The Synergetic Effect of Multinational Corporation Management's Social Cognitive Capability on Tacit-Knowledge Management: Product Innovation Ability Insights from Asia

Margaret L. Sheng, Nathaniel N. Hartmann, Qimei Chen, and Irene Chen

ABSTRACT

Multinational corporations (MNCs) use their overseas subsidiaries to access tacit knowledge about host countries. It is generally assumed that subsidiary tacit knowledge contributes directly to greater product innovativeness; however, little empirical evidence supports this assumption. In this research, the authors propose a negative direct relationship between subsidiary tacit-knowledge level and MNCs' product innovation ability. The authors then examine the role of social cognitive capability as an attenuator of this negative relationship between subsidiary tacit-knowledge level and MNCs' product innovation ability. The results reveal that each of the MNCs' social cognitive capability components (i.e., task efficacy, organic structure, and affective trust) independently weakens this negative relationship. Moreover, combining social cognitive capabilities exerts synergetic influences to further excavate the effect of tacit knowledge.

Keywords: product innovation, multinational corporation knowledge flows, social cognitive theory, multinational subsidiary management, tacit-knowledge transfer

Multinational corporations (MNCs) are facing increasingly intensified global competition, which renders knowledge transfer "across national boundaries for global marketing opportunities" an organizational imperative (Murray and Chao 2005, p. 1). Although both explicit (i.e., "know-what") and tacit (i.e., "know-how") knowledge can be transferred, tacit knowledge—that is, knowledge highly specific to the context in which it is created—is essential to MNCs' success (Bindroo, Mariadoss, and Pillai 2012; Fransson, Håkanson, and Liesch 2011). For example, Krasnikov and Jayachandran (2008) contend that tacit knowledge is the major reason marketing capabilities exert a stronger impact on firm performance than either research-and-development or operations capabilities (Kemper, Engelen, and Brettel 2011). Tacit knowledge is particularly important to MNCs aiming to enter a foreign market (Fletcher, Harris, and Richey 2013; Hilmersson and Jansson 2012). Researchers have shown that although MNCs can gather explicit knowledge before entry, it is more challenging to amass tacit knowledge. Moreover, MNCs that enter foreign markets with

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a lack of tacit knowledge may experience a "shock effect" (Pedersen and Petersen 2004). Therefore, many MNCs resort to establishing host-country subsidiaries after entry to continuously gain tacit knowledge from the local market (Pedersen and Petersen 2004).

In general, tacit knowledge possessed by the subsidiaries of an MNC is assumed to positively influence the MNC's product innovation ability—the capability to develop and introduce new products that fulfill needs across multiple country markets. This assumption is predicated on the understanding that tacit knowledge can stimulate knowledge exploration (Nonaka, Toyama, and Nagata 2000), understanding of problems (Bindroo, Mariadoss, and Pillai 2012), problem solving (Goffin and Koners 2011), and idea novelty (Brockman and Morgan 2003). Moreover, because tacit knowledge is valuable, rare, inimitable, and nonsubstitutable (Brockman and Morgan 2003), it can lead to difficult-to-replicate, radical innovations (Bindroo, Mariadoss, and Pillai 2012). However, tacit knowledge is also difficult to articulate, understand, and internalize (Nonaka, Toyama, and Nagata 2000), and innovation is a social process (Madhavan and Grover 1998). Thus, the challenge of transferring, synthesizing, and applying subsidiary tacit knowledge makes it more difficult for MNCs to develop and introduce new products—even if those products are more radical and difficult to replicate.

Previous research (Lee, Chen, and Lu 2009) in the knowledge management literature has documented the importance of technological processes to transferring knowledge between MNCs' headquarters and their subsidiaries. Although technological processes may facilitate the transfer of explicit knowledge, MNC managers express that "[information technology–]mediated knowledge transfer was not amenable ... to transferring more tacit types of knowledge" (Roth et al. 2009, p. 9). Given that tacit-knowledge transfer requires a social backdrop and that innovation is a social process (Madhavan and Grover 1998), we follow the recommendations of Roth et al. (2009) and build on extant research by examining the role of social processes in knowledge transfer. In this pursuit, we focus on the role of social cognitive capability as a mechanism that intercepts the impact of subsidiary tacit knowledge on firms' product innovation ability within the MNC context.

Social cognitive capability is the ability to understand human social behavior and involves investigating aspects of information processing pertaining to learning within complex social interactions (Gioia and Sims 1986). Social cognitive capability is determined by triadic reciprocal interactions among cognition, behavior, and the environment (Bandura 1991). Because tacit knowledge resides in overseas subsidiaries, product innovation ability fundamentally depends on how proficiently tacit knowledge is transferred to, interpreted by, and applied by MNCs' headquarters. Given that (1) tacit-knowledge transfer requires social interaction and (2) innovation is a form of group learning that involves various intraorganizational units throughout the organization and their reciprocal interactions among knowledge, cognition, behavior, and culture (Madhavan and Grover 1998), social cognitive capability is highly relevant to understanding the influence of MNC network knowledge flows on MNCs' product innovation ability.

This research therefore makes three contributions to the literature. First, we develop a theoretical framework to capture the negative relationship between subsidiary tacit-knowledge level and MNCs' product innovation ability. We demonstrate that in the international marketing context, higher levels of subsidiary tacit knowledge may not increase MNCs' capability to develop and introduce new products that fulfill needs across multiple country markets (i.e., MNCs' product innovation ability). In so doing, we highlight an often-neglected downside of tacit knowledge: the difficulty of sharing, synthesizing, and applying it may, at times, hinder new product innovation. Second, we include a formal conceptualization of social cognitive capability and investigate the interplay between subsidiary tacit-knowledge level and social cognitive capability in fostering MNCs' product innovation ability. In addition to examining the independent effect of each social cognitive capability component, we also capture the synergetic influence of these components on converting subsidiary tacit knowledge into MNCs' product innovation ability. As such, this research resonates with prior calls to emphasize the importance of social processes, as opposed to technology processes, in MNC knowledge transfer in general, and tacit-knowledge transfer in particular (e.g., Roth et al. 2009). Finally, extant research has typically applied social cognitive theory (SCT) at the interpersonal level; therefore, we advance the literature by examining the validity of SCT as a unitary construct. We demonstrate that social cognitive capabilities work best interdependently as a unitary construct in facilitating MNCs' product innovation ability. Thus, we demonstrate the potency of this concept in the gestalt, as opposed to the individual level. As such, the current study can help future researchers better conceptualize this construct and incorporate it into their theoretical frameworks.

Next, we introduce our theoretical framework by first reviewing resource-based theory (RBT), dynamic capa-

bilities theory (DCT), and SCT, and we discuss their relevance to examining the subsidiary tacit-knowledge level's impact on MNCs' product innovation ability. Then, we develop a set of hypotheses that examine the direct and interaction effects of subsidiary tacit-knowledge level and social cognitive capability on MNCs' product innovation ability. We test the hypotheses on data collected from 86 Taiwan-based MNCs, using partial least squares structural equation modeling (PLS-SEM). Finally, we provide the results and discuss their theoretical and managerial implications.

THEORETICAL BACKGROUND

RBT and DCT

Resource-based theory posits that disparity in firm performance, among many other outcomes, can be explained on the basis of the notion that firms differ in the resources they possess (Barney 1991). Morgan, Kaleka, and Katsikeas (2004) underscore that theoretical advances regarding DCT distinguish resources and capabilities and point to their differences (Makadok 2001; Teece, Pisano, and Shuen 1997) as the reason some firms are more able than others to accomplish activities and objectives, such as product innovation initiatives. Given the ability of RBT and DCT to explain disparity in firm performance among other outcomes, they often serve as foundation frameworks for international marketing research (Fletcher, Harris, and Richey 2013; Morgan, Kaleka, and Katsikeas 2004; Morgan, Katsikeas, and Vorhies 2012).

"Resources" refer to tangible and intangible assets on which a firm can draw in working to accomplish specified activities and objectives. "Capabilities" refer to the firm's ability to use these resources. Thus, a capability is "a special type of resource—specifically, an organizationally embedded nontransferable firm-specific resource whose purpose is to improve the productivity of the *other* resources possessed by the firm" (Makadok 2001, p. 389, emphasis added). On this basis, we position social cognitive capability as an organizationally embedded resource that improves the productivity of tacit knowledge in influencing MNCs' product innovation ability, and we identify tacit knowledge as a resource core to an organization's product innovation ability. Affective trust, organic structure, and task efficacy are practices that form the social cognitive capability that an organization employs to obtain, integrate, reconfigure, and use its knowledge resources. We argue that social cognitive capability (i.e., task efficacy, organic structure, and affective trust) serves as an interpersonal process that facilitates transfer of this resource (i.e., tacit knowledge) from subsidiaries to the MNCs' headquarters. In the next section, we further detail the role of social cognitive capability in improving the productivity of subsidiary tacit knowledge to facilitate MNCs' product innovation ability.

Social Cognitive Theory

Social cognitive theory asserts that psychosocial functioning is determined by triadic reciprocal interactions among cognitive, behavioral, and environmental factors (Bandura 1991). The theory emphasizes the capacity and importance of processing, retaining, and using information. By incorporating social structure (i.e., organizational routines and systems) and cognitive perspectives (i.e., human cognitive processes), SCT provides a viewpoint of the learning process that can be qualified by the reciprocal relationship of cognitive processes and social constructs. As such, SCT is often used to examine what influences and is influenced by information processing and information use within social interactions (Gioia and Sims 1986).

In this research, we adopt SCT as the basis for examining the influence of subsidiary tacit-knowledge level on MNCs' product innovation ability and focus on the social interactions between MNCs' headquarters and their subsidiaries. Prior research has observed that one pitfall of knowledge transfer for many MNCs is the overreliance on technology processes, as opposed to interpersonal processes (Roth et al. 2009). According to Peters (1995, p. 6), "getting the psychology and sociology of sharing right is more important than state-of-the-art electronic linkages." Given that interpersonal aspects are "particularly important for sharing tacit knowledge" (Roth et al. 2009, p. 22) and that subsidiaries possess valuable stores of tacit knowledge about their market, it is salient to examine the role of MNCs' social cognitive capability in facilitating subsidiary tacit-knowledge sharing.

In this study, we examine the three major forces of SCT: the influence of cognitive, environmental, and behavioral factors. Perceived task efficacy is core to SCT because people's beliefs in their efficacy "influence the choices they make, their aspirations, how much effort they mobilize in a given endeavor, how long they persevere in the face of difficulties and setbacks, whether their thought patterns are self-hindering or self-aiding" (Bandura 1991, p. 257), among other things. For tacit knowledge to be transferred from subsidiaries to MNCs' headquarters, the headquarters must be moti-

vated to gain this knowledge. Likewise, subsidiaries must possess the knowledge and motivation to share it. If headquarters and subsidiaries are not confident in their ability to handle this task, tacit-knowledge sharing may be hampered.

The environmental aspect of SCT refers to the physical and social aspects of one's surroundings (Bandura 1991). Given our focus on intraorganizational knowledge sharing, we constrain our examination to the physical and social aspects of the work environment that may encourage or discourage subsidiary–headquarters tacit-knowledge sharing. Specifically, we focus on organic structure, which refers to the extent to which an organization's work environment is flexible, decentralized, and participative in decision making (Burns and Stalker 1961). More flexible, decentralized, and participative decision making allows for more efficient communication of tacit knowledge between high-level managers and lower-level employees and encourages greater and more diverse participation in tacit-knowledge sharing (Huang, Rode, and Schroeder 2011). Moreover, a more organic structure may influence organizational routines and employee cooperation, which further facilitates idea generation and tacit-knowledge sharing (Olson, Walker, and Ruekert 1995).

The behavioral aspect of SCT refers to one's responses to various inputs (Bandura 1991). Drawing from Murray and Chao's (2005) conceptual framework, which aims to explain international knowledge acquisition for new product development, we focus our examination on the relationship between the source (i.e., subsidiary) and recipient (i.e., headquarters) of knowledge. Specifically, we focus on affective trust, which refers to the repeated reciprocated actions that demonstrate the extent to which the subsidiary and headquarters genuinely care and are concerned for each other. In doing so, we account for the harmony of the relationship (i.e., cooperativeness) and trust (i.e., willingness to be vulnerable) between the subsidiary and headquarters; two aspects of the subsidiary–headquarters relationship conceptualized as key to knowledge acquisition by Murray and Chao. Norman (2002) shows that knowledge providers often perceive transferring tacit knowledge as risky because tacit-knowledge discrepancies can yield advantages to more informed parties. Knowledge receivers (i.e., the headquarters) may also perceive receiving knowledge as risky due to uncertainty surrounding knowledge accuracy, quality, and usefulness. Thus, affective trust may help reduce risk perception by creating a sense of security (Katsikeas, Skarmeas, and Bellow 2009). Therefore, affective trust (i.e., the cooperation between MNC subsidiaries and headquarters) facilitates MNCs' ability to overcome boundaries in transferring knowledge (Murray and Chao 2005), ultimately enhancing idea generation and knowledge sharing (Atuahene-Gima and Murray 2007).

CONCEPTUAL FRAMEWORK AND HYPOTHESES

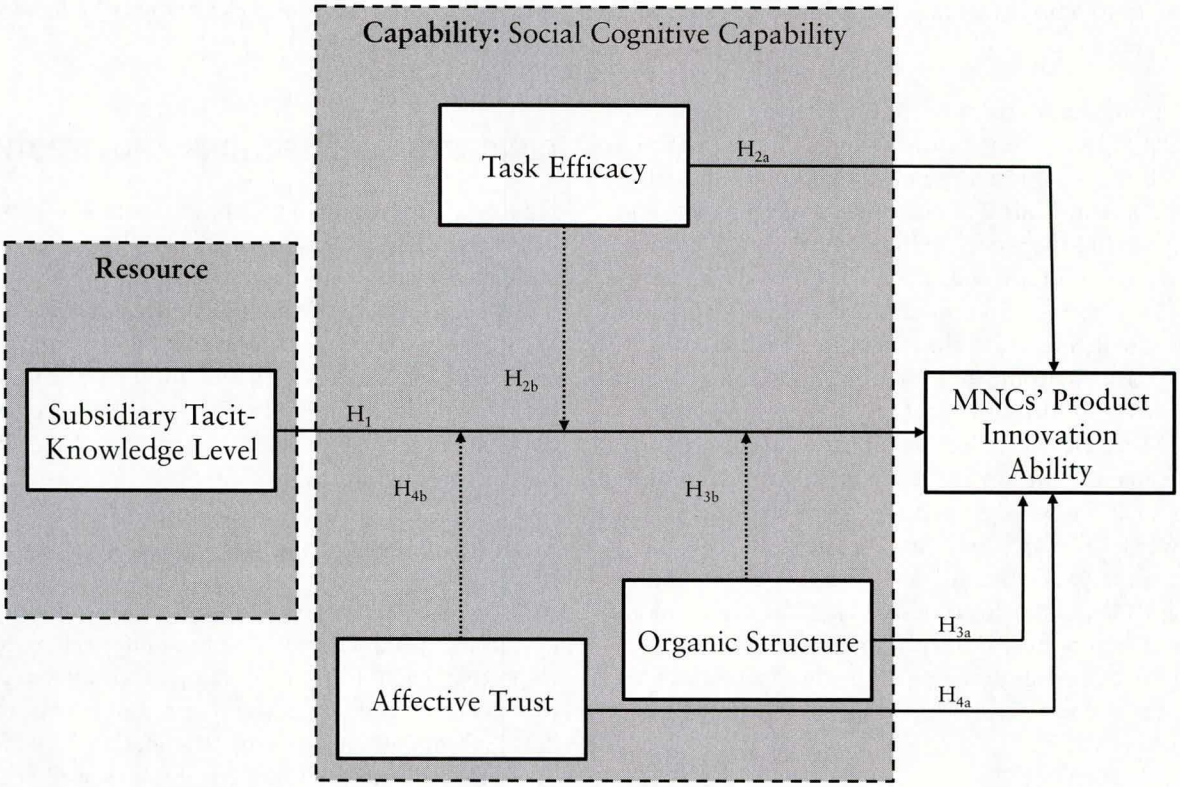
Figure 1 displays our conceptual framework, which is based on RBT, DCT, and SCT. In subsequent sections, we explore the relationship between subsidiary tacit-knowledge level and MNCs' product innovation ability. We then theorize how task efficacy, more organic structures, and affective trust directly influence MNCs' product innovation ability and serve as the intercept to elucidate the impact of subsidiary tacit-knowledge level on MNCs' product innovation ability.

Structural Relationships

MNCs' Product Innovation Ability. Multinational corporations' product innovation ability refers to their respective capability to develop and introduce new products that fulfill needs across multiple country markets (Subramaniam and Venkatraman 2001). This product innovation ability is affected by how well headquarters can synthesize knowledge from its subsidiaries (Li, Poppo, and Zhou 2010). This is because overseas subsidiaries possess valuable stores of knowledge about the unique characteristics of customers, competitors, and technologies of the market in which they operate (Hilmersson and Jansson 2012; Zhang, Di Bendetto, and Hoenig 2009). Multinational corporations with headquarters that are better able to understand and incorporate knowledge from the markets their subsidiaries serve into new product development efforts are more able to develop products that appeal to customers in these markets (Lee et al. 2008).

Tacit Knowledge. Knowledge can be described as either explicit or tacit. Explicit knowledge describes the know-what, which is based on established work processes. Tacit knowledge describes the know-how, which is based on practice (Nonaka, Toyama, and Nagata 2000). Tacit knowledge is highly specific to the context in which it is created and is based on unique experiences, ideals, values, and intuition, among other attributes (Nonaka, Toyama, and Nagata 2000). Tacit knowledge is also valuable, rare, inimitable and nonsubstitutable (Brockman and Morgan 2003). For these reasons, tacit knowledge is often conceptualized and empirically linked to greater firm performance and innovation

Figure 1. Conceptual Framework



(Cavusgil, Calantone, and Zhao 2003; Fletcher, Harris, and Richey 2013).

Tacit knowledge is also abstract and therefore more difficult to express and capture than explicit knowledge. Subsidiary tacit knowledge refers to MNCs' knowledge of similarities, differences, and unique traits and characteristics of overseas markets that are difficult to codify and transfer systematically (Subramaniam and Venkatraman 2001) from an MNC's subsidiaries to its headquarters. Thus, the subsidiary tacit-knowledge level captures the extent to which the knowledge generated in overseas subsidiaries is know-how based, as opposed to know-what based. Although overseas subsidiaries constitute a potentially vital source of tacit knowledge by acquiring know-how regarding the host country's culture, tastes, markets, and technology (Hilmersson and Jansson 2012; Li, Poppo, and Zhou 2010), MNCs' headquarters play a critical role in transferring, synthesizing, and applying this tacit knowledge (Lee et al. 2008), which may aid in developing and introducing successful products. This is because tacit knowledge can stimulate knowledge exploration (Nonaka, Toyama, and Nagata 2000), understanding of problems (Bindroo, Mariadoss, and Pillai 2012), problem solving (Goffin and Koners 2011), and idea novelty (Brockman and Morgan 2003). Thus, many would argue that a higher subsidiary tacit-knowledge level provides MNC headquarters with an increasingly important knowledge base to leverage in innovation efforts. If this were the case, we would expect a positive relationship between subsidiary tacit-knowledge level and MNCs' product innovation ability.

However, a counterargument is that the difficulty in expressing and capturing tacit knowledge implies that a higher subsidiary tacit-knowledge level makes it more challenging for subsidiaries to share market knowledge with MNCs' headquarters and for headquarters to synthesize and apply subsidiary tacit knowledge to develop

and introduce new products. This is because subsidiaries and MNCs' headquarters possess interrelated but unique strategies and institutional logics—practices, assumptions, beliefs, and values, among other attributes (Hilmersson and Jansson 2012; Kostova, Roth, and Dacin 2008; Roth et al. 2009)—that serve as the organizing principles for cognition and action. Differences between subsidiaries' and the headquarters' institutional logics may compound the difficulty of transferring, synthesizing, and applying subsidiary tacit knowledge by increasing causal ambiguity and concern regarding the usefulness and relevance of this knowledge, attributes of tacit knowledge that are widely believed to impede knowledge transfer (Murray and Chao 2005; Roth et al. 2009). Moreover, because tacit knowledge is transferred through observation and interaction (Nonaka, Toyama, and Nagata 2000), functional and proximate distance between subsidiaries and headquarters may increase the challenge of transferring subsidiary tacit knowledge by increasing knowledge transfer uncertainty and cost (Bindroo, Mariadoss, and Pillai 2012; Hilmersson and Jansson 2012). Thus, subsidiary tacit knowledge is a knowledge leverage paradox because it is difficult to interpret, assimilate, and apply. If, as the subsidiary tacit-knowledge level increases, the knowledge becomes more difficult for the subsidiary to share and for MNCs' headquarters to synthesize and apply, we would expect a negative relationship between subsidiary tacit-knowledge level and MNC product innovation ability. In line with this argument, we propose the following hypothesis:

H_1: Subsidiary tacit-knowledge level is negatively related to MNCs' product innovation ability.

Given the challenge of transferring tacit knowledge (Nonaka, Toyama, and Nagata 2000), recent research on knowledge acquisition has investigated the importance of the disseminative capacity of the sender and the absorptive capacity of the receiver as well as knowledge characteristics (Murray, Kotabe, and Westjohn 2009). Herein, we focus on the relationship between senders and receivers to capture the interpersonal process of knowledge sharing (Roth et al. 2009). Against the backdrop of RBT and DCT, we model this process using SCT and capture three aspects (i.e., task efficacy, organic structure, and affective trust) essential to overcoming tacit-knowledge sharing difficulties.

Task Efficacy. Task efficacy refers to people's belief people in their ability to accomplish tasks and fulfill goals. Task efficacy positively influences motivation to pursue learning (Kim, Song, and Jones 2011), persistence in learning, and ability to overcome obstacles in meeting learning goals (Chen, Chuang, and Chen 2012). Furthermore, task efficacy is a necessary condition for creative productivity and knowledge discovery.

Extending the aforementioned findings to the MNC context suggests that task efficacy is a critical component that motivates MNCs to pursue subsidiary–headquarters knowledge sharing for new-product-development reasons. In motivating knowledge sharing, greater task efficacy is likely to assist MNCs in persisting through knowledge-sharing activities and obstacles. For example, greater task efficacy may aid subsidiaries and headquarters in following through on and developing solutions to communication challenges due to proximity and different institutional logics. Furthermore, given the positive relationships between task efficacy and motivation to pursue solutions as well as persistence in achieving learning goals and the ability to overcome obstacles in doing so, MNCs with greater task efficacy may accumulate more valuable experiences and skills over time, which enhances product innovation ability.

Although tacit knowledge is widely considered the fundamental driver of product innovation success (Bindroo, Mariadoss, and Pillai 2012), it is sticky and difficult to codify (Li, Poppo, and Zhou 2010). Thus, sharing tacit knowledge presents challenges to both the sender (i.e., subsidiary) and the receiver (i.e., headquarters). Greater task efficacy may aid subsidiaries and headquarters by increasing motivation and confidence, which in turn increases effort and ability to persist and overcome obstacles in transferring tacit knowledge. Therefore, we postulate that MNCs with greater task efficacy are more able to innovate and that greater task efficacy weakens the negative relationship between subsidiary tacit-knowledge level and MNCs' product innovation ability.

H_{2a}: Task efficacy is positively related to MNCs' product innovation ability.

H_{2b}: The negative association between subsidiary tacit-knowledge level and MNCs' product innovation ability becomes weaker when task efficacy is greater.

Organic Structure. An organization's structure refers to its system of control, authority, and information dispersion and has been conceptualized on a continuum ranging from mechanistic to organic (Burns and Stalker 1961). Firms with a more mechanistic structure tend to be more centralized and inflexible, employ authoritative decision making, concentrate knowledge within parts of

the organization, and possess formal procedures and communications. Firms with a more organic structure tend to be more decentralized and flexible, employ participative decision making, disperse knowledge throughout the organization, and lack formal procedures and communications. Within the international marketing literature, more organic structures are theorized to offer performance advantages (Boso et al. 2013).

More organic structures may facilitate MNCs' product innovation ability. Research has suggested that subsidiaries possess valuable tacit knowledge about host countries that provide headquarters with collaboration and learning opportunities (Asmussen, Foss, and Pedersen 2013). Because tacit knowledge is best shared through regular interactions and experiences, which enable receivers to understand the senders' way of thinking (Nonaka, Toyama, and Nagata 2000), a more organic structure may aid tacit-knowledge transfer by increasing the frequency and quality of subsidiary–headquarters interactions and experiences. Indeed, at least one study examining new product development outcomes (Olson, Walker, and Ruekert 1995) has shown that more organic structures facilitate knowledge flow across firm divisions. As such, more organic structures facilitate socialization and externalization processes (Nonaka, Toyama, and Nagata 2000), thus enabling tacit knowledge to lead to innovations (Bindroo, Mariadoss, and Pillai 2012). Therefore, we propose that a more organic structure positively influences MNCs' product innovation ability and weakens the negative relationship between subsidiary tacit-knowledge level and MNCs' product innovation ability.

H_{3a}: Organic structure is positively related to MNCs' product innovation ability.

H_{3b}: The negative association between subsidiary tacit-knowledge level and MNCs' product innovation ability becomes weaker when organic structure is greater.

Affective Trust. Affective trust is based on repeated reciprocated actions demonstrating genuine care and concern for the other party as well as a belief in the inherent value of the relationship (McAllister 1995). Relationships characterized by affective trust resemble communal relationships (Clark, Mills, and Corcoran 1989). Parties in communal relationships perceive partners' problems as their own, develop a tacit awareness of their partners' needs, and act to fulfill their partners' needs (Rempel, Holmes, and Zanna 1985). Consequently, affective trust enables greater cooperation between a knowledge sender and receiver by creating a mutual understanding that both sides will consider the interests of the other. Research has found that the development of shared dependency, which mirrors affective trust, captures the mutual sense of reliance among MNCs' network members (Sinkula, Baker, and Noordewier 1997) and facilitates MNCs' headquarters in gaining tacit knowledge (Simonin 1999).

Tacit knowledge entails insights, intuition, and beliefs that are tightly intertwined with the experience of the knowledge source (Nonaka, Toyama, and Nagata 2000). Affective trust facilitates mutual understanding between, identification with, and/or affect between partners (Bstieler 2006), which may aid headquarters in decoding and applying knowledge for new product innovation. Furthermore, affective trust alleviates concerns regarding the risks of sharing tacit knowledge (Katsikeas, Skarmeas, and Bellow 2009) by providing an environment "in which people feel secure and psychologically safe to make mistakes and offer and receive criticism" (Atuahene-Gima and Murray 2007, p. 7). Because affective trust fosters tacit-knowledge sharing (Katsikeas, Skarmeas, and Bellow 2009; Li, Poppo, and Zhou 2010) and enhances MNCs' new product innovation (Brattström, Löfsten, and Richtnér 2012), we propose that it directly influences MNCs' product innovation ability and weakens the negative relationship between subsidiary tacit-knowledge level and MNCs' product innovation ability.

H_{4a}: Affective trust is positively related to MNCs' product innovation ability.

H_{4b}: The negative association between subsidiary tacit-knowledge level and MNCs' product innovation ability becomes weaker when affective trust is greater.

METHODOLOGY

Sample and Data Collection

Our sampling frame consists of the top 1,000 companies in Taiwan listed in *CommonWealth Magazine* in 2013. Worldwide, Taiwan had the leading rank in patents per million people and ranked 12th in global competitiveness, 8th in the capacity of Taiwanese businesses to innovate, and 7th in terms of efficiency in goods markets (Schwab 2013). Taiwanese MNCs are increasingly establishing themselves as major global players. Moreover, there is substantial disparity regarding the level of internationalization of Taiwanese MNCs (Johnson, Yin,

and Tsai 2009). Thus, Taiwan can provide insights into innovation processes and serves as an adequate context to test our hypotheses.

To answer Freeman and Cavusgil's (2007, p. 2) recent call emphasizing the need to incorporate more comprehensive measures of internalization, we focus our research on assessing "the least studied and more controversial" dimension—that is, attitudinal evaluation of senior management, as opposed to firm-level analysis. This is because senior managers influence an MNC "as a direct result of their attitudes—through their decisions, values and vision" (Freeman and Cavusgil 2007, p. 2). In addition, our focus on the social cognitive aspects of knowledge sharing warrants the selection of knowledgeable informants who are familiar with and influence MNCs' knowledge-sharing and innovation processes.

To enhance our ability to reach informants involved in new product development, we used a list that identified senior managers serving in marketing, research-and-development, and/or manufacturing roles. Our interviewers contacted each firm on the list by telephone to (1) determine whether the firm was a "true MNC" or merely an exporter and (2) identify two or three additional key informants knowledgeable about their firm's host-country operations. If the firm was a true MNC, the firm contacts were asked to give the questionnaire in person to the most senior managers able to respond. All respondents provided their responses within prearranged pickup windows; thus, we report no early or late responses. Respondents averaged 17.8 years of firm experience; approximately 70% of respondents were senior executives.

We received 213 usable questionnaires from 86 Taiwan-based MNCs. These responses represent MNCs operating in the consumer durables (n = 52), industrial products (n = 22), and consumer packaged goods (n = 12) industries. The subsidiaries of the MNCs that were the focus of this research were based throughout Asia (n = 86), Europe (n = 5), the United States (n = 5), and elsewhere (n = 1). The MNCs also reported their number of overseas subsidiaries. Of the MNCs, 31 had 1–10, 19 had 11–20, 11 had 21–30, 10 had 31–40, 8 had 41–50, and 7 had more than 50 overseas subsidiaries. An independent t-test comparing the mean revenue of responding and nonresponding companies, using data from secondary sources, revealed no significant differences ($p > .05$), suggesting that nonresponse bias is not a substantive concern.

Although we sought multiple responses from each MNC, in some cases only single-informant data were returned. To examine the reliability of these single-informant data, one to two additional managers in each respondent's unit were surveyed. Responses to the follow-up survey questions were comparable to initial respondent responses. The unit of analysis in this study is the business level and refers to the MNC as a whole.

Construct Measures

Each construct was assessed using established scales or items. We measured MNCs' product innovation ability using five items from Subramaniam and Venkatraman (2001). We assessed MNCs' product innovation ability using a seven-point Likert-type scale ranging from "much worse than the competition" to "much better than the competition." We assessed task efficacy using five items modified on the basis of Mitchell et al. (1994). We assessed organic structure using three items adopted from Lee and Yang (2011). We measured affective trust using five items adapted from McAllister (1995). We measured subsidiary tacit-knowledge level using five items adapted from Subramaniam and Venkatraman (2001). The aforementioned constructs were rated on seven-point Likert-type scales ranging from "strongly disagree" to "strongly agree." Table 1 displays items and their respective factor loadings.

Control Variables

We included firm size, number of overseas subsidiaries, and firm age as control variables; each control variable was measured using seven-point interval items. We controlled for firm size given that large firms generally have greater resources than do small firms and that resources contribute to innovation. We assessed firm size using the number of employees; in our sample, the firm's number of employees ranged from fewer than 1,000 to more than 6,000. We also controlled for number of overseas subsidiaries, ranging from fewer than 10 to more than 60. Multinational corporations with more overseas subsidiaries might be more innovative, more knowledge intensive, and more experienced in tacit-knowledge transfer and might have stronger motivations for enhancing product innovation ability. Finally, we controlled for firm age, ranging from less than 10 years to more than 60 years. Multinational corporation industry experience, indicated by its age, may increase learning capability, thereby influencing product innovation ability.

Table 1. Items and Factor Loadings

Item	Factor Loading
MNCs' Product Innovation Ability: *Respondents were asked to indicate the extent to which their multinational company was much worse or much better than key competitors on the following items:*	
Frequency of new product introductions	.762
Being first in the market with new product introductions	.609
Ability to introduce new versions simultaneously in several markets	.830
Ability to respond to the unique requirements of different countries	.785
Ability to penetrate new overseas markets	.851
Subsidiary Tacit-Knowledge Level: *Respondents were asked to indicate how strongly they disagreed or agreed with the following statements regarding the characteristics of the knowledge shared from overseas subsidiaries:*	
Difficult	.774
Difficult to comprehensively document in manuals and report	.853
Difficult to comprehensively understand from written documents	.909
Difficult to precisely communicate through written documents	.887
Difficult to identify without personal experience in the overseas locations	.833
Task Efficacy: *Respondents were asked to indicate how strongly they disagreed or agreed with the following statements regarding their internal knowledge generation and sharing beliefs:*	
We are able to achieve most goals that we have set for ourselves.	.867
When facing difficult tasks, we are certain that we will accomplish them.	.911
We are able to successfully overcome numerous challenges.	.914
We are confident that we can perform effectively on numerous different tasks.	.874
Compared to others, we can perform most tasks very well.	.755
Organic Structure: *Respondents were asked to indicate how strongly they disagreed or agreed with the following statements regarding the structure of the work environment:*	
We usually complete tasks without necessarily following work procedures, rules, manuals or other formalities.	.724
When it comes to creating ideas or making decisions about new products or services, we have complete freedom in our firm.	.825
When creating new products or services, we typically do not call specialists from other companies or obtain help from outside the firm.	.817
Affective Trust: *Respondents were asked to indicate how strongly they disagreed or agreed with the following statements regarding the relationship between senior managers of the headquarters and subsidiary:*	
We have a sharing relationship. We freely share our ideas, feelings and hopes.	.849
We can talk freely to any individual about difficulties we have at work and know that they will want to listen.	.885
We would feel a sense of loss if one of us was transferred and we could no longer work together in the same group.	.653
If we shared problems with others, we know they would respond constructively and caringly.	.885
We would have to say that we made considerable emotional investments in our personal relationship.	.764

ANALYSES AND RESULTS

We used PLS-SEM to test the hypothesized relationships. We tested the hypotheses using 500 bootstrapped samples in Visual PLS (version 1.04b1). When the primary objective of the study is theory development and prediction, PLS variance-based SEM is preferable to covariance-based SEM (Reinartz, Haenlein, and Henseler 2009). Given that many of the hypothesized relationships have

not been examined before and that our focus is on explaining variance in MNCs' product innovation ability, our use of PLS-SEM is appropriate. Moreover, PLS-SEM offers greater power than covariance-based SEM and is advantageous when sample size is small to medium, as is the case with our sample. Partly due to these reasons, PLS-SEM is often used to examine relationships in the MNC context (e.g., Asmussen, Foss, and Pedersen 2013; Ciabuschi, Dellestrand, and Martin 2011; Venaik, Midgley, and Devinney 2005).

Reliability and Validity

Table 2 displays variable means, standard deviations, and bivariate correlations. Cronbach's reliabilities, composite reliabilities, and average variance extracted (AVE) estimates exceed recommended thresholds (Fornell and Larcker 1981; Hair et al. 2010). Furthermore, PLS indicator loadings are considerably higher for their hypothesized factor than for other factors, and the square root of the AVE for each construct is greater than its correlation with any other construct (Fornell and Larcker 1981). Overall, these results suggest that the measures possess convergent and discriminant validity.

Several of the independent and control variables are moderately correlated. To assess whether multicollinearity is a substantive concern, we examined the variation inflation factors (VIFs). Variance inflation factors greater than 10 provide strong evidence of multicollinearity (Hair et al. 2010). All VIFs for the variables in Table 2 are less than 3. Moreover, results of the PLS analysis, which included several interaction terms, suggest that multicollinearity is not a substantive concern; the highest VIF in the PLS analysis is ≈ 5.

Assessment of Common Method Bias

Common method bias (CMB) refers to the variance attributable to the method and source of the data. Although CMB may inflate or deflate direct relationships, it does not alter interaction effects (Siemsen, Roth, and Oliveira 2010). To assess the extent of CMB, we performed Harman's single-factor test. This test produced a five-factor solution, with the first factor accounting for less than 50% of the variance (20.52% of 68.23%), suggesting that CMB is not a substantive issue. We then performed the partial correlation procedure, comparing the zero-order correlations of the study's variables with their partial correlations, after controlling for a marker variable (Lindell and Whitney 2001). Because the zero-order and partial correlations were similar after controlling for our marker variable (i.e., personal task analyzability) and no correlations

Table 2. Means, Standard Deviations, and Bivariate Correlations

Construct	1	2	3	4	5	6	7	8	9
1. Number of subsidiaries	1								
2. Firm size	.519**	1							
3. Firm age	.344**	.300**	1						
4. MNCs' product innovation ability	.079	.089	.005	1					
5. Subsidiary tacit-knowledge level	–.038	.071	–.026	–.361**	1				
6. Task efficacy	.084	.051	–.050	.323**	–.112	1			
7. Organic structure	.013	.043	.021	.344**	.047	.212*	1		
8. Affective trust	.021	.057	.093	.284**	.038	.319**	.488**	1	
9. Task analyzability	–.164*	–.107	–.041	–.031	.054	–.096	.156	.018	1
M	3.23	3.67	3.50	5.06	4.48	5.42	4.46	4.86	4.48
SD	1.20	1.63	1.61	1.03	1.15	.86	1.21	1.01	1.06
Cronbach's alpha				.83	.91	.92	.73	.87	
Composite reliability				.88	.93	.94	.83	.91	
AVE				.60	.74	.76	.77	.66	

*$p < .05$.
**$p < .01$.

significantly differed, we conclude that CMB is not a substantive concern.

Main and Moderation Effects

Table 3 displays the results. Subsidiary tacit-knowledge level is negatively related to MNCs' product innovation ability (b = −.337, $p < .001$). Thus, H_1 is supported. Task efficacy (b = .152, $p < .10$), organic structure (b = .234, $p < .05$), and affective trust (b = .242, $p < .05$) are positively (albeit marginally for task efficacy) associated with MNCs' product innovation ability. Thus, H_{2a} is marginally supported, and H_{3a} and H_{4a} are supported. Overall, the main-effects-only model explains 26.9% of the variance in MNCs' product innovation ability.

The interaction effect between subsidiary tacit-knowledge level and task efficacy is marginally significant (b = .252, $p < .10$), offering marginal support for H_{2b}. In support of H_{3b}, the interaction between subsidiary tacit-knowledge level and organic structure is significant (b = .195, $p < .05$). Finally, the interaction between subsidiary tacit-knowledge level and affective trust is significant (b = .249, $p < .01$). The addition of these interaction terms offers a meaningful incremental explanation ($R^2 = .358$, $p < .001$; $\Delta R^2 = .089$, $p < .01$) of the variance in MNCs' product innovation ability.

We assessed the strength of the moderating effects by comparing the proportion of R^2 of the main-effects model with the R^2 of the full model, termed f^2 (Cohen 1988). The moderated effect sizes of task efficacy, organic structure, and affective trust were .059, .054, and .078, respectively. These effect sizes are small, but Cohen (1988) notes that small interaction effect sizes are meaningful if the resulting beta changes are meaningful .

Following Dawson and Richter (2006), we examine the nature of the moderation effects by graphing and testing each interaction at low (i.e., one standard deviation

Table 3. The Moderating Effect Between Subsidiary Tacit-Knowledge Level, Task Efficacy, Organic Structure, and Affective Trust on MNCs' Product Innovation Ability

	MNCs' Product Innovation Ability				
	Model 1	Model 2	Model 3	Model 4	VIF
Number of subsidiaries	.135	.143	.133	.111	1.513
Firm size	.131	.086	.122	.112	1.526
Firm age	−.001	−.026	−.012	−.010	−.133
Tacit knowledge (TK)	−.337***	−.347***	−.447***	−.408***	5.006
Task efficacy (TE)		.152†	.151*	.149*	1.946
Organic structure (OS)		.234*	.146	.112	1.408
Affective trust (AT)		.242*	.176*	.117	1.353
TK × TE			.252†	.122	1.434
TK × AT			.249**	.351**	2.818
TK × OS			.195*	.312**	2.656
TK × TE × OS				−.241*	2.027
TK × TE × AT				−.267*	2.925
TK × AT × OS				−.125	1.67
F	6.623***	7.925***	7.607***	7.506***	
R^2	.158	.269	.358	.377	
Adjusted R^2	.134	.223	.317	.338	
ΔR^2	.158***	.111***	.089**	.019*	

†$p < .10$.
*$p < .05$.
**$p < .01$.
***$p < .001$.
Notes: Model 1 tests H_1; Model 2 tests H_{2a}, H_{3a}, and H_{4a}; Model 3 tests H_{2b}, H_{3b}, and H_{4b}; and Model 4 tests synergistic effects not hypothesized.

below the mean) and high (i.e., one standard deviation above the mean) levels of each social cognitive capability component. Figure 2 displays the interaction plots. Specifically, simple slope analysis reveals that the negative association between subsidiary tacit-knowledge level and MNCs' product innovation ability is weakened but remains significant when task efficacy is high (slope gradient = –.247, t = –4.216, $p < .001$) versus low (slope gradient = –.647, t = –6.889, $p < .001$). Likewise, the negative association between subsidiary tacit-knowledge level and MNCs' product innovation ability is weakened but remains significant when organic structure is high (slope gradient = –.211, t = –2.071, $p < .05$) versus low (slope gradient = –.683, t = –7.120, $p < .001$). Moreover, the

Figure 2. The Contingent Effect of Tacit Knowledge

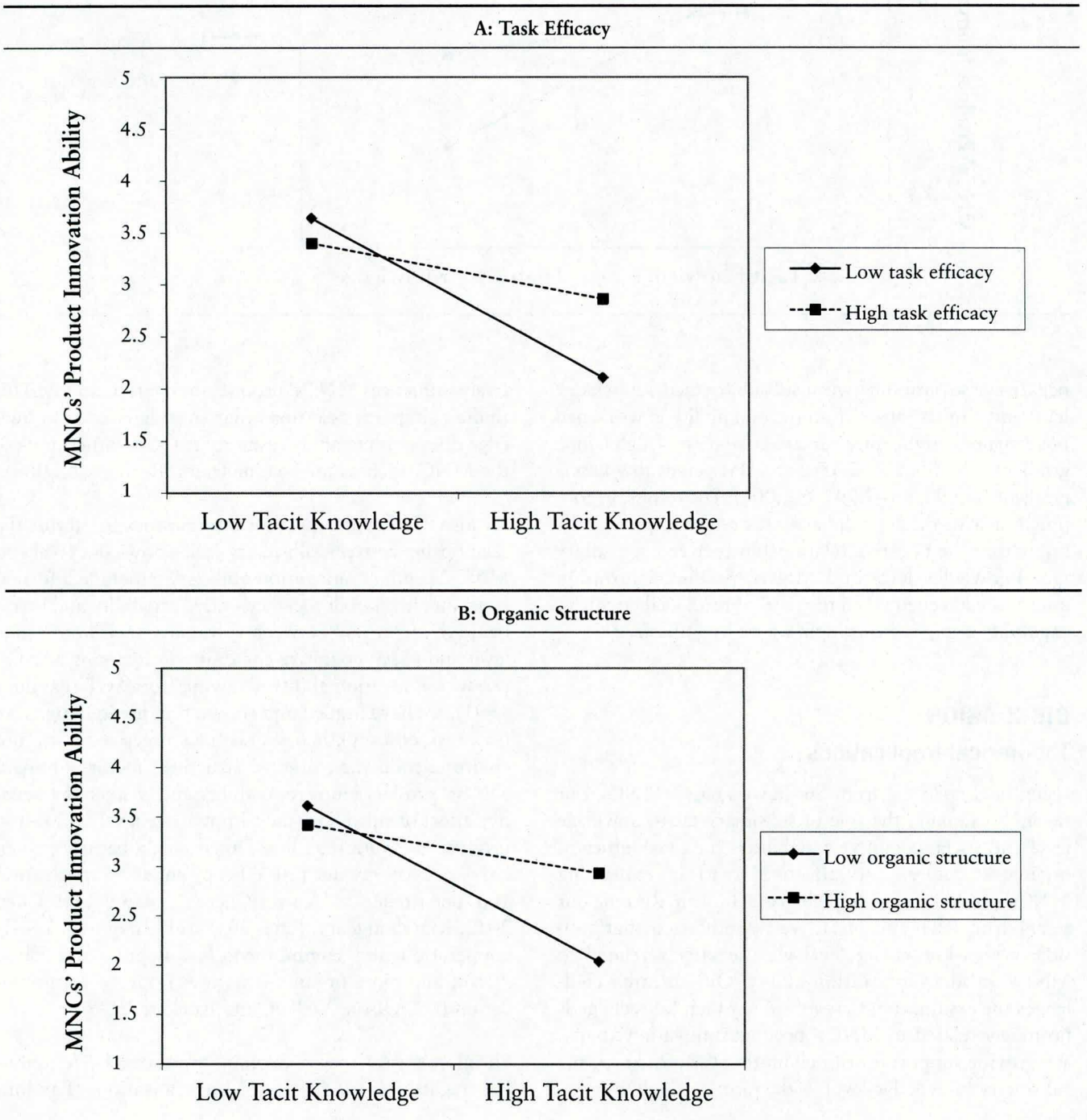
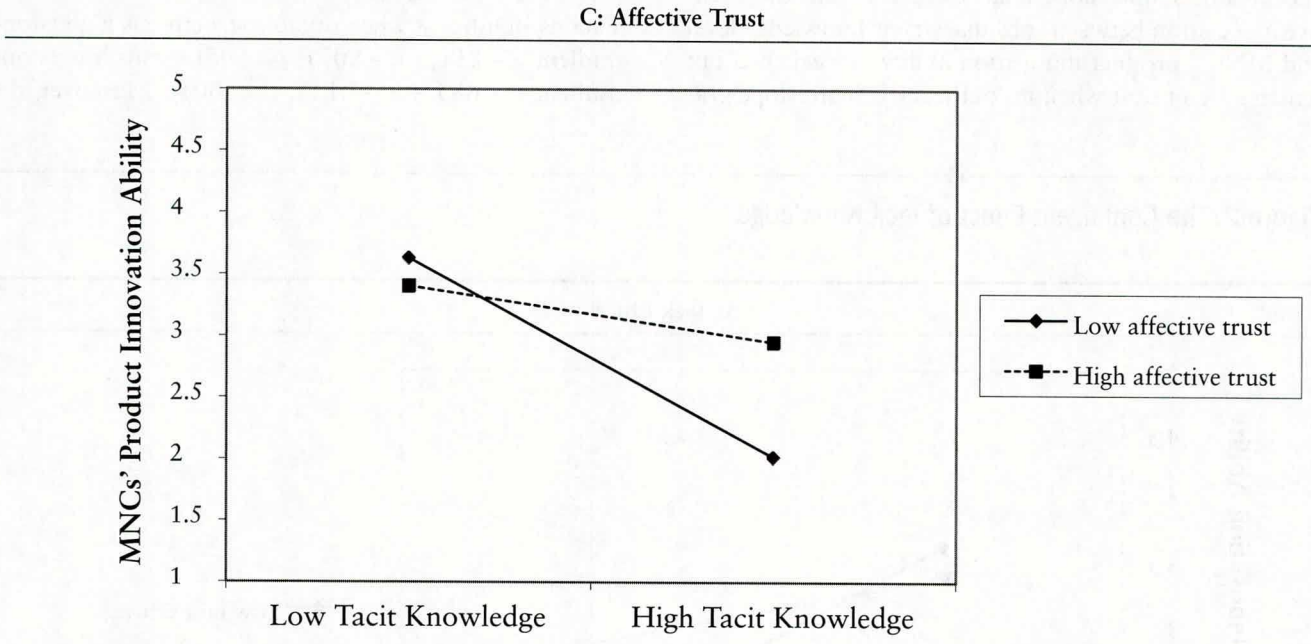


Figure 2. Continued



negative association between subsidiary tacit-knowledge level and MNCs' product innovation ability is weakened but remains significant when affective trust is high (slope gradient = –.200, t = –2.356, $p < .05$) versus low (slope gradient = –.694, t = –7.991, $p < .001$). The results, in conjunction with those of the analyses reported previously, imply that the negative relationship between subsidiary tacit-knowledge level and MNCs' product innovation ability is weakened when the level of the social cognitive capability component is high, as we hypothesized.

DISCUSSION

Theoretical Implications

Using data collected from 86 Taiwan-based MNCs, our research examines the role of subsidiary tacit-knowledge level and social cognitive capabilities (i.e., task efficacy, organic structure, and affective trust) in explaining MNCs' product innovation ability in Taiwan. Rooting our research in RBT and DCT, we hypothesized that subsidiary tacit-knowledge level was negatively related to MNCs' product innovation ability. Our research challenges the assumption that subsidiary tacit knowledge is positively related to MNCs' product innovation ability. We provide support for our claim that the more tacit the subsidiary knowledge level is, the more strongly it negatively influences MNCs' product innovation ability. This finding supports assertions that subsidiary tacit knowledge does not inevitably result in its use by other units of the MNC, such as the headquarters (Roth et al. 2009).

We also developed a theoretical framework to capture the relationship between subsidiary tacit-knowledge level and MNCs' product innovation ability. We include a formal conceptualization of social cognitive capability and investigate the interplay between subsidiary tacit-knowledge level and social cognitive capability in fostering MNCs' product innovation ability. Drawing from SCT (Bandura 1991), we have argued and shown that greater cognitive (i.e., task efficacy), behavioral (i.e., affective trust), and environmental (i.e., organic structure) factors improve MNCs' product innovation ability and weaken the negative effect of subsidiary tacit-knowledge level on MNCs' product innovation ability. This is partly because, when barriers exist, greater task efficacy enhances motivation and persistence to learn (Chen, Chuang, and Chen 2012; Kim, Song, and Jones 2011), affective trust boosts cooperation and commitment (Li, Poppo, and Zhou 2010), and more organic structures improve communication (i.e., Olson, Walker, and Ruekert 1995).

Social cognitive theory explains psychosocial functioning regarding triadic reciprocal causation (Bandura

1991), in which cognitive, behavioral, and environmental factors all operate as interactive determinants. On this basis, we examine the three-way interactions involving subsidiary tacit-knowledge level and the social cognitive capability components. In accordance with SCT, the results indicate that combining social cognitive capabilities exerts synergetic influences to excavate the effect of tacit knowledge further. For example, as Table 3 shows, task efficacy and organic structure moderate the effect of subsidiary tacit-knowledge level on MNCs' product innovation ability ($b = -.241$, $p < .05$). Simple slope analysis reveals that when task efficacy and organic structure are both high, MNCs with a high subsidiary tacit-knowledge level have slightly better product innovation ability than MNCs with a low subsidiary tacit-knowledge level; moreover, when task efficacy and organic structure are both low, MNCs with a high subsidiary tacit-knowledge level fare much worse than MNCs with a low subsidiary tacit-knowledge level ($T_{\text{slope differences}} = 4.827$, $p < .000$). We also found similar slope differences between task efficacy and affective trust as well as between affective trust and organic structure.

These results suggest that MNCs' product innovation ability is more effectively fostered through the synergy between the social cognitive capability components than through each component individually. Thus, these components work interdependently in a unitary capability to enhance MNCs' product innovation ability. These results support our hypotheses and further demonstrate the synergetic effects of combining two or more social cognitive capabilities in further excavating the effect of subsidiary tacit-knowledge level.

This research therefore makes three contributions to the literature. First, we develop a theoretical framework to capture the relationship between subsidiary tacit-knowledge level and MNCs' product innovation ability. Second, we include a formal conceptualization of social cognitive capability and investigate the interplay between subsidiary tacit-knowledge level and social cognitive capability in fostering the MNCs' product innovation ability. We also capture the synergetic influence of different components of social cognitive capability on converting subsidiary tacit knowledge into an MNC's product innovation ability. Finally, although ample research has applied SCT at the interpersonal level, scant research has examined the validity of SCT as a unitary construct. Our results show strong intercorrelations, as well as significant synergistic effects, among the three SCT dimensions. This suggests that in the MNC setting, it is most beneficial to use all three SCT dimensions. It also demonstrates the potency of SCT in the gestalt, as opposed to the individual level. In so doing, we assist further research in conceptualizing and incorporating SCT as a theoretical framework. We also help advance the international marketing literature by prompting further research to develop research questions for SCT as a global construct.

Managerial Implications

Our research offers implications to managers overseeing international knowledge sharing between MNC subsidiaries and headquarters. A focal purpose of MNCs establishing host-country subsidiaries is to gain tacit knowledge continuously from the local market; this tacit knowledge has been found to be important to MNCs (Hilmersson and Jansson 2012; Pedersen and Petersen 2004). However, as we show, increasing subsidiaries' tacit-knowledge level may not positively influence MNCs' product innovation ability.

As our research indicates, managers can mitigate the negative relationship between subsidiary tacit-knowledge level and MNCs' product innovation ability by avoiding the pitfall of relying excessively on technology processes in lieu of interpersonal processes (Roth et al. 2009). Rather, consistent with previous research (Peters 1995, p. 6), our research highlights the importance of "getting the psychology and sociology of sharing right." Specifically, we demonstrate that MNCs' social cognitive capability enhances tacit-knowledge sharing between MNC subsidiaries and headquarters, thereby supporting product innovation ability. To facilitate subsidiary–headquarter knowledge sharing, MNCs must develop and maintain affective trust, task efficacy, and a more organic environment.

To foster MNC product innovation ability, MNC managers should nurture affective trust between headquarters and subsidiaries to aid the sharing, synthesizing, and applying of subsidiary tacit knowledge. Moreover, MNC managers should assess and then influence the work environment, with the understanding that a more organic structure can increase MNC product innovation ability by aiding the sharing, synthesizing, and applying of subsidiary tacit knowledge. Moreover, MNC managers should aim to develop task efficacy at the subsidiary by providing positive reinforcement. For example, positive feedback from headquarters personnel to subsidiary personnel regarding product innovation challenges can help overcome such challenges through the use of subsidiary shared tacit knowledge.

Our research suggests that it is beneficial for MNC managers to treat SCT as a unitary construct, enabling

all three SCT dimensions to merge together in the organization. Thus, managers should strive to structure MNCs so that headquarters and subsidiary employees feel that they are working together toward a shared vision with common goals. When cognitive, behavioral, and environmental factors supplement one another to enhance knowledge transfer, MNC headquarters may be better able to synthesize and apply subsidiary tacit knowledge for innovative purposes. If so, greater social cognitive capability is likely to motivate MNC headquarters to engage in more and/or higher-quality interactions with its subsidiaries, facilitating tacit-knowledge transfer. Similarly, subsidiaries may be increasingly motivated to share tacit knowledge in a manner that overcomes the constraints imposed by proximity and differing institutional logics. In addition, subsidiaries and headquarters should be encouraged to overcome adversarial relationships and the "not-invented-here" syndrome, in support of the MNCs' overall product innovation efforts.

Limitations and Future Research Directions

Several limitations to the present study warrant discussion. First, the data were collected in a single country—Taiwan. Focusing our data collection on a single country offers advantages in minimizing potential confounds. However, doing so also raises concerns regarding the generalizability of our findings. Would the observed relationships be found if analogous research were conducted in the context of another country? Are there unique environmental or cultural aspects of Taiwan that led to the observed relationships? To assess the generalizability of our findings, further research should reexamine the proposed relationships in other contexts.

A second limitation of the present research is our reliance on firm-supplied self-report data, which is prone to CMB. Although the results of both Harman's single-factor test and the partial correlation procedure suggest that CMB is not a substantive concern, we encourage further research to examine the proposed relationships using objective innovation data in conjunction with survey data from customers. In addition to overcoming the limitations of self-report data, such an approach may allow MNCs' headquarters to better identify when and why closer coordination with subsidiaries is necessary and how to manage the coordination process to optimize innovation.

Although the VIFs suggest that multicollinearity is not a substantive concern, high correlations among variables do increase variation, making it more difficult to detect significant effects (Hair et al. 2010). Drawing conclusions as to whether increased variation is responsible for the marginally significant direct tacit task-efficacy effect ($b = .152$, $p < .10$), marginally significant two-way interaction ($b = .252$, $p < .10$) of tacit knowledge and task efficacy, or the insignificant three-way interaction ($b = -.125$, $p > .10$) between tacit knowledge, affective trust, and organic structure is speculative. Thus, we encourage further research to reexamine these relationships.

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