Drivers and Effects of IT Capability in 'Born-Global' Firms: A Cross-National Study

Saonee Sarker  
*Washington State University*

Suprateek Sarker  
*Washington State University*

Man Zhang  
*Bowling Green State University*

Follow this and additional works at: [http://aisel.aisnet.org/icis2007](http://aisel.aisnet.org/icis2007)

Recommended Citation

Sarker, Saonee; Sarker, Suprateek; and Zhang, Man, "Drivers and Effects of IT Capability in 'Born-Global' Firms: A Cross-National Study" (2007). ICIS 2007 Proceedings. 98.  
Drivers and Effects of IT Capability in “Born-Global” Firms: A Cross-National Study

Man Zhang
Department of Management
Bowling Green State University
3009 Business Administration
Bowling Green, OH 43403
Email: mzhang@cba.bgsu.edu

Saonee Sarker
Department of Information Systems
Washington State University
Todd Hall 440D
Pullman, WA 99164-4743
Email: ssarker@wsu.edu

Suprateek Sarker
Department of Information Systems
Washington State University
Todd Hall 440D
Pullman, WA 99164-4743
Email: sarkers@wsu.edu

Abstract

Past research acknowledges that IT capability enhances firm performance. However, studies have focused primarily on large firms, and have seldom explored why firms develop IT capability, leaving a void in the understanding of the role of IT capability in SMEs. This study, using a survey methodology, attempts to address this void by examining the effect of relevant environmental and firm-level factors on IT capability, and the effect of IT capability on the international performance of Chinese and US born-global firms, a special breed of export-focused SMEs. Results support most of the hypotheses. Interestingly, the results of the comparison between Chinese and US born-globals are consistent with the “convergence” perspective. The study contributes by: 1) providing clear evidence that IT does matter in born-global firms, 2) highlighting the specific types of IT capability that born-globals should invest in, and 3) pointing to factors that drive IT capability development in such firms.

Keywords: IT capability, born-global firms, resource-based view, international market performance, export-focused SMEs, IT in global firms, national culture and IT, convergence perspective.
Introduction

According to Rivard, Raymond, and Verreault (2006, p. 30), the “contribution of Information Technology (IT) to the achievement of business objectives is an important management issue,” both for academics and for practitioners in today’s digitized world. On similar lines, Feeny, Ives, and Piccoli (2003, p. 115) have noted that the “role of... IT capabilities as sources of sustained competitive advantage is now well-known.” It is thus not surprising that “numerous studies” have sought to examine the role of IT capability on a firm’s competitive advantage and performance (Rivard et al. 2006, p. 30). While prior research has contributed immensely to our understanding of the IT capability construct and its impacts on firm performance (e.g., Bhatt and Grover 2005; Bharadwaj 2000; Jarvenpaa and Leidner 1998), a review of the literature suggests that studies seldom explore why firms develop IT capability. Also, empirical examinations on IT capability have been conducted primarily on large North American firms. Unfortunately, past research shows that knowledge based on large firms cannot be automatically considered valid for small (or even medium-sized) businesses (e.g., Hunter 2004). Indeed, Small and Medium-sized Enterprises (SMEs) differ from large firms in various ways. Large firms have “greater scope of operation and are involved in diverse markets,” have a better ability to “spread costly new systems over larger units of production,” and have “internal technical development and maintenance capabilities” (Johnston & Wright 2004, p. 229), which are privileges not typically enjoyed by SMEs. Given a) that SMEs currently constitute a significant proportion of the economies of countries, especially those of developing nations such as China (e.g., Love and Irani 2004), and b) the fact that many SMEs around the world fail within the first few years of their inception (e.g., Watson and Everett 1996), we believe that it is important to study IT capability of SMEs in today’s global context.

Recently, a special breed of young and export-focused SMEs has drawn the attention of academics as well as consultants. These firms, known as born-globals, enter the global marketplace soon after their inception, often bypassing the domestic market (e.g., Knight and Cavusgil 1996). Their mode of internationalization is unlike “traditional” international business organizations, which initially offer products/services to the domestic markets and then gradually serve international markets. Born-global firms closely reflect Cavusgil’s (1994, p. 18) observations that for many contemporary global organizations, “small is beautiful...” and “gradual internationalization is dead.”

One of the striking features of born-global organizations is that, despite their “resource poverty,” they are able to develop a unique set of capabilities that allow them to leapfrog the stages of internationalization, and compete effectively with firms with access to much larger resource pools (Kundu and Katz 2003). It would appear that the organizational IT capability has a key role to play in the success of born-global firms, which need: to rapidly gain access to distant markets; to acquire, integrate, and assimilate information about markets and competitors; to maintain tight network of relationships within the firm and with external partners; and to develop a high-level of agility/efficiency in order to deal with the dynamic global environment (e.g., Feeny and Willcocks, 1998; Knight and Cavusgil 2004; Kyobe 2004). In fact, Arenius, Sasi, and Gabrielsson (2006) suggest that born-global firms can realize superior international performance by developing greater IT capability. They contend that such firms suffer from the “liability of foreignness” (arising from the costs associated with transportation, etc. to foreign markets, and lack of familiarity with the foreign nation’s business environment), and from resource scarcity. Others suggest that “technological capability” in SMEs is an enabler of global competitiveness (Dhungana 2003, p. 7). Notwithstanding these positive pronouncements about IT, past research suggests that a majority of SMEs view IT as a cost rather than as an enabler of growth and high performance (Levy, Loebbecke, and Powell 2003).

In light of this contradiction in the existing literature, we see a clear need to empirically investigate IT capability in the context of born-global firms, which face liabilities of being both new and foreign as they expand abroad while still in their infancy. Surprisingly, despite the growing importance of these types of firms and the presumed ubiquitous impacts of IT in businesses, few studies have formally investigated the role of IT capability in born-global contexts. We seek to offer a contribution in this important arena by addressing two related research questions:

RQ1: Does IT capability contribute to born-global firms’ performance?

RQ2: What factors, among those suggested in the allied literature, lead born-global firms to develop their IT capability?

We examine the above-mentioned research questions through an empirical study of born-global firms in China and the US. We selected born-global firms from China and the US as part of our sample due to a number of reasons: First, born global firms exist throughout the developing and the developed world, contributing significantly
to their national exports. Second, their prospects are believed to be particularly promising in developing countries, such as China, where revenues of a large proportion of organizations are dependent on exports. Third, US and China are seen as being distinct in terms of a number of factors such as economic development and especially culture (e.g., Martinsons and Westwood, 1997). For example, in terms of culture, China has unique characteristics such as paternalism and hierarchical order derived from Confucianism, guanxi preference for high-context communication, and a pictographic language, which have been found to influence how IT is perceived and utilized in organizations (e.g., Martinsons and Westwood, 1997; Hofstede, 2001; Liang et al., 2004; Walsham, 2001). Further, China is characterized as having higher power distance, and a more collectivist culture when compared to the US (Hofstede 2001). It may thus be argued that cultural differences between the US and China are likely to influence the factors that drive the development (and effect) of IT capability in born-global firms’ of the two countries.

We believe that a comparison between these two diverse nations, where export-focused SMEs play an important role in their respective economies¹, can potentially reveal interesting insights regarding IT capability, and shed light on the third research question:

RQ3: What (if any) are the differences in the antecedents (RQ2) and consequences (RQ1) of IT capabilities arising from the differences in national contexts within which the born-global firms are embedded?

Theoretical Foundation of the Study

Born-global Firms

Born-globals are small-medium sized enterprises that engage in international operations soon after their inception (e.g., Knight and Cavusgil 1996; 2004; Rialp, Rialp, Urbano, and Vaillant 2005). Different terms have been used to define born-globals, such as international new ventures, global start-ups, instant exporters, instant internationals, among others (e.g., Rialp et al, 2005). Irrespective of the terms used, it is widely acknowledged that such firms “go international approximately from the time of their formation” (Rialp et al, 2005, p. 135), breaking the rules of stagewise internationalization, typically associated with traditional and large organizations. Rasmussen and Madsen (2002, p. 13), however, note that “there is absolutely no clear definition--neither theoretically nor empirically--of a born global.” Further, the level of internationalization of born-global firms can also vary between 100% and 5-10% (Zahra et al. 2000). Some researchers have operationalized born-globals in their empirical studies as those that are small, young, and internationally focused (e.g., Rialp et al. 2005). Others have adopted a more restrictive perspective, and defined born-globals as those that initiate their international activity within “six years of founding and three years post IPO” (Gleason and Madura 2006, p. 103; Shrader, Oviatt, and McDougall 2000). Knight and Cavusgil (1996), noted for their work on born-global firms, define born-globals as those that export 25% or more within the first three to six years of their foundation. While this operationalization may be criticized because 75% of the sales in organizations classified as born-globals may be potentially domestic (within this definition), researchers argue that firms “may be a born global despite not generating any [or a large percentage] of foreign sales.” This is because it often takes time for bringing a product to market, and imposing a higher percentage criterion on foreign sales in empirical studies “will necessarily leave out many born globals” (Gleason and Wiggenhorn 2007, p. 326). Given the wide adoption of Knight and Cavusgil’s (1996) definition and operationalization of born-global firms in prior research (e.g., Rasmussen and Madsen 2002; Hashai and Almor 2004), we adopt the same in this study.

Research Model

In developing our model, we drew on prior research that highlights the important role of both firm-level factors (e.g., Earl and Feeny, 1996) and environmental factors (e.g., Clemons, 2003) on a firm’s initiative to develop IT capability. Earl and Feeny (1996) argue that there are three firm-level “imperatives” (or drivers) of IT in global firms: 1) They not only strive to achieve economies of scale but also “go further” in an effort to seek/create new international opportunities -- such a characteristic has been referred to as international entrepreneurial orientation (Knight and Cavusgil 2004); 2) They focus on local responsiveness to markets and customer needs around the globe-- this is referred to as international marketing orientation (e.g., Cavusgil and Zou 1994); and 3) They focus

¹ It is estimated that China has 8 Million SMEs (Meetchina.com), a substantial proportion of which may be classified as born-global because of their young age and focus on exports (OECD, 1997). Indeed, SMEs’ export volume (in 1999) was estimated to be 60% of China’s total. Similarly, according to the International Trade Association of the US, 97% of all US exporters are SMEs.
on knowledge creation and sharing, both within and across functional units and locations—this is referred to as the organization’s learning orientation (e.g., Sinkula, Baker, and Noordewier 1997). In this paper, we examine the influence of these three firm-level factors on IT capability.

In addition, researchers point to environmental uncertainty and information intensity as being two key environmental factors affecting the role of IT in enhancing the business performance of organizations (e.g., Kearns and Lederer 2004; Clemons 2003; Bhatt 2000). Specifically, it has been argued that these two factors can “influence the effectiveness of planning mechanisms and the firm’s ability to earn adequate returns on IT investments” (Kearns and Lederer 2004, p. 900); thus, these variables are also included in our model.

Finally, consistent with RBV-based arguments which suggest that IT is a form of organizational capability that can be developed into a valuable, rare, and not easily imitable asset (e.g., Ray, Muhanna, and Barney 2005; Wade and Hulland 2004; Bharadwaj 2000), thereby having a significant effect on firm performance (e.g., Wade and Hulland 2004), we also sought to examine the effect of IT capability on born-global firms’ international performance. Below, we elaborate on the specific constructs and hypothesized relationships.

**IT Capability**

IT capability is a complex construct, and has been in the past conceptualized as managerial capabilities (e.g., Sambamurthy & Zmud 1992; Ross, Beath, and Goodhue 1996) or as technological capabilities (e.g., Teo and King 1997; Sahberwal and Kirs 1994). Recently, researchers have proposed a more integrative view of IT capability, suggesting that it is composed of technical skills and information technologies within the firm (i.e., the technology components), as well as the managerial resources (e.g., Ray et al. 2005; Bhatt and Grover 2005; Bharadwaj 2000; Bharadwaj, Sambamurthy, and Zmud 1999). For example, Ray, Muhanna, and Barney (2005) view IT capability as being composed of two categories of resources: the first consists of raw IT spending, the technical skills and generic information technologies within the firm (i.e., the technology components), and the second consists of more managerial resources that “influence how the first [category] of resource is used” (p. 628). Similarly, Bhatt and Grover (2005) view IT capability as being composed of the 1) value capabilities (e.g., IT infrastructure), 2) competitive capabilities (e.g., IT business experience, relationship infrastructure), and 3) dynamic capabilities (e.g., intensity of organizational learning). The rich multidimensional RBV-informed conceptualization of IT capability by Bharadwaj and colleagues has been widely adopted in the IS discipline, and helps clarify how IT capability affects a firm’s financial and strategic performance (Wade and Hulland 2004). Bharadwaj et al. (1999) define IT capability as a firm’s ability to acquire, deploy, and leverage its IT-related resources in combination with other resources and capabilities in order to achieve business objectives, and suggest that the IT capability construct is composed of six-underlying dimensions (pp. 379-381). They are: IT-business partnerships, external IT linkages, business IT strategic thinking, IT business process integration, IT management, and IT infrastructure.

*IT-business partnerships* refer to the firms’ ability “to foster rich partnerships between the technology providers and technology users” (Bharadwaj et. al. 1999). In other words, this sub-construct captures the existence of dialogue between business and IS professionals, and the development of users’ understanding of IT’s potential. *External IT linkages* refer to the “technology based linkages between the firm and its key business partners” (Bharadwaj et al., 1999). Specifically, it refers to information technology such as extranets and other electronic distribution channels that can facilitate sophisticated interactions between suppliers and customers, and foster the sharing of useful knowledge (Zaheer and Venkatraman 1994). *IT business strategic thinking* reflects the importance of integrating IT and business strategy (Feeny and Wilcocks 1998; Teo and King 1997), and is concerned with the management’s ability to “envision how IT contributes to business value,” and “to integrate IT planning with the firm’s business strategies” (Bharadwaj et al. 1999). The sub-construct of *business process integration* refers to the firm’s ability to streamline existing business processes through the use of IT (Bharadwaj et al. 1999). IT-enabled process integration enables firms to improve cross-functional processes, which tend to be compartmentalized into silos, and consist of a large number of complicated interdepartmental processes (Grover, Teng, and Fiedler 1995), thereby making an organization more flexible and agile. *IT management* refers to the firm’s ability to effectively implement IT project management practices, systems development practices, IT evaluation and control systems, etc. Finally, a firm’s *IT infrastructure* is comprised of its computer and communication technologies, its technical platforms, and its shared databases (Ross, Beath, and Goodhue 1996; Bharadwaj 2000). Given the inclusive and comprehensive nature of the above definition of IT capability, we adopt it for our study.
Environmental Factors and IT capability

Kearns and Lederer (2004) argue that the two key environmental factors, environmental uncertainty and information intensity, affect the “IT focus of the firm,” and the extent to which a firm develops its IT capability. This, we believe, is true for born-global firms as well, where the need for information technologies and related capabilities is expected to depend on the environmental uncertainty in the export-market environment, and the information intensity associated with the product/service exported.

According to the information processing view, organizations process information to reduce uncertainty. Organizational effectiveness depends on the ability to match its information processing capacities with the uncertainty (and equivocality) it faces (Kearns and Lederer 2004; Feeny and Willcocks 1998; Daft and Lengel 1986). Environmental uncertainty refers to “those situations where the probability of the outcome of events is unknown” (Duncan 1972, p. 317). Others suggest that environmental uncertainty is composed of three components (Duncan 1972, p. 317): 1) the lack of clarity of information, 2) the time span in which feedback is received, and 3) the uncertainty in the causal relationships. Kearns and Lederer (2004, p. 902) suggest that uncertain environments create needs for more innovation, and consequently, firms facing such environments rely more heavily on IT-related capabilities. Specifically, Kearns and Lederer (2004) argue that environmental uncertainty a) places time constraints on decision-making, b) requires that the IT plan be aligned with the business plan, and c) needs IT resources to “continue to support business strategies and take advantage of emerging opportunities.” All of these requirements increases a firm’s dependency (and by extension, its investments) on IT capability (Kearns and Lederer 2004). Similar to large firms, born-global firms also have high information processing needs in uncertain environments (Karimi, Somers and Gupta 2004), and this, in turn, should prompt decision-makers to develop greater IT capability. Thus, we argue:

**H1:** There is a positive relationship between environmental uncertainty and IT capability in born-global firms.

Similar to environmental uncertainty, the information intensity may also be argued to drive an organization’s development of its IT capability. Information intensity is the extent to which organizations dealing with certain products/services are dependent on information (Bhatt 2000; Kearns and Lederer 2003; Thong and Yap 1995). Teo and King (1997a, b) suggest that in high information-intensive industries, operation of products or services require substantial information processing. For example, firms operating in industries with complex products, such as an aircraft, require substantially more information than in industries with simple products, such as furniture (Kearns and Lederer 2003). Similarly, travel agencies are considered to be more “information intensive,” since their primary function is to “process and package tour information” (Thong and Yap 1995, p. 433). It has been argued that firms operating in more information-intensive environments are likely to make a higher level of investment in IT capability (e.g., Kearns and Lederer 2004; Teo and King 1997a,b; Thong and Yap 1995), so as to maintain their ability to rapidly change business processes, products, and activities (Bhatt 2000). Further, IT investment decisions in SMEs have been known to depend on the information intensity associated with the firm’s industry (Quan, Hu, and Wang 2005). Extending this view to the more specific class of young export-focused SMEs, we argue:

**H2:** There is a positive relationship between information intensity and IT capability in born-global firms.

Firm Factors and IT capability

As discussed earlier, drawing on the suggestions of Earl and Feeny (1996), our model proposes the effect of three different firm-level factors on IT capability in born-global firms. The factors are: international entrepreneurial orientation, international marketing orientation, and organizational learning. Below, we discuss the role of each of these factors in further detail:

*International entrepreneurial orientation* refers to the firm’s overall innovativeness and pro-activeness in the pursuit of international opportunities (Knight and Cavusgil 2004). Morris and Paul (1987) define entrepreneurial orientation as “the propensity of a company’s top management to take calculated risks, to be innovative, and to demonstrate proactiveness.” McDougall and Oviatt (2000, p. 903) define it as “a combination of innovative, proactive and risk-seeking behavior that crosses national borders.” Thus, international entrepreneurship is an organization-wide process which is embedded in the organizational culture of the firm; through which the firm seeks to exploit opportunities in the international marketplace to generate value (e.g., Dimitratos and Plakoyiannaki 2003; Autio et al. 2000). Having an international entrepreneurial orientation implies that these firms make a “leap” into international markets, as opposed to gradual expansion across national borders (e.g., Autio et al. 2000; McDougall, Shane, and Oviatt 1994).
Such entrepreneurial firms continually seek new capabilities that improve organizational performance (e.g., Zahra et al. 2000), and enable them to plan flexibly, set realistic goals, and make strategic changes responsibly. They thus, frequently depart from existing ways of work and invest in new technologies such as IT (Lumpkin and Dess 1996), which provide analytical decision-making support and open networking possibilities with potential partners. Thus, we contend:

H3: There is a positive relationship between international entrepreneurial orientation and IT capability in born-global firms.

International marketing orientation refers to a mindset associated with the achievement of superior performance by focusing on and being responsive to the needs of customers located in other countries (e.g., Cavusgil and Zou 1994). Described as the “implementation of the marketing concept” (Kohli and Jaworski 1990), marketing orientation is an aspect of organizational culture which encourages organizations to create superior value for their customers (and consequently superior performance for the business) by focusing on customer needs and long-term profitability (Narver and Slater 1990). Specifically, marketing orientation has been defined as the process of: (1) generating marketing intelligence, (2) disseminating marketing intelligence, and (3) responding to marketing intelligence (Kohli and Jaworski 1990; Narver and Slater 1990). Knight and Cavusgil (2004, p. 130) define it as “a managerial mindset that emphasizes the creation of value, via key marketing elements, for foreign customers.” It is argued that marketing-oriented firms seek to offer products and services whose value is perceived (by buyers) as exceeding the expected value of alternative offerings. Globalization is facilitating the emergence of customers who are better organized, have more information, and are generally more demanding (Knight and Cavusgil 2004). This leads many born-global firms to create/maintain a customer-focused orientation. Pelham (2000) suggest that firms with such an orientation must have greater flexibility, and a better capacity for speeding up innovation. It is thus reasonable to expect that market-oriented born-global firms, in striving to gather and analyze more information about customers’ needs and to interact more efficiently with them, would choose to develop superior IT capability. Thus we argue:

H4: There is a positive relationship between international marketing orientation and IT capability.

Organizational learning orientation refers to an organizational focus toward creating, disseminating, and utilizing knowledge for smooth adaptation to marketplace changes as well as for questioning taken-for-granted organizational values and practices, and revising them (Sinkula et al. 1997; Senge 1990). A learning orientation influences what kind of information is gathered (Dixon, 1992), how it is interpreted (Argyris and Schon 1978), evaluated (Sinkula et al. 1997), and shared (Moorman 1998). Calantone et al. (2002) and Liu, Luo, and Shi (2002) argue that learning orientation consists of four components. They are commitment to learning, shared vision, openness-mindedness, and intra-organizational knowledge sharing. Earl and Feeny (1996), among others, argue that a focus on learning usually prompts an organization to invest more on the informing capabilities of IT, such as superior communication networks for fostering sharing and learning, and globally accessible knowledge bases and related processes for codifying and distributing scarce expertise and best practices. We thus argue:

H5: There is a positive relationship between organizational learning orientation and IT capability.

IT Capability and International Performance

Drawing on the resource-based view, it may be argued that organizational capabilities (which include IT capability) result from unique arrangements/combinations of resource elements that are difficult to imitate, which in turn can lead to competitive advantage (e.g., Bharadwaj 2000) and superior business performance (Wade and Hulland 2004). The positive relationship between IT capability and firm performance has been validated in prior research (e.g., Dehning, Richardson, and Zmud 2003; Bhatt and Grover 2000; Bharadwaj, Bharadwaj, and Konsynski 1999). It has been argue that IT capability can potentially lead to high performance in export-focused organizations due to the following reasons: 1) the pursuit of high-value-added applications of IT to maintain a competitive edge (Feeny and Willcocks 1998), 2) the reduction of costs for communicating with foreign customers/suppliers, and for gathering information about foreign competitors, and 3) the support/enhancement of distinctive competencies and skills in other business functions (Prasad, Ramamurthy and Naidu 2001). While we are not aware of studies specifically exploring the impact of IT capability on international performance of born-global firms, fragmented literature on SMEs indicates that such firms are also likely to benefit. Arenius et al. (2006) suggest that born-global firms can realize superior international performance by developing greater IT capability, especially, given that IT has the ability to mitigate the effects of two key constraints faced by these organizations -- the liability of foreignness, and resource scarcity. We thus argue:
H6: There is a positive relationship between IT capability and the performance of born-global firms.

Cross-cultural Differences in the Predictors of IT Capability

Our third research question in this study was directed toward understanding the cross-national differences (if any) in the predictors and effects of IT capability. As discussed earlier, China and US have distinct cultures. China differs significantly from Western cultures on many established cultural dimensions (e.g., it has high power distance, and high collectivism as opposed to Western nations such as the US which have low power distance and high individualism). In addition, there are other aspects of the Chinese culture that affect how IT is perceived and utilized. We discuss these cultural characteristics below.

Based largely on Confucianism, the Chinese management culture is known to emphasize issues such as personal relationships among people, morality and organizational citizenship behavior, control by a “paternalistic” figure, and harmony within organizations (Pun, Chin, and Lau 2000; Bond 1991; Su, Zhang, and Hulpke 1998). In Confucianist China, managers tend to avoid the use of IT-based communication, since it can potentially lead to status equalization (Martinsons and Westwood 1997). The Chinese business culture also adheres to “horizontal coordination” through guanxi and “personal networks” (Shin, Ishman, and Sanders 2007; Hofstede 2001, p. 362). Due to this emphasis on guanxi and personalism, Chinese organizational members initiate and maintain contact and communication through written memos and face-to-face interaction (Martinsons and Westwood 1997), rather than IT. Further, the Chinese culture also emphasizes high-context communication (e.g., Burrow, Drummond, and Martinsons 2005). The inability of IT to appropriately capture the context results in many Chinese managers finding little value in the use IT for both internal and external communication, especially in situations of high uncertainty or high information intensity. Finally, the Chinese language uses pictographic symbols instead of alphabets (e.g., Liang et al. 2004), which makes it a challenge to translate systems developed by Western organizations in (say) English to the Chinese language, accurately and thoroughly. Even if they are translated, significant rework is often required, leading to inefficiencies, and a lessened effect of IT on the performance (Davison 2002). Owing to these unique cultural and business characteristics of China, and considering the dominance of the “divergence perspective” amongst cross-cultural researchers, which argues that “global solutions to organizational and management problems do not exist” (e.g., Hofstede 2001, p. 373), we contend:

H7: Drivers of IT capability, and the effect of IT capability on the performance of born-global firms will be different in China and in the US.

Research Method

Data Collection

To test the hypothesized relationships, we used a survey methodology. First, the survey was administered to born-global firms in China in 2004. Drawing on the widely accepted definition of born-global firms by Knight and Cavusgil (1996), we operationalized born-global firms as follows: 1) these firms were established after 1980 (i.e., they are relatively young), and entered foreign markets from or soon after their inception, and 2) international sales constitute at least 25% of their total sales, indicating strong export focus.

In China, to overcome problems related to the absence of adequate postal systems and lack of reliable archival data (Li and Atuahene-Gima 2001), instead of the “mail survey” approach, the alternate (and often recommended) “key informant technique” was used (e.g., Lamb et al. 2002). We would like to emphasize that prior survey-based studies, especially those focusing on the role of IT on the performance of firms, have typically used “perceptions of a single key informant” within each organization as measures of their primary independent and dependent variables (e.g., Kearns and Lederer 2003, p. 11; Segars, Grover, and Teng 1998). It has been argued that such perceptual measures are “more likely to reflect the current state of a firm. than archival measures” (Kearns and Lederer 2003, p. 12). Further, perceptual responses from a single informant has been seen to parallel archival data (e.g., Tallon, Kraemer, and Gurbaxani 2000), prompting researchers use them especially when “archival data are lacking or where it is not feasible to collect data from multiple informants” (Kearns and Lederer 2003, p. 12). In order to increase the accuracy of our data, prior to administering the surveys, it was pilot tested. Then, members of top management were first contacted to seek their participation, and identify the key informant in their organization. Data was collected using an on-site interview, whereby a trained interviewer completed the questionnaire based on the responses of a designated key informant (usually he/she was a member of the top management) in the organization (e.g., Bhatt and Grover 2005; Li and Atuahane-Gima 2001). This practice contributed to gaining
access to the right respondents, to ensuring correct/consistent understanding of the terms, and to obtaining more accurate responses (Li and Atuahene-Gima 2001).

In China, top management of 180 of the 240 firms contacted agreed to participate in the study. Our data collection efforts finally yielded 136 completed questionnaires. Given that our study was focused on born-global firms (which, as mentioned earlier, are a type of SMEs), from this dataset of 136 completed questionnaires, we deleted those firms that had more than 500 employees (this is an often used though not universally accepted criterion for organizations to be classified as SMEs in the literature). Deletion of the firms with greater than 500 employees and having other missing data reduced the Chinese dataset to 85 firms.

Next, the study was administered to firms in the U.S. In the U.S., firms were identified primarily via two databases: Directory of United States Exporters and CorpTech Directory of Technology Companies (version 2000). Data collection in the US yielded 137 complete questionnaires. After applying the same criteria used for the Chinese sample (consistent with the criteria of Knight and Cavusgil 2004), the US dataset was reduced to 58 firms. We would like to note that the response rate was much lower in the US than in China. In US, firms were identified from the Directory of United States Exporters and CorpTech Directory of Technology Companies (version 2000). We could not apply the criteria of export volume (i.e., >25%) prior to selecting the firms, because this is not available in the Directory of United States Exporters. We therefore relied on the year of foundation, and number of employees to select target firms, and collected export volume-related information through the survey. Many of the firms that had completed the survey (though they had been formed after 1980 and had less than 500 employees), did not satisfy the criteria of export sales of at least 25% soon after inception, and were consequently removed from the sample. This led to a reduction of the response rate.

We would also like to note that while our cross-cultural study involved respondents from two different nations, who could have potentially had different response biases, in light of a recent study by Lalwani, Shavitt, and Johnson (2006), we believe that such biases did not taint our results.

The descriptive statistics of the sample (i.e., age, number of employees, exports) are provided in Table 1, showing that the firms were young SMEs, with high proportion of revenues coming from exports.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Total Sample</th>
<th>China Sub-Sample</th>
<th>US Sub-Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of employees</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>151</td>
<td>213</td>
<td>60</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>163</td>
<td>173</td>
<td>87</td>
</tr>
<tr>
<td>Ages of the firms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>12.73 years</td>
<td>9.88 years</td>
<td>16.91 years</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>8.23 years</td>
<td>8.25 years</td>
<td>6.21 years</td>
</tr>
<tr>
<td>Current Percentage of Foreign Sales</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>59.46%</td>
<td>66.04%</td>
<td>49.81%</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>24.98%</td>
<td>25.96%</td>
<td>20.06%</td>
</tr>
</tbody>
</table>

Measures

All measures used in the survey were adapted from established studies. In preparing for data collection in China, the scales were professionally translated to Chinese, with back-translation and refinements undertaken by two independent bilinguals, as suggested by Douglas and Craig (1983). This process helped ensure conceptual equivalence (Mullen, 1995). Unless otherwise stated, items were measured on a scale of 1 (Strongly disagree) to 7 (Strongly agree).

IT Capability, the core construct in this study, was measured using the scale developed by Bharadwaj et al. (1999). The measures of each of the dimensions in this scale were considered “reliable and valid,” and were found to have good psychometric properties (Wade & Hulland, 2004). Further, the scale had been validated in prior studies based on a survey of senior executives, and thus seen as appropriate for our study which also uses organizational survey data.
Firm performance, especially of large and multinational organizations, is often measured using objective financial indicators. However, objective financial measures are difficult to obtain in the case of SMEs or “born-globals,” especially in China, where managers prefer to keep a high-level of secrecy regarding the specifics of their business operations and are “sensitive” to the public disclosure of financial data (Siu et al. 2004). As a result, previous studies involving Chinese SMEs have typically used self-assessed measures of performance (Siu et al., 2004). Given that our study is focused not only on US but also on Chinese “born-global” firms, in an effort to maintain equivalency in the measurement of the dependent variable in the two datasets, we opted to use a self-assessed measure of performance both in China and in the US. We would like to emphasize that prior research has suggested that self-reported measures of performance are appropriate (e.g., Siu et al. 2004; Zou, Taylor, and Osmond 1998), and are positively correlated with objective measures (e.g., Dollinger and Golden 1992). In this study, we drew on a scale developed by Zou et al. (1998) to measure international performance of firms, which has also been utilized extensively in prior authoritative work in international business (e.g., Dow 2006; Morgan, Kaleka, & Katsikeas 2000). The scale incorporates prior conceptualizations of export performance (e.g., financial and strategic), and also takes into consideration the firm’s performance relative to its competitors, which has been viewed as a superior approach to measuring performance (Wade & Hulland 2004). Further, the scale’s focus on international performance (composed of both financial and strategic performance) makes it appropriate for our study involving export-focused SMEs.

All of our independent variables were measured by drawing on existing instruments. Information intensity has typically been measured within the MIS discipline using modified versions of Teo and King’s (1997 a, b) scale. In this study, we used Bhatt’s (2000) scale, who had modified Teo and King’s (1997) scale to assess global firms. Environmental uncertainty was operationalized in terms of the technological uncertainty and environmental turbulence, and measured using Karri’s (2001) scale. We measured international marketing orientation and international entrepreneurial orientation using Knight and Cavusgil’s (2004) scale, that has been widely adopted in the context of born-global firms. Finally, organizational learning orientation has been typically measured using a variety of different scales (e.g., Sinkula et al. 1997; Hurley and Hult 1998). In this study, we have drawn on Hurley and Hull’s (1998) scale, which has often been used to assess multinational or global firms (e.g., Hult, Hurley, Guinipero, and Nichols, Jr. 2000). Further, this scale, captures a wider domain of the construct including, firm’s ability to create and share knowledge among employees, firms’ focus on providing opportunities for individual development other than formal training, firms investment on formal developmental activities, among others. Our complete instrument is available at http://www.cb.wsu.edu/~ssarker/born_globals/appendix_instrument.doc.

Analyses and Results

In order to assess our research questions 1 and 2, in the first phase of the data analysis, we tested our model using our entire sample of born-global firms (i.e., our sample consisted of both Chinese and US born-global firms). PLS-Graph Version 3.00 was used for analyzing the data. Our choice of the analysis technique (partial least square) was based on the following considerations: 1) PLS works well with small-to-medium sample sizes (Chin, Marcolin, and Newsted 2003; Chin 2001; Hulland 1999), and 2) PLS has been shown to be a superior technique when the model has second-order factors (e.g., Chin et al. 2003; Lohmuller 1989), such as IT Capability and International Performance in this study. In the first stage, we assessed the validity and reliability of the measurement model, and in the second stage, we assessed the hypothesized relationships ([e.g., Gefen and Straub 2005; Chin 2001].

Validity and reliability

A key issue in the validation of instruments is to “properly specify the measurement relations,” that is, the “directional relationship between the indicators and the latent construct” (Mackenzie, Podsakoff, and Jarvis 2005, p. 711). There are two ways to represent these relationships: 1) as reflective indicators (i.e., the “direction of causality flows from the construct to the measures,” and “covariation among measures is explained by variation in an underlying common latent factor”), or 2) as formative indicators (i.e., direction of causality is from indicators to the latent construct, and is appropriate when the indicators “do not share a common theme,” with each of them capturing an “unique aspect of the conceptual domain” (Mackenzie et al. 2005, p. 713). Given that in our study, the indicators were “manifestations” of the latent constructs, and “standard scale development procedures,” including analysis involving PLS, recommend the use of reflective indicators, we did the same in this study. We followed standard guidelines in “purifying” our “reflective measures” (MacKenzie et al. 2005, p. 725. We estimated the common latent
construct using a CFA model, then assessed the item validities (including significance and magnitude of factor loadings), followed by the estimation of the average variance explained, construct reliability, and discriminant validity. All items loaded significantly on their respective constructs (Gefen and Straub 2005). Further, most items had a loading above .70 (see Table 1), and none of the items (retained for the analysis of the hypothesized relationships) had a loading below .50 (Hulland 1999); 2) the composite reliabilities of each of the items were above .70 (Hulland 1999); and finally, 3) the Average Variance Extracted (AVEs) of all but one of the constructs were over the threshold value of .502 (see Table-2, which shows square-roots of the AVEs on the main diagonal). We would like to note that our initial confirmatory factor analysis revealed that one item (each) measuring information intensity, environmental uncertainty, and IT management had a loading less than .50. Consistent with prior research (e.g., Hulland 1999), these items were dropped from the sample prior to analyzing the hypothesized relationships (please see appendix).

In assessing the discriminant validity, we ensured that the square-root of the AVE of a construct exceeded all correlations between that factor and any other construct within the study, as suggested in prior research (Gefen and Straub 2005). (Please see Table-2, where the square-roots of the AVEs have been reported on the main diagonal, with the off-diagonal cells reflecting the correlations between that construct and other constructs).

<table>
<thead>
<tr>
<th>Scale Item</th>
<th>Item Mean</th>
<th>Item S.D.</th>
<th>Item Loading</th>
<th>Mean Loading3</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTENT1</td>
<td>5.413</td>
<td>1.360</td>
<td>.73</td>
<td>.73</td>
</tr>
<tr>
<td>INTENT3</td>
<td>4.881</td>
<td>1.366</td>
<td>.79</td>
<td>.79</td>
</tr>
<tr>
<td>INTENT4</td>
<td>5.539</td>
<td>1.093</td>
<td>.59</td>
<td>.57</td>
</tr>
<tr>
<td>INTENT5</td>
<td>5.252</td>
<td>1.189</td>
<td>.79</td>
<td>.79</td>
</tr>
<tr>
<td>ENVIR1</td>
<td>5.279</td>
<td>1.421</td>
<td>.69</td>
<td>.68</td>
</tr>
<tr>
<td>ENVIR3</td>
<td>4.972</td>
<td>1.272</td>
<td>.74</td>
<td>.72</td>
</tr>
<tr>
<td>ENVIR4</td>
<td>5.245</td>
<td>1.328</td>
<td>.77</td>
<td>.75</td>
</tr>
<tr>
<td>ENVIR5</td>
<td>5.007</td>
<td>1.470</td>
<td>.59</td>
<td>.59</td>
</tr>
<tr>
<td>ENVIR6</td>
<td>4.965</td>
<td>1.411</td>
<td>.56</td>
<td>.56</td>
</tr>
<tr>
<td>IMO1</td>
<td>4.846</td>
<td>1.115</td>
<td>.72</td>
<td>.68</td>
</tr>
<tr>
<td>IMO2</td>
<td>4.657</td>
<td>1.101</td>
<td>.79</td>
<td>.77</td>
</tr>
<tr>
<td>IMO3</td>
<td>4.881</td>
<td>1.159</td>
<td>.83</td>
<td>.84</td>
</tr>
<tr>
<td>IEO1</td>
<td>6.063</td>
<td>1.056</td>
<td>.69</td>
<td>.69</td>
</tr>
<tr>
<td>IEO2</td>
<td>5.594</td>
<td>1.223</td>
<td>.90</td>
<td>.90</td>
</tr>
<tr>
<td>IEO3</td>
<td>5.469</td>
<td>1.238</td>
<td>.86</td>
<td>.87</td>
</tr>
<tr>
<td>IEO4</td>
<td>5.315</td>
<td>1.195</td>
<td>.81</td>
<td>.81</td>
</tr>
<tr>
<td>IEO5</td>
<td>5.783</td>
<td>1.182</td>
<td>.81</td>
<td>.81</td>
</tr>
<tr>
<td>OL1</td>
<td>4.846</td>
<td>1.375</td>
<td>.83</td>
<td>.83</td>
</tr>
<tr>
<td>OL2</td>
<td>4.615</td>
<td>1.384</td>
<td>.79</td>
<td>.79</td>
</tr>
<tr>
<td>OL3</td>
<td>4.259</td>
<td>1.523</td>
<td>.80</td>
<td>.79</td>
</tr>
<tr>
<td>OL4</td>
<td>4.783</td>
<td>1.349</td>
<td>.79</td>
<td>.79</td>
</tr>
<tr>
<td>IBP1</td>
<td>4.308</td>
<td>1.455</td>
<td>.77</td>
<td>.76</td>
</tr>
<tr>
<td>IBP2</td>
<td>4.867</td>
<td>1.240</td>
<td>.76</td>
<td>.75</td>
</tr>
<tr>
<td>IBP3</td>
<td>4.867</td>
<td>1.139</td>
<td>.85</td>
<td>.85</td>
</tr>
<tr>
<td>IBP4</td>
<td>4.489</td>
<td>1.368</td>
<td>.81</td>
<td>.81</td>
</tr>
<tr>
<td>IBP5</td>
<td>4.531</td>
<td>1.260</td>
<td>.82</td>
<td>.81</td>
</tr>
<tr>
<td>EIT1</td>
<td>5.132</td>
<td>1.359</td>
<td>.86</td>
<td>.86</td>
</tr>
<tr>
<td>EIT2</td>
<td>5.035</td>
<td>1.308</td>
<td>.82</td>
<td>.82</td>
</tr>
<tr>
<td>EIT3</td>
<td>4.601</td>
<td>1.662</td>
<td>.86</td>
<td>.86</td>
</tr>
<tr>
<td>BIT1</td>
<td>5.238</td>
<td>1.250</td>
<td>.89</td>
<td>.89</td>
</tr>
<tr>
<td>BIT2</td>
<td>5.168</td>
<td>1.343</td>
<td>.84</td>
<td>.84</td>
</tr>
<tr>
<td>BIT3</td>
<td>5.720</td>
<td>1.189</td>
<td>.89</td>
<td>.88</td>
</tr>
<tr>
<td>BPI1</td>
<td>5.105</td>
<td>1.167</td>
<td>.79</td>
<td>.79</td>
</tr>
<tr>
<td>BPI2</td>
<td>4.853</td>
<td>1.204</td>
<td>.79</td>
<td>.78</td>
</tr>
<tr>
<td>BPI3</td>
<td>4.846</td>
<td>1.263</td>
<td>.82</td>
<td>.81</td>
</tr>
</tbody>
</table>

2 Environmental Uncertainty had an AVE of .459 which may be considered fairly close to .50.

3 Mean item loadings were calculated using the bootstrap algorithm with 200 sub-samples; all mean loadings are significant at p < .01
Hypothesis testing

Next, we examined the significance and strength of our hypothesized relationships. We adopted a “molecular approach” in representing the role of the second-order factors in our model (Chin and Gopal 1995, p. 49-50). This approach suggests that “an overall latent construct exists and is indicated by the first order constructs.” In this study, the molecular approach suggests that our two second order factors (IT capability and International Performance) is indicated by the relevant first order constructs (e.g., international performance is indicated by financial performance and strategic performance). To test our hypotheses, we created a hierarchical component model using repeated manifest variables (to address the issue of second-order factors), following the guidelines of Chin et al. (2003) and Lohmoller (1989). Specifically, we repeated the manifest variables (or measurement items) for the multiple dimensions of IT Capability and International Performance twice: once for each of the dimensions, and once for the second-order factors. All of the path coefficients from IT Capability to its six dimensions were high and significant, with coefficients for four of the six paths being over .704 (Chin et al. 2003). Similarly, both the path coefficients from overall performance to financial and strategic performance were over .70. This suggested that our second-order factors were indeed indicated by the underlying first order factors.

Results also provide support for most of the hypotheses in our model. H1 predicted that information intensity would have a significant effect on IT capability. This hypothesis was supported (b=.235, p<.01). H2, where we predicted that environmental uncertainty would play a positive role on IT capability was also supported (b=.161, p<.05). Contrary to expectations, H3, where we predicted that international marketing orientation would positively affect born-global firms’ IT capability was not supported (b=.023, p>.10). H4, which predicted the positive effect of international entrepreneurial orientation on IT capability was supported (b=.298, p<.01). Similarly, organizational learning orientation had a positive effect on IT Capability, supporting H5 (b=.307, p<.01). The environmental and firm factors explained 42.8% of the variance in IT capability.

Finally, as hypothesized in H6, IT Capability had a significant positive effect on international performance of born-global firms (b=.329, p<.01), explaining approximately 10.9% of the variance on the international performance. We summarize the results in Figure 1, and in Table 4 (column 2).

---

4 The coefficient of the paths from IT Capability to External IT Linkages (EIT) and to IT Business Process Integration (BPI) were .446 and .660 respectively, which we believe is adequate.
Table 3: Composite Reliabilities, Correlation between constructs, and Square-root of AVEs

<table>
<thead>
<tr>
<th>Construct</th>
<th>Composite Reliability</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Information Intensity</td>
<td>.818</td>
<td>.729</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Environmental Uncertainty</td>
<td>.807</td>
<td>.369</td>
<td>.677</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Int. Market Orientation</td>
<td>.826</td>
<td>.226</td>
<td>.216</td>
<td>.783</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Int. Entre. Orientation</td>
<td>.910</td>
<td>.175</td>
<td>.183</td>
<td>.472</td>
<td>.818</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Org. learning Orientation</td>
<td>.879</td>
<td>.145</td>
<td>.061</td>
<td>.239</td>
<td>.288</td>
<td>.803</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 IT Bus. Partnerships</td>
<td>.900</td>
<td>.269</td>
<td>.196</td>
<td>.214</td>
<td>.381</td>
<td>.420</td>
<td>.802</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 External IT Linkages</td>
<td>.883</td>
<td>.267</td>
<td>.229</td>
<td>.149</td>
<td>.205</td>
<td>.111</td>
<td>.383</td>
<td>.846</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 Bus. IT Strategic Thinking</td>
<td>.906</td>
<td>.262</td>
<td>.158</td>
<td>.160</td>
<td>.389</td>
<td>.351</td>
<td>.552</td>
<td>.369</td>
<td>.873</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 IT Bus. Process Integration</td>
<td>.843</td>
<td>.248</td>
<td>.128</td>
<td>.165</td>
<td>.315</td>
<td>.388</td>
<td>.553</td>
<td>.139</td>
<td>.663</td>
<td>.801</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 IT Management</td>
<td>.917</td>
<td>.310</td>
<td>.327</td>
<td>.327</td>
<td>.335</td>
<td>.274</td>
<td>.474</td>
<td>.232</td>
<td>.288</td>
<td>.239</td>
<td>.831</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 IT Infrastructure</td>
<td>.944</td>
<td>.239</td>
<td>.328</td>
<td>.327</td>
<td>.284</td>
<td>.245</td>
<td>.465</td>
<td>.089</td>
<td>.328</td>
<td>.274</td>
<td>.650</td>
<td>.921</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13 Int. Strategic Performance</td>
<td>.945</td>
<td>.227</td>
<td>.297</td>
<td>.418</td>
<td>.573</td>
<td>.362</td>
<td>.239</td>
<td>.172</td>
<td>.266</td>
<td>.227</td>
<td>.259</td>
<td>.277</td>
<td>.691</td>
<td>.922</td>
</tr>
</tbody>
</table>

Environmental Factors

- Information Intensity
- Environmental Uncertainty

Firm Factors

- International Market Orientation
- International Entrepreneurial Orientation
- Organizational Learning Orientation

IT Capability

- IT Business Partnerships
- External IT Linkages
- Business IT Strategic Thinking
- IT Business Process Integration
- IT Management
- IT Infrastructure

International Performance of Born Global Firms

- Strategic Performance
- Financial Performance

Figure 1: IT Capability Model of Born-Global Firms With Path Coefficients
Cross-National Analysis

In order to empirically assess H7, we split our dataset into two sub-samples: one consisting of the firms in China (n=85), and the other consisting of firms in the U.S. (n=58). We then tested our model separately using the two datasets. For the most part, results are fairly consistent with the test of the model using the entire dataset. That is, in both China and the US, information intensity, environmental uncertainty, international entrepreneurial orientation, and organizational learning orientation had a significant (or marginally significant) positive effect on IT capability (see Table 4). Consistent with the results based on the entire data set, international marketing orientation did not have a significant effect on IT capability. Finally, IT capability had a significant effect on the international performance of the born-global firms in both countries. We note that while the effect of some of the predictors were significant at p<.10 (especially in the case of the US firms), it is likely that these results are artifacts of low sample size measurement variable ratio rather than indicative of weak relationships.

Discussion, Implications, and Conclusion

Drawing primarily on RBV and research on IT capability in large firms, this study posited a number of relationships linking potentially relevant environmental and firm-level factors to the level of IT capability in born-global firms, and the IT capability of the firms to their international performance. All but one relationship (international marketing orientation → IT capability) were found to be significant. Overall, the results validate the theory suggesting that certain firm-level orientations and environmental conditions indeed prompt born-global organizations to develop IT-based competencies that then become valuable in helping the firms survive and/or thrive in the hypercompetitive global marketplace. We believe more research is needed to make sense of the result indicating that international market orientation does not influence IT capability. One possible explanation we offer is that born-global firms with high market orientation tend to rely more on hands-on experiential observations, personal relationships, and face-to-face connections (e.g., Vaughan 1999) of owners, managers, or personnel, rather than on activities that are enabled by IT capabilities, such as computer-mediated relationship management, and systematic acquisition, analysis, and dissemination of data about markets.

One of the objectives of this study was also to assess the cross-cultural differences in the drivers and effects of IT capability in Chinese and US-based firms. While our expectation (based on the unique cultural characteristics of China as compared to the US) was that different drivers would lead to IT capability in born-globals in China and in the US, our results indicated otherwise. In fact, the results suggest that there is uniformity in the predictors of IT capability in born-global firms, irrespective of the national context. This, we believe, is a significant finding, and has implications for both IS and cross-cultural research and practice. We elaborate on this issue below.
Two different research traditions guide studies associated with national/cultural contexts— the divergence perspective, and the convergence perspective. Researchers adopting the divergence perspective argue that national cultural differences shape organizational behaviors, and emphatically state that “there is no culture free context of organizations” (Sorge 1983, p. 136). The convergence perspective, on the other hand, stems from the “convergence hypothesis” of the 1960s, which proposed that “the logic of industrialism will eventually lead us all to a common society where ideology will cease to matter” (Kerr, Dunlop, Harbison, and Myers 1960, p. 101), with the implication that “management philosophies and practices around the world should become more and alike” (Hofstede 2001, p. 34). Proponents of this perspective argue that “specific features of the global environment determine organizational form” (Stohl 1999, p. 325), as a result of which organizations across the globe adopt similar strategies and forms.

While the IS discipline has paid considerable attention on the role of culture (Ford, Connelly, and Meister 2003), and have derived rich insights on technology implementation and use in different cultural contexts (e.g., Walsham 2001), much of the prior research has adopted the divergence perspective, examining the role of cross-cultural differences in a variety of IS-related phenomenon of interest, such as e-commerce (e.g., Rose, Evaristo, and Straub 2003), information systems adoption (e.g., Srite and Karahanna 2006), perceptions of IS risk and failure (Peterson and Kim 2003), IS strategy (e.g., Tai and Phelps 2000), computer-mediated group work (e.g., Chudoba, Wynn, Lu, and Watson-Manheim 2005; Tan, Wei, Watson, and Walczuch 1998), and general information systems management (e.g., Loch, Straub, and Kamel 2003), among others. Our research, on the other hand, suggests that little cross-cultural differences exist in the drivers of IT capability, and the effect of IT capability on the international performance of born-global firms. This is particularly interesting, given that the firms in the study were embedded in the diverse contexts of China and the US. We believe that this result is an indication of the strong effects of globalization on organizations, and lends support to the convergence hypothesis.

The convergence hypothesis suggests that efforts by organizations to survive in an uncertain global arena create similarities amongst the organizations, and lead them to model after each other (Stohl 1999; DiMaggio and Powell 1991). We believe that the above perspective could apply to born-global firms. Not only do these firms operate in a global environment soon after inception, they also experience the “liability of foreignness” as they seek to enter multiple international markets. In such circumstances, they benefit from modeling themselves after other born-global organizations that they perceive as successful (DiMaggio and Powell 1991), irrespective of their national origin. Further, owing to the fact that born-global organizations are relatively young, it may be argued, that “reliance on established, legitimated procedures” of peers enhances the born-global firms’ “legitimacy and survival characteristics” (DiMaggio and Powell 1991, p. 75). Finally, simultaneous operations in multiple foreign markets, require born-global firms to be agile, and prepared to adjust themselves to the changing environments of the foreign nations. Owing to this, such firms find it “easier to mimic other organizations than to make decisions on the basis of systematic analyses of goals since such analyses would prove painful or disruptive” (DiMaggio and Powell 1991, p. 75), or even time consuming (which born-global organizations can ill-afford). We would like to emphasize that we are not proposing that there are no differences among individuals or organizations embedded in distinct national cultures; instead we are highlighting a particular case where due to certain unique characteristics and circumstances faced by born-global firms, the convergence rather than the divergence perspective provides a meaningful explanation.

**Post-Hoc Analysis**

Existing research and our study has indicated that IT capability is a complex construct with several dimensions (e.g., Bharadwaj, Sambamurthy, & Zmud, 1999). For developing actionable advice for born-global firms, clearly, it is not sufficient to merely know if IT capability makes a difference in such firms (i.e., RQ1); there is also a need to closely examine which of the dimensions/mechanisms significantly affect the performance of these organizations. To contribute to this objective, we “unpacked” our IT capability construct, and tested the effect of each of the six dimensions of IT capability on the international performance of born-global firms. Given that born-globals from China and US exhibited similarity in terms of the drivers of IT capability, and the effect of IT capability on firm performance, we tested our “unpacked” model using our entire dataset. Results indicated that IT-enabled business process integration, and integrated IT infrastructure have a significant effect on the performance. This suggests that the ability to streamline existing business processes through the use of IT, the ability to share information across different functions, and to be flexible in responding to changes in business strategy through the use of integrated IT infrastructure would lead to performance of born-global firms.
**Limitations**

One potential limitation of the study arises from the specific research methodology employed. We used a cross-sectional survey technique to collect the data, where a single respondent provided assessment of the predictor and the criterion variables. While this is not an uncommon practice, recently, some researchers have raised common method variance (CMV) concerns regarding such studies (Podsakoff, MacKenzie, Lee, and Podsakoff 2003). While our study could have been affected by CMV, we believe that this is not a concern here, due to the following reasons: 1) the use of established instruments (as in this study) reduces the threats associated with CMV (Podsakoff et al. 2003); and 2) We conducted the widely-known Harmon’s single-factor test to check for CMV (e.g., Bhatt and Grover 2005; Podsakoff et al. 2003), which indicated that CMV was not a major problem. Further, our confirmatory factor analysis, viewed as a “sophisticated test” of CMV (Podsakoff et al. 2003, p. 889), also revealed that the items had higher loadings on their respective factors (as opposed to other factors).

Another possible limitation of the study arises from the low sample size, especially in examining our third research question, which involved splitting the dataset into two. While, the ratio of sample-size to the number of measurement variables in the study was low for the cross-cultural analyses (i.e., the China and US sub-samples were 85 and 58 respectively), given that the results were significant, we may infer that sample size was not a major concern. In any case, a larger sample size (especially for US firms) could increase the confidence in the results. In our study, we faced a tradeoff: We realize that in applying a stringent criteria for screening data (e.g., number of employees being less than or equal to 500), our sample size was negatively impacted. However, on a positive note, this ensured less variation among the organizations studied, and consequently greater validity of results for born-globals.

**Conclusion and Future Research**

This study empirically examines the drivers and effects of IT capability in born-global firms in China and in the US, and offers a number of contributions to both the Information Systems (IS) and the international business (IB) disciplines. In terms of theoretical directions for IB research, this study suggests that RBV provides a potentially useful lens for investigating aspects of born-global firms, for which traditional theories such as monopolistic advantage theory (Caves 1982), product life cycle theory (Vernon 1966), and stage theory of internationalization (Johanson and Vahlne, 1977) have not proved to be particularly useful (McDougall, Oviatt, and Shrader 2003). Wade and Hulland (2004, p. 110) argue that RBV provides the “groundwork for a set of mutually exclusive and exhaustive information systems assets and capabilities” and provides a “useful way to measure the strategic value of IS resources.” Our study confirms that there are benefits to using RBV to assess the IT capability, its antecedents, and its effects on the strategic value (i.e., international performance) in the born-global context.

More broadly, for the IS discipline, which often has to engage in critical (self-)examinations regarding the contribution of IT as a result of provocative viewpoints (e.g., Carr, 2003), the study conveys the heartening news that IT does matter, at least in born-global firms in the US and China, two diverse national contexts. Born-global firms are thus well-advised to seriously consider developing their IT capability, especially if they face information intensive and uncertain environments, and possess an entrepreneurial and learning orientation. In addition, our post-hoc analysis, wherein we “unpacked” IT capability into its six different dimensions, and assessed their effect on performance, provides more useful advice to born-global firms, in terms of the specific types of IT they should invest in. The implication for the IB discipline, which appears to focus solely on the traditional business functions such as Marketing, HR, and Finance (e.g., Ball et al. 2006) while paying little attention to IS, is that it needs to direct attention to the importance of understanding (and investing in) IT-based systems in firms with a global scope. Finally, the study makes an important contribution to the existing body of cross-cultural research in IS. As discussed earlier, cross-cultural research in general draws on either the divergence or the convergence perspective. Our study indicates that in the context of born-global organizations, which are dynamic, young, and follow rapid internationalization, the convergence perspective explains much of their technology-related behaviors and outcomes. Our hope is that this study will contribute to the awareness of the community of global IT scholars that the divergence and the convergence perspectives “capture the dialectical tensions inherent in the globalization” (Stohl 1999, p. 326), and will caution us against the unquestioning use of one particular view. Indeed, it would be useful to identify contingency factors that determine when the convergence or the divergence perspective becomes relevant. Clearly, there is much to be learned about the role of IT capability in these new organizational forms operating in the global arena, and we hope this study provides a useful step in this direction.
Global Information Technology Issues

References


Global Information Technology Issues


Zhang et. al. / Drivers and Effects of IT Capability in Born-Globals


