

To share or not to share? R&D, Resources and the Role of the MNE in Finland

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Abstract This paper investigates the role of the multinational enterprises (MNE) in Finland, a small but advanced economy known for its innovative clusters. Specifically, the research asks what types of resources are shared between firms, and whether this is influenced by cluster membership, multinationality, firm country of origin, or if sharing is more likely via different types of linkages. Drawing on the responses of 85 of Finland's largest firms, the paper provides evidence that especially technical, R&D and innovation-related resources are shared between firms within the small economy context. More importantly, it confirms the importance of national flagship firms or those firms that are Finnish by origin but international in scope. The findings suggest that local cluster development may be attractive to foreign MNEs, but is more likely shaped by the significant contributions to resource sharing made by national (Finnish owned) MNEs. The research also finds that in the small, advanced economy context, linkages with customers rather than suppliers are more likely to involve technical, R&D and innovation-related resource transfer, highlighting the importance of forward linkages.

The authors would like to acknowledge the contribution to the questionnaire design made by Axele Giroud (Manchester Business School) and Fabienne Fortanier (Amsterdam Business School) as part of the GlobeConnect Project.

1. Introduction

Multinational enterprises (MNEs) are amongst the most significant players worldwide in terms of knowledge creation, control and commercialization, and actively transfer technological innovation internally from headquarters to foreign subsidiaries (Maher and Christiansen 2001). Building external linkages with other companies and institutions is also essential in order to better generate, use and absorb knowledge and technology (Castellani and Zanfei 2006). Such linkages are often forged in international markets. MNE subsidiaries, according to Scott-Kennel (2007), may thus act as a 'bridge' between the MNE parent and a host country's local business network enabling the MNE to benefit from both intra- and inter-organizational linkages. Locally-based firms interacting with the MNE, such as customers, subcontractors, suppliers, service providers and strategic alliance partners, also stand to benefit (Ernst and Kim 2002).

Understanding such inter-organizational collaboration is essential because innovation and competitive advantage can be developed through interaction with business partners (Forsgren et al. 2005). Indeed, one can argue that knowledge creation solely through in-house R&D activity is no longer sufficient to build competitiveness in a global world (Kosonen 2008). The need for sharing, melding and building on knowledge resources and innovation has prompted firms to pursue higher-level inter-organizational collaboration (Sabel and Saxenian 2008).

One might also argue that companies in advanced economies have greater opportunity to engage in inter-organizational collaborations. Local clusters of innovative activity can act as magnets to foreign MNEs seeking to 'tap in to' location-specific competencies. Equally, where host country companies have enough absorptive capacity, they are capable to acquire outside knowledge that will enable them to create something new instead of merely doing traditional things more efficiently (Vuori 1995), perhaps even creating radical innovations (Sabel and Saxenian 2008). This is particularly important for small, open economies (SMOPEC), which have a higher reliance on international activities – both by national and foreign MNEs – to fuel economic growth and development (Scott-Kennel 2008).

Despite these arguments we find little by way of research that distinguishes the roles of national and foreign owned MNEs in small, open home/host economies with regard to inter-organizational collaboration. Though the nature of inter-firm relationships has been subject to much research (see e.g. Imai 1989, Forsgren et al. 1995, Nahapiet and Ghoshal 1998, Schienstock and Härmäläinen 2001, Driffield et al. 2002, Smarzyska 2002, Buono 2003, Chen et al. 2004, Castellani and Zanfei 2006, Scott-Kennel 2007, Dunning and Lundan 2008, Javorcik and Spatareanu 2008, Giroud and Scott-Kennel 2009), there is not a clear understanding of how such firms differ in terms of resource sharing. Neither is there sufficient empirical research that considers how the incidence of clusters, nor the innovative and interactive business activity they tend to engender, might influence sharing of knowledge (including technology) resources between firms.

The research is set in Finland – a SMOPEC with several enviable industry clusters dominated by large Finnish MNEs as well as attractive to foreign owned MNEs. In this setting it is important to recognize the different roles Finnish MNEs and foreign subsidiaries take in inter-company collaboration and how they differ from purely domestic Finnish companies. To this end, this paper examines inter-company collaboration between the largest companies in Finland and

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their locally based suppliers, customers and other business partners by analyzing the resources they receive and contribute. This two-way resource transfer is referred as resource sharing in this paper. The research question guiding our research, therefore, can be posed as follows. ‘Does resource sharing differ between national MNEs, foreign MNEs and solely domestic enterprises: by the type of resources transferred, cluster industry, international orientation and ownership or linkage type? We hope the results allow researchers, managers and policy makers alike not only to better understand how MNEs might benefit from their operations in a SMOPEC country, but also how local companies take advantage of the MNEs’ presence.

2. Literature review

2.1 Inter-firm resource sharing

Traditionally, R&D and other higher value-added functions have been located within the parent company in the home country (Dachs et al. 2008, Castellani and Zanfei 2007). However, MNEs are increasingly conducting such activities abroad to benefit from location-specific advantages such as clusters of innovative activity. Companies in highly competitive industries are more likely to engage in local innovation and form alliance and technology sharing agreements with domestic companies (Ivarsson’s 2002). Also Dunning and Cantwell (1987) argue that continuous local innovation not only attracts local firms but also other strong MNEs. In fact, MNEs invest in advanced regions in order to have their own R&D in close access to complementary technological development (Dunning and Cantwell 1987).

The types of resources that are being transferred through linkages determine the structure of the partnerships (Chen and Chen 2003) and thus the resources were divided into four groups in our analysis: (1) technical know-how, R&D, and innovation (hereafter R&D), (2) organization and management know-how (hereafter management), (3) marketing know-how and market information (hereafter marketing), and (4) training and development of human resources (hereafter HR). Although inter-company resource transfer has been widely studied (see Castellani and Zanfei 2006, Alfaro and Rodriguez-Clare 2004, Javorick and Spatareanu 2008, Blyde et al. 2004, Smarzynska 2002) literature rarely distinguish different types of resources (e.g. R&D from marketing).

We have emphasized the importance of R&D resources in inter-company collaborations that take place in Finland because we argue that companies are more likely to share technical know-how, R&D, and innovation resources than other types of resources. During the 1990s Finland had gone from being one of the least ICT specialized countries to one of the most specialized (Koski et al. 2002) and Finnish industries had experienced a structural change from previously strong metal, engineering and paper manufacturing industries towards high tech products based on the R&D intensities in the main clusters (Luukkainen and Pentikäinen 2000). Hence, we examine the nature of inter-company collaborations by comparing the types of resources that the respondent companies share with their locally based partners, including customers, suppliers and other (non-supply chain) partners, and propose that:

H1. Linkages with local business partners in Finland are more likely to involve sharing of technical, R&D and innovation related resources than other types of resources.

2.2 Cluster membership

Clusters are centers of excellence where interconnected companies generate synergies and create thus more value than they would achieve alone (Porter 1998). Therefore, clusters may offer a collective learning base where knowledge is created locally via interaction between both national and international firms (Hervás-Oliver and Albors-Garrigós 2008). Lead firms are linked to supporting firms in clusters through market and non-market interactions (Davis et al. 2009). Localization is important in new knowledge creation because innovative work requires generation and exchange of knowledge that has not been transferable through codification (Sturgeon et al. 2008).

Clusters are often overlapping and resource transfer occurs also between clusters (Virtanen and Hernesniemi 2005, Hakonen et al. 2009). Multiple clusters form open entities that are formed by local SMEs and connected with domestic and foreign MNEs, which sustain the channels for knowledge transfer locally and globally (Hervás-Oliver and Albors-Garrigós 2008). Intra-cluster linkages are rich and efficient, while inter-cluster linkages provide access to novel information that is not available within the cluster (Sturgeon et al. 2008). In fact, the most advanced innovations are formed in two or more clusters' collaborations (Virtanen and Hernesniemi 2005).

Multiple researchers have argued that MNEs benefit from their subsidiaries located in small advanced economies with competitive clusters or leading firms (Porter 1998, Ivarsson 1999). Advantages that companies gain from clusters include higher productivity, growth, profitability and innovation (Simmie 2004). Thus, we suggest that clusters are not only attractive to foreign firms seeking to 'tap into' local competencies and resources but also enhance the attractiveness of the host country as a whole. Therefore, in line with previous literature, we would expect all firms to benefit, either directly or indirectly, from their proximity to such clusters. However, we would expect that companies which operate in cluster industries might have greater opportunity to benefit from interaction with other firms in their supply chain and business partners they are collaborating with.

The major clusters in Finland are ICT, forestry, metal and chemical industries (Steinbock 2006). All four are nowadays technology driven and strong in R&D and innovation (Steinbock 2007). We argue that the knowledge resources within these clusters attract large national (Finnish) MNEs as well as foreign MNE subsidiaries. Extant literature suggests that MNEs create linkages with locally based companies in Finland in order to attain strategic and knowledge resources (Pajarinen and Ylä-Anttila 1999) that are not as easily available in their home markets (Narula and Zanfei 2005). It appears that investment in R&D and innovation has created numerous technology-intensive firms that are attracting foreign companies to locate in Finland in order to integrate the know-how of the Finnish companies into their own operations (Pajarinen and Ylä-Anttila 1999). Hence, in the Finnish context, we propose:

H2. Firms in clusters are more likely (than non-cluster firms) to share technical, R&D and innovation-related resources.

2.3 International orientation

Our discussion thus far suggests that MNEs' build global competitive advantages by tapping into foreign countries' location specific advantages, such as knowledge based clusters.

These strategic asset-seeking activities are utilized to gain access to specific R&D competencies that are not as easily available in MNEs' home country or to create completely new assets in these foreign markets (Narula and Zanfei 2005). In fact, MNEs are one of the most significant players worldwide in terms of technology creation and control (Maher and Christiansen 2001). The possibility to tap into various resources has resulted in specialized companies focused on knowledge-based core competencies (Schienstock and Hämäläinen 2001). Compared to purely domestic companies MNEs have greater capacity to meld firm-specific knowledge with expertise gleaned from strategic alliances and collaborative linkages in host economies. Specialization enables non-core activities to be outsourced. Furthermore, purely domestic companies are largely relying on collaboration with local partners as distance inhibits close inter-firm relationships internationally. Castellani and Zanfei (2006) suggest that knowledge flows via durable and effective linkages need to be well organized which requires commitment, a favorable environment and proximity.

We have already argued that the Finnish business environment is predominantly built around technical, R&D and innovation-related competencies that are likely to attract MNEs to establish operations in Finland. However, what we do not fully understand is the contribution different types of firms make to resource sharing, nor if certain types of firms tend to receive more or contribute less. One might argue, however, that given the multinational company's ability to organise resources originating from home and host countries, their primary focus is on taking advantage of R&D related competencies in Finland. Therefore they benefit more from R&D related resource sharing than firms organised on a purely domestic basis. Hence, we propose that:

H3. Multinational companies receive more technical, R&D and innovation-related resources than purely domestic companies.

2.4 Finnish vs. Foreign

In line with our earlier arguments, we also propose that Finnish firms are more likely to be involved in inter-company collaborations than foreign subsidiaries. This proposition is in-line with Castellani and Zanfei (2007) who found that home-country (Italian) multinationals contributed more to industry development than purely domestic firms or foreign subsidiaries based in Italy. A possible explanation for this is that MNEs tend to keep the most important activities, especially R&D and innovation, close to their headquarters (Dachs et al. 2007, Castellani and Zanfei 2007). Multiple researchers concur that MNEs, given that most core competencies still reside at headquarters in the home country, will have the highest likelihood of resource transfer to local partners (Benito et al. 2003, Chen et al. 2004). Therefore, national (Finnish) MNEs are more likely to make a greater contribution than foreign MNEs to innovation as they work closely with local customers and subcontractors (Luukkainen and Pentikäinen 2000, Niinen et al 2000). This appears to be true of Finnish MNEs, such as Nokia (telecommunications), Stora Enso (forestry) etc., which are central to national cluster development and innovative activity (see Steinbock 2006, Sölvell and Porter 2002).

In a similar vein, firms with local equity are more likely to result in linkage creation in the host economy than wholly foreign owned subsidiaries (Chen et al. 2004). Javorick and Spatareanu (2008) found that having some domestic ownership is positively associated with linkages, especially those with local producers in supplying sectors. In sum, we argue that given the emphasis on R&D at MNE headquarters, and the incidence of asset-seeking activities by foreign

MNEs in host countries, the former may have greater capacity to share resources via inter-firm linkages. Hence, we propose:

H4a. National (Finnish) MNEs receive more technical, R&D and innovation-related resources than foreign (non-Finnish) MNEs based in Finland.

H4b. National (Finnish) MNEs contribute more technical, R&D and innovation-related resources than foreign (non-Finnish) MNEs based in Finland.

2.5 Linkage Type

In addition to examining how international orientation is likely to influence resource sharing, we also want to understand the nature of the business linkages between firms. In other words, do different linkages tend to encourage greater sharing of different resources? Inter-firm (external) linkages can be divided into two main types: supply chain (with suppliers or customers), relational (with other business partners outside the supply chain, also called collaborative) (Giroud and Scott-Kennel 2009). Empirical research suggests that MNEs are more likely to transfer knowledge to their local suppliers (backward) than customers (forward) via supply chain linkages (Smarzynska 2002, Alfaro and Rodriguez-Clare 2004, Blyde et al. 2004, Castellani and Zanfei 2006, Javorick and Spatareanu 2008). However, these studies were mainly conducted in developing or transition economies, and their analyses focus on backward linkages.

Studies in small, advanced economies suggest that forward linkages are just as, if not more important (Scott-Kennel 2007). For example, the results of a study that examined innovative companies in Finland indicate that forward linkages with customers are stronger than backward linkages with suppliers (Palmgren et al. 2000). Although studies are few, they suggest that forward linkages play an important role in developing technically advanced products tailored to customer needs. In contrast, local suppliers in advanced countries, such as Finland, may have less need for technical assistance from MNEs than companies in developing nations do. However, it could be argued that both buyer and supplier relationships in advanced economies have the potential for collaboration and joint development of innovation.

While supply chain, especially backward linkages have received a large amount of attention in the literature, only a limited number of studies include relational linkages. Iammarino et al. (2009) studied technological companies in the UK and found that innovations are reinforced with collaborations along the value chain, rather than horizontally with competitors or consultants because rivalry is too dominant. Also Rindfleisch (2000) suggest that horizontal collaborative alliances might be less trusting to their partners compared to vertical alliance partners and therefore the cooperation is often weaker. However, both strategic management and international business literature demonstrate that collaborative alliances are frequently formed to share resources (Scott-Kennel 2007) and they are becoming more important as in-house R&D development is increasingly insufficient to create competitive innovations (Sabel and Saxenian 2008). In fact, Hakonen et al. (2009) anticipate that horizontal and dynamic value chains are becoming more important and will substitute vertical supply chains. Given the dearth of empirical work which includes forward, backward and relational linkages in the small, advanced economy such relationships remain unclear. However, in advanced economies where services, marketing and continuous innovation are more important, forward and relational linkages are also likely to be more important in terms of

resource sharing, and particularly sharing technical, R&D and innovation-related resources. In order to investigate further, therefore, we propose that:

H5a. MNEs are more likely to contribute technical, R&D and innovation-related resources to customers (forward) than to suppliers (backward).

H5b. MNEs are more likely to contribute technical, R&D and innovation-related resources to customers (forward) than to other business partners (relational).

This section has put forward a number of hypotheses relating to resource sharing between firms in the small, advanced economy context, specifically: the type of resources, cluster membership, differences in international orientation and ownership, and type of linkages within or outside the locally-based supply chain. The following section outlines the methodology employed to test these hypotheses.

3. Methodology

This research used a quantitative approach for collecting and analyzing data. The questionnaire was developed in English and then translated in Finnish in order to improve the response rate and avoid misunderstandings due to language barriers. The initial translation was done in parallel by three Master's students who compared the translations and made modifications in order to reach a consensus. Then a person whose native languages are both Finnish and English translated the questionnaire back to English to ensure there were no errors in certain words or phrases.

The responses were collected through an internet survey, with follow ups using email and a hardcopy version of the survey instrument between September 2008 and April 2009. Due to detailed questions regarding the company's activities and future plans, the respondent in each company needed to be a chief executive officer (CEO) or other person in a top management position. The questionnaire was sent to the 500 largest companies in Finland based on turnover and 81 of them completed the whole survey. In addition, 6 companies with partial responses were added giving a response rate of 17.2 percent. However, two of the responses were from the same company, so the other response was excluded from the analysis. Therefore a total of 85 companies are analyzed in this study.

The data was analyzed using MS Office and SPSS PASW version 18. All the questions analyzed in this study were on a 7-point Likert scale, with an option to select "not applicable" if needed. The respondents were asked to indicate "to what extent their firm contributes or benefits from resources transferred to their local suppliers, customers, or other business partners" and the seven response categories varied from 1 = "not at all", to 7 = "to a great extent". As discussed earlier, the resources are divided in four categories and each of them as well as types of linkages (with suppliers, customers or other business partners) are treated separately in order to better understand the nature of resource transfer.

The top 500 firms were chosen as a population for the study based on their annual revenues, which were more than 105,539,000 EUR in 2007 (Nordic Net database). The company listing and contact information were retrieved from NordicNet and cross-referenced with the Top 500 companies list produced by Talouselämä. We divided the respondents in three groups based on

their level of internationalization and ownership: (1) national MNEs (Finnish MNEs), (2) foreign MNE's subsidiaries (in Finland), and (3) domestic firms (solely Finnish firms that operate only in Finland).

Table 1 illustrates the demographic distributions of the respondent companies. The sample size consists of 40 national MNEs, 20 foreign subsidiaries and 25 purely domestic firms. National MNEs have 48 – 11,000 employees in Finland and 16 – 35,900 employees outside Finland whereas foreign MNEs have 24 – 2,900 employees in Finland and 403 – 390,000 employees outside Finland. Domestic companies have 3 – 3000 employees in Finland. In addition, one company that had 3 employees outside Finland was added to the domestic group because its operations are strongly in Finland. Since all the respondents are among the 500 largest companies in Finland by turnover, they are all considered as large companies.

Respondent MNEs were divided into five different segments based on their primary NACE Rev 2 code, which is a Pan-European acronym used for statistical classifications of economic activities (Eurostat, retrieved 31.8.2009). These cluster industries are: ICT, forestry, metal and chemical (see Table 1). MNEs that operate in multiple industries are ranked based on their primary business. ICT, forestry, metal, chemical industries are the leading clusters in Finland and thus MNEs that operate on those industries were combined as "cluster industry MNEs". All other industries were included in "non-cluster MNEs". As Table 1 indicates, while the majority of the respondents do not operate in the main cluster industry (46 respondents), metal cluster is strongly represented among Finnish MNEs (13 respondents) and metal as well as ICT cluster among foreign subsidiaries (both having 5 respondents). The vast majority, 19 of the domestic companies operate in non-cluster industry.

INSERT TABLE 1 HERE

3.1 Methods used

We use confidence intervals calculated from means of each four types of resources shared by all the respondents with their local partners (suppliers, customers and other business partners) in the first hypothesis. Since we are examining resources shared, the resources that the respondents receive and contribute have been combined. Confidence intervals are used because they measure the range into which the true population value parameter will fall (Malhotra and Birks 2007) and they are increasingly commonly used in statistics partly because they measure the size of the effect (Urdan 2005).

The second hypothesis measures whether companies operating in cluster industries share more R&D resources than companies that operate in non-clusters. We measure this with one-way analysis of variance (ANOVA) to compare means. We examine the resources that the respondent companies share with their local customers (forward linkages), suppliers (backward linkages) and other business partners (relational linkages outside the supply chain) separately in order to understand the differences in them. We use ANOVA also to test the third and fourth hypotheses because they also compare the means of two different respondent groups, MNEs vs. purely domestic companies and national (Finnish) vs. foreign MNEs.

We test the fifth hypothesis with a paired t-test because there is one sample group whose two different responses (resources contributed to customers vs. suppliers or other partners) are

compared. We have chosen to measure exclusively MNEs in this hypothesis because we want to understand their behavior and motives in having operations in Finland. Again, we are measuring resources shared (contributed and received by the respondent) because we aim to find out the main collaborating partners.

3.2 Limitations

The questionnaire used in the data collection was only answered by MNEs' executives, not their business partners that share resources with them. Therefore it only measures the respondents' assumption of the extent and types of resources that they contribute to and receive from companies located in Finland. The second limitation of the questionnaire draws from the interval scale-based questions. Most of the responses are based on each respondent's own assumption of the extent of the resource transfer. Therefore what one respondent might consider being a significant amount, another might consider it more modest. However, the Likert-scale technique used in this survey is a widely accepted survey instrument particularly as it uses a 7-point scale (see Malhotra and Birks 2007). Also, since a top management executive in each company answered the questionnaire, the answers are assumed to be as reliable and valid for that firm as they can be.

4. Results

The results show that the respondent firms are most likely to share R&D rather than other resources via linkages with other locally-based partner firms in Finland, thus we find support for H1. As Table 2 indicates, we are 95% confident that, on average, the respondent firms share more technical know-how, R&D, and innovation resources (confidence interval for the mean of 3.889 – 4.326) than organization and management know-how (2.575 – 3.076), marketing know-how and market information (3.266 – 3.812) or training and development of human resources (2.937 – 3.382) with their local business partners.

INSERT TABLE 2 HERE

We are 95% confident that, on average, the respondent companies that operate in cluster industries share more technical know-how, R&D, and innovation resources with their customers than companies operating in non-cluster sectors (means 4.603 and 3.842, respectively). Similarly, we are 95% confident that, on average, companies that operate in cluster industries are more likely to share R&D with other business partners (those outside the supply chain) than non-cluster companies (means 4.422 and 3.788, respectively). However, we do not find significant difference for technical know-how, R&D, and innovation resources shared with suppliers. Therefore, the results offer partial support for H2.

INSERT TABLE 3 HERE

The third hypothesis tests whether MNEs receive more technical know-how, R&D, and innovation resources than purely domestic companies from their local business partners. We use ANOVA to compare the means. As Table 4 indicates, we are 95% confident that, on average, MNEs are more likely to receive technical know-how, R&D, and innovation resources from their customers than purely domestic companies (means 4.310 and 3.410, respectively). We do not find a significant difference between the amount of technical know-how, R&D, and innovation resources received by MNEs and domestic companies from suppliers or other business partners. Therefore, the results offer some support for H3.

INSERT TABLE 4 HERE

H4a proposed that national (Finnish) MNEs receive more technical know-how, R&D, and innovation resources from their local partners than foreign MNEs do. The results of the ANOVA in Table 5 indicate that we are 90% confident that, on average, national MNEs receive more R&D resources from suppliers than foreign subsidiaries (means 4.780 and 4.000, respectively). We find no significant difference between national and foreign MNEs when the resources received from customers and other business partners are tested. Thus, this finding partially supports H4a.

H4b proposed that national MNEs contribute more technical know-how, R&D, and innovation resources to their local partners than foreign MNEs do. ANOVA in Table 5 indicates that we are 90% confident that, on average, national MNEs contribute more R&D resources to suppliers than foreign subsidiaries do contribute (means 4.000 and 3.260, respectively). In addition, we are 95% confident that, on average, national MNEs contribute more R&D to customers than what foreign MNEs do (means 4.850 and 3.790, respectively). We do not find significant difference in resources contributed to other business partners. This finding partially supports H4b.

INSERT TABLE 5 HERE

The fifth hypotheses tests whether the respondent MNEs are more likely to contribute technical know-how, R&D, and innovation resources to customers than to suppliers or other partners. We use paired samples t-test to compare first technical know-how, R&D, and innovation resources contributed to customers versus suppliers (H5a) and then R&D resources contributed to customers versus other partners (H5b). Table 6 indicates that we are 99.9% confident that, on average, MNEs contribute more technical know-how, R&D, and innovation resources to their customers than with their other partners (means 4.364 and 3.571, respectively). The results support H5a. Table 6 also illustrates that we are 99% confident that, on average, MNEs contribute more technical know-how, R&D, and innovation resources with their customers than with their other partners (means 4.375 and 3.778, respectively). The results strongly support H5b.

INSERT TABLE 6 HERE

5. Summary and conclusions

This research explored how resource sharing differs between national MNEs, foreign firms and solely domestic enterprises by the type of resources transferred, cluster industry, international orientation, ownership and linkage type. We have tested five hypotheses. First, we found that the respondents who were amongst 500 largest companies in Finland are more likely to share more technical know-how, R&D, and innovation resources than organization and management know-how, marketing know-how and market information, or training and development of human resources with their local business partners. This supports our argument that R&D resources are the most important resources shared via inter-firm linkages and suggests that these are a source of competencies for firms in Finland. This also indicates that different types of resources are more important than others and thus they should be examined separately.

Second, we found that the respondent companies in cluster industries share more technical know-how, R&D, and innovation resources with their customers and other partners than companies in non-cluster industries. This suggests that firms which operate in Finnish clusters tend to have closer ties with their local customers and other business partners, and they jointly exchange R&D knowledge. Strong linkages with other business partners might also suggest the importance of inter-cluster relationships. However, we did not find that respondent companies in cluster industries share more technical know-how, R&D, and innovation resources with their suppliers than non-cluster companies. Although our purpose was not to test whether or not such linkages were formed within clusters, but just by firms belonging to a cluster, these findings reinforce the importance of customer and relational linkages within clusters in the small, advanced economy context. Here, companies are likely to be more heavily dependent on innovative - and international - activity, and thus more likely to need to collaborate at the market (rather than supply) end of the value chain. This finding is in contrast to research on linkages in developing and transitional economies where backward linkages with suppliers have been the focus. It also seems likely that innovative clusters will be attractive to both the retention of national R&D activities as well as foreign firms locating to Finland.

Third, we found that MNEs receive more technical know-how, R&D, and innovation resources from their customers than non-MNEs (domestic companies) do. Again, although the purpose at this stage was not to differentiate between foreign and national MNEs, this finding also strongly supports the notion that firms with international operations are located in Finland where they can gain proximity to locally-based innovatory activities. In some instances, for example large Finnish headquarters such as Nokia, the firms are central to these activities, in others, firms are able to 'tap into' and develop capabilities alongside other innovators. The results appear to be in line with the literature discussed earlier that MNEs create linkages with other locally based companies in Finland in order to share and develop technical and knowledge-based resources that complement those developed internationally. In practice, R&D resources that MNEs receive from their local customers might be related to product design obtained from local companies (Chen et al. 2004), such as agents or industrial customers in the value chain.

Taking this investigation further, we also examined MNEs' ownership in order to understand whether national (Finnish) MNEs share more resources with local partners than their foreign counterparts. We found that national MNEs receive slightly more R&D resources from their suppliers than foreign subsidiaries do but there were no significant differences in terms of resources received from local customers or other business partners. However, national (Finnish)

MNEs seem to contribute significantly more R&D resources to local customers than foreign MNEs do. Taken with our earlier findings, the fact that Finnish MNEs contribute more reinforces our argument of the importance of national MNEs acting as flagship firms at home. It also lends support to the idea that foreign MNEs establish subsidiaries in host economies for asset-seeking purposes, in this case, to benefit rather than contribute to resource sharing with other locally-based firms.

The fifth hypothesis tested whether MNEs are more likely to contribute technical know-how, R&D, and innovation resources to their local customers than their suppliers or other partners. Refinement of earlier tests suggested this was the case for cluster members, however we still did not know whether this was the case for MNEs. Our research again revealed the importance of customer relationships, finding that MNEs did contribute R&D resources significantly more to their customers than to other partners or suppliers. This seems to indicate that strategically important resources such as R&D and innovation tend to be shared more downstream within the value chain rather than upstream or across value chains (in other words horizontal linkages across industries). This finding is in line with Palmberg et al. 2000 who suggest that customers are most important partners in developing innovations and their demand along with observation of market niche are important factors when creating innovations. Especially in a developed country like Finland, companies are technologically capable of developing innovative solutions but they have to meet their customers' demand in order to be successful. When customers participate in developing new innovations, it results in more customer oriented solutions that have an immediate demand. In practice, customers are more likely long-term business-to-business industrial customers that are jointly developing more tailor made products with the MNE.

This research shows that in order to understand what large multinational companies are doing in their host economies, here Finland, their inter-organizational resource sharing habits should be compared to those of domestic companies. Inter-organizational resource sharing practices tend to differ whether the company is a multinational enterprise, domestic owned and operates in cluster sectors. In addition, the types of resources transferred should be identified because different host economies provide unique locational advantages that attract foreign MNEs.

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7. Vitae

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8. Tables

Table 1. Sample demographics, N= 85

	Company type	Domestic MNE	Foreign MNE	Other	Total
Number of employees in Finland	Minimum	48	24	3	
	Maximum	11 000	2 900	3 000	
	Mean	2 109,78	878,50	630,00	
Number of employees outside Finland	Minimum	16	403	-	
	Maximum	35 900	390 000	3	
	Mean	5 070,05	60 871,15	0,13	
Number of employees worldwide	Minimum	88	1 510	3	
	Maximum	46 700	391 000	3 000	
	Mean	7 179,83	61 749,65	630,12	
Cluster	ICT	1	5	2	8
	Forestry	6	-	2	8
	Metal	13	5	1	19
	Chemical	2	1	1	4
	Non-cluster	18	9	19	46
Total		40	20	25	85

Table 2. Types of resources shared by all respondents with all local partners (All respondents included in analysis, n=85)

<i>Confidence intervals</i>	N	Mean	Confidence intervals		Significance
			95% low	95% high	
Technical know-how, R&D, and innovation	70	4.107	3.889	4.326	> Mgmt, Mktg, HR
Organization and management know-how	67	2.928	2.575	3.067	< R&D, Mktg
Marketing know-how and market information	69	3.539	3.266	3.812	< R&D, >Mgmt
Training and development of human resources	69	3.159	2.937	3.382	< R&D

Table 3. The influence of cluster industry on sharing technical know-how, R&D, and innovation resources (All respondents included in analysis, n=85)

ANOVA	Technical know-how, R&D, and innovation resources shared with:		
	Backward linkages with suppliers	Forward linkages with customers	Relational linkages with other partners
Cluster	4.250	4.603	4.422
Non-cluster	3.976	3.842	3.788
F	1.021	6.776	5.998
Significance	0.316	0.011*	0.017*

Significance shown by ^=0.1 *=0.05. **=0.01. ***=0.001 level

Table 4. International orientation's influence on receiving technical know-how, R&D, and innovation resources (All respondents included in analysis, n=85)

ANOVA	Technical know-how, R&D, and innovation resources received from:		
	Backward linkages with suppliers	Forward linkages with customers	Relational linkages with other partners
MNE	4.500	4.310	4.240
Non MNE (domestic firm)	5.050	3.410	4.520
F	2.192	5.392	0.705
Significance	0.143	0.023*	0.404

Significance shown by ^=0.1 *=0.05. **=0.01. ***=0.001 level

Table 5. Firm country of origin's influence on receiving and contributing technical know-how, R&D, and innovation resources (MNEs only included in analysis, n=60)

ANOVA	Technical know-how, R&D, and innovation resources received from:		
	Backward linkages with suppliers	Forward linkages with customers	Relational linkages with other partners
National MNE	4.780	4.370	4.420
Foreign subsidiary	4.000	4.200	3.890
F	3.494	0.149	1.743
Significance	0.067^	0.701	0.193

	Technical know-how, R&D, and innovation resources contributed to:		
	Backward linkages with suppliers	Forward linkages with customers	Relational linkages with other partners
National MNE	4.000	4.850	4.000
Foreign subsidiary	3.260	3.790	3.610
F	3.488	5.696	0.776
Significance	0.067^	0.021*	0.383

Significance shown by ^=0.1 *=0.05. **=0.01. ***=0.001 level

Table 6. The difference of MNEs' contributing technical know-how, R&D, and innovation resources to buyers vs. suppliers and other local partners (MNEs only included in analysis, n=60)

<i>Paired samples t-test</i>	Technical know-how, R&D, and innovation resources shared with:				
	Mean	St. dev.		Mean	St. dev.
Customers	4.472	1.624	Customers	4.521	1.650
Suppliers	3.755	1.426	Other partners	3.833	1.492
Difference	0.717		Difference	0.688	
t Value	3.577		t Value	2.718	
Pr > t	0.001***		Pr > t	0.009**	
N	52		N	47	

Significance shown by ^=0.1 *=0.05. **=0.01. ***=0.001 level