective of institutional theory to explain how individuals respond to environmental pressures to confirm the behaviour and shared norms and how to shape the decisions from time to time lead to a certain isomorphism (coercive, mimetic, and normative) in the behaviour and structure (DiMaggio and Powell, 1991). The higher level of mimetic pressures (DiMaggio and Powell, 1983; Haveman, 1993), normative (DiMaggio and Powell, 1983; Burt, 1982), and coercive (Teo et al., 2003), will be the higher the absorptive capacity of organisation in the process of knowledge transfer.

Absorptive capacity is determined by the number of prior related knowledge, beliefs, and cultural compatibility between the partners, the recipient organisation's adaptability and capacity to absorb the amount of knowledge transfer. High ability on absorptive capacity will support and facilitate the success of knowledge transfer processes between transferor organisations to receiver organisation (Szulanski, 1995; Mowery et al., 1996). Generally concluded that absorptive capacity has an important role in increasing knowledge transfer both intra and inter-organisational organisation, therefore in this study was developed the following proposition:

- *Proposition 2b:* transfer of knowledge is influenced by absorptive capacity.

6 Network attributes

6.1 Structural dimension

Structural dimension of social capital includes the relationship between actors involved in the alliance, are analysed from the perspective of social interaction, ie how an

organisation maintains close personal relationships with alliance partners, and network connection, which is how the actors in a network of social ties creates opportunities for social capital transactions (Nahapiet and Ghosal, 1998; Tsai and Ghosal, 1998). Transfer and acquisition of knowledge within alliance is highly dependent on the level of closeness and attachment between alliance partners (Krackhardt, 1992). Level of attachment that exists in the relationship between the alliance partners have a positive influence on the acquisition and transfer of knowledge as a high attachment indicates a high level of confidence as well. Strong attachment is an effective tool in the process of knowledge transfer within and between organisations involved in strategic alliances (Hansen, 1999).

Attachment strength between the alliance partners plays an important role in the process of knowledge transfer to the operational level of the organisation below. At each level, different dimensions of attachment strength has a significant influence on the process of knowledge transfer. At the operational level, the intensity and intimacy of interaction between alliance partners can be improved in accordance with the relevant strength of the relationship between the alliance partners (Uzzi, 1997). By developing scientific expertise, maintaining scientific discoveries and social networks with the scientific community, the company might improve the ability to identify and exploit scientific discoveries from outside the company.

The intensity of the relationship with the organisation and increase the knowledge of relevant organisational unit that is accessible and increase the capacity of processing information lead to increased knowledge flow in a partnership or alliance (Hansen, 1999; Gupta and Govindarajan, 2000), therefore it can be concluded that the increase in the intensity of the relationship in a network will provide an increase in the level of knowledge transfer, the proposition is developed as follows:

- *Proposition 3a:* transfer of knowledge is influenced by structural dimension.

6.2 Relational dimension

Relational dimension refers to the study Inkpen and Tsang (2005) which focuses on trust. Trust based on social judgment (e.g., assessment of competence and expertise of the other party) along with the assessment of costs (e.g., risk) if the other party has not changed its commitment to trust (Rousseau et al., 1998 in Inkpen and Tsang, 2005). Confidence plays an important role in the willingness of actors involved in alliances to share knowledge. Trust between the partners has a positive influence on organisational knowledge transfer, as the increase in the willingness and commitment of partner organisations to understand the new external knowledge (Lane et al., 2001). Degree of risk and uncertainty related with the process of knowledge transfer can be minimised by increasing trust between alliance partners that can increase the strength of the alliance relationship. Strength of this relationship is indicated by the level of trust, commitment, and high-quality and intense communication that ultimately has a positive impact on the process of knowledge transfer (Kraatz, 1998; Morgan and Hunt, 1994), so the proposition developed in this study as follows:

- *Proposition 3b:* transfer of knowledge is influenced by relational dimension.

6.3 Cognitive dimension

Cognitive dimension in this study refers to the dimensions proposed by Inkpen and Tsang (2005) that includes shared goals and shared cultures. In explaining the concept of shared goals, Inkpen and Tsang (2005) refers to the concept of shared visions proposed by Tsai and Ghosal (1998), which focuses on efforts to achieve collective goals and aspirations of the members of the inter-organisational networks. When shared visions in the alliance, members have the same perception of how they should interact with one another. It can promote mutual understanding and the exchange of ideas and resources. Shared visions can be seen as a mechanism that helps each alliance partner to integrate knowledge in the alliance.

Organisational knowledge transfer is facilitated by the similarity in the organisational structure and compensation practices, shared vision and systems so that it can be concluded that cognitive dimension have a positive influence on knowledge transfer (Lane and Lubatkin, 1998). The similarity in the dominant logic, structure (Lane et al., 2001) and business partners (Lane et al., 2001) make a positive contribution to organisational knowledge transfer. On the other hand, the organisation's culture between partners outside can lead to misunderstandings that can limit the sharing of information or knowledge (Lyles and Salk, 1996). When discussing shared visions, shared cultures have an important role in the process of knowledge transfer in strategic alliances to help convey the identity of members of the organisation and creating a commitment to achieve the objectives the alliance. The existence of shared goals and shared cultures in the alliance will enhance the parent company's response to the needs of business unit and to appreciate the initiative that was born the business unit to create conducive environment and intrinsic motivation in the process of knowledge transfer, therefore the proposition developed in this study as follows:

- *Proposition 3c:* transfer of knowledge is influenced by cognitive dimension.

7 Relationship between knowledge transfer and level of institutionalisation

According to institutional theory, institutions are part of social-economic relations network and establish norms called 'institutional' in their environment. Under uncertain business environment, companies exert normative pressure to affect the structure and practices in the environment because of a company's ultimate goal is to survive in the business environment, then the company in accordance with institutional norms to increase the legitimacy and survival capabilities (DiMaggio and Powell, 1983; Meyer and Rowan, 1977). To effectively interact with the external environment and to absorb elements of proper knowledge, companies need to institutionalise the process of knowledge involving routine activities that allow knowledge to continue the process of knowledge transfer for the long term or period of time, it can be concluded that the knowledge transfer activities have a positive influence the institutionalisation process of knowledge transfer, which in turn had a positive impact overall alliance performance (Meyer and Rowan, 1977).

Hedges and Olkin (1985), Hunter and Schmidt (1990) in Sanchez-Meca et al. (2003) suggested the existence of differences results in empirical study that explain the

homogeneity effect relationship between organisational knowledge transfer, and its consequence variable, therefore it can be conclude that there are moderating variables need to include. In this study, uncertainty refers to technical and organisational uncertainty that may affect the homogeneity effect between these variables (Daghfous, 2007). Technical and organisational uncertainty has a moderating influence as a significant variable in explaining the relationship between knowledge transfer and new product development projects in universities and industry alliances.

Technical uncertainty has a negative impact to the level of familiarity and the organisation of knowledge transfer related to the features and the underlying science knowledge is transferred, while the organisational uncertainty has a negative impact on the level of familiarity and the organisation of the potential impact of the new knowledge and skills system already exists in organisation. Uncertainty, both technical and organisational, has become barrier that lead to negative impact on the success of knowledge transfer processes that weaken the relationship between knowledge transfer and its consequent, theefore in this study hypothesised that:

- *Proposition 4:* the relationship between knowledge transfer and the level of institutionalisation of knowledge transfer activities is influenced by the level of uncertainty.
- *Proposition 4a:* the relationship between the level of institutionalisation of knowledge transfer and knowledge transfer activity will be stronger when there is low level of organisational uncertainty.
- *Proposition 4b:* the relationship between the level of institutionalisation of knowledge transfer and knowledge transfer activity will be stronger when there is low level of technical uncertainty.

8 Control variables

8.1 Organisation size

Organisation size indicates the size of the organisation or the number of workers, which have important influence on knowledge transfer within the organisation (Serenko et al., 2007). Size small organisations usually have lack understanding of knowledge transfer concept, so it becomes slow in implementing the policy of systematic knowledge transfer, whereas larger organisations have the resources and financial capacity to support more successful knowledge transfer process (Wong and Aspinwall, 2004). Large company and its subsidiaries involved in strategic alliance may have more high-quality resources, are the intellectual capital of the organisation to support knowledge creation process in improving their ability to offer non-duplicative knowledge (Gupta and Govindarajan, 2000).

8.2 Organisation age

Organisation age is considered as important factor that determine organisation's ability to learn and to adapt to the changing environment through alliances. In the context of university to industry knowledge transfer, the older the university age as transferor, is

expected to have more visibility, reputation, image, and high prestige thus providing benefits for the reputation and legitimacy of the industrial partners as transferee, by doing imitation or mimicking the social norms that can be explained through the concept of isomorphic change at the organisational level (DiMaggio and Powell, 1991). Alliance encourages the learning process within organisation, such as through the process of knowledge transfer and knowledge sharing that help organisations to utilise strategic alliances as a mean to study science, technology, and new skills from alliance partners (Kogut, 1988; Mowery et al., 1996; Kale et al., 2000).

9 Conclusions

This study is a synthesis of previous studies that review the conceptual and empirical literature concerned on knowledge transfer through university-industry collaboration to develop a conceptual framework for understanding the effectiveness of knowledge transfer in strategic alliances in particular through universities and industry alliance. These knowledge resources become companies' source of competitive advantage because of its role as critical factors for the successful development and maintaining competitive advantage through creating value for the company's stakeholder. This proposed frameworks aims to integrate the antecedent variables, moderating variables and the dependent variable to explain the role of knowledge transfer in university and industry alliances.

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