

# **Tapping a Foreign Subsidiary's Competence: An Empirical Test of Subsidiaries of Multinational Corporations in South Korea**

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## **Abstract**

This study examined the conditions under which a foreign subsidiary becomes the competence center within the multinational corporation (MNC)'s network. We developed an integrated framework by investigating effects of both subsidiary-level factors and headquarter (HQ)-level factors on subsidiary's competence development. Survey data from 76 foreign subsidiaries of MNCs in South Korea largely supported our hypotheses. We found that subsidiaries with high management autonomy and high network embeddedness in the local market (South Korea) tend to build superior capabilities that would be useful throughout the entire MNC network. Concerning an MNC's management

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system, our results suggested that technological and managerial knowledge transfer from HQ to subsidiaries plays important roles in helping a subsidiary evolve into a competence center in the MNC's global network.

Keywords: network embeddedness, subsidiary autonomy, learning capability, competence center

## INTRODUCTION

Traditionally, an MNC's HQ generated ownership-specific advantages such as proprietary technologies and premium brands and transferred them to overseas subsidiaries so that they can overcome the cost of foreignness in overseas operations (Caves 1996). Overseas subsidiaries were viewed as appendages to the HQ, as they just executed orders from the HQ by utilizing knowledge and resources transferred from the parent company. However, recently, leading MNCs began to view their overseas subsidiaries as the sources of MNC's sustained competitive advantages and encouraged them to tap valuable resource embedded in the local market (Bartlett and Ghoshal 1989; Song 2002). As a result, some overseas subsidiaries develop some distinctive capabilities that are also useful for headquarters and peer subsidiaries. Thus how to make some overseas subsidiaries become as the competence center within the MNC network became an important issue in international management.

Though prior researches emphasized the growing importance of the subsidiary initiative, (Birkinshaw, Hood, and Jonsson 1998; Birkinshaw, Hood, and Young 2005), few studies empirically examined the conditions under which a subsidiary can evolve into a competence center (Frost, Birkinshaw, and Ensign 2002) and thus contributes to MNC's competitive advantages. This study tries to fill the gap by examining the conditions that promote a subsidiary evolving into the excellent competence center within the MNC network.

We argue that whether a subsidiary can become the competence center and contribute to the other parts of an MNC depends on both subsidiary characteristics and the HQ's management system. Therefore, we develop an integrated framework to examine the conditions under which a subsidiary becomes the competence center within the MNC network.

Particularly, by examining the HQ's managerial styles such as the subsidiary evaluation system and the HQs' knowledge transfer, this study also addresses the issue about "how HQ can manage the competence center?" By observing foreign subsidiaries operating in South Korea, we found that managerial autonomy and local network embeddedness of a subsidiary increase the possibility that a subsidiary develops as the competence center. And firm-specific knowledge transfer from the HQ to a subsidiary also help subsidiary become the competence center within the MNC network.

This paper is organized as follows: We first describe the theoretical background and develop hypotheses. Then we state research methodologies used in this study. Empirical results and implications of this study are discussed in the last part.

## **THEORY AND HYPOTHESES**

### **Subsidiaries as New Sources of an MNC's Sustained Competitive Advantages**

The monopolistic advantage view of foreign direct investment (FDI) and the subsequent eclectic theory emphasized the ownership-specific advantages drawn from the home country as the important driving force for foreign direct investments (Buckley and Casson 1998; Dunning 2000). In such conventional FDI theories, firm-specific resources owned by the MNC in the home country motivate its going abroad to exploit existing organizational slack resource for growth (Penrose 1959). In this theory, overseas subsidiaries were viewed as merely appendages to the parent company's global strategy and resources. However, recently, these conventional FDI theories were criticized for over-emphasizing the absolute role of HQ and the home country but ignoring the possibility of a subsidiary's evolution into an autonomous and competent one (Birkinshaw and Hood 1998). Recent studies found that an increasing number of foreign direct investments are motivated by sourcing valuable resources embedded in the host country (Shan and Song 1997). A new paradigm of an MNC's global competitiveness suggests that ownership-specific advantages of an MNC can exist not only in

the home country but also in the host country. Rugman and Verbeke (2001) emphasized subsidiary-specific advantages as the important sources of an MNC's sustained competitive advantages. MNCs often granted overseas subsidiaries competence-creating mandates so that they can become competence centers in the global network through tapping valuable resources and capabilities embedded in the host country (Frost, Birkinshaw, and Ensign 2002; Cantwell and Mudambi 2005).

Therefore, the key issue in an emerging perspective of foreign direct investments is how to help a subsidiary develop their resources and capabilities in the host country so that these resources and capabilities can be leveraged and diffused throughout the MNC network. Frost, Birkinshaw, and Ensign (2002) and other scholars named this kind of competent overseas subsidiary as the "center of excellence", which refers to "an organization unit that embodies a set of capabilities that has been explicitly recognized by the firm as an important source of value creation, with the intention that these capabilities be leveraged by and/or disseminated to other parts of the firm".

Although recent studies emphasized the importance of subsidiaries as the competence centers, few studies empirically examined conditions under which a subsidiary can become a competence center within an MNC network. Birkinshaw, Hood, and Jonsson (1998) found that a subsidiary's initiative plays an important role in its competence building activities in the host country. However, since an overseas subsidiary is always under the control of and evaluated by the HQ, changes in a subsidiary's activities and its underlying capabilities are driven inevitably by both the subsidiary's own choice and the HQ's assignment and managerial styles (Birkinshaw and Hood 1998). Thus, in this study, we examined both the subsidiary and the headquarters' roles in determining the subsidiary's competence development.

### **Capability Building of Overseas Subsidiaries**

We first hypothesized subsidiary-specific characteristics that promote a subsidiary's competence development. Following Song, Asakawa and Chu (2006), we suggested that among subsidiary-level factors, network embeddedness in the host country and

managerial autonomy of the subsidiary are the most important factors. We should note that these subsidiary-level variables are largely determined by the MNC HQ's policies rather than decided solely by each subsidiary. Thus subsidiary-level variables that we examined in this paper are factors that are subsidiary-related rather than subsidiary-determined.

*Network Embeddedness in the Host Country.* Economic action is always embedded in the structures of social relations and inevitably affected by relations in the social network (Granovetter 1985; Uzzi 1996). A network embeddedness perspective stresses that social relations rather than institutional arrangements are important in producing economic benefits and trust in economic life (Granovetter 1985). Due to the trust and reciprocity built among the members, network relationships facilitate fine-grained information sharing and joint problem-solving arrangement (Granovetter 1985; Uzzi 1996; Adler and Kwon 2002), thereby promoting product innovation (Hansen, Nohria, and Tierney 1999; Tsai and Ghoshal 1998). Song, Asakawa and Chu (2006) examined both internal embeddedness within the MNC network and external embeddedness in the host country. They found external network embeddedness of subsidiary in the host country significantly influences the knowledge sourcing of overseas R&D labs from host locations.

Network relations represent a stock of knowledge for participating firms. Members of business networks develop appropriate organizational structures and inter-organizational interaction routines so that they can promote reliable information exchange. In case of an MNC, overseas subsidiaries interact with local business actors. The network relationships that a subsidiary builds with buyers, suppliers, and competitors in the host country bring with them many valuable resource and learning opportunities. Subsidiaries highly embedded in the host country have advantages in assimilating tacit knowledge and know-how, and thus, they are more likely to develop competencies based on locally embedded knowledge in the host country (Song, Asakawa and Chu 2006). Thus we hypothesize:

**H1:** The degree of network embeddedness of a subsidiary in the host country will be positively related to the possibility that

the subsidiary becomes the competence center within the MNC network.

*Managerial Autonomy.* Subsidiary autonomy refers to the degree to which a foreign subsidiary has the authority to do strategic and operational decision-making by itself (O'Donnell 2000). An MNC often faces conflicts with its overseas subsidiaries over the distribution of decision-making authorities. Traditionally, an MNC's HQ exerted strong hierarchical control over overseas subsidiaries in order to pursue strategic integration. However, recently, an increasing number of MNCs realize the need of giving substantial autonomy to overseas subsidiaries so that they have freedom to develop resources and capabilities in the local country (Andersson, Forsgren, and Holm 2001; Taggart and Hood 1999). Recent studies showed that subsidiary autonomy positively affects the subsidiary's entrepreneurial activities and innovation outputs (Birkinshaw, Hood, and Jonsson 1998; Birkinshaw, Hood, and Young 2005).

Too much control of HQ over overseas subsidiaries lowers the subsidiary's learning motives, innovative or entrepreneur behaviors (Bartlett and Ghoshal 1989; Frost, Birkinshaw, and Ensign 2002). To encourage a subsidiary to develop location-bound, subsidiary-specific advantages, the subsidiary should be given enough managerial autonomy to identify and tap local knowledge. Thus, considerable autonomy is necessary for an overseas subsidiary to take the initiative to develop subsidiary-specific competences and become the competence center.

**H2:** Managerial autonomy of a subsidiary will be positively related to the possibility that the subsidiary becomes the competence center within the MNC network.

### **HQ Management System**

The process that drives the changes of a subsidiary's activities and capabilities is determined by not only the subsidiary's features but also the HQ's management systems (Birkinshaw and Hood 1998). Though a subsidiary is embedded in the host country, it is still under the controls of its parent company (Birkinshaw, Hood, and Jonsson 1998). Therefore, whether a

subsidiary can evolve into a competence center in the MNC network is inevitably influenced by headquarters' managerial policies. We chose HQ's appraisal system and knowledge transfer to subsidiary as key dimensions of HQ's management policies that affect the possibility that the subsidiary becomes the competence center within the MNC network.

*Performance Appraisal System.* Performance evaluation system used by a HQ is an effective way to align subsidiary behaviors to the HQ's goal so that agency problems between the subsidiary and the HQ are decreased (Eisenhardt 1989). In order to encourage a subsidiary to develop and share its resources and capabilities with other units within the MNC network, the appraisal system regarding to subsidiary performance should be positively linked with the creation and transfer of the subsidiary's capability (Gupta and Govindarajan 2000). Prior studies found that appropriate evaluation based on the performance of entire MNC rather than just the performance of a subsidiary itself stimulates subsidiary cooperation and knowledge transfer to other units (Gupta and Govindarajan 2000).

In this study, two kinds of performance appraisal mechanisms — learning-related and capability transfer-related appraisal systems — are examined. The appraisal system that emphasizes knowledge creation stimulates subsidiary to innovate and learn more knowledge in the host country (Gupta and Govindarajan 2000; Tsang 2002; Minbaeva et al. 2003). So the learning-related appraisal system encourages a subsidiary's knowledge accumulation and capability building in the host country.

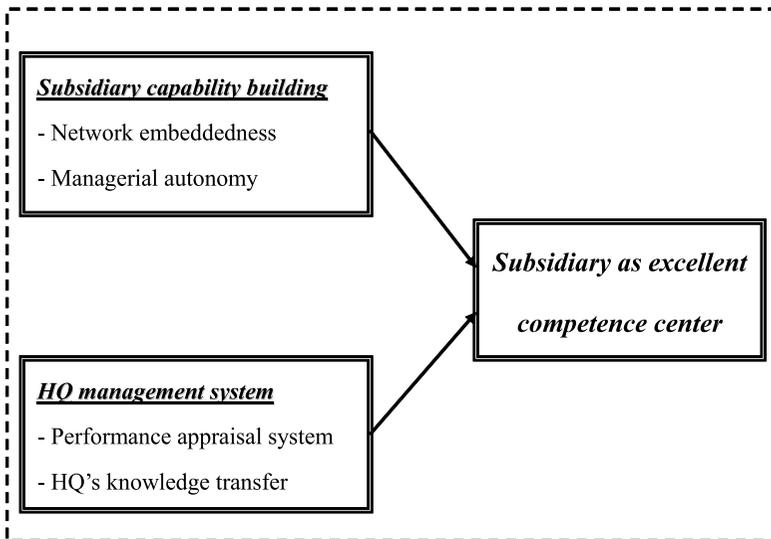
However learning-related evaluation fails to ensure that excellent capabilities built by overseas subsidiaries can be effectively transferred and diffused throughout the MNC network. Usually, subsidiaries with superb resources and capabilities tend to monopolize their subsidiary-specific advantages in order to gain a central position and bargaining power against other units (Gupta and Govindarajan 2000). If so, a capability transfer-oriented performance appraisal system can serve as an indirect control mechanism to solve this problem. Thus a learning-oriented appraisal policy is necessary but not enough condition to make a subsidiary become the competence center. A capability

sharing-related assessment is also required to push a subsidiary to share its valuable resources and capabilities with the HQ and other subsidiaries in the global network of an MNC.

**H3-a:** A learning-oriented performance appraisal system adopted by the HQ will be positively related to the possibility that a subsidiary becomes the competence center within the MNC network.

**H3-b:** A transfer-oriented performance appraisal system adopted by the HQ will be positively related to the possibility that a subsidiary becomes the competence center within the MNC network.

*HQ's Knowledge Transfer to Subsidiaries.* Overseas subsidiaries face many costs arising from the unfamiliarity with the environment and cultural, political, and economic differences, which are called as liability of foreignness (Zaheer 1995, 1997). In order to help subsidiaries to overcome the liability of foreignness and compete successfully against local companies, the HQ should provide overseas subsidiaries with its ownership-specific assets (Buckley and Casson 1976; Dunning



**Figure 1. Research Model**

2000; Zaheer 1995). Knowledge transfer from the HQ helps an overseas subsidiary to upgrade its competence in the host country. Organizational capabilities and knowledge transferred from the HQ to a subsidiary serve as the basis of the subsidiary's absorptive capacity so that the subsidiary with transferred organizational capabilities can recognize and assimilate the value of new, external information and resource embedded in the host country more quickly and efficiently (Almeida and Phene, 2004). Thus, the transfer of organizational capability and knowledge from the HQ to a subsidiary helps the subsidiary develop its competence.

**H4:** Transfer of knowledge and capabilities from the HQ will be positively related to the possibility that a subsidiary becomes the competence center within the MNC network.

## METHODOLOGY

### Data and Sample

We collected data by surveying the manufacturing subsidiaries set up by MNCs in South Korea from 1945 to 2005. We obtained lists of these subsidiaries from the KIS-LINE database. Since it is difficult for the HQ to exert control over overseas subsidiaries with less than 50% equity stakes, we included subsidiaries only with more than 50% equity stakes. Additionally, subsidiaries with too small size (with employees fewer than 50) and little operational experience (operational years less than 2 years) were also excluded. Finally, 404 overseas subsidiaries were identified. Then we developed survey questionnaires with 7-point Likert scales to measure variables. We sent questionnaires to executives of subsidiaries by fax and e-mail. Additionally, in order to assure that the items developed are correct and well understood, we conducted a pre-test by sending the questionnaires to 3 managers before the full-scale survey.

We received 98 responses with a 24% response rate. Among the 98 responses, subsidiaries that are checked out as non-manufacturing firms, having equity less than 50% or employees fewer than 50 were dropped. In addition, questionnaires with

**Table 1. Industry Distribution of 76 Foreign Subsidiaries**

SIC code	Industry name	Frequency	Percent	Accumulated percent
15	Manufacture of food products and beverages	1	1.3	1.3
16	Manufacture of tobacco products	1	1.3	2.6
18	Manufacture of wearing apparel; dressing and dyeing of fur	1	1.3	3.9
21	Manufacture of paper and paper products	2	2.6	6.6
24	Manufacture of chemicals and chemical products	17	22.4	28.9
25	Manufacture of rubber and plastics products	3	3.9	32.9
26	Manufacture of other non-metallic mineral products	3	3.9	36.8
27	Manufacture of basic metals	3	3.9	40.8
28	Manufacture of fabricated metal products, except machinery and equipment	2	2.6	43.4
29	Manufacture of machinery and equipment n.e.c.	9	11.8	55.3
30	Manufacture of office, accounting and computing machinery	4	5.3	60.5
31	Manufacture of electrical machinery and apparatus n.e.c.	6	7.9	68.4
32	Manufacture of radio, television and communication equipment and apparatus	2	2.6	71.1
33	Manufacture of medical, precision and optical instruments, watches and clocks	5	6.6	77.6
34	Manufacture of motor vehicles, trailers and semi-trailers	16	21.1	98.7
36	Manufacture of furniture; manufacturing n.e.c.	1	1.3	100.0
	Sum	76	100.0	

missing data were also excluded. Finally, 76 cases were used for this study.

Table 1 and 2 showed the distributions of industries and home countries of the 76 foreign subsidiaries. In our sample, the largest number of subsidiaries is present in the “manufacture of chemicals and chemical product” (22.4%), followed by

**Table 2. Home Countries of 76 Foreign Subsidiaries**

Home country	Frequency	Percent	Accumulated percent
AUSTRIA	2	2.6	2.6
BELGIUM	1	1.3	3.9
ENGLAND	5	6.6	10.5
FRANCE	7	9.2	19.7
GERMANY	10	13.2	32.9
ITALY	1	1.3	34.2
JAPAN	31	40.8	75.0
NETHERLAND	1	1.3	76.3
NORWAY	1	1.3	77.6
SWISS	1	1.3	78.9
TAIWAN	1	1.3	80.3
U.S.A	15	19.7	100.0
Sum	76	100.0	

**Table 3. Frequency of Subsidiary Operational Years**

Subsidiary age	Frequency	Percent	Accumulated percent
2.00	1	1.3	1.3
3.00	1	1.3	2.6
4.00	2	2.6	5.3
5.00	5	6.6	11.8
6.00	7	9.2	21.1
7.00	5	6.6	27.6
8.00	4	5.3	32.9
9.00	1	1.3	34.2
10.00	4	5.3	39.5
11.00	2	2.6	42.1
12.00	1	1.3	43.4
13.00	1	1.3	44.7
14.00	1	1.3	46.1
15.00	3	3.9	50.0
16.00	2	2.6	52.6
17.00	3	3.9	56.6
18.00	3	3.9	60.5
19.00	2	2.6	63.2
20.00	9	11.8	75.0
21.00	2	2.6	77.6
25.00	1	1.3	78.9
26.00	1	1.3	80.3
27.00	2	2.6	82.9
28.00	2	2.6	85.5
29.00	2	2.6	88.2
31.00	2	2.6	90.8
33.00	3	3.9	94.7
35.00	3	3.9	98.7
50.00	1	1.3	100.0
Sum	76	100.0	

“manufacture of motor vehicles, trailers and semi-trailers” (21.1%), and “manufacture of machinery and equipment n.e.c.” (11.8%). Most of the subsidiaries in our sample are from Japan (40.8%), US (19.7%) and Germany (13.2%). The age frequency of subsidiaries (see table 3) showed that the youngest subsidiary is 2 years old and the oldest subsidiary is 50 years old, with an average 16 years operational experience and 429 employees.

### Measurement

*Dependent Variable.* Dependent variable in this study indicates the degree to which a subsidiary acts as a competence center within the MNC network. Based on Gupta and Govindarajan (2000), Schulz (2001) and Bjorman *et al.* (2004), and Frost, Birkinshaw and Ensign (2002), we measured the dependent variable by asking subsidiary managers the following question with 7-point Likert scales: “How much superior competences do you think your company has that are used by headquarters and other subsidiaries in the following 5 aspects?”:

- 1) development of basic and applied technologies;
- 2) development of product technologies and new product design;
- 3) manufacturing know-how;
- 4) sales, marketing and distribution capabilities;
- 5) general management skills;

### Independent Variables.

#### Network Embeddedness

We view a subsidiary’s network embeddedness as relational embeddedness (Andersson, Forsgren, and Holm 2002), which stresses the reciprocal relationship that a subsidiary built with other local business actors in order to facilitate information exchange. We referred to Anderson, Forsgren and Holm (2002)’s measurement of network embeddedness. They operationalized “subsidiary embeddedness” as the degree of adaptation in business and technical aspects, focusing a subsidiary’s customers and suppliers related to its most important field of business. Drawing on Andersson, Forsgren, and Holm (2002), we

developed 4 items by asking “to what extent does your company respond to the special demands of suppliers or customers with whom you have the most important business relationships by amending or applying the following aspects?” 1) product design, function, and specification; 2) production methods and processes; 3) normal business customs; and 4) standard operation procedures?

#### Subsidiary Autonomy

Subsidiary autonomy refers to the subsidiary's decision-making authority and control on its own management and operational activities. Based on previous studies of subsidiary autonomy (Ghoshal, Korine, and Szulanski 1994; Gupta and Govindarajan 2000; Roth and Morrison 1992), we developed 6 items to measure the degree of autonomy in terms of 1) development and introduction of a new product, 2) pricing decisions and marketing activities such as advertisements or promotions, 3) extension and reduction of production equipments, 4) human resource policies like hiring, promotion and dismissal, 5) source of capital, and 6) setting up yearly business goals.

#### Performance Appraisal System

In this study, we classified the performance appraisal system of the HQ into the learning-related performance appraisal system and the knowledge transfer-related performance appraisal system. According to Minbaeva et al (2003) and Bjorkman, Barner-Rasmussen, and Li (2004), the learning-oriented assessment in this study was measured with a single item by asking “to what extent is the knowledge acquisition from the host country emphasized when headquarters evaluate your company's performance?” Similarly, the knowledge-transfer related assessment system is operated by asking “to what extent is the knowledge transfer to the HQ and sister subsidiaries emphasized when the HQ evaluates your company's performance?”

#### HQ's Knowledge Transfer to Subsidiaries

According to Gupta and Govindarajan (2000), Schulz (2001), and Bjorkman, Barner-Rasmussen, and Li (2004), the HQ's efforts

**Table 4. Variables Measurement and Reliability**

<b>Variables (7-point Likert scale)</b>	<b>Reliability</b>
<p><b>Subsidiary as competence center</b></p> <p>→ “how much superior competences do you think your firm has that are used for headquarter and other subsidiaries, in following aspects</p> <ol style="list-style-type: none"> <li>1) development of basic and applied technology;</li> <li>2) development of product and new product design;</li> <li>3) manufacturing activities;</li> <li>4) sale, marketing and distribution;</li> <li>5) general management skills;</li> </ol>	<b>0.772</b>
<p><b>Network embeddedness</b></p> <p>→ “to what extent does your company respond to the special demands of suppliers or customers with whom you have the most important business relationships by amending or applying the following aspects?”</p> <ol style="list-style-type: none"> <li>1) product design, function, specification;</li> <li>2) production methods and processes;</li> <li>3) normal business customs;</li> <li>4) standard operation procedures;</li> </ol>	<b>0.776</b>
<p><b>Managerial autonomy</b></p> <p>→ degree of autonomy, regarding:</p> <ol style="list-style-type: none"> <li>1) development and introduction of a new product;</li> <li>2) pricing decision and marketing activities such as advertisements or promotions;</li> <li>3) production equipments extension and reduction;</li> <li>4) human resource policies like hiring, promotion and dismissal;</li> <li>5) capital raising;</li> <li>6) setting up yearly business goals.</li> </ol>	<b>0.803</b>
<p><b>HQ's knowledge transfer</b></p> <p>→ “to what degree does your company receive helps from HQ concerning following items:</p> <ol style="list-style-type: none"> <li>1) knowledge about the development of basic and applied technology;</li> <li>2) knowledge about new product design and development;</li> <li>3) knowledge about manufacturing activities;</li> <li>4) knowledge about sales, marketing and distribution;</li> <li>5) knowledge about general management.</li> </ol>	<b>0.750</b>

**Table 4. Continued**

Variables (7-point Likert scale)	Reliability
<b>Performance appraisal system</b>	
→ Learning-oriented: "to what extent is the knowledge acquisition from the host country emphasized when headquarter evaluates your company's performance?"	
→ Transfer-oriented: "to what extent is the knowledge transfer to the HQ and sister subsidiaries emphasized when the HQ evaluates your company's performance?"	

to transfer capabilities to overseas subsidiaries was measured by asking "to what extent does your company receive supports from the HQ concerning the following items: 1) knowledge about the development of basic and applied technologies, 2) knowledge about new product design and development, 3) knowledge about manufacturing activities, 4) knowledge about sales, marketing and distribution, and 5) knowledge about general management."

Table 4 summarized the survey items that were used to measure the variables and Cronbach's alpha.

**Control Variables.** We controlled the size of a subsidiary, because prior studies suggested that large firms have better capabilities for growth. Subsidiary size was measured in terms of the number of the subsidiary's employees. We also controlled a subsidiary's age which was measured by the subsidiary's operating years in the host country because subsidiaries with long operation experience usually learn more from the local markets. Among the 76 cases, two main industries are "manufacture of chemicals and chemical products" (22.4%) and "manufacture of motor vehicles, trailers and semi-trailers" (21.1%). We controlled for these two industries separately by using dummy variables. Cultural distance was also calculated and controlled according to Kogut and Singh (1988)'s index.<sup>1)</sup>

1) Considering the important of the HQs' equity stake, we also ran regression by controlling the equity stake. The result showed that there was a high correlation (about 0.4) between the equity stake and the subsidiary autonomy as we predicted. We think both the equity stake and the subsidiary autonomy reflect managerial control activities of HQs on their subsidiaries. However, subsidiary autonomy examined in this study is a more direct measure for the HQs' control than equity stake which is a rather indirect measure of the HQs' control. In addition, the statistical results of all independent variables did not

**Table 5. Descriptive Statistics and Correlation Matrix (N=76)**

	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11
1. competence center	5.05	1.00	1.00										
2. automobile	0.21	0.41	.19	1.00									
3. chemicals	0.22	0.42	-.07	-.28	1.00								
4. subsidiary age	16.24	10.15	-.05	.00	.20	1.00							
5. subsidiary size	439.01	492.56	.22	.21	-.20	.14	1.00						
6. Culture distance	2.70	0.80	-.03	-.02	-.04	.16	.11	1.00					
7. Network embeddedness	5.14	1.06	.47	.32	-.36	.10	.18	-.06	1.00				
8. Autonomy	4.46	1.18	.45	.20	-.22	.03	.17	.23	.24	1.00			
9. HQ's knowledge transfer	5.09	1.00	.43	-.01	.11	.14	.14	-.01	.12	.22	1.00		
10. Learning related appraisal	4.62	1.54	.28	.11	-.03	.00	.21	.06	.17	.22	.49	1.00	
11. Transfer related appraisal	14.60	1.57	.34	.14	-.02	.14	.23	.08	.23	.16	.57	.76	1.00

## STATISTICAL RESULTS

We employed the multiple regression analysis to test hypotheses. Table 5 provides descriptive statistics and Pearson correlation about the dependent variable, independent variables and control variables. The correlation matrix did not show any serious collinear problem among the variables except for the high correlation (0.76) between the learning-oriented and the transfer-oriented appraisal systems. However, the variance inflation factor (VIF) value suggests that the multicollinearity is not a serious problem in the study.

Regression results are showed in table 6. Model 1 included control variables only and Model 2 included all independent variables and control variables. Because of the high correlation between the “learning related appraisal system” and the “transfer related appraisal system”, the variable was included separately in Model 3 and Model 4. Network embeddedness of a subsidiary turned out to be significant and positive in all models at the 0.01 significance level. This result corresponds to findings of the prior studies that network embeddedness plays an important role in a subsidiary's capability building in the host country. Thus hypothesis 1 was supported. Subsidiary autonomy was also supported at the 0.01 significance level. This result suggests that subsidiary autonomy effectively helps a subsidiary to become the competence center in the MNC.

At the HQ level, neither the learning-related nor the transfer-related performance appraisal system showed significant results. Thus H3a and H3b were not supported. Results showed in table 6 also suggest that knowledge and capability transfer from the HQ to a subsidiary significantly and positively increases the possibility that a subsidiary becomes the competence center.

Among the control variables, we found that “manufacture of chemicals and chemical products” industry was positively related to the subsidiary's possibility of being the competence center. However, contrary to our prediction, subsidiary age showed a negative effect on the possibility that a subsidiary evolves into a competence center.

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vary much even after the equity stake variable was included. Thus we included only subsidiary autonomy in our model.

**Table 6. Regression Results on the Possibility that a Subsidiary Evolves into the Competence Center within the MNC Network**

	Model 1	Model 2	Model 3	Model 4
(constant)	(11.465)***	(0.900)	(0.844)	(0.781)
Automobile	0.149 (1.226)	0.016 (0.162)	0.016 (0.171)	0.023 (0.238)
Chemicals	0.022 (0.178)	0.176* (1.704)	0.173* (1.681)	0.174* (1.683)
Subsidiary age	-0.077 (-0.636)	-0.199* (-2.067)	-0.185* (-1.955)	-0.186* (-1.960)
Subsidiary size	0.202 (1.665)*	-0.104 (1.089)	0.098 (1.037)	0.107 (1.132)
Culture distance	-0.035 (-0.299)	-0.056 (-0.595)	-0.055 (-0.589)	-0.048 (-0.519)
Network embeddedness	0.403***	(3.925) 0.405***	(3.950) 0.414***	(4.066)
Subsidiary autonomy	0.330***	(3.334) 0.318***	(3.255) 0.317***	(3.241)
HQ's knowledge transfer	0.283**	(2.524) 0.274**	(2.462) 0.319***	(3.025)
Learning-related appraisal	-0.117	(-0.835)	-0.031 (-0.298)	
Transfer-related appraisal	0.138	(0.922) 0.055	(0.492)	
R square	0.074 0.497	0.491 0.490		
Adjust R square	0.008	0.419	0.422	0.421
F	1.126	6.418	7.087	7.053

Note: n=76, two tailed test, ( ): t-value\*significant at p < 0.1, \*\*significant at p < 0.05, \*\*\*significant at p < 0.01

## DISCUSSION AND CONCLUSION

In this study, we examined conditions under which a subsidiary becomes a competence center within the MNC network. We argue that the condition under which a subsidiary becomes the competence center is determined by not only the subsidiary's self-endeavor but also the HQ's management system. In order to become the competence center within the MNC network, a subsidiary must have distinctive assets and knowledge that are not owned by other units of the MNC. Therefore, acquiring valuable knowledge embedded in the host country is the most important mission for a subsidiary which aims to become the competence center. Results in this study suggest that network embeddedness of a subsidiary promotes competence enhancement of a subsidiary and thus positively helps the subsidiary to become the competence center in the MNC.

We also proposed that subsidiary autonomy encourages a subsidiary's capability development. Our results showed that autonomy associated with substantial operational and managerial activities positively promotes the formation of competence center. This finding suggests that autonomy related to high-level production and marketing activities helps a subsidiary to learn and seek best practices and methods to solve problems which occurred during local operations thus, ultimately promoting learning and capability building. Autonomy gives a subsidiary enough freedom to develop its own resource profiles and encourages the subsidiary's learning and capability building.

This study also found that the HQ's management style, such as knowledge and capability transfer from the HQ to the subsidiary plays an important role in the subsidiary's competence enhancement. Transfer of firm-specific capabilities from HQ to the subsidiaries help subsidiary overcome liability of foreignness in local market. At the same time, through combining the technological and managerial knowledge transferred from the HQ with local specific knowledge, a subsidiary can enhance its absorptive capacity (Cohen and

Levinthal 1990) and build valuable knowledge stock quickly so that it can become the competence center.

Additionally, in a further analysis (see table 7), we classified a subsidiary's competence which can be used by the HQ and other subsidiaries as development-related competence (item 1 and 2) and operation-related competence (item 3, 4 and 5). The results showed that network embeddedness and subsidiary autonomy as subsidiary-level factors had significant effects on the possibility that a subsidiary evolves into both a development-related competence center and an operation-related competence center. However, among the HQ-level factors, HQ's knowledge transfer only helps a subsidiary develop as the operation-related competence center but not the development-related competence center. These findings give two important implications: 1) to become either a development-related competence center or an operation-related competence center, a subsidiary's initiative efforts to seek knowledge in the host market through building network relationships with local counterparts is an imperative condition; 2) though HQ's knowledge transfer can help subsidiaries upgrade their managerial or operational capabilities, knowledge that is transferred from HQs does not help the subsidiary to develop innovative capabilities. These results are different from prior studies. Previous literature (e.g., Ghoshal and Bartlett 1988; Birkinshaw, Hood and Johnsson 1998; Frost, Birkinshaw and Ensign 2002;) suggested that HQs' investment and communication with a subsidiary facilitate the subsidiary's innovation. However, our results showed that the effect of knowledge transfer from HQs varies depending on the subsidiary's strategic contexts: it would be more helpful in enhancing the operational competence of a subsidiary than the development competence.

We predicted that subsidiaries with longer operational experience would learn more from the local market and thus are more likely to become the competence center. But contrary to our prediction, results showed that subsidiary age was negatively related with the possibility that a subsidiary evolves into the competence center. This result suggests that older subsidiaries may have lower learning motivation and capabilities and suffer more organizational inertias so that they can't transform themselves into competence centers as younger subsidiaries do.

**Table 7. Regression Results on the Possibilities that a Subsidiary Evolves into a Development-Related Competence Center and an Operation-Related Competence Center**

	Original model	Development competence center	Operational competence center
(constant)	(0.900)	(0.265)	(1.108)
Automobile	0.016 (0.162)	-0.022 (-0.203)	0.047 (0.443)
Chemicals	0.176* (1.704)	0.130 (1.143)	0.169 (1.476)
Subsidiary age	-0.199* (-2.067)	-0.234* (-2.219)	-0.104 (-0.982)
Subsidiary size	-0.104 (1.089)	0.165 (1.582)	0.012 (0.117)
Culture distance	-0.056 (-0.595)	-0.125 (-1.223)	0.029 (0.284)
Network embeddedness	0.403*** (3.925)	0.411*** (3.654)	0.273** (2.407)
Subsidiary autonomy	0.330*** (3.334)	0.273** (2.258)	0.286** (2.614)
HQ's knowledge transfer	0.283** (2.524)	0.184 (1.496)	0.295** (2.377)
Learning-related appraisal	-0.117 (-0.835)	-0.200 (-0.819)	0.214 (0.831)
Transfer-related appraisal	0.138 (0.922)	0.171 (1.046)	0.063 (0.383)
R square	0.497	0.396	0.385
Adjust R square	0.419	0.304	0.290
F	6.418	4.269	4.067

Note: n = 76, two tailed test, ( ): t-value

\*significant at  $p < 0.1$ , \*\*significant at  $p < 0.05$ , \*\*\*significant at  $p < 0.01$

This study offers some theoretical contributions and managerial implications. We provide a rather integrated framework for the determinants of a subsidiary being the competence center by examining both the subsidiary and the HQ management level factors. We suggest that at the subsidiary level, in order to become the competence center within the MNC network, a subsidiary should enhance its learning capacity and try to build reciprocal business relations with local actors so that

it can tap into locally embedded resources successfully. At the MNC level, the HQ also should actively help their subsidiaries to evolve into competence center by transferring their knowledge and capability to them.

This study has some limitations that should be overcome in future studies. For example, data about “a subsidiary as a competence center” that were collected from subsidiary managers in this study may suffer from subjectivity and distortion risks. Future studies should develop more direct and objective measures.

As the results showed, self endeavor by a subsidiary is necessary but not sufficient to become the competence center. Support from headquarters plays an important role. An MNC usually sets up new subsidiaries in foreign countries with specific strategic purposes. The MNC grants different subsidiaries with different strategic mandates. This means that foreign subsidiaries vary in their strategic importance within an MNC network. For example, IB scholars have identified multiple types of foreign-based MNE activities, such as the market seeking FDI, the resource seeking FDI, the efficiency seeking FDI and the strategic asset seeking FDI (Dunning, 2000). Based on this classification, we suggest that strategic asset seeking or knowledge seeking subsidiaries may be more likely to evolve into competence centers than those with different strategic mandates. In the same vein, HQ’s strategic orientation (e.g., global company or transnational company) also impacts a subsidiary’s competence building efforts. Subsidiaries of a transnational company may be more likely to become competence centers than subsidiaries of a global company because they have more opportunities to access local valuable resources and knowledge. Though the degree of knowledge transfer from headquarters to a subsidiary examined in this study to certain degree indirectly reflects strategic importance of the subsidiary and the MNC’s strategic orientation, future study should examine directly how strategic importance of a subsidiary as well as the HQ’s strategic orientation can influence the subsidiary to evolve into a competence center.

In addition, though “how a subsidiary can become a competence center” as a main research question of this paper is an important issue for MNCs to improve their competitive

advantages, once a subsidiary develops itself as a competence center, HQ should pay much attention to how to manage the competence center effectively. Thus "how to manage the competence center" is another important issue that should be stressed. Though the managerial policies (such as knowledge transfer and subsidiary performance evaluation system adopted by HQ) suggested in this study give HQ's managers some implications to manage their competent subsidiaries, there are many other important management policies that should be addressed by future studies.

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