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Full Length Research Paper

Host-country experience, location strategy and investment performance: An empirical study of Taiwan IT companies in China

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Previous studies on investment location focused on local environmental factors, but tended to overlook the fact that firms' host-country experience might have an impact on their location strategies and influence the investment performance. This study categorized location strategy in the breadth and depth of foreign investment and hotspots for investment to compensate for the inadequacy of relevant studies. This study chose 120 listed Taiwanese electronics companies that had invested in China between 1999 and 2007, as the research data, to examine the impact of host-country experience on the three types of location strategies and the impact of a specific location strategy on investment performance. This study discovered that as firms increased their host-country experience, the breadth, and depth of their foreign investment increased, as well as their investment in hotspots. In addition, the wider the range a firm's foreign investments were, the better their investment performance would be. The impact of diversity on investment performance had a deferred effect. However, if firms invested in foreign hotspots, their potential profit might decrease, due to strong competition that detracted from investment performance.

Key words: Host-country experience, location strategy, Taiwan IT companies, China.

INTRODUCTION

According to statistics from the United Nations, China attracts more foreign investment than any other developing country (United Nations Conference on Trade and Development, UNCTAD, 2009). Taking the year 2008 as an example, the country attracted 92.4 trillion US dollars in total foreign investment. This enormous flow of capital into the country has contributed to rapid growth in the Chinese economy, for example, the Gross Domestic Product (GDP) in 2008 reached 4.4 trillion US dollars(30.067 trillion RMB), an increase of 9% compared to 2007 (National Bureau of Statistics of China, 2009); and the economic growth rate was 9% (Mainland Affairs Council, Executive Yuan, Taiwan, 2009). China has become the third largest exporting country in the world, next to Germany, with the United States (whose foreign exchange reserves has reached two trillion US dollars), ranked number one (Masson et al., 2008). Obviously, China has an enormous impact on the global economy.

Until March, 2010, the total Taiwanese investment in China had reached 85.4 billion (Investment Commission, Ministry of Economic Affairs, 2010). In particular, investment from the electronics industry was the most significant (Securities and Futures Bureau, Financial Supervisory Commission, Executive Yuan, Taiwan, 2009). As to the location of this investment, many companies have moved from the region of the Pearl River Delta to that of the Yangtze River Delta, which is more comprehensively equipped, with many related supply chain companies as well as a sound legal environment. It has become the most popular location for Taiwanese investment in China. The main objectives in this Taiwanese shift into the Chinese market were the acquisition of basic resources and human capital (Frost, 2001); the securing of components, techniques, and financial support through connections with suppliers in

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relevant production networks, and to increase their competitiveness (Allen and Pantzalis, 1996; Phene and Almeida, 2008).

Previous studies concerning investment location focused mainly on the perspective of the local environment; the way that governmental support, joint suppliers, competitive markets, production conditions, and basic facilities affect on firms' selection of investment locations (Li and Park, 2006). However, the impact of firms' investment experience on the selection of investment locations has largely been overlooked. When analyzing location strategies, companies tended to determine the breadth and depth of foreign investment first. While the breadth of foreign investment refers to the number of locations firms could invest in, the depth refers to the density of investment in a particular investment location (for example, a firm whose subsidiaries in one location take up a high relative proportion of the total number of subsidiaries). Normally, the breadth and depth of firms' foreign investment indicate a firms' commitment to an investment location and the development of the local market. On the other hand, foreign location strategies are deeply influenced by companies' local investment experience and operations (Eriksson et al., 1997). When firms reinforce their cooperation with subsidiaries in various locations by increasing the breadth of foreign investment, they are able to obtain crucial insight and alternatives in maximizing the value chain of the industry. In the meantime, by increasing the depth of investment, firms are able to concentrate on developing a local market, connecting more closely with local manufacturers, creating their own niche, and thereby improving investment performance.

Firms are often led by governmental policies or legislation to invest in particular hotspots, or they simply follow in the steps of other firms. Previous studies have overlooked the impact of host-country experience or location strategy on investment performance. To compensate for this insufficiency, we selected, as research data, the 120 publicly listed Taiwanese Electronics companies that had invested in China between 1999 and 2007. Because this research data has both the cross-sectional and time-series characteristics, the Hausman test is employed to test the appropriateness of the random effects model or fixed effects model (Greene, 2000). This research contributes to the existing literature on important issues related to strategic planning and performance evaluation in the context of international operations.

LITERATURE REVIEW AND RESEARCH HYPOTHESES

Host country experience and foreign investment location

As firms accumulate host-country experience, they learn to cooperate with local customers, and upstream or downstream manufacturers. Through knowledge sharing, firms develop their managerial, research and developmental expertise; they are rewarded with market development opportunities; and they obtain natural resources and access to labor and capital. In short, they procure all of the strategic assets that are required for production (Chen and Chen, 1998). In particular, staff turnover and migration between industries or manufacturers may result in technology spillover, wherein manufacturers are able to absorb a diversity of knowledge (Almeida and Kogut, 1999). To expand their production networks, firms may consider moving to other locations to look for new partners with whom to cooperate (Chen et al., 2004).

Geographic locations vary in terms of resources, basic facilities, competitive conditions, and quality of labor. Therefore, firms tend to expand the breadth of their foreign investment to take advantage of the resources in various locations, and thus, to generate an integration of complimentary resources, technological spillover, and economic scale. Taiwanese firms benefit from sharing know-how with partners and establishing their unique advantages by building stable, long-term, strategic alliances with their up-, mid-, and downstream manufacturing partners. Accordingly, as experience in local management increases, firms establish more partnerships in various locations, to further increase the breadth of their investment. Thus, we propose the hypotheses as follows:

H_1: Host-country experience has an impact on foreign investment location strategy.
H_{1a}: Host-country experience has a positive impact on the breadth of foreign investment.

When firms first enter a local market, they have to overcome investment obstacles. As they spend more time dealing with local businesses, they accumulate the knowledge and skills to run a business successfully in the host country. The accumulated experience enables firms to develop and acquire integration-related resources and abilities, and to improve their position relative to the competition (Davidson, 1980). As they learn to function in the host country, firms obtain new abilities and complimentary resources to reduce management risk and better fulfill their commitment to the market (Chetty et al., 2006; Eriksson et al., 1997). As firms develop an understanding of the local market, the perceived risk and uncertainty of doing business in that country are reduced, which encourages firms to invest more resources in that location. Thus, we propose the hypotheses as follows:

H_{1b}: Host-country experience has a positive impact on the depth of foreign investment.

From the perspective of institutional theory, firms' activities are embedded in the institutional environment

and influenced by legislation, cultural norms, and perceptions (Scott, 2001). In order to survive, firms often have to connect with each other to seek legitimacy under managerial circumstances (Pouder and John, 1996). In addition, organizations become increasingly similar in their procedures due to mimetic isomorphism, coercive isomorphism, and normative isomorphism. Regarding mimetic isomorphism, high-technology industries might imitate each other to establish legitimacy because of the uncertainty in technology and the marketplace. Thus, mimetic isomorphism is the format that firms choose when they invest in hotspots from time to time (DiMaggio and Powell, 1983).

Concerning coercive isomorphism, organizational procedures, controls and structures all face the pressure of institutionalization, due to limitations resulting from legislation, mutual dependence on the same resources and the restraints of legal contracts. This affects a firm's behavior (Scott, 2001), contributes to conformity, and further influences their selection of hotspots for investment. Under these conditions, a form of coercive isomorphism is developed (DiMaggio and Powell, 1983). When firms sign up researchers or new employees from local universities or from their competitors, these new team members tend to adopt the same approach to define and solve problems, because they have received similar training or professional education. This contributes to a format of normative isomorphism (Suchman, 1995).

As firms accumulate host-country experience and try to reduce the level of uncertainty they face, they are more likely to adopt the methods of mimetic isomorphism in imitating the behavior of other organizations by investing in hotspots, to reduce the costs associated with changing organizational practices. Subsequently, suppliers, researchers, and joint ventures that invest in hotspots may form homogeneous goals, procedures, and systems because of coercive isomorphism. As experience in a host country increases, firms are better able to predict investment strategies similar to those adopted by other firms investing in that location. They learn how to respond to the needs of local markets (DiMaggio and Powell, 1983), which in turn, encourages them to invest in the hotspot. As industries evolve, conformity resulting from normative isomorphism between firms can bring legitimacy, stability, access to resources and skilled personnel. Furthermore, firms' competitiveness is improved (Oliver, 1991), and they are unintentionally attracted to invest in these locations. Thus, we propose the hypotheses as follows:

H_2: Host-country experience has a positive impact in hotspots for foreign investment.

Foreign investment location and firms' investment performance

Regarding the correlation between geographic location and market values, Pantzalis (2001) discovered that transnational enterprises tended to expand their businesses in developing countries to add market value. Vermeulen and Barkema (2002) pointed out that both the countries in which firms were investing, and the selection of expansion path had an impact on a firms' investment performance.

In order to expand their production networks, firms establish primary and secondary value chain activities to enhance flexibility in management (Pantzali, 2001). At the same time, they carry over their successful experience from other locations to utilize and transfer both production elements and resources effectively. Chen (2003) suggested that networking distance had an impact on the success of firms' investments. During internationalization, Taiwanese firms usually choose to invest in locations with shorter networking distances, because close proximity between the host country and the mother country increases convenience in the movement of products and services. Firms are better able to acquire and allocate resources efficiently, compensate for a lack of internal resources, reduce management risk and improve flexibility in management (Chen and Chen, 1998; Phene and Almeida, 2008). If firms were able to add a variety of investment locations through a comprehensive planning of investment distribution, they would be able to build new networks with suppliers and customers in other locations. They could develop an understanding of market conditions in various locations more quickly, obtain critical resources (Taggart, 1989), reinforce competitive advantages, respond to competitors effectively, and enhance investment performance. Thus, we propose the hypotheses as follows:

H_3: Foreign investment location has an impact on investment performance.
H_{3a}: The breadth of foreign investment has a positive impact on investment performance.

The structure of industry or division of labor developed in different investment locations may differ. Manufacturers may develop mutual, long-term, profitable cooperative networks and achieve industrial economies of scale through vertical specialization, complementary resources utilization and a reduction in costs. Furthermore, firms establish more contacts, which can in turn contribute to simplification of purchasing procedures, spread of technology, increased innovation and eventually, expansion of the firm (Porter, 2001; Yamawaki, 2002).

Manufacturers in the same location tend to develop mutual commitments, which are beneficial for exchanging technology, lowering transaction costs, and spreading knowledge. In this way, knowledge unique to a particular location is pooled, thereby improving manufacturers' competitive advantage (Audretsch and Feldman, 1996; Porter, 1990, 1998). As firms devote themselves to local markets, their understanding of the local market increases

and perceived risks and uncertainty are reduced. This can significantly enhance investment performance. Thus, we propose the hypotheses as follows:

H_{3b}: The depth of foreign investment has a positive impact on investment performance.

Early on, Taiwanese firms focused primarily on the Pearl River Delta, in areas such as Shenzhen and Dongguan, when selecting investment locations in China (Filatotchev et al., 2007). The major activities were computer assembly and the production of components. Later, as Taiwanese firms invested more in domestic sales than in exports, many manufacturers followed big assembly plants to cities such as Shanghai, Kunshan, and Suzhou, forming a network among up-, mid-, and downstream industries.

The selection of investment location can be seen as an example of organizational isomorphism. DiMaggio and Powell (1983) suggested that companies tended to follow the example of successful companies when facing environmental pressure and uncertainty. When investing in China, Taiwanese companies learned from previously successful companies to reduce management risk when facing environmental uncertainty, and selecting investment locations based on the previous decisions of firms in the same industry (Wang, 2004).

The availability of information about well-equipped facilities in the region of Eastern China, and a mature division of labor among up-, mid-, and downstream industries has made it much easier for companies to locate joint manufacturing opportunities. In particular, Taiwanese companies were emotionally connected (Filatotchev et al., 2007). By interactively applying a firm's core competence and complementary resources utilization, firms are able to take full advantage of their location and remain competitive (Porter, 1998). Furthermore, when multinational enterprises or leading manufacturers take the initiative and lead other satellite manufacturers to invest in the same hotspot, it benefits all of those involved by increasing the availability of complementary resources and the exchange of information among manufacturers (Meyer, 2004).

The relative maturity of legislation and regulations in high-tech parks and compact networks has encouraged a large number of Taiwanese companies to move their investment from the region of Southern China to Eastern China. Meanwhile, implementing global strategic plans based on Chinese hotspots enables Taiwanese firms to connect to local production networks. In this way, they are able to utilize their resources efficiently and improve flexibility in management. This enhances their competitive advantages and investment performance. Thus, we propose the hypotheses as follows:

H_4: Companies have better investment performance when investing in hotspots.

Normally, an appropriate investment location strategy helps companies to expand the breadth of foreign investment and increase flexibility in management, and to integrate their operations with up-, mid-, and downstream manufacturers. In addition, companies may be more willing to concentrate on local markets to increase the depth of foreign investment following their success. As soon as one manufacturer leads other major satellite factories from up-, mid-, and downstream to invest in a hotspot, their profits encourage other manufacturers to follow, thereby starting an investment wave. However, previous research has overlooked the correlation between host-country experience, investment location strategy, and investment performance. In this study, we hope to compensate for the lack of relevant studies. The structure of this research is presented in Figure 1.

RESEARCH METHODS

Sample and data collection

According to the Investment Commission, the total amount of Taiwanese corporate investment in China had reached 85.4 billion US dollars by March, 2010 (Investment Commission, Ministry of Economic Affairs, Taiwan, 2010). Statistics from the Securities and Futures Bureau, Taiwan, 2009) suggested that 932 publicly listed and over the counter (OTC) companies had invested in China by the third quarter of 2009, with the total amount of 918.1 billion NTD. In addition, most of this investment came from computer and peripheral devices manufacturing, and electronic engineering. One should note that information technology plays an important role in Taiwanese investment in China, and, this research has therefore chosen companies investing in information technology in China as the sample for this research.

Early on, Taiwanese companies chose the Pearl River Delta region (especially focusing on Guandong Province) as the major investment location, with the major business being computer peripherals and components. Since 1995, as the Chinese market gradually opened, Taiwanese companies have started moving to the Yangtze River Delta region, mainly concentrating on Jiangsu Province and Zhejiang Province. Some companies have also moved to Northern China (Shandong, Hebei, and Liaoning Province) and the Northwestern China (Shanxi Province).

The region of Eastern China attracts more companies involved in information technology. These companies manufactured technology products of higher sophistication, such as light- emitting diodes (LEDs) rectifier diodes, liquid crystal displays (LCDs) and notebook computers. On the other hand, the region of Southern China focuses on the production of peripherals and computer components (Kao, 2006). Taiwanese companies usually follow a pattern of first setting up a holding company in a foreign tax haven, and then investing in Chinese subsidiaries. They do this to lessen political risk and promote funding flexibility. According to information from the Taiwan Stock Exchange Market Observation Post System, more than 80% of the subsidiaries investing in China are 100% owned by their Taiwanese parent companies. Given that, parent companies maintain control of foreign subsidiaries as long as they possess more than 50% of the shares, this research chose, as research samples, the publicly listed Taiwan IT companies whose shareholding ratios in their Chinese subsidiaries were higher than 50%.

For research samples, we selected 334 listed IT companies that had been verified by the Securities and Futures Bureau (the first two digits of whose stock codes were 14, 16 (transformed to IT industry), 23, 24, 30, 54, and 61). After eliminating the companies

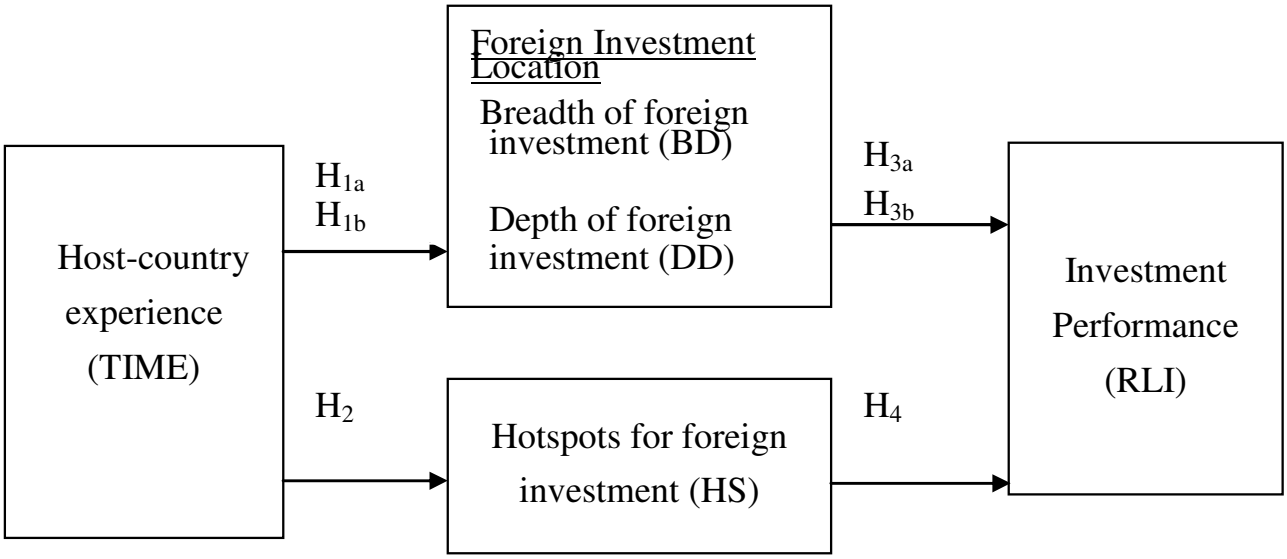

Figure 1. The impact of host-country experience and foreign investment location strategy on investment performance

which had never established subsidiaries in China or whose data was missing, 120 listed IT companies remained, with 1,080 items of panel data.

Variable measurement

Host-country experience (TIME)

Previous researchers divided international investment experience into international experience, country specific experience, and mode experience (Erramilli, 1991; Padmanabhan and Cho, 1999). This study considered the research of Luo and Peng (1999), using the number of years that companies operated in a host country as the proxy variable for the host country experience; for example, if a company had operated in China for four years, TIME = 4.

Foreign investment location

For past research performed on investment zones in Mainland China, few scholars investigated the influence of the breadth and depth of the foreign investment locations on performance; references on this topic are very limited. When researching the value of the operational flexibility of multinational corporations (MNCs), Allen and Pantzalis (1996) distinguished the transnational networks of subsidiaries as breadth and depth. Breadth is measured as "the log of the number of foreign countries in which the MNCs has subsidiaries." Depth is measured as "the ratio of the sum of the subsidiaries in the two countries with the largest number of the MNCs' subsidiaries as a fraction of the MNCs' total number of foreign subsidiaries." Regarding the distribution of subsidiaries, they used "nation" as the basis of measurement. Considering that this study used Taiwanese IT companies investing in Mainland China as the main focus (focusing on only one country), should this measurement method have been considered, the distribution location of subsidiaries ("nation" would be an unsuitable measurement basis) and measurements of investment breadth and depth would have required modification.

To differentiate the distribution locations in China of the subsidiaries for sample companies, He et al. (2008) separated China into three regions: Eastern, Central, and Western; meanwhile, Kang and Liao (2006) divided China into five regions: Northern, Central, Southern, Southwest and Northeast (provinces outside of northern, central, and southern China). Canfei (2006) also divided the China region into four regions, although these regions remained unnamed. After considering past studies, and considering that the sample companies lacked subsidiaries in the Western China region (for example, Xinjiang, Xizang, Qinghai, Ningxia, Gansu, Yunnan, and Guizhou Province) during the 1999 to 2007 research period, researchers felt that the Western region had little categorical significance. Therefore, this study divided China into four regions: Northern (including Hebei, Henan, Shandong, Liaoning, Jilin, and Shanxi), Central (including Anhui, Hubei, Hunan and Jiangxi), Eastern (including Jiangsu, and Zhejiang), and Southern (including Guangdong, Fujian, Sichuan and the south-western China). This was used as the foundation to measure foreign investment location and to identify hotspots among them.

The breadth of foreign investment (BD)

As described earlier, in dividing China into four general regions for this research, this study considered the work of He et al. (2008), Kang and Liao (2006), and Canfei (2006), and then considered the measurement methods of breadth and depth developed by Allen and Pantzalis (1996). Afterward, a "region" was established as the basis for calculating the breadth of foreign investment. For Taiwan IT companies investing in Mainland Chinese subsidiaries, if the locations of the subsidiaries were distributed over four regions, BD = 4; if the locations of the subsidiaries were distributed over three regions, BD = 3, etc.

The depth of foreign investment (DD)

Regarding the depth of foreign investment, after considering the research of Allen and Pantzalis (1996), this study used Taiwan IT companies that had the highest subsidiary establishment rates in the four China regions (the highest relative proportion of regional subsidiaries to the total number of subsidiaries) to set the values of DD.

The hotspots for foreign investment (HS)

As Pouder and John (1996) pointed out, hotspots for foreign investment must have characteristics of high-growth, a technological basis, and geographically clustered groups of competing firms. In 2007, Taiwanese IT companies established 29 subsidiaries in Northern China, 17 subsidiaries in Central China, 250 subsidiaries in Eastern China, and 131 subsidiaries in Southern China. In 1999, the number of established subsidiaries was 15 (Northern China), 2 (Central China), 30 (Eastern China), and 50 (Southern China). The subsidiary growth rates of the sample companies in the four general regions of China were 93.3% (Northern China), 750% (Central China), 733.3% (Eastern China), and 162% (Southern China). Although Central China experienced a 750% growth rate, only a few sample companies established subsidiaries. Therefore, it was difficult to term the region a hotspot for foreign investment. The subsidiary establishment by sample companies in eastern China witnessed a 733.3% growth rate, with the area classified as a high growth area.

In Eastern China, statistics showed that the products produced and sold by subsidiaries were higher-level technological products; for example, integrated circuits, bridge rectifiers diodes, liquid crystal displays, motherboards, notebook computers, etc. As indicated by our statistics, the average amount of Taiwanese corporate investment in Northern, Central, Eastern, and Southern China was 3,383,122 NTD, 1,496,814 NTD, 105,113,400 NTD and 35,747,340 NTD. The amount of money invested in the region of Eastern China was the highest. Additionally, clustered groups of competing firms were evident, with a large number of competing companies (250 in 2007), thus meeting the definition by Pouder and John (1996) of a hotspot for foreign investment. Therefore, we gave companies with subsidiaries in Eastern China a value of 1 and a value of 0 to those that did not have. This was used as an indicator to determine if companies invested in hotspots (HS).

Companies' investment performance (RLI)

Because this research intended to examine how the investment performance of listed Taiwanese IT companies in China was influenced by investment location, it would have been inappropriate to make such determinations based on companies' overall performance (such as return on assets (ROA), net profit margin, return on equity (ROE), or Tobin's Q). The 17th paragraph in the Taiwan Statement of Financial Accounting Standards No.5 "Accounting Standards for Long-Term Equity Investment under Equity Method" points out that as long as investors have control over the invested companies, such investment should be considered a long-term equity investment and be evaluated by the equity method. In addition, the 29th paragraph states that investing companies should recognize the investment income or loss from subsidiaries in China based on their shareholdings (Accounting Research and Development Foundation in Taiwan, 2005).

The financial reports (audited by Certified Public Accountants, CPA) from Taiwan IT companies (mother companies) displayed the profit and loss of foreign investment. In addition, investment profit and loss could be calculated from the Summary of Information Inquiries on Investment in China from the Market Observation Post System (MOPS) of the Taiwan Stock Exchange (TSE). Though Delios and Beamish (2001) researched the profitability of Japanese foreign subsidiaries, they used a questionnaire survey to investigate the performance; the value of 1 represented loss, 2 represented breaking even, and 3 represented profit. This study felt that using a questionnaire survey to collect data on income was not as objective as referring to financial reports audited by CPA. Therefore, data from the investment income or loss of Chinese subsidiaries recognized in the financial reports of the listed Taiwanese IT companies (mother companies) were the basis to evaluate investment performance.

Moreover, larger companies may recognize more investment income or loss, thanks to their abundant resources, financial strength, and greater investment; while smaller companies may recognize less. In order to avoid the impact of company scale on investment performance, we deflated the investment income or loss by the total assets of the companies. The results were used as an indicator of investment performance (that is, investment income or loss/total asset, RLI). Because this study used total assets to deflate the investment performance, it is not appropriate to use total assets as control variable.

Control variables

The economy of knowledge is flourishing, and as a result, companies' core competitiveness comes mainly from the hidden value of intellectual capital, which far exceeds the value of net assets (Kotabe et al., 2002). Intellectual capital includes human capital, structural capital, and relational capital; among which, human capital is the foundation of intellectual capital. Considering that employees are the source of intellectual capital, large-scale companies have more employees than medium or small-scale companies, so the number of employees is an appropriate proxy variable for the scale of companies (Shin et al., 2009; Olufunso et al., 2010). Besides, when companies have a higher debt ratio, their financial and bankruptcy risks increase with their investment in China. This leads to a further negative impact on investment location and investment performance (Olufunso et al., 2010; Wang et al., 2010). Consequently, this study included debt ratio (total debt/total asset, DB) in the empirical model as a control variable.

This study includes 1,080 panel data from 120 IT companies listed on the Taiwan Stock Exchange during the period 1999 to 2007. Based on Greene's (2000) perspective, when conducting empirical research with panel data, one can adopt a fixed effects model or a random effects model to verify the data, because both models feature cross sections and time series (Huang, 2005). Whether the empirical data should be examined by a fixed effects model or a random effects model should be determined by a Hausman test (Hausman, 1978). If test data fell within the region of rejection, the null hypotheses should be rejected and the fixed effects model should be selected as the correct model (Greene, 2000). The virtual variable (1, 0) was used to present whether companies invested in hotspots or not, so a logistic regression would be adopted to verify the hypothesis when the variables were 1 and 0.

Model design

As companies accumulate more host country experience, they are willing to devote more resources, or to apply more funding to an investment location to find good joint manufacturers with whom to cooperate. As the number of partners they deal with increases, the breadth of investment increases.

After the production network within the community is completed, other manufacturers from the strategic alliances compete to move in, and thus, the connection within the industrial value chain becomes more comprehensive.

In order to examine the impact of host country experience on investment location strategy and investment performance of companies, this research established four empirical models as shown thus:

Model 1: The impact of host-country experience (TIME) on the breadth of foreign investment (BD):

$$BD=\beta_0+\beta_1*SIZE+\beta_2*DB+\beta_3*TIME+\varepsilon_{it} \quad (1)$$

Table 1. The RMSE of model 4a-4e.

Model[a]	Dependent variable	Independent variable	RMSE
Model 4a (lag 1 period)	RLI	DB, BD, DD, HS, BD(-1), DD(-1), HS(-1)	0.0296
Model 4b (lag 1-2 periods)	RLI	DB, BD, DD, HS, BD(-1), DD(-1), HS(-1), BD(-2), DD(-2), HS(-2)	0.0232
Model 4c (lag 1-3 periods)	RLI	DB, BD, DD, HS, BD(-1), DD(-1), HS(-1), BD(-2), DD(-2), HS(-2), BD(-3), DD(-3), HS(-3)	0.0326
Model 4d (lag 1-4 periods)	RLI	DB, BD, DD, HS, BD(-1), DD(-1), HS(-1), BD(-2), DD(-2), HS(-2), BD(-3), DD(-3), HS(-3), BD(-4), DD(-4), HS(-4)	0.0349
Model 4e (lag 1-5 periods)	RLI	DB, BD, DD, HS, BD(-1), DD(-1), HS(-1), BD(-2), DD(-2), HS(-2), BD(-3), DD(-3), HS(-3), BD(-4), DD(-4), HS(-4), BD(-5), DD(-5), HS(-5)	0.0381

[a] RMSE: the root mean squared error; RLI: investment performance; DB: debt ratio; BD: the breadth of foreign investment; DD: the depth of foreign investment; HS: the hotspots for foreign investment; BD (-1): BD lags 1 period; DD (-1): DD lags 1 period; HS (-1): HS lags 1 period; BD (-2): BD lags 2 periods; DD (-2): DD lags 2 periods; HS (-2): HS lags 2 periods; BD (-3): BD lags 3 periods; DD (-3): DD lags 3 periods; HS (-3): HS lags 3 periods; BD (-4): BD lags 4 periods; DD (-4): DD lags 4 periods; HS (-4): HS lags 4 periods; BD (-5): BD lags 5 periods; DD (-5): DD lags 5 periods; HS (-5): HS lags 5 periods.

Model 2: The impact of host-country experience (TIME) on the depth of foreign investment (DD):

$$DD=\beta_0+\beta_1*SIZE+\beta_2*DB+\beta_3*TIME+\varepsilon_{it} \quad (2)$$

Model 3: The impact of host-country experience (TIME) in hotspots for foreign investment (HS):

$$HS=\beta_0+\beta_1*SIZE+\beta_2*DB+\beta_3*TIME+\varepsilon_{it} \quad (3)$$

In Models 1 to 3, β_0 is the constant and does not forecast positive or negative directions; β_1 indicates the forecast as positive, β_2 as negative, and β_3 as positive.

Model 4: The impact of host-country experience (TIME) on investment performance of companies (RLI). Given the possibility of lagged effects on investment performance, lag periods of BD, DD, and HS are also included in Model 4. Regarding the selection of lag period in Model 4, this study first constructed lag models with different periods (lag 1 period was added to Model 4a; lag 1 to 2 periods was added to Model 4b; lag 1 to 3 periods was added to Model 4c; lag 1 to 4 periods was added to Model 4d; and lag 1 to 5 periods was added to Model 4e). Then, the root mean squared error (RMSE) of each model was compared, and the model with the lowest RMSE was determined as optimal. Long lag period produce over-parameterization, decreasing the degrees of freedom and invalidating estimation results. Furthermore, after adding lag 5 periods, independent variables BD, DD, and HS did not have significant impact on RLI, a dependent variable. Therefore, this study only added up to lag 5 periods after constructing the lag models presented in this paper and comparing the RMSE of each model. Table 1 shows the results. After comparing the RMSE of Models 4a-4e, this study found that the RMSE of Model 4b, at 0.0232, was the lowest, making Model 4b superior to the others. This study therefore selected lag 1 to 2 periods as the empirical model. The construction of Model 4 is finally outlined as follows:

$$RLI=\beta_0+\beta_1*DB+\beta_2*BD+\beta_3*DD+\beta_4*HS+\beta_5*BD(-1)+\beta_6*DD(-1)+\beta_7*HS(-1)+\beta_8*BD(-2)+\beta_9*DD(-2)+\beta_{10}*HS(-2)+\varepsilon_{it} \quad (4)$$

In Model 4, β_0 is the constant and does not forecast directional positivity or negativity; β_1 is a negative forecast, and β_2 to β_{10} are positive forecasts; BD: the breadth of foreign investment; DD: the depth of foreign investment; HS: the hotspots for foreign investment; RLI: investment performance; SIZE: company scale, finding the logarithm of the number of employees as the proxy variable; DB: debt ratio; TIME: host-country experience; BD (-1): BD lags one period; DD (-1): DD lags one period; HS (-1): HS lags one period; BD (-2): BD lags two periods; DD (-2): DD lags two periods; HS (-2): HS lags two periods; i: the i^{th} company; t: the t^{th} year; ε_{it} : residuals of the i^{th} company in the t^{th} year.

EMPIRICAL RESULTS

Descriptive statistics

Table 2 shows that the average BD was 1.3833, indicating that sample companies seldom chose more than two regions for investment location. The average DD (number of Chinese subsidiaries in the prioritized region/total number of subsidiaries in four regions) was 0.6765, indicating that most Taiwanese companies tended to set up more subsidiaries in the prioritized region. Among the companies, the proportion of investment

Table 2. Descriptive statistics of variables (n = 1,080).

Variable [a]	Mean	Median	Minimum	Maximum	Standard deviation
BD	1.3833	1.0000	0.0000	4.0000	0.8311
DD	0.6765	0.6905	0.0000	1.0000	0.3541
HS	0.6725	1.0000	0.0000	1.0000	0.4695
RLI	0.0048	0.0000	-0.2966	0.3007	0.0284
SIZE	2.7176	2.6522	0.9542	4.3261	0.5146
DB	0.3583	0.3503	0.0356	0.9152	0.1452
TIME(year)	6.2746	6.0000	0.0000	18.0000	4.0748
INV_N(NT$ Thousand)	3,383	0	0	303,795	20,543
INV_C(NT$ Thousand)	1,497	0	0	306,063	14,867
INV_E(NT$ Thousand)	105,113	0	0	5,649,416	329,509
INV_S(NT$ Thousand)	35,747	0	0	3,033,400	148,105
INV_T(NT$ Thousand)	145,741	17,425	0	5,649,416	369,975

[a]BD: the breadth of foreign investment; DD: the depth of foreign investment; HS: the hotspots for foreign investment; RLI: investment performance; SIZE: company scale, finding the logarithm of the number of employees as the proxy variable; DB: debt ratio; TIME: host-country experience; INV_N: investment in northern China; INV_C: investment in central China; INV_E: investment in eastern China; INV_S: investment in southern China; INV_T: total investment in China.

communities' prioritizing the Northern, Central, Eastern, and Southern regions were 5.4, 0.7, 63, and 30.9%. The average number of subsidiaries that the sample companies set up in the four regions was 24 in the Northern region, 7 in the Central region, 164 in the Eastern region and 101 in the Southern region. There were 67.25% of the sample companies choosing to invest in hotspots (HS) in the East China region, which suggests that the East China region, where quality of labor, physical facilities, and various incentives are comprehensive, is still the first choice when companies decide their investment locations.

In addition, the average RLI was 0.48%, with the maximum of 20.07% and the minimum of -29.66%, indicating that although Taiwanese IT companies investing in China in general profit, the profits varied greatly. Furthermore, the average SIZE was 1,138 (num-ber of employees) and was categorized as a medium or small-scaled company compared to large international manufacturers. The average DB was 0.3583, indicating that the sample companies did not prefer to use high financial leverage. Finally, the average investment was 145,741 thousand NTD, with 3,383 thousand NTD in the Northern, 1,497 thousand NTD in the Central, 105,113 thousand NTD in the Eastern, and 35,747 thousand NTD in the Southern. This suggested that the Eastern region was the favorite investment location for Taiwanese companies' with the Southern region second. The average number of years of investment (TIME) was 6.3 years, indicating abundant experience.

Table 3 shows the Pearson's coefficient of correlations between all variables in the research. Particularly, a significant correlation was found between hotspots for foreign investment and the breadth of foreign investment; a strong correlation was found between the amount invested in the Eastern China region and the total investment. The VIF value of the independent variables was between 1.033 and 1.684; according to Neter et al. (1990), the issue of collinearity between independent variables was not serious when the VIF value was less than 10.

DISCUSSION

This study includes 1,080 panel data observations from 120 IT companies listed on the Taiwan Stock Exchange during the period 1999 to 2007. Panel data (whose dependent variables were not 1 or 0) could be empirically examined by either a fixed effects model or a random effects model, and the Hausman test is employed to test the appropriateness of the random effects model. If the test statistic falls within the rejection region, the null hypothesis of random effects model should be rejected and the fixed effects model selected instead. However, when the dependent variables were virtual variables of 1 or 0, a logistics regression should be adopted. As Table 4 shows, the statistics of Hausman test of Models 1, 2 and 4 all fell within the region of rejection (Hausman's test of Model 1 = 188.4697, $x^2(3) = 7.8147$; Hausman's test of Model 2 = 22.5800, $x^2(3) = 7.8147$; Hausman's test of Model 4 = 174.4263, $x^2(10) = 18.3070$). This confirmed that the fixed effects model was the correct model to use for this study of Models 1, 2 and 4. As far as Model 3 was concerned, the goodness of fit passed the test (LR statistic = 155.1423, P<0.01) so our analysis was based on those results.

As the coefficient estimation in Table 4 shows, Models 1, 2, and 3 suggested that the abundant host-country experience (TIME) had a positive impact on the breadth (BD) ($\hat{\beta}$ =0.0970, *P*<0.01) and depth (DD) ($\hat{\beta}$ =0.0193,

Table 3. All variables' Pearson's coefficient of correlations (n = 1080).

Variable[a]	BD	DD	HS	RLI	SIZE	DB	TIME	INV_N	INV_C	INV_E	INV_S	INV_T
BD	1.00											
DD	0.05 (0.09)	1.00										
HS	0.59**[b] (0.00)	0.21** (0.00)	1.00									
RLI	0.04 (0.18)	0.02 (0.53)	0.06 (0.05)	1.00								
SIZE	0.10** (0.00)	0.10** (0.00)	0.19** (0.00)	0.10** (0.00)	1.00							
DB	-0.01 (0.77)	-0.10** (0.00)	-0.03 (0.38)	-0.08* (0.01)	0.13** (0.00)	1.00						
TIME	0.37** (0.00)	0.17** (0.00)	0.28** (0.00)	0.09** (0.00)	-0.15** (0.00)	-0.10** (0.00)	1.00					
INV_N	0.28** (0.00)	-0.09** (0.00)	0.08** (0.01)	-0.04 (0.16)	0.05 (0.08)	-0.01 (0.86)	0.02 (0.53)	1.00				
INV_C	0.21** (0.00)	-0.05 (0.09)	0.06 (0.06)	0.02 (0.55)	0.03 (0.34)	-0.03 (0.35)	0.05 (0.09)	0.09** (0.00)	1.00			
INV_E	0.06 (0.06)	0.14** (0.00)	0.18** (0.00)	0.06 (0.07)	0.39** (0.00)	0.09** (0.00)	0.01 (0.74)	0.01 (0.66)	-0.01 (0.71)	1.00		
INV_S	0.14** (0.00)	-0.01 (0.85)	0.04 (0.22)	0.01 (0.87)	0.24** (0.00)	0.10** (0.00)	0.02 (0.51)	0.04 (0.19)	-0.01 (0.74)	0.06 (0.07)	1.00	
INV_T	0.13** (0.00)	0.12** (0.00)	0.18** (0.00)	0.05 (0.10)	0.45** (0.00)	0.12** (0.00)	0.02 (0.50)	0.09** (0.00)	0.03 (0.31)	0.91** (0.00)	0.45** (0.00)	1.00

[a]BD: the breadth of foreign investment; DD: the depth of foreign investment; HS: the hotspots for foreign investment; RLI: investment performance; SIZE: company scale, finding the logarithm of the number of employees as the proxy variable; DB: debt ratio; TIME: host-country experience; INV_N: investment in northern China; INV_C: investment in central China; INV_E: investment in eastern China; INV_S: investment in Southern China; INV_T: total investment in China; [b]Those below and left of the diagonal are Pearson coefficient of correlation; the values in brackets are two-tailed p-value; ** means significance level is 0.01 (two-tailed), significance; * means significance level is 0.05 (two-tailed), significance.

P<0.01) of foreign investment, as well as increasing companies' foreign investment in hotspots (HS) ($\hat{\beta}$ =0.1940, P<0.01). As a result, the research hypothesis H_{1a}, H_{1b} and H_2 were supported.

Taiwanese companies with more investment experience in China (TIME) were more capable of discovering local market opportunities and realizing how to cooperate with partners in the industrial value chain. If companies were able to invest more widely, they would be able to increase managerial flexibility, which had a significant positive impact on the breadth of investment (BD). In addition, as Taiwanese companies spent more time managing local markets in China, they continued accumulating experience, increasing their commitment to local markets and establishing cooperative joint ventures with manufacturers to expand their production networks. Additionally, the exchange of knowledge and skills, and staff turnover could both contribute to technology spillover, which had a significant positive impact on the depth of investment (DD). Normally, when multinational companies have more host-country experience, they have a better grasp of the effect of local governments' on industrial development; and they have more knowledge about the processes and timelines of constructing facilities. When companies from the same business followed each others' steps investing in a particular location, it suggested profitability in that region; thus, driven by financial incentives, other companies would also seek to invest in those foreign hotspots (HS).

In terms of investment distribution, Model 4 shows that, the broader foreign investment locations (BD) were, the

better the investment performance companies would be ($\hat{\beta}$ =0.0032, P <0.01). Meanwhile, the deferred effect that the breadth of investment had on investment performance was significant (the impact of BD (-1) on investment performance was $\hat{\beta}$ =0.0010, *P* <0.05; the impact of BD (-2) on investment performance was $\hat{\beta}$ =0.0007, P <0.05). Moreover, companies improved investment performance with greater depth of foreign investment (DD) ($\hat{\beta}$ =0.0040, *P* <0.01); and the research hypothesis H_{3a} and H_{3b} were thereby supported. Despite this, the question of whether companies invested in foreign hotspots (HS) or not had no significant impact on investment performance ($\hat{\beta}$ = -0.0004, *P* >0.1); namely, research hypotheses H_4 was not supported. This research succeeded in demonstrating that in order not to be outdone, companies had to actively expand their businesses into foreign locations and bring the benefits of their experience with them. As soon as leading manufacturers started investing in various regions of China, other up-, mid-, and downstream manufacturers of the strategic alliance in the industrial chain followed. As a result, the breadth of investment (BD) increased. Companies benefit from an integrated industrial community through a division of labor, complementary resource allocation, and technology spillover. All of these have a positive impact on investment performance. In the meantime, as the effects of knowledge spillover and technology spread, companies can constantly accumulate and pass on the benefits of their experience, providing a positive influence for years to come (BD (-1), BD (-2)).

When firms devote themselves to local markets (DD), their understanding of the local market increases and perceived risks and uncertainty are reduced. This can significantly enhance investment performance. As lagged effects are considered (the impact of DD (-1) on investment performance was $\hat{\beta}$ = -0.0005, *P* >0.1; the impact of DD (-2) on investment performance was $\hat{\beta}$ =0.0001, *P* >0.1), the depth degree of investment produces an insignificant effect on investment performance. A higher concentration of subsidiary investments in one particular region may only prove that these subsidiaries are producing too many homogeneous products and fail to pursue effective market segmentation strategies.

As to why no significant impact was found on investment performance by companies investing in hotspots (HS; HS (-1); HS(-2)) in the region of Eastern China, it may be due to the large number of economic development zones in the region. For example, there are Nanjing Hi-tech Zone, Wuxi New District, Shanghai Zhangjiang Hi-Tech Park, Suzhou Industrial Park, and Kunshan Taiwanese Investment Industrial Zone. The gradual entry of companies into these areas has resulted in intense competition and greatly reduced room for profits, which in turn led to a negative impact on investment performance. Regarding analysis of control variables, as the coefficient estimates of Table 4 demonstrate, Models 1 to 3 each show that a larger company scale (SIZE) significantly and positively influences not only the breadth of foreign investment (BD) ($\hat{\beta}$ = 0.2975, P<0.01), and the depth of foreign investment (DD) ($\hat{\beta}$ = 0.2127, P<0.01), but also foreign investment in hotspots (HS) ($\hat{\beta}$ = 1.1612, P<0.01). This occurs because with a larger company scale (SIZE), human capital is richer, employee professional knowledge and ability are stronger, and an understanding of the importance of building the industry value chain is augmented, helping to increase the breadth of foreign investment (BD). This facilitates new network relationships with suppliers and customers in other locations, creating a competitive niche. At the same time, richer human capital with a greater understanding of how to deeply engage with the direct market (DD) and a united commitment shared with the company lowers operational risk and uncertainty. Furthermore, when human capital is richer, employees can better grasp the dynamics of market development and the investment trends of flagship enterprises. As soon as flagship enterprises invest in hotspots (HS), the company can follow and share in benefits related to resource sharing, technology spillover, economies of scale, etc.

As the coefficient estimates in Table 4 demonstrate, Models 1 to 3 each show that a higher debt ratio (DB) does not significantly affect the breadth of foreign investment (BD) ($\hat{\beta}$ = -0.0878, P> 0.1), the depth of foreign investment (DD) ($\hat{\beta}$ = -0.0697, P>0.1), or foreign investment in hotspots (HS) ($\hat{\beta}$ = -0.2895, P>0.1). This study speculates that in the case of foreign investment, companies tap into enormous hidden business opportunities in the local market, and whether the experience of the host country and flagship or collaborative enterprises is sufficient or not, has far greater impact on local investment from foreign companies. The financial risk of an overly high debt ratio is not the most important consideration. Model 4 shows that higher debt ratio (DB) significantly and negatively influences investment performance (RLI) ($\hat{\beta}$ = -0.0149, P<0.01). The higher debt ratio (DB) results in a heavier interest burden on the company, which increases both the cost of acquiring capital and financial risk, hence negatively influencing investment performance (RLI).

CONCLUSION AND SUGGESTIONS

This research analyzed 1,080 panel data from 120 listed Taiwanese IT companies that had invested between 1999 and 2007, and examined the impact of Taiwanese companies' host-country experience on their selection of investment locations in China. In terms of investment location strategy, when Taiwanese companies had more

Table 4. Regression analysis: The impact of host-country experience and location strategy on investment performance (n = 1,080).

Variable[a]	Expected symbol	Model 1[b]: The impact of TIME on BD	Model 2: The impact of TIME on DD	Model 3: The impact of TIME on HS	Model 4: The impact of TIME, BD, DD on RLI
SIZE	+	0.2975***[c]	0.2127***	1.1612***	
DB	-	-0.0878	-0.0697	-0.2895	-0.0149***
TIME	+	0.0970***	0.0193***	0.1940***	
BD	+				0.0032***
DD	+				0.0040***
HS	+				-0.0004
BD(-1)					0.0010**
DD(-1)					-0.0005
HS(-1)					-0.0003
BD(-2)					0.0007***
DD(-2)					0.0001
HS(-2)					0.0013
F value		31.9192	77.0048		8.0307
P value		0.0000	0.0000		0.0000
R^2		0.8014	0.9068		0.5915
Adjusted R^2		0.7763	0.8950		0.5178
Hausman test		188.4697	22.5800		174.4263
χ^2		χ^2 (3) = 7.8147	χ^2 (3) = 7.8147		χ^2 (10)= 18.3070
LR statistic				155.1423	
P value				0.0000	
McFadden R^2				0.1135	

[a]SIZE: company scale, finding the logarithm of the number of employees as the proxy variable; DB: debt ratio; TIME: host-country experience; BD: the breadth of foreign investment; DD: the depth of foreign investment; HS: the hotspots for foreign investment; RLI: investment performance; BD (-1): BD lags one period; DD (-1): DD lags one period; HS (-1): HS lags one period; BD (-2): BD lags two periods; DD (-2): DD lags two periods; [b]Model 1, 2 and 4 are fixed-effects models; Model 3 is Logit Regression model; [c]*** means significance level is 0.01; ** means significance level is 0.05: ** means significance level is 0.1.

experience running businesses in China, they tended to invest more broadly and deeply. They also tended to swarm to investment hotspots.

As transnational companies increased the breadth and depth of their investments, they improved their investment performance. Moreover, the impact of breadth of foreign investment on investment performance is deferred.

Management implications

The theoretical contribution of this research was to compensate for the insufficiency of previous studies on investment location, which had concentrated mostly on the aspects of local environment, such as competition and joint manufacturing but overlooked the impact of host-country experience on foreign investment location. Furthermore, previous studies about the effects of investment location had only focused on the impact of specific investment locations on R&D, innovation and knowledge development. It is less commonly noted that companies often select investment locations to gain operational and financial leverage and to create constant competitive advantages. This research has been able to compensate for the insufficiency of past studies to deal with these topics. From the empirical research, this study concluded that companies with more host-country experience could expand the breadth of their foreign investment, thereby rapidly connecting to the market in various locations. By doing this, they acquired strategic resources, increased managerial flexibility and investment opportunities. In the end, it was possible for them to improve their investment performance. This conclusion agrees with the results of Chen et al. (2004). Secondly, companies with more host-country experience may have had a better understanding of the local market and a stronger commitment to the local market, which increased the depth of their investment. This conclusion supports the theory of Eriksson et al. (1997). Additionally, in order to reduce the technological uncertainty,

companies with more host-country experience have more knowledge about how to learn from the actions of other companies', in order to legitimize their managerial decisions. Moreover, the region of Eastern China attracted investment thanks to abundant human resources, comprehensive basic facilities, and legislative incentives provided by local governments. Therefore, it was determined that companies' investment in hotspots in the model of mimetic isomorphism also responded to the perspective of institutional theory (Scott, 2001).

Because plentiful host-country experience contributed to the success of investment locations, this study suggested that companies who plan to select investment locations in China should seek to accumulate host-country experience quickly by establishing a strategic alliance in the industrial chain with up-, mid-, and downstream manufacturers. When investing offshore, companies can build appropriate production networks by exchanging knowledge, sharing experience, and utilizing complementary resource management. By improving sensitivity to environmental changes in the market, companies familiarize themselves with the investment environment and risk evaluation in various locations as well as mastering resource information. Companies can fully exploit the benefits of global investment locations based on close cooperation with alliance manufacturers in industrial chains.

This study discovered that when companies had broader investment locations, they appear to have had more connections with manufacturers in various locations. They were able to obtain critical techniques and resources from prospective markets, to dispose of various value chain activities, and further improve foreign investment performance. This corresponded to the conclusions of Phene and Almeida (2008). On the other hand, increased depth of investment enabled companies to interact more closely with local manufacturers, and to benefit from the integration of technology spillover and reduction in production costs, through mutual learning and knowledge exchange. This was in line with the results of Nachum and Zaheer (2005). When companies swarm to hotspots for investment, keen competition may decrease profits and result in very little positive impact on investment performance. This result differed completely from the conclusion of DiMaggio and Powell (1983), and warranted future examination.

This study suggested that Taiwanese companies should base their strategic planning on a macro point of view when investing in China. Companies should expand the breadth of investment in China, apply location-specific resources properly, and take full advantage of production networks through vertical or horizontal cooperation. In this way, the positive effects of value chain activities can be maximized. In the meantime, leading companies should unite major satellite factories to enter single foreign locations to help the up-, mid-, and downstream manufacturers connect with each others' vertically and to promote the integration of manufacturers in that location.

When companies seek to invest in hotspots, those who arrive early establish stable networks and business foundations. This is due to comprehensive basic facilities, rich human capital, governmental support, and lively business opportunities. It is therefore, a challenge for the companies that follow to stand out in such an intensively competitive environment. Making investment in hotspots, Taiwanese companies should carefully assess their own competitive advantages and core competence in the first place before searching for potential investment locations. They must avoid swarming into hotspots and thereby missing the opportunity to explore other locations.

Research limitations

Due to the limited data, this study only observed how Taiwanese companies selected their investment locations in China after 1999. We were unable to study investment changes from 1979, when the market was opened, to 1999. Nor, were we able to examine the dynamics of investment location. Thus, researchers should conduct a more comprehensive study to describe and analyze companies' dynamic changes in response to investment location. In addition, other aspects of corporate management such as resource utilization, competence, and networking relation with other Taiwanese companies all have an impact on the selection of investment locations. This study suggests that future studies look into the impact of these factors on companies' foreign investment performance.

While our research subject was IT companies, whose locations selections were mainly in coastal China, other industries such as food and transportation may differ from the IT industry in terms of location selection strategy. Thus, future studies should analyze differences in investment location between different industries. This research only considered the breadth of investment, the depth of investment, and investment hotspots with regards to Taiwanese companies' location strategies in the Chinese market. It would be worth discussing in following studies whether investment strategies could be tackled in chronological order. Finally, this research discussed the investment locations of subsidiaries from the perspective of mother companies, and overlooked the decision-making autonomy of the subsidiaries in the host country. Accordingly, we would suggest that future studies consider the impact that decision-making of foreign subsidiaries has on investment location and foreign investment performance.

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