Survey of Cross-Cultural Technology Transfer Research

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Abstract

This study aims at reviewing the technology/knowledge transfer literature and identifying which research areas on cross-cultural technology transfer field which should explore to obtain the new insights. With it in mind, the intersection of research fields concerning cross-cultural technology/knowledge transfer, the national culture difference and the extended literature of hybridization in the broad field of cross-cultural management is focused.

As a result, this study identifies the five research areas meriting the further research on cross-cultural technology transfer: (1) the impact of cultural differences on technology transfer; (2) management practice factors for achieving efficient technology transfer; (3) the evaluation of current management practices at Japanese manufacturing subsidiaries; (4) the relationship between efficient technology transfer and business performance; and (5) research approach in cross-cultural technology transfer, such as research methodology, viewpoint and theoretical foundation. Accordingly, this study suggests the dimensions for further qualitative and quantitative investigations and the integration of fundamental theories-Hofstede's national culture, Adler's hybridization perspective, Abo's management practice framework and organizational learning view-to underpin the investigating models. Consequently, this study draws the significant ways to answer the prevailing problem of how to implement cross-cultural technology transfer efficiently for achieving the successful business performance.

Keyword: cross-cultural technology transfer, efficient technology transfer, literature review, national culture difference, Japanese manufacturing subsidiaries in Vietnam

1. Introduction

Vietnam has recently become growing to take an important part in international market, after the great efforts in shifting the economic structure of centralized plan of command-driven into oriented market of market-driven and attracting foreign direct investment. Its characteristics of-the central location in East Asia, the stable socio-political environment, and rich both natural resource and young, hard-working and ambitious human resource-also provides the potential advantages. As the result, among of invested foreigner projects in Vietnam getting underway, the investment of Japanese companies came early around in the early 1990's, have been ranked third in term of approved foreign investment projects and first in implementing rate (Fukunaga, 2010). Recently, the Japanese incentives for expanding the foreign direct investment projects into Vietnam are been performing; Japanese companies are gradually increasing the establishing and operating their long term business. However, on the practical observation, Japanese subsidiaries in Vietnam have encountered many difficulties in transferring technology into Vietnam in the context of cultural differences, and are facing the need to increase wages because of inflation in the Vietnamese market and higher productivity (Nguyen, Takanashi, & Aoyama, 2012; Nguyen & Aoyama, 2012). It has become increasingly necessary to address the practical need to seek problem-solving approaches originating from cultural origins and the relationship among efficient technology transfer, firm's business performance and national culture. Specifically, the prevailing problem is how to implement efficiently technology transfer in the context of cultural difference for achieving the successful business performance at Japanese manufacturing subsidiaries in Vietnam; which needs to be solved. At the same time, research on cross-cultural technology transfer research has inadequate achieved the understanding, especially focusing on Japanese firms in Vietnam. Therefore, the urgently managerial question merits this study to systematically look at the literature in cross-cultural technology transfer and relevant cross-cultural

management to identify research areas could be explored the new insights.

The paper is structured as follows. After a concise introduction of the issues in section 1, section 2 introduces the method leading literature review. Section 3 presents the literature review on cross-cultural technology transfer; which is classified into the definition of technology transfer and of efficient technology transfer; research approach in cross-cultural technology/knowledge transfer model; facilitators and inhibitors in technology/knowledge transfer; the impact of national culture on cross-cultural technology/knowledge transfer; and technology transfer consequence. Section 4 presents the relevant literature of national culture difference and the hybridization notion in cross-cultural management. Section 5 offers the identified research areas meriting the further research on cross-cultural technology transfer. Section 6 suggests the dimensions for further qualitative and quantitative investigations and the theoretical background underpinning research model-Hofstede's national culture, Adler's hybridization perspective, Abo's management practice framework and organizational learning view-to address the above issues. This paper closes at section 7 with the brief findings from this study.

2. Method

This study constitutes an intersection of research fields concerning cross-cultural technology transfer, and the national cultural difference and the extended literature of hybridization in the broad field of cross-cultural management. Seven steps in the approach of Creswell (2003) and of Creswell (2009) are followed to conduct the literature review: (1) identifying key words; (2) searching the library catalog (EBSCO Host, ScienceDirect, ProQuest and etc., and from Google scholar, Open access resources, Google search and etc.); (3) locating about 50 reports of research and setting a priority on the research for journal articles and books; (4) looking over the abstracts and skimming the article and chapter to obtain a sense of useful contribution to current understanding of literature; (5) designing a literature map to position own study within the larger body of literature; (6) drafting the summaries of the most relevant articles; and (7) structuring the literature   review thematically. As a result, the relevant literature on the topic of cross-cultural technology transfer are organized by important concepts addressed in this study-technology transfer definition, efficient technology transfer definition, the cross-cultural technology/knowledge transfer research approach, facilitators and inhibitors in technology/knowledge transfer. The relevant research on cross-cultural management is summarized in subjects, such as national culture, cultural difference dimensions, and hybridization notion.

3. Cross-Cultural Technology Transfer

3.1 Technology Transfer Definition

The concept of technology transfer is defined according to the context and the research in which it is employed (Bozeman, 2000). Previous research projects have provided various definitions of technology transfer; they demonstrate convergence in their similarity and complementariness (Nguyen, Takanashi, & Aoyama, 2012). This study suggests defining technology transfer as specific knowledge transfer in the context of cultural differences and as the phenomenon of the geographic expansion of production activities. Therefore, technology transfer is the process of transferring technological knowledge, information, and know-how across organizational borders from developed to less technologically developed countries. Technology transfer can be said to have occurred where the technology recipients have effectively acquired, learned, absorbed, and applied such knowledge to production activities and management techniques, similarly to the original economic organizations (Derakhshani, 1984; Williams & Gibson, 1990; Yamashita, 1991; Bozeman, 2000; Ando, Kawashima, & Kan, 2005; Sazali & Raduan, 2011).

3.2 Efficient Technology Transfer Definition

Considering technology transfer as a specific phenomenon of technological knowledge transfer, there are various perspectives according to which the efficiency of technology transfer can be defined. The simplest viewpoint is the ability of the recipient firm to operate the technology effectively, and the most complex method is the ability of the firm to invent a new technology (Al-Thawwad, 2008). Particularly, previous research defined efficient technology transfer as follows: (1) transferring costs (Teece, 1976); (2) reducing unit costs and defect rates, enhancing self-production rates, improving and developing products produced under cooperation, and enhancing the quality and competitiveness of technical personnel (Chen & Hsu, 1978); (3) achieving technology implementation, economic efficiency, and product-development skills (Mansfield, Romeo, Schwarts, Teede, Wagner, & Brach, 1982); (4) impacting efficiency, achieving smoothness of transfer, and executing target tasks (Leonard-Barton & Sinha, 1993); (5) associating innovation behavior with the quality of supervisor–subordinate relationships (Scott & Bruce, 1994); (6) adopting technology, and enhancing technical capacity (Fang & Cheng, 1999); (7) continuously improving competitive abilities through unique technology (Yli-Renko, Autio, & Sapienza, 2001); and (8) acquiring and applying technology or process know-how, reducing technical

dependency, and improving innovation ability through enhancement of professional standards and reforming the stimulation system for manufacturers (Lin, 2007).

Briefly, although there are several approaches of defining the efficiency of technology transfer, the specific targets for cooperation mainly concentrate on production improvements, increase of technical capacity and business extension. Technology transfer herein focuses on the processes of efficiently learning, acquiring, accumulating, and applying technological knowledge to production activities. Therefore, the efficiency of technology transfer concept is suggested capturing on the viewpoint of product-development skills (Mansfield et al., 1982), the acquisition of know-how regarding technology/processes, the application of knowledge, and improvement of professional standards (Lin, 2007); and the basis of interviews with Japanese and Vietnamese managers. It could be concentrated on acquiring technological knowledge from partner, enhancing knowledge application, increasing the motivation for further study, and improving innovative capacity of process and product quality.

3.3 Approach in Technology Transfer Research

The research on international technology transfer has matured by emphasizing the technology itself (Li-Hua, 2004). Recently, knowledge has been identified as the key to control technology transfer performance (Li-Hua, 2004). This research trend continues to be explored; treating the knowledge based view to underlie technology transfer models. The approaches on technology transfer research based on knowledge based view are briefly summarized as shown in Table 1.

Table 1. The approach in knowledge/technology transfer research

Approach	Advantage	Shortcomings
Knowledge characteristic (e.g., Polanyi, 1967; Calantone, Lee, & Gross, 1990; Simkoko, 1992; Nonaka, 1994; Zander & Kogut, 1995; Teece, 1998; Orlikowski, 2002)	-Basing on the notion of knowledge as more conception than codification, the concept of tacit knowledge is formalized to distinguish knowledge and information; know-what and know-how (Orlikowski, 2002). -The potentiality and benefit of the conversion of tacit and explicit knowledge are viewed in the debate of knowledge codification (Nonaka, 1994).	-The perspective of knowledge as an object or an activity remains vague (Orlikowski, 2002; Hartmann, 2007).
Knowledge as an activity (e.g., Orlikowski, 1992; Brown & Duguid, 1998; Brown & Duguid, 2001; Orlikowski, 2002)	-Knowledge is considered as an activity rather than an object; which directly addresses into human activities and human relations (Orlikowski, 1992; Orlikowski, 2002). The basic of structuration theory of Giddens's (1984) is exploited in this approach (Nguyen, 2012).	-The operational measurements of this notion for quantitative research have not been persuaded (Nguyen, 2012).
Knowledge flows (e.g., Szulanski, 1996; Andersen, 1999; Szulanski, 2000; Schulz, 2003; Riusala & Smale, 2007; Chen, 2010)	-Knowledge is viewed as a liquid flowing from one point to another point (Szulanski, 1996; Hartmann, 2007); that the difficulty of knowledge transfer is regarded by the concept of stickiness (Szulanski, 1996).	-The measurement of concept of stickiness is particularly not defined (Nguyen, 2012). -There are confusions between the characteristics of knowledge and the factors of human and organization (Szulanski, 2000; Hartmann, 2007).
Organizational learning (e.g., Mills & Friesen, 1992; Kim, 1993; Nevis, Dibella, & Gould, 1995; Tenkasi & Mohrman, 1995; Epple, Argote, & Murphy, 1996; Steensma, 1996; Tiemessen, Lane, Crossan, & Inkpen, 1997; Benkard, 2000; Bapuji & Crossan, 2004; Daghfous, 2004; Le, 2005; Chen, 2010; Sazali & Raduan, 2011)	-Technology transfer is conceptualized as collaborative learning where human beings and their activities are focused (Tenkasi & Mohrman, 1995). -An organization learns through individuals in the organization through three stages-knowledge acquisition, knowledge sharing, and knowledge utilization-with four involved critical elements-structure, conditions, process, and outcomes (Kim, 1993; Tiemessen, Lane, Crossan, & Inkpen, 1997). -The discrepancy among learning –capability, the characteristics of technology, collaboration, and the difficult level in learning process are	-The learning process is viewed as an activity happening in the inside of an organization; the transfer activities occur from the outside (Tenkasi & Mohrman, 1995; Hartmann, 2007). The outcome of technology transfer process is not explicitly considered (Nguyen, 2012). -The relationship between the theoretical models and their operationalization is not evident (Hartmann, 2007; Sazali & Raduan, 2011).

Approach	Advantage	Shortcomings
	viewed as the problems relating to learning gap (Steensma, 1996).	
Information transmission (e.g., Samli, 1985; Malik, 2002; Buckley, Carter, Clegg, & Tan, 2005)	-Based on telecommunication theory, the straight interaction of technical devices, including-sender as information source; receiver as the end transmission point; message as information, coding foreign languages and technical information; noise in transmission; transmission channels and feedback channels-is built in this line of research stream (Nguyen, 2012).	-The human interaction in transmission process is not considered (Nguyen, 2012). -The explicit information content is believed as really need for effectively implementing technology transfer in a different culture setting (Nguyen, 2012). It is obtained by an ideal transferring type of one-on-one copy (Samli, 1985; Hartmann, 2007).
Information translation (e.g., Holden & von Kortzfleisch, 2004)	-Information translation is an interesting modification type of information transmission approach that innovates the exact copy in the standard telecommunication model (Holden & von Kortzfleisch, 2004). Ambiguity, interference and lack of equivalence are investigated (Holden & von Kortzfleisch, 2004).	-The information translation also maintains the limitations of the information transmission approach (Holden & von Kortzfleisch, 2004; Hartmann, 2007).
Knowledge exchange network (e.g., Ghoshal & Bartlett, 1988; Ghoshal, Korine, & Szulanski, 1994; Hansen, 1999; Tsai, 2001; Tsai, 2002; Hansen, 2002; Levine, 2003; Reagans & McEvily, 2003)	-The persons' ties and the firm's regime are the core aspects of the technology transfer approach upon knowledge exchange network structure based on network theory (Levine, 2003). It is formalized that knowledge is easier to transfer in a strong tie than in a weak tie; in which two features of cohesion and range relate to the ease of knowledge transfer (Tsai, 2001; Tsai, 2002; Reagans & McEvily, 2003).	-The mathematical models in quantitative studies linking network structure, knowledge tacit-ness and codification and transfer performance are limited at practical application (Hansen, 1999; Hartmann, 2007). -It seems hardly to enhance the ties through group-wide meetings and job rotation (Reagans & McEvily, 2003; Hartmann, 2007).
Information technology-based knowledge management (e.g., O'Dell & Grayson, 1998; Bolisani & Scarso 1999; Garavellia, Gorgoglione, & Scozzi, 2002; Albino, Garavellia, & Gorgoglione, 2004)	-Information technology-based knowledge management, e.g., computer database with instrument, search functions, directory encourages employees using system of knowledge and manifests the advantage of technology oriented companies in technology transfer process (Nguyen, 2012).	-Only explicit knowledge is acquired by database system. The mechanisms for transferring the tacit knowledge are not included in this approach (O'Dell & Grayson, 1998; Hartmann, 2007). - Organizational culture and factors involving employees still are remains (O'Dell & Grayson, 1998).
Feedback controlling mechanism (e.g., Joshi, 1977; Samli, 1985; Kremic, 2003)	-Feedback mechanism based on control theory is mainly focused (Nguyen, 2012). The sender checks the success of a transfer according to the output (Kremic, 2003). Once the unsatisfactory result rises, the sender performs corrective actions (Kremic, 2003). For example, when subsidiary's performance in practice goes down, the MNC's general director changes the head of subsidiary (Kremic, 2003; Hartmann, 2007; Nguyen, 2012).	-Organization is considered as a black box that its internal mechanisms of knowledge transfer are not addressed any insights (Kremic, 2003; Hartmann, 2007).
Knowledge as a firm's strategic asset, and technology transfer as project management (e.g., Michalisin, Smith & Kline, 1997; Sicotte & Langley, 2000; Gupta & Aronson, 2000; Lin & Berg, 2001; Saad, Cicmil, & Greenwood, 2002; Bresnen, Edelman, Newell, Scarbrough, & Swan, 2003; Fernie, Green, Weller, & Newcombe, 2003; Huang & Newell, 2003; Koskinen, Pihlanto,	-Under the project management perspective, the most appropriate methods for managing technology transfer process are focused to provide the comprehensive view and describe completely the nature of the technology transfer phenomenon (Saad, Cicmil, & Greenwood, 2002; Hartmann, 2007; Nguyen, 2012). -On the strategic view point, organizational knowledge is considered as a firm's strategic asset to develop and sustain its competitive advantage because of its characteristics-valuable, rare, inimitable, and non-substitutable (Michalisin, Smith & Kline,	-The approach of technology transfer as project management does not underpin the fundamental theory in building models (Nguyen, 2012).

Approach	Advantage	Shortcomings
& Vanharanta, 2003)	1997). It is managed in various activities of acquisition, organization, dissemination and exploitation to create the added value to the firm (Gupta & Aronson, 2000).	
Expatriate performance (e.g., Minbaeva & Michailova, 2004; Harzing & Christensen, 2004; Holopainen & Bjorkman, 2005; Lu, 2011)	-The subsidiary managers' performance is considered as the decisive factor for the operating results in subsidiaries; even though severe failure of expatriate might be rarely in the reality (Harzing & Christensen, 2004; Lu, 2011). Thus, the disseminative capacity associated with individual communication behavior is attentively looked at in seeking the appropriate expatriate candidates for organization's success (Minbaeva & Michailova, 2004).	-This approach functions the individual success or failure associated with organization's performance; gives the criticism to the remarkable persons once something in organization is broken down (Nguyen, 2012). Actually, technology transfer is an organizational and social phenomenon (Nguyen, 2012).
The stages of transfer (e.g., Tyre & Hauptman, 1992; Szulanski, 1996; Szulanski, 2000; Szulanski, 2003; Ando, Kawashima, & Kan, 2005)	-Upon the stages of transfer, technology transfer activities are divided into separate organizational units of design, engineering, manufacturing process, and R&D or into the stages of initiation, implementation, ramp-up and integration to solve organizationally manufacturing problem (Tyre & Hauptman, 1992; Szulanski, 1996; Szulanski, 2000; Szulanski, 2003); which offer the new insights of organizational practices.	-The implementation of new technologies at the shop floor clearly separates in sequential stages, without too much overlap among them (Ando, Kawashima, & Kan, 2005; Hartmann, 2007). In fact, some issues in technology transfer stages interrelate and occur together (Nguyen, 2012).

It is seen that research on technology transfer capturing the knowledge based view presents relatively novel, though they are mainly built on three previous research streams: organizational learning, information processing theory, and the resource-based view. Among which, organizational learning perspective provides much needed rigor in the conceptualization of the technology transfer process in an insightful manner (Sazali, Haslinda, Jegak, & Raduan, 2009). Moreover, organizational learning literature is viewed as necessary and a complementary component for the complete view of technology transfer as a learning process; and technology recipient organizations as learning system (Daghfous, 2004; Bapuji & Crossan, 2004). Besides, the concept of organizational learning provides considerable promise -to academics because of its vital disciplines and to managers because of its key role in corporate competitiveness (Dodgson, 1993). In general sense, learning perspectives also are associated to knowledge at one time.

3.4 Facilitators and Inhibitors in Technology/Knowledge Transfer

A review of technology transfer and knowledge transfer reveals that facilitators and inhibitors are major factor impacting on the effectiveness and efficiency of technology transfer. In this section, four key components that may facilitate/inhibit technology transfer process are picked up in Samli (1985)'s the basic model of technology transfer-technology/knowledge characteristic, transferor's characteristic, transferee's characteristic and organizational context characteristic; which are presented in Table 2. Knowledge characteristic refers to explicit knowledge, tacit knowledge, specificity, complexity, and causal ambiguity. Transferor's characteristic relates to willingness to transfer technology vs. lacked motivation and protectiveness, knowledge base, degree of international experience, wariness, and unreliability. Transferee's characteristic relates to learning orientation, learning intent, risk aversion, intellectual demands, degree of international experience, learning capacity, absorptive capacity, knowledge base, lacked motivation, lacked retentive capacity, and personal power and promotion opportunities. Organizational context characteristic refers to management of technology transfer program, transfer agreement, transfer method, relationship, trust, effective communication, shared values, information technology support, unproductive organizational environment, and cultural differences.

Table 2. Facilitating and inhibiting factors of technology/knowledge transfer

Attribute	Impacts to technology/knowledge transfer
Technology/Knowledge's characteristic	
Explicitness (+)	Explicit knowledge can be easily transferred by articulating in words and numbers (Davenport & Prusak, 2000).
Tacitness (-)	Tacit knowledge causes the difficulty and frustration in learning, obstacles for imitation and significantly influences on the effectiveness of knowledge transfer (Reed & DeFillippi, 1990;

Attribute	Impacts to technology/knowledge transfer
	Kogut & Zander, 1993; Szulanski, 1996; Simonin, 1999).
Causal ambiguity (-)	Causal ambiguity creates barriers for imitation (Szulanski, 1996; Simonin, 1999; Simonin, 2004).
Specificity (-)	Knowledge exists in specific context associated with particular time and space, and impossibly replicates the original contextual to transfer (Hayek, 1945; Simonin, 1999; Parise & Henderson, 2001; Lucas, 2006). Its characteristic has a similar role with tacit knowledge.
Complexity (-)	The nature of the transferred technology affects the efficiency of communication and interaction between the two parties during the technology transfer process (Lin & Berg, 2001). The complex technology becomes harder to understand, and is more difficult to transfer from one party to another, therefore more training of local partner is required (Calantone, Lee, & Gross, 1990; Simkoko, 1992; Lin & Berg, 2001).
Transferor's characteristic	
Willingness to transfer technology (+) vs.	The transferor is willing to transfer the appropriate technology; that is one of the essential elements to achieving successful technology transfer (Malik, 2002; Benedetto, Calantone, & Zhang, 2003; Wang, Tong, & Koh, 2004; Ganesan & Kelsey, 2006).
Lacked motivation and protectiveness (-)	Partner assistance and partner contribution are important to knowledge acquisition (Lyles & Salk, 1996; Lyles, Sulaman, Barden, & Kechik, 1999; Le & Evangelista, 2007).
	Knowledge is hard to transfer in cases of lacked motivation and more protectiveness from transferors (Szulanski, 1996; Simonin, 1999; Inkpen, 2000; Simonin, 2004).
Knowledge base (+)/(-)	The knowledge base of both the technology transferor and transferee importantly impacts for achieving the effective technology transfer process, especially for companies expand into oversea (Saad, Cicmil, & Greenwood, 2002; Wang, Tong, & Koh, 2004).
	The high knowledge base, the transferor contributes the amount of useful knowledge to existing knowledge stock that they can transfer (Steensma & Lyles, 2000; Wang, Tong, & Koh, 2004; Teerajetgul & Charoenngam, 2006).
Degree of international experience (+)	The degree of international experience of both the transferor and transferee impacts significantly on the technology transfer process. The greater level of international experience, the more effective technology transfer process (Lin & Berg, 2001).
	The cross communication and internal communication networks help to build confidence with international operations and increase technology transfer effectiveness (Lin & Berg, 2001).
Wariness (-)	Transferors feel fear and caution when they are being exploited in an exchange relationship, thus knowledge transfer might be less reached (Lynch, Eisenberger, & Armeli, 1999).
Unreliability(-)	The perceived unreliability from transferor is a significant barrier to knowledge transfer (Szulanski, 1996).
Transferee's characteristic	
Learning orientation (+)	The stronger employees have learning orientation, the more the consultation with co-workers to improve their knowledge skills and abilities (Brett & VandeWalle, 1999; Gray & Meister, 2004).
Learning intent (+)	The intent to learn the new technology of the transferee directly affects the degree of knowledge advancement (Malik, 2002; Mohr & Sengupta, 2002; Benedetto, Calantone, Zhang, 2003; Wang, Tong, & Koh, 2004; Ganesan & Kelsey, 2006).
	The higher the learning intent, the higher the degree of knowledge transfer (Simonin, 2004; Le & Evangelista, 2007).
Risk aversion (+)	The stronger individuals have risk aversion, the more the searching for knowledge to reduce the possibility of making an error (Pratt, 1964; Gray & Meister, 2004).
Intellectual demands (+)	The higher the intellectual demands for work, the more the need of knowledge and the greater learning behavior activates (Knowles, 1980; Gray & Meister, 2004).
Degree of international experience (+)	The transferee's experience working with foreigners helps to increase the capability of preserving core technology from the transferor (Lin & Berg, 2001).
Learning capacity (+)	The higher the incentive-based learning capacity, the higher the degree of knowledge transfer (Makhija & Ganesh, 1997; Parise & Henderson, 2001; Simonin, 2004; Le & Evangelista, 2007).
Absorptive capacity (+)	The higher the absorptive capacity, the higher the degree of knowledge transfer (Cohen & Levinthal, 1990; Szulanski, 1996; Davenport & Prusak, 2000; Lane, Salk, & Lyles, 2001; Joshi & Sarker, 2003).
Knowledge base (+)/(-)	A poor knowledge base of the transferee raises difficulty to understanding and utilizing the new technology (Saad, Cicmil, & Greenwood, 2002; Wang, Tong, & Koh, 2004).
Lacked motivation (-)	The lacked motivation from recipients is significant barrier to knowledge transfer (Szulanski, 1996).
Lacked retentive capacity (-)	The less the knowledge recipient has retentive capacity, the more difficult the received knowledge is continuously used feasibly (Szulanski, 1996).
Individual authority and promotion opportunities	The fear feeling of losing some power; reducing the chances of promotion, compensation and success; and of increasing the additional workload leads the knowledge sharing in employees is

Attribute	Impacts to technology/knowledge transfer
(-)	not voluntary (Rus & Lindvall, 2002).

Organizational context characteristic

Management of technology transfer program	The commitment of senior management to technology transfer and the successful teamwork between the host and foreign management team highly encourage technology transfer process (Simkoko, 1992; Black, Akintoye, & Fitzgerald, 2000; Devapriya & Ganesan, 2002).
Transfer agreement	The formally planned and managed agreement including the amount of training provided to the transferee, the extent of local employment and the degree of the provided supervision of transferor helps to transfer a greater degree of knowledge to host workers (Simkoko, 1992; Saad, Cicmil, & Greenwood, 2002; Wang, Tong, & Koh, 2004).
Transfer method	The type of transfer arrangements (e.g., joint venture) is key to allocate risk and responsibility of all aspects of the technology transfer project. It influences on the degree of technology transfer performance (Calantone, Lee, & Gross, 1990; Ganesan & Kelsey, 2006).
Closed relationship (+) vs. Arduous relationship (-)	The relationship between the transferor and transferee impact on the technology transfer process (Lin & Berg, 2001; Fisher & Ranasinghe, 2001; Kumaraswamy & Shrestha, 2002).
	Strong ties enhance the tacit knowledge transfer (Dhanaraj, Lyles, Steensma, & Tihanyi, 2004).
	An arduous relationship might produce additional hardship for transfer (Szulanski, 1996; Strang & Soule, 1998).
Trust (+)	Employees feel less hesitant and willing to post information to other members once they trust together and believe knowledge to be the reliable and objective information source (Ardichvili, Page, & Wentling, 2003; Dhanaraj, Lyles, Steensma, & Tihanyi, 2004).
	Otherwise, employees hesitate to contribute their knowledge sharing due to the fear of criticism or of misleading the community members (Ardichvili, Page, & Wentling, 2003). Thus, the various types of trust, varying from knowledge-based trust into institution-based trust, are necessary to build (Ardichvili, Page, & Wentling, 2003).
Effective communication (+)	Effective communication positively impacts on technology transfer process (Black, Akintoye, & Fitzgerald, 2000; Devapriya & Ganesan, 2002; Malik, 2002; Ganesan & Kelsey, 2006).
Shared values (+)	Shared value system enhances the tacit knowledge transfer (Dhanaraj, Lyles, Steensma, & Tihanyi, 2004).
Information technology support (+)/(-)	Information technology support enables the capacity of organization in transferring knowledge faster and creating knowledge quicker (Lee & Choi, 2003; El Sawy & Majchrzak, 2004; Yeh, Lai, & Ho, 2006).
	Otherwise, employees have difficulties in positioning the required information because of the overloaded information (Rus & Lindvall, 2002).
Unproductive organizational environment (-)	An unproductive organizational environment hampers the transfer implementation and transfer evolution (Szulanski, 1996).
Cultural differences (-)	Cultural differences between the transferor and transferee at both national and organizational level undoubtedly play a part in the international technology transfer process (Choi &Lee, 1997; Meschi, 1997; Inkpen, 1998; Liu & Vince, 1999; Dussauge, Garrette, & Mitchell, 2000; Stewart, & Waroonkun, 2007).
	Cultural differences create bottlenecks either impede or eliminate the potential of successful knowledge transfer (Lin & Berg, 2001; Lucas, 2006). The higher cultural gap between the participating firms, the lower the effectiveness of technology transfer projects (Simonin, 1999; Lin & Berg, 2001; Lucas, 2006).
	Culturally blind leadership applies traditional ways and methods and pays less attention to cultural differences; that leads to severe problems in technology transfer implementation, especially in the practical disintegration of teamwork (Makilouko, 2004).
	The appropriate management practices and work approach of transferor and transferees based on cultural base (i.e. leadership style) for working in a partnership encourage the technology transfer process (Fisher & Ranasinghe, 2001; Kumaraswamy & Shrestha, 2002; Makilouko, 2004).

Note: (+) refers to positive impact; (-) refers to negative impact

As a result, the technology transfer research specifying the facilitating and inhibiting factors from the organizational context characteristic has not sufficiently reached the systematic consideration, in comparison to those factors from knowledge characteristic, transferor's characteristic and transferee's characteristic. Therefore, more specific items of organizational feature could be explored, especially the angles of national culture

difference on cross-cultural technology/knowledge transfer.

3.5 National Culture on Cross-Cultural Technology/Knowledge Transfer

Cultural difference is identified as one of crucial factors for achieving cross-cultural technology transfer efficiently (see Table 2, section 3.4) and as a major challenge for managers who undertake international technology transfer projects. Most of the encountered problems in international projects can be traced back to cultural factors, both national and organizational culture (Meschi, 1997). Therefore, cross-cultural projects could suffer if cultural differences are insufficiently realized (Kwek, 2006).

This study suggests investigating the phenomenon of cultural differences at national culture level because of its very important role in technology transfer and knowledge transfer across culture from one organization to another organization. Accordingly, the current literature relating to the impact of national culture on cross-cultural technology/knowledge transfer shows the interesting points as follows.

Firstly, the partners' distance and cultural differences are major obstacles to inter-firm knowledge transfer (Mowery, Oxley, & Silverman, 1996). Both the partners' national and organizational culture potentially affects all aspects of collaboration in the process of cross-national knowledge transfer management within a business context (Tiemessen, Lane, Crossan, & Inkpen, 1997). Particularly, national culture affects the values, attitudes and behaviors of the organization, and directly impacts on knowledge transfer and sharing behaviors in individuals (Pauleen, Wu, & Dexter, 2007). The cultural conflicts and cultural misunderstandings rooted in cultural differences minimize flows of information and learning (Lyles & Salk, 1996). Therefore, in order to successfully implement knowledge management, companies should establish the knowledge management approach to fit their culture (McDermott & O'Dell, 2001).

Then, organizations located in individualist cultures prefer to transfer and absorb more explicit and independent knowledge, while organizations located in collectivist cultures prefer to transfer and absorb more tacit and collective knowledge (Bhagat, Kedia, Harveston, & Triandis, 2002). In addition, individuals having high tolerance for ambiguity are better able to transfer and receive the tacit, complex and collective knowledge than those of low tolerance (Bhagat, Kedia, Harveston, & Triandis, 2002).

Finally, the differences in national culture create bottlenecks, either impede or eliminate the potential for successful knowledge transfer, because the transferring process involves movement of human capital, routines, practices and technologies to be adapted and institutionalized in the new environment (Lucas, 2006). Thus, inter-subsidiary knowledge transfers are likely more effective if subsidiaries located in similar cultural contexts (Lucas, 2006).

3.6 Consequence of Technology Transfer

Previous research on cross-cultural knowledge/technology transfer specifically evaluates the operational performance with the transferred knowledge and technology in various aspects, for example, organizational learning effectiveness (Cavusgil & Yavas, 1984; Inkpen, 2000; Le & Evangelista, 2007); productivity or revenue and market share (Caves, 1974; Xu, 2000; Liu & Wang, 2003; Yin & Bao, 2006); competitive advantage (Rodriguez & Rodriguez, 2005; Liao & Hu, 2007); operational efficiency, employee productivity, market share, market penetration, product quality, and customer satisfaction (Lane, Salk, & Lyles, 2001; Dhanaraj, Lyles, Steensma, & Tihanyi, 2004; Tsang, Nguyen, & Erramilli, 2004; Cui, Griffith, Casvugil, & Dabic, 2006); technological capabilities (Kumar, Kumar, & Persaud, 1999; Madanmohan, Kumar, & Kumar, 2004); human resources, business, and general performance (Lyles & Salk, 1996); and potential for innovation (Guan, Mok, Yam, & Pun, 2006; Kotabe, Dunlap-Hinkler, Parente, & Mishra, 2007).

Overall, most studies on operational performance and strategic alliance lack focus on the effects of efficient technology transfer on the companies' business performance in terms of productivity and innovation capacity. Accordingly, the role of corporate culture or organizational culture on those relationships has particularly received little attention. Consequently, considering technology transfer as the process of transferring knowledge, the process of how efficient technology transfer significantly affects subsidiaries' business performance merits further research.

4. Relevant Research from Cross-Cultural Management Field

4.1 Definition of Culture and National Culture

Most of the research on cross-cultural issues has focused on cross-national matters, with very few operational definitions of culture (Nasif, Al-Daeaj, Ebrahimi, & Thibudeaux, 1991; Leung, Bhagat, Buchan, Erez, & Gibson, 2011). In fact, culture is a complex concept and has not achieved consensual definition in the literature, for

example, culture is always shared by members of a society, not genetically inherited, and cannot exist on its own (Hall, 1976); culture as the collective programming of the mind which distinguishes the members of one group from another, is passed and changed from generation to generation because of adding something of its own by each generation before passing it on (Hofstede, 1980). Though, in most cases, culture strongly affects everything people do in the society because of their ideas, values, attitudes, and normative or expected patterns of behavior. Therefore, culture therein is characterized by shared and enduring meaning, values, norms and beliefs values and mutually reinforces and orients the behavior (Mulholland, 1991).

Accordingly, national culture herein is defined as key factor driving actions in organizations; at least to some degree, determining the forms of the behavior of a person in the workplace (Hofstede, Hofstede, & Minkov, 2010); and shaping the value system of company. National culture difference is the highly significant differences in the behavior and attitudes of employees and managers from each country when they work together within the same multinational corporation (Adler & Gundersen, 2008).

4.2 Dimension of National Culture Difference

The concepts of social culture and nation have recently become interesting research themes in cross-cultural business management. Through learning about premising research relating to national culture difference, there are some various research frameworks of the dimensions of cultural difference; which are summarized in the following Table 3.

Table 3. Cultural dimensions

Research by	Framework	Cultural dimensions	Referenced Source
Hall, 1960	Dimensions affecting individual behavior	Time; Space; Things (material possessions); Friendship, Agreements; and Relation to nature	Schwartz, 1999; Deresky, 2006; Lane, Distefano, & Maznevski, 2006
Kluckhohn & Strodtbeck, 1961	Dimensions of cultural tendency	Relationships among people; Mode of human activity; and Belief about basic human nature	
Hofstede, 1980	Dimensions of linking basic culture theory to practical management	Time orientation; Space using; Individualism-Collectivism; Power distance; Uncertainty avoidance; and Masculinity-Femininity	Hofstede, 1980
Hofstede & Bond, 1988	Dimensions of the thought orientation	Long-terms vs. short-term orientation	Hofstede & Bond, 1988
Trompenaars, 1993	Express the cultural difference in nations each other	Universalism vs. particularism; Individualism vs. collectivism; Neutral vs. affective; Relationships; Specific-oriented culture vs. diffuse-oriented culture; Achievement vs. ascription; Orientation toward time; and Internal and external control	Trompenaars, 1993; Schwartz, 1999; Hofstede & Mc Crae, 2004; Lane, Distefano, & Maznevski, 2006
Smith, Dugan, & Trompenaars, 1996	Dimensions of values	Egalitarian commitment vs. conservatism; and Utilitarian involvement vs. loyal involvement	Matsumoto & Yoo, 2006
Inglehart, 1997	Dimensions of attitudes, values, and beliefs	Traditional vs. secular-rational orientation; and Survival vs. self-expression values	Matsumoto & Yoo, 2006
Schwartz, 1999	Dimensions of relating work-value in decision, organizational leadership	Conservatism; Intellectual Autonomy; Affective autonomy; Hierarchy; Egalitarianism; Mastery; and Harmony	Schwartz, 1999
Hofstede, 2001	Dimensions of work-related cultural values	Individualism vs. collectivism; Power distance; Uncertainty avoidance; Masculinity vs. femininity; Long vs. short term orientation.	Hofstede, 2001
Globe Project Team, 2001; House, Hanges, Javidan, Dorfman, & Gupta, 2003	Dimensions of leadership values	Performance orientation; Assertiveness orientation; Future orientation; Human orientation; Institutional collectivism; Family collectivism; Gender egalitarianism; Power distance; Uncertainty avoidance.	Hofstede & Mc Crae, 2004; Matsumoto & Yoo, 2006
Schwartz, 2004	Dimensions of values	Embeddedness; Hierarchy; Intellectual autonomy; Affective autonomy; Egalitarianism;	Matsumoto & Yoo,

Research by	Framework	Cultural dimensions	Referenced Source
Bond et al., 2004	Dimension of social axioms (beliefs)	Mastery; and Harmony	2006
		Dynamic externality and Societal cynicism	Matsumoto & Yoo, 2006
Hofstede, Hofstede, & Minkov, 2010	Dimensions of work-related cultural values	Individualism vs. collectivism; Power distance; Uncertainty avoidance; Masculinity vs. femininity; and Long vs. short term orientation; Indulgence vs. restraint.	Hofstede, Hofstede, & Minkov, 2010

Briefly, there are many scholars discuss the choice of dimensions most appropriate for conceptualizing and operationalizing culture. Among the research on cross-cultural studies, Hofstede's work is the most representative of the national culture dimensions of work-related cultural value. Hofstede's framework is the most widely used national cultural framework in psychology, sociology, marketing, or management studies (Steenkamp, 2001). Although subject to some criticism, Hofstede's work has been used in subsequent studies on cross-cultural management because of its rigorous design, systematic collection, coherent theory, and the relative accuracy of its cultural dimensions (Michael & College, 1997; Jones & Alony, 2007; Adler & Gundersen, 2008; Schlunze, Hyttel-Srensen, & Ji, 2011).

4.3 Hybridization Notion in Cross-Cultural Management

A review of the extended literature on the cross-cultural management of hybridization reveals that transnational companies face many intercultural challenges and opportunities and that the unity of host and home management practices still prevails. Some of the research utilizing hybridizing notion has investigated on various approaches such as developing a hybrid management structure to create intercultural synergy (e.g., Abo, 1994; Adler & Gundersen, 2008; Fuller, 2009; Schlunze, Hyttel-Srensen, & Ji, 2011), matching corporate cultures in joint ventures and mergers (e.g., Tsang, 1998; Ross, 1999), assessing the "fit" between a country's culture and a generic strategy (e.g., Ross, 1999), recognizing the new dimensions of corporate strategy (e.g., Buckley & Casson, 1998).

Chiefly, even though hybridization perspective contributed to cross-cultural management field, the core values of the hybridizing notion have not yet reached its potential in the cross-cultural technology transfer field. This has revealed that the notion of cultural synergy, involving a series of optimal analysis of intercultural compromises, could be considered relevant for this study's proposal.

5. Discussion on Research Areas to Be Explored

By reviewing the growing interest and current debates in intersection of-cross-cultural technology/knowledge transfer, the national culture difference and the extended literature of hybridization in the broad field of cross-cultural technology transfer-, this study identifies the five major research areas meriting further studies (Figure 1). They are discussed on the following parts.

5.1 Effects of Cultural Difference on Technology Transfer

It has been seen that prior works on cross-cultural technology transfer mainly aimed to explain the nature of international technology transfer, and lacked a synthetic and systematic view incorporating both theoretical and empirical approaches. Currently, the prevailing issues are such as: which factors constrain technology transfer performance; how can minimize them effectively; and what significant activities promote technology transfer implementation in the context of cultural difference. In fact, the prior research to date on cross-cultural technology transfer, particularly emphasizing the effects of cultural difference on international technology transfer has not yet been holistically achieved.
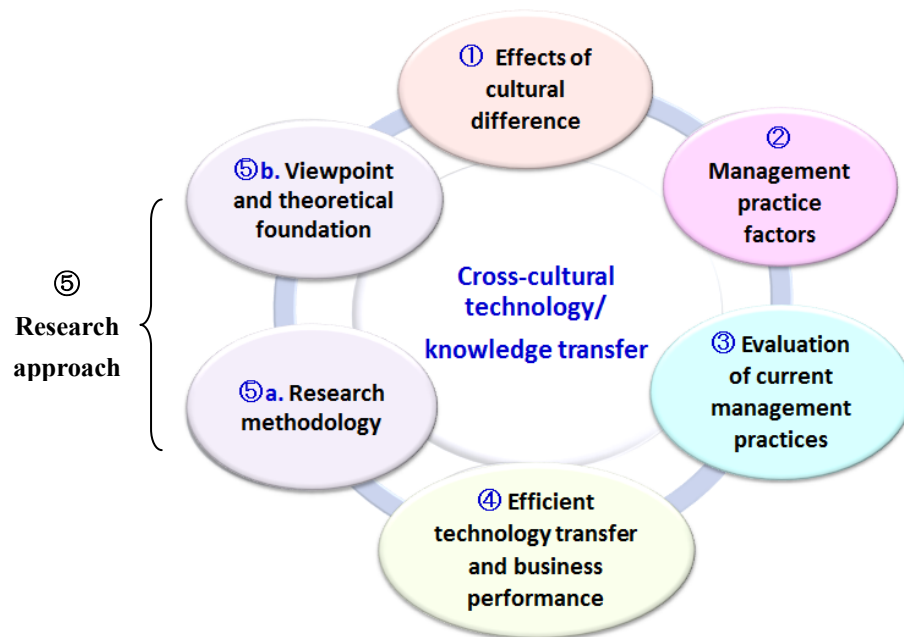
Figure 1. The identified research areas

At the same time, it has been observed that not only the negative influence of cultural difference on technology transfer has not solved adequately, but also the positive aspect of cultural difference has been lacked. This prevails the potential worthy of further exploring research. Given this background, the notion of "cultural fit" or "cultural synergy" involving a series of analysis of inter-cultural compromises, defined by e.g., Adler & Gundersen (2008); Schlunze, Hyttel-Srensen, & Ji (2011), could be considered the optimally strategic solution for the current problems. Thereupon, this study serves the suggestion to integrate the light of Hofstede et al. (2010)'s national culture and Adler & Gundersen (2008)'s hybridizing perspective on cross-cultural management, and with reference to Abo's management practice framework into the cross-cultural technology transfer field. This integration provides the fundamental to explore some of the important issues concerning the effects of cultural difference on international technology transfer that the current understanding has yet to sufficiently conceptualize-how to determine the combinable management perspectives based on each culture, how to synergize them, and why intercultural synergizing can be converted into advantages that efficiently promote technology transfer performance in the context of cultural difference.

In short, in a cross-cultural context, the technology transfer process becomes more complex and difficult and involves several aspects of the synthetic view that previous research has lacked both theoretically and empirically. Therefore, national culture theory and hybridizing notion should be exploited as cultural lens to explain the impact of cultural difference in management practice from the cultural origin on the technology transfer and firm business performance and to explore the systematic solutions of managing operations in cross-cultural technology transfer efficiently.

5.2 Management Practice Factors on Efficient Technology Transfer

From the management perspective, it has been clear that only a few studies have theoretically explored and empirically investigated the effects of hybrid management practices on the successful implementation of technology transfer cross-culturally. Currently, the understanding on management practice factors facilitating efficient technology transfer can basically be clustered into five groups of factors-management commitment, team based work, quality practice, sharing/understanding, and training (Table 4). These factors are internally organizational management factors that can be managed actively so that technology transfer process can occur through organizational learning design rather than by chance. In fact, research on the hybrid management practice factors for achieving cross-cultural technology transfer have not obtained the systematic view theoretically and empirically, both the measurement and managerial framework; that raise the need for further research.

It is suggested that the organizational learning viewpoint of Hill (1996), Buckler (1998), Easterby-Smith & Araujo (1999) and Sadler-Smith, Spicer, & Chaston (2001) regarding to integrating learning process of

individuals as well as groups/organizations and learning outcomes is suitable for this inquiry.

5.3 Evaluation of Current Management Practices at Japanese Subsidiaries

It is seen that prior research on cross-cultural technology transfer has not evaluated the current performance of management practices or targeted advanced solutions that are of interest to global companies, particularly Japanese manufacturing companies in Vietnam, in their search for systematic solutions to achieve a competitive advantage.

5.4 Efficient Technology Transfer and Business Performance

Overall, most studies on operational performance and strategic alliance lack focus on the effects of efficient technology transfer on the firm's business performance, especially, in terms of firm's productivity and firm's innovation capacity. The role of corporate culture on those relationships has particularly received little attention. Additionally, considering technology transfer as the process of transferring knowledge, the process of how efficient technology transfer significantly affects subsidiaries' business performance in the context of corporate culture merits further research.

5.5 Research Approach in Cross-Cultural Technology Transfer

5.5.1 Research Methodology

Firstly, on the basis of Table 4, much relevant research on cross-cultural knowledge/technology transfer field is already placed on traditional method either qualitative or quantitative; therefore, the evolution of mixed methodologies enabling the empirically investigated research becomes the growing interest.

5.5.2 Viewpoint and Theoretical Foundation

Among technology transfer research capturing the knowledge based view, organizational learning perspective presents as much needed rigor in the conceptualization of the technology transfer process in an insightful manner (Sazali, Haslinda, Jegak, & Raduan, 2009). Moreover, organizational learning literature is viewed as a necessary and complementary component for the complete view of technology transfer as a learning process; and technology recipient organizations as a learning system (Daghfous, 2004; Bapuji & Crossan, 2004). In general sense, learning perspectives also are associated to knowledge at one time. Actually, the potential of organizational learning view has not sufficiently exploited in cross-cultural technology transfer research field. At the same time, the current state of art in technology transfer field is raising the need more effort devoted the integration of social, cultural and psychological perspectives into cross-cultural technology transfer research. Those new trends and shortcomings strengthen the effort of researching the integrating mechanism of effective learning processes to achieve efficient technology transfer within cross-cultural organizations.

Consequently, in order to explore the above current interests specifying the prevailing question of how to implement cross-cultural technology transfer efficiently for achieving the successful business performance, this study suggests dimensions for further investigation both qualitatively and quantitatively, including the factors adopted from prior empirical studies and newly proposed (Table 4). In order to build the cross-cultural technology transfer research framework for this inquiry, the fundamental views from Hofstede's national culture, Adler's hybridization perspective, Abo's management practice framework and organizational learning view should be integrated. Its scientific rationale is: (1) to provide a comprehensive understanding of the linkage between the organizing and managing learning process of technological knowledge through technology transfer implementation in the context of cultural difference and the potential outcomes in efficient technology transfer performance; and (2) to understand cross-cultural technology transfer phenomenon in associated with disciplines of psychology, sociology, and organization behavior.

Table 4. Cross-table positioning the proposed study among the previous research on knowledge/technology transfers

Facilitators/Inhibitors technology and knowledge transfer	Lyles & Salk 1996	Mowery et al 1996	Szulanski 1996	Wathne et al. 1996	Goh & Richards 1997	Clarke et al. 1998	Simonin 1999	Lyles et al. 1999	Urata 1999	Black et al 2000	Kale et al. 2000	Lin & Berg 2001	Fryxell et al. 2002	Cavusgil et al. 2003	Dhanaraj et al 2004	Stewart & Waroonkun 2007	Evangelista & Le 2009	Sazali & Raduan 2011	This study's proposal	Baughn et al. 1997	Choi & Lee 1997	Lei et al. 1997	Morrison & Mezentseff 1997	Saxton 1997	Teare 1997	Inkpen 1998	Appelbaum & Reichart 1998	Love & Gunasekaran 1999	Hansen 1999	Liu & Vince 1999	Inkpen 2000	Nonaka et al. 2000	Solingen et al. 2000	Hurley 2002	Mohr & Sengupta 2002	Bhagat et al 2002	Saad et al 2002	Lucas 2006	Pauleen, Wu, & Dexter 2007
	Empirical studies with large sample data																			Theoretical studies or case studies																			
Cultural difference																																							
Cultural difference	o				o	x				o						x	o		*		x								x						x	x			
National culture																			*																				x
Cultural conflict and misunderstanding	o																		*																				
Organizational distance/difference				x																	x																		
Management commitment																																							
Management/leadership commitment					o					o						o			*		x	x					x	x				x	x	x					
Reward system /Leadership					o											o			*			x		x				x							x				
Clearly stated goals /Articulated goals							x									o			*															x					
Clearly stated procedures																			*																				
Variety of methods, procedures, systems																x												x											
Team based work																																							
Group problem solving					o											o			*																				
Dedicated team											o																												
Existing teams																			*																				
Deal with technical activities											o					o			*									x											
Work collaboratively																	o		*																				
Communicate frequently																			*																				
Quality practice																																							
Quality improvements											o								*																				
Understand quality																			*																				
Devote to maintain quality																			*																				
Quality control																			*																				
Training																																							
The formally planned training																			*																	x			
Provide materials and guidelines																			*																				
OJT in Vietnam											o								*																				
OJT in Japan											o								*																				
Sharing and understanding																																							
Relationship		o	o									o	o	o	o	o																	x	x					
Systematic/inter-dependent relationship														o																			x						
Informal relationship						o														x																			
Unproductive organizational environment	o																																						
Support each other																o			*																				

Facilitators/Inhibitors technology and knowledge transfer	Empirical studies with large sample data																			This study's proposal	Theoretical studies or case studies																			
	Lyles & Salk	Mowery et al	Szulanski	Wathne et al.	Goh & Richards	Clarke et al.	Simonin	Lyles et al.	Urata	Black et al	Kale et al.	Lin & Berg	Fryxell et al.	Cavusgil et al	Dhanaraj et al	Stewart & Waroonkun	Evangelista & Le	Sazali & Raduan			Baughn et al.	Choi & Lee	Lei et al.	Morrison&Mezentseff	Saxton	Teare	Inkpen	Appelbaum & Reichart	Love & Gunasekaran	Hansen	Liu & Vince	Inkpen	Nonaka et al.	Solingen et al.	Hurley	Mohr & Sengupta	Bhagat et al	Saad et al	Lucas	Pauleen, Wu, & Dexter
	1996	1996	1996	1996	1997	1998	1999	1999	1999	2000	2000	2001	2002	2002	2003	2004	2007	2009	2011		1997	1997	1997	1997	1997	1998	1998	1999	1999	1999	2000	2000	2000	2002	2002	2002	2002	2006	2007	
Desire to maintain relationships/Trust	o				x											o				*	x						x		x				x							
Create environment of approachability																				*																				
Share ideas, feelings, hopes, common concerns							o					o				o				*							x	x					x							
Speak freely about difficulties at work												o								*																				
Comprehend approaches and points of view																				*																				
Confidence in technical capabilities																o				*																				
Organizational culture/Corporate culture																																								
Learning culture/climate																				*		x																		
Shared decision making																				*			x																	
Accurate, timely information																				*																				
Accept risk																				*																				
Readily offer needed help																				*																				
Accept conflict/Conflict management											o																													
Information redundancy																																	x							
Other																																								
Age								x												*																				
Type of ownership																				*																				
Duration of the partnership																				*																	x			
Cross-cultural technology transfer experience																				*																				

Note: In the columns of empirical studies with large sample data, (x) denotes no empirical support; (o) denotes empirical support.

In the columns of theoretical studies or case studies, (x) denotes untested proposition; (o) denotes case studies.

This study suggests the dimensions (*) for empirical investigation both qualitatively and quantitatively. The factors in italics are newly proposed measurement scales by this study.

6. Conclusion

This study provides the systematic picture of the current interests on cross-cultural technology transfer through reviewing the intersection of research fields concerning cross-cultural technology/knowledge transfer, the national culture difference and the extended literature of hybridization in the broad field of cross-cultural management. Specifically, this study briefly summaries: (1) the definition of technology transfer and of efficient technology transfer; (2) the current understanding of the research approach in cross-cultural technology/knowledge transfer; (3) facilitators and inhibitors in technology/knowledge transfer; (4) the relevant literature of national culture difference and the hybridization notion in cross-cultural management.

As a result, the five research areas meriting the research on cross-cultural technology transfer are identified: (1) effects of cultural difference on technology transfer; (2) management practice factors on efficient technology transfer; (3) evaluation of current management practices at Japanese subsidiaries; (4) efficient technology transfer and business performance; and (5) research approach in cross-cultural technology transfer, such as

research methodology, viewpoint and theoretical foundation. In order to explore the above current interests, the dimensions for further investigations both qualitatively and quantitatively are proposed, including the factors adopted from prior empirical studies and newly proposed. Accordingly, Hofstede's national culture, Adler's hybridization perspective, Abo's management practice framework and organizational learning view are suggested as fundamental views to integrate into the cross-cultural technology transfer research. Finally, this study draws the significant ways for answering the prevailing problem of how to implement cross-cultural technology transfer efficiently for achieving the successful business performance.

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