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*Learning in International Strategic Alliances: A  
Qualitative Study of Indigenous Technological Firms in  
Taiwan*

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**WORKING PAPER SERIES**

**NONAKA CENTRE FOR KNOWLEDGE AND INNOVATION**

**NUMBER 2**

**June 2014**

**ISSN 2340-9568**

**Nonaka Centre  
CUNEF**

Colegio Universitario de Estudios Financieros (CUNEF)  
C/ Serano Anguita 8, 28004 Madrid (Spain)



**FINANCIAL [THINKING]**

## Editor's Foreword

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This paper follows a presentation titled **"Learning in International Strategic Alliances: a Qualitative Study of Indigenous Technological Firms in Taiwan"**, given at the Colegio Universitario de Estudios Financieros (CUNEF) to an audience of academics by **Chia-Ling (Eunice) Liu, Associate Professor at the National Cheng Kung University (Taiwan), and Yingying Zhang, Associate Professor at CUNEF (Spain).**

In the present working paper **"Learning in International Strategic Alliances: a Qualitative Study of Indigenous technological Firms in Taiwan"**, both authors addresses a critical question for corporate strategists and managers: What are the antecedent factors that influence alliance learning and a firm's learning processes in international strategic alliances. They argue that firms that integrate inter- and intra-organizational learning are able to achieve superior learning outcomes. Particular attention is drawn to the characteristics of the learning partner, the teaching partner, the knowledge acquired and the nature of the relationship between firms in the international strategic alliance.

While the debate is useful for strategists, management and organization researches the authors gives some thoughts relevant for international strategic alliances that go well beyond the Taiwanese context. Their analytical framework invites for reflects by managers involved in international strategic alliances about the specific prerequisites for the achievement of intended objectives. The discussion on the characteristics of the learning and teaching partners reminds us that successful knowledge acquisition and learning depends on all firms involved in strategic alliances and as the ancient Greek writer Euripides pointed out *"learning is more effective when it is an active rather than a passive process"*.

Sylvia Rohlfer and Jorge Cruz-González

# **Learning in International Strategic Alliances: A qualitative study of indigenous technological firms in Taiwan**

## **Abstract**

This paper examines how antecedent factors influence alliance learning. We propose that firms integrating inter- and intra-organizational learning are better able to achieve better learning outcomes. A conceptual framework is developed by linking alliance research, organizational learning theory, and the resource-based view. Employing a qualitative data analysis, we present empirical evidence collected from six firms in the IT industry. Subthemes are identified for each category and theme of studied alliance learning characteristics include: learning partner, teaching partner, knowledge, and relationship. Our findings demonstrate that firms enhance their alliance learning outcomes not only by acquiring knowledge from their partners but also internalizing such knowledge into the firm's organizational routines. The resulted themes are also discussed with future research proposed.

**Keywords:** international strategic alliance; alliance learning; learning process; learning outcomes, emerging markets

## **1. Introduction**

Many multinational corporations (MNCs) have gradually given up their in-house operations and increasingly use contractual modes (e.g. contract manufacturing alliances or licensing) in recent decades to shift their production to international suppliers. As work becomes more complex, MNC buyers find that they cannot be efficient in every activity in the value chain. The supplier firm also steadily develops economies of scale, scope and knowledge intensity to bridge the gap between MNCs. In nowadays' global production network, MNC buyers in the technology industry outsource not only manufacturing but also innovation. Suppliers have been taking more and more responsibility for knowledge-intensive activities, like R&D, product design and process innovation.

Global outsourcing currently provokes much debate and is, therefore, quite a topical issue in many industries and an emerging research area in the International Business field (Ramamurti, 2004). Nonetheless, the drivers and consequences of such an important phenomenon are less systematically studied from the perspective of suppliers in resource-limited countries. The suppliers in new industrialized economies (NIEs) view the collaborations with the MNCs as excellent opportunities to capture economic development and to learn at low cost from their foreign partners (Bettis, Bradley, & Hamel, 1992). The co-evolution of inter-organizational and international knowledge linkages enables local suppliers to update from low-tech assemblers to sophisticated product designers, providing more high value-added services in the value chain (Ernst, 2000).

The changing phenomenon in the global production network is forging international strategic alliances (ISAs) of different scopes for the interests of both MNC buyers and NIE suppliers. Within this context, the learning and knowledge acquisition have been asserted as important rationale for the formation of ISAs, and critical in the outsourcing process and hence to the ISA performance. (Hamel, 1991; Inkpen & Beamish, 1997; Lyles & Salk, 1996; Norman,

2004). Though a lot of conceptual and empirical studies in the alliance learning area have been conducted, the research findings are still fragmented and inconsistent (Kale & Singh, 2007; Kang, Mahoney, & Tan, 2009; Liu, Ghauri, & Sinkovics, 2010). To bridge this gap, this paper attempts to explore the underlying issues on antecedent factors that influence alliance learning and learning process, which determinate the alliance learning outcomes, to further knowledge in the field.

To satisfy the proposed objectives, the paper is structured as follows. Firstly, the theoretical background is presented to overview principal issues in the international alliance learning, with the study context exposed. Then, the methodological section follows to detail the methods used to fulfill the research objectives. After the presentation of results, discussion and conclusion are drawn for future research.

## **2. Theory Background**

The inter-organizational knowledge management and processing are increasingly viewed as important determinants to the success of alliances. In this section, we present a brief review of different streams of literature, examining the factors influencing alliance learning, learning processes, and alliance learning performance (as showed in Figure 1).

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Insert Figure 1 about here  
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### *2.1 Antecedent factors that influence learning in ISAs*

The analysis of the antecedents of alliance learning has received much attention from scholars (Inkpen, 2002). According to the previous literature of alliance learning, the knowledge-based view, and the relational view, the factors influencing alliance learning in ISAs

can be categorized into four groups: learning partner characteristics, teaching partner characteristics, knowledge characteristics, and relationship characteristics.

### *2.1.1 Learning partner characteristics*

Two main factors associated with the characteristics of learning partner (the partner who acquires knowledge) in the literature are *learning intent* and *absorptive capacity*. Some scholars have asserted that the motivation to form alliances is related to the expected outcome of these alliances (Hamel, 1991; Inkpen, 1996).

As an antecedent learning partner factor, *learning intent* refers to “a firm’s initial propensity to view collaboration as an opportunity to learn” (Hamel, 1991: 90). Comparing the intent to form alliances between Western and Japanese firms, Hamel indicated that most Western firms possess substitution intent - to substitute their competitiveness in a specific area for their own lack of skills while the Japanese partners seem to have explicit learning intent - to actually internalize their partners’ skills. When the internalization intent is strong in the company, the skills and knowledge acquired from the partner are important to the growth of the whole company and not just capability enhancement in one product or business (Hamel, 1991). Organizations with *learning intent* will promote learning culture and place high value on learning activities (Kandemir, Ghauri, & Cavusgil, 2002; Mowery, Oxley, & Silverman, 1996). A firm adopting learning-oriented cooperative strategy usually possesses clear learning intent to internalize the critical knowledge/skills acquired from the alliance partners and ultimately enhance its capability in the end (Tsang, 2002). Some scholars also assert that the organization must consider learning as an explicit objective, and collective learning in the organization will enhance the firm’s capability to survive (Ghoshal, 1987; Hamel, 1991; Norman, 2004).

*Absorptive capacity* can be defined as a firm’s ability to “recognize the value of new, external knowledge, assimilate and apply it to commercial ends” (Cohen & Levinthal, 1990: 128). The organization’s absorptive capacity starts at the individual level so it not only depends

on the interface with the external environment but also on the transfers of knowledge across and within subunits (Cohen & Levinthal, 1990). The firm's absorptive capacity results from a long process of investment in knowledge accumulation and is influenced by its participation in product development, R&D and other technological activities (Mowery, Oxley, & Silverman, 2002; Petersen, Pedersen, & Lyles, 2008). An organization's capacity to absorb, circulate and utilize information determines whether new knowledge is acquired from external parties and applied within the organization (Bierly III, Damanpour, & Santoro, 2009; Lyles & Salk, 1996).

### 2.1.2 *Teaching partner characteristics.*

The characteristics of the teaching partner are less discussed than those of the learning partner (Inkpen & Tsang, 2007). *Transparency* and *protection* have been proposed by scholars as critical factors related to teaching partner characteristics (Kale, Singh, & Perlmutter, 2000; Lee et al., 2007).

Transparency refers to the "knowability" or openness of each partner and thus the potential for learning (Hamel, 1991: 90). Openness should be a key element in determining the amount of information shared (Inkpen, 2000). Transparency can be determined from two aspects: organization and skills (Hamel, 1991). Norman (2004) claims that transparency could be influenced through the design of organizational interfaces, the attitudes towards outsiders, the partner's relative pace of skill-building and the protectiveness of individuals. Hamel (1991) believes that *transparency* of each firm in an alliance determines the potential for learning. In the context of alliance learning, transparency can be defined as the willingness and ability of the alliance partners to share information and communicate openly (Inkpen, 2000; Jao, 1996). Naturally, transparency in the collaborative relationship is critical for knowledge acquisition.

Von Hippel (1994) indicates that some attributes influence knowledge stickiness; for example, specialized personnel such as technological gatekeepers, specialized organization structures, such as transfer groups, or the pricing of access to proprietary information. These

attributes are indicators of the degree of the protection requested by information transmitters vis-à-vis their knowledge base (Simonin, 1999a). In their study of US/China joint ventures (JVs), Yan and Gary (1994) conclude that Chinese firms in IJV did not achieve their goal of learning about more advanced Western technology because the US partners protected their technologies. The foreign partners may put barriers to limit local partners to access their specific skill area (Inkpen & Beamish, 1997; Simonin, 2004). If the participating firms' capabilities are complementary, the alliance partners are more willing to take part in skill-sharing R&D (Sakakibara, 1997). If the nature of the collaboration is highly competitive, the partner may be very *protective* about sharing knowledge that could lead to the creation of a potential competitor. It is also critical to create an ongoing win-win situation to protect one's core competencies, without hindering learning opportunities from alliance partners.

### 2.1.3 Knowledge characteristics

As learning antecedents, the characteristics associated with knowledge include *tacitness* and *specificity*. *Tacitness* can be defined as the extent to which knowledge can be codified and thus transmitted and communicated in a formal, systematic language (Simonin, 1999b). Tacit knowledge is very difficult to transfer across organization boundaries because it is based on shared experiences and deeply embedded in the day-to-day organization practices of learning, coordination and communication (Feinberg & Gupta, 2004; Gupta & Govindarajan, 2000; Nielsen & Nielsen, 2009). The degree of tacitness of a particular competency of know-how not only significantly influences knowledge ambiguity (Simonin, 1999a) but also the speed of capability transfer (Zander & Kogut, 1995).

*Specificity* refers to the knowledge and assets that specifically dedicated to a partner in the strategic alliance. Asset specificity, which is defined in the transaction cost economics (TCE) literature as the degree to which an asset can be redeployed to alternative uses and by alternative user without sacrifice of productive values (Williamson, 1991: 281). *Asset specially* dedicated

to a partner may include physical equipment, IT hardware and software, sites and people. Human assets and dedicated assets that are specifically designed for the production of goods and services for a specific customer are protected by the security and exclusivity of the firm-customer relationship (Reed & DeFillippi, 1990). Such a specificity creates an obstruction for the competitor trying to imitate it (Simonin, 1999b).

#### *2.1.4 Relationship characteristics*

Partner selection is important to the success of cross-border alliances. Many researchers have emphasized the importance of the hard functional (e.g., legal, financial, operational) side of strategic alliance planning and management but ignore the soft side of the development and management of relationships in the alliances (Cullen, Johnson, & Sakano, 2000). No matter how detailed and complete the agreement, it still cannot cover every single issue or contingency, especially in long-term evolving alliances. Without the social fabric of any relationship, alliances will not deliver their potential strategic or economic payoff (Madhok, 1995). Trust and communication have been identified as critical for smooth partner relationship.

*Trust* has been identified as a key relationship variable in many studies in different fields (Nielsen, 2007; Schoorman, Mayer, & Davis, 2007). Firms learn about each other and build up interfirm trust through ongoing contacts and interactions (Gulati, 1995). If trust did develop from prior ties, one may expect that the firms will reduce the fear of opportunistic behavior and be more willing to share knowledge in alliances (Oxley & Sampson, 2004). *Trust* reflects the belief that a partner's word or promise is reliable and that a partner will fulfill its obligations in the relationship (Inkpen, 2000: 1027). Many researchers have indicated the important role of trust in the performance of a collaborative relationship (Dhanaraj et al., 2004; Inkpen, 2000; Liu, Ghauri, & Sinkovics, 2010). However, most of these studies focus on inter-personal trust; the way in which close relationships between managers, scientist, and engineers (Dodgson, 1993). Little account is taken of the trust ingrained in the organizational modes of behavior:

inter-organizational trust. It is also critical to facilitate learning between partners and support the beliefs in the mutual benefit throughout the organization.

The density of communication interface in alliances contributes positively to knowledge flows. A fluid communication could enhance partner relationship, especially with factors of interaction and cultural distance which are critical in international business among others (Zhang et al., 2009). *Interaction* facilitates the exchange of information and interpersonal contacts. As joint-task activities in alliances become more complex, the interaction between the partners will moderate the impact of inter-partner diversity and cultural distance (White & Lui, 2005). ISAs are formed by companies different in country, strategic goals, organization culture, management style, policies and procedures. All of the differences create the potential for conflict and give rise to the instability and failure of alliances. *Cultural distance* can be defined as the resulting vector of culture-based factors that impede the flow of information between the firm and its partner or environment (Simonin, 1999b: 472). The differences in organizational and national cultures may influence how they communicate, interact, manage, interpret, report and evaluate, thereby affecting the effectiveness and cohesiveness of the ISA management team (Killing, 1983; Tiemessen et al., 1997). The partner's culture difference can significantly influence all aspects of the collaboration, from the formative stage to the performance of an alliance. A lack of cross-cultural skills, exposure and understanding obstructs knowledge flows between the alliance partners (Lyles & Salk, 1996), the process of knowledge management (Tiemessen et al., 1997), and knowledge transfer (Mowery, Oxley, & Silverman, 1996).

## 2.2 Learning Process

Many firms employ alliances with specific learning objectives (Hamel, 1991). Even though learning through alliances can and does occur successfully, the process is difficult, frustrating, and usually misunderstood (Inkpen, 1996). Organizational knowledge creation

represents a process whereby individual knowledge is amplified and internalized as part of an organizational knowledge base (Nonaka, 1994). Learning process in ISAs could include inter-organizational knowledge transfer process and intra-organizational knowledge diffusion inside the learning partner. The knowledge conversion between tacit and explicit one at multiple levels (i.e. individual, team and firm level) is critical for a successful learning process, through externalization, internalization, socialization, and combination (Nonaka, 1994). The effect of learning is minimized if the knowledge acquired from the alliances is limited to the individual level and not applied to the organization as a whole. The mechanism to facilitate intra-firm learning is crucial in transferring knowledge across different levels of the organization. This interplay between tacit and explicit knowledge is important in the individual's learning process (Nonaka, 1991). The process to disseminate knowledge is intended to resolve individual views into a shared understanding at a group level (Tiemessen et al., 1997). At the organizational level, new knowledge and skills acquired from the alliance should be incorporated into the firm's own systems, structures, and procedures. This learning process is defined as institutionalizing (Crossan & Berdrow, 2003). Both knowledge acquisition and knowledge application are important in enhancing the firm's capability.

Most research in the alliance learning area has focused on the cognitive aspects of knowledge processes, such as absorptive capacity, tacitness, complexity, etc., and on how these may influence knowledge transfer between the partners (Foss & Pedersen, 2004). There have been few attempts to understand how to manage the learning process and how to design effective organizational interfaces related to the knowledge process in alliances. Managers are left without much theory-based guidance when they need to deal with the issues of organizational mechanisms for capturing alliance knowledge (Foss & Pedersen, 2004; Inkpen, 2002). Therefore, there is a need to fill the gap to better understand the learning interfaces. Task-definition and interface-design are important in ISA management because they affect what

and how firms learn from alliances (Doz, 1996).

Finally, traditionally suppliers in NIEs often are viewed as the sole learning partner while the MNCs in the developed countries as the teaching partner (Tsang, 2002). Nevertheless, with the innovation capability enhancement of these firms in the emerging markets during the last decades, researches have indicated that a bi-directional learning experience is possible and even sometimes desirable generally in international business (Andersson, Forsgren, & Holm, 2007; London & Hart, 2004). However, there are still very limited empirical studies on this material and further understanding is needed.

### *2.3 Alliance Learning Outcomes*

There is widespread agreement that strategic alliances can be effective organizational instruments for offering learning opportunities. However, many alliance learning studies focus on learning as an end in itself, rather than a consequence of learning and value creation (Inkpen, 2002). If firms do learn from alliances, how do these learning benefits create value? How does a firm enhance its competitive advantages after alliance learning? The empirical studies that link alliance learning and learning outcomes have received less attention. This research tries to provide additional insights to fill the gap by proposing two outcome variables: capability enhancement and network position enhancement.

***Capability Enhancement.*** The resource-based theory (Barney, 1991; Foss & Foss, 2005) and the ‘dynamic capabilities’ view (Doh, 2005; Teece, Pisano, & Shuen, 1997) of competitive strategy stress the importance of unique, innovative resources and capabilities that create sustained competitive advantages in situations of rapid and unpredictable change (Eisenhardt & Martin, 2000). The firms can develop innovative capabilities through internal development. However, it becomes increasingly difficult for the firms to cope with complex technological developments that go beyond the capabilities of most individual companies. In this context, the

efficient use of external sources through strategic alliances can also contribute to the firm's capability enhancement and innovative renewal (Hagedoorn & Duysters, 2002).

***Network Position Enhancement.*** While much of the research in the alliance learning area focuses on dyadic relations, some researchers argue that inter-firm alliance network (not just dyadic relations between firms) affect learning and innovation (Borgatti & Foster, 2003; Brass et al., 2004; Kogut, 2000). The diversity of alliance network (i.e., variance in partners' resources, capabilities, experiences, and industrial backgrounds) may facilitate the transmission of information, the reduction of innovation time-span, and the matching of complementary technological capabilities (Dussauge, Bernard, & Will, 2000; Goerzen & Beamish, 2005). The firms can accrue resources and access unique capabilities from the interfirm networks within which they are situated (Gulati, 1999). The investigation of the influence of focal firm capabilities on network outcomes at the firm level is one important but understudied aspect of network research (Zaheer & Bell, 2005). Therefore, we link the resource-based view with the network research by demonstrating that firms with better capabilities after alliance learning are capable of occupying superior network positions. When the firm is located in a preferred position in the network, it may be better able to acquire the innovation-related information that other firms might miss (Powell, Koput, & Smith-Doerr, 1996; Zaheer & Bell, 2005).

#### *2.4 Study Context: Taiwanese indigenous technological firms*

Among emerging markets, East Asian region has been the focus of many studies by researchers. Taiwan, as one of the four Asian Tigers, has been sustaining a growth rate more than 6% since 1960s (Barro, 1998). Differentiated from the giant emerging countries such as BRIC (Brazil, Russia, India and China), the small size of internal market of Taiwan has not provided their indigenous firms with resource advantages. However, despite of its limitation in natural resources, Taiwan has become the world's biggest producer of notebook PCs and

established itself as a world-class supply source for a variety of computer-related products, key components and knowledge-intensive service (Einhorn, 2005; Ernst, 2000). According to Market Intelligence Center (MIC)<sup>1</sup>, Taiwan's IT industry controlled 91.4% of the world's market share of Notebook, 71.7% of LCD monitors, and 68% of chip foundry services in 2011. Companies from Taiwan occupied 8 of the top 100 slots in the Business Week IT 100 list in 2011.

Due to a limited development room within internal market, Taiwanese technological firms have been actively participating global production network since the very beginning of their industrial development. Most of products are sold to buyers from the US, Europe and Japan, and re-sold under other brands with designs from Taiwanese indigenous companies. The size-related disadvantages have not prevented Taiwan from becoming a successful global player in IT industry since these firms develop a wide range of technological and organizational capabilities through inter-organizational knowledge outsourcing (Ernst, 2000).

### **3. Methodology**

The study employs qualitative case methodology to explore antecedent factors that influence alliance learning, and inter-organizational knowledge management and processing. Given the nature of the study objective has both exploitative and explorative part, the research design needs to be flexible in order to go forward and backward to discover insights of the studied objects (Kinnear & Taylor, 1996; Yin, 2003).

The case study approach has played an important role in the study of alliance learning (Hamel, 1991; Yang and Gray, 1994). Though knowledge and learning issue has been widely studied, taking it from the perspective of emerging market's enterprises in alliance learning is novel. In order to fully explore the insights of this new phenomenon to better understand how

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<sup>1</sup> MIC is Taiwan's leading IT industry analysis and consulting service provider.

it works, a qualitative approach is adequate and even advantageous (Tsui, 2009; Yin, 2003), especially for the process analysis of the issue (Ghauri, 2004; Inkpen, 2000).

### *3.1 Case selection*

Though case studies could be conducted with single or multiple cases with numerous analysis levels (Ghauri, 2004; Yin, 2003), a multiple case methodology is advocated for its advantages to enhance the likelihood of establishing accurate findings from the data. Besides that a multiple case design is considered more suitable for providing better information and identifying pattern-variations, Eisenhardt (1989) also reckons that a number from 4 to 10 cases are appropriate for multiple case studies. In this research, since we are interested in exploring alliance learning of Taiwanese indigenous firms in electronics and IT industry, a comprehensive list of targeted firms was first collected from public sources such as journals (e.g. Business Week, Fortune) and company annual reports, as well as databases (e.g. Top 1000 manufacturing list), and web-based resources at Taiwan Electronics and Appliance Manufacturers Associates.

Two main criteria were applied in the case selection process: size (more than 3000 employees) and ISA experience (more than 10 years of international strategic alliance experience). The criterion of size is because a big firm usually has more ISA experience of various projects and more in-house expertise to provide in-depth information. ISA experience is between MNC buyers and local suppliers in the electronics and IT industry. Ten companies were selected from these databases in accordance with the criteria. Contacts were approached to high level managers from firms in this preliminary list through personal network. An introductory letter describing the study was sent to potential interviewees. Given the tight schedule of managers and their sensibility on the requested information, the interview outline was also attached to the cover letter. After the follow-up and negotiating access for about one month, six large and prominent IT companies in the Top 200 Manufacturing List in Taiwan with great ISA experience finally accepted to participate in the study (see Table 1 the profiles of the

studied firms). The product domain of the selected firms is diverse, including PC systems, communications, semiconductors and display solutions, which allows a diversity of industrial profile for the current study within the general technological industry.

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Insert Table 1 about here  
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### *3.2 Data collection*

The collected data combine information from both primary and secondary sources. Face-to-face onsite interviews were the principal method for the data collection, combined with onsite observations and other secondary data such as company information and newspaper reports. The secondary data served a supplementary purpose in this research. This research consists of two phases of data collection process. Secondary data were first collected to understand the general phenomenon and industry development. Annual company reports, existing report from Business Week, Financial Times, Market Intelligence Center (MIC), Industrial Technology Intelligence Service (ITIS)<sup>2</sup>, and Excellent Business Database (EBD)<sup>3</sup> were reviewed. After this review of general phenomenon, the primary data were collected from interviews with industry experts and managers within reputed indigenous firms.

After the research agreement was reached with these six companies, right person with in-depth insights in organization was identified for the interview and qualitative data collection. The contacted highly placed manager in each company was asked to help in identifying the right person. Overall, nine key informants were identified in these six firms including CEO/CIO, Vice President/Director either in the product development or sales division, and the head of

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<sup>2</sup> ITIS is the technology division of the Ministry of Economic Affairs (MOEA) in Taiwan. EBD provides news service abstracts from major Taiwanese journals and magazines.

<sup>3</sup> EBD provides news service abstracts from major Taiwanese journals and magazines.

Research & Development or functional manager in knowledge application and development department.

In this second phase, an interview protocol was first prepared. This interview protocol includes the introduction of the research project, outlined interview themes, and contact-following-up request. A summary of the outlined interview themes were prepared after the extensive literature review, which served as a semi-structured question list guiding researcher in the interview process. Nonetheless, the questions formed during the interviewing process were open enough to not impose researcher's own mind and pre-defined theoretical framework, which intended to follow fluidly the mind of the interviewees and get their rich experiences.

These on-site interviews were open-ended, lasting from one to two hours. Each interview was tape-recorded and transcribed. The second phase interview data were also complemented with company annual reports, industry yearbook of Ministry of Economics, and archival records on the characteristics of the studied firms. After interview, feedback was provided for all respondents.

### *3.3 Data analysis procedure*

This study adopts data-driven thematic analysis (Boyatzis, 1998) to uncover detailed elements for antecedent factors influencing alliance learning and interpretative analysis for knowledge acquisition from the qualitative data. The category and themes of antecedent factors influencing alliance learning follows the theoretical structure proposed earlier; while data corresponding to knowledge acquisition were explored to further understanding learning process.

First, each case was individually analyzed; then, cross-case analysis was performed to identify their common ground, as well as differentiation. Since analyzing data lies at the heart of conducting case studies but is also the most difficult and least codified part of the process (Ghauri, 2004), two experienced researchers were involved in this process. First, each

researcher made their independent analysis for antecedent factors of alliance learning, and data exploration for knowledge acquisition. Relevant sentences were identified and codified in accordance with each category. Then, researchers discussed and exposed their individual analysis. The results were thoroughly discussed with discrepancies debated. An 87.5% of agreement was reached for the coding. Consensus in the coding was sought where disagreement existed, with final agreement to accomplish Table 2 where example quotations from interviewees are presented.

## 4. Results

The results of the analysis are presented in the following subsections. Firstly, Table 2 presents antecedent factors that influence alliance learning: characteristics of learning partner, teaching partner, knowledge and relationship with their corresponding themes, subthemes and example quotes. Secondly, the learning process in ISA is proposed in Figure 2 in accordance with the data revealed from the cases. Thirdly, the integrated learning as outcomes is suggested.

### *4.1 Factors influencing alliance learning*

The thematic analysis of within-case and cross-cases identified diverse subthemes under each theme and category (see Table 2). Each category with their corresponding themes and subthemes are presented with example quotes from interviewed managers. The following subsections describe the results of the four categories.

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Insert Table 2 about here  
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#### *4.1.1 Learning partner characteristics*

Defined as the attributes related to learning partners that influence alliance, learning partner characteristics have the themes of learning intent and absorptive capacity. Two subthemes were identified for each theme: learning as explicit objective, and collective learning in organization for learning intent; proactive exploitation of new learning opportunities, and capability in assimilating acquired knowledge for absorptive capacity.

Local suppliers view alliances as good opportunities to learn. Changes in the processes and systems are often derived from implementing their partner's best practice wherever useful. Even though there may be both intentional and unintentional knowledge acquisition in the alliance learning process, studies have consistently found a positive correlation between 'intent' and 'organizational learning' (Schacht, 1999).

For example, the R&D director in Firm 3 said that the company would sometimes accept the ODM project even though they need to invest heavily in product development and run the risk of loss. In this situation, learning intent is the major strategic rationale when they collaborate with foreign partners. Knowledge acquired from this type of collaboration can enhance their technology capability for designing more products and expand their product lines.

Besides that learning is explicitly expressed as a strategic objective in the example case above, this learning is also clearly expressed as a collectively learning with the need to spread over the organization. In Firm 5, the manager stressed that when the knowledge was transferred in, it only stayed within the team; this complex knowledge was needed to be decoded into learning component, combined with practical lessons, in order to for engineers and operators to understand and learn the skills in the shortest time.

If intent establishes the desire to learn, receptivity determines the capacity to learn (Hamel, 1991: 96). From the case interviews, most of the respondents assert that the technological capability of the learning partner is important to the success of technology transfer projects. Without absorptive capacity, it will be difficult to learn from their partners and add value to the firm.

Proactively exploitation of new learning opportunities and capability in assimilating acquired knowledge are critical for absorptive capacity to contribute to learning outcomes. In Firm 1, the Section manager stated that they proactively looked for new products and functions in order to integrate them into the R&D system, or get informed from clients. In order to assimilating new acquired knowledge, they put example that through ISO system, all R&D and documentation were managed in the same system flow so that it was shared internally and everything done by different teams could be known to enhance learning.

#### *4.1.2 Teaching partner characteristics*

Defined as the attributes related to teaching partners that influence alliance, teaching partner characteristics have the themes of transparency and protection. Two subthemes were identified for each theme: attitude of openness and accessibility for transparency; knowledge protection policy and knowledge spillover prevention for protection.

From the case studies, the interviewees indicate that they will obtain more learning benefit if the partners are more open to sharing knowledge: “The attitude of collaboration is very much related with their will...in the process of negotiation, two parts became friends and formed partnership so they were more willing to share with us” (Director of Firm 3). However, cooperation still needs to have some limitations. The challenge is to share enough knowledge to create competitive advantages while preventing the whole transfer of core skills (Hamel, Doz, & Prahalad, 1989).

From our case studies, most of the foreign partners adopt a strict protection policy to protect their knowledge and its spillover within the learning organization. Non-disclose Agreement (NDA) is a common practice as the mechanism of protection, in which rights and obligations are negotiated and specified. Even then, certain preventions are adopted as practices to keep data in confidential: such as the partitioning of tasks, the physical separation of R&D experts

or even the division of several production sites. The loss of knowledge may also lead to the threat of a new and stronger competitor at last.

#### *4.1.3 Knowledge characteristics*

Defined as the attributes of knowledge that affect alliance learning, knowledge characteristics include tacitness and specificity. Under the theme of tacitness, differentiation of tacit and explicit knowledge, and the acquisition of tacit knowledge have been identified from the data to form two subthemes exposed with example quotes in Table 2. Two subthemes knowledge specificity and assets specificity are identified for the theme of specificity.

Most managers in the case companies stated that there is a distinction between tacit knowledge and explicit knowledge. The manager in Firm 4 commented that most of knowledge transfer in the early stage was technology related, which was more explicit knowledge transfer; in the management, it went through different ways such as the auditing of MNCs... and the best manner was to recruit managers who had worked previously in MNCs, so they could bring in “this-is-what-we-did” knowledge.

Regarding the tacit knowledge acquisition, some endorses the recruitment of experienced manager to bring their embedded knowledge into organization, as in Firm 4; others refer to employees of MNCs stay physically in local suppliers’ factories, and intensive interactions in between foster the transfer of this type of knowledge; and others facilitate learning by doing through apprenticeship since some tacit knowledge is difficult to be 100% transferred through Design Database.

In some cases, after years and decades of knowledge accumulation from international players (often big MNCs as clients), indigenous Taiwanese technology firms have developed technology in certain specific areas. This knowledge is specifically developed by certain company that even MNCs as clients have to consult them asking for specific technical proposals instead of simply placing orders. That is specifically stated by some interviewees in Firm 2:

“We have accumulated many technologies in Power Supply after cooperating with different MNCs. Thus we could teach and orient Intel to make a standard requirement and we design. This design capability is not possessed by MNCs”; “In some certain context, brand and ODM cooperate together, like the type of products of LCD TV. The know-how is in the hand of ODM, but the channel is there already. So it pushes cooperation between two. From the perspective of R&D’s adding value, international player can only provide little knowledge.”

In some case, dedicated equipment and cross-functional project teams were preconditions to serving a specific OEM/ODM buyer. In practice, a dedicated team allows for customized communication and immediate feedback. As stated by a manager in Firm 4, “...The MNC needs to transfer the whole process know-how to us for the production, and requires us to produce only for them... there is much negotiation (depending on) the commitment of the partner in their order loading.”

#### *4.1.4 Relationship characteristics*

Defined as the attributes related to soft fabric of inter-partner relationships that influence alliance, partnership characteristics have the themes of trust and communication. Two subthemes have been identified for each theme: individual and organizational level trust, and interaction and cultural difference for communication.

From our case studies, most of the interviewees agree that the climate of trust will encourage the exchange of information between partners and reduce the fear of opportunistic behavior. OEM or ODM projects can be regarded as the processes through which the buyer and the supplier co-work jointly to achieve their goals. From the within-case analyses, most companies agreed that relationship management is important to partnership success. Global buyers are more willing to choose partners they can trust from their previous alliance experiences. High-level trust will eliminate unnecessary safeguard mechanism and is expected

to have a positive impact on knowledge acquisition.

In terms of organizational trust, it refers principally to the decisions of MNCs when choosing alliance partner and further processes. Some interviewed manager even goes straightforward, "...trust is very important. It is the behavior base...", while another comments more indirectly that when there is more cooperation, MNCs get to know the supplier better, and then will give them more work; Some others pinpoint the separation of brand from the manufacturing and design in order to gain the trust from the MNCs, because MNCs are unwilling to transfer knowledge to create or facilitate a potential competitor. In terms of individual level of trust, it refers more to the interpersonal relationship. For instance, some states, "better relation, higher degree of trust, and more knowledge transfer." Others refer to the transfer speed: "high level of trust, faster the transfer speed." Often this trust also refers to Japanese MNCs whose engineers would transfer more tacit knowledge when interpersonal relationship with local Taiwanese engineers increases the level of trust.

As for communication, most of the interviewees point out that closed interactions help to acquire tacit knowledge from the alliance partners. A variety of interaction modes such as on-site visits, product concept reviews, technical meetings and joint training programs are encouraged to improve the quality of relationships and facilitate knowledge acquisition. The transferring of tacit knowledge is very communication-intensive, involving several months of frequent interactions between the alliance partners. Intense communications and interactions enable the suppliers to acquire more knowledge associated with the MNC buyers' skills and capabilities. Taking the notebook computer as an example, most brand-name companies now rely on their Taiwanese suppliers for the innovation in new design models. The results from the interviews with Firm 6 (a major Taiwanese notebook computer supplier) show that the scope of collaboration has further extended to the global logistic coordination and supply chain management. Starting from a manufacture subcontractor, Firm 6 not only builds up its own production capability but also sharpens its competences in product and process development,

R&D management and organizational flexibilities from working with their foreign partners. These firm-specific and difficult-to-imitate capabilities come into shape mainly from the long-term collaborations and close relationship with their MNC partners. Overall, we can argue that close interaction facilitates greater learning across the alliances.

Besides of interaction is important to enhance communication between partners, cultural difference is another relevant factor that calls attention. One manager specifies that each client company has their own different culture. Though different team is needed to deal with different client with their particular culture (i.e. organizational culture), most of the interviewed managers pinpoint to national cultural difference between their MNCs clients. That is, US partners have more room for negotiation, are more open to sharing ideas, more flexible in concepts and easier to generate ideas applicable for patents; while Japanese partners tend to preserve their own knowledge, keep soft part, are more demanding in product quality and standard. There are also mentions about European MNCs who have transferred more knowledge and Korean ones are quite nationalistic according to the interviewee.

#### *4.2 Learning Process*

Following the four elements suggested in the theoretical background, the results of the learning process is presented (see Figure 2) in the following: learning interface, knowledge transfer, knowledge diffusion and learning direction.

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Insert Figure 2 about here  
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From the findings of the case interviews, there are a large number of potentially relevant paths to acquiring knowledge in the ISA context. Firstly, a top-management link between both partners is crucial for building trust in the initial stage of the ISA. Top management team

members from both parties negotiate business terms, such as strategic objectives, milestones, scope and responsibility. Both learn strategic knowledge of how to position the product, what new technology to develop and how to make better use of the ISAs. Secondly, cross-functional project teams from both sides are formed to facilitate knowledge acquisition in the collaborations. Knowledge can be acquired within and between members of the dedicated project team. However, this involves only a limited number of individuals at the inter-firm level, i.e. R&D individuals teaching other R&D individuals or small groups. Thirdly, the integration of knowledge acquired from the alliance partners into the firm's organizational routines is necessary for knowledge diffusion within the firm. Often engineers in the core team are sent to production line in order to share knowledge with line managers. Also, systematic knowledge sharing within the learning organization is commonly empowered by database software; in such a way, knowledge gap is identified with specific learning needs generated to design learning materials or lessons for certain area.

The effect of learning is minimized if the knowledge acquired from the alliances is limited to the individual level and not applied to the organization as a whole. The mechanism to facilitate intra-firm learning is crucial in transferring knowledge across different levels of the organization - individuals, groups, and organization. Most of the respondents in the case interviews stated that the project team members are requested to form documentation to interpret their project experience. All documentation is stored in computer systems such as "Design Databases" or "Knowledge Banks". Individuals obtain quick access to the information and learn from previous experience. Besides the function of system in diffusing knowledge within the firm across different levels, trust has played an important role in inter-firm knowledge transfer at these three levels. When there is a high level of trust between organization, the alliance tends to be more sustainable; when there is more interaction between teams, more knowledge is transferred – therefore, dedicated core team is often formed for a relevant alliance; this latter is specially reflected at the individual level – key managers of a core team often stay

with the same alliance partner since they are familiar with their counterpart – which makes the interchange more smoothly based on the inter-personal trust.

From the studied technological firms in Taiwan, though most of them recognize that they have learnt a lot about technology, process and management system from MNCs, currently this is not a single direction learning process in this relationship. Over years, technology firms in emerging economy have gone through learning curve and accumulated significant knowledge in certain specific areas. Therefore, in these specific areas, it is the supplier from emerging economy who contributes more knowledge and proposes design for joint R&D. In this sense, the learning process is becoming bi-directional in international strategic alliance.

#### *4.3 Alliance learning outcomes: Integrated learning*

We borrowed the concept of ‘combinative capabilities’ from Kogut and Zander (1992) and applied this approach to product development capability. Kogut and Zander (1992) refer to ‘combinative capabilities’ as the ability to synthesize knowledge resources by combining internal and external learning and building new applications from those resources. Effective product development relies on the combination of different types of specialized knowledge, both externally and internally (Clark & Fujimoto, 1991; Grant, 1996). The combination of knowledge may be viewed as a hierarchy of integration. At the base of the hierarchy are the capabilities that deal with specialized tasks (e.g. low cost production). Moving up the hierarchy of capabilities, task-specific capabilities are integrated into broader functional integration capabilities - marketing, manufacturing and R&D (Grant, 1996: 377).

The findings from our case studies in the electronics and IT industry in Taiwan show that the firms absorb the knowledge acquired from their MNC partners and gradually achieve a full product development capability. Leonard’s (1995) four levels in the transfer of product development capability accords closely with Taiwanese IT firms’ capability enhancement in

different phases: (1) assembly or turnkey operations; (2) adaptation and localization of components; (3) product redesign; and (4) independent design of products.

In the first level, global buyers established a turnkey or assembly plant in Taiwan to take advantage of the low labor costs. All of the products were designed, developed and initially manufactured in developed countries before being transferred to Taiwan for production. One-way knowledge flow (or received learning) from the MNC firms enables local firms to build their skills in using the equipment and understanding the manufacturing principle. Success at level 2, the adaptation and localization of components, requires local suppliers to understand the principle on which the technology is based and alters the process to accommodate local needs and select local components (Leonard, 1995). MNC firms need to invest more time and money to train local professionals to achieve an adaptive capability in level 2. Hence, local firms are involved in more learning during this stage in order to enhance their actual development capability to move to the third level - product redesign. Local firms are able to redesign the product as a whole system but the MNC partners are still major sources of product know-how of the original design in the third level. Local firms are independent in conducting all innovative product activities in the fourth level. New products are based on local firms' own designs. In level 4, knowledge flows are bidirectional. Local firms become the source of technology and reduce their dependency. The challenges in this stage are to define the role and work of development and build up a support web for technology flows.

To survive in a technology-intensive sector, such as the electronics and IT industry, firms are increasingly linked in complex and ongoing relationships in cross-border production networks that span the entire value-chain activity (Borras, Ernst, & Haggard, 2000). These production networks pool a variety of capabilities from the buyers, suppliers, distributors or other firms participating in cooperative arrangements. These inter-firm relationships allow the firm to find external resources more easily and thus adjust the strategic structure and the firm's position in the production network. Many top-brand global firms, such as Dell, HP and

Motorola, have started to buy complete designs for some digital devices from Taiwanese IT companies (Engardio & Einhorn, 2005). These contract manufacturers have become the main sources of product design in most high-tech devices, such as laptops, digital cameras, and MP3 musical players.

The findings from the case studies show that the firm's capability in new product development is a critical source of its competitiveness and the important determinant of its position in the global production network. If the suppliers can develop superior technology for product design and development, they gain more bargaining power for negotiation and win more opportunities to work with other well-know partners in the network.

## **5. Conclusions and discussions**

The above results have demonstrated empirically different proposed characteristics in determining alliance learning as antecedent factors, as well as the integrated learning process that enhances learning outcomes. In this section, conclusions are drawn based on these results with further discussions.

Our study has focused on the learning type of learning from alliance partner as classified by Inkpen and Tsang (2007). The results of the qualitative study on indigenous technological firms in Taiwan have highlighted the relevance of learning in ISAs. As a consequence, Taiwanese firms have significantly enhanced their firm performance, which is evident as shown in Table 1, with their enhancement of capability and network position. Over decades of learning experience from their international partners, Taiwanese technological firms have well positioned themselves in today's global production network with significant market share. Moreover, this traditional figure as learning partner in the alliance partnership has also changed and converted them into teaching partner sometimes in the alliances in specific technological areas, with capability to jointly develop research with their MNC partners.

Most of identified codes coincide with the current literature but it is not always the case or the same interpretation of its meaning. For example, learning as a set objective or a need is mentioned by Inkpen (1996); however another prerequisite learning factor, the attitude of receptivity (Inkpen & Tsang, 2007), was not highlighted in the interviewed cases, but the collective learning at organizational level. In terms of absorptive capacity, we also identified the proactivity in exploiting learning opportunity when the alliance is already established. Previous literature normally address absorptive capacity only in the receptivity aspect, understanding, assimilating and applying knowledge offered by the foreign partner firm (Lane, Salk, & Lyles, 2001). Our study on the successful Taiwanese firms reveals that they not only set learning as part of their strategic objective in the alliance (i.e. learning intent), but also actively search for new learning opportunity to absorb the interested knowledge into their organization. Therefore, we include this element as part of subthemes for absorptive capacity.

Regarding the characteristics of teaching partners, Inkpen and Tsang (2007) refer transparency possibly not as an outcome of any intentional actions. That is, for instance, Hamel (1991) found that Western and Japanese partners have systematic asymmetries in transparency. The studied Taiwanese cases also addressed the differences between Western and Japanese partners but this is classified as cultural differences in the category of relationship category as both Western and Japanese are MNCs partners for Taiwanese indigenous firms. In this theme of transparency, interviewees referred openness in terms of business nature, instead of an unintentional outcome due to cultural factor (Hamel, 1991; Inkpen & Tsang, 2007). For instance, one stated that, “in theory, it is better not sharing your knowledge to create future competitors; in practice, only sharing could generate profits ...therefore, one needs selectively open some technology for production and make trade-off”. So, the teaching partner intentionally and strategically decides the degree of openness to balance between the risk of creating future competitor and the profit to be generated from knowledge sharing. Similarly, accessibility is also an intentional action of the teaching partner in the studied cases as suggested by

interviewees. Certain type of knowledge is intentionally decided to be more accessible than others. That is, the interviewed managers constantly stressed that it was very difficult to get access to marketing knowledge except these necessary for alliance cooperation. Thus, the teaching partner intentionally establishes the level of accessibility for different type of knowledge. These decisions are considered from business perspective rather than cultural one.

Knowledge protection has been considered as important issue in alliance learning since there has been unintended loss of knowledge (Pucik, 1988; Reich & Mankin, 1986), which potentially creates new and stronger competitors. The result of our study has distinguishes two types of protections at inter-organizational level between alliance partners and intra-organizational level within the learning partner. Besides the separation of equipment and assets for different production lines to prevent knowledge spill-over, strict knowledge protection policies are often applied, especially in the joint product development, not only non-disclose agreement is signed, but also there is a lot of mutual identity, as stated by an interviewee, “if our process invades others’ intellectual property (IP), then the partner will be sued; if the IC design invades others’ IP, then the manufacturer will be sued. This is the responsibility of both in the knowledge transfer process, and both need to protect their own knowledge.”

Knowledge is characterized and distinguished by tacit and explicit knowledge. Though many researchers have proposed that *tacitness* makes knowledge transfer more difficult in cross-border alliances (Simonin, 1999a; Subramaniam & Venkatraman, 2001; von Hippel, 1994), the interviewed managers seem to be experienced in handling tacit knowledge acquisition process. Often this is resolved by internalize experienced managers or face-to-face apprenticeship. In terms of specificity, Williamson (1991: 281) defined asset specificity as the degree to which an asset can be redeployed to alternative uses and by alternative users without any sacrifice of productive value. The buyer-supplier relationship is enhanced through such specialized investments. The result of the analysis also includes knowledge specificity into this category. In the studied particular case, interviewees refer their accumulate knowledge specific

to their organization, which in turn transform them into the role of teaching partner instead of a traditional role of learning partner in relation with MNCs.

In the category of relationship characteristics, both individual level and organizational level of trust have been considered in the theme of trust. Though there is one interviewee commented that the level of trust and relations will not influence the transfer of knowledge, all the rest have considered that is relevant, especially in tacit knowledge acquisition, which often is not explicitly specified in the knowledge transfer contract and therefore the teaching partner is not obliged to do so. Hamel et al (1989: p. 134) suggested that successful companies should “never forget that their new partners may be out to disarm them”. This has been also the fear of MNCs perceived by Taiwanese technological firms. Apparently if a manufacturer also has strong brands, then MNCs are not confident to build up strategic alliances with them in order to avoid future competition. For example, Acer had to separate branding and manufacturing into different and independent division groups to gain the trust of MNCs to transfer their manufacturing contracts. Even then, the first years was hard for the manufacturer until evidences demonstrated that this division is clear and no backward action will occur. Individual level of trust is also relevant when transferring knowledge. Therefore, intensified interactions have been recommended to improve communication and relations, and eventually trust and learning experience.

Cultural difference has been considered as additional difficulties and challenges for managers (Inkpen & Tsang, 2007). Also, culture is a complex construct though the dimensions of organizational culture and national culture are the most recognizable ones (Hofstede, 1994). The interviewees have referred to both organizational cultural differences and national ones, though the latter is more emphasized. In spite of the existence of cultural differences, the successful Taiwanese technological firms seem to be experienced to handle this issue and overcome this barrier for knowledge transfer. An interesting feature in ISAs is against the language difference. Although this has been mentioned as complicating the knowledge transfer

process, it is also stated that face-to-face exchanges between engineers often do not require the intervention of an interpreter and they build up friendship and trust with few common language ground.

In the learning, most companies hold product meetings, seminars or training to encourage intra-organizational interaction across project teams. The presented Figure 2 has thoroughly represented the knowledge flow and learning process in the strategic alliance. Eventually it contributes to our better understanding of the learning process in ISAs. In practice, cross boarder alliances between global buyers and Taiwanese suppliers can be classified into different types of cooperation. One distinction is the supplier's involvement in product manufacturing (Original Equipment Manufacturing-OEM) and another distinction is the supplier's involvement in product R&D (Original Design Manufacturing-ODM). Although each case has its own particular alliance history, each has acquired technology and learned to innovate incrementally by following a similar route from OEM to ODM. Most firms began with OEM arrangements because local firms were strong in lower-cost manufacturing but lacked their own technological capabilities. MNC firms are more advanced in product technology. ISA learning modes adopt the form of 'received learning' in the single direction of knowledge flow from MNC firms to local firms. Local firms acquire manufacturing related knowledge, such as process technology, quality control, inventory management, benchmarking of productivity, testing, and product prototyping. Even though these activities do not involve formal R&D, the collaborations with the global firms still facilitate considerable learning and innovation.

In the IT industry, the product-life-cycle has been cut to the bare minimum. Speed-to-market requires that key design information be shared more freely between the buyers and suppliers. Local firms learned more about product concept, product design know-how, and product trend. Most of the IT firms in Taiwan became innovative in product design and established themselves as credible ODM suppliers. Indigenous Taiwanese technological firms take the main responsibility for the R&D activities or joint-development with MNC firms under

ODM deals. The ISA learning mode has shifted to ‘integrated learning’ to combine each side’s knowledge and capability. These findings show that different types of knowledge and learning occur through different modes of collaborations between alliance partners.

## **6. Limitations and future directions**

Although the contributions of this paper were described in the previous section, the limitations that influence the interpretation of this study are also well recognized. Our study highlights the importance of alliance learning, but the findings are only valid within the narrowly defined scope of the context of ISA partnerships between suppliers and buyers in the electronics and IT industry. The model we propose is only limited to large firms operating in the Taiwanese context. Therefore, the generalizability of our results to small and medium-sized firms is as of yet unknown.

In order to keep our analysis manageable, some factors had to be excluded from the research’s scope. Several factors related to alliance learning in previous studies, such as relationship duration (Anderson & Dahlqvist, 2002; Simonin, 1999a), size (Kotabe, Martin, & Domoto, 2003) and the country of origin of the alliance partner (Jao, 1996; Mowery, Oxley, & Silverman, 1996) only received scant attention. Similarly, due to the limitation of the interviewed sample, the presented code book in Table 2 is more tentative and suggestive than definitive. Further work on these variables would be a natural extension of the current research.

Another potential problem is caused by the one-sided interviews that depend on the suppliers’ perceptions and judgments about alliance learning. The unit of analysis of our study is the cross-border alliance between Taiwanese supplier and MNC buyer. While dyadic data (including both sides of an alliance) would have been more desirable, it became clear that this was not a feasible option due to the concerns of confidentiality indicated by the managers in our case interviews.

One obvious path for extending this research is to test the findings in other alliance modes that go beyond merely contractual arrangements, i.e. examining joint ventures. This would greatly complement the work done by some scholars, such as Dhanaraj et al. (2004), Inkpen (2000), Lyles and Salk (1996), and Makhija and Ganesh (1995). The collaborations between Taiwanese suppliers and MNC buyers are seldom for marketing purposes. Most of the respondents from the supplier side indicate that it is quite difficult to acquire marketing know-how from their MNC buyers. Researchers may gain substantial insights by looking into ISAs that link different elements of the value chain, e.g. marketing, logistics, channels, etc.

This research did not focus on the ‘success’ of the partnership, so the findings relating to the links between alliance learning, capability enhancement and network position enhancement are merely tentative. The measurement of ISA success is always a complicated but critical issue in management research (Beamish & Kachra, 2004; Buchel & Killing, 2002). Alliance performance can be viewed in many ways. For the purpose of comparison, further studies might also want to include more performance indicators, such as market share, profitability, satisfaction and stability to assess the alliance outcomes from multiple angles.

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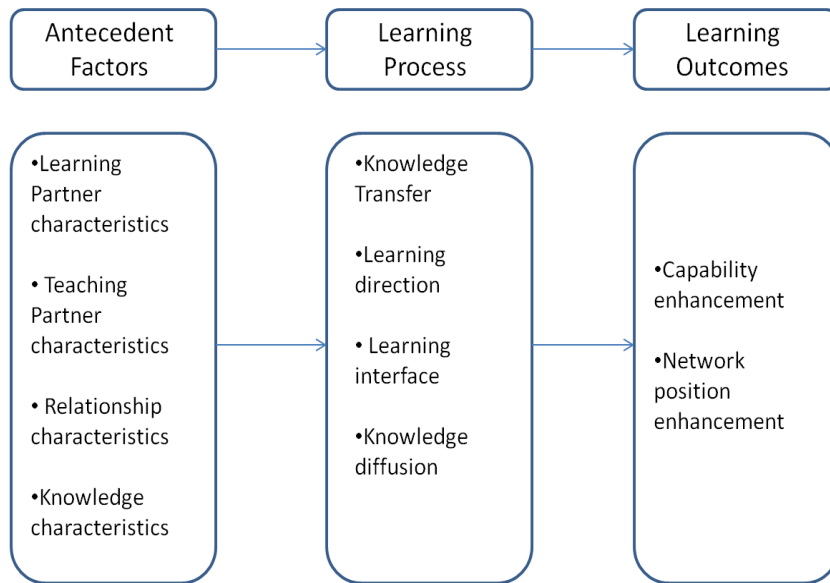
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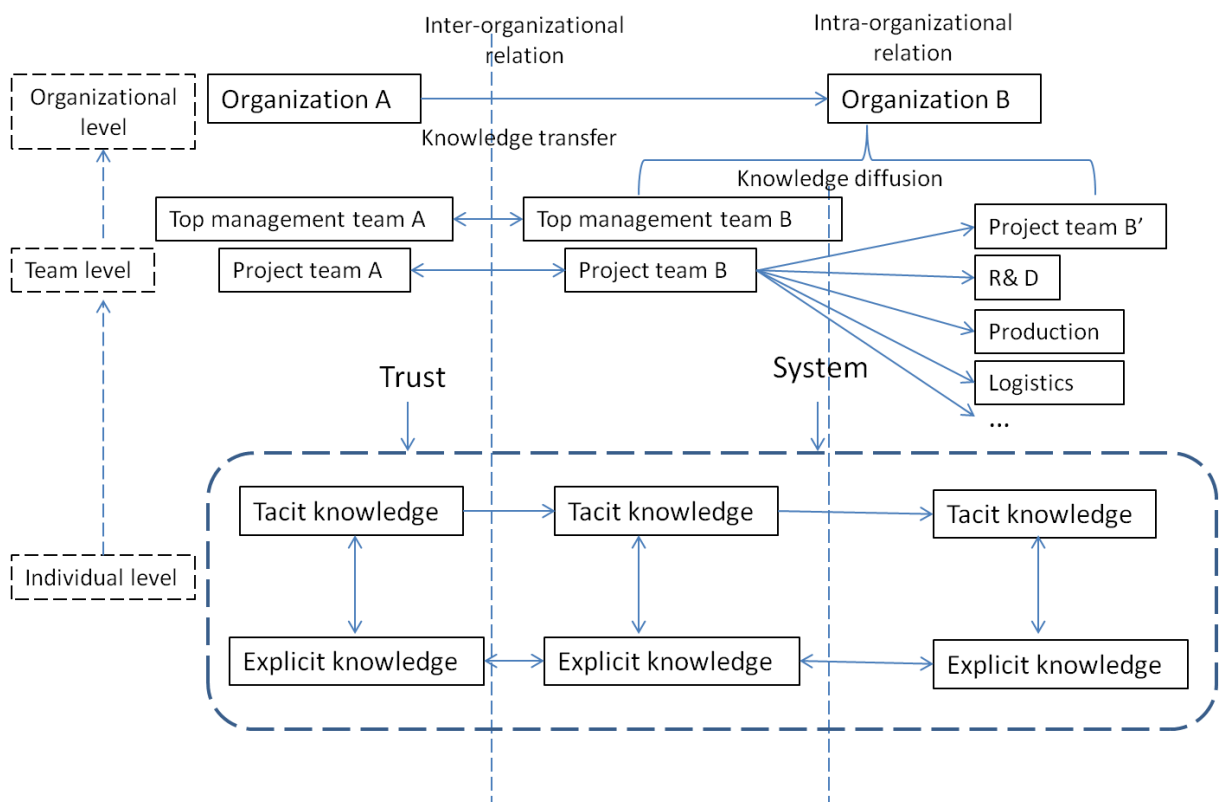
**Figure 1**

Theoretical Framework for Alliance Learning



**Figure 2**

Learning process in international strategic alliance



**Table 1**

Profiles of the studied firm

	<b>Firm 1</b>	<b>Firm 2</b>	<b>Firm 3</b>	<b>Firm 4</b>	<b>Firm 5</b>	<b>Firm 6</b>
<b>Capital/2011</b>	US\$ 249 Million	US\$ 823 Million	US\$ 17 Million	US\$ 8,904 Million	US\$ 565 Million	US\$ 681 Million
<b>Sales/2011</b>	US\$ 3,170 Million	US\$ 5,887 Million	US\$418Million	US\$ 14,417 Million	US\$ 551 Million	US\$ 21,140 Million
<b>Established in (Year)</b>	1992	1980	1999	1987	1994	2001
<b>Employ Number</b>	24565	70200	3600	38393	3540	53256
<b>Business Scope</b>	Display Solutions	Electronics, Communications	Communications, Networks	Semiconductors (IC Foundry)	Semiconductors (IC Foundry)	PC Systems, Communications
<b>Alliance Partners</b>	HPQ, Dell, Texas Instruments, View Sonic, NEC, SONY, Toshiba, Sharp, Mitsubishi	Dell, HPQ, IBM, NEC, Fujitsu, Cisco, Ericsson, Alcatel, Nokia, Siemens, Philip, Samsung, Microsoft, Sony, Toshiba	Dell 、 Digi,Mitsubishi 、 Fujitsu 、NetGear 、 HP 、Nortel 、 Hitachi 、NEC 、Intel	Altera, Broadcom, NVIDIA, Qualcom, VIA, Philips, Analog, Motorola	Texas Instruments, NEC, Mitsubishi	IBM, Dell, NEC, HPQ, Hitachi, Medion, Fuji, Siemens, Intel, NEC, Microsoft, Casio
<b>Interviewee</b>	Director of Sales Div, Section Manager (R&D)	Vice President	Director	Chief Information Officer	Manager of Knowledge Management Application & Development Dep.	President, Product Management Director, Technical Director
<b>Business Type</b>	OEM/ODM	OEM/ODM	OEM/ODM	OEM/ODM	OEM/ODM	OEM / ODM

**Table 2:**

Antecedent Factors for Alliance Learning in Studied Firms with Example Quotes

Category	Theme	Subtheme	Example Quotes
<b>Learning partner characteristics</b> <i>Definition:</i> The attributes related to learning partners that influence alliance learning.	<b>Learning intent</b> <i>Definition:</i> The intention to internalize knowledge or skill learned from alliance partners.	<b>Learning as explicit objective</b> <i>Definition:</i> Learning is explicitly expressed as the objective in the process of alliance partnership.	"The potential of future needs to be considered in the alliance (learning). For example, the improvement of technology and expansion of production lines, or expansion to other clients. These are all potential benefits. So even if we may lose money, we still are willing to cooperate to form alliance. This is from the perspective of business and strategy." - Firm 3
		<b>Collective learning in organization</b> <i>Definition:</i> Learning is collectively spread in the organization at different levels.	"Technology and knowledge have been transferred in, but then only this team can do that, without diffusing to engineering of production line. Then the complex knowledge is needed to be decoded into learning component, combined with practical lessons, in order for engineers and operators to understand and learn the skills in the shortest time." - Firm 5
	<b>Absorptive capacity</b> <i>Definition:</i> The firm's ability to recognize the value of new, external knowledge, assimilate and apply it to commercial ends.	<b>Proactive exploitation of new learning opportunities</b> <i>Definition:</i> The learning firm proactively exploits new opportunities in acquiring knowledge from the partner organization	"We also look at market for different products and functions at different time period, to integrate into our R&D system, or to get informed from clients." -Firm 1
		<b>Capability in assimilating acquired knowledge</b> <i>Definition:</i> The learning firm is able to assimilate the new acquired knowledge and apply it to its own organization	"We will share acquired knowledge and establish Design Database. People can assess the database anytime when needed". -Firm 6

Category	Theme	Subtheme	Example Quotes
<b>Teaching partner characteristics</b> <i>Definition:</i> The attributes related to teaching partners that influence alliance learning.	<b>Transparency</b> <i>Definition:</i> The willingness of partners to share information and communicate openly	<b>Attitude of openness</b> <i>Definition:</i> The degree to which the teaching partner is willing to share knowledge with learning partner.	"The attitude of collaboration is very much related to their will...in the process of negotiation, two parts become friends and form partnership so they are willing to share things with you." - Firm 3
		<b>Accessibility</b> <i>Definition:</i> The degree to which the teaching partner could be accessed through their organizational interfaces and individuals in terms of knowledge and skills.	"There are specific marketing documentations and reports. They will mention them but not completely give (marketing intelligence) to us. They only tell the customer's complain for product modification." - Firm 1
	<b>Protection</b> <i>Definition:</i> The degree to which the partner protect their proprietary knowledge	<b>Knowledge protection policy</b> <i>Definition:</i> The degree to which the partner establish formal protection policy to limit knowledge sharing	"MNCs pay very much attention to issues related to intellectual property in the joint development process. Often they immediately apply for patent when there is some new idea." - Firm 2
		<b>Knowledge spill-over prevention</b> <i>Definition:</i> The degree to which the partner establish norms to prevent knowledge diffusion inside of the learning organization, specially referring to facilitating knowledge to competitors.	"The same product from different clients not only requires Non-Disclose Agreement (NDA), but also the separation of manufacturing and R&D site, even the employees cannot communicate in between in order to keep confidential." - Firm 3

Category	Theme	Subtheme	Example Quotes
<b>Knowledge characteristics</b> <i>Definitions:</i> The attributes of knowledge that affects alliance learning	<b>Tacitness</b> <i>Definition:</i> The extent to which knowledge can be codified and thus transmitted and communicated in a formal and systematic language	<b>Differentiation of tacit and explicit knowledge</b> <i>Definition:</i> The distinction between tacit and explicit knowledge for alliance partners' learning experience.	"Only 70%~80% of knowledge can be actually documented. Some knowledge can be only shared through personal to personal exchange. " - Firm 6
		<b>Tacit knowledge acquisition</b> <i>Definition:</i> The way that tacit knowledge is acquired by the learning partner in the strategic alliance process.	"Some tacit knowledge is difficult to 100% transfer through Design Database. We will facilitate learning by doing through apprenticeship." - Firm 6
	<b>Specificity</b> <i>Definition:</i> A particular knowledge and assets possessed by a partner or dedicated to a partner	<b>Knowledge specificity</b> <i>Definition:</i> A particular knowledge or technology of a certain partner embedded in the organization	"The core competence must be accumulated from the foundation, relatively difficult to learn from other places. If the partner could help you in learning core competence, then tomorrow they can help others." - Firm 4
		<b>Assets specificity</b> <i>Definition:</i> Assets that specifically dedicated to a partner.	"One of the cases is that the MNC needs to transfer the whole process know-how to us for the production, and requires us to produce only for them... There is much negotiation...(depending on) the commitment of the partner in their order loading. "    - Firm 4

Category	Theme	Subtheme	Example Quotes
<b>Relationship characteristics</b> <i>Definitions:</i> The attributes related to soft fabric of inter-partner relationships that influence alliance learning.	<b>Trust</b> <i>Definition:</i> The belief that a partner's promise is trustworthy and that a partner will accomplish its obligations in the alliance relationship	<b>Organizational trust</b> <i>Definition:</i> The trustworthy at organizational level.	"If there is high degree of cooperation, the clients (MNCs) will give us (Supplier) more work". - Firm 1
		<b>Individual trust:</b> <i>Definition:</i> The trustworthy at individual level.	"Better relation, higher degree of trust, and more knowledge transfer." - Firm 3
	<b>Communication</b> <i>Definition:</i> The way that partners interact in between in the strategic alliance process.	<b>Interaction</b> <i>Definition:</i> The inter-firm routines for information-sharing and increase socio-technical interaction.	"The most sharable in the transfer process was the model of technology transfer. It is very systematic and disciplined. First high level managers met to discuss business terms; later on middle high level managers with the project leader to Japan to negotiate the details of transfer. Then there are three phases of interactions of engineers, managers, and transferring to operational employees." - Firm 5
		<b>Cultural difference</b> <i>Definition:</i> The extent to which cultural difference have been the issue in alliance partnership.	"The influences of cultural difference are obvious. Japanese partners usually have certain limitations for sharing knowledge. They request detail for everything. The partner from Europe and the United States are more open to teach us the related skills. " - Firm 6