

SOCIAL NETWORKS AND OPPORTUNITY RECOGNITION: A CULTURAL COMPARISON BETWEEN TAIWAN AND THE UNITED STATES

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This paper investigates the moderating effect of national cultural contexts on the relationship between social networks and opportunity recognition. Data obtained from Taiwan and the United States support the proposition that cultural contexts, specifically the individualism-collectivism dimension, moderate the relationship between tie strength, structural holes, and opportunity recognition. Results indicate that in the United States, tie strength is negatively associated with opportunity identification and structural holes are positively associated with opportunity identification; whereas in Taiwan we find the opposite. The results also show that the interaction effect between bridging ties and tie strength on opportunity recognition varies depending on the cultural context. Copyright © 2011 John Wiley & Sons, Ltd.

INTRODUCTION

A primary aspiration of strategic management scholars has been to identify factors that lead to competitive advantage (Hitt, Ireland, and Hoskisson, 2001). As a vital source of competitive advantage, opportunity—in particular the identification and exploitation of promising business opportunities—has become a key construct in the field of strategic management (Alvarez and Busenitz, 2001; Zahra and Dess, 2001). After all, effective strategic management is aimed at facilitating the identification of competitive opportunities not yet recognized or exploited (Ireland *et al.*, 2001). In this study, we follow Baron (2006) in viewing opportunity identification as a cognitive process through which individuals strive to connect

the dots between changes, events, and trends so as to come up with new product or service ideas.

Most of the research on opportunity identification agrees on the key role of information (e.g., Kirzner, 1997; Ozgen and Baron, 2007; Shane, 2000). In particular, drawing on Austrian economics, Shane (2000) asserts that opportunity identification is a function of the distribution of information in society. Similarly, Fiet (1996) proposes an information-based model of entrepreneurial discovery suggesting that the acquisition of relevant and specific information is the antecedent of opportunity discovery. Those ideas resonate with Kirzner's (1997) argument that opportunities are not obvious to all individuals, which suggests a critical role for information in opportunity discovery.

Because information is distributed according to the unique life circumstances of each person (Venkataraman, 1997), social networks determine what information individuals have access to. In fact, as the most significant source of information (Johannisson, 1990), social networks have

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been used consistently by individuals to acquire information and recognize entrepreneurial opportunities (Birley, 1985; Singh *et al.*, 1999a). While social networks may also function as a media through which actors gain access to a variety of tangible and intangible resources held by other actors such as capital (Bates, 1997), emotional support (Brüderl and Preisendörfer, 1998), reputation (Higgins and Gulati, 2003), and identity (Podolny and Baron, 1997), we are interested in the key benefit of networks, which is the access they provide to information, tacit or explicit, due to its relevance to opportunity identification. Individuals may use social networks to tap into information such as important changes and trends in technology, markets, government policies, or supplier relationships, to name a few (Ozgen and Baron, 2007). For instance, social networks such as those afforded by conferences may allow one to gather, through conversations with others, important information on technological solutions in one industry and use it to solve issues in other industries where the solutions are rare or unknown. Prior literature suggests that the ability to discover opportunities is also influenced by individual attributes such as personality (Sarasvathy, Simon, and Lave, 1998) and heuristics (Busenitz and Barney, 1997), which may lead to different interpretations of the same bit of information. The present study focuses on the effect of information conveyed through social networks.

Two important network structure characteristics have been studied extensively in the examination of the effect of social networks on opportunity identification. First, network structure has been characterized in terms of tie strength (Granovetter, 1973): strong ties imply frequent interaction and the rendering of reciprocal favors, whereas weak ties indicate infrequent interaction lacking affective content. While strong ties tend to transfer redundant information, weak ties are typically used to diffuse novel information (Nelson, 1989). Because novel information is a crucial ingredient in the ability to recognize an opportunity, weak ties have a demonstrable advantage over strong ties (de Koning and Muzyka, 1999). For instance, Singh *et al.* (1999b) found that individuals possessing more weak ties tend to identify more new venture opportunities. Second, network research shows that bridging ties, social ties spanning between disconnected networks, facilitate opportunity identification by providing nonredundant information restricted within each network (Arenius and De

Clercq, 2005). However, these studies were all conducted in the United States, and given international variations found for other organizational phenomena (e.g., Ronen, 1986), it is not at all clear that those findings would hold across national contexts.

In this study, we seek to explore the potential role played by culture, a crucial layer of environmental context, in opportunity recognition. We focus on individualism/collectivism (IC) as a key cultural variable that is especially pertinent to individual use of social networks. In particular, we conjecture that while certain structural characteristics of social networks (e.g., the prevalence of weak ties and bridging ties) benefit opportunity identification in individualist cultures, the same characteristics may not be rewarded in collectivist cultures.

The present study contributes to organization and strategic management research in several respects. First, it highlights the importance of the contingent value of social networks based on cultural contexts. Gulati and Higgins (2003) argue that the value of ties may change by context and it is essential to understand what circumstances can alter the effects of social networks on firm outcomes. For example, Li, Poppo, and Zhou (2008) conclude that although social networks are found to be positively associated with firm performance, the specific institutional and cultural context, such as that of China, may moderate the effect of managerial tie utilization on firm performance so that network ties can be detrimental to performance. Therefore, knowledge on the contingent value of social networks may enhance network research by identifying the contexts within which the effects of social networks vary. While a bulk of research has suggested that weak ties are beneficial to the identification of opportunity, our study challenges the conventional wisdom by examining the conditions under which strong ties are of more importance to such identification. Second, we address the influence of cultural context on the potential interactive effect between different types of network ties. Tiwana (2008) suggests that knowledge on the complementarities between different forms of social capital and types of social network ties can significantly augment our understanding of social networks. Yet, this stream of research remains underdeveloped. We shed light on this issue by empirically showing that bridging ties and tie strength interact with each other

in determining opportunity recognition. In addition, we enrich understanding of the interactive relationship by extending the examination beyond the boundaries of the United States. This extension has important implications because previous cross-cultural studies have shown that cultural variations can alter the relationships in which we are interested (e.g., Li *et al.*, 2008; Xiao and Tsui, 2007).

THEORY AND HYPOTHESES

Culture became a vital topic in the field of management when scholars began to realize that what was considered universal may be true only to the Western world (Triandis, 2004). In the most simplistic of terms, culture is viewed as a shared set of values and beliefs. Hofstede (1980: 19) defined culture as ‘... the interactive aggregate of common characteristics that influence a human-group’s response to its environment.’ It is reflected in ‘general tendencies of persistent preference for particular states of affairs over others, persistent preferences for specific social processes over others, and general rules for selective attention, interpretation of environmental cues, and responses’ (Tse *et al.*, 1988: 82). Culture is widely treated as a multidimensional construct (e.g., Hofstede, 1991; 2001; House *et al.*, 2004; Schwartz, 1994). Among the different dimensions of culture, Hofstede (1980; 2001) identified IC as a key one. In a subsequent analysis of replications of Hofstede’s work, Sondergraad (1994) found only a single study that did not confirm the original findings on this dimension, better than for any of the other three dimensions. Variations on IC can also be found in virtually all other classifications of culture, for example, ‘institutional collectivism’ (House *et al.*, 2004: 12 [The GLOBE Study]) and ‘autonomy/conservatism’ (Schwartz, 1994: 105). Smith, Dugan, and Trompenaars (1996) asserted that the IC dimension has been shown to be the most important to date in cross-cultural psychology, a view confirmed by Aguinis and Henle (2003).

The IC dimension has to do with the perception of the self and its positioning vis-à-vis other members of society and other social groupings. Collectivist cultures do not separate the individual from his/her respective groups. The perception of the self is blurred, intertwined, and interdependent with that of other ingroup members. Individualist

cultures, in contrast, cherish the individual and his/her aspirations. They celebrate his/her uniqueness, free will, and nondeterminism and legitimize his/her search for recognition and advancement.

A key difference between the two cultures is how individuals define and understand their relationship with others. Triandis (1972) suggests that how individuals understand who is in the ingroups may vary across individualist and collectivist cultures. In collectivist cultures, the ingroup is defined as ‘family and friends and other people concerned with my welfare’ (Triandis *et al.*, 1988a: 326). Therefore, based on strong connections, individuals are more likely to be treated and perceived as ingroup members and more strongly identified with the ingroup. Individuals anticipate ingroup members to project a higher degree of trust and are under moral and social pressures to act in the interest of the group (Triandis, 1989). Since the interests of the ingroup generally reign supreme, individuals are expected, at least under normal circumstances, to subsume their own interests to that of the group (Triandis, 1995). Outgroup members, on the other hand, are often viewed and treated negatively and/or with moral indifference or even moral exclusion (Chen, Peng, and Saporito, 2002) because outgroup members are not regarded as individuals to whom the moral values and other obligations apply (Opatow, 1990). Group members may behave opportunistically toward outgroup individuals (Chen *et al.*, 2002) and negatively stereotype them (Redding, 1993).

In individualist cultures, the ingroup is defined as ‘people who are like me in social class, race, beliefs, attitudes, and values’ (Triandis *et al.*, 1988a: 326). Given autonomous and independent self-perception, individuals in individualist cultures are less concerned with their group membership. While individualist societies may also differentiate between ingroup and outgroup members, the difference and its impact are mitigated by strong emphasis on the self and respect for self-interests (Chen *et al.*, 2002). Individualist societies have institutions devised to limit the permeation of particularistic behavior and tend to negatively label the mixing of particularistic and universal behaviors as ‘nepotism.’ Therefore, in individualist cultures there tend to be more ingroups from which individuals have greater emotional detachment. In addition, participation in any ingroup is subject to the ongoing capability of the ingroup to provide social benefits without making excessive

demands (Triandis *et al.*, 1988a; Watkins and Liu, 1996).

IC contributes to the understanding of social networks. In particular, the difference in the treatment of ingroup versus outgroup members between individualist and collectivist cultures should be directly relevant to the usefulness of strong and weak ties. While strong ties are more likely to be treated as ingroup members based on frequent interactions, trust, and reciprocal relationships, weak ties are more likely to be treated as outgroup members because of infrequent interactions and lack of affective elements. Given that the United States, a demonstrably individualist nation, has dominated social network scholarship, it is relevant to ask whether concepts and findings obtained in the United States will generalize to cultures that are more collectivist.

While there are also individual differences within cultures based on the observations of individuals who are more collectivist or individualist in attitudes and behaviors in both collectivist and individualist cultures (Oyserman, Coon, and Kimmelmeier, 2002; Triandis, 2004; Triandis, Brislin, and Hui, 1988b), we focus on the overall cultural contexts and examine the cultural boundaries of social networks. That is, we are interested in how the environment is likely to impact the benefits derived from social networks differentially in the process of opportunity identification.

Tie strength and opportunity identification across cultures

Previous literature suggests that IC has important implications for trust. Among the various dimensions of trust that have been discussed, for example, affect- and cognition-based trust (McAllister, 1995), we focus on the dimension of generalized social trust due to its relevance to group membership. Generalized trust, also referred to as 'moral trust' (Uslaner, 2002), is concerned with trust toward others with whom one does not have a close relationship. While it would appear that there should be a higher level of trust in collectivist cultures because of the emphasis on relationships and the close relationship between ingroup members (Chen, Chen, and Meindl, 1998), a closer look reveals that collectivism may actually inhibit trust, particularly generalized trust.

In collectivist cultures, the quality of social interactions between individuals is heavily

dependent on whether they belong to the same ingroup (Watkins and Liu, 1996). Although cooperation within ingroups is higher in collectivist cultures, it is lower with outgroup members as compared with individualist cultures (Sinha, 1982; Triandis *et al.*, 1988a). In fact, a lower level of generalized trust tends to prevail in collectivist cultures (Fukuyama, 1995; Huff and Kelley, 2005). Empirical studies provided evidence for these assertions. For instance, Leung (1988) found that compared to Americans, Hong Kong Chinese tended to have more conflicts with outgroup members. Espinoza and Garza (1985) discovered that in collectivist cultures, individuals are more likely to compete with, manipulate, and exploit outgroup members than in individualist cultures. On the other hand, cultures in which people believe that most people can be trusted, that is, cultures high in generalized trust, tend to be more individualistic (Allik and Realo, 2004; Huff and Kelley, 2005; Kwon and Arenius, 2008).

Trust has a significant influence on information sharing (Currall and Judge, 1995). Based on the difference in generalized trust, knowledge sharing with ingroup and outgroup members may differ in individualist and collectivist cultures. In individualist cultures, generalized trust allows weak ties to be leveraged as a conduit for information transfer from unrelated individuals. Since people are less concerned with group membership, they are more likely to trust strangers and outsiders (Triandis, 1991) and are thus in a better position to tap information from weak ties without the constraints typically associated with outgroup discrimination, such as negative stereotypes and suspicion of intention.

In collectivist societies, lack of generalized trust undermines the advantage of weak ties in transferring information because people are more likely to behave opportunistically toward outgroup members (Chen *et al.*, 2002), which involves 'the incomplete or distorted disclosure of information' and especially 'calculated efforts to mislead, distort, disguise, obfuscate, or otherwise confuse' (Williamson, 1985: 47). Therefore, even when privy to outside information, people may mistrust the information obtained from a weak tie because information credibility, the belief that the information is not distorted (Thayer, 1968), is an important antecedent of subsequent use of information (O'Reilly, 1982). Given that information credibility is a function of the relationship between the source and the receiver and the frequency of

past interactions between the two (Moenaert and Souder, 1996), information obtained from weak ties tends to be associated with low credibility. Distrust and bias toward outgroup members in collectivist cultures further decrease the credibility associated with information from weak ties and undermines their information benefits.

In collectivist cultures, distorted information from unreliable weak tie sources may instead hinder individuals from identifying opportunities. Effective decisions are based on complete and accurate information about the likely connections between choices. Interpretation based on inadequate or incorrect information reduces decision-making effectiveness (Dean and Sharfman, 1996). Irrelevant signals also decrease individual alertness to opportunities by making it harder to identify important hints (Manis, Fichman, and Platt, 1978). This is because incomplete or inaccurate information may mislead individuals to develop problematic interpretations about relationships between choices and divert them from detecting promising prospects. Given these problems in the dissemination and subsequent use of information from weak ties, weak ties may not be as useful in collectivist cultures as in individualist cultures.

With the information benefits of weak ties undermined in collectivist cultures, strong ties demonstrate important advantages in information transmission because information tends to flow through these inner networks. In collectivist societies, social capital may be a prerequisite for, rather than merely a facilitator of, the acquisition of important information (Björkman and Kock, 1995). People who are not included in the ingroup can be seriously disadvantaged in obtaining access to critical information. Bian (1997) studied how people search for jobs in China, a highly collectivist culture, and found that strong ties offered individuals more information relevant for their job search and, thus, greater job opportunities. In particular, he suggests that individual agents who control job related information are not willing to share the information with others they do not know or trust. In other words, it is hard to obtain useful information in collectivist cultures without strong tie contacts. Wank (1996) advanced a similar argument in his observation that Chinese entrepreneurs rely heavily on strong ties to acquire market information.

In contrast, the advantage of strong ties may not be fully manifested in individualist cultures due to

the existence of higher levels of trust that can be generalized beyond ingroup members to outgroup members. The ingroup does not have to represent strong ties in individualist cultures because the ingroup is defined as people who share characteristics such as social class, race, beliefs, attitudes, and values (Triandis, 1972). Free flow of information across socially disparate social networks facilitated by generalized trust allows weak ties to fully realize the information benefits, which is confirmed by Ozgen and Baron's (2007) findings that family members and close friends do not constitute key social sources of opportunity-related information in the United States (individualist).

Hypothesis 1: Individualism/collectivism moderates the relationship between tie strength and opportunity recognition so that tie strength will be negatively related to opportunity recognition in individualist cultures and positively related to opportunity recognition in collectivist cultures.

Bridging ties and opportunity identification across cultures

Scholars in the field of social networks suggest that structural holes, or, the missing ties between disconnected actors, present in an individual's network can influence his/her ability to acquire information (Burt, 1992). Because a structural hole bridges social groups that are otherwise disconnected, it provides network benefits that are additive rather than overlapping, such as nonredundant information (Burt, 1992). Therefore, individuals need to develop bridging ties that allow them to fill the 'structural holes' and obtain important information.

Although novel information can be obtained from both weak ties and structural holes, the two concepts are not necessarily the same (Burt, 1992; McEvily and Zaheer, 1999). As Figure 1 illustrates, Actor A can be involved in various networks. Because Actor A's contacts in network I do not know A's contacts in network II, A is bridging these two networks through the weak relationship with B. At the same time, A is also bridging network I and network III by the strong relationship with C. While both AB and AC links are bridging ties, the former is a weak relationship and the latter is a strong relationship. On the other hand, the weak tie between Actors B and D is not a bridging tie because it does not span a structural hole.

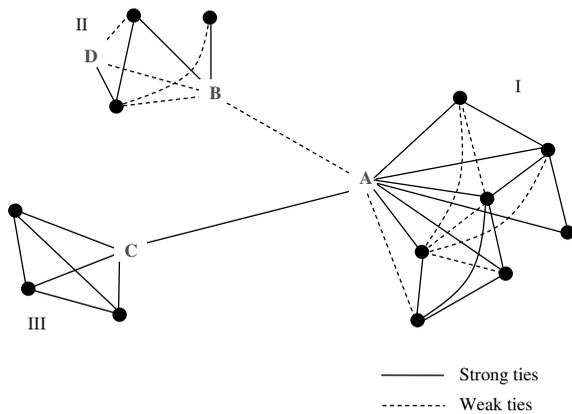


Figure 1. Illustration of tie strength and bridging ties

Therefore, bridging ties can be strong or weak (McEvily and Zaheer, 1999; Tiwana, 2008) and weak ties can exist between redundant contacts (Burt, 1992).

Evidence suggests that an ample presence of bridging ties allows managers to discover a wider array of business opportunities (Burt, 2003). Arenius and De Clercq (2005) find that bridging ties have a positive effect on opportunity recognition: when located between two disconnected networks, individuals can obtain information that resides exclusively within each network. For instance, connecting across two industry-specific networks may put an individual in an optimal position to leverage the knowledge and experience accumulated in one in the arena of the other, where it has not as yet been utilized.

The contingent value of bridging ties has been recognized by scholars (e.g., Ahuja, 2000; Vissa and Chacar, 2009; Xiao and Tsui, 2007). Burt, Hogarth, and Michaud (2000) point out that taking advantage of structural holes by brokering is individualistic. An individual who is able to locate himself/herself in structural holes can negotiate for advantages by playing against the two parties and build value from their disunion (Burt, 2000), which prioritizes individual goals and task achievement above collective's goals and personal relationships and may not be appreciated in a collectivist environment. For example, Xiao and Tsui (2007) found bridging ties to negatively influence individual career performance in China, a highly collectivist culture. This is because in collectivist cultures, staying at the boundary of two groups is one of the most socially disparaged behaviors and is subject to heavy social sanctions. It may

marginalize the individual from both groups (Xiao and Tsui, 2007) and severely dampen the information benefits of bridging ties on opportunity identification.

Hypothesis 2: Individualism/collectivism moderates the relationship between bridging ties and opportunity recognition so that bridging ties will be negatively related to opportunity recognition in collectivist cultures and positively related to opportunity recognition in individualist cultures.

Tie strength, bridging ties, and the effect of IC

Recent studies suggest that tie strength and bridging ties may exert joint effects on organizational outcome variables in addition to their main effects. For example, Tiwana (2008) found that strong ties and bridging ties complement each other in influencing knowledge acquisition. In fact, Burt (1992) also suggests that strong bridging ties tend to bring the most benefits of social networks. On the one hand, bridging ties are able to connect individuals to other networks and expand the pool of available information as well as the flow of potentially relevant information. On the other hand, a major advantage of strong ties is the capability to promote the communication of information (Hansen, 1999). Therefore, strong ties can provide critical mechanisms that facilitate the integration of the diverse collection of information made available by bridging ties. That is, the information benefits of bridging ties may be strengthened by strong ties that allow individuals to process, integrate, and utilize the information in a more effective manner. At the same time, the strength of strong ties can be amplified by bridging ties that bring a diverse array of knowledge, information, and perspectives, which may be more demanding in terms of individual ability to understand and integrate information. Weak ties, however, are limited in terms of fostering synergistic effects with bridging ties because the information benefits of weak ties are consistent with those emanating from bridging ties. That is, although there may exist a potential positive interplay between weak ties and bridging ties, the complementarity between weak ties and bridging ties may be limited.

The above arguments are based on prior studies mostly conducted in the United States. The joint effects of tie strength and bridging ties may be different in collectivist cultures. In collectivist

cultures, harmony and interdependence are promoted and conformity pressures are paramount (Bond and Smith, 1996). One tends to find a more coherent set of beliefs, a high degree of shared values, a common language, and a strongly agreed upon kind of appropriate behavior. This situation leaves limited room to absorb outside sources of knowledge in ways that contradict shared beliefs. Highly collectivist cultures resist deviance, slow down attempts at change, and tend to foster inbreeding. The preference for strong relations in terms of distributing information further aggravates the problem because confining oneself to operations within the same narrow circle will increase such conformity over time, limiting the ability to generate unique ideas (Goncalo and Staw, 2006).

Bridging ties serve as an important complementary mechanism that compensates for narrowness and conformity pressures by exposing individuals to divergent ideas and viewpoints. Synthesizing these disparate ideas and views increases the variety and richness of available information, which can be a catalyst for creative ideas (Hansen, 1999; Tiwana, 2008) and can expand the opportunity set available to individuals. In addition to the functionality-based complementarity between strong ties and bridging ties, the benefits of bridging ties are likely to be realized with strong ties in collectivist cultures due to social considerations. As noted earlier, bridging ties are negatively viewed in collectivist cultures because of the possibility that an individual bridging two disconnected contacts will play against the two parties and build value from their disunion (Burt, 2000), which is based on individual self-interest rather than group interest. Strong connections can alleviate this negative judgment because individuals are less concerned about potential brokering behavior by a strong contact they trust. Therefore, strong bridging ties allow people to gain access to two (or more) disconnected networks, each endowed with important information and social capital (Walker, Kogut, and Shan, 1997).

In contrast, the positive complementary effect of bridging ties may not extend to relations that are weak. Individuals spanning structural holes are more likely to be labeled or viewed negatively by both networks they bridge when their bridging ties are weak. Lacking sufficient trust, individuals perceive a much higher probability of potential brokering behavior by a weak tie contact

that is also connected with another network. The outgroup treatment from both networks may further limit individuals' ability to obtain credible information and identify relevant opportunities. In other words, bridging ties and weak ties reinforce each other's negative effect on opportunity identification in collectivist cultures.

Hypothesis 3: Individualism/collectivism moderates the interactive effect between tie strength and bridging ties on opportunity identification in such a way that a) in individualist cultures, bridging ties weaken the inverse relationship between tie strength and opportunity identification so that tie strength is less negatively related to opportunity identification; and b) in collectivist cultures, bridging ties strengthen the positive relationship between tie strength and opportunity identification so that tie strength is more positively related to opportunity identification.

METHODS

Sample and procedures

The concept of IC can be useful for comparing both cultures and individual orientations (e.g., Hofstede, 1980; Triandis *et al.*, 1988a). In this study, we focus on the aspect of IC as a cultural context. In particular, we compare the cultural contexts of Taiwan and the United States and focus on how individual usage of networks is influenced by cultural values.

National culture and the unit of analysis

There has been a long running debate on whether country should be used to proxy culture (e.g., Fiske, 2002; Oyserman *et al.*, 2002; Steenkamp, 2001). For example, Oyserman *et al.* (2002) challenged the use of Hofstede's country-level ratings as proxies for IC. Other scholars suggest that culture can be validly conceptualized at the national level if there exists some meaningful degree of within-country commonality and between-country differences in culture (e.g., Steenkamp, 2001). Prior evidence suggests that this is the case. We follow Punnett and Ronen (1984), Ronen (1986) and Leung *et al.* (2005), among many others, in justifying this use on the following grounds.

Hofstede (1991: 12) suggests that nations 'are the source of a considerable amount of common

mental programming of their citizens' due to a relatively similar history, language, religion, political, legal and educational environment, among others. Historically speaking, nations are political expressions of cultural similarities (Ronen, 1986) and the two variables have been defined by similar variables, for example, language and religion. In fact, the very existence of the state and its institutions creates homogenization of culture (e.g., Javidan *et al.*, 2006; Peterson and Smith, 2008). While this does not imply that countries are completely homogeneous, there are forces leading to a meaningful degree of within-country commonality (Steenkamp, 2001). As a function of the above, it is not only possible but also advisable to use 'national culture' as a primary construct (Leung *et al.*, 2005).

Prior literature has identified systematic variation between countries on the national-culture level (e.g., Hofstede, 1980; 1991; Schwartz, 1994; Smith *et al.*, 1996). For example, Smith and Schwartz (1997) conducted cross-cultural studies by sampling three regions in China, three in Japan, and five in the United States and found that cultural differences among the samples within each country were overshadowed by the much larger differences between countries. In practice, multinational firms compete and organize a meaningful portion of their activities on a national basis, with inter-country variations in such realms as regulation and taxation having a major impact on their strategy and operations.

Cultural comparison between the United States and Taiwan

The two cultures compared in this study represent different values on the IC dimension: Taiwan represents a collectivist society and the United States represents an individualist society. Regarding the selection of countries to proxy culture, scholars recommend using countries being as far apart as possible on some theoretical aspects while sharing similarities across other dimensions to improve reliability and enhance generalizability. This follows on the methodological principle of 'partial similarity' advanced by Przeworski and Teune (1970), applied in a multinational context by Farmer and Richman (1964), and affirmed in later research (e.g., Soares, Farhangmehr, and Shoham, 2007; van de Vijver and Leung, 1997). For example, to examine the effect of economic ideology,

Sin *et al.* (2005) compared Taiwan and China so that they were able to control cultural effects on the relationships of interest. Ralston *et al.* (1997) selected Japan and the United States to examine the effect of cultural factors so as to control for economic factors.

Regarding cultural values, Taiwan and the United States are far apart on the IC dimension, which is the focus of the current study, and close on other cultural dimensions, which creates an ideal comparative setup as argued above. In general, it is confirmed by prior studies that Chinese societies tend to exhibit high levels of collectivism compared with Western countries, which leads to a great number of studies sampling Chinese societies to examine the effect of IC (e.g., Leung, 1988; Oyserman *et al.*, 2002; Ralston *et al.*, 1997; Xiao and Tsui, 2007). Cheung and Chow (1999) find that Taiwan, the People's Republic of China (PRC), and Hong Kong are not significantly different from each other on the IC dimension and the three cultural settings exhibit clear characteristics of collectivist cultures (see also Ronen and Shenkar, 1985). Most of the literature, including Ralston *et al.* (1997) and Xiao and Tsui (2007), confirms that the Chinese are less individualistic and more collectivistic than Americans, suggesting that differentiating the two groups on I/C is robust. Oyserman *et al.* (2002) also find that the Chinese are the only group that contrasts with Americans on that dimension, which suggests that comparing the Chinese versus Americans makes for the best comparison group for our purposes.

In terms of other salient dimensions of national culture, we compared Taiwan with other societies that have been used as a proxy for collectivist culture. In particular, we followed Sivakumar and Nakata (2001), who developed algorithms that calculated indices that reflected the power of different sample choices for hypotheses testing. They suggest that one way to identify optimal country pairs is to maximize the difference on the focal variable while minimizing the differences on the non-focal variables, which echoes the recommendations discussed earlier in terms of selecting country proxies of national cultures. We calculated the indices developed by Sivakumar and Nakata (2001) for cultures that have been widely used as collectivist contexts and found that the Taiwan-United States pair makes the best case in terms of maximizing the difference on the IC dimension while minimizing the differences on other cultural

dimensions, that is, power distance, uncertainty avoidance, masculinity/femininity, and long-term/short-term orientation (see Appendix A).

In terms of national differences that are not culture related, such as ideology, politics, and economy, Taiwan is a better choice than the PRC as a point of comparison with the United States since it is much more similar to the United States on those aspects. Cheung and Chow (1999) compared managerial values in the PRC, Hong Kong, and Taiwan and suggest that although the three settings share a common Chinese cultural heritage that is heavily influenced by the Confucian tradition (Hsu, 1987; see also Shenkar and Ronen, 1987; Hofstede and Bond, 1988), there are differences among them due to political and economic factors. In contrast to the communist ideology and hybrid planned economy in the PRC, Hong Kong and Taiwan are influenced by their colonial experiences, including imported institutions (Crane, 1993), and are characterized by free market capitalism, more advanced type of industrialization, and at least some democratic institutions shared with the Western world. In addition, in both Taiwan and the United States the service economy has become dominant whereas in the PRC the agricultural and industrial sectors represent the bulk of economic activity (a major proxy for the level of development). Prior cross-cultural studies in management, marketing, and psychology have also provided sufficient evidence (ranging from ethics to social relationships) to support this choice, making the two societies ideal for use in a comparative study of the IC dimension (e.g., Lee, Pratto, and Li, 2007; Liu, Friedman, and Chi, 2005; Sims, 2009).

Survey data from managers in Taiwan and the United States were collected to test the hypotheses. We chose to sample subsidiaries of multinational firms, targeting U.S. employees of Taiwanese firms in the United States and Taiwanese employees of U.S. and other foreign firms in Taiwan. Using a systematic random sampling design, we sampled 500 Taiwanese firms in the United States from the *Company File of Foreign Direct Investment* provided by the Ministry of Economy of Taiwan. In Taiwan, we have used the same design to select 500 firms from the listing of *Foreign Enterprises in Taiwan* published by Dun and Bradstreet International.

Compared with the choice of sampling U.S. firms in the United States and Taiwanese firms in Taiwan, our sampling allows us to establish more

stringent requirements in terms of the impact of cultural contexts because local employees of those subsidiaries are under pressure from the home country of the multinational (Hofstede, 1980). To test for possible confounding of home country impact, the Taiwan sample included employees of foreign subsidiaries owned by firms from both individualist and collectivist societies, namely the United States, the United Kingdom, France, Germany, the Netherlands, Hong Kong, Singapore, and Malaysia. ANOVA analyses showed no significant differences between more collectivistic and more individualistic home countries and across the eight groups on the key variables: bridging ties, tie strength, opportunity identification, and entrepreneurial orientation, with significance levels ranging from 0.17 to 0.88. We also conducted regression analysis with sampled firms in Taiwan owned by firms from more individualist societies, namely the United States, the United Kingdom, France, Germany, the Netherlands and sampled firms in the United States owned by firms from Taiwan. The results were consistent with those reported here.

Respondents were key informants, that is, organizational members who are knowledgeable of firm operations and are willing and able to report on the problem being investigated (Campbell, 1955). Previous literature suggests that marketing and research and development (R&D) employees are more likely to identify opportunities as they have access to useful information and possess related knowledge (Agarwal *et al.*, 2004). Thus, key informants (1) were in charge of sales, marketing, or R&D/engineering departments, (2) had five years or longer of work experience, and (3) were willing to participate (Heide and Weiss, 1995). Depending on the size of each individual firm, one to five managers were surveyed from each firm.

Pretest

To ensure informant quality and response validity, we first identified eligible individuals by employing trained interviewers to conduct face-to-face and telephone interviews. Presurvey interviews yielded 716 and 854 potential respondents in the United States and Taiwan, respectively. A preliminary questionnaire was pretested with 20 and 24 managers selected from potential respondents in the United States and Taiwan, respectively. The pretest respondents were not included in the final

sample. The questionnaire was initially constructed in English and then translated into Chinese. After the pretest, only minor adjustments were needed in the English version (not all variables were used in the Chinese version). We used back translation by two independent translators to ensure measure and meaning equivalence (Brislin, 1980). In addition, we spent at least one hour with non-U.S. respondents discussing each item to ascertain that they understood the constructs and interpreted the questions accurately. Based upon their feedback, we reworded some questions to provide greater clarity and enhance comprehensibility.

Response rate

The final questionnaires were delivered to the 1,526 key informants via e-mail or mail. We offered a small gift and a summary of the results as incentives to participate. The original mailing, one follow-up, and two reminders yielded a total of 304 responses (20%). A *post hoc* test on informant quality was conducted by using reverse-scored forms. Information on work experience, departmental affiliation, and job title was considered to eliminate unqualified responses. We discarded 28 questionnaires that failed our *post hoc* tests of informant quality and excluded another 15 because of considerable missing data. Altogether, 261 usable questionnaires were obtained (17% effective response rate) from 93 subsidiaries in the industries of telecommunication, electrical and electronic products, transportation equipment, medical equipment, and machinery. The industry composition of the two samples is listed in Appendix B. The size of the subsidiaries in terms of the number of employees ranges from 0 to 500 (39 subsidiaries), 500 to 1000 (22 subsidiaries), 1,000 to 3,000 (17 subsidiaries), 3,000 to 5,000 (eight subsidiaries), to 5,000 to 10,000 (seven subsidiaries).

Among the 261 respondents, 128 informants were from firms in the United States and 133 were from firms in Taiwan. The sample is composed of 93 R&D managers (35.6%) and 168 marketing and sales managers (64.4%). The U.S. sample includes 47 R&D managers and 81 marketing and sales managers. The Taiwan sample comprises 46 R&D managers and 87 marketing and sales managers. As individuals from different functions may differ in terms of network characteristics (Allen, 1970; Reve and Stern, 1979), we

conducted analysis comparing the functional areas. ANOVA tests revealed no significant difference on opportunity identification (t -value = -1.47 , $p = 0.14$) between R&D and marketing and sales managers.

Assessment of nonresponse bias

We assessed possible nonresponse bias in two ways. First, following McEvily and Zaheer (1999), we compared respondents with 60 randomly selected nonrespondents on certain key attributes (firm size in terms of the number of employees and firm age). T-tests revealed no significant differences between the mean size (t -value = 0.25 , $p = 0.80$) and the mean age (t -value = 0.48 , $p = 0.63$) of respondents and nonrespondents. Second, Armstrong and Overton (1977) argue that late respondents are more representative of nonrespondents. We compared early to late respondents using a t -test procedure suggested by Churchill (1991). This comparison indicated no significant differences between early and late respondents on the relevant constructs. Based on these results, nonresponse bias did not appear to present a problem in testing our framework.

Dependent and independent variables

We used established scales extracted from previous literature to measure the constructs in this study, with modifications made based on pretests. With the exception of the IC dimension, the constructs were measured using multi-item scales.

Bridging ties

Bridging ties have been conceptualized as nonredundancy (Burt, 1992). Among alternative measures of nonredundancy, such as network size, McEvily and Zaheer (1999) suggest that the ego-centered network measure is the most robust. We thus gauged nonredundancy based on an instrument that asked respondents (ego) to identify the five most important sources, internal or external to the firm, from whom they sought business related information and/or advice regarding new product and market opportunities. The use of five alters has been prominent in a number of network papers including Aldrich, Rosen, and Woodward (1987), Podolny and Baron (1997), Nicolaou and Birley, (2003), and Ostgaard and Birley (1994). Marsden

(1987) also found that few individuals (5.5% of the respondents) have six or more alters from whom they get information and advice, which is echoed by subsequent studies (e.g., McEvily and Zaheer, 1999; Staber, 2004). The respondents were also asked to report the extent of presence of ties among these five sources.

A nonredundancy score was computed as follows: $\text{nonredundancy} = (\text{potential ties} - \text{actual ties}) / \text{number of advisors}$, where potential ties are the maximum number of ties that could theoretically exist among advisors (zero to 10); actual ties are the number of ties that exist among advisors (zero to 10); and the number of advisors equals the total number of advisors the respondent listed (zero to five). The maximum number of ties that could theoretically exist among the five advisors is 10 (i.e., $n(n-1)/2$, where n is number of advisors listed). If the respondent states that there is only one tie between two of these advisors in the network, then redundancy would be equal to $(10 - 1)/5 = 1.8$. This measure thus defines nonredundancy as a ratio of nonredundant ties per advisor, the values for which range from zero to two, with low scores indicating low nonredundancy and high scores indicating high nonredundancy. In other words, high nonredundancy, a low percentage of advisors who know each other, indicates a network rich in bridging ties (McEvily and Zaheer, 1999).

Previous literature has discussed the reliability and validity of the ego-centered nonredundancy measure, which may be contingent on the ego's ability to accurately assess inter-alter relations (e.g., Krackhardt, 1995; McEvily and Zaheer, 1999; Nicolaou and Birley, 2003). McEvily and Zaheer (1999) address this issue by surveying the alters identified by a random sample of 21 egos based on their network data. They find that 72 percent of the cases of interalter ties reported by the egos is confirmed by both alters, and 86 percent of the cases is confirmed at least by one alter. In addition, Marsden (1990) finds that although ego-centered network data are perceived network rather than the actual network (Krackhardt, 1987), rates of reciprocation are sufficiently high to show that the measures reflect more than ego's perceptions. Xiao and Tsui (2007) argue that even if the above mentioned biases exist in the ego-centered network measures, the bias would function the same way across all respondents and should not have impacted the analysis and the

outcome for interpersonal comparisons. Therefore, we believe that prior studies provide ample justification that ensures the validity of the ego-centered measures.

Tie strength

We adopted the three-item scale developed and validated by Levin and Cross (2004) and measured tie strength as the closeness and interaction frequency of a relationship between two parties. Following Hansen (1999) and McEvily and Zaheer (1999), we asked respondents to report the strength of the interpersonal ties with each of the advisors listed. Using this information, an overall tie strength score for each respondent was computed as the average of the values of tie strength with each of the advisors listed. This measure of tie strength is able to reflect the overall status of an individual's social network in terms of tie strength.

Individualism-collectivism (IC)

We made a composite IC score based on the original scores for Taiwan and the United States from the GLOBE scale (House *et al.*, 2004).

Opportunity recognition

This dependent variable was measured by a three-item scale adapted from Ozgen and Baron (2007) and Singh *et al.* (1999b), gauging both the ability to recognize opportunities and the alertness to opportunities when they appear to exist.

Control variables

We controlled for a number of variables based on prior literature. Because organizational characteristics may trigger individual entrepreneurial motivation (Kuratko, Montagno, and Hornsby, 1990), we controlled for the entrepreneurial orientation of the firm (Dess, Lumpkin, and Covin, 1997) by adopting the measures from Dess *et al.* (1997) and Miller (1983). Work experience and functional backgrounds were controlled for based on previous literature (Allen 1970; DeMartino and Barbato, 2003). In addition, we dummy coded the industry of each firm to control for potential industry difference.

Assessment of the measurement model

The measurement model containing 12 items measuring the three latent constructs was subjected to confirmatory factor analysis. Table 1 presents the correlation matrix and descriptive statistics of the main variables. Each item was restricted to load on its *a priori* specified factor, with the underlying factors permitted to correlate (Gerbing and Anderson, 1988). Model fit statistics ($\chi^2_{51} = 137.77$ and $p < 0.001$, RMSEA = 0.08, NFI = 0.93, NNFI = 0.95, CFI = 0.96, GFI = 0.92) suggest that the measurement model fits the data reasonably well.

All standardized factor loadings were significant with t-values well above 2.0 (Anderson and Gerbing, 1988) and average variance extracted from 0.61 to 0.78. Shared variance among constructs ranges from 0.00 to 0.21. Thus, convergent and discriminant validity were obtained (Fornell and Larcker, 1981). In addition, the composite reliabilities (CR) were all above the widely accepted threshold of 0.70 (Nunally, 1978), which demonstrates good internal consistency. Collectively, the measurement model is reliable and exhibits convergent and discriminant validity. The results are summarized in Table 2.

Measurement invariance

Measurement invariance across samples from Taiwan and the United States was conducted and the results are summarized in Table 3. The baseline model with no constraints resulted in $\chi^2_{102} = 234.17$. Then Model 2 with factor loadings constrained equal across the two groups was tested. The chi-square change was not significant ($\Delta\chi^2 = 0.99$, $\Delta df = 9$). Therefore we obtained metric equivalence between the two groups. Model 3 further constrained the covariance of the constructs between the two groups. The chi-square change was significant ($\Delta\chi^2 = 5.35$, $\Delta df = 1$), which shows that the covariance between the latent constructs are different across the two groups. Therefore, the structural relationship is different across the groups, which indicates a moderating effect.

Analysis

Hierarchical moderated regression analysis was used to test the hypotheses. Prior to creating interaction terms, predictor variables were mean-centered to reduce multicollinearity (Aiken and

Table 1. Correlations, means and standard deviations of the study variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Tie strength	-0.09											
2. Bridging ties	0.04	-0.01										
3 Individualism-collectivism	0.03	0.06	-0.05									
4. Entrepreneurial orientation	0.13*	-0.01	-0.45**	0.16**								
5. Work experience	-0.11	-0.58**	-0.02	-0.05	0.00							
6. Functional area	-0.03	0.06	-0.27**	0.13*	0.25**	-0.02						
7. Industry	-0.07	0.06	-0.09	0.01	-0.05	0.09	0.05					
8. Tie strength × bridging ties	0.20**	-0.09	-0.01	0.18**	0.03	0.10	-0.03	0.07				
9. IC × tie strength	-0.09	-0.15*	0.00	-0.09	-0.13*	0.04	0.01	0.11	-0.09			
10. IC × bridging ties	0.06	0.11	-0.09	-0.04	-0.08	-0.06	0.03	0.04	-0.08	0.06		
11. IC × tie strength × bridging ties	0.10	0.21**	-0.09	0.46**	0.12*	-0.09	0.11	0.12	0.27**	0.21**	0.09	
12. Opportunity recognition	3.72	1.21	4.67	5.68	9.41	—	—	—	—	—	—	4.95
Mean	1.14	0.60	0.43	0.95	8.65	—	—	—	—	—	—	1.28
Standard deviation												

* $p < 0.05$, ** $p < 0.01$; two-tail tests ($N = 261$).

Table 2. Confirmatory factor analysis of items and measurement properties of the scales¹

Scales	Standardized loading	Z - val.
Tie strength ($CR = 0.90$, $AVE = 0.74$, $\Phi^2 = 0.00 - 0.01$)		
1. How close was your working relationship with each person?	0.92	14.41
2. How often did you communicate with each person?	0.73	19.50
3. To what extent did you typically interact with each person?	0.92	
Opportunity recognition ($CR = 0.92$, $AVE = 0.78$, $\Phi^2 = 0.00 - 0.21$)		
1. While going about day-to-day activities, I see potential new ideas (e.g., on new products, new markets, and new ways of organizing firms all around me).	0.88	17.88
2. I have a special alertness or sensitivity toward new opportunities (e.g., about new products, new markets, and new ways of organizing the firm).	0.85	
3. Seeing potential new opportunities (as mentioned above) does not come very naturally to me.	0.91	19.36
Entrepreneurial orientation ($CR = 0.90$, $AVE = 0.61$, $\Phi^2 = 0.00 - 0.21$)		
1. Our firm is usually among the first to introduce new products in the industry.	0.83	15.13
2. In our firm, people are very dynamic.	0.81	14.85
3. Our firm challenges, rather than responds to its major competitors.	0.80	14.12
4. In our firm, most people are willing to take risks.	0.77	11.65
5. Our firm shows a great deal of tolerance for high-risk projects.	0.67	14.51
6. In our firm, people are encouraged to experiment so as to identify new, more innovative approaches or products.	0.79	

¹ Model fit statistics: $\chi^2 = 137.77$ (df = 51), RMSEA = 0.08, GFI = 0.92, NFI = 0.93, NNFI = 0.95, CFI = 0.96. The composite reliability (CR), the average variance extracted (AVE), and the range of squared correlations (Φ^2) between a particular underlying construct with others are presented for each measure.

Table 3. χ^2 difference tests

Measurement model	Goodness of fit	χ^2 difference
Baseline: No constraints	$\chi^2_{(102)} = 234.17$	NA
Model 2: Invariance	$\chi^2_{(111)} = 235.16$	M2-M1: $\chi^2_{(9)} = 0.99^a$
Model 3: Moderation	$\chi^2_{(112)} = 240.51$	M3-M2: $\chi^2_{(1)} = 5.35^*$

^a: not significant at the 0.05 level; * significant at the 0.05 level.

West, 1991). Subsequent examination of the variance inflation factors associated with each regression coefficient showed a range from 1.00 to 1.75, suggesting that no serious problem of multicollinearity exists.

RESULTS

Following the suggestion of Aiken and West (1991) on testing interactions, we entered the control variables and the main effects in Model 1. The two-way interaction term between IC and tie strength was added in Model 2 and the interaction term between IC and bridging ties was added in Model 3. In Model 4, we added all two-way interaction terms. The three-way interaction term was entered in Models 5. Table 4 presents our results.

Hypothesis 1 proposed that the IC moderates the relationship between tie strength and opportunity recognition. Model 2 indicates that the interaction between IC and tie strength is significantly and positively related to opportunity recognition ($\beta = 0.19$; t -value = 3.44; $p < 0.05$). These findings support the hypothesis that while weak ties will be positively related to opportunity recognition in individualist societies, strong ties will be positively related to opportunity recognition in collectivist societies.

Hypothesis 2 posits that IC moderates the relationship between bridging ties and opportunity recognition. Model 3 indicates that the interaction between IC and bridging ties is significantly and negatively related to opportunity recognition ($\beta = -0.11$; t -value = -2.00 ; $p < 0.05$). This finding supports the hypothesis that bridging ties will be positively related to opportunity recognition in individualist societies.

Hypotheses 3a and 3b investigate whether the joint effect of tie strength and bridging ties on opportunity identification will vary by culture. We propose that in collectivist cultures, the positive effect of tie strength on opportunity identification

will be strengthened by structural holes. Empirical support can be seen in Table 4, Model 5. When the three-way interaction among IC, tie strength, and bridging ties was introduced in Model 5, the interaction term was significant at 0.1 level ($\beta = 0.10$; t -value = 1.81; $p = 0.07$) and explained significant variance over and above those of the first four steps for opportunity identification ($\Delta R^2 = 0.01$, $\Delta F = 3.29$, $p < 0.1$).

To better explain the three-way interaction, we plotted it based on the results obtained in Model 5 (see Figure 2). Values of tie strength and bridging ties were set at one standard deviation above and below the mean (Aiken and West, 1991). As shown in Figure 2, the nature of the interaction indicates that in collectivist cultures, managers with strong bridging ties identify relatively more opportunities—this provides support for Hypothesis 3b. It is interesting to note that although the interaction between bridging ties and tie strength is insignificant in the United States, managers with more bridging ties identify relatively more opportunities.

Post hoc robustness check

The above regression analyses are based on a combined dataset with both Taiwan and U.S. data. Following Lin *et al.* (2009), we conducted subsample analysis in each cultural context to gain deeper insights into the effect of social networks on opportunity identification (Table 4). In the U.S. subsample, the predictors remain significant. For the Taiwan subsample, the significance level of tie strength increases, yet the effect of bridging ties becomes insignificant. This interesting finding may be due to the moderating nature of tie strength on the effect of bridging ties on opportunity identification. As proposed by Sohn, Ci, and Lee (2007), the insignificant main effect may result from the opposite directions of the interaction effects canceling each other out. To test this conjecture, we did a median split on tie strength and compared the effect of strong versus weak bridging ties in the

Table 4. Results of hierarchical regression analysis on interactions

Variables	Individualistic culture (N = 128)			Collectivist culture (N = 133)					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
<i>Control variables</i>									
Four dummy variables for five industries	(not reported) [†]	(not reported)	(not reported)	(not reported)	(not reported)	(not reported)	(not reported)	(not reported)	(not reported)
Entrepreneurial orientation	0.43*** (0.01)	0.39*** (0.01)	0.38*** (0.01)	0.39*** (0.01)	0.38*** (0.01)	0.36*** (0.01)	0.36*** (0.01)	0.44*** (0.11)	0.44*** (0.10)
Function	0.08 (0.18)	0.06 (0.18)	0.05 (0.18)	0.03 (0.18)	0.02 (0.18)	-0.03 (0.26)	-0.03 (0.27)	0.09 (0.24)	0.04 (0.24)
Work experience	-0.01 (0.01)	-0.00 (0.01)	-0.02 (0.01)	-0.00 (0.01)	-0.01 (0.01)	0.08 (0.01)	0.08 (0.01)	-0.14 [†] (0.02)	-0.09 (0.02)
<i>Main effects</i>									
Tie strength	0.12* (0.06)	0.08 (0.06)	0.07 (0.06)	0.07 (0.06)	0.06 (0.06)	-0.14 [†] (0.11)	-0.14 (0.11)	0.31*** (0.08)	0.29*** (0.08)
Bridging ties	0.25*** (0.15)	0.25*** (0.14)	0.23** (0.15)	0.21** (0.15)	0.19** (0.15)	0.27** (0.08)	0.26** (0.08)	0.15 (0.22)	0.10 (0.22)
IC	-0.04 (0.19)	-0.04 (0.18)	-0.05 (0.18)	-0.03 (0.18)	-0.02 (0.18)				
<i>Interactions</i>									
IC × tie strength		0.19** (0.14)	0.18** (0.14)	0.17** (0.14)	0.18** (0.14)				
IC × bridging ties			-0.11* (0.27)	-0.13* (0.27)	-0.13* (0.27)				
Tie strength × bridging ties				0.11* (0.10)	0.11 (0.10)		0.02 (0.02)		0.19* (0.14)
IC × tie strength × bridging ties							0.10 [†] (0.23)		
R ²	0.27	0.31	0.32	0.33	0.34	0.30	0.30	0.35	0.38
Adj. R ²	0.24	0.28	0.28	0.29	0.30	0.25	0.24	0.30	0.32
F value	9.41***	10.00***	9.61***	9.30***	8.95***	5.66***	5.06***	7.20***	7.31***
ΔR ²		0.03	0.01	0.01	0.01				
F for ΔR ²		11.85**	3.99*	4.07*	3.29 [†]		0.06		5.80*

Note: ^a The beta coefficients of the four dummy variables were nonsignificant and are not reported for sake of brevity. Numbers in parentheses are standard errors. [†] $p < 0.1$ * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$ N = 261.

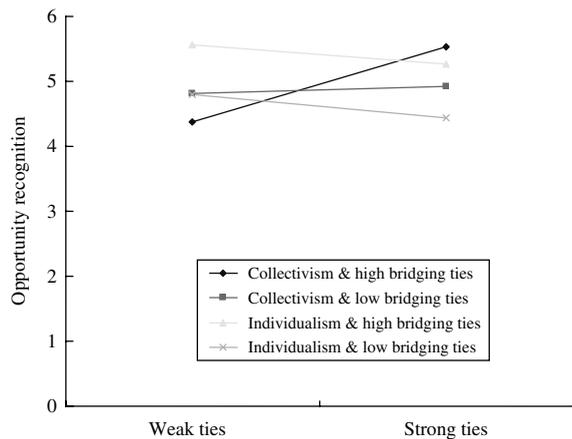


Figure 2. Interaction between IC, tie strength, and bridging ties

Taiwan subsample. The results show that strong bridging ties are positively related to opportunity identification ($\beta = 0.48$; t -value = 3.21; $p < 0.01$), whereas weak bridging ties are negatively related to opportunity identification ($\beta = -0.36$; t -value = -2.61 ; $p < 0.05$), which may explain the insignificant main effect of bridging ties in the Taiwan subsample.

DISCUSSION AND IMPLICATIONS

This study sheds light on the effect of social networks on subsequent opportunity identification by incorporating cultural contexts, specifically the IC dimension. The findings have considerable theoretical implications for future research on cross-cultural management, social networks, and broader strategy research.

A major implication of this study is that cultural contexts make different aspects of social networks more salient in terms of information usage and opportunity identification, which echoes Levinthal's (2007) assertion that understanding the boundary conditions and underlying logics of alternative network structures is critical for network analysis. Xiao and Tsui (2007) suggest that it is network closure, rather than structural holes, that creates social capital in collectivistic cultures. Our findings are consistent with this argument and show that while the functional imperatives of social networks are more prominent in individualist cultures, the social aspect of social networks is a more primary driver in collectivistic cultures. The

functional benefits of social networks cannot be realized without social acceptance. For example, nonredundant information sources will not benefit individuals as expected if those sources are not socially approved. More broadly, our results are consistent with the observations of scholars who find that contextual variables such as cultural values, especially IC, moderate the effect of social networks on various outcome variables, such as consumer behavior, recruitment effectiveness, individual career performance, job mobility, and firm performance (e.g., Bian, 1997; Li *et al.*, 2008; Ma and Allen, 2009; Watkins and Liu, 1996; Xiao and Tsui, 2007).

Second, our results complement recent studies on social networks, such as Tiwana (2008) and Levin and Cross (2004), that recognize and explain the complementarity of different types of social ties in terms of both the context of the complementary effect and the mechanism through which the complementary effect takes place. The current findings comply with McEvily and Zaheer (1999) and show that bridging ties are not necessarily weak ties as shown by the insignificant correlation between tie strength and bridging ties. Instead, bridging ties may interact with tie strength in affecting outcome variables such as competitive ability (McEvily and Zaheer, 1999) and opportunity identification.

The findings also confirm and extend the work of Xiao and Tsui (2007) on the influence of collectivist cultures on bridging ties by differentiating strong and weak bridging ties. Xiao and Tsui (2007) argue that bridging ties are negatively related to individual performance due to the preference of collectivist cultures toward loyalty to the ingroup. We found that bridging ties are not always disadvantageous in collectivist cultures. In fact, as earlier discussed, whether the information benefits of bridging ties can be realized in collectivist cultures is determined by the strength of the tie. Bridging ties will dampen an individual's ability to identify opportunities when there is no necessary social capital derived from ingroup membership. While weak bridging ties are more negatively related to opportunity identification, strong bridging ties will lead to more opportunity identification. Therefore, bridging ties and tie strength may interact in different manners across cultural contexts, which may lead to interesting discussions in future network research.

Third, our findings are in line with previous studies showing that host countries play a critical role in influencing subsidiaries of multinational corporations (MNCs) and employee behaviors (e.g., Makino, Isobe, and Chan, 2004; Fey and Furu, 2008; Shin, Morgeson, and Campion, 2007). Although it is noteworthy that an MNC's home country affects various aspects of its subsidiaries such as the type of managerial control (Egelhoff, 1984), the host country is also crucial in respects such as knowledge creation (Almeida and Phene, 2004) and strategic orientation (Luo and Park, 2001). For example, Shin *et al.* (2007) found that the IC dimension of host countries will influence expatriates' relationship-oriented behaviors and host culture requires individuals to adjust their behaviors accordingly. In particular, we found that the cultural context of the host country significantly influences subsidiary employees' use of social networks to identify opportunities, which indicates that cultural context may shape individual behaviors. That is, what you do may depend on where you are.

The study has some limitations. First, due to the brief time frame, our choice of control variables may be limited. Future research could incorporate other variables that may have a potential impact on the opportunity recognition process. For example, entrepreneurship research has suggested that personality might also influence the opportunity identification process (Busenitz and Lau, 1996; Hills, Lumpkin, and Singh, 1997). Second, the use of ego-centered networks does not allow us to have information on the full network. As a result, we are not able to know how the participants position in the full network and how other people identified by the participants as network ties perceive the relationship. Third, we only tested our hypotheses in two typical individualist and collectivist cultures, the United States and Taiwan, which raises the issue of unobserved heterogeneity. To address the potential influence of unobserved variables, we have carefully sampled the cultural contexts for comparison and included a number of control variables in our models. However, the two samples may still differ in other aspects, such as unobserved economic and political differences. Unfortunately, our sampling scheme cannot capture the effect of all the unobserved factors. Future work is needed to examine the influence of cultural contexts based on a larger sample of cultures to further rule out potential alternative

explanations. In addition, Shenkar (2001) recommends that national-level data should be supplemented by cognitive measures to enhance the rigor of cross-cultural research. Therefore, cognitive survey instruments verifying the IC perspectives upheld by the respondents may also be used in future research to establish the effect of cultural contexts.¹ Another potential theoretical extension lies in the exploration of other cultural variables (Lee and Peterson, 2000) such as uncertainty avoidance, which may have a major influence on innovation (Mueller and Thomas, 2001).

A common method variance problem can result from collecting all construct measures from the same sources using the same method. However, considering that nearly all of our hypotheses were based on interaction effects rather than main effects, it is unlikely that common method bias would have produced our results. It has been observed that the complex data relationships shown by predicted interaction effects are not explained by common method bias because respondents are not able to guess the researchers' interaction hypotheses so as to systematically bias their responses (Doty, Glick, and Huber, 1993; Evans, 1985). In addition, not all variables herein used to test hypotheses are original response data. For instance, the measurement of bridging ties was a conversion of original response data, and the IC scores were obtained from the GLOBE project. Consequently, we are reasonably confident that these results are not subject to common method variance.

For managers, the results suggest that entrepreneurial managers need to rely on different types of network ties based on the culture in which they are embedded. Given that cultural values play a critical role in the opportunity identification process by impacting tie strength and bridging ties, we suggest that individuals learn to make sense of cultural contexts and create a combination of ties that benefits opportunity recognition the most. This sensemaking is especially challenging when individuals cross cultural boundaries, an increasingly feasible option in a global economy. Managers from individualist cultures who contemplate operation in a collectivist culture will find that their

¹ We thank an anonymous reviewer for the suggestion to rule out potential alternative explanations by incorporating cognitive measures of cultures.

reliance on weak ties to identify business opportunities does not yield the requisite information and will need to build strong ties, for instance, by cultivating relationships with business partners and related constituencies. Managers who hail from collectivist cultures will need to learn to make better use of weak ties and closely evaluate the usefulness of information obtained from this source. Their different treatment of ingroup and outgroup information can be a disadvantage in individualist cultures since discrediting useful information from weak ties might lead to the missing of significant opportunities.

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APPENDIX A: INDICES OF COUNTRY PAIRS FOR COMPARISON OF THE IC DIMENSION

Country	Absolute difference	Relative difference	Combined
Taiwan, United States	2.55	2.63	2.59
Hong Kong, United States	2.26	2.14	2.20
China, United States	1.91	2.17	2.04
Singapore, United States	2.56	1.36	1.96
India, United States	2.12	1.56	1.84
Japan, United States	1.25	1.13	1.19

APPENDIX B: INDUSTRY COMPOSITION FOR TAIWAN AND THE UNITED STATES

Industry	Taiwan n = 133	United States n = 128
Telecommunication	27	30
Manufacturing	106	98
Electric and electronic products	36	45
Transportation equipment	22	42
Medical equipment	37	8
Machinery	11	3