

The Relationships between Knowledge Transfer, Knowledge Dissemination Capability and Inter-Organizational Dynamics in Public and Private Sectors Organizations

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Abstract

This research empirically investigated the relationships between knowledge transfer, knowledge dissemination capability and inter-organizational dynamics in public and private sectors organizations. The research employed a quantitative methodology to investigate the effects of asset specificity, experience, expertise and absorptive capacity on the transfer of knowledge in Private Finance Initiative (PFI) projects, and the moderating effects of collaborative know-how and partnership duration. In addition, the research also studied the relationships among the constructs inside knowledge dissemination capability and the moderating effect of inter-organizational dynamics on it. 602 valid responses were collected by a questionnaire survey amongst private and public sector professional practitioners; which representing a 30% response rate. The findings revealed that the research established its critical role in knowledge transfer by showing its supportive effect on the process and illustrated a weak effect of collaborative know-how and partnership duration on knowledge transfer in PFI projects. With regard to the knowledge dissemination capability itself, there is virtually no relationship between absorptive capacity and intra-organizational transfer capability within the donor and recipient organizations in PFI projects. PFI partners need to carefully balance absorptive capacity and intra-organizational transfer capability, since inter-organization dynamics cannot facilitate knowledge dissemination within donor/recipient organizations.

Keywords: knowledge transfer, knowledge dissemination capability, inter-organizational dynamics, public organizations, private organizations

1. Introduction

Public Private Partnerships (PPPs) are an important strategy for delivering public facilities and services in many countries (Kettl, 1993; Nagle, 1992; Salamon and Elliott, 2002; Young, Chih and Ibbs, 2009). In recent years, a massive growth in engaging private firms for the provision of public services, especially through the development of PPPs, has been witnessed. PPPs have also emerged as one of the major approaches for delivering infrastructure projects in Hong Kong (Hong Kong Efficiency Unit, 2008). Private Finance Initiative (PFI) partners, which, under a public private partnership arrangement, are from both public and private sector organizations. As such, private sectors in PPP and PFI have more to gain competitively due to the nature of the organization (Baum & Ingram, 1998; Darr, Argote, & Epple, 1995; Greve, 1999; Ingram & Simons, 1999; Powell, Koput and Smith-Doerr, 1996). The partnership between public and private organization is known to face difficulties in knowledge transfer from one to other (Carrillo, Robinson, Anumba and Bouchlaghem, 2006; Kamseh and Jolly, 2013). These difficulties are evidently due to the nature of their jobs, bureaucracy and the differences in culture. The private organization may be efficient on transferring essential knowledge internally as they have more to gain in a competitive environment.

Previous research focused on business partners from private sector organizations while largely neglecting partnerships between public and private sector organizations, such as can be found in PPPs. This research helps to redress the imbalance by examining knowledge transfer between business partners in the context of PPPs. Due to the important role of PPPs in the economy of both developed and developing countries, there is a genuine need for a better understanding of knowledge transfer between public and private sector partners. For strategic alliances or joint venture partners in the private sector, one means to improve performance and strive for excellence is related to the enhancement of organizational knowledge transfer process.

Some other studies have examined organizational characteristics, such as decentralization and absorptive capacity (Gupta and Govindarajan, 2000), or have primarily focused on attributes that typically operate at the dyad-level or network-level, such as trust and cultural distance (Lane, Salk and Lyles, 2001). To explore the situation of knowledge transfer in PFI projects, this research investigated the relationships between knowledge transfer, knowledge dissemination capability and inter-organizational dynamics in public and private sectors organizations.

The following section discusses the literature search strategy and process and its attendant limitations. It discusses key findings and the state of knowledge in the areas of knowledge management, knowledge transfer, perception variations and causal ambiguity. Next section provides information about sampling, data collection method and data analysis methods. Results and analysis provides the research findings by testing the five hypotheses. Last but not the least is the discussion and conclusion which discusses the significance of the research findings, research constraints and recommendations for further research.

2. Literature Review

Research has shown that organizational knowledge transfer between partners in a strategic alliance, such as joint ventures, has important implications for organizational performance and innovativeness. Organizational knowledge transfer has been associated with higher levels of performance by enabling organizations to develop innovative ideas and products (Powell, Koput and Smith-Doerr, 1996; Tsai, 2001; Wijk, Jansen and Lyles, 2008), stimulating the

combination of existing and newly acquired knowledge, and increasing an organization's capacity for making novel linkages and associations (Jansen, Van den Bosch and Volberda, 2005). Khamseh and Jolly (2014) even described that alliances would provide a channel for transfer and exchange of information, experience and knowledge beyond the boundaries of the firm.

2.1 Knowledge Creation and Transfer

Tenets of knowledge transfer have attracted a vast number of academic and non-academic research. Amongst these are the interest in investigating knowledge characteristics and its influence on the sharing of knowledge (Soberg, 2012). Nonaka and Takeuchi (1995) took the pioneering step of describing knowledge creation as a continuous and self-transcending spiral. Individual influence and intention are found at the micro level, while people interaction under environmental influences is at the macro level. Nonaka and Takeuchi (1995) proposed a four-pattern knowledge creation process consisting of socialization, externalization, combination, and internalization (SECI). The SECI process considers knowledge creation a spiralling process of interaction between explicit and tacit knowledge, which may result in the creation of new knowledge.

Knowledge transfer is an area of increasing interest to many organizations, particularly those involved in PFI projects. Knowledge sharing is a way to enhance the access to knowledge (Tuan, 2012). Argote, Ingram and Moreland (2000) provided a summary of the various mechanisms available. These include personnel movement, training, communications, observation, technology transfer, and alliances. A number of scholars have also proposed models or frameworks of knowledge transfer (Argote and Ingram, 2000; Szulanski, 2000; Goh, 2002). As such, knowledge sharing levels are indeed not discrete. It is a multidimensional construct that involves a myriad of interactions among members of an organization and partnering organizations.

Knowledge transfer is a complex phenomenon that in practice is not easy to achieve (Easterby-Smith, Lyles and Tsang, 2008). Even for the relatively simple case of transferring knowledge from one unit to another within the same organization, there are a number of factors that may affect the effectiveness and the outcome of transfer (Szulanski, 1996). Transferring knowledge between organizations brings more complexity because of the multifaceted nature of the boundaries, cultures, and processes involved. It is therefore an interesting domain for further theoretical investigation (Easterby-Smith, Lyles and Tsang, 2008).

2.2 Knowledge Transfer Problem in PFI Projects

All projects require knowledge transfer, but the need is even more critical for organizations involved or interested in PFI projects, entering into particular areas of the PFI market or expanding their PFI work (Carrillo Robinson, Anumba and Patel, 2009). The main reason for this is that it is a relatively new form of procurement, all parties are new to the process and there is a shortage of expertise in this area. PFI is a costly commitment. Any mistakes made because of lack of current knowledge can be critical for the length of the service period of the contract and induce criticisms. PFI contract form forces the private sector, particularly, the main contractor, to invest more time and capital in the public projects (Zhou, Keivani and Kurul, 2013).

Actually in each PFI project, all parties are learning and the PFI process is continuously evolving as seen by the need for professional bodies (Carrillo et al., 2009). Knowledge sharing network in alliances, such as those created to execute PFI projects, raise complex

issues such as confidentiality, reliability, copyright, the dissemination of a firm's unique stock of knowledge outside its boundaries, and trade-off between cooperation and competition, or what is referred to as "co-operative" (Levy, Loebbecke and Powell, 2001). The ability to learn is also crucial to effective knowledge transfer, and an organization's absorptive capacity to manage new knowledge depends on prior knowledge and technical capability (Gann, 2001). PFI projects designed to operate beyond organizational boundaries could provide a stimulus for knowledge sharing and innovation (Carrillo et al. 2009).

The considerations on absorptive capacity, know-how, organizational readiness, organizational culture, willingness of sharing knowledge, partner protectiveness, and capability are the specific problems and barriers associated with knowledge transfer activities that are required to be addressed. To have an understanding of knowledge transfer, the analysis for the consequences of organizational knowledge transfer should be on the causal ambiguity and its antecedents including: (1) Tacitness; (2) Asset Specificity; (3) Strategic Similarity; (4) Experience; (5) Expertise; (6) Partner Protectiveness; (7) National Distance; (8) Absorptive Capacity; and (9) Organizational Culture (after Simonin, 1999; Easterby-Smith, Lyles and Tsang, 2008).

The mutual inter-organizational knowledge transfer between PFI partners has four sets of rational factors proposed by Easterby-Smith, Lyles and Tsang (2008): (1) the resources and capabilities of the donor firm (2) the resources and capabilities of the recipient firm, (3) the nature of knowledge that is being exchanged, and (4) inter-organizational dynamics. This model supplements the uni-dimensional nature of Simonin (1999)'s model by linking up those antecedents with mutual relationship substances.

2.3 Knowledge Dissemination Capability of the Donor and the Recipient

There is a degree of symmetry between the characteristics of the donor organization and the recipient organization for two reasons: (1) knowledge transfer takes place in both directions as roles and relationships change through alliances, partners and customer/supplier networks; and (2) the best teachers are often the best learners (Easterby-Smith, Lyles and Tsang, 2008). A key factor in both cases is absorptive capacity, which is the ability to recognize the value of new knowledge and to assimilate and use that knowledge (Cohen and Levinthal, 1990). The recipient firm's absorptive capacity is influenced by its past experiences, expertise and knowledge retention capabilities (Lane and Lubatkin, 1998). Past studies also show that absorptive capacity of both transferring organization and receiving organization depends on their past experience, external knowledge complementarity, diversity and characteristics of external knowledge sources (Zahra & George, 2002; Todorova & Durisin, 2007; Volberda, Foss and Lyles, 2010). Thus, it is insufficient to initiate protocols and standard operating procedures if the sincerity in transferring and receiving the knowledge is inherently lacking in the organization.

Absorptive capacity and intra-organizational transfer capability are interrelated in the sense that an organization which is good at absorbing external knowledge should also be well equipped for disseminating the knowledge within its own boundaries (Easterby-Smith, Lyles and Tsang, 2008). Even there is an implicit conjecture about the significance of disseminative capacity (Reagan & McEvily, 2003), most researchers have separated absorptive capacity and dissemination capacity in conducting knowledge transfer research, and thus research is silent on the connections and relationships between dissemination capacity and absorptive capacity (Mu, Tang and MacLachlan, 2010). This separation limits the full understanding of knowledge transfer processes and a full appreciation of the roles of knowledge holders in

knowledge transfer processes. The relationships among donors' dissemination capacity, receivers' absorptive capacity and network structures when knowledge is transferred in intra-organization networks should be considered as a whole. As such, the term "Knowledge Dissemination Capability" within either the donor or recipient organization is used in this study. Both donor and recipient organization are thus grouped under this category.

2.3.1 Absorptive Capacity

Originally introduced by Cohen and Levinthal (1990), absorptive capacity has emerged as one of the most prominent themes in the literature on organizational knowledge transfer (Easterby-Smith, Lyles and Tsang, 2008). Partners may vary in their absorptive capacity, which is their ability to exploit outside sources of knowledge. The significance of absorptive capacity in the propensity to transfer knowledge across organizational boundaries should be well recognised (Easterby-Smith, Lyles and Tsang, 2008). Efficient knowledge transfer calling for a comprehensive understanding the absorptive capabilities of knowledge recipients and dissemination capabilities of knowledge donors, and other knowledge transfer facilitating and constraining factors (Mu, Tang and MacLachlan, 2010).

2.3.2 Intra-Organizational Transfer Capability

Intra-Organizational Transfer Capability comprises three elements: (1) Asset Specificity, (2) Expertise and (3) Experience, which are related to resources and capabilities of the donor and recipient organizations respectively.

Asset specificity is the extent to which the resources and investments contributed to support a particular transaction, rather than redeployed for the other purposes (McGuinness, 1994). Obviously, such transaction should be of higher value and the units are willing to "tie in" in a two-way or multiple-way relationship. As such, it serves as a test of knowledge retention capabilities within own boundary, which is an important determinant of governance choice (Klein, 1989; Anderson and Coughlam, 1987) that can be acquired over time by learning-by-doing. In the conceptual model of this research, asset specificity is thus considered as a factor to indicate the intra-organizational knowledge transferability relating to the knowledge hoarding against imitation or knowledge internationalisation.

Prior experience and expertise with a given asset or knowledge base for a person acquiring knowledge predetermines the level of familiarity and comfort with both information content and context, and thus favours the transferability of knowledge (Simonin, 1999). Experience and expertise are gained through learning, practising and ultimately becomes an asset. In the context of knowledge transfer between partners, it is assumed that the greater the level of prior experience and expertise of the knowledge seeker with the underlying knowledge domain, the more chance to grasp the asset of the partner in the knowledge transfer process.

Once knowledge comes into an organization from some external source, the recipient needs to rely on its intra-organizational knowledge transferability to disseminate the knowledge within the organization so that it can be assimilated and utilized. Theoretical analysis and simulation results convince us that absorptive capacity and disseminative capacity either interactively or separately determine how knowledge flows or is transferred effectively and efficiently between members of intra-organization networks (Mu, Tang and MacLachlan, 2010). At the same time the donor needs absorptive capacity to appreciate the potential value of knowledge for passing to the recipient, and needs intra-organizational transfer capability if the information is to be made available to the recipient in an efficient manner (Easterby-Smith, Lyles and Tsang, 2008). The absorptive capability and intra-organizational

transfer capability of a donor or recipient organization as a whole regard as the knowledge dissemination capability.

Mu, Tang and MacLachlan (2010) found no formal operationalized research on dissemination capacity that essentially had captured the interactive nature of knowledge transfer. Current research is concentrated on knowledge recipients' absorptive capacity only, whereas knowledge dissemination capacity should also be investigated comprehensively (Mu, Tang and MacLachlan, 2010).

Partners may vary in their absorptive capacity, which are their ability to exploit outside sources of knowledge. *Intra-Organizational Transfer Capability*, which is “Asset Specificity”, “Expertise” and “Experience”. Asset Specificity is the extent to which investments support a particular transaction, rather than redeployed for other purposes (McGuinness, 1994). Such transactions should be of high value and the units willing to tie into a two-way or multiple-way relationship. Expertise and Experience are gained through learning, and practicing; richer experience can facilitate knowledge transfer.

Hypothesis H1 Absorptive Capacity is positively related to Intra-Organizational Transfer.

2.4 Inter-Organizational Dynamics

As inter-organizational knowledge transfer involves at least two organizations, it is necessary to understand the interactive dynamics between organizations. Four set of rational factors were identified by Easterby-Smith, Lyles and Tsang (2008): power relations, trust and risk, structures and mechanisms, and social ties.

2.4.1 Power Relations

Power relations refer to the extent to which people pay attention to the distribution of power or hierarchical positions, and accept the unequal distribution of power (Boh, Nguyen and Xu, 2012). The donor and the recipient are often in a situation of power asymmetry, with the donor being in a superior position. In PFI projects, public and private sector organizations are in partnership. Unlike the other strategic alliances in the commercial world, the situation of power asymmetry between the donor and the recipient for PFI partners may be even more complicated. Even though the public sector partner may appear to be in a superior position in each PFI project, there is no proof of this.

2.4.2 Trust and Risk

The donor often perceives a risk of unintended transfer of knowledge that may lead to the erosion of its competitive advantage (Norman, 2002). While the relationship between trust and knowledge transfer has been acknowledged by a number of researchers and is well documented, still there is scant literature that connects it with other knowledge management processes (Sankowska, 2013). Though some researchers see trust as “a global evaluation of an organization’s trustworthiness” (Krot and Lewicka, 2011), Sankowska (2013) regards that the central in the notion of trust is the premise that it leads people to engage in risk taking behaviors such as delegating and knowledge sharing and it causes acceptance of vulnerability linked with them. Generally, knowledge sharing is seen as an activity involving risk connected for knowledge provider with possibility of losing a competitive advantage over other by uncovering valuable knowledge and for knowledge recipient with absorbing knowledge of poor quality potentially conveyed with bad intentions (Sankowska, 2013).

2.4.3 Structures & Mechanisms

The structure of the inter-organizational relationship refers to the context in which knowledge transfer takes place, and the transfer mechanisms which are established within that context. More often than not, organizations have to be in some form of strategic alliance before there is any significant knowledge flow from one to another (Easterby-Smith, Lyles and Tsang, 2008). As strategic alliances can be in various forms, ranging from non-equity to equity arrangements, they affect how organizations interact and how knowledge is transferred (Hagedoorn and Narula, 1996).

Learning organizational culture from others occurs over time and through active participation and interaction in the organization (Leonard and Sensiper, 1998). Actually, organizational culture incompatibilities are the source of distortion in inter-firm learning (Edwards & Kidd, 2001; Hofstede, Hofstede and Minkov, 2010). Prior research has found that openness to diversity, an aspect of organizational culture, is an important dimension of organizational culture that affects knowledge sharing and cooperation within the firm (Hartel and Fujimoto, 2000; Hobman, Bordia and Gallois, 2004; Mitchell, Nicholas and Boyle, 2009).

2.4.4 Social Ties

Regardless of the structure of the inter-organizational relationship, research suggests that informal or social ties between members of the same organization (Hansen and Lovas, 2004) or different organizations (Bell and Zaheer, 2007) are superior conduits for knowledge flow between geographically distant locations (Easterby-Smith, Lyles and Tsang, 2008). Such ties probably also help to alleviate the cultural differences, whether national or organizational, which may exist between organizations. National distance usually refers to cultural distance. The possibly damaging effects due to the various facets of collaboration including communication barriers, work routines, managerial approaches, and cultural differences have been well documented in the literature (Simonin, 1999; Mjoen and Tallman, 1997; Parkhe, 1991). Furthermore, upon the inception of the alliance, the partner's national cultures have the potential to affect in depth all aspects of collaboration, including the process of knowledge management (Tiemessen, Lane, Crossan and Inkpen, 1997). Less cultural distance can help managers to communicate well, to manage conflict effectively and to avoid mutual misunderstandings (Khamseh and Jolly, 2014). Reducing cultural distance can improve inter-firm communication and unity of alliance direction (Khamseh and Jolly, 2014).

Based on hypothesis H1 and the characteristics of inter-organizational dynamics, hypothesis H2 below reveals whether higher inter-organizational dynamics can facilitate knowledge absorption and dissemination within donor and recipient organizations.

Hypothesis H2 The relationship between Absorptive Capacity and Intra-Organizational Transfer Capability is moderated by Inter-Organizational Dynamics.

From the literature review above, knowledge dissemination capability has the four dimensions, they are absorptive capacity, asset specificity, expertise and experience in which the latter three dimensions refer to intra-organizational transfer capability. As mentioned above, it is hypothesized as H3 that there is a positive relationship between knowledge dissemination capability and knowledge transfer.

Hypothesis H3 Knowledge Dissemination Capability is positively related to Knowledge Transfer.

2.5 Moderating Effects in Knowledge Transfer

A moderating variable is a factor that is positioned between the independent variable and dependent variable. The previously hypothesised relationships between the donor organization and the recipient organization are likely to be moderated by two variables: (1) collaborative know-how, and (2) partnership duration.

2.5.1 Collaborative Know-How and Knowledge Transfer

Simonin (1997) empirically demonstrated that past experience leads to the emergence of a distinct form of collaborative know-how that helps achieve greater benefits in subsequent alliances. In a significant way, this collaborative know-how affects the ability of firms to understand and adopt proper procedures for information gathering, interpretation, and diffusion (Simonin, 1999). Such understanding favours knowledge transfer and absorption by eliminating many of the unnecessary tasks and disruptive noise of cooperation. Lack of collaborative experience may lead to alliance problems and failures (Lei and Slocum, 1992).

Lack of collaborative experience may lead to alliance problems and failures (Lei and Slocum, 1992). Collaborative know-how thus helps to adopt proper procedures for information gathering, interpretation and diffusion (Simonin, 1999). The hypothesis H4 is established.

Hypothesis H4 The influence of Knowledge Dissemination Capability on Knowledge Transfer is moderated by Collective Know-How.

2.5.2 Partnership Duration and Knowledge Transfer

As the partnership sustains itself over the years, trust intensifies and attachment between partners develops (Inkpen and Beamish, 1997). Trust facilitates frequency and quality of communication between parties (Sankowska, 2013). With higher level of trust, an individual is more likely to mobilize informational resources and perform better (De Jong and Elfring, 2010) with respect to generating new knowledge. It is thus expected to moderate the relationship hypothesized in the model. The partners become more familiar with each other's expertise and idiosyncrasies as time goes by (Simonin, 1999).

As the partnership sustains itself over the years, trust intensifies and attachment between partners develops (Inkpen and Beamish, 1997). It was thus expected to moderate the relationship hypothesized in the model. The hypothesis H5 is established.

Hypothesis H5 The influence of Knowledge Dissemination Capability on Knowledge Transfer is moderated by Partnership Duration.

2.6 Gaps in the Literature

Based on the foregoing literature review, there appears to be a number of gaps in the current relevant literature. Drawing on the RBV and dynamic capabilities perspective (Teece, Pisano and Shuen, 1997), this research addresses the knowledge gap by developing and testing an integrated model of knowledge transfer in the context of PFI, in which only research relating to the definition and processes of knowledge transfer between partners has been undertaken. With the growing significance of PFI, there is recognition of the need to investigate the knowledge transfer process involved. Conducting a research into the antecedents of ambiguity in knowledge transfer for public and private sector organizations is the starting point and hypotheses in this research were developed above for filling this gap.

2.7 Research Framework

The conceptual model for this research was derived from models developed by: Simonin (1999), Grant (1996), Argote, McEvily and Reagans (2003), and Easterby-Smith, Lyles and Tsang (2008). The hypotheses were consequently presented as follows. The conceptual framework of this research is shown in Figure 1.

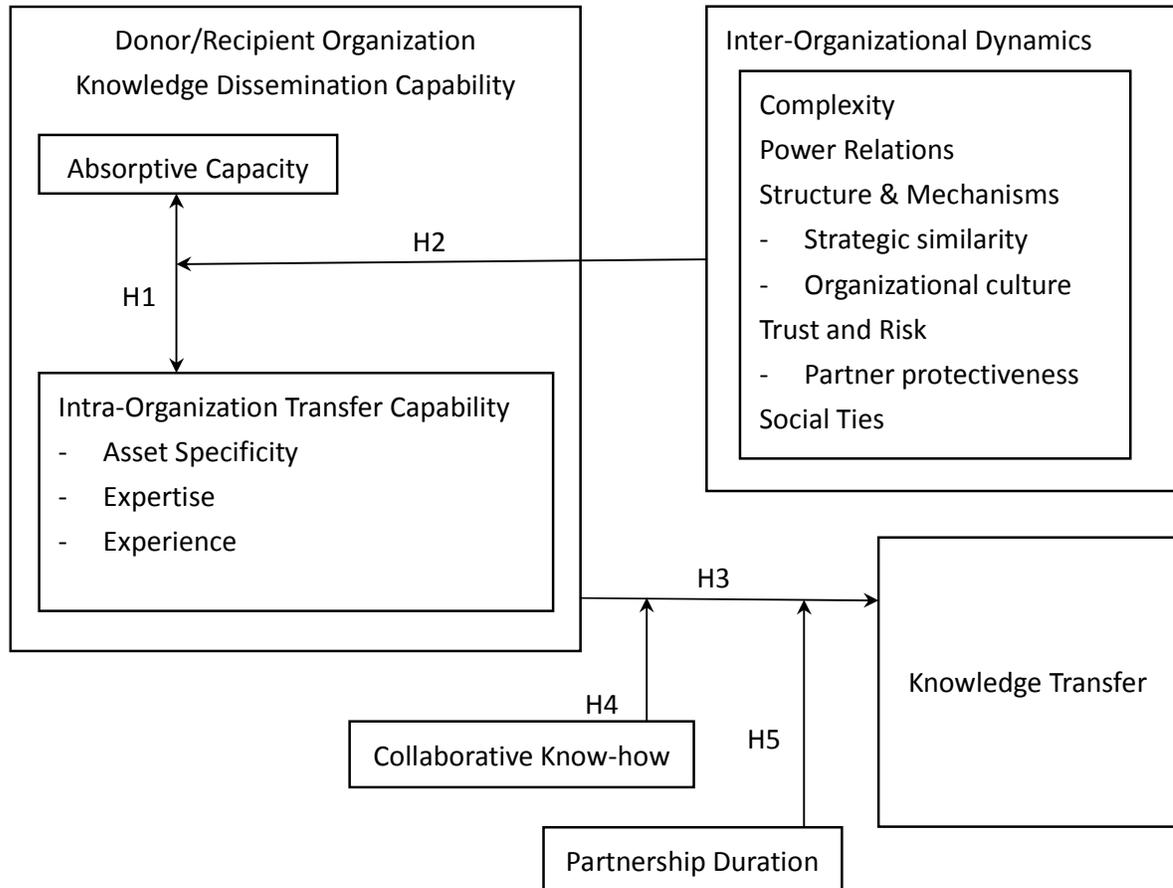


Figure 1 Conceptual Model

3. Methodology

3.1 Sample and Collection of Data

Samples or the target population were consisted of practitioners from both public and private sectors who had experience with PFI projects and who were members of the following relevant registered professional bodies: Hong Kong Institute of Architects (HKIA) and Architects Registration Board, Hong Kong Institute of Planners (HKIP) and Planners Registration Board, Hong Kong Institute of Surveyors (HKIS) and Surveyors Registration Board, Hong Kong Institution of Engineers (HKIE) and Engineers Registration Board, Hong Kong Institute of Landscape Architects (HKILA) and Landscape Architects Registration Board, and the Chartered Institution of Civil Engineering Surveyors (ICES). Members of these professional institutes are the main players in the community of PFI infrastructure projects in Hong Kong. Such sample drawn from the member lists of these professional institutes including all individual members was considered representative of the population.

Simple random sampling approach was used in this research. A total of 2,000 copies of the

questionnaire were sent to members of the professional bodies sampled from the six major professional institutions in Hong Kong construction and real estate industry. A total of 602 valid responses were received, representing a 30% response rate. The main data collection instrument of this research was an anonymous questionnaire. To procure consent from participants, an invitation letter was sent to members of the professional bodies. Detailed information about this research, the research objectives, and the eligibility of participants were included in the invitation letter. Participation was on an entirely voluntary basis and the questionnaire did not require participants to divulge personal details. A participant information sheet was attached to each questionnaire explaining the purpose of the research and assuring the confidentiality of collected data. Instructions were provided to guide correct completion of the questionnaire, and the contact details of the researcher were also provided in case participants required more information about the survey. The information sheet and questionnaire were prepared both in English and Chinese.

3.2 Questionnaire Design

All questionnaire items, with minor modification of the terms, were basically adopted from a peer-reviewed study (Simonin, 1999) published in the Strategic Management Journal. For questions on “knowledge transfer, absorptive capacity, collaborative know-how and partnership duration”, they followed the categories as illustrated by Simonin (1999). For the “Strategic Similarity, Organizational Culture, Partner Protectiveness, Social Ties”, they were grouped under the “Complexity (Inter-Organizational Dynamics)”. Similarly, for “Asset Specificity, Expertise, Experience”, they were grouped under the “Intra-Organizational Transfer Capability”. Demographic data were collected in order to identify the background information of respondents and their enterprises.

3.3 Data Analysis

Pearson product moment correlation, single linear regression and multiple linear regression were used to formulate several models that link the dependent, independent and moderating factors in testing the five hypotheses with 95% confidence interval.

4. Results and Analysis

4.1 Demographic Profile of Respondents

The following Table 1 outlines the key demographic information of the respondents to the questionnaire survey.

Table 1 Profile of 602 Respondents

	Frequency	Percentage
Employment Sector		
Government	296	49.2%
Private	306	50.8%
Professional Affiliation		
Hong Kong Institution of Engineers (HKIE)	171	28.4%
Chartered Institution of Civil Engineering Surveyors (ICES)	147	24.4%
Hong Kong Institute of Architects (HKIA)	112	18.6%
Hong Kong Institute of Surveyors (HKIS)	107	17.8%
Hong Kong Institute of Planners (HKIP) or Hong Kong Institute of Landscape Architects (HKILA)	65	10.8%
Years of PFI Partnership Experience		

1	27	4.5%
2	61	10.1%
3	50	8.3%
4	47	7.8%
5	55	9.1%
6	46	7.6%
7	66	11.0%
8	51	8.5%
9	58	9.6%
10	70	11.6%
11	60	10.0%
12	4	0.7%
13	2	0.3%
14	1	0.2%
15	1	0.2%
16	2	0.3%
18	1	0.2%

4.2 Hypotheses Testing

The questionnaire items were adapted from a peer-reviewed study (Simonin, 1999) published in the Strategic Management Journal. Hence, it is reasonable to assume that the questionnaire items had been evaluated and validated by the original author with satisfactory level of reliability and validity. The correlation between “Absorptive Capacity” and “Intra-Organizational Transfer Capability” is examined. The related hypothesis is:

Hypothesis H1: Absorptive Capacity is positively related to Intra-Organizational Transfer Capability

The Pearson correlation results in Table 2 above show that the correlation between “Absorptive Capacity” and “Intra-Organizational Transfer Capability” is weak and insignificant ($R = 0.033$, $p = 0.425$). Therefore, H1 is rejected.

Table 2 Correlations between Absorptive Capacity and Intra-Organizational Transfer Capability (H1)

		Absorptive Capacity	Intra-Organizational Transfer Capability
Absorptive Capacity	Pearson Correlation	1	0.033
	Sig. (2-tailed)		0.425
	N	602	602
Intra-Organizational Transfer Capability	Pearson Correlation	0.033	1
	Sig. (2-tailed)	0.425	
	N	602	602

Hypothesis H2: The relationship between Absorptive Capacity and Intra-Organizational Transfer Capability is moderated by Inter-Organizational Dynamics.

As Power Relations is a binary variable (either Government Employees or Private Sector Employees), a dummy variable named “Government Employee” is created and coded as 1 if

the respondent is a government employee and 0 if the respondent is a private sector employee. The interaction term between the dummy variable of “Government Employee” and independent variable of “Intra-Organizational Transfer Capability” was computed using the compute command in SPSS.

Table 3 below shows the regression analysis results using the Baron and Kenny (1986) approach to test the moderating effect of “Inter-Organizational Dynamic” on the relationship between “Knowledge Dissemination Capability” and “Knowledge Transfer”.

As indicated in the three models shown in Table 3, there is a weak and insignificant total effect of “Intra-Organizational Transfer Capability” on “Absorptive Capacity” (adjusted $R^2 = -0.01$, $p > 0.05$) in model 1, and model 2 shows an insignificant increase in R-square when the latent variables of “Organizational Culture”, “Social Ties”, “Partner Protection” and “Strategic Similarity” and the dummy variable of “Government Employees” are added (adjusted $R^2 = 0.01$, $p > 0.05$). In model 3, when the interaction terms of “Intra-Organizational Transfer Capability * Organizational Culture” (ITCxORC), “Intra-Organizational Transfer Capability * Social Ties” (ITCxSCT), “Intra-Organizational Transfer Capability * Partner Protection” (ITCxPPR), “Intra-Organizational Transfer Capability * Strategic Similarity” (ITCxSSM) and “Intra-Organizational Transfer Capability * Government Employees” (ITCxG) are added, the explanation power of the model increases insignificantly (adjusted $R^2 = -0.01$ with R square changed = 0.006, $p > 0.05$), indicating that the interaction term does not contribute to the increment in explaining the variance in “Knowledge Transfer”. Therefore, Hypothesis H2 is rejected.

Table 3 Model Summary for H2/Model Summary (d)

Model	R	R Square	Adjusted R Square	Change Statistics				
				R Square Change	F Change	df1	df2	Sig. F Change
1	0.033(a)	0.001	-0.001	0.001	0.637	1	600	0.425
2	0.106(b)	0.011	0.001	0.010	1.237	5	595	0.290
3	0.130(c)	0.017	-0.001	0.006	0.679	5	590	0.639

a Predictors: (Constant), Intra-Organizational Transfer Capability

b Predictors: (Constant), Intra-Organizational Transfer Capability, Organizational Culture, Social Ties, Partner Protection, Strategic Similarity, Government Employees

c Predictors: (Constant), Intra-Organizational Transfer Capability, Organizational Culture, Social Ties, Partner Protection, Strategic Similarity, Government Employees, ITCxG, ITCxORC, ITCxSCT, ITCxPPR, ITCxSSM

Dependent Variable: Absorptive Capacity

Hypothesis H3: Knowledge Dissemination Capability is positively related to Knowledge Transfer

The linear regression test results in Table 4 and Table 5 reveal that “Knowledge Dissemination Capability” of knowledge has a significantly positive impact on “Knowledge Transfer” (Standardized beta = 0.555, $p < 0.05$). In other words, “Knowledge Dissemination Capability” enables “Knowledge Transfer”. “Knowledge Dissemination Capability” explains 30.6% (Adjusted $R^2 = 0.306$) of the variation in “Knowledge Transfer”. Therefore, Hypothesis H3 is supported.

Table 4 Model Summary: Influence of Knowledge Dissemination Capability on Knowledge Transfer (H3)/Model Summary (b)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.555(a)	0.308	0.306	0.72548

a Predictors: (Constant), Knowledge Dissemination Capability
 Dependent Variable: Knowledge Transfer

Table 5 Coefficients: Influence of Knowledge Dissemination Capability on Knowledge Transfer (H3)/Coefficients (a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-0.973	0.272		-3.576	0.000
	Knowledge Dissemination Capability	1.424	0.087	0.555	16.325	0.000

Dependent Variable: Knowledge Transfer

Hypothesis H4: The influence of Knowledge Dissemination Capability on Knowledge Transfer is moderated by Collaborative Know-How.

A moderating variable is a factor that is positioned between the independent variable and dependent variable. A multiple regression was used to test the moderating effect on the two variables. Table 6 shows the regression analysis results using the Baron and Kenny (1986) approach to test the moderating effect of “Collaborative Know-How” on the relationship between “Knowledge Dissemination Capability” and “Knowledge Transfer”.

As indicated in the three models shown in Table 6, there is a significant total effect of “Knowledge Dissemination Capability” on “Knowledge Transfer” (adjusted $R^2=0.306$, $p<0.05$) in model 1, and model 2 shows a significant increase in R-square when “Collaborative Know-How” is added (change of $R^2 = 0.026$, $p<0.05$). In model 3, when the interaction term (KDCxCKH) is added, the explanation power of the model does not increase, indicating that the interaction term does not contribute to the increment in explaining the variance in “Knowledge Transfer”. Therefore, Hypothesis H4 is rejected.

Table 6 Model Summary for H4/Model Summary (d)

Model	R	R Square	Adjusted R Square	Change Statistics				
				R Square Change	F Change	df1	df2	Sig. F Change
1	0.555(a)	0.308	0.306	0.308	266.493	1	600	0.000
2	0.578(b)	0.334	0.332	0.026	23.735	1	599	0.000
3	0.578(c)	0.334	0.331	0.000	0.000	1	598	0.986

a Predictors: (Constant), Knowledge Dissemination Capability
 b Predictors: (Constant), Knowledge Dissemination Capability, Collaborative Know-how
 c Predictors: (Constant), Knowledge Dissemination Capability, Collaborative Know-how, KDCxCKH
 Dependent Variable: Knowledge Transfer

Hypothesis H5: The influence of Knowledge Dissemination Capability on Knowledge Transfer is moderated by Partnership Duration.

Table 7 below shows the regression analysis results using the Baron and Kenny (1986) approach to test the moderating effect of “Partnership Duration” on the relationship between “Knowledge Dissemination Capability” and “Knowledge Transfer”.

As indicated in the three models shown in Table 7, there is a significant total effect of “Knowledge Dissemination Capability” on “Knowledge Transfer” (adjusted $R^2=0.306$, $p<0.05$) in model 1, and model 2 shows an insignificant increase in R-square when “Partnership Duration” is added (change of $R^2 = 0.001$, $p>0.05$). In model 3, when the interaction term (KDCxPND) is added, the explanation power of the model increases insignificantly (change of $R^2 = 0.001$, $p>0.05$), indicating that the interaction term does not contribute to the increment in explaining the variance in “Knowledge Transfer”. Therefore, Hypothesis H5 is rejected.

Table 7 Model Summary for H5/Model Summary

Model	R	R Square	Adjusted R Square	Change Statistics				
				R Square Change	F Change	df1	df2	Sig. F Change
1	0.555(a)	0.308	0.306	0.308	266.493	1	600	0.000
2	0.556(b)	0.309	0.307	0.001	1.130	1	599	0.288
3	0.557(c)	0.310	0.306	0.001	0.770	1	598	0.380

a Predictors: (Constant), Knowledge Dissemination Capability

b Predictors: (Constant), Knowledge Dissemination Capability, Partnership Duration

c Predictors: (Constant), Knowledge Dissemination Capability, Partnership Duration, KDCxPND

Dependent Variable: Knowledge Transfer

5. Discussion

Unlike previous studies on private sector organizations, the findings of hypotheses H1 and H2 illustrated nearly no effect of absorptive capacity on intra-organizational transfer capability and also revealed that inter-organizational dynamics cannot facilitate knowledge absorption and dissemination within donor and recipient organizations. The interactions among all items are insignificant. It has been shown that even if greater resources are allocated to learning from partners dedicated to facilitating knowledge absorption, there is still a minimal effect on knowledge dissemination within organizations. It is understandable that since PFI projects are still new and all participants are on a learning curve. Both experiences and expertise have to be accumulated for better transfer and dissemination within organizations. Absorptive capacity theory also suggests that prior knowledge acquired from this specific teacher should also be important to understanding knowledge (Lane, Salk, and Lyles, 2001). For this research, prior acquired knowledge seems weakly associated with current learning. It still needs time for partners in PFI projects to develop the learning path.

The results of hypothesis H3 about the correlation between the knowledge dissemination capability of donor/recipient organizations and knowledge transfer in PFI projects indicate that the positive effect of knowledge dissemination capability on knowledge transfer is significant amongst PFI partners. Asset specificity is the extent to which investments support a particular transaction, rather than be redeployed for the other purposes (McGuinness, 1994). It is not only an important determinant of governance choice (Klein, 1989; Anderson and

Coughlam, 1987) that can be acquired over time by learning-by-doing, but it is also a source of ambiguity (Simonin, 1999). This research supported the positive correlation between knowledge transfer and knowledge dissemination capability, including asset specificity as a dimension. Therefore, knowledge transfer is likely to interact with asset specificity in PFI projects.

For the acquisition of knowledge, experience and expertise with a given asset or knowledge base predetermines the level of familiarity and comfort with both content and context, and thus favours the transferability of knowledge (Simonin, 1999). For example, cumulative experience with a technology is a critical factor in understanding new technologies (Zander and Kogut, 1995). This research also supports its positive correlation. Therefore, experience and expertise are likely to interact with knowledge transfer, which means that they both facilitate knowledge transfer in PFI projects. Though absorption capacity exerts a minimal effect on knowledge dissemination within organizations owing to new participants on the learning curve, it is still likely to interact with knowledge transfer, and facilitate knowledge transfer in PFI projects as a whole.

Unlike previous studies of private sector organizations, the result of hypothesis H4 of this research found a weak effect of collaborative know-how and partnership duration on knowledge transfer in PFI projects. The special nature of PFI projects as a new approach may explain this finding. This research provides a further understanding of the process of knowledge transfer between public and private sector organizations. Through a study of PFI projects, this study provides a new dimension of knowledge transfer in the field of knowledge management. The effects of causal ambiguity and its antecedents on the process of knowledge transfer between strategic alliance and joint venture partners in the private sector have been illustrated by various studies. The conceptual model for this research was derived from the models developed by: Simonin (1999), Grant (1996), Argote, McEvily and Reagans (2003), and Easterby-Smith, Lyles and Tsang (2008). Making use of the antecedents, the mutual inter-organizational knowledge transfer between PFI partners was mapped using four sets of rational factors: (1) the resources and capabilities of the donor firm (2) the resources and capabilities of the recipient firm, (3) the nature of knowledge that is being exchanged, and (4) inter-organizational dynamics (Easterby-Smith, Lyles and Tsang, 2008).

Simonin (1999) found that collaborative know-how helped to adopt proper procedures for information gathering, interpretation and diffusion. It was shown in this research that even when partners deploy greater resources on collaboration with each other dedicated to facilitating knowledge transfer, it has little effect. When examining the analogous effects of collaborative know-how on the process of knowledge transfer in this research, it was observed that under conditions of greater collaborative know-how the effects of ambiguity still appear. Previous research found that as partners multiply their collaborative endeavors, expert know-how on partnering results in greater abilities to cope with new and unfamiliar situations (Powell, Koput and Smith-Doerr, 1996; Simonin, 1997). As organizations develop collaborative know-how, future collaborations should result in superior tangible and intangible benefits. Increased collaborative know-how in terms of searching for, negotiating, managing, monitoring, and terminating collaborative agreements can provoke more informed decisions about further collaborations and more realistic and achievable objective settings for collaboration (Simonin, 1997).

Findings from the study by Simonin (1997) suggest that firms do learn from past collaborations by developing skills in identifying specifics of collaborative agreements,

managing and monitoring the arrangements, and transferring knowledge. And, in term of past collaborative experience, this collaborative know-how allows firms to achieve greater benefits from collaborations. However, Simonin (1997) also found that previous collaborative experience alone does not ensure that a firm will benefit from collaboration; experience is only valuable if the lessons of this experience (both positive and negative) are internalized by the firm and drawn into specific know-how that can be used to guide future actions. That finding helps to explain why this research found that collaborative know-how has no effect on knowledge transfer across PFI partners. As the PFI approach is relatively new, there is relatively little experience to draw on that could guide future actions.

Concerning the result found in hypothesis H5, as the partnership sustains itself over the years, trust intensifies and attachment between partners may develop (Inkpen and Beamish, 1997). The significant effects of tacitness on knowledge transfer are constant across partners, irrespective of the duration of the partnership. This result is consistent with Mosakowski's (1997, p.437) conclusion that "I do not expect causal ambiguity to disappear completely". There are some limitations and possible boundaries to the 'unsticking' of information (von Hippel, 1994), to the conversion of knowledge from tacit to explicit (Nonaka, 1994), and to the decay of barriers to imitation, possibly through reinvestment in causally ambiguous competencies (Reed and DeFilippi, 1990). When the ceiling effect is reached in the unsticking of information, PFI partners are no panacea when it comes to knowledge transfer. Further technological developments may be required as alternate channels or organizational arrangements rather than partnership duration.

The important implications for business practices emerging from this research concerns the relative importance of various antecedents and four sets of rational factors: (1) the resources and capabilities of the donor firm (2) the resources and capabilities of the recipient firm, (3) the nature of knowledge that is being exchanged, and (4) inter-organizational dynamics (Easterby-Smith, Lyles and Tsang, 2008). Partners in PFI projects seeking to change the extent of knowledge transfer need to focus particularly on developing strong and trustworthy relations, especially within organizational boundaries. As such, relations that foster close cooperation are also likely to support knowledge transfer both at the intra-organizational and inter-organizational levels.

6. Conclusion

With regard to the "Knowledge Dissemination Capability", there is nearly no relationship between absorptive capacity and intra-organizational transfer capability within the donor and recipient organizations in PFI projects. It appears that although knowledge is absorbed, it takes time to retain the knowledge within the donor and recipient organizations in PFI projects upon accumulation of experience and expertise. Together with the insights from this study that the effectiveness of inter-organization dynamics is positively related to organizational knowledge transfer, PFI partners need to carefully balance absorptive capacity and intra-organizational transfer capability, since the inter-organization dynamics cannot facilitate the knowledge dissemination within donor/recipient organizations.

This research found a weak effect on collaborative know-how and partnership duration towards knowledge transfer in PFI projects. The special nature of PFI projects as a new approach with a short history also explains these findings. Whereas the age of organizations does not influence knowledge transfer, older units, e.g. public sector organizations, appear to experience difficulties transferring knowledge within organizations that requires further investigation.

This research represents a step towards quantitatively summarizing the empirical literature related to organizational knowledge transfer in PFI projects. It is highly likely that the number of studies investigating organizational knowledge transfer in the context of PFI will increase. There is clearly a need for additional theoretical and methodological development of the organizational knowledge transfer constructs for public and private sector organizations when it comes to partnerships. It is hoped that the results of this study will encourage additional research into how organizations may successfully acquire and transfer knowledge in order to enhance the performance of public projects for the benefit of all stakeholders, including the community at large. As such, the seminal work of Polanyi (1967) remains timely and fundamental to understanding the flow of knowledge transfer between partners of PFI projects, particularly when active knowledge sharing is an objective shared by PFI partners.

7. Limitations and Recommendations

First, the research used a self-completed questionnaire survey. Although every effort was made to ensure that the questionnaire was written properly, the meaning of the questions and terms such as 'partnership duration' and 'experience' were subject to the respondents' interpretations. A face-to-face interview approach may be better for future research so that the questions can be consistently explained and respondents have the opportunity to ask for clarification of terms if necessary. Second, although questionnaires were distributed through professional bodies and the invitation letter made it clear who the participants of the survey should be, the actual respondents might have been selected based on the recipients' own criteria. Finally, the major limitation of Baron and Kenny's (1986) approach for moderation evaluation is that it is based on a set of linear regressions and cannot be easily extended to more complex situations that are frequently encountered in applied research (Green, Ha and Bullock, 2010). To cite this study as an illustration, knowledge transfer actually is a complex construct with multiple dimensions, so examinations of other classifications, such as different natures of knowledge transfer or different stages of the transfer process, might extend the findings beyond just using the linear regression approach. SEM is an alternative analysis tool for performing modulating tests on multiple dimensions simultaneously. However, it was not used in this research because it is very complicated if used for a conceptual framework with multiple moderators, and it is only worth using to minimize the limitation of linear regressions.

Given the insignificant moderating effect on knowledge transfer in PFI, the roles of partnership duration and collaborative know-how needs to be studied again in the future. Owing to the inconsistencies when compared to that of previous studies, this finding rests on the necessity for future research to trace more closely and accurately the evolution of awareness and adaptation of partners over the course of the PFI partnership. In turn, it underlines the need to formally account for these two constructs in the future research.

In addition, given that research results are based on PFI projects in Hong Kong, it is recommended that similar studies be carried out in other countries.

References

Anderson E, Coughlan A (1987). International market entry and expansion via independent or integrated channels of distribution. *Journal of Marketing* 51:71-82.

Argote L, McEvily B, Reagans R (2003). Managing knowledge in organizations: an

- integrative framework and review of emerging themes. *Management Science*. 49(4):571-582.
- Baron RM, Kenny DA (1986). The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations. *Journal of Personality and Social Psychology*. 51(6):1173-1182.
- Baum JAC, Ingram P (1998). Survival-enhancing learning in the Manhattan hotel industry 1898 – 1980. *Management Science*. 44(7):996-1016.
- Bell G, Zaheer A (2007). Geography, networks, and knowledge flow. *Organization Science*. 18(6):955–972.
- Boh WF, Nguyen TT, Xu Y (2012). Knowledge transfer across dissimilar cultures, *Journal of Knowledge Management*. 17(1):29–46.
- Carrillo PM, Robinson HS, Anumba CJ, Bouchlaghem NM (2006). A knowledge transfer framework: the PFI context. *Construction Management and Economics*. 24(10): 1045-1056.
- Carrillo PM, Robinson HS, Anumba CJ, Patel M (2009). *Governance & Knowledge Management for Public-Private Partnerships*, Wiley, John & Sons: Oxford.
- Cohen WM, Levinthal DA (1990). Absorptive capacity: A new perspective on learning and innovation', *Administrative Science Quarterly*. 35(1):128–152.
- Darr E, Argote L, Epple D (1995). The acquisition, transfer and depreciation of knowledge in services organisations: Productivity in franchises. *Management Science*. 41(11):1750-1762.
- De Jong, BA, Elfring T (2010). How does trust affect the performance of ongoing teams? Mediating role of reflexivity, monitoring, and effort. *Academy of Management Journal*, 53(3): 535-49.
- Easterby-Smith M, Lyles AM, Tsang EWK (2008). Inter-organizational knowledge transfer: current themes and future prospects. *Journal of Management Studies*. 45(4):677-690.
- Edwards JS, Kidd JB (2001). Knowledge management when ‘the times they are a-changing, In *Proceedings of the ECKM 2001 Conference* (Remenyi D, Ed), 171–183, Second European Conference on Knowledge Management; Bled, Slovenia, 5–6 November.
- Gann D (2001). Putting academic ideas into practice: technological progress and the absorptive capacity of construction organisations. *Construction Management and Economics*. 19(3):321-330.
- Grant RM (1996). Toward a knowledge-based theory of the firm. *Strategic Management Journal*. 17(S2):109-122.
- Green DP, Ha SE, Bullock JG (2010). Enough Already about “Black Box” Experiments: Studying Mediation Is More Difficult than Most Scholars Suppose. *The Annals of the American Academy of Political and Social Science*. 628(1):200–2008.
- Greve, H R (1999). Branch systems and nonlocal learning in populations. In A. Miner

- & P. Anderson (Eds.). *Advances in Strategic Management* 57-80. Greenwich, CT: JAI Press.
- Gupta AK, Govindarajan V (2000). Knowledge flows within multinational corporations. *Strategic Management Journal*. 21(4):473–496.
- Hagedoorn J, Narula R (1996) Choosing organizational modes of strategic technology partnering: international and sectoral differences. *Journal of International Business Studies* 27(2):265–284.
- Hansen M, Lovas B (2004). How do multinational companies leverage technological competencies? Moving from single to interdependent explanations. *Strategic Management Journal*, 25(8-9), pp. 801–822.
- Hartel CEJ, Fujimoto Y (2000). Diversity is not the problem - openness to perceived dissimilarity is. *Journal of Management & Organization*. 6(1):14-27.
- Hobman EV, Bordia P, Gallois C (2004). Perceived dissimilarity and work group involvement. *Group & Organization Management*. 29(5):560-587.
- Hofstede G, Hofstede GJ, Minkov M (2010). *Cultures and Organizations: Software of the Mind* (3rd ed). McGraw-Hill, New York.
- Ingram P, Simons T (1999). The exchange of experience in a moral economy: Embedded ties and vicarious learning in Kibbutz agriculture. *Academy of Management Proceedings*.
- Inkpen AC, Beamish PW (1997). Knowledge, bargaining power, and the instability of international joint ventures. *Academy of Management Review*. 22(1):177-202.
- Jansen JJP, Van den Bosch FAJ, Volberda HW (2005). Managing potential and realized absorptive capacity: how do organizational antecedents matter? *Academy of Management Journal*. 48(6):999–1015.
- Kettl D (1993). *Sharing Power. Public Governance of Private Markets*. Washington, D.C., Brookings.
- Khamseh HM, Jolly D (2014). Knowledge transfer in alliances: the moderating role of the alliance type. *Knowledge Management Research and Practice*. 12(4):1-12.
- Klein S (1989). A transaction cost explanation of vertical control in international markets. *Journal of the Academy of Marketing Science*. 17(3):253-260.
- Krot K, Lewicka D (2011). Innovation and organisational trust: study of firms in Poland. *International Journal of Innovation and Learning*. 10(1):43-59.
- Lane PJ, Salk JE, Lyles MA (2001). Absorptive capacity, learning, and performance in international joint ventures. *Strategic Management Journal*. 22(12):1139–1161.
- Lane PJ, Lubatkin M (1998). Relative absorptive capacity and interorganizational learning. *Strategic Management Journal*. 19:461–477.

- Lei D, Slocum JW (1992). Global strategy, competence-building and strategic alliances. *California Management Review*. 35(1):81-97.
- Leonard-Barton D, Sensiper S (1998). The role of tacit knowledge in group innovation. *California Management Review*. 40(3):112-132.
- Levy M, Loebbecke C, Powell P (2001). SMEs, Co-Opetition and Knowledge Sharing: The IS Role. *Global Co-operation in the New Millennium*. 9th European Conference on Information Systems. Bled, Slovenia.
- McGuinness T (1994). *Markets and managerial hierarchies*. Thompson, G. *Markets, Hierarchies and Networks*. Sage:London.
- Mitchell R, Nicholas S, Boyle B (2009). The role of openness to cognitive diversity and group processes in knowledge creation. *Small Group Research*. 40(5):535-554.
- Mu J, Tang F, MacLachlan DF (2010). Absorptive and disseminative capacity: Knowledge transfer in intra-organization networks. *Expert Systems with Applications*. 37(1):31–38.
- Nagle JF (1992). *A history of government contracting*, Washington, DC: George Washington University Press.
- Nonaka I, Takeuchi H (1995) *The Knowledge-Creating Company*, Oxford: Oxford University Press.
- Norman PM (2002). Protecting knowledge in strategic alliances: resource and relational characteristics. *Journal of High Technology Management Research*. 13(2):177–202.
- Parkhe A (1991). Interfirm diversity, organisational learning and longevity in global strategic alliances. *Journal of International Business Studies*. 22(4):579-601.
- Reagan R, McEvily B (2003). Network structure and knowledge transfer: The effects of cohesion and range. *Administrative Science Quarterly*. 48:240–267.
- Salamon LM (2002). *The Tools of Government: A Guide to the New Governance*. Oxford: Oxford University Press.
- Simonin BL (1999). Ambiguity and the process of knowledge transfer in strategic alliances. *Strategic Management Journal*. 20(7):565-623.
- Simonin BL (1997). The Importance of Collaborative Know-How: An Empirical Test of the Learning Organization. *The Academy of Management Journal*. 40(5):1150-1174.
- Soberg PV (2012). Activity specific knowledge characteristics in the internationalization process. *Baltic Journal of Management*. 7(3):251-267.
- Tiemessen I, Lane HW, Crossan MM, Inkpen AC (1997). Knowledge management in international joint ventures. *Cooperative Strategies, North American Perspectives*.
- Todovora G, Durisin B (2007). Absorptive capacity: valuing a reconceptualization. *Academy*

of Management Journal. 32(3):774–786.

Tsai, W. (2001). Knowledge transfer in intra-organizational networks: effects of network position and absorptive capacity on business unit innovation and performance. *Academy of Management Journal*. 44:996–1004.

Volberda HW, Foss NJ, Lyles MA (2010). Absorbing the concept of absorptive capacity: how to realize its potential in the organization field. *Organization Science*. 21(4):931–951.

Wijk R, Jansen JJP, Lyles MA (2008). Inter- and Intra-organizational knowledge transfer: A meta-analytic review and assessment of its antecedents and consequences. *Journal of Management Studies*. 45(4):677-690.

Young HK, Chih YY, Ibbs CW (2009). Towards a Comprehensive Understanding of Public Private Partnerships for Infrastructure Development. *California Management Review*. 51(2):51-78.

Zahra SA, George G (2002). Absorptive capacity: a review, reconceptualization, and extension. *Academy of Management Review*. 27(2):185–203.

Zhou L, Keivani R, Kurul E (2013). Sustainability performance measurement framework for PFI projects in the UK. *Journal of Financial Management of Property and Construction*. 18(3):232-250.