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Choose Foreign R&D Partners From Right Pools: A Synthesis Framework

海外研發夥伴之選擇：整合型架構

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Abstract

To complement the extant research of R&D partner selection that is fragmented, we develop the synthesis framework to provide a holistic view for the foreign R&D partner selection process. In this framework, we integrate the strategic motive, the learning strategy, the R&D partner selection, and the institutional contingency altogether and adopt the classification of stakeholders to suggest firms the pools of potential candidates in which they can effectively select their suitable R&D partners in the host countries. By examining the 2,423 outbound FDI cases of Taiwan from 2009 to 2012, we find that firms pursuing the technology acquisition will adopt the exploratory learning strategy and be more inclined to choose their R&D partners from their external stakeholders; but this inclination will be mitigated when the host countries are full of institutional voids. Nevertheless, firms pursuing the market expansion may not necessarily adopt the exploitative learning strategy as the prior research suggests but, instead, may undertake the exploratory learning and, furthermore, partner their external stakeholders when the host countries are full of institutional voids.

【Keywords】 strategic motive, learning strategy, institutional voids, foreign R&D partner selection, stakeholders

摘 要

由於現有關於選擇研發夥伴的研究較為片段，我們為此提出了一個整合型架構來為海外研發夥伴之選擇流程提供一個全方位的觀點。在這架構中，我們整合了策略動機、學習策略、研發夥伴之選擇、以及體制情境等要素，並採取了關係人的分類架構，建議企業在地主國應該從哪類的關係人當中有效地選擇合適的研發夥伴。透過檢視臺灣自 2009 到 2012 年間共 2,423 筆的海外直接投資案例中，我們發現，當企業去海外尋求新科技時，他們會採行探索型 (Exploratory) 的學習策略，並且傾向從外部關係人 (External Stakeholders) 當中找尋研發夥伴，但這樣的傾向會被地主國的體制缺陷 (Institutional Voids) 所弱化。然而，當企業去海外擴大其市場時，他們並不一定會像以前研究所說的去採行深化型 (Exploitative) 的學習策略，反而可能會採行探索型的學習策略，而且當地主國充斥著制度缺陷時，他們甚至可能從外部關係人當中找尋研發夥伴。

【關鍵字】策略動機、學習策略、體制缺陷、海外研發夥伴選擇、關係人

1. Introduction

R&D collaboration is recognized as an effective mean to acquire technologies (Belderbos, Carree, and Lokshin, 2004; Benfratello and Sembenelli, 2002; Niedergassel and Leker, 2011; Tyler and Steensma, 1995). Selecting suitable partners for R&D collaboration is a strategic decision for firms to enhance their competitive advantages (Ahlstrom, Levitas, Hitt, Dacin, and Zhu, 2014). Extensive efforts have been made to the research of the partner selection for R&D collaboration (e.g., Belderbos et al., 2004; Emden, Calantone, and Droge, 2006; Feng, Fan, and Ma, 2010; Li, Eden, Hitt, and Ireland, 2008; Miotti and Sachwald, 2003; Petruzzelli, 2011). For instance, Emden et al. (2006) suggest the process-based criteria on the interfirm factor alignments with candidates in aspects of technology, strategy and relation; Feng et al. (2010) posit that the individual and collaborative utilities are derived from the firm- and interfirm-level resources, capabilities, and goals; Li et al. (2008) focus on the characteristics of innovation, IP protection, alliance scope, and interfirm relationship; Miotti and Sachwald (2003) emphasize the firm- and technological-level demography; Petruzzelli (2011) claims for the importance of technological relatedness, prior ties, geographical distance, and cooperation with universities. Those studies emphasize heavily on fine-grained specifications of partners (*WHO*), specifically limited to the firm-level factors. Besides, Dong and Glaister's (2006) study, which is not limited to R&D collaboration, examines the effects of motive (*WHY*) on the partner selection from perspectives of Chinese firms (*WHERE*). However, very scant research examines the strategic motive (*WHY*), the learning strategy (*HOW*), the institutional context (*WHERE*) and the partner selection (*WHO*) simultaneously, which makes this research stream fragmented and dispersed.

To complement the extent research with a holistic perspective, this study proposes the synthesis framework of foreign R&D partner selection process (Figure 1) by integrating the most crucial firm-level and context-level antecedents. We review the IB literature related to the strategic motive of foreign entry and adopt the organizational learning theory to examine the relationship between the strategic motive of foreign entry (*WHY*) and the learning strategy (*HOW*), and augment the transactional costs economics and the stakeholder perspective to examine the relationship between the learning strategy and the partner selection (*WHO*) under institutional voids (*WHERE*).

By examining the 2,423 outbound FDI cases of Taiwan from 2009 to 2012, we find that firms in their foreign entries for technology acquisition will adopt the exploratory

learning strategy and be more inclined to choose their R&D partners among their external stakeholders, but this inclination will be mitigated when the host countries are full of institutional voids. Nevertheless, firms in their foreign entries for market expansion may not necessarily adopt the exploitative learning strategy as the prior research suggests but, instead, undertake the exploratory learning when their existing technologies may be insufficient for localizing their products/services to serve specific demands of host countries; furthermore, they may partner their external stakeholders for obtaining new technologies, the up-to-date governmental policies and good protections for appropriation of the co-developed intellectual properties when the host countries are full of institutional voids.

This study contributes theoretically to the research stream of foreign R&D partner selection in two aspects. First, it bridges the gap in the extant fragmented literature by synthesizing the organizational learning theory, the transactional costs economics, and the stakeholder perspective altogether to demonstrate why, how, where, and whom to choose for the R&D collaboration. Second, by examining the impacts of institutional failures of the host countries, this study suggests that the existence of the take-for-granted trusts embedded in the close ties, e.g., within the internal or primary stakeholders, may be questionable.

This study also contributes to the practice. It provides the firm management teams with a holistic perspective for making the efficient and effective R&D partner selections. The partner selection process is time- and cost-consuming with potential risks, e.g., adverse selections and moral hazards, due to incomplete information and information asymmetry derived from the nature of bounded rationality and tacit knowledge. Firms may be overwhelmed by details and neglect some crucial antecedents of decisions if they divulge into the fine-grained screening for potential partners in the initial stage. As such, they may be likely to waste their efforts and limited resources, miss the right timing to market, and, even worse, make the adverse selections. The study suggests the management teams not to divulge fully into the fine-grained specifications of foreign R&D partners at the beginning without clarifying their foreign entry motives, identifying the suitable learning strategies, and examining the institutional completeness of host countries.

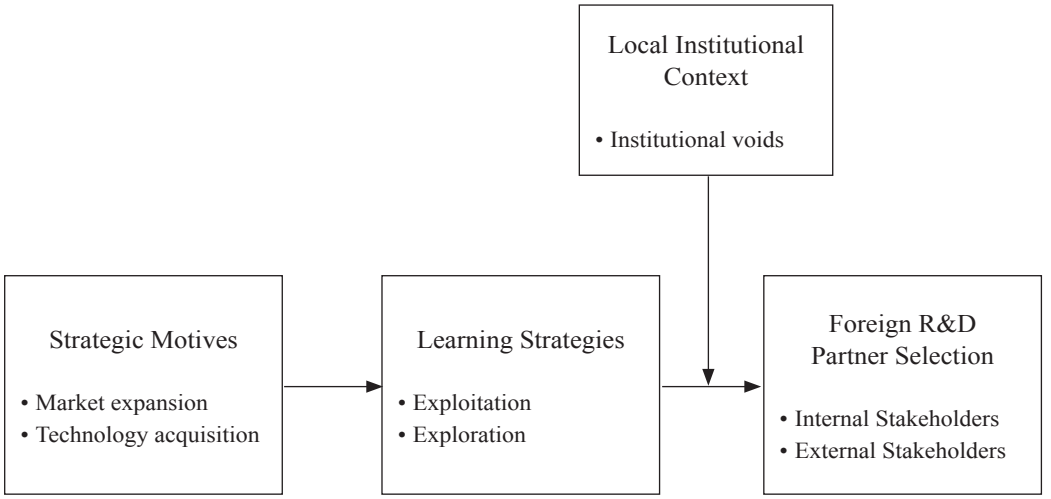

Figure 1 Synthesis Framework of Foreign R&D Partner Selection

2. Literature Review and Hypotheses

2.1 Strategic Motives of Foreign Entry

Firms entering foreign countries are driven by various motives. For instance, Peter and Pervez (1994) posits that firms undertake foreign entries for selling products/services or obtaining resources, e.g., lower-cost labors, natural assets, or trade quotas; Beamish (1987) suggests that firms go overseas for acquiring technologies, learning managerial skills, or accessing international markets; Hitt, Dacin, Levitas, Arregle, and Borza (2000) argue that firms from emerging and developed economies will seek different accesses to multiple forms of technological capabilities; Dong and Glaister (2006) highlight from the perspectives of Chinese firms that the motive of foreign entry is to exchange complementary technologies and share R&D costs; Santangelo and Meyer (2011) propose two strategic motives: one is competence-creating that is for accessing skills and control over strategic assets, and the other is non-competence-creating that is for accessing market or cheap labors, and improvement of efficiency; Chang, Lee, Chieng, and Chin (2013) posit that a firm's foreign entry is associated with the market attraction, technology, and institutions of host countries as well as its growth strategy. Accordingly, we reviewed the highly cited literature that examined the strategic motives of foreign entry directly or indirectly, and made a summary as shown in Table 1. Five kinds of the foreign entry motive can be specified: (1) market-seeking, (2) resource-seeking, (3) technology-seeking, (4) client-following, and (5) mutual-forbearing.

Table 1 Literature of Foreign Entry Motives Examined

Authors	Key Research Question	Entry Motives	Journal	Citied Frequency (times)
Beamish (1987)	The author examined how the performance of joint business ventures in developing countries could be improved.	1. Technological transfer. 2. Learning of managerial skills. 3. Access of international markets.	Management International Review	266
Erramilli and Rao (1990)	The authors studied how unique characteristics of service firms would affect their foreign market entry mode choices.	1. Client-following. 2. Market-seeking.	Management International Review	546
Kim and Hwang (1992)	The authors examined how various environmental, transaction-specific factors, and global strategic considerations would affect entry decisions of firms.	1. To set up a strategic outpost for future global expansion. 2. To develop a global sourcing site (i.e., resource-seeking). 3. To attack actual or potential global competitors.	Journal of International Business Studies	1,242
Williams (1992)	The authors examined the motives of internationalization of the UK-based retailers and the structures behind respectively.	1. For proactive growth. 2. Limitation to domestic market growth opportunities. 3. In search of internationally appealing innovative offering. 4. Passive motives (e.g., offers from foreign retailers).	Journal of Marketing Management	124
Hagedoorn (1993)	The authors empirically explored the firms' motives to engage in the strategic technology partnering.	1. Motives related to basic and applied research. 2. Motives related to concrete innovation processes. 3. Motives related to market access and search opportunities.	Strategic Management Journal	2,619

Authors	Key Research Question	Entry Motives	Journal	Citied Frequency (times)
Hitt et al. (2000)	The authors studied the differences in determinants of partner selecting choices between emerging and developed market contexts.	1. To seek and access local market knowledge. 2. To leverage firms' own resources by selecting alliance partners with complementary capabilities and unique competencies.	The Academy of Management Journal	1,291
Shi, Ho, and Siu (2001)	The authors examined how firm-specific (e.g., foreign experiences), strategic (e.g., entry motives), location-specific (e.g., host-government policies), and transaction-specific variables (e.g., asset specificity) would determine the entry mode choices.	1. Export-orientation (e.g., lower production costs). 2. Market-seeking (e.g., market potential and benefits of producing locally).	Asian Pacific Business Review	58
Randøy and Dibrell (2002)	The authors explored the reasons and means of the Norwegian MNEs to commit resources abroad from perspectives beyond entry mode choices.	1. Global integration-seeking (e.g., for new market opportunities). 2. Advantage-seeking (e.g., for skills and capabilities).	Management International Review	85
Dong and Glaister (2006)	The authors examined the strategic motive for international strategic alliance (ISA) formation and partner selection criteria from perspectives of Chinese firms.	1. For transferring technology. 2. For learning managerial skills. 3. For accessing to international markets. 4. For upgrading technologies. 5. For conforming to the host government policies. 6. For potential low cost sourcing.	International Business Review	126

Authors	Key Research Question	Entry Motives	Journal	Citied Frequency (times)
Luo and Tung (2007)	The authors claimed that MNEs of emerging markets used international expansion as a springboard to acquire strategic resources and reduce their institutional and market constraints at home.	1. Asset-seeking (e.g., for technology, know-how, facilities, human capital, brands, consumer bases, distribution channels, managerial expertise, and natural resources). 2. Opportunity-seeking (e.g., for rapid growth, seizing opportunities to leverage their cost-effective manufacturing capabilities, and opportunities in unrelated but promising areas).	Journal of International Business Studies	1,352
Dunning and Lundan (2008)	The authors analyzed the role of MNE in the global economy.	1. Market-seeking. 2. Natural Resource-seeking. 3. Efficiency-seeking. 4. Strategic asset-seeking. 5. Other motives (e.g., client-following).	Edward Elgar Publishing	8,803
Santangelo and Meyer (2011)	The authors studied why MNEs changed their strategy for a country after their initial entry.	1. For competence-creating (i.e., for accessing skills and control over strategic assets). 2. For non-competence-creating (i.e., for accessing market or cheap labors, and improvement of efficiency).	Journal of International Business Studies	103

The market-seeking motive drives firms to enter foreign markets for seeking new geographic markets and pursuing the growth in sales or market shares (e.g., Beamish, 1987; Dong and Glaister, 2006; Dunning and Lundan, 2008; Erramilli and Rao, 1990; Gil, Nakos, Brouthers, and Brouthers, 2006; Randøy and Dibrell, 2002; Shi et al., 2001; Williams, 1992), or for exploiting their existing resources and advantages locally (e.g., Dong and Glaister, 2006; Hitt et al., 2000). The resource-seeking motive leads firms to foreign markets for acquiring natural resources (e.g., Dunning and Lundan, 2008; Kim and Hwang, 1992), low-cost labors and productions (e.g., Dong and Glaister, 2006; Dunning

and Lundan, 2008; Gil et al., 2006; Kim and Hwang, 1992; Santangelo and Meyer, 2011; Shi et al., 2001) or human capitals (e.g., Beamish, 1987; Dong and Glaister, 2006; Hitt et al., 2000; Luo and Tung, 2007; Randøy and Dibrell, 2002). The technology-seeking motive pushes firms to acquire innovative ideas, processes, technologies, and specialized R&D that firms do not own (e.g., Dunning and Lundan, 2008; Gil et al., 2006; Hagedoorn, 1993; Luo and Tung, 2007; Santangelo and Meyer, 2011; Williams, 1992), to undertake the basic or applied research (Hagedoorn, 1993), or to upgrade their existing technologies (e.g., Dong and Glaister, 2006). The client-following motive makes firms follow their customers to foreign markets for providing local supports in productions or services (e.g., Dunning and Lundan, 2008; Erramilli and Rao, 1990; Gil et al., 2006) in order to protect the existing business relationships. The mutual-forbearing motive (e.g., Kim and Hwang, 1992) implies that firms enter foreign markets to attack or threaten their current competitors in order to maintain the competitive status quos.

Among these five motives, the market-seeking, client-following, and technology-seeking ones are likely to have firms involved in the foreign R&D activities. Following clients abroad implies that firms seek for new market opportunities indirectly along with their existing customers by providing products, productions, delivery and services locally. Thereof, this study includes the client-following motive in the broader market-seeking category. Firms directly or indirectly pursuing new markets will be likely to transfer and exploit their existing technologies or resources in the host countries. Although such exploitation is cost-effective, it may not fit the local demands; localization with technological adjustments to some extent is required. As Belderbos (2003) claims, the foreign R&D will follow the overseas expansions with product/production adaptations and local improvements of firms' existing technologies. Therefore, in this study focusing on the R&D collaborative context, we coin the market expansion and the technological acquisition as the two main strategic motives of foreign entry.

Expanding markets is for surviving, growing, or servicing customers. Such a purpose will lead firms to exploit their existing advantages in the host countries, or to locally obtain the human or technological resources and market-specific knowledge by themselves or via collaboration in order to sell their products or services. Under this motive of market expansion, firms seeking for R&D collaboration may put foci on the improvement and localization of their existing technologies, products or services.

Acquiring technologies implies that firms may be less competitive in their technologies and unable to upgrade their technologies alone, or that firms may intend to

advance their technologies through collaboration to enhance their competencies. Under this motive of technology acquisition, firms seeking for R&D collaboration may put foci on obtaining the technologies that they do not own or are complementary to their existing competencies. The acquired technologies will not be limited to any specific markets but will be treated as the upgrades and expansion of the technological reservoirs of firms.

2.2 Learning Strategy

As Rothaermel and Deeds (2004) highlight, "R" (Research) and "D" (Development) in the research and development process need to be distinguished for realizing their intrinsic effects on firms' decisions. Hong, Heikkinen, and Blomqvist (2010), based on the extant research in the R&D collaboration, categorize firms' learning strategies into two: (1) *knowledge exploitation*, i.e., codification strategy, emphasizing the application of firms' existing knowledge; (2) *knowledge exploration*, i.e., personalization strategy, emphasizing the knowledge creation through interfirm collaboration; the former strategy correlates with "D" and the latter with "R". March (1991) depicts the competition for scarce resources between the exploration and exploitation, the polar opposites of the organizational learning. Therefore, this study follows the extant literature and defines exploration and exploitation as the two learning strategies of firms.

The exploratory learning is about learning from generating new knowledge that is diffusing, variant, and distant from the existing knowledge base (Brady and Davies, 2004; McGrath, 2001; Schildt, Maula, and Keil, 2005; Huang, 2010). Cohen and Levinthal (1990) posit that exploration involves basic research, invention, risk-taking, and new capabilities building. March (1991) suggests exploration as the "experimentation with new alternatives" which returns are "uncertain, distant, and often negative". Levinthal and March (1993) contend that exploration is the 'pursuit of knowledge, of things that might come to be known'. Rothaermel and Deeds (2004) suggest that the precursor to exploration is simply "the desire, the wish to discover something new".

In contrast, the exploitative learning is about learning from generating knowledge that is mainly based on the existing knowledge base with limited and incremental variance (Brady and Davies, 2004; McGrath, 2001; Schildt et al., 2005; Huang, 2010). March (1991) suggests exploitation as the "refinement and extension of existing competencies, technologies, and paradigms" that implies its economic returns to be more "positive, proximate, and predictable". Levinthal and March (1993) depict that exploitation is the "use and development of things already known". Rothaermel and Deeds (2004) suggest

that the precursor to exploitation is the existence of resources, assets, or capabilities that are exploitable under firms' controls.

As such, regarding the economic returns, the exploratory learning is more uncertain and time-consuming than the exploitative learning (March, 1991; Schildt et al., 2005). Regarding the technological scope and characteristics, the exploratory learning is broader, discontinuous, and radical than the exploitative learning (March, 1991). Rooted in the IB literature and the organizational learning theory, this study proposes that, for expanding the geographical market by foreign entry, the focal firm will be more inclined to exploit its current knowledge, technologies and resources, and to localize its products through local R&D collaboration; such exploitation will help the firm save the R&D costs, effectively manage the time to market, and quickly gain returns from sales. In contrast, when the focal firm entering a host country is to acquire new technologies for advancing its long-term competency, it will be more inclined to partner local firms to explore new knowledge and technologies that it does not currently have or may be unable to obtain on its own.

Hypothesis 1a: When a firm's strategic motive of foreign entry is the market expansion, its learning strategy inclines to be more exploitative than exploratory.

Hypothesis 1b: When a firm's strategic motive of foreign entry is the technology acquisition, its learning strategy inclines to be more exploratory than exploitative.

2.3 R&D Collaborative Partners

Partner selection is an important strategic decision for firms to enter foreign markets through collaboration (e.g., Adler and Kwon, 2002; Dong and Glaister, 2006; Hitt et al., 2000; Hitt, Ahlstrom, Dacin, Levitas, and Svobodina, 2004; Li et al., 2008; Li and Ferreira, 2008; Luo, 2002; Ramachandran, Clark, Mclver, and Miller, 2011; Roy and Oliver, 2009). The extant research in the R&D partner selection delineates the collaborative candidates with fine-grained specifications at the firm level. This approach is too specific and fragmented to provide a holistic view, and may make the partner selection inefficient or even averse. For guiding firms to select partners more efficiently and directionally, this study adopts the classification of stakeholders from the stakeholder theory to delineate the collaborative candidates at the group level.

The most accepted definition of stakeholder is Freeman's (1984); it depicts the stakeholder as "any group or individual that can affect or is affected by the achievement of

an organization's objectives". Freeman (1984) claims that any organization may be unable to exist without supports from those individuals or groups. There are various typologies of stakeholders in the extant literature. For instance, Savage, Nix, Whitehead, and Blair (1991) delineate four types of stakeholders, i.e., supportive, marginal, non-supportive and mixed blessing, with a two-by-two matrix consisted of the stakeholder's potential threat to organization and the stakeholder's potential for cooperation. Freeman (1984) suggests two broad types defined by the directness and strength of connections with the firm: the internal stakeholders (e.g., financiers, customers, suppliers, employees, and communities) and the external stakeholders (e.g., governments, NGOs, critics, the media, and others). Vandekerckhove and Dentchev (2005) propose three types of stakeholders according to their contribution levels to a firm: the primary stakeholders who contribute significantly to the firm's survival, the secondary stakeholders who make a more limited contribution, and the non-stakeholders who are neither influenced by the focal firm nor crucial for the firm's survival. Fassin (2009) presents four types based on the interest concerns with a firm: the stakeholder who has a concrete stake in the focal firm with a real positive or at least the expected loyal interest, the stakewatcher (e.g., pressure groups, unions), the stakekeeper (e.g., independent regulators), and the non-stakeholder.

For fitting our synthesis framework, we apply Freeman's (1984) typology to delineate the groups of R&D collaborative candidates. We group the customers, suppliers and complements of the focal firm as the internal stakeholders, and the professionals, research institutes, and universities as the external stakeholders. The grouping foundation is rooted in the degree of relational closeness that assumes trust to exist in much closer ties (Freeman, 1984). Our typology is in line with that of Savage et al. (1991). Savage et al. (1991) attribute suppliers as the supportive stakeholders, and attribute customers, the professionals, technological research institutions and universities as the mixed blessing stakeholder; they suggest the involving strategy for the former and the collaborative strategy for the latter. As such, the focal firm will be more inclined to partner these two kinds of stakeholders for the R&D collaboration. Our typology is also similar to that of Belderbos et al. (2004), who analyze the impact of R&D cooperation on the firm performance and identify four types of R&D partners as competitors, suppliers, customers, universities and research institutes. However, different from Belderbos et al. (2004), we consider competitors to be less likely to become potential partners due to the expropriation problem caused by information asymmetry and opportunism. As Miotti and Sachwald (2003) claim, the tension between the resource considerations which constitutes an

incentive for cooperation and the potential risks which may inhibit cooperation will be stronger in the case of a firm's collaboration with its competitors.

When the focal firm is to partner for the R&D collaboration under the exploitative strategy, the purpose of alliance is more likely to enhance its existing competency by gaining complementary or progressive knowledge to combine with its existing knowledge base. The firm will focus on the "D" in the research and development process. Such an exploitative alliance can be characterized by forming a union among complementors (Rothaermel and Deeds, 2004), suppliers, or customers. The effective knowledge combination and transfer become crucial for the success of collaboration. From the organizational learning theory, Grant (1996) claims for the importance of the three foundations of knowledge: the knowledge transferability, the capacity for aggregation for which the absorptive capacity (Cohen and Levinthal, 1990) is crucial, and the appropriability. In the R&D collaboration, complementary knowledge, resources and capabilities from partners will increase the opportunities of the focal firm for new combinations of its existing knowledge. When the focal firm has a sufficient overlap of knowledge with its R&D collaborators, it will have better absorptive capacity to digest and internalize the external knowledge from its collaborators (Chang et al., 2013). When the interests of the focal firm and its R&D collaborators are aligned well, it may effectively appropriate the benefits derived from the collaborative synergies. However, searching for new collaborators from ground zero is time- and cost-consuming; without prior collaborative experiences or relationships, the difficulties in deploying and transferring the existing knowledge of the focal firm will increase the opportunistic hazards because of unfamiliarity and less interest alignment, and even delay the time to market products or services. Therefore, when the focal firm is engaged in the incremental innovation through exploitative alliance to localize its products, it will be more inclined to collaborate with its internal stakeholders whom it is familiar with. This can be exemplified by the work of Rothaermel and Deeds (2004) on the biotechnological industry in which BioGen, a biotech firm, allies with the Schering-Plough, a pharmaceutical company, for commercializing its discovery.

Hypothesis 2a: When a firm undertakes the exploitative learning, it will be more inclined to select its R&D collaborative partner from its internal stakeholders rather than external stakeholders in the host country.

When the focal firm is to partner for the R&D collaboration under the exploratory

strategy, its purpose of alliance is more likely to discover something new to its current knowledge base; it will focus on the "R" in the research and development process (Rothaermel and Deeds, 2004). The focal firm engaged in an exploratory alliance expects to acquire new knowledge and technologies from the distant parties. From the perspective of strong ties of social network, the internal stakeholders' knowledge is more likely to be homogeneous and redundant to the focal firm's existing knowledge base. Such homogeneity and redundancy make the opportunities of radical innovation via combination of new and idiosyncratic knowledge relatively rare. In contrast, cooperating with the external stakeholders (e.g., the local professionals or universities) who mostly do the basic and distant research may let the focal firm gain more new knowledge and technologies. The professionals, research institutes or scholars often patent or publish their research for academic purposes; this may reduce risks of information asymmetry. Additionally, the position of the external stakeholders is relatively interest-neutral so that might mitigate the problem of expropriation. For example, Rothaermel and Deeds (2004) depict the exploratory innovation through the cooperation between a firm and its external stakeholder. In their research, BioGen, a biotech firm, cooperates with the University of Zurich, and this cooperation leads to the discovery of Intron A. Hong et al. (2010) argue that having the R&D interactions with universities is more preferable in the relation-oriented cultures when the knowledge involved is more tacit or personalized. Miotti and Sachwald (2003) claim that the collaboration with public research institutions is the most attractive to firms who undertake R&D at the technological frontier. Therefore, we expect that a firm will prefer to cooperate with its external stakeholders for the exploratory innovation.

Hypothesis 2b: When a firm undertakes the exploratory learning, it will be more inclined to select its R&D collaborative partner from its external stakeholders rather than internal stakeholders in the host country.

2.4 Institutional Voids

The institutional context is different from country to country. Hitt et al. (2004) suggest that the institutional environment of a host country, specifically its legal aspect, should be considered when studying IJV partner selection. The institutions provide the formal and informal rules that bind and shape behaviors of and interactions among individuals and organizations in societies (North, 1990). The function of institutions in an economy is to lower costs of transactions and information by reducing uncertainty and by

establishing a stable structure that facilitates interactions (Hoskisson, Eden, Lau, and Wright, 2000). However, the institutional environments of some host countries, especially in the emerging economies, are poorly structured and malfunctioning; Khanna and Palepu (1997) coins the term "institutional voids" for such institutional failures, that refers to the relative lack of intermediary firms, regulatory systems and contract-enforcing mechanisms. Those voids will hamper the economic exchanges in the capital, labor and product markets.

Collaboration is a kind of arms-length transactions, and the appropriate governance is the key success factor from the perspective of transactional costs economics. Institutional voids of the host countries impose higher risks of opportunistic hazards on firms. Information asymmetry, interest misalignment and asset specificity are the key antecedents of opportunism. For the exploitative collaboration, information asymmetry and interest misalignment become the focal firm's concerns on its partners when the regulatory enforcement for protecting the value appropriation is lacking. For the exploratory collaboration, the asset specificity and the interest misalignment will jeopardize the relationships between the focal firm and its partners.

When the target host country is full of institutional voids, the contextual uncertainty increases risks to the focal firm. Miller and Blair (2009) claim that the regional, national and international connections with suppliers, business partners, and customers will encounter the risks inherent in the political and economic conditions locally. Upon entry to such a host country, the focal firm's idiosyncratic knowledge or economic rents may likely be expropriated by the local collaborators because of the lack of regulative protections on property rights or contract enforcement. Institutional voids increase the transactional hazards that are derived from the information asymmetry due to the lack of qualified information intermediaries; the risk of adverse selection thus increases. As such, we argue that the focal firm's willingness to collaborate with its internal stakeholders for the exploitative learning will be intensified but the willingness to collaborate with its external stakeholders for the exploratory learning will be weakened. The ongoing business relationships and the good interest alignments between the focal firm and its internal stakeholders will mitigate the opportunism under institutional voids; however, the external stakeholders, lacking interest alignments with the focal firm and being more obliged to follow the governmental policies, may be unlikely to provide much help to the focal firm in avoiding risks from the institutional voids, though they might not behave opportunistically. For example, Khanna and Palepu (2000) argue that, in the emerging

markets full of institutional voids, business-grouped firms characterized by strong and long-term commitments will outperform standalone firms. They suggest that the ties between firms within business groups will reduce the transactions costs and provide reliable access to capital, human, reputational and technological resources that are difficult to obtain in the economies full of institutional voids. Those ties exist not only within business groups but also in the connections with suppliers, collaborators and others who provide managerial and technological supports (Miller and Isabelle Le, 2006).

Hypothesis 3a: When a firm enters a host country full of institutional voids, the likelihood of undertaking the exploitative learning with its internal stakeholders will be intensified.

Hypothesis 3b: When a firm enters a host country full of institutional voids, the likelihood of undertaking the exploratory learning with its external stakeholders will be mitigated.

We herewith summarize the hypotheses in Figure 2 with the predicted signs of causal paths indicated.

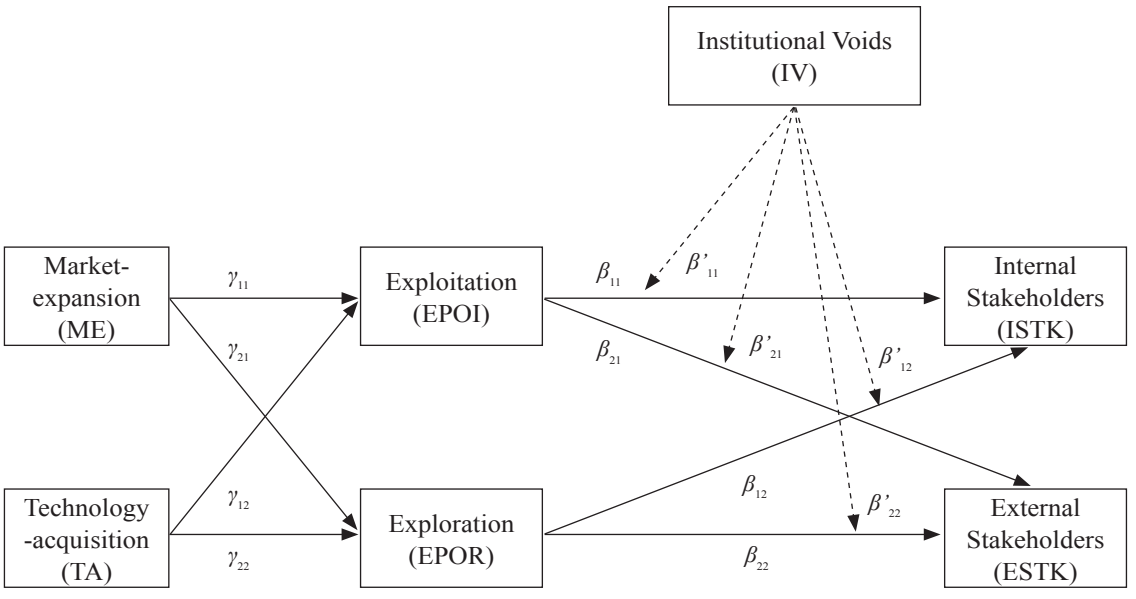

Figure 2 Research Hypotheses and Predicted Signs

Notes: The predicted sign each of the causal paths is: Hypothesis 1a: $\gamma_{11} > \gamma_{21}$; Hypothesis 1b: $\gamma_{22} > \gamma_{12}$; Hypothesis 2a: $\beta_{11} > \beta_{21}$; Hypothesis 2b: $\beta_{22} > \beta_{12}$; Hypothesis 3a: $\beta'_{11} > \beta_{11}$; Hypothesis 3b: $\beta_{22} > \beta'_{22}$.

3. Research Methods

3.1 Data and Sample

This study uses a unique firm-level data set of overseas investments of Taiwanese manufacturing firms to empirically test the hypotheses. Enormous changes in the industrial environments, e.g., the emphasis on the environmental protection, increasing land and labor costs, and fluctuations in the local Taiwanese currency emerging in the late 1980s, have forced many labor-intensive firms to move their productions overseas. Specifically, to meet the requirements of being a member of the World Trade Organization (WTO), Taiwan deregulated its regulatory policy enforced in the electronics industry regarding the investments in China in 2001, which resulted in a substantial upsurge in FDI.[1] For instance, the annual amount of outward FDI increased from US$1.97 billion in 1992 to US$13.14 billion in 2012;[2] the high growth rate reveals that Taiwanese firms have been actively investing in foreign markets to meet the challenges of economic globalization.

The technologies from the developed countries, e.g., the USA, Japan, and Germany, are often advanced and even those countries are regarded as the technology exporters; firms from the developed countries go abroad more for exploring new markets rather than acquiring new technologies. As such, sampling firms from the developed countries may lead our hypothesis testing to be difficult due to less differentiation in the strategic motives and the learning strategies among firms. In contrast to most of the extant research of internationalization or R&D collaboration that sampled firms from the developed countries, e.g., the USA and Japan, we sampled firms from the emerging economies, i.e., Taiwan, for testing the effects of different strategic motives and learning strategies on the firms' decisions of R&D partner selection. Firms from the emerging economies often face the constraints of limited home market sizes and the bottlenecks of technologies; these problems force firms to seek for new markets and new technologies overseas. By sampling firms from Taiwan, this study can complement the current research stream with diverse samples of more heterogeneous motives and strategies.

1 For the development of Taiwan's outward FDI policy, please refer to Yang, Wu, and Lin (2010).

2 These numbers can be found in the World Investment Report 2016.

The data set utilized in this study is primarily drawn from the 2009–2012 Survey on the Outward FDI of Taiwanese Manufacturers conducted by the Ministry of Economic Affairs (MOEA) of Taiwan.[3] This survey includes not only the firm characteristics, e.g., revenue, total employment, and R&D expenditure, but also the variables related to the overseas activities of firms, e.g., overseas R&D collaboration. More importantly, the information regarding the responding firms' strategic motives of foreign entry and their comments on the institutional situations enable us to test our hypotheses. Total 2,423 company-year observations are valid for this study after removing those with missing data and no R&D activities.

3.2 Variables and Measurements

The factors related to the foreign R&D partner selection of Taiwanese manufacturers are surveyed in the questionnaire, which include why firms enter foreign markets (Strategic Motive), where firms enter (Local Institutional Context), how firms intend to learn (Learning Strategy), and whom firms are inclined to partner with for the technological R&D (Partner Selection).

Strategic motive. Following the extant literature, we proxy the construct of strategic motive with two dummy variables: the market expansion (ME) and the technology acquisition (TA). We code ME as1 if the firms enter foreign countries for potential business opportunities, otherwise as zero. We code TA as 1 if the firms enter the foreign countries in pursuit of advanced technologies and technical human resources, otherwise as zero.

Learning strategy. We use two dummy variables of exploitation (EPOI) and exploration (EPOR) to proxy two types of learning strategy. We code EPOI as 1 if the firms undertake R&D activities in host countries for lowering production costs, improving efficiency, product quality or functions, or expanding local markets, otherwise as zero. We code EPOR as 1 if the firms undertake R&D activities for developing new technologies, products or services, or utilizing local R&D resources, otherwise as zero.

3 In order to understand the motive, business profile, and the difficulties confronted by overseas investments of Taiwanese manufacturers, MOEA conducts an investigation by sampling about 2,500 firms every year, and the successful response rate is about 76%.

Foreign R&D partner selection. As aforementioned, we classify R&D partners into the internal stakeholders (ISTK) and the external stakeholders (ESTK). We code ISTK as 1 when the counter parties that the firms partner for R&D collaboration are customers, material suppliers, or subcontractors, otherwise as zero. We code ESTK as 1 when the counter parties are technical consulting firms, local professionals, technological institutes, or universities, otherwise as zero.

Local institutional context. We use a dummy variable for institutional voids (IV) to examine how the local institutional context may moderate the partner selection decisions. We operationalized this variable by asking the firms what difficulties they have encountered when undertaking the outward FDI. We code IV as 1 when the respondents choose any of the following items, otherwise as zero.

- Administrative inefficiency of local governments
- Ambiguous regulations and complex local cliques
- Insufficient local infrastructure
- Complicated procedures of the customs of host countries
- Difficulties in financing
- Difficulties in liquidity
- Risks in account receivables

Control variables. We control two firm-specific characteristics, i.e., firm size and R&D intensity. Firm size (Size) is measured by the logarithm of the yearly revenue. R&D intensity (RD) is measured by the ratio of annual R&D expenditures to sales.

Statistical analysis. We test our hypotheses by using path analysis with Stata/MP 13. The correlation matrix between variables (Table 2) reveals no multicollinearity among independent variables. The moderating effect of institutional voids (IV) on the relationship between the constructs of learning strategy and foreign R&D partner selection is examined with the interaction terms of the institutional voids and learning strategies.

Table 2 Descriptive Statistics and Correlation Matrix

	Observations	Mean	S. D.	Min	Max
SIZE	2423	14.62155	1.81656	6.315358	20.8408
RD	2423	0.244286	2.702210	0.000063	80.7853
ME	2423	0.445316	0.497103	0	1
TA	2423	0.033430	0.179793	0	1
EPOI	2423	0.433347	0.495640	0	1
EPOR	2423	0.298803	0.457828	0	1
IV	2423	0.370615	0.483069	0	1
EPOIIV	2423	0.155592	0.362543	0	1
EPORIV	2423	0.109369	0.312166	0	1
ISTK	2423	0.189022	0.391607	0	1
ESTK	2423	0.078828	0.269526	0	1

	SIZE	RD	ME	TA	EPOI	EPOR
SIZE	1					
RD	-0.2635	1				
ME	0.0657	-0.0187	1			
TA	0.0001	-0.0022	-0.0604	1		
EPOI	0.1241	0.0075	0.0594	0.0320	1	
EPOR	0.0996	0.0085	0.0718	0.1444	0.5955	1
IV	-0.0257	0.0211	0.0535	0.0047	-0.0209	-0.0062
EPOIIV	-0.0052	0.0230	0.0392	0.0279	0.4909	0.2745
EPORIV	0.0261	0.0218	0.0425	0.0525	0.2886	0.5368
ISTK	0.0508	-0.0050	-0.0232	0.0040	0.4904	0.4172
ESTK	0.0629	-0.0112	0.0553	0.0904	0.2665	0.3210

	IV	EPOIIV	EPORIV	ISTK	ESTK
SIZE					
RD					
ME					
TA					
EPOI					
EPOR					
IV	1				
EPOIIV	0.5594	1			
EPORIV	0.4567	0.6631	1		
ISTK	0.0180	0.2610	0.2226	1	
ESTK	0.0102	0.1491	0.1478	0.2460	1

4. Empirical Results

Figure 3 provides the complete estimation results derived by path analysis. The analysis results indicate a good fit of our synthesis framework (χ^2 = 41.962, degree of freedom [df] = 8, χ^2/df = 5.245, GFI = 0.913, NFI = 0.992, CFI = 0.994, RMSEA = 0.042). We follow the method of Hong, Song, and Yoo (2013) to conduct the pairwise t-tests between the two path coefficients associated with each pair of constructs (Strategic Motive → Learning Strategy; Learning Strategy → Partner Selection; Learning Strategy* Context → Partner Selection) and the results are shown in Table 3. As the path coefficient between each pair of constructs is statistically different, we therefore directly compare the coefficients of the paired causal paths to test our hypotheses.

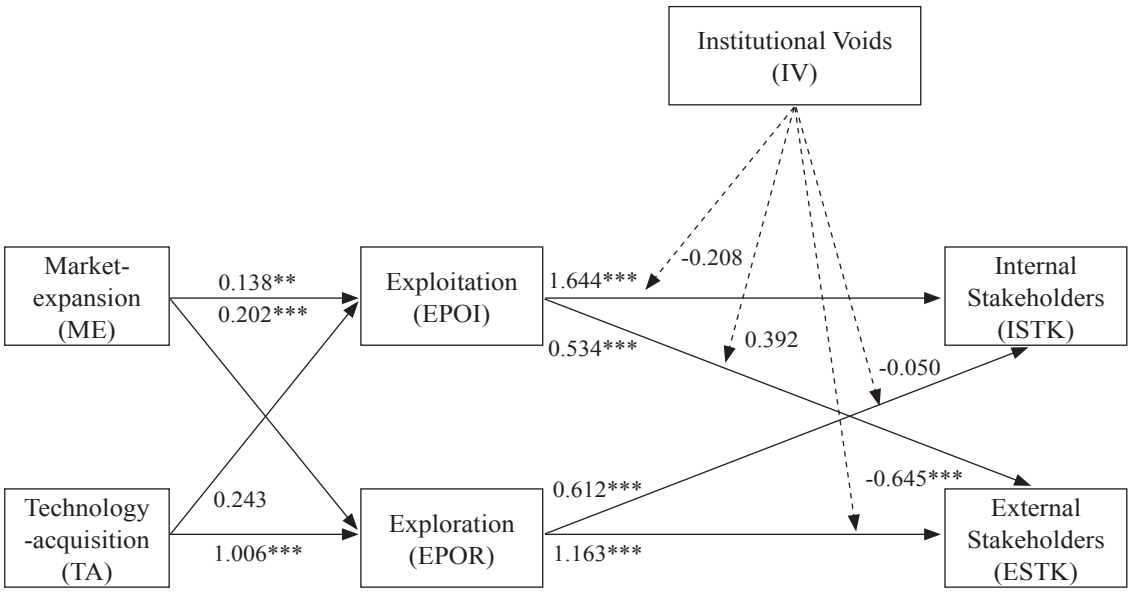

Figure 3 Estimation Results of Path Analysis

Notes: All path coefficients of the causal paths are standardized; * p < 0.1; ** p < 0.05; *** p < 0.01.

Table 3 Differential Effects of Causal Paths

Strategic Motive → Learning Strategy	Path Coefficients		*t*-values	Significance
	Exploitation	Exploration		
Market Expansion	0.138	0.202	10.606	$p < 0.01$
Technology Acquisition	0.243	1.006	-2.2548	$p < 0.05$

Learning Strategy → Partner Selection	Path Coefficients		*t*-values	Significance
	ISTK	ESTK		
Exploitation	1.644	0.534	14.019	$p < 0.01$
Exploration	0.612	1.163	-9.676	$p < 0.01$

Learning Strategy* Context → Partner Selection	Path Coefficients		*t*-values	Significance
	ISTK	ESTK		
Exploitation* IV	1.644	0.534	8.625	$p < 0.01$
Exploration* IV	-0.05	-0.645	6.725	$p < 0.01$

Notes: ISTK = internal stakeholder, ESTK = external stakeholder, IV = institutional voids.

Firstly, regarding the causal paths between the strategic motive and the learning strategy, γ_{11} (0.138, $p < 0.05$) is smaller than γ_{21} (0.202, $p < 0.01$); it implies that firms entering foreign countries for market expansion may not necessarily undertake the exploitative learning more than the exploratory one. Hypothesis 1a is thus not supported. This discrepancy is surprising and will be discussed in the next section. γ_{22} (1.006, $p < 0.01$) is significantly bigger than γ_{12} (0.243, insignificant); this result renders support to Hypothesis 1b and indicates that firms entering foreign countries for acquiring technologies tend to adopt the exploratory learning strategy.

Secondly, regarding the causal paths between the learning strategy and the partner selection, β_{11} (1.644, $p < 0.01$) is bigger than β_{21} (0.534, $p < 0.01$). This result shows that firms undertaking the exploitative learning are more inclined to find the R&D partners from their internal stakeholders rather than from their external stakeholders; Hypothesis 2a is thus supported. Besides, β_{22} (1.163, $p < 0.05$) is bigger than β_{12} (0.612, $p < 0.05$), which also supports Hypothesis 2b; namely, firms with the exploratory learning strategy are more inclined to choose the R&D partners from their external stakeholders rather than from their internal stakeholders.

Thirdly, while considering the institutional voids in the causal paths between the learning strategy and the partner selection, we find that Hypothesis 3b is supported as β'_{22} (-0.645, $p < 0.01$) is significantly smaller than β_{22} (1.163, $p < 0.01$). This result indicates that the inclination of firms with the exploratory learning strategy to choose the R&D partners from their external stakeholders will be mitigated when the host countries are full of institutional voids. Regarding Hypothesis 3a, it is not supported as β'_{11} (-0.208, $p > 0.1$) is smaller than β_{11} (1.644, $p < 0.01$). This result implies that firms with the exploitative learning strategy tend to partner their external stakeholders when the host countries are full of institutional voids, which is in opposition to our prediction. This discrepancy will also be discussed in the next section.

Finally, Table 4 presents the validation of mediating effects in our synthesis framework. The Sobel test results confirm that: (1) the relationship between the strategic motive of market expansion (ME) and the partner selection from the internal stakeholders (ISTK) is partially mediated by the exploitative learning strategy (EPOI); the coefficient of ISTK directly affected by ME decreases from -0.030 ($p = 0.051$) to -0.050 ($p = 0.000$) when the mediator of EPOI is included; (2) the relationship between the strategic motive of technology acquisition (TA) and the partner selection from the external stakeholders (ESTK) is partially mediated by the exploratory learning strategy (EPOI); the coefficient of ESTK directly affected by TA decreases from 0.135 ($p = 0.000$) to 0.085 ($p = 0.003$) when the mediator of EPOR is included.

Table 4 Validation Results of Mediating Effect

Causal Path	Mediator	Sobel Test	*p*-value
ME → EPOI → ISTK	EPOI	2.5837***	0.0097
TA → EPOR → ESTK	EPOR	5.2440***	0.0000
ME → EPOIIV → ISTK	EPOIIV	-0.9385	0.3480
TA → EPORIV → ESTK	EPORIV	-2.8453***	0.0044

Notes: The results are the Aroian version of Sobel test; * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.
ME = market expansion, TA = technology acquisition, EPOI = exploitation, EPOR = exploration,
EPOIIV = exploitation × institutional voids, EPORIV = exploration × institutional voids,
ISTK = internal stakeholder, ESTK = external stakeholder.

4.1 Robustness Test

We estimate the following equations by using the three-stage least square regression (Zellner and Theil, 1962) for the robustness test for two reasons: (1) some equations contain the endogenous variables; (2) the three-stage least square regression supports the iterated GLS estimation and linear constraints.

$$\text{EPOI} = \beta_{11}\text{ME} + \beta_{12}\text{TA} + \text{Control variables} + \varepsilon_1 \quad (1)$$

$$\text{EPOR} = \beta_{21}\text{ME} + \beta_{22}\text{TA} + \text{Control variables} + \varepsilon_2 \quad (2)$$

$$\text{ISTK} = \beta_{31}\text{EPOI} + \beta_{32}\text{EPOR} + \beta_{33}\text{IV} + \beta_{34}\text{EPOI}\times\text{IV} + \beta_{35}\text{EPOR} \times \text{IV} + \varepsilon_3 \quad (3)$$

$$\text{ESTK} = \beta_{41}\text{EPOI} + \beta_{42}\text{EPOR} + \beta_{43}\text{IV} + \beta_{44}\text{EPOI}\times\text{IV} + \beta_{45}\text{EPOR} \times \text{IV} + \varepsilon_4 \quad (4)$$

The estimation results are shown in Table 5 and consistent with the results derived by path analysis although there are very slight differences between the results of Hypothesis 3a and 3b estimated by path analysis and by three-stage least square regression. For Hypothesis 3a, we still find that the inclinations of firms to choose the R&D collaborative partners from their internal stakeholders are not intensified; β_{31} (0.326, $p < 0.001$) is still bigger than β_{34} (0.004, $p > 0.1$), and this result is consistent to that of path analysis. For Hypothesis 3b, β_{42} (0.401, $p < 0.001$) is smaller than β_{45} (-0.149, $p > 0.1$), indicating that the inclinations of firms to choose external stakeholders for R&D collaboration are indeed mitigated though β_{45} is not statistically significant; this estimation result remains consistent with the estimation by path analysis, supporting Hypothesis 3b. Therefore, we claim that our synthesis framework is robust.

Table 5 Robustness Test by Three-Stage Least Square Regression

	EPOI	EPOR	ISTK	ESTK
ME	0.0611***	0.0815***		
	(3.10)	(4.72)		
TA	0.0919*	0.370***		
	(1.66)	(7.32)		
SIZE	0.0351***	0.0249***		
	(6.18)	(4.82)		
RD	0.00766**	0.00589*		
	(2.05)	(1.82)		
EPOI			0.326**	-0.00400
			(2.03)	(-0.03)
EPOR			-0.141	0.401***
			(-0.92)	(3.52)
IV			0.00590	0.00879
			(0.11)	(0.22)
EPOIIV			0.00422	0.0998
			(0.03)	(0.83)
EPORIV			0.0512	-0.149
			(0.33)	(-1.28)
Cons	-0.112	-0.115	0.0815	-0.0416
	(-1.34)	(-1.50)	(1.60)	(-1.10)
N	2,423	2,423	2,423	2,423

Notes: t statistics are indicated in the parentheses. All coefficients are standardized;
* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

5. Discussions

In line with the extant research, this study empirically confirms that firms in their foreign entry for acquiring technologies will undertake the exploratory learning and will be more inclined to choose their R&D collaborative partners from their external stakeholders when the institutional contexts of host countries are not considered. When firms undertake the exploratory learning in the host countries full of institutional voids, their inclination of choosing the R&D collaborative partners from their external stakeholders will be mitigated. However, different from the theoretic inference, this study

finds that firms in their foreign entry for expanding the geographical markets will be more inclined to undertake the exploratory learning than the exploitative learning while these two learning strategies may be adopted simultaneously. Although firms adopting the exploitative learning strategy will be more inclined to choose the R&D collaborative partners from their internal stakeholders as the theoretic prediction, such an inclination will not be intensified as expected when the host countries are full of institutional voids.

Two possible explanations may be made for the findings inconsistent to the theoretic inferences. First, firms' existing products/services may not fulfill the local demands and their existing knowledge/technologies are not sufficient for modifying or localizing those products/services. As such, they may need to undertake the exploratory learning to some extent to acquire new knowledge/technologies that are distant from their existing ones. Second, when the host countries are full of institutional voids, the interfirm trust and the interest alignment, that are assumed to exist among the internal stakeholders as the prior research suggests, may be jeopardized or may not even necessarily exist. Firms may find it more difficult to align their interests fairly with their internal stakeholders under the institutional voids. For instance, how to fairly and legally share the property rights of the co-developed products/services and appropriate from them become difficult; that difficulty may jeopardize the interfirm trust and therefore let firms partner with their external stakeholders who are more interest-neutral. The future research can examine the influences of such location-specific requirements for the localization of products/services and fair distributions of the joint interests under the institutional voids.

Furthermore, for verifying whether the institutional voids will influence the relationship between the strategic motive of foreign entry and the learning strategy, we modify our synthesis framework by adding the moderating effect of institutional voids on this relationship. The estimation results of the modified framework are summarized in Table 6. When the additional moderating effect of institutional voids are added on the relationship between the foreign entry motive and the learning strategy in our original synthesis framework, all the causal results remain the same as our previous estimations (see Pair 7, 8, 9, 10 of Table 6).

Table 6 Moderating Effects of Institutional Voids on the Motive-Learning and Learning-Partner Selection Relationships

Pair #	Causal Path	Path Coefficient	*p*-value
1	ME → EPOI	0.087***	0.001
	ME → EPOR	0.096***	0.000
2	TA → EPOI	0.072	0.312
	TA → EPOR	0.466***	0.000
3	EPOI → ISTK	0.283***	0.000
	EPOI → ESTK	0.033	0.244
4	EPOR → ISTK	0.177***	0.000
	EPOR → ESTK	0.186***	0.000
5	MEIV → EPOI	-0.065	0.122
	MEIV → EPOR	-0.059	0.125
6	TAIV → EPOI	0.066	0.564
	TAIV → EPOR	-0.229**	0.030
7	MEIV → EPOIIV	0.022	0.380
	MEIV → EPORIV	0.038*	0.100
8	TAIV → EPOIIV	0.138**	0.048
	TAIV → EPORIV	0.238***	0.000
9	EPOIIV → ISTK	0.035	0.487
	EPOIIV → ESTK	0.076*	0.053
10	EPORIV → ISTK	-0.028	0.546
	EPORIV → ESTK	-0.095**	0.014

Notes: All path coefficients of the causal paths are standardized, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, ME = market expansion, TA = technology acquisition, MEIV = market expansion × institutional voids, TAIV = technology acquisition × institutional voids, EPOI = exploitation, EPOR = exploration, EPOIIV = exploitation × institutional voids, EPORIV = exploration × institutional voids, ISTK = internal stakeholder, ESTK = external stakeholder.
Pairwise *t*-tests confirmed the statistical differentiation in the path coefficients of each pair of the causal paths.

This finding further supports the validation and robustness of our synthesis framework and has two strategic implications. On the one hand, the institutional voids may not affect the relationship between the entry motive and the learning strategy. Institutional voids are related to the downside uncertainties of business transactions and legal protectiveness toward the value appropriation of firms in the context of foreign market expansion. Those institutional failures will affect the firms' governance modes of transactions and even the decisions of partner selection, but are less likely to influence the

local customers' acceptances of the firms' products/services which will be determined by the values and utilities brought to the local markets. Besides, those institutional failures may not even influence the firms' decision for undertaking the explorative learning by which acquiring new knowledge/technologies to enhance the long-term competencies are the firms' goals of foreign entry. On the other hand, the strategy will follow the motive closely but will be implemented by various approaches in response to different contingencies. In this study, it is clearly demonstrated that the learning strategy follows the strategic motive and is implemented by selecting suitable collaborative partners contingently. In sum, the future research can further examine if different strategies in different contexts will also follow the firms' motives without being influenced by the external contingencies.

6. Conclusion and Limitations

This study makes some contributions to the theory and practice. First, it is one of the very few research of the foreign R&D partner selection that takes strategic motive, learning strategy, institutional context, and partner selection into simultaneous consideration. Most of the extant research puts foci only on WHY and WHO in a given context of developed economies where the institutional systems are well structured and the technologies are overall advanced. This study provides a holistic view on the R&D partner selection process by integrating WHY, HOW, WHERE, and WHO altogether. Such a synthetic approach complements the extant fragmented research and makes this research stream more structured, completed, and theoretically integrated. Second, this study bridges the gap in the extant research that mainly adopts the perspectives of the firms from the developed countries. In contrast to the extant research, this study samples the firms from the emerging economies whose technologies are advanced in some fields but lag behind in others. Such heterogeneity in the technological development is more likely to derive diverse strategic motives for foreign entry, which can clearly demonstrate the effects of different strategic motives on the firms' decisions for different learning strategies and further the influences on the firms' foreign R&D partner selections in different institutional contexts.

Practically, this research adopts the notion of stakeholders, i.e., internal stakeholders and external stakeholders, to classify the potential R&D partners into different groups for firms to review and select. The idea of "partner pool" can prevent firms from undertaking

costly random search or even making adverse selections. The management teams are advised not to divulge fully into the detailed specifications of the foreign R&D partners in the initial stage without clarifying their foreign entry motives, identifying the suitable learning strategies, and examining the institutional completeness of host countries. Besides, the management teams need to verify if their existing knowledge/technologies are sufficient for localizing their current products/services to fit the indigenous demands of host countries before deciding the proper learning strategies. Moreover, the management teams always need to be cautious to the expropriation risks in R&D collaborations in the institutionally incomplete countries even if they have close ties with the collaborative partners. The take-for-granted trust embedded in the close relationships may be questionable.

There are limitations to our research that may be further examined by future research. First, the sampled firms are from Taiwan, and most of their FDIs (66.23% in our study) are made in China. The generalization of this synthesis framework in other institutional contexts may be further verified, although we suggest that our results be applied in other contextual scenarios. Second, we follow Freeman's (1984) idea of stakeholders to broadly group the potential R&D partners into the internal stakeholders and the external stakeholders. The future research can suggest better classifications of stakeholders or grouping methods of potential R&D collaborative partners.

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