A Dual-Role Typology of Multinational Subsidiaries

By

Jue Wang[1] , Xiaming Liu[1*] and Xiaoying Li[2]

[1]School of Management
Birkbeck College
University of London
Malet Street, Bloomsbury
London WC1E 7HX
UK

[2]Warwick Business School
University of Warwick
Coventry
UK

December 2007

*Corresponding author. E-mail: Xiaming.liu@bbk.ac.uk (Xiaming Liu); Tel: 0044 (0)20 7079 0895; Fax: 0044 (0)20 7631 6769.

A Dual-Role Typology of Multinational Subsidiaries

Abstract

The analysis of multinational subsidiary roles or strategies has traditionally been from the viewpoint of the multinational enterprise (MNE) per se, focusing on a trade-off between the two strategic dimensions of integration and responsiveness (localization). This paper argues that a subsidiary is embedded in a dual context of both the MNE and the host environment, and hence its strategic role should be assessed by its relative positions and contributions both within the knowledge networks of the MNE and the host country. This dual typology is believed to be useful for the MNE and the host government in assessing the impacts of the subsidiary on the competitiveness enhancement of the MNE and local capability development. The framework is tested on a sample of 369 multinational subsidiaries in China. The results confirm that a subsidiary active both internally (through knowledge flows with the rest of the MNE) and externally (with the local partners) has not only the best financial and overall performance but also a most positive impact on local development. The managerial and policy implications are also discussed.

Key Words: Subsidiary typology, Dual context, Two-way strategic relations, China

I. Introduction

Since White and Poynter's (1984) pioneering study, there has been an increasing interest in the roles, strategies or characteristics of multinational subsidiaries (D'Cruz, 1986; Bartlett, 1986; Bartlett and Ghoshal, 1989; Jarillo and Martinez, 1990; Gupta and Govindarajan, 1991; Roth & Morrison, 1992; Birkinshaw and Morrison, 1995; Taggart, 1998; Hogenbirk and van Kranenburg, 2006; Vereecke et al, 2006). This great interest has resulted mainly from the recognition that foreign subsidiaries can contribute substantially to the vibrancy of the multinational enterprise (MNE) at the local level (Bartlett and Ghoshal, 1989), and enable the MNE to enhance and sustain competitive advantage at the corporate level (Levitt, 1983; Porter, 1980; Yip, 1992; Taggart, 1998).

Ferdows (1997) argues that since subsidiaries differ in the level of creation, sharing, and absorption of innovations, they may play different roles in the knowledge network in the company and in local environments. Although existing research has shed considerable light on the strategic roles subsidiaries play within the MNE, one shortcoming is its excessive focus on the internal management to achieve corporate efficiency without adequate consideration of the impact of the interaction between the MNE and its local business environment. White and Poynter's (1984) and Hogenbirk and van Kranenburg (2006) use a subsidiary's product, market and value added scopes to classify its roles or strategies. Bartlett (1986), Bartlett and Ghoshal (1989), Roth & Morrison (1992) and Taggart (1998) apply the integration-localization/responsiveness framework to differentiate subsidiary roles or strategies given the international business environment. While having made significant contributions to our understanding of subsidiary roles within MNEs, these studies may pay too much attention to the interests and challenges facing MNEs, and not enough to how MNEs help or hurt local economies, especially developing country economies (Meyer, 2004; Ramamurti, 2004). Gupta & Govindarajan's (1991) study only focuses on knowledge flows within the MNE to identify different roles of subsidiaries, lacking a discussion of knowledge exchange between a subsidiary and its local environment.

Different from the existing subsidiary role/strategy studies, the current paper proposes a dual-role typology of multinational subsidiaries. This typology is based on the network approach to MNEs (Hedlund, 1986; Ghoshal & Bartlett, 1988; Harzing, 1999; O'Donnell, 2000). While this approach has recently been adopted to explain knowledge creation and diffusion of MNEs (Andersson et al., 2001; Andersson et al., 2005), it has not been fully applied to

subsidiary typology. Following this approach, an MNE is a differentiated network of internationally dispersed units which are simultaneously embedded in two business contexts: the internal networks of the MNE and the external (host country) environment. Thus, the roles and/or strategies of subsidiaries are both shaped by and affect these two contexts. A subsidiary's strategic role should be assessed by its relative positions and contributions within the knowledge networks of both the MNE and the host country. We believe that the typology proposed in this way is useful not only for MNE managers but also for policy makers, especially from host countries.

The rest of the paper is organized in the following way. Section II reviews the literature on subsidiary roles and strategies, and in Section III, we present our dual-role typology. The research methodology is explained in Section IV. We test the typology and relationships between the roles of a subsidiary and its own performance as well as its impact on local firms on a survey data set of 369 multinational subsidiaries in China. Finally, Section V concludes by summarizing the paper and discussing managerial and policy implications and limitations of this research.

II. Literature Review

The traditional view on foreign direct investment (FDI) (Hymer, 1976; Caves, 1971; Buckley and Casson, 1976) assumes a hierarchical relationship between the headquarter (HQ) of an MNE and its subsidiaries. Typically, the MNE creates technological knowledge at the HQ and then diffuses it to subsidiaries worldwide (Almeida and Phene, 2004) while expecting them to perform in line with the overall corporate strategy. However, subsidiaries have seen their roles change greatly in recent years and have increasingly valuable places in both the MNE and local environment. With regard to roles in the MNE, a subsidiary does not just receive and apply knowledge, but in many cases creates knowledge in its local (host country) environment and then diffuses it back to HQ and the rest of the MNE. This increases efficiency at both the subsidiary and corporate (MNE) levels. On the other hand, since it is located in a host country, a subsidiary can contribute to the development of the local economy through transferring advanced knowledge, engaging local employees and contributing to local tax. In this process, the subsidiary can also benefit from the local environment through learning indigenous knowledge including both indigenous technology and local information in order to increase profits, widen the global market share and enhance its reputation (Wei et al. 2008).

A very important contribution by White and Poynter's pioneering work (1984) is their recognition of different business strategies pursued by different subsidiaries as these subsidiaries are themselves affected differently by environmental changes. If we describe all subsidiaries as branch plants, then this variation cannot be captured. Hedlund's (1986) concept of heterarchy (contrasting with hierarchy) is perfectly consistent with this idea, which implies that subsidiary roles are not necessarily assigned by HQs. Actually, the concept of heterarchy has already proved a stimulating one in the field of multinational strategy and structure (Young and Tavares, 2004).

So far three main types of typology of subsidiary roles/strategies have been developed in the literature: the Product-Market-Value Added Framework, the Integration-Localisation Framework and the Knowledge Flows-Based framework. A review of these frameworks is useful for the development of our own dual-role typology of multinational subsidiary roles or strategies.

Typology 1: Product-Market-Value Added Framework

Based on their case studies, White and Poynter's (1984) divide business strategies pursued by multinational subsidiaries into five categories, defined by the activities of subsidiaries with regard to the product, market and value added scopes. The product scope refers to product line extensions and new product areas. The market scope indicates the range of geographic markets available to a subsidiary. Finally, the value added scope concerns the range of ways (development, manufacturing and marketing activities) a subsidiary adds value. Depending on the different combinations of these three dimensions, the five types of strategies are described below.

The first is as a miniature replica business which produces and markets some of the parent's product lines or related product lines in the local country. Depending on the degree of product and marketing modifications performed by the subsidiary, there can be three sub-strategies: adopter, adapter and innovator. The second is as a marketing satellite business which markets products manufactured centrally into the local trading area. The third is as a rationalised manufacturer that produces a designated set of component parts or products for a multi-country or global market. The fourth is as a product specialist that develops, produces, and markets a limited product line for global markets. Finally, the fifth is as a strategic

independent that has the freedom and resources to develop lines of business for either a local, multi-country or global market.

Hogenbirk and van Kranenburg **(**2006) adopt a very similar approach to that of White and Poynter's (1984) i.e. using the framework of market scope and value added scope (as shown in Figure 1) to analyse strategic roles of subsidiaries. One apparent difference between the two studies is that the former groups subsidiaries into 4 categorises of local satellites, truncated miniature replicas, export platforms and regional or world mandated hubs. However, given the similar framework used, the four categories given by Hogenbirk and van Kranenburg **(**2006) are very similar to those of White and Poynter's (1984).

<Figure 1 about here>

This typology is useful for us to identify the particular role a subsidiary plays in the R&D, production and marketing systems within the MNE. However, it fails to show any interactions between the subsidiary and the local environment, although this approach suggests that environmental changes affect the subsidiary.

Typology 2: Integration-Localisation Framework

This framework has been most widely used to classify the roles and/or strategies of subsidiaries. Porter (1986) firstly uses this framework to categorise firms at the industry level, arguing that the essential structural characteristic is the degree of interrelationship between competitive environments in different countries. If that interrelationship is very high, then the industry is global, as opposed to a multi-domestic industry, where what happens in one country affects little or nothing in the rest. Faced with its own industry structure, each firm has to devise a strategy along two dimensions: the configuration of the activities of the firm's value chain (i.e. where they are carried out) and the co-ordination of those activities (how inter-dependent the different subsidiaries are). Along these axes, four types of strategy can be determined: a country-centred strategy by multinationals or domestic firms operating in only one country (low co-ordination of activities and low geographic dispersion); an export-based strategy with decentralised marketing (low co-ordination of activities but high geographic concentration); a high foreign investment strategy with extensive co-ordination among subsidiaries (high co-ordination of activities but low geographic concentration); and finally a simple global strategy (high co-ordination of activities and high geographic concentration).

As noted by Jarillo and Martinez (1990), Bartlett (1986) takes a slightly different view with Porter (1986) at the firm level. The two dimensions he adapts are co-ordination/integration among the firms and the degree of "adaptation" to each national milieu where the firm is located. Based on this framework, firms can be grouped into three types: global (high global co-ordination/integration but low national responsiveness/differentiation), transnational (high global co-ordination/integration and high national responsiveness/differentiation) and multinational (low global co-ordination/integration but high national responsiveness/differentiation).

Bartlett and Ghoshal (1989) then used the similar dimensions, degree of integration and degree of localization to categorise multinational subsidiary roles/strategies. As Figure 2 shows, subsidiaries can be divided into three groups based on this framework. (1) An active subsidiary with a high degree of integration and a high degree of localization. It is regarded as the best type of subsidiary for both the MNE and host country as many of its activities are carried out in the host country with close co-ordination with the rest of the firm. (2) A receptive subsidiary with a high degree of integration and a low degree of localization. Many functions of this type of subsidiary are highly integrated with the rest of the firm. (3) An autonomous subsidiary with a low degree of integration but a high level of localization. In Bartlett (1986) and Bartlett and Ghoshal (1989), the bottom left corner of the integration-localisation framework is empty, omitting a possible type of subsidiary with a low degree of both integration and localisation.

<Figure 2 about here>

Jarillo and Martinez (1990) carry out an empirical study of 50 subsidiaries in Spain, and their results indicate that all 50 subsidiaries can be grouped into the three groups as suggested by Bartlett and Ghoshal's Integration/localization framework. Furthermore, Taggart (1998) extends Bartlett and Ghoshal's Integration/localization framework by identifying a fourth type of subsidiary located on the bottom left of Figure 2 - an aquiescent subsidiary with a low level of integration and localization.

The integration/localization framework is very useful in explaining the efficiency and competitiveness of MNEs as it considers both the internal co-ordination and external response to local demands. However, as mentioned in the preceding section, the framework may pay

too much attention to the interests and challenges facing MNEs, and not enough to how MNEs help local economies, especially developing country economies. While responding to the local business environment, the integration-localization framework may not take into consideration that subsidiary strategies can both be influenced by and affect the host country environment. Different interest groups involved in a subsidiary's internal and external linkages such as the subsidiary itself, its corporate headquarters and the host-country government have different views on the roles and strategies of a subsidiary. A subsidiary may wish to learn more from HQ and the local environment to enhance its efficiency. The MNE (HQ) may require subsidiaries to not only learn and implement know-how from HQ to increase its productivity, but also to create and transfer knowledge back to HQ and rest of the MNE in order to enhance efficiency at the corporate level. The host country government could pay more attention to how much the country can learn and benefit from the foreign subsidiary as opposed to merely the MNE's overall efficiency. Thus the roles of subsidiaries need to be assessed not only internally in terms of the competitiveness of the MNE, but also externally in terms of its interactions with the local environment.

Typology 3: Knowledge Flows-Based Framework

Gupta and Govindarajan (1991) treat an MNE as a network of capital, product and knowledge transactions among units located in different countries, and believe that this perspective is consistent with the analyses of Porter (1986), Bartlett (1986), and Bartlett and Ghoshal (1989). Knowledge transactions are the focus of Gupta and Govindarajan's (1991) study where knowledge flow between a subsidiary and the rest of the MNE is defined as the transfer of either expertise (such as skills and capabilities) or external market data of strategic value (such as key customers, competitors and suppliers). Subsidiaries are different in knowledge flow patterns. Based on this, Gupta & Govindarajan (1991) classify the roles/strategies of subsidiaries into 4 categories in terms of the degree of two-way knowledge flows between a subsidiary and the MNE, namely those of global innovator (high outflow, low inflow); integrated player (high outflow, high inflow); implementor (low outflow, high inflow); and local innovator (low outflow, low inflow); as shown in Figure 3.

<Figure 3 about here>

A subsidiary plays a global innovator role when it serves as the fountainhead of knowledge for other units. An integrated player has a similar role to a global innovator, but is not self-sufficient in its knowledge needs. An implementor creates little knowledge but relies on

knowledge flows from the rest of the MNE. Finally, a local innovator creates knowledge especially for the host-country market. The typology based on a network of knowledge flows within the MNE is very useful for us to understand the competitiveness of the MNE in the global and host-country-specific markets. However, this typology only considers a two-way internal exchange of ideas between a subsidiary and the rest of the MNE, omitting possible knowledge flows between the subsidiary and its local environment.

III. Dual-role Typology of Multinational Subsidiaries

Over the last two decades, research on the structure and organization of multinationals has shifted its focus from one-to-one HQ-subsidiary relationships to that of managing a network of units (Kogut 1989). Ghoshal and Bartlett (1988, p. 620) claim that the network approach "is particularly suited for the investigation of such differences in internal roles, relations, and tasks of different affiliated units and of how internal co-ordination mechanisms might be differentiated to match the variety of sub-unit contexts." The network approach argues that an MNE is a differentiated network of internationally dispersed units which are simultaneously embedded in two business contexts: the internal MNE and the external (host country) environment. Thus, the roles of subsidiaries are both shaped by and affect these two contexts. A subsidiary has a dual role to play: it interacts with the rest of the MNE internally and with the local environment externally. These interactions allow subsidiaries to obtain access to resources from different sources and affect their internal and external business partners. In fact, differences in such interactions create differences in their level of competence, which in turn create differences in the roles the subsidiaries can play (Andersson et al, 2001).

Among all resources potentially useful to a firm, knowledge may be the most important for the firm to create and maintain competitiveness in the market. Indeed, it is widely acknowledged in strategic thinking that the ability of a firm to develop and exploit knowledge faster than its competitors is a key component of its competitive advantage (Porter, 1980; Prahalad and Hamel, 1990; Utterback, 1994; Leonard-Barton, 1995; Nonaka and Takeuchi, 1995; Teece *et. al*., 1997; Nonaka and Teece, 2001; Storey and Salaman, 2005; Cooke and Beh, 2007). Like Gupta and Govindarajan (1991), our dual-role typology focuses on knowledge flows. However, we consider not only internal, but also external two-way knowledge flows, and this framework can be presented in the following diagram.

The top reference frame demonstrates internal interactions. Firstly, if a subsidiary actively diffuses its knowledge to, and at the same time energetically learns from, the rest of the MNE, it can be referred to as an "internal activist". Secondly, if a subsidiary proactively learns from, but is less proactive to diffuse its knowledge to, the rest of the MNE, it can be called an "internal receptor". Thirdly, if a subsidiary diffuses more knowledge to the rest of the MNE than it learns from them, then it can be referred to as an "internal contributor". Finally, if a subsidiary is inactive in both knowledge learning and knowledge diffusion within the MNE, it is an "internal loner".

The bottom reference frame of Figure 4 shows external interactions of a subsidiary. Firstly, if a subsidiary is proactive in both diffusing knowledge to, and learning knowledge from, its local partners in the host country, it can be regarded as an "external activist". It follows that the subsidiaries in the remaining three quadrants of this frame can be referred to as an "external receptor", "external contributor" and "external loner" respectively.

This framework links together the internal and external interactions (or embeddedness), and hence allows 16 different combinations between these two types of interactions. For instance, a subsidiary can be very active in two-way knowledge flows both internally and externally (a combination of internal and external activist, or dual activist), or inactive in both types of interactions (a combination of internal and external loner, or dual loner). Similarly, a subsidiary can be active internally but inactive externally (a combination of internal activist/contributor with external loner/receptor) or vice versa (a combination of internal loner/receptor with external activist/contributor).

<Figure 4 about here>

The different combinations of the internal and external interactions are expected to be associated with different levels of performance. This is consistent with the widely accepted view in strategy and organization research that a firm's context influences its behavior and performance (Almeida and Phene, 2004). In terms of internal interactions, the network approach of Hedlund (1994) and Bartlett and Ghoshal (1989) suggests that technical, market, and functional knowledge is sourced from various locations and generated continuously in all parts of a company, and shared across the organization. Almeida et al. (2002) show that, via various formal and informal mechanisms (such as structure, culture and management systems

and processes), an MNE transfers product and process knowledge across borders. However, given that MNEs (and their subsidiaries) vary in the degree to which these mechanisms are efficiently employed and thus in their ability to move, build, and exploit knowledge across the network (Almeida and Phene, 2004), subsidiaries will have different levels of performance. In our proposed framework, since an internal activist energetically creates and diffuses knowledge while proactively learning from the rest of the MNE, it should perform better than an internal loner. Similarly, an internal contributor may perform better than a receptor as the former is able to create and diffuse more knowledge than the latter.

As for external interactions, MNEs now regard host countries not just as their markets or sources of cheap labour, but increasingly as potential sources of new knowledge (Dunning, 1994). Industry-specific knowledge developed in geographically concentrated locations can flow to subsidiaries located there via inter-firm (and interpersonal) linkages in the region, and this can be a positive source of value creation for MNEs (Almeida and Phene, 2004). On the other hand, the literature on FDI spillovers suggests that the most important reason why countries try to attract FDI is perhaps the prospect of acquiring modern technology, interpreted broadly to include product, process, and distribution technology, as well as management and marketing skills (e.g. Caves, 1974; Blomstrom and Kokko, 1998). FDI is a package of capital, technology and managerial skills, and has been viewed as an important source of both direct capital inputs and technology and knowledge spillovers. Balasubramanyam et al. (1996) argue that developing countries can significantly benefit from FDI because it not only transfers production know-how and managerial skills but also produces externalities or spillover effects. Some relatively recent studies all find positive spillover effects, such as Kokko et al. (1996) on the Uruguayan manufacturing sector, Liu et al. (2000) on UK manufacturing, Li et al. (2001) and Wei and Liu (2001; 2006) on China. In our proposed framework, an external activist vigorously seeks knowledge from the local environment while spilling its own knowledge to indigenous firms in the host country, it should perform better and have a greater positive impact on local firms than an external loner. Similarly, an external contributor should produce a greater positive impact on local firms than an external receptor.

Therefore, based on our dual-role typology of multinational subsidiaries and the proposed relationships between subsidiary types and performance, the following four hypotheses can be formed:

H1. Activists are expected to perform better than loners.

H2. Contributors are expected to perform better than receptors.

H3. External activists are expected to have a greater positive influence on local firms than external loners.

H4. External contributors are expected to have a greater positive influence on local firms than external receptors.

IV. Research Methodology

Sample

A random sample of more than 1000 firms was drawn from the lists of foreign invested firms in Beijing, Chongqing and Jiangsu Province in China. A draft research instrument was pre-tested via personal interview with chief executives or other senior managers of 14 foreign invested firms. The questionnaire was then modified and finalized. This pre-test also allowed us to obtain insights into the types and performance of multinational subsidiaries in China, and provide an assessment of the questions' validity and the likely reliability of the data that would be collected (Saunders et al, 2003).

As argued by Taggart (1998), a postal questionnaire was thought to be the appropriate method of data collection for studying subsidiary roles or strategies because of resource constraints and generalizability of results. Following this research strategy, the questionnaire was sent to 1223 foreign invested firms and 493 of them responded (40.3% of total). Among the respondents, 205 (41.6%) were the founders or chief executive officers, 188 (38.1%) were chief financial officers and the rest (20.3%) were senior human resource managers. We then removed 124 foreign invested firms with less than 50% foreign ownership from our sample, as a firm with at least 50% foreign ownership can be seen as a multinational subsidiary (Jarillo and Martinez, 1990). After such clearance, 369 subsidiaries were included in the final sample and could be grouped into 30 industrial sectors, including motor, steamboat, airplane, computer as technology-intensive industries, and food, beverage, cloth and shoe as labour-intensive industries.

Multinational subsidiaries located in Beijing, Chongqing and Jiangsu Province were chosen for two reasons. Firstly, because of resource constraints, only limited locations could be chosen. Secondly, these three locations may represent different levels of development in

China. Beijing is the capital and one of the commercial centers of China. It is better developed than many other areas and has attracted much FDI. Jiangsu Province is a highly developed industrial and commercial region in China. According to *Chinese Economic Annual Report 2005* (Chinese Industrial and Commercial Bureau, 2006), Jiangsu Province was the No. 2 inward FDI destination in China with 36,000 FDI foreign invested firms located there in that year. Chongqing is located in the southwest of China and is the commercial and transportation center of Western China. Compared to eastern regions, western regions are less developed. Since the Chinese government announced the western development programme more than a decade ago, Chongqing has already become one of the fastest growing areas in the country, and is the youngest metropolis in China. It is the leading city representing the western China.

Measures

Table 1 below summarizes the variables we used in the questionnaire. To measure internal and external interactions (or knowledge flows), we have drawn on ideas from De Meyer (1993), Egelhoff (1988), Gates and Eglehoff (1986), Hedlund (1981), Young et al, (1988) and Taggart (1998), and employed the following variables:

Internal interactions:
The extent to which the HQ and rest of the MNE (subsidiary) help(s) the subsidiary's (the HQ and rest of the MNE's) production, management, R&D and marketing
External interactions:
The extent to which the subsidiary (local firms) help(s) local firms' (subsidiary's) production, management, R&D, marketing and business opportunity identification

A 5- point Likert-type scale was employed as follows: 1 = Very unhelpful; 2 = Unhelpful; 3 = Neutral; 4 = Helpful; 5 = Very helpful.

After testing the typology of multinational subsidiaries in China, which is the focus of this paper, we will test the four hypotheses discussed in section III as FDI network theory predicts a positive relationship between a subsidiary's internal/external interactions and its own performance and its impact on local firms. To measure a subsidiary's performance, three objective variables, including return on assets (ROA), return on equity (ROE), and return on investment (ROI) and a subjective variable were employed. In the existing literature, ROA,

ROE, ROI are widely used to measure firm performance (Tanriverdi and Venkatraman, 2005). Based on Jaw et al (2006), the subjective variable was used to measure overall subsidiary performance in order to obtain a comprehensive result. In this paper, variable Bb29 (indicating "how satisfactory the subsidiary's overall performance is") was used as a subjective variable.

The measurement of subsidiary strategic impact on local firms was operationalized by five variables drawn on and modified from the same set of existing studies mentioned above.

All the subjective variables on subsidiary performance and subsidiary strategic impact on local firms were measured on a 5-point Likert-type scale: 1= Very disappointing; 2 = Disappointing; 3 = Neutral; 4 = Satisfactory; 5= Highly satisfactory.

<Table 1 about here>

Data analysis

The statistical package used in this research is SPSS (Pallant, 2004). The survey data were analyzed using the following steps. Principal Components Factor (PCF) Analysis was first applied to identify the dimensions of the internal and external interactions. Then clustering analysis was carried out in order to test whether the 369 cases could be grouped into the 16 clusters. Finally, ANOVA analysis was employed to test the four performance and impact hypotheses.

V. Results and Discussions

Case Studies

The interviews with the 14 multinational subsidiaries in our pre-test of questionnaire confirmed a number of different types of multinational subsidiary as predicted by our dual-role typology framework. For instance, in the extreme cases, the CEO of firm CQ6 (a US motor accessory subsidiary) believed that his subsidiary had close two-way knowledge flows both within the corporate and with the local Chinese partners, and hence was active both internally and externally (dual activist). On the other hand, the CFO of firm CQ30 (a South Korean motorbike accessory subsidiary) described his subsidiary as a dual-loner. Due to poor performance in the recent years, CQ30 planned to close down soon. The interviews also revealed that firms CQ1, CQ2, CQ6, BJ1, BJ2, and JS1 interacted with local Chinese firms by

introducing new business opportunities to each other due to relational capital. There has been little discussion of this form of knowledge flows between foreign and local firms in the literature. Accordingly, this new channel was incorporated into our final questionnaire in order to determine whether this is a prevailing practice in the interaction between multinational subsidiaries and local Chinese firms.

The reliability test results of the sample of firms interviewed are shown in table 2. The Cronbach Alpha coefficient is 0.848>0.70. From the Cronbach's Alpha if an item is deleted, all the values of the 27 items are larger than 0.70. Therefore, it can be concluded that the scale used for this research is considered reliable (Pallant, 2004, p87). In terms of validity, all the questions are clear and easy to answer.

<Table 2 about here>

Post Questionnaires

In analyzing returned questionnaires, we expect that the 8 variables, which determine the internal interactions (A1 to A8) of the subsidiary, can be reasonably reduced to two key dimensions, i.e. internal interactions from HQ and rest of MNC to the subsidiary, and internal interactions from the subsidiary to HQ and rest of MNC. Likewise, the 10 variables (B1 to B10) that determine the external interactions of the subsidiary can be reasonably reduced to two key dimensions: external interactions from the subsidiary to local firms, and external interactions from local firms to the subsidiary. The results are presented in Table 3.

The results of PCF in Table 3 show that for internal interactions, the Kaiser-Meyer-Olkin Measure of Sampling Adequacy value is 0.758, which is more than 0.6, and Sig. value of Bartlett's Test of Sphericity is less than 0.05. Therefore, the factor analysis is valid (Pallant, 2005). In Table 3, it can be seen that the 8 variables can be perfectly divided into 2 factors and the loadings of each of the variables on the two factors are all over 0.6. Factor 1 (IISTOHQ) includes A5 to A8 which show internal interactions from the subsidiary to the HQ and rest of the corporate. Factor 2 (IIHQTOS) combines A1 to A4, indicating internal interactions from the HQ and rest of the corporate to the subsidiary. In our three-dimensional typology picture, Factor 1 is represented by the top frame X axis and Factor 2 by the top frame Y axis.

<Table 3 about here>

The application of PCF to external interaction is also valid. Also from table 3, the Kaiser-Meyer-Olkin Measure of Sampling Adequacy value is 0.903, and Sig. value of Bartlett's Test of Sphericity is less than 0.05. It can also be seen that the 10 variables are divided into 2 factors and the loadings of each of the variables in the two factors are more than 0.7 except variable B10, whose factor loadings are similar in Factor 3 (0.339) and Factor 4 (0.466), suggesting a possible cross-loading effect. This variable indicates the extent to which the subsidiary helps local firms to develop overseas business opportunities. Despite the possible cross-loading effect, we decide to retain variable B10 since our case studies have confirmed this relatively newly identified two-way knowledge flow, i.e. while local firms help the subsidiary find local business opportunities as indicated by B5, the subsidiary assists local firms in identifying overseas business opportunities. To sum up, Factor 3 (EILTOS) includes B1 to B5 which indicate external interactions from local firms to the subsidiary. Factor 4 (EISTOL) combines B6 to B10 and indicates external interactions from the subsidiary to local firms. In our three-dimensional typology picture, Factor 3 is represented by the bottom Y axis, and Factor 4 is represented by the bottom x axis.

Multinational Subsidiary Clusters

We now proceed to conduct cluster analysis based on the four factors drawn from the above PCF examinations. The results are shown in Tables 4 and 5. First, according to the Summary provided in Table 5, it is clear that not all of the 16 conceptual groups have relevant subsidiaries to fix into. Specifically, we are unable to classify any multinational subsidiaries from our sample as belonging to any of the following clusters: i) Internal activist and external contributor, ii) Internal contributor, external loner, and iii) Internal and external receptor. Our limited sample size (369) may explain the absence of these three groups of multinational subsidiaries. However, all the multinational subsidiaries in our sample have been successfully classified into as many as 13 out of the 16 groups of multinational subsidiaries. Compared to our case studies, firm CQ6 is in Group 14 (dual activist) and firm CQ30 is in Group 3 (dual loner). This indicates that the cluster grouping results are the same as the case-study results for these subsidiaries. We can conclude that our dual-role typology is generally appropriate in differentiating the subsidiaries' roles, strategies or characteristics in both the academic and business fields.

<Tables 4 and 5 about here>

From Tables 4 and 5 we can detect the following pattern of multinational subsidiaries' roles or strategies. Firstly, the three largest groups of multinational subsidiaries are external loners. Specifically, there are 45 internal activists/external loners, 49 internal receptors/external loners, and 45 internal and external loners (dual loners). Put another way, as many as 38% of multinational subsidiaries in China do not interact with local Chinese firms. Secondly, although the number of internal loners is smaller, it still reaches 106 (45 dual loners, 26 internal loners/external activists, 24 internal loners/external contributors, and 11 internal loners/external receptors), or about 29% of multinational subsidiaries in China. Thirdly, there are only 31 dual activists.

One of the positive sides of this pattern is that dual activists contribute significantly to both the efficiency of their corporations and to local firms' capability development, and should be welcomed by both their MNEs and the host-country government. Furthermore, the majority of multinational subsidiaries also make positive contributions to their corporations and/or local development at varying degrees. On the genitive side, however, slightly less than one-third of multinational subsidiaries in China do not seem to learn from and share their knowledge with the rest of their corporation. Hence they do not seem to contribute to the efficiency and competitiveness of their corporation. Furthermore, more than one-third of multinational subsidiaries in China do not seem to learn from and share their knowledge with local Chinese firms. Hence, they seem to neither gain from the local environment nor help local development. The behaviour of this proportion of subsidiaries is inconsistent with the main purpose of FDI policy, which expects MNEs to transfer or diffuse knowledge to local firms.

The existence of a relatively large proportion of external loners may be due to the fact that China is still an emerging economy, and its knowledge and skills are not seen to be important to some multinational subsidiaries, especially those from developed countries which are technology leaders. Hence they may have no incentives to learn from and share their knowledge with local Chinese firms. The fact that there are many internal loners may be caused by subsidiary management's overlook of the importance of knowledge sources within their corporations.

Subsidiary Roles and Their Performance

After classifying multinational subsidiaries according to their roles in internal and external knowledge flows, we investigated the relationship between subsidiary role or strategy and subsidiary performance. Since the performance measurement variables in this study are ROA, ROE, ROI and Bb29, we use factor analysis to decide whether these four variables can be combined into one factor to represent subsidiary performance, and use ANOVA to examine the relationship between subsidiary strategy and its performance by testing the four hypotheses developed in section III.

Form the factor analysis, the Kaiser-Meyer-Olkin Measure of Sampling Adequacy value is 0.548 and the Sig. value of Bartlett's Test of Sphericity is less than 0.05. In the Component Matrix**,** the loading of ROE is only -0.203, while other loadings of ROA, ROI and Bb29 are high. Therefore, the variable of ROE is dropped and the other three variables are combined into one factor (performance factor)[1].

Table 6 provides the results of testing hypotheses 1 and 2. As can be seen from the table, the ANOVA gives a sig. value of 0.037 that is less than 0.05 indicating that there are significant differences among the mean scores on the performance factor for the 16 groups. Based on our hypotheses, activists and receptors are expected to perform better than loners. The higher mean of the dual activist clusters (clusters 12 and 14, 0.358631) compared to the dual loner cluster (cluster 3, -0.29282) supports our first hypothesis. In addition, the combined mean of the four internal activist clusters is 0.217964, much higher than the combined mean of the four internal loner clusters, which is only -0.22718. Furthermore, the combined mean of the four external activist clusters is 0.154226, and much higher than the combined mean of the four external loner clusters, which is only -0.10953. To sum up, we have compared three different groups of performance differences between activist clusters and loner clusters, and all the results support Hypothesis 1.

<Table 6 about here>

For the second hypothesis, the contributors may perform better than the receptors as they may have a very high level of capability so that they do not feel a need to learn from others. Since no subsidiaries match the dual receptor clusters, we cannot compare the dual contributor

[1] The detailed test results are not tabulated but are available upon request.

cluster with the dual receptor cluster. Alternatively, we have compared the internal contributor and receptor, and external contributor and receptor clusters respectively. The combined mean of the four internal contributor clusters is 0.151423, much higher than the combined mean of the four internal receptor clusters which is -0.09178. Furthermore, the combined mean of the four external contributor clusters is 0.001929, again much higher than the combined mean of the four receptor cluster, which is -0.08428. Therefore, all the comparison results support the second hypothesis that contributors may perform better than receptors.

The relationship between subsidiary role or strategy and its impact on local firms is next discussed by testing Hypotheses 3 and 4. Since the impact of subsidiary role or strategy on local firms in this study is measured by IMPACTONLP, IMPACTONLM, IMPACTONLRD, IMPACTONLMARKET and IMPACTONLNEW, we use factor analysis to decide whether these five variables can be combined into one factor to represent its impact on local firms, and use ANOVA to test its relationship with subsidiary strategy. The results are shown in Table 7. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy value is 0.784 which is more than 0.6, and the Sig. value of Bartlett's Test of Sphericity is less than 0.05. Therefore the factor analysis is appropriate. In the Component Matrix, all variables' loadings are high so that all of them can be represented by one factor, i.e. the Impact factor [2] .

As indicated in Table 7, the ANOVA gives a sig. value of less than 0.05 indicating that there are significant differences somewhere among the mean scores on the impact factor for the 16 groups. Based on Hypothesis 3, external activists are expected to have a more positive influence on local firms than external loners. The combined mean of the four external activist clusters is 0.506728, and is positive and much higher than the combined mean of the four external loner clusters, which is only -0.51368. Therefore, the results support Hypothesis 3.

Hypothesis 4 suggests that external contributors may have a greater positive influence on local firms than external receptors. The combined mean of the four external contributors is 0.406702, while that of the four external receptors is -0.50405. Therefore this hypothesis is supported.

[2] The detailed test results are not tabulated but are available upon request.

The results on the relationship between subsidiary strategy and its performance tend to further pinpoint the importance of the typology of multinational subsidiaries. FDI network theory predicts a positive relationship between a multinational subsidiary's internal/external interactions and its performance, but very little empirical research has been reported. The results in support of the four hypotheses helps validate the dual-role typology of multinational subsidiaries, and offers clear evidence of the roles and performance of multinational subsidiaries in the world's largest emerging economy.

VI. Conclusions

Since different types of multinational subsidiaries can play different roles in improving efficiency at both the subsidiary and corporate level, as well as in enhancing local capability development in the host-country economy, there has been an increasing interest among researchers in the analysis of subsidiary typology. Following a critical analysis of the existing subsidiary typology frameworks and applying a network approach to the MNE, a dual-role typology is developed in this paper. This typology considers both the efficiency of multinational subsidiaries and their impact on local development and is believed to be an important improvement upon the existing typologies. The empirical results from an analysis of 369 multinational subsidiaries in China lend strong support to our new typology as 16 conceptual groups have relevant subsidiaries to fix into, and as our hypotheses are supported in the sense that there are positive relationships between subsidiary internal and external interactions and its impact on local development.

There are several managerial and policy implications of this study. Firstly, managers of multinational corporations need to integrate their subsidiaries into both internal and external linkages to benefit from both sources of knowledge and contribute to the efficiency of the MNE and the development of local economy. Secondly, managers of local firms should also be encouraged to establish networks with MNEs to learn from each other so that their competence can be enhanced, especially with activists and contributors, since local firms can benefit more from them than from loners and receptors. Thirdly, host-country policy makers need to encourage foreign direct investment to be selective ie. encourage FDI which is expected to develop extensive linkages with local firms to promote local development.

The contributions of this paper to our understanding of multinational subsidiary strategy and their roles need to be interpreted with caution as there are several important limitations.

Firstly, the multinational subsidiaries in the sample are located in only three different areas in China. Perhaps an ever larger sample with the selection of subsidiaries located in more different areas may allow all 16 conceptual clusters to have relevant cases to fix in. Secondly, to measure a subsidiary's impact on local firms (Hypothesis 4), we used five subjective variables based on the views of subsidiary managers only. This may lead to a biased measurement since subsidiary managers may overestimate their subsidiary's positive impact on local firms. Thus, in order to get a fairer evaluation of subsidiaries' impact on local firms, the views of related local firms need to be collected. Despite the limitations, the current study should contribute to both theoretical and empirical literature on multinational subsidiary typology.

References

Almeida, P. and Phene, A. (2004) Subsidiaries and Knowledge Creation: The Influence of The MMC and Host Country on Innovation, *Strategic Management Journal*, 25: 847–864

Almeida, P., Song, J. and Grant. R. (2002) Are firms superior to markets and alliances? An empirical investigation of cross-border knowledge building. *Organizatio*n *Scienc*e **13**(2): 147–161.

Andersson, U., Bjorkman, I. and Forsgren, M. (2005), Managing subsidiary knowledge creation: The effect of control mechanisms on subsidiary local embeddedness, *International Business Review*, 14, 521–538

Andersson, U., Forsgren, M., & Pedersen, T. (2001). Subsidiary performance in multinational corporations: the importance of technology embeddedness. *International Business Review*, 10(1), 3–23.

Balasubramanyam, V. N., Salisu, M. and Sapsford, D. (1996), 'Foreign Direct Investment and Growth in EP and IS Countries', *Economic Journal*, 106, 92-105.

Bartlett, C. A. (1986). Building and managing the transnational: the new organizational challenge. In M. E. Porter (Ed.), Competition in global industries (pp. 367–401). Boston, MA: Harvard Business School Press.

Bartlett, C. A., & Ghoshal, S. (1989). Managing across borders: the transnational solution. Boston, MA: Harvard Business School Press.

Birkinshaw, J., & Morrison (1995). Configurations of strategy and structure in subsidiaries of multinational corporations. *Journal of International Business Studies*, 26, 729–754.

Blomstrom, M. and Kokko, A. (1998) 'Multinational Corporations and Spillovers', *Journal of Economic Surveys*, 12(2): 1-31.

Buckley P, Casson M. 1976. The Future of the Multinational Enterprise. Macmillan: London.

Caves, R. E. (1971). International corporations: the industrial economics of foreign investment. *Economic*a 38(141): 1–27.

Caves, R.E. (1974) 'Multinational Firms, Competition and Productivity in Host-Country Markets', *Economica*, 41, 176-93

Cooke, F. L. and Beh, K. K. (2007) Continuous Innovations in Production Technology in the Manufacturing Industry In Britain: A Networked Approach? *Vision*, 11(1), 1-13.

D'Cruz, Joseph R. (1986). Strategic management of subsidiaries. In H. Etemad & S. Dulude. editors, *Managing the Multinational Subsidiaries*, London: Croon1 Helm.

De Meyer, A. (1993). 'Management of an international network of industrial R&D laboratories', *R&D Management*, **23**(2), pp. 109–120.

Dunning J. (1994). Multinational enterprises and the globalization of innovatory capacity. *Research Policy*, 23: 67–89.

Egelhoff, W. G. (1988). 'Strategy and structure in multinational corporations: A revision of the Stopford and Wells model', *Strategic Management Journal*, **9**(1), pp. 1–14.

Ferdows, K. (1997). Making the most of foreign factories. *Harvard Business Review*.. 75(2) 73–88.

Gates, S. R. and W. G. Egelhoff (1986). 'Centralization in headquarters–subsidiary relationships', *Journal of International Business Studies,* Summer, pp. 71–92.

Ghoshal, S., & Bartlett, C. A. (1988). Creation, adoption and diffusion of innovations by subsidiaries of multinational corporations. *Journal of International Business Studies*, 19(3), 365–388.

Gupta, A. K., & Govindarajan, V. (1991). Knowledge flows and the structure of control within multinational corporations. *Academy of Management Review*, 16(4), 768–792.

Harzing, A.-W. K. (1999). Managing the multinationals: an international study of control mechanisms. Northampton, MA: Edward Elgar.

Hedlund, G. (1986). The hypermodern MNC-A heterarchy? *Human Resource Management*, 25, 9–25.

Hedlund, G. (1981). 'Autonomy of subsidiaries and formalization of headquarters subsidiary relationships in Swedish MNCs'. In L. Otterbeck (ed), *The Management of Headquarters–subsidiary Relationships in Multinational Corporations*, Gower, Aldershot, Hants, pp. 25–78.

Hogenbirk, A.E. and van Kranenburg, H. L. (2006) Roles of foreign owned subsidiaries in a small economy, *International Business Review*, 15 53–67

Hymer S. (1976). *The International Operations of National Firms*: A *Study of Direct Foreign Investment*. MIT Press: Cambridge, MA.

Jarillo, J. C., & Martinez, J. I. (1990). Different roles for subsidiaries: the case of multinational corporations. *Strategic Management Journal*, 11, 501–512.

Jaw, B.S, Yu C., Wang, P and Chen, Y, H (2006), Knowledge flows and performance of multinational subsidiaries: the perspective of human capital. *International Journal of Human Resource Management*, 17(2), pp 225-244.

Kogut, B. (1989). Research notes and communications: A note on global strategies. *Strategic Management Journal*, 10, 383–389.Leonard-Barton, D. (1995), *Wellsprings of Knowledge: Building and Sustaining Sources of Innovation*, Boston, MA, Harvard University Press.

Kokko, A., Tansini R. and Zejan M.C. (1996) 'Local Technological Capability and Productivity Spillovers from FDI in the Uruguayan Manufacturing Sector', *Journal of Development Studies*, 32(4): 602-611.

Leonard-Barton, D. (1995), *Wellsprings of Knowledge: Building and Sustaining Sources of Innovation*, Boston, MA, Harvard University Press.

Levitt, T. (1983). 'The globalization of markets', *HarvardBusiness Review*, 61(3), pp. 92–102.

Li, X., Liu, X. and Parker, D (2001) 'Foreign Direct Investment and Productivity Spillovers in the Chinese Manufacturing Sector', *Economic Systems*, 25, 305-321.

Liu, X., Siler, P., Wang, C. and Wei, Y. (2000) Productivity Spillovers from Foreign Direct Investment: Evidence from UK Industry Level Panel Data, *Journal of International Business Studies*, 31(3): 407-425.

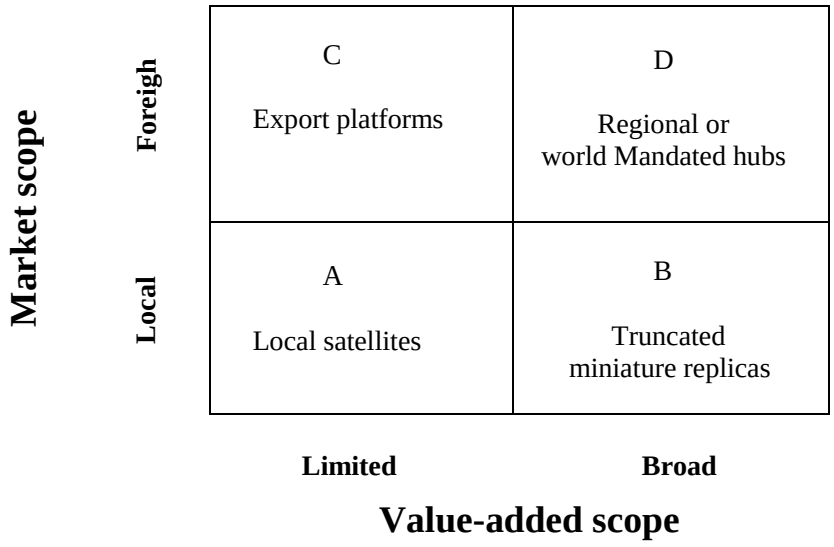
Meyer, K (2004) 'Perspectives on multinational enterprises in emerging economies', *Journal of International Business Studies*, 35(4): 259–276.

Nonaka, I. and Takeuchi, H. (1995), *The Knowledge-Creating Company*, New York, Oxford University Press.

Nonaka, I. and Teece, D. (eds) (2001), *Managing Industrial Knowledge: Creation, Transfer and Utilization*, London, Sage Publications.

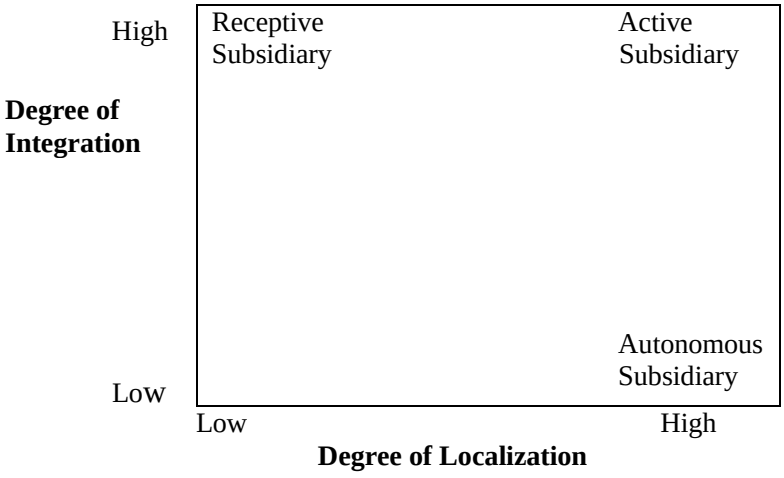
O'Donnell, S. W. (2000). Managing foreign subsidiaries: agents of headquarters, or an interdependent network? *Strategic Management Journal*, 21, 525–548.
Pallant, J. (2004), SPSS Survival Manual, 2nd, New York
Porter, M. (1980), *Competitive Strategy*, US, Free Press.
Porter, M. E. (1986). Competition in global industries: a conceptual framework. In M. E. Porter (Ed.), *Competition in global industries* (pp. 15–60). Boston, MA: Harvard Business School Press.
Prahalad, C. K. and Hamel, G. (1990), "The Core Competence of the Corporation", *Harvard Business Review*, May-June, pp. 79-91.
Ramamurti, R (2004) 'Developing countries and MNEs, extending and enriching the research agenda', *Journal of International Business Studies*, 35, 277–283
Roth, K., & Morrison, A. J. (1992). Implementing global strategy: characteristics of global subsidiary mandates. *Journal of International Business Studies*, 23(4), 715–735.
Saunders, M., Lewis, P. and Thornhill, A. (2003) *Research Methods for Business Student*, 3rd ed., London, Prentice Hall
Storey, J. and Salaman, G. (2005), Managers of Innovation: Insight into Making Innovation Happen, Oxford, Blackwell.
Taggart, J. H. (1998). Strategy shifts in MNC subsidiaries. *Strategic Management Journal*, 19, 663–681.
Tanriverd, H and Venkatraman, N. (2005), Knowledge relatedness and the performance of multibusiness firms. *Strategic Management Journal*, 26(4), pp97-119
Teece, D.J., Pisano, G. and Shuen, A. (1997), "Dynamic Capabilities and Strategic Management", *Strategic Management Journal*, 18, (5), pp. 509-533.
Utterback, J. M. (1994), Mastering the Dynamics of Innovation: How Companies can Seize Opportunities in the Face of Technological Change, Boston, MA, Harvard Business School Press.
Vereecke, A., Van Dierdonck, R. and De Meyer, A. (2006), A Typology of Plants in Global Manufacturing Networks, *Management Science*, 52(11), 1737–1750
Wei, Y. and Liu, X. (2001) *Foreign Direct Investment in China: Determinants and Impact*, Cheltenham: Edward Elgar.
Wei, Y. and Liu, X. (2006) "Productivity Spillovers from R&D, Exports and FDI in China's Manufacturing Sector", *Journal of International Business Studies*, 37(4) 544-557.
Wei, Y., Liu, X. and Wang, C (2008) "Mutual productivity spillovers between foreign and local firms in China", *Cambridge Journal of Economics*. (Forthcoming)
White, R., & Poynter, T. (1984). Strategies for foreign-owned subsidiaries in Canada. Business Quarterly, 48(4), 59–69.
Yip, G. S. (1992). *Total Global Strategy: Managing for Worldwide Competitive Advantage*. Prentice-Hall, Englewood Cliffs, NJ.
Young, S., N. Hood and S. Dunlop (1988). 'Global strategies, multinational subsidiary roles and economic impact in Scotland', *Regional Studies*, **22**(6), pp. 487–497.
Young, S. & Tavares A.T. (2004) Centralization and autonomy: back to the future, *International Business Review* 13 215–237.

Figure 1 Hogenbirk and van Kranenburg's framework



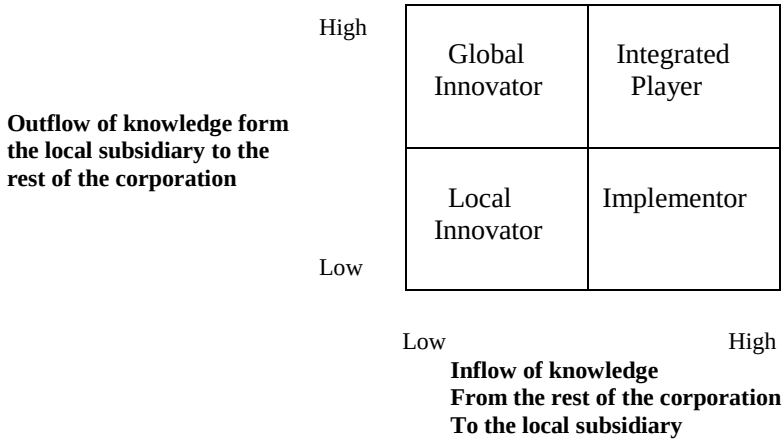
Source: Hogenbirk and van Kranenburg **(**2006)

Figure 2 Integration/Localization frameworks at subsidiary level



Source: Bartlett and Ghoshal (1989)

Figure 3 Knowledge Flow-Based Framework



Source: Gupta and Govindarajan (1991)

Figure 4 Dual-role Typology of Multinational Subsidiaries Framework

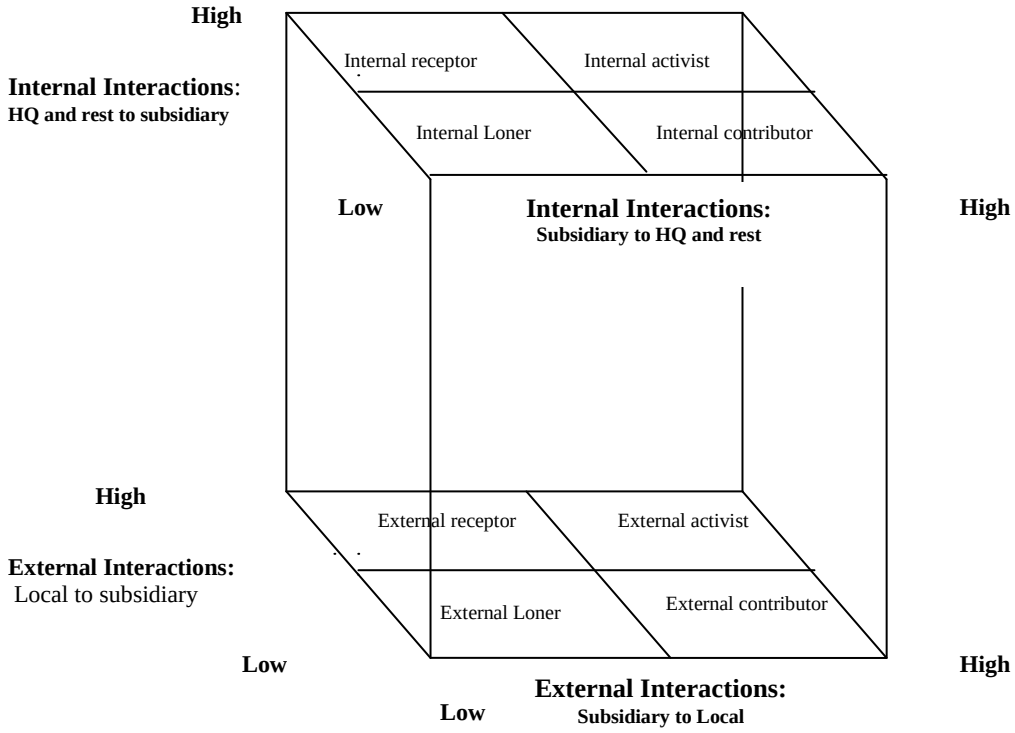


Table 1: Description of the variables

	Variable Code	Variable description
Performance variables	ROA	Return on assets
	ROE	Return on equity
	ROI	Return on investment
	Bb29	Satisfaction of subsidiary overall performance
Strategic impact on local firms	IMPACTONLP	Subsidiary's impact on local productions
	IMPACTONLM	Subsidiary's impact on local management
	IMPACTONLRD	Subsidiary's impact on local R&D
	IMPACTONLMARKET	Subsidiary's impact on local marketing
	IMPACTONLNEW	Subsidiary's impact on local firms' new business opportunity abroad
Internal interactions	A1	Production help from HQ and rest of MNC
	A2	Management help from HQ and rest of MNC
	A3	R&D help from HQ and rest of MNC
	A4	Marketing help from HQ and rest of MNC
	A5	Production help to HQ and rest of MNC
	A6	Management help to HQ and rest of MNC
	A7	R&D help to HQ and rest of MNC
	A8	Marketing help to HQ and rest of MNC
External interactions	B1	Production help from local firms
	B2	Management help from local firms
	B3	R&D help from local firms
	B4	Marketing help from local firms
	B5	Local business opportunity help from local firms
	B6	Production help to local firms
	B7	Management help to local firms
	B8	R&D help to local firms
	B9	Marketing help to local firms
	B10	Overseas business opportunity help to local firms

Table 2 Reliability results from case research

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.848	.832	27

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Bb29	49.1818	63.500	.577	.	.836
A1	49.4675	75.342	-.377	.	.865
A2	48.8961	70.116	.099	.	.851
A3	49.3961	66.805	.406	.	.843
A4	48.9675	75.293	-.425	.	.863
A5	48.6103	66.473	.369	.	.844
A6	48.3246	67.862	.415	.	.843
A7	48.6818	64.991	.624	.	.836
A8	48.8246	66.447	.548	.	.839
B1	48.5389	64.007	.685	.	.834
B2	48.5389	65.385	.546	.	.838
B3	48.5389	68.350	.341	.	.845
B4	49.1103	61.593	.676	.	.831
B5	48.4675	69.203	.174	.	.850
B6	48.9675	61.291	.782	.	.828
B7	48.6103	61.224	.727	.	.830
B8	49.2532	62.854	.706	.	.832
B9	48.6818	63.277	.667	.	.833
B10	48.7532	67.709	.239	.	.849
ImpactonlocalP	49.2532	64.010	.516	.	.838
ImpactonlocalM	49.1103	62.451	.608	.	.834
ImpactonlocalRD	49.3246	63.870	.595	.	.836
ImpactonlocalMarketing	48.8961	65.727	.444	.	.841
ImpactonlocalNew	48.8961	68.245	.160	.	.853
ROA	50.7412	71.787	-.072	.	.852
ROE	50.5010	72.676	-.153	.	.857
ROI	50.6213	70.384	.068	.	.852

Table 3: Factor loading of the four-dimension solution

	Varimax factor loadings			
Variables	Factor 1	Factor 2	Factor 3	Factor 4
A1		**.876**		
A2		**.810**		
A3		**.787**		
A4		**.695**		
A5	**.905**			
A6	**.890**			
A7	**.839**			
A8	**.850**			
B1			**.784**	
B2			**.810**	
B3			**.837**	
B4			**.770**	
B5			**.726**	
B6				**.860**
B7				**.836**
B8				**.764**
B9				**.823**
B10				**.466**
Variance	**.316**	**.382**	**.357**	**.342**

Note: Loading value below 0.4 is that shown in this table

KMO and Bartlett's Test

Internal interactions	Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	**0.758**
	Sig.	**0.000**
External interactions	Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	**0.903**
	Sig.	**0.000**

Table 4: Results of cluster analysis

Cluster	Factor	Mean	Groups combine	No. of cases	Performance/impacts on locals	Mean Value
1	Factor 1	-0.76	Internal receptor	49	Performance factor	-0.11
	Factor 2	0.73			Impact on local factor	
	Factor 3	-0.85	External loner			
	Factor 4	-0.72				-0.45
2	Factor 1	0.57	Internal activist	31	Performance factor	-0.08
	Factor 2	0.19			Impact on local factor	
	Factor 3	-0.63	External loner			
	Factor 4	-0.97				-0.60
3	Factor 1	-0.94	Internal loner	45	Performance factor	-0.29
	Factor 2	-1.04			Impact on local factor	
	Factor 3	-0.77	External loner			
	Factor 4	-0.81				-0.73
4	Factor 1	0.39	Internal contributor	21	Performance factor	-0.22
	Factor 2	-0.92			Impact on local factor	
	Factor 3	0.79	Internal receptor			
	Factor 4	-1.00				-0.62
5	Factor 1	-0.92	Internal loner	11	Performance factor	0.07
	Factor 2	-1.45			Impact on local factor	
	Factor 3	1.61	External receptor			
	Factor 4	-0.71				-0.30
6	Factor 1	-0.65	Internal loner	26	Performance factor	-0.10
	Factor 2	-0.52			Impact on local factor	0.25
	Factor 3	0.77	External activist			
	Factor 4	0.05				
7	Factor 1	-0.63	Internal loner	24	Performance factor	-0.37
	Factor 2	-0.23			Impact on local factor	0.71
	Factor 3	-0.37	External contributor			
	Factor 4	1.17				
8	Factor 1	-0.69	Internal receptor	22	Performance factor	0.11
	Factor 2	1.27			Impact on local factor	0.68
	Factor 3	-0.65	External contributor			
	Factor 4	1.49				
9	Factor 1	0.71	Internal contributor	41	Performance factor	0.37

	Factor 2	-0.29			Impact on local factor	0.46
	Factor 3	0.70	External activist			
	Factor 4	0.42				
10	Factor 1	-0.81	Internal receptor	20	Performance factor	-0.28
	Factor 2	1.08			Impact on local factor	0.50
	Factor 3	0.95	External activist			
	Factor 4	0.31				
11	Factor 1	0.73	Internal activist	20	Performance factor	0.33
	Factor 2	0.39			Impact on local factor	-0.08
	Factor 3	-0.80	External contributor			
	Factor 4	0.87				
12	Factor 1	0.42	Internal activist	19	Performance factor	0.29
	Factor 2	0.94			Impact on local factor	0.64
	Factor 3	0.94	External activist			
	Factor 4	0.34				
13	Factor 1	2.18	Internal activist	14	Performance factor	0.41
	Factor 2	0.82			Impact on local factor	0.15
	Factor 3	-0.15	External loner			
	Factor 4	-0.14				
14	Factor 1	1.59	Internal activist	12	Performance factor	0.46
	Factor 2	0.63			Impact on local factor	1.05
	Factor 3	0.11	External activist			
	Factor 4	2.16				
15	Factor 1	1.64	Internal contributor	9	Performance factor	0.01
	Factor 2	-1.96			Impact on local factor	0.01
	Factor 3	-0.05	External contributor			
	Factor 4	0.60				
16	Factor 1	2.22	Internal contributor	5	Performance factor	0.16
	Factor 2	-1.03			Impact on local factor	-0.44
	Factor 3	3.31	External receptor			
	Factor 4	-1.64				

Notes: For internal interaction from HQ to subsidiary, higher scores signifies more internal flows from HQ to subsidiary.
For internal interaction from subsidiary to HQ, higher scores signifies more internal flows from subsidiary to HQ.
For external interaction from Local to subsidiary, higher scores signifies more external flows from Local to subsidiary.
For external interaction from subsidiary to local, higher scores signifies more external flows from subsidiary to local.

Table 5: Summary of the subsidiary groups

Group Combination	Cluster Number	Numbers of subsidiary
Dual Activist	12,14	31
Internal activist, External contributor		
Internal activist, External receptor	11	20
Internal activist, External loner	2, 13	45
Dual Contributor	15	9
Internal contributor, External activist	9	41
Internal contributor, External receptor	4,16	26
Internal contributor, External loner		
Dual Receptor		
Internal receptor, External activist	10	20
Internal receptor, External contributor	8	22
Internal receptor, External loner	1	49
Dual Loner	3	45
Internal loner, External activist	6	26
Internal loner, External contributor	7	24
Internal loner, External receptor	5	11

Table 6: Tests on hypothesis 1 &2

Group	N	Mean	Std. Deviation	Std. Error
1	49	-.1073167	1.21706602	.17386657
2	31	-.0824402	.69134008	.12416834
3	45	-.2928198	.96873032	.14440979
4	21	-.2230053	.83404559	.18200367
5	11	.0689357	.62076265	.18716698
6	26	-.1034942	.87814907	.17221920
7	24	-.3738045	.79428348	.16213244
8	22	.1119981	.95232409	.20303618
9	41	.3738871	.85710266	.13385695
10	20	-.2778691	.90608939	.20260775
11	20	.3298342	1.96696884	.43982760
12	19	.2939650	.72221167	.16568672
13	14	.4118518	.84811892	.22666931
14	12	.4610182	.46923826	.13545742
15	9	.0061500	.67655162	.22551721
16	5	.1613136	.62548749	.27972651

ANOVA Sig. Value

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	25.787	15	1.719	1.773	.037
Within Groups	342.213	353	.969		
Total	368.000	368			

Table 7: Tests on hypothesis 3&4

Group	N	Mean	Std. Deviation	Std. Error
1	49	-.4500247	.87961027	.12565861
2	31	-.6011289	.95450541	.17143423
3	45	-.7295881	.87751422	.13081210
4	21	-.6234579	.50138818	.10941187
5	11	-.3039865	.95664865	.28844042
6	25	.2457013	.76832751	.15366550
7	24	.7065823	.90198313	.18411654
8	22	.6837987	1.02438086	.21839873
9	41	.4564384	.72303363	.11291888
10	20	.4977870	.95664907	.21391324
11	20	-.0797924	.79483492	.17773049
12	19	.6418615	.75836276	.17398035
13	14	.1512031	.90981511	.24315832
14	12	1.0450487	.82409834	.23789670
15	9	.0107730	.78352257	.26117419
16	5	-.4427113	.68160748	.30482413
Total	368	.0000000	1.00000000	.05212860

ANOVA Sig. Value

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	113.896	15	7.593	10.560	.000
Within Groups	253.104	352	.719		
Total	367.000	367			