The Impact of the Acquired Firm's Knowledge Sources on the Knowledge Creation Processes in the Acquiring Firm

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6 December 2002

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One outcome of an acquisition is that the acquired firm brings its external knowledge relations into the acquiring corporation. At the same time, the acquired firm establishes new corporate knowledge relations with headquarters and other subsidiaries. The question is to what extents do external and internal knowledge sources impact different aspects of the post-merger integration process. Internal and external knowledge sources are predicted to have different impacts since external sources typically strengthen the acquired firm's (the new subsidiary) autonomous while, in contrast, the firm's new reliance on internal sources advocates for integration to a higher degree. This paper tests the impact of the acquired firm's knowledge sources on the knowledge creation processes of the acquiring multinational corporation (MNC).

The Knowledge Sources of the Acquired Firm

Acquisition is more than a change in the ownership of firm-embedded resources. Through the acquisition, the acquiring firm gains access to the external resources of the target firm in terms of product, capital, human resources, knowledge, etc. Using a network-oriented approach, an acquisition can be interpreted as a takeover of resources located outside the boundaries of the target firm. These resources, such as a sophisticated technology to give one example, are particularly responsive to local suppliers, buyers and related firms (Zander, 1999b), or to agglomerations of specialised expertise in terms of clusters (Porter, 1990; Cantwell, 2001).

Knowledge generated in the local environment, therefore, becomes an essential part of a firm's knowledge stock. As Penrose (1959, p. 79) writes: "*To be sure, experience of the external part is part of the experience of a firm's personnel".* Penrose further states that knowledge of markets and technologies being developed by other firms are of particular importance. Furthermore, the taste and attitudes of consumers are emphasized, since changes in demand initiate entrepreneurial activity. Customer relations, therefore, often lead to requests for modifications of existing products and services and, sometimes, new product designs as well (Gammelgaard, 2000).

Formation of strategic alliances are another important external knowledge source, and firms typically cooperate with many of their competitors in order to sustain competitive positions in the market (Prahalad & Hamel, 1990). Finally, scientific centres, universities, etc., supply unique resources, like highly skilled engineers (Florida, 1997; Forsgren, Johanson & Sharma, 2000) or basic oriented knowledge. However, in the last case a wide discrepancy is predictable due to the practical-oriented knowledge creation seen in firms and the topics chosen for investigation in, e.g., universities (Rynes, Bartunek & Daft, 2001). Universities, involved in basic research, produce less targeted knowledge, whereas more targeted knowledge is generated by contract research centres or suppliers in general (Cohen & Levinthal, 1990).

The different knowledge sources used by a firm acquired by an MNC are, therefore, to a high degree disparate to the knowledge sources available to the other units of the MNC. The disparity is not only related to the importance of the different sources, but also evident in terms of the intensity of interaction with the different sources (Gemünden, Ritter & Heydebreck, 1996). The role played by the acquired firm in the MNC is, furthermore, essential since specific knowledge or product developing mandates create specific needs for external knowledge, particularly when compared to another subsidiary that mainly customizes

products to the local customer (Bartlett & Ghoshal, 1989; Poynter & White, 1985; Birkinshaw, 1996; Gerybadze & Reger, 1999; Holm & Pedersen, 2000; Cantwell, 2001). In addition, the size and age of the target firm also have an effect on its external relations. The story of each target firm is, in that sense, unique because the target firm brings its pre-acquisition structure into the acquiring corporation (Gupta & Govindarajan, 2000). The acquired firm is then likely to continue its relationships subsequent to the takeover if these relationships still provide valuable inputs for the new organisation into which the firm is placed.

As a consequence of the takeover, new sources of internal corporate knowledge are offered to the acquired firm. Being a newcomer in the organisation, the acquired firm will still rely on external sources in the beginning, but will be integrated and rely more on internal knowledge sources over time. In fact, knowledge transfers are used as an instrument for integrating the acquired firm into the organisation (Håkanson & Nobel, 2001). In situations where a pre-acquisition relationship existed between the acquiring firm and the target firm, the acquiring firm has already acted as a source for some period prior to the takeover (Andersson & Forsgren, 2000, Gammelgaard, 2002). Here the acquiring firm serves as an internal, rather than external, source.

The extent of knowledge transfers to the acquired firm is influenced by the role played by the acquired firm. A local-oriented subsidiary that customises the acquiring firm's products to the local market relies heavily on knowledge created by others. Subsidiaries responsible for developing knowledge or products that are going to be used or sold by other corporate units also rely on knowledge inflows (Gupta & Govindarajan, 1994). Poorly managed firms find that it is possible to change consolidated practices through the acquisition (Nooteboom, 1999) and therefore also depend on subsequent internal knowledge transfers.

Different efficiency levels between the acquiring firm and the acquired firm give rise to a value creation opportunity for the acquiring firm if procedures within the acquired firm can be brought up to the same level of efficiency as in the acquiring firm (Weston, Chung and Hoag, 1990).

In the opposite case, where a firm is acquired because it possesses capabilities or competences (Wernerfelt, 1984), a much higher initial impact is likely, because transfers of resources and capabilities from the new subsidiary help the acquiring firm improve its own competences. Knowledge transfers to the acquired firms in these cases depend to a significant degree on whether the acquiring corporation possesses knowledge that either can improve resources in the acquired firm or be combined with the acquired firm's resources to create synergies. The acquiring corporation must, therefore, be at least as competent in related supplementary areas before knowledge transfer can occur (Cohen & Levinthal, 1990). For these reasons, the acquiring firm's motivational disposition to receive knowledge and its absorptive capacities are, in the end, determents to the use of the intra-organisational network.

The purpose of this paper is to establish a link between the different knowledge sources of the acquired firm and their importance for knowledge creation in the acquiring corporation. However, one essential knowledge source can neither be classified as internal nor external: the knowledge creating processes that take place within the acquired firm. These processes often take place in the in-house R&D activities of the acquired firm and, in this respect, may be concentrated on basic-oriented capability development or be more directly linked to products and services (Ronstadt, 1978; Taggart, 1998; Zander, 1999a; Yamin, 2000). If these in-house R&D activities become isolated from the R&D activities in the acquiring corporation, the acquired firm naturally assumes an autonomous position in the organisation. Knowledge creation will be specialised, capability-oriented and unique, since a

disparity occurs with the corresponding knowledge creating processes of the acquiring corporation (Chiesa & Manzini, 1996; Chiesa, 2000). In this situation, the acquired firm will rely on its own source of knowledge to a high degree. This situation can be avoided if the acquired R&D activities are included in the acquiring firm's R&D network. This inclusion forces the acquired R&D unit to rely on other intra-organisational sources in their knowledge and product developments (Brockhoff, 1998; Gassmann & Zedtwitz, 1999).

To which degree the subsidiary relates to the different knowledge source depends, as shown above, on differing factors that often relate to the integration process. For example, if managers are replaced in the acquired firm, the likelihood that the subsidiary will rely on internal sources increases (Gupta & Govindarajan, 1994). Acquired firms that relied heavily on external sources before the takeover will, in all probability, still rely on these sources following the take-over, especially if a low degree of inter-unit homophily is present (Gupta & Govindarajan, 2000). In general, a tendency exists to rely on well-known and existing sources when solving familiar problems (Leonard-Barton, 1995). Only if these sources prove to be unsatisfactory may the firm turn to new sources in an effort to develop capabilities more divergent from the existing set (Lane & Lubatkin, 1998). Subsequent to the takeover, the acquired firm may initially rely on its existing knowledge stock, i.e. in-house and external sources. However, being part of a new organisation, which may result in dramatic changes to strategic goals, might enforce a need for highly divergent capability development, possibly making internal sources critical to the acquired firm. In general, the choice of knowledge sources to rely upon depends on the quality of the sources. If the knowledge stock of the acquiring firm's corporate unit is relatively more valuable than external and in-house services, the acquired firm will naturally rely on those (Gupta & Govindarajan, 2000).

Different surveys cover the question of to which degrees firms rely on internal, external or in-house sources in their knowledge creations processes. However, these surveys have been conducted on different analysis levels and are, therefore, not directly comparable. Conway's (1995) survey takes its point of origin in the innovation processes of the firm and is not specifically related to subsidiaries. Conway's analysis showed that external inputs to the innovation process were either critical or important in 54% of the cases. Drawing on the degree of internationalisation, Keeble *et al* (1998) conclude that international-oriented firms tap into universities, research collaborators and competitors to a much higher degree than national-oriented firms. In addition, the latter category of firms establishes relations with customers, suppliers and sub-contractors to a higher degree. However, in this survey, only a small proportion of the firms were subsidiaries.

Three surveys investigate the subsidiary's knowledge sources in deeper detail, although acquisition is not touched upon as a specific topic. In a series of articles, Pearce (1996; 1999) investigates the knowledge sources of MNC subsidiaries in the UK. In-house R&D and R&D carried out by local scientific institutions relate first and foremost to subsidiaries that produce new products for both local and global markets. R&D carried out in collaboration with other firms relates mostly to subsidiaries producing and exporting components parts for assembly elsewhere. Finally, the internal knowledge source found in R&D carried out by other R&D laboratories of the MNC was mostly used by subsidiaries producing for local markets.

In general, the importance of different R&D sources differs further by industry. In Florida's (1997) survey, the most important knowledge sources for innovation processes in foreign-affiliated R&D laboratories in the US were in-house R&D activities and customers. Of some importance were other MNC R&D laboratories, competitors and joint venture partners. Universities and suppliers were of low importance.

Finally, Nobel & Birkinshaw (1998) operate with the "international creator" subsidiary role, emphasizing R&D units tapping into both inter- and intra-organisational local bodies of expertise. In their survey, which covers both national and foreign affiliates to large Swedish MNC's, such units relate significantly more to local and foreign universities, but not to the host country universities in general. Significantly, the international creator had relationships with both host-country and foreign customers, but local costumers were more important as a source for subsidiaries purely concentrating on products fulfilling local demands.

Bridging Knowledge Sources and MNC Knowledge Creation

One central necessity is to describe the effect of using different knowledge sources on MNC knowledge creation activities in general. One may assume that the internal sources are positively related to MNC knowledge creation, since the acquired firm acts as an improver of the existing knowledge stock. The other organisational units then receive modifications of well-known knowledge. Knowledge, as an outcome of the acquired firm's independent R&D processes or external relationships with a local environment, is consequentially more disparate to the acquiring unit. Therefore, if the subsidiary is going to influence MNC knowledge creation, it has to act as a bridge between the external and in-house knowledge sources and the other organisational units. The acquired firm and, in particular, its R&D unit play a sort of "gatekeeper" (Katz & Tushman, 1983) or "idea broker" (Birkinshaw & Hood, 2001) role, in which absorption, translation and transfer of knowledge makes external-embedded knowledge useful to inside receivers.

A direct link between external sources and intra-organisational influence on MNC strategy is found by Andersson and Forsgren (2000) where the degree of embeddedness in external relations determines the degree of influence. To give one example, an intensive and

long-lasting interaction between the subsidiary and a customer about development of a specific product might influence the product development activities of the entire MNC. Best practice imitation of the acquired firm's practices is another example of a direct relationship (Rosenzweig & Singh, 1991).

However, an indirect link between external embeddedness and internal influence is much more likely. External knowledge sources are central to competence building in the subsidiary. As a competence centre of an organisation, the subsidiary is often pronounced as a centre of excellence (Holm & Pedersen, 2000), making it easier for other corporate units to recognize and acknowledge the knowledge stock of the subsidiary (Andersson & Forsgren, 2000). The close ties to customers, competitors and local research institutions become central for upgrading existing products and for the introduction of new technologies (Zander, 1999b). To reuse the above example, the customer becomes important for the development of a certain technology in a subsidiary. Thereafter, the subsidiary influences a knowledge creation process elsewhere in the MNC, as it possesses that specific technology (Andersson & Pahlberg, 1997). The entrepreneurial culture here has a direct effect on influence (Birkinshaw, Hood & Jonsson, 1998), and external relations are part of this entrepreneurial culture. The effect on influence, though, is indirect.

External sources are, therefore, first and foremost important for building up competences in the subsidiary. In fact, external sources can provide a boost to the effectiveness and scope of the learning processes in the firm (De Meyer, 1991). The outcome of formatting these external partnerships depends on the subsidiary's ability to combine internal learning processes with external learning processes (Kogut & Zander, 1992), which again depends on the subsidiary's absorptive capacities (Cohen & Levinthal, 1990).

As a bridge between external and internal sources, the subsidiary finds itself in a dilemma. On the one hand, it is pulled to achieve isomorphism with the local institutional

environment. On the other hand, it needs to form part of the acquiring institution (Rosenzweig & Singh, 1991). In its strategy, the acquired firm must address local values, norms and practices but simultaneously follow the norms and rules of the acquiring corporation, which are often governed by headquarters located in far distance countries. Adapting to the local culture creates autonomy (Yamin, 1999), whereas trying to adopt corporate culture creates a situation of being a mirror (Brooke & Remmers, 1970) or a miniature replica of the headquarters (Poynter & White, 1985). However, building on the logic of the acquired firm's external embeddedness, Rosenzweig & Singh (1991) predict that similarity with the host country firms and institutions is higher for acquired firms than for greenfield subsidiaries, saying that among acquired firms pure autonomous behaviour is to be found. The isomorphic adaptation to the local environment makes the subsidiary less reliant on the MNC network and, at the same time, it also makes the acquired firm more attractive to the other MNC units (Yamin, 1999).

The crucial matter is, therefore, to integrate the knowledge generated from the acquired firm's external relations into the acquiring corporation. For example, when a firm is acquired because of its placement or position in a superior cluster, it is important to define its new role and focus during the integration. In particular, activities with which the new subsidiary can contribute to the corporation, like the R&D unit and its network links to other R&D units or a science centre in the cluster are important (Porter, 1990). In fact, the problem is not to keep the external knowledge relations as a source when integrating the acquired firm. Rather, problems arise in the interface between external knowledge supplied to the acquired firm and the knowledge needed by other corporate units, since those needs often include specific organisational demands, language schemes, and cultural norms (Katz & Tushman, 1983). In this situation, high interdependency and acceptance of "Not Invented Here" knowledge among corporate units is required to successfully disseminate the subsidiary's

external knowledge to the rest of the corporation (Gupta & Govindarajan, 1994). Moreover, external embedded knowledge may be too complex for the other organisational units to understand and recognize (Andersson & Forsgren, 2000). A survey by Forsgren & Pedersen (1998) showed that only 30 out of 141 subsidiaries managed to be simultaneously autonomous-oriented in regard to external knowledge sources and interdependent in relation to internal sources. One reason is the nature of absorptive capacities that are often firm-specific and, therefore, hinder integration (Cohen & Levinthal, 1990). In this situation, the subsidiary is not able to translate the external knowledge to a corporate language.

In general, one may claim that external links are unique in their dyadic nature and can only be transferred across national and organisational boundaries to a limited extent (Porter, 1990; Zander, 1999a). Over-embedded subsidiaries might then - from the headquarters' point of view - be seen as "captive" in the local net and, for that reason, be considered of less importance (Porter, 1990; Taggart & Hood, 1999).

Research Frame, Data Collection and Statistical Test

The following statistical analyses are based on data collected through a questionnaire survey undertaken in the spring of 2000. The questionnaire was sent to those Danish industrial firms that had acquired a foreign firm in the period 1994 – 1998, numbering 151. 54 firms replied, giving a response rate of 36%. The acquiring Danish firms are typically medium-sized with less than 1000 employees, although several firms are very large and internationalised, giving a mean of 1182 and 3695 employees in Denmark and abroad respectively. The typical firm acquired less than one firm per year in the period. At the top of this scale, one firm acquired 74 foreign firms in 18 different countries. The target firms are often small or medium-sized, with a mean of 170 employees and an average turnover at the time of takeover of US$ 17.50 million. In 43 of the cases R&D activities were taking place in

the acquired firm subsequent to the takeover. Part of the questionnaire aimed to test which knowledge sources the acquired firm uses to improve its competences. Knowledge sources were grouped into intraorganisational sources, including the acquired firms' headquarters and other affiliates in the acquiring corporation, interorganisational knowledge sources, including customers, consumers, and local science centres, and the acquired firm's own knowledge sources, including its in-house R&D activities.

The 43 acquired firms are only deemed to be to some extent important to the MNC's knowledge creation. This question derived a mean of 3.76 measured on a 1-7 point Likert scale, as shown in Table 1. The variance was 2.33. In general, the most important knowledge source for the competence building in the acquired firm is its customers, as proven by a high mean combined with a very low variance. The result corresponds to the fact that customizing products to fulfil local needs is still a central R&D role for many subsidiaries. Competitors also contribute as a knowledge source in some cases. The lower importance here is due to the fact that formalised partnerships, such as strategic alliances, need to be established before critical information is to be transferred across firm boundaries. The last external knowledge source, the relation to local science centres, is of relatively low importance, and none of the acquiring firms responded with a "6" or "7" to that particular question. One explanation could be wide gaps between scientific research designed for technology development and the more practical, adaptive R&D activities usually taking place in the acquired firms.

Headquarters takes the position as the most important internal knowledge source. However, the high variance shows that in some of the acquired firms, headquarters does not deliver any knowledge of relevance. Other subsidiaries also play a role as a knowledge supplier for competence building. This source is generally of moderate importance and, again, the variance is relatively high. As in the Gupta & Govindarajan (1994) survey, subsidiaries play different roles regarding the extent of inflows and outflows respectively.

The acquired units' own R&D laboratories seemingly have only a moderate importance. One group of firms indicating no importance, while another group of firms indicates some or strong importance causes the result's high variance. The high median is created through a high number of firms indicating a "6" or more in importance. The result speaks for a division of the acquired firms, where one group plays a "centre of excellence role" at the one end of the scale, and the other group on the other end of the scale plays the role as a sales outlet, where R&D activities are of minor importance.

Table 1: Importance of different knowledge sources for competence development in the acquired firm

Knowledge source	Mean	Variance
In-house R&D activities	4.05	3.71
Headquarters	4.67	3.32
Other subsidiaries	3.83	2.85
Customer	5.21	1.26
Competitors	4.09	2.47
External knowledge centres	2.72	2.02

N = 43
1 = no importance, 4 = moderate importance, 7 = high importance

The interrelatedness among the different knowledge sources and how they in interplay effect the MNC knowledge creation processes is tested through correlation and regression analyses respectively. The correlation analysis, as given in Table 2, indicates a correlinearity problem between importance and in-house R&D activities and a multicorrelinearity problem among the three external knowledge sources: customers, competitors and external science centres. Finally, a correlinearity problem exists between the subsidiary and the external sources. The correlation analyses hints that the in-house R&D activities are the influential factor in MNC knowledge creation. However, the indirect effect is not to be found, since no

other knowledge sources correlate with the in-house R&D activities. Difficulties of translating and transferring external embedded knowledge apparently exist in relation to customers and competitors, so this knowledge remain locally embedded in product customisation processes and is only rarely used by other corporate units. In return, basic-oriented knowledge coming from external sources is of much higher use for other MNC units. Finally, it is noteworthy that those acquired firms that maintain relations with local science centres are much more open to knowledge possessed by other affiliates, competitors, and customers even though the latter relation is non-significant. The results here point toward a situation where the acquired firm becomes part of wide network-oriented structures only slightly controlled by the headquarters. Finally, the low correlation between external sources and in-house R&D activities indicates that firms focusing on internal knowledge creating processes do not tap into other sources in particular, and in contrast, firms with low internal R&D activity need alternative sources such as, e.g., a local university, to gain access to knowledge not owned by the MNC.

Table 2: Correlation coefficients for knowledge sources of the acquired firm

	IMP	R&D	HQ	SUB	CUS	COM	EXT
IMP	1.00						
R&D	0.61****	1.00					
HQ	0.07	0,04	1.00				
SUB	-0.03	-0.08	0.19	1.00			
CUS	-0.17	-0.09	-0.11	0.04	1.00		
COM	-0.05	0.05	-0.02	0.06	0.29*	1.00	
EXT	0.23	0.07	0.07	0.34**	0.19	0.26*	1.00

COM = Importance of MNC knowledge creation; R&D = Acquired firm's R&D laboratory; HQ = Headquarters; SUB = Subsidiaries; CUS = Customers; CPT = Competitors; EXT = External scientific centres;
*p < 0.10; **p < 0.05; ***p < 0.01; ****p < 0.001

A regression analysis is used to investigate the relation between knowledge creation in the acquiring corporation and the knowledge sources of the acquired firm. In general, the regression analysis is sufficient with strong F-statistics and R-values. The high degree of

collinearity between in-house R&D and importance weakens the analysis. However, removing the in-house factor from the analyses make the F-statistics insignificant.

The regressions as shown in Table 3 prove that in-house R&D is sovereign to the other sources in regards to MNC knowledge creation processes. The R&D activities of the acquired firm are, therefore, apparently the most influential knowledge source. However, the indirect effect from the other knowledge sources is still likely to be counted in the figures despite the low correlations. As stated in earlier studies, like Rantf (1997), the R&D activities are the driver of the acquired firm's knowledge creating processes subsequent to the takeover or, at least, the knowledge creating processes taking place in the R&D department are those acknowledged by other corporate units. The acquired firm might be excellent in developing marketing techniques, but such a knowledge stock is more likely to remain embedded in local customer relationships.

The other significantly influencing knowledge source is the relation with local external science centres. The uniqueness of the relationship is the essential element, since relations between, e.g., universities and practitioners are established when the latter has to solve the most difficult and important scientific problems (Rynes, Bartunek & Daft, 2001). Through such relationships, the acquired firm possesses knowledge that is very different to the knowledge possessed by other corporate units. This uniqueness leaves room for learning processes, as long as the knowledge is not too far away from the specific needs of other MNC units (Ahuja & Katila, 2001). Furthermore, local research entities are often the supplier of basic-oriented knowledge related more to science than to a specific product or service. Firms, therefore, seldom conduct such research programmes but tap into the research centres instead. In addition, research centres also specify and differ in their respective research programmes. A university located near the target firm may therefore be the most satisfactory source for the

MNC in general. The relationship to the local science centre thereby becomes crucial for knowledge creating processes taking place elsewhere in the MNC.

There is no significant relationship between the remaining knowledge sources tested and the knowledge creating processes in the acquiring corporation. The negative impact of internal knowledge sources is to be expected, since these sources do not initially encourage the development of unique knowledge in the receiving subsidiary. On the other hand, from a network-oriented perspective the synergy-effect of sharing knowledge and utilising dispersed competences is not to be found in this study. The competence perspective in which independent, specialised and autonomous aspects are emphasized is on the agenda (Brockhoff, 1998).

The negative impacts from external knowledge sources like customers and competitors are surprising. Like in the case of external sciences centres, the customers and competitors of the acquired firm could also be the supplier of unique and specialised knowledge, useful for other corporate units. However, these two sources relate more to customisation-oriented R&D with the purpose of fulfilling specific customer demand. In this case, the customer and competitor relationships of the acquired firm become less relevant to the remaining corporation. In addition, the customers of the acquired firm do not have a position where their demands and needs have any considerable effect on the future product strategy by other units in the MNC. This part of the survey is therefore in contrast to the findings of Andersson & Pahlberg (1997) and Andersson, Holm & Holmström (2001).

The R&D activities are the "home" for competence in the acquired firm and are therefore important to other units of the MNC. Headquarters and affiliates tap not only into the knowledge embedded in the R&D activities, but also into the knowledge embedded in the acquired firm's external relationships with local research institutions. Product-related

relationships, as well as intra-organisational relationships, play an inferior role in this connection.

Table 3: Regressions of knowledge sources of the acquired firms with the knowledge creation in the acquiring corporation as the dependent variable

Model Variable	1
Own R&D activities	0.46 (4.63)****
Other corporate subsidiaries	-0.06 (0.46)
Headquarters	-0.03 (0,24)
External science centres	0.29 (1,93)*
Customers	-0.17 (0,93)
Competitors	-0.10 (0.83)
Constant	2,53 (2,07)**
R^2	0.45
Adjusted R^2	0.36
F-statistic	4,87***
N	43

T-values are set in parentheses.
*p < 0.10; **p < 0.05; ***p < 0.01; ****p < 0.001

Conclusion

The role of the acquired firm's knowledge sources in the learning processes following the acquisition is a hitherto unexplored topic. This analysis showed that subsequent to the takeover, the acquired firm might remain within existing practices and rely on in-house or

external sources of knowledge. However, integration strategies may insure that the acquired firm starts to use intra-organisational sources as well.

The next step in the analyses was to investigate which of the knowledge sources offered to the subsidiary simultaneously were important for knowledge creation processes taking place elsewhere in the organisation. Investigation of a dataset containing information about 43 international acquisitions made by Danish industrial firms in the period 1994 - 1998 showed that the sources supplying basic-oriented and unique knowledge were central in this aspect. First and foremost, the R&D activities of the acquired firm were essential for the MNC knowledge creation to a significantly degree. At the same time, a low inflow of MNC knowledge to the R&D unit indicates a specialised, autonomy-based unit, where created knowledge is likely to be disparate to the existing stock of MNC knowledge. Furthermore, the acquired firm's use of local research centres significantly contributes to the MNC knowledge creation. Again, the basic-oriented flavour of such research is also useful for other units in the MNC. Firms acquired for their possession of competences, and where the acquiring corporation emphasizes strategies for knowledge sharing will typically be acting as sources of specialised knowledge that form part of larger research projects managed elsewhere in the MNC.

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