

# Factors Affecting Knowledge Transfer and Absorptive Capacity in Multinational Corporations

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## ABSTRACT

*With the increasing speed of competition, knowledge management has become a critical competitive weapon. The process of knowledge transfer between business units is an essential aspect of knowledge management. The ability to transfer knowledge internally is one of the main competitive advantages of multinational corporations (MNCs). In this paper we will explore knowledge transfer and absorptive capacity in multinational corporations. We review relevant literature on knowledge management especially for knowledge transfer and absorptive capacity. The objective of our study is two fold. First, we conceptualize absorptive capacity by emphasizing both ability and motivation. Second, we explore the internal transfer of knowledge by multinational corporations.*

*Based on the literature review, the absorptive capacity of the receiving unit is the most critical determinant of internal knowledge transfer in MNCs. However, the existing literature on absorptive capacity often do not capturing the various facets of absorptive capacity. We suggest that absorptive capacity should be comprised of both employees' ability and motivation. Both ability and motivation can facilitate knowledge transfer from other parts of the MNC. Also, we expect to discover that the absorptive capacity of the subsidiary facilitates transfer of knowledge from other parts of the multinational corporations.*

**Keywords:** Knowledge Management, Knowledge Transfer, Absorptive Capacity, Multinational Corporations

## INTRODUCTION

The globalizations of markets and production have caused a primary change of corporate strategy in many companies. The ability to create and transfer knowledge internally is one of the main competitive advantages of multinational corporations (MNCs). The MNC is considered to be a differentiated network, where knowledge is created in several parts of the MNC and transferred to various inter-related units (Bartlett and Ghoshal, 1989). Conceptualizing the MNC as a differentiated network has inspired a recent stream of research on the creation, assimilation, and diffusion of internal MNC knowledge emphasizing the role of subsidiaries in these processes (Holm and Pedersen, 2000)

The idea of MNCs as knowledge networks has been elaborated by Gupta and Govindarajan (1991). The main idea of their concept is that MNCs can be thought of as a network of multidirectional knowledge transactions among units located in different countries. Network approaches to MNCs emphasize the importance of internal transfers of knowledge between headquarters and subsidiaries (Nohria & Ghoshal, 1997; Bartlett & Ghoshal, 1989). The basic premise of these approaches is that competitive advantages can be achieved from the capability of transferring knowledge to those MNC sub-units where it will increase value added. A precondition for this is that the geographically dispersed units are able to transfer knowledge to other MNC units as well as to adopt knowledge generated there. Especially subsidiaries with reference knowledge that is valuable world-wide have to assure that this knowledge is available for the entire MNC (Boettcher, and Welge, 1994). This capacity of world-wide knowledge transfer becomes essential to support transnational organizational learning and to enhance the holistic perspective of MNCs.

The process of knowledge transfer between business units is an essential aspect of the knowledge management. The ability to transfer knowledge internally is one of the main competitive advantages of multinational corporations. The transfer of knowledge between units in the same country is far from trivial. However, the problem of knowledge transfer will become increasingly difficult with geographical and cultural distance. Multinational corporations can

exploit existing knowledge and combine it to explore new knowledge as their competitive advantages, but transfer of knowledge across business units is still a challenge in many MNCs.

Knowledge-based competition has magnified the importance of learning alliances as a fast and effective way to develop superior dynamic capabilities. To achieve a competitive advantage, firms need better quality, innovation, and improved efficiency. This requires a steady search for new tools and management opportunities to provide these competencies. However, many firms are prevented from adopting them by organizational inertia (Welsch, Liao and Stoica, 2001), or a lack of absorptive capacity (Boer, Bosch and Volberda, 1999). Also, learning-before-doing is typically undervalued, so firms tend to underinvest in the development of absorptive capacity (Cohen and Levinthal, 1994). Absorptive capacity enables the firm to effectively acquire and utilize external as well as internal knowledge, which affects the firm's ability to innovate and adapt to its changing environment and be competitive.

Past studies on MNC knowledge flows propose that the absorptive capacity of the receiving unit is the most significant determinant of internal knowledge transfer in the MNC. If subsidiaries differ in their absorptive capacity, this affects the level of knowledge transfer between subsidiaries (Cohen and Levinthal, 1990). While the literature offers multiple methods to conceptualize and operationalize absorptive capacity (Zahra and George, 2002), little attention has been paid to the question of whether, and how, firms can enhance the development of absorptive capacity through effectively knowledge transfer on MNCs.

## **CLASSIFICATION OF KNOWLEDGE**

There are many ways to classify knowledge according to the previously mentioned research. However, the most popular classification is explicit and tacit knowledge (Nonaka & Takeuchi, 1995). Nonaka et al. (2000) defined explicit knowledge as the knowledge that can be expressed in formal and systematic language and shared in the form of data, scientific formulae, specifications, manuals and so on. In contrast, tacit knowledge is deeply rooted in action, procedure, routines, commitment, ideals, values and emotions.

### **Explicit knowledge**

Mackenzie (1996) suggested that explicit knowledge is information or instruction that can be formulated in words or symbols and therefore can be stored, copied and transferred using impersonal means, such as written documents or computer files. Hansen et al. (1999) expressed that explicit knowledge is codified, stored and accessed with a high quality, reliable, fast information retrieval system. After being codified, explicit knowledge assets could be reused to solve many kinds of problems similar to previous situations. Preiss (1999) stated that explicit knowledge is the knowledge that lies in a given collection of data and rules, or can be directly deduced from that collection in a reasonable amount of time.

### **Tacit knowledge**

Tacit knowledge is knowledge that has not been explicitly formulated and therefore cannot effectively be stored or transferred entirely by impersonal means. Tacit knowledge may not be perceived directly, but it is as important as explicit knowledge. Tacit knowledge is related highly to the individual. Fleck (1996) stated that tacit knowledge is the kind of knowledge that is wholly embodied in the individual, rooted in practice and experience, expressed through skillful execution and transmitted by apprenticeship and training through watching and doing forms of learning.

Globalization has created local knowledge with potential for utilization elsewhere, and information technology has given individuals increasingly differentiated knowledge. The inter-firm and intra-firm management of knowledge has been the subject of plenty of research among business scholars recently. Developing abilities to better utilize the knowledge contained in the firm's network has become apparent to managers. An important finding is that the establishment of sophisticated mechanisms for the transfer of knowledge throughout the far-flung networks of the MNC is necessary to stay alongside in rapid international competition.

## DEFINITION OF KNOWLEDGE TRANSFER

Knowledge is an elusive concept that has been classified and defined in a variety of ways. For the purposes of this study, we use the definition of knowledge used by Kogut and Zander (1992) that incorporates both the relatively tacit know-how, defined as the accumulated practical skill or expertise that allows one to do something smoothly and efficiently; and information which accommodates more explicit dimensions of knowledge. The concept of transfer is also difficult to capture. The issue here is that there is no definite distinction between the transfer of knowledge and the creation of new knowledge. A literature search reveals that what some call knowledge combination, knowledge creation, or learning are only other names for knowledge transfer (Bartlett and Ghoshal, 1989; Nonaka and Takeuchi, 1995). For the purpose of this study, we use the term knowledge transfer only. Knowledge can be transferred in either or both of the following directions: from the acquiring unit to the acquired unit; from the acquired unit to the acquiring unit. Knowledge transfer in this context implies successful knowledge transfer, which means that transfer results in the receiving unit accumulating or assimilating new knowledge. Accordingly, we define knowledge transfer between organizational units as a process that covers several stages starting from identifying the knowledge over the actual process of transferring the knowledge to its final utilization by the receiving unit. In the context of MNC, the other units are the headquarters and other subsidiaries in the corporation, while the receiving unit is the focal subsidiary.

## FACTORS AFFECTING KNOWLEDGE TRANSFER

The concept of knowledge is clearly distinct from information. Information, which can be associated with facts about the real world, is the fundament of knowledge. Knowledge is information combined with experience, context, interpretation, reflection, intuition, and creativity. Knowledge can be seen as the capacity, embodied in the brains of people and embedded in social practices, to interpret information, transforming it into fresh knowledge (Davenport and Prusak, 1998). Even though a growing number of executives, consultants, and management theorists have proclaimed that knowledge constitutes a major competitive advantage for organizations, many firms have not achieved their knowledge management objectives. Knowledge transfer is not a simple process. Organizations often do not know what they know and have poor systems to locate and retrieve the knowledge that resides in them. The following factors are factors that affect effective knowledge transfer in organizations.

### **Information Technology**

IT can increase knowledge transfer by extending the individual's reach beyond formal communication lines. Computer networks and electronic bulletin boards and discussion groups create a forum that facilitates contact between the person seeking knowledge and those who may have access to the knowledge. Video technologies can also enhance knowledge transfer.

### **Systems and Procedures**

Knowledge is only valuable if it is appropriate, accurate, and accessible. Successful knowledge transfer requires systems, methods, and procedures. These systems and procedures constitute what a user wants or needs to know, how knowledge should be created, collected, stored, and shared and the responsibilities for the process.

### **Culture**

Organizational culture is increasingly recognized as a factor in promoting intellectual assets. Culture shapes assumptions about what knowledge is worth exchanging, defines relationship between individual and organizational knowledge, determining who is expected to control specific knowledge, as well as who must share it. Also, culture shapes the processes by which new knowledge is created, legitimated, and distributed in organizations.

## KNOWLEDGE TRANSFER WITHIN MNCS

The interest in knowledge within MNCs has been stimulated with huge research potential in the last decade (Gupta and Govindarajan, 2000). MNCs can develop knowledge in one location and exploit it in other locations, which imply the internal transfer of knowledge by MNCs. Thus, the competitive advantage that MNCs could take depends on their ability to facilitate and manage inter-subsidiary transfer of knowledge. Szulanski (1996) emphasized that knowledge transfer is a process of dyadic exchanges of knowledge between the source and recipient units. Apparently, pure transmission of knowledge from the source to the recipient is valueless if the recipient does not use the new knowledge. Knowledge transfer may lead to some changes in the recipient's behavior and/or the development of some new ideas that lead to new behavior (Davenport and Prusak, 1998). More recently, much of the empirical research on intra-company knowledge transfer has been focusing on different factors that hinder or stimulate knowledge transfer. Ghoshal and Bartlett (1988) concluded that communications between organizational units facilitate knowledge flows within MNC. Gupta and Govindarajan (2000) observed that the knowledge inflows into a subsidiary are positively associated with the richness of transmission channels, motivation to acquire knowledge, and capacity to absorb incoming knowledge.

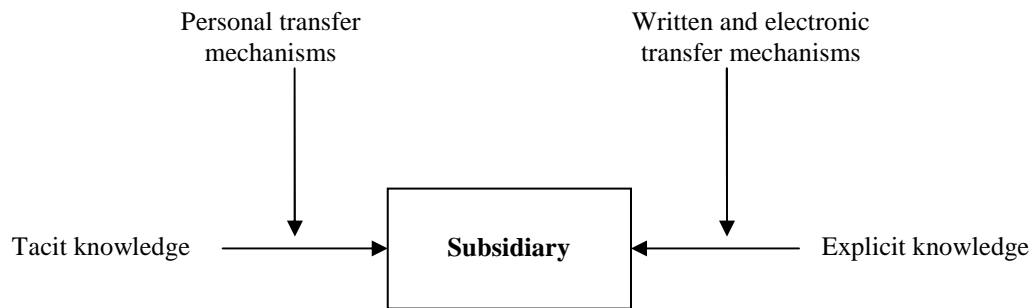
## CHARACTERISTICS OF KNOWLEDGE FLOWS

With reference to the characteristics of knowledge flows it can be distinguished between objective vs. experiential knowledge (Penrose, 1959) respectively explicit vs. tacit knowledge (Polanyi, 1966). Objective or explicit knowledge refers to knowledge that can be articulated either verbally or in writing and thus can be transmitted in formal, systematic language. In contrast to explicit knowledge, experiential or tacit knowledge is implicit, non-verbalized and therefore difficult to formalize and transfer it to others since it is embedded in individual experiences and involves personal beliefs, perspectives and value systems (Hedlund and Nonaka, 1993; Nonaka and Takeuchi, 1995)

These two forms of knowledge require different mechanisms of transfer. Experiential or tacit knowledge can be best exploited through personal transfer mechanisms like the international transfer of managers and global teams. Foreign delegations allow transfer of knowledge that the sender may be unaware of to require trust-creation between the sender and the receiver, and need to be adapted to different cultures, laws, and business practices. Global teams may also act as interfaces and boundary-spanners between different MNC units (Cohen and Levinthal, 1990). Composed of managers from different countries they are argued to be efficient mechanisms to exchange tacit knowledge between geographically dispersed subsidiaries and to translate it into a form that is appropriate to the specific local conditions (Ghoshal et al., 1994). Harzing (2001) suggested that expatriates are not only seen as an instrument to control foreign subsidiaries but also as a mechanism to transfer technical and management know-how as well as organizational culture.

On the contrary, explicit or objective knowledge is more likely to be transferred through written or electronic modes (Pedersen et al., 2003). Written and electronic modes are able to transfer large amounts of data, which are not possible to be transferred through face-to-face interactions. Also, it may result in high costs with personal transfer mechanisms, such as travel expenses of foreign delegations. Through written and electronic modes, knowledge transfer could be done more precisely because information may be digitalized and individual perceptions are less likely selective. Moreover, the storage of information in an electronic form allows permanent access irrespective of space, time and context.

The preferred mechanisms of knowledge transfer mentioned previously are presented in figure 1.



**Figure 1: The preferred mechanisms of knowledge transfer**

### **ABSORPTIVE CAPACITY**

Organizational units differ in their ability to assimilate and replicate new knowledge gained from external sources. Cohen and Levinthal (1990) labeled such ability as “absorptive capacity”.Cohen and Levinthal (1990) defined absorptive capacity as the ability to recognize the value of new external information, assimilate it, and apply it to commercial ends. Lane et al. (2001) refined the absorptive capacity definition offered by Cohen and Levinthal. They propose that the first two components, the ability to understand external knowledge and the ability to assimilate it, are interdependent yet distinct from the third component, the ability to apply the knowledge. In the recent research, Zahra and George (2002) summarized representative empirical studies on absorptive capacity. According to them, absorptive capacity has four dimensions – acquisition, assimilation, transformation, and exploitation – where the first two dimensions from potential absorptive capacity, the latter two – realized absorptive capacity. They argue that more attention should be devoted to studying the realized absorptive capacity which emphasizes the firm’s capacity to leverage the knowledge that has been previously absorbed (Zahra and George, 2002).

For the purposes of this paper, we add to the existing literature on absorptive capacity especially for the concept of absorptive capacity. In terms of the conceptualization and measurement of absorptive capacity, we aim our efforts at studying the firm’s capacity to utilize and exploit previously acquired knowledge. Also, we identify the employees’ ability and motivation as the key aspects of the firm’s absorptive capacity that in turn facilitate internal knowledge transfer.

### **DEVELOPING SUBSIDIARY ABSORPTIVE CAPACITY**

The concept “absorptive capacity”has been mainly used to capture a company’s ability to recognize, assimilate, and apply external knowledge to commercial ends (Cohen and Levinthal, 1990). Zahra and George (2002) criticized existing studies for applying measures, such as R&D intensity, number of scientists working in R&D departments, which have been rudimentary and do not fully reflect the richness of the construct. They neglect the role of individuals in the organization, but their ability is crucial for knowledge utilization and exploitation at the organizational level. Moreover, current measures may be too occupied with the ability to recognize and assimilate external knowledge but neglect the role of the receiving unit’s ability to put knowledge into commercial use.

Existing literature has paid little attention to how absorptive capacity is created and developed in the firm, rather taking for granted that this process does occur. To understand the sources of a firm’s absorptive capacity, Cohen and Levinthal (1990) focused on the structure of communication between the external environment and the organization, as well as among the subunits of the organization, and also on the character and distribution of expertise within the organization. These factors emphasize environmental scanning and changes in R&D investments but pay little attention to other internal organizational arrangements and their role in absorptive capacity creation and development.

Minbaeva et al. (2003) suggest that focusing on employees’ ability in a subsidiary to use knowledge as the key aspect of a subsidiary’s absorptive capacity that in turn enables a subsidiary to benefit from internal knowledge flows. Also, only when MNC employees can identify valuable knowledge by searching topics or knowledgeable partners in other MNC-units, they usually utilize knowledge inflows (Mahnke and Venzin, 2003; Kautz and Mahnke, 2003). By

contrast, when an individual's knowledge search and access is complicated, for example, because adequate communication channels are not available and knowledge search is complex, knowledge use from other units will decrease accordingly.

### **ELEMENTS OF ABSORPTIVE CAPACITY**

There are four different but complementary dimensions of absorptive capacity: acquisition, assimilation, transformation, and exploitation. These four elements must progress chronologically. Acquisition is defined as the ability to recognize, value, and acquire external knowledge that is critical to a firm's operations (Lane and Lubatkin, 1998; Zahra and George, 2002). Welsch, Liao, and Stoica (2001) define it as the generator of knowledge for the organization. Acquisition depends on prior investments, prior knowledge, intensity in terms of the capability to develop new connections, speed of a firm's efforts to acquire external knowledge, and strategic direction.

Assimilation refers to the firm's ability to absorb external knowledge. Zahra and George (2002) defined it as a firm's routines and processes that allow it to understand, analyze, and interpret information from external sources.

Transformation refers to the firm's ability to develop routines that facilitate combining existing knowledge with newly acquired and assimilated knowledge. Transformation can be achieved by adding or deleting knowledge, or interpreting existing knowledge in a different way.

Exploitation refers to the routines that allow firms to refine, extend, and leverage existing competences or create new ones by incorporating acquired and transformed knowledge into its operations (Zahra and George, 2002). It can also refer to a firm's ability to apply new external knowledge commercially to achieve organizational objectives (Lane and Lubatkin, 1998).

### **FACTORS AFFECTING ABSORPTIVE CAPACITY**

Broadly speaking, there are two factors affecting a firm's absorptive capacity. One factor is internal factors, such as organizational structure, culture, human resource management practices, R&D spending, prior knowledge base, employees' level of education and knowledge as well as their background, and cross-cultural communication; the other one is external factors, which include external knowledge environment and a firm's position in knowledge networks.

#### **Internal Factors**

*Prior related knowledge* has a positive effect on absorptive capacity because it presents the ability to perform its three main activities: acknowledge the value of new knowledge, assimilate it, and apply it to commercial ends (Cohen and Levinthal, 1990). To ease the assimilation of new knowledge, the firm needs previous knowledge that is closely related to the new one (Nonaka and Takeuchi, 1995). Absorptive capacity is path-dependent, resulting from the cumulative nature of knowledge (Cohen and Levinthal, 1990), and, thus, is influenced by the contribution of past experience to the organizational memory (Zahra and George, 2002).

*Individual absorptive capacity* largely depends on the collective absorptive capacity of a firm's individuals, though not a simple addition of these (Cohen and Levinthal, 1990). How well a firm can aggregate the different absorptive capacities of its employees is determined by its combinative capabilities. *The level of education and academic degrees of employees* affects absorptive capacity through the knowledge assimilation phase (Vinding, 2000). Employees with higher levels of education in a particular area are usually better able to absorb new knowledge in that field.

*Diversity of backgrounds and knowledge* provides two advantages in favor of absorptive capacity. It increases the chance the new knowledge will be somewhat related to knowledge already in the firm, facilitating its assimilation. It also provides a variety of perspectives from which to process the acquired knowledge, leading to new associations, linkages, and innovation (Cohen and Levinthal, 1990). *Gatekeepers* are important to absorptive capacity. They are specialized roles present both within organization, where they serve as boundary spanners between the firm's subunits,

as well as outside the organization where they interface with its external knowledge environment (Cohen and Levinthal, 1990). Moreover, the absorptive capacity of a firm's main gatekeepers enhances the process of organizational learning.

*Organization structure* affects the dissemination of absorptive capacity. Dissemination involves transferring the acquired knowledge to all parts of the organization. Hence, the firm's structure should maximize the movement of knowledge through formal and informal networks (Welsch, Liao and Stoica, 2001). A functional organizational structure permits a high efficiency of absorption, but a limited scope and flexibility of absorption (Boer, Bosch and Volberda, 1999). Functional structure increases the effect of specialization, which creates communication barriers between the different departments.

An organizational structure allows the maximum amount of communication among various subunits improves a firm's absorptive capacity. A firm has to enhance the greatest communication between the knowledge producing and knowledge using subunits. Also, to improve absorptive capacity the organizational structure should eliminate bureaucracy, because it slows down responsiveness to change and innovation. The structure should be flat, flexible, adaptable, dynamic, and participative.

*Cross-functional communication* creates opportunity for the internal transfer of knowledge within the firm. Better internal communication enhances social integration mechanisms, which lower the barriers to information-sharing and increase the efficiency of assimilation and transformation capabilities (Boer, Bosch and Volberda, 1999).

*Organizational culture*, especially the distribution of power, also has great influence on absorptive capacity. When a knowledge-sharing culture is encouraged, this makes employees willing to share different information and further create new ideas. *Organizational inertia* states that organizations tend to stick to their existing strategies and have a natural tendency to resist changes (Welsch, Liao and Stoica, 2001). This is the main impediment to a firm's ability to respond and adapt to changes in its environment and is a common obstacle to the use of transferred knowledge (Davenport and Prusak, 1998).

The relationship between *R&D spending* and absorptive capacity seems to be bi-directional: absorptive capacity influences the direction and intensity of R&D (Vinding, 2000), and the more R&D the more efficient it is in acquiring external knowledge. A firm's ability to exploit external knowledge is often a byproduct of its R&D (Cohen and Levinthal, 1990). *Human resource management practices* are another variable that affects the degree to which a firm can acquire and assimilate new knowledge. These practices include interdisciplinary workgroups, quality circles, systems for the collection of employee proposals, planned job rotation, delegation of responsibility, integration of functions, and performance-related pay. Recruiting is a common practice that many firms use to improve their competencies, and therefore the absorptive capacity can be enhanced by hiring the right people. Moreover, reward systems are another important issue that could improve absorptive capacity by motivating continuous learning.

## **External Factors**

*The external knowledge environment* is important to absorptive capacity. A knowledge-creating company operates in an open system in which it constantly interacts with its outside environment by exchanging knowledge (Nonaka and Takeuchi, 1995). *Position in the knowledge networks* also affects absorptive capacity. By overlapping networks, firms are better able to absorb innovative practices due to the sharing of information (Arthur and Defillippi, 1994).

Absorptive capacity is one of the most important determinants of the firm's ability to acquire, assimilate, and profitably utilize new knowledge-intensive practices. Knowledge alone is not enough. A firm needs to have tools to exploit and appropriate this knowledge embedded in new organizational innovations. Developing the firm's absorptive capacity by developing its primary elements, each individual's absorptive capacity, is essential.

The subsidiaries of the MNCs can develop their absorptive capacity by the following methods. First, firms should promote a culture that is open to change. Second, firms can build physical and virtual knowledge marketplaces such as intranets so each subsidiary and every employee can get together and communicate with each other. It would allow adequate time and space for knowledge acquisition, creation and sharing. Third, each subsidiary can include knowledge sharing as a criterion of performance evaluation. This will discourage knowledge-hoarding cultures that prevent the successful implementation of knowledge management initiatives.

## CONCLUSIONS

To develop best practice reports on valuable knowledge created in leading subsidiaries, local expert knowledge is centrally codified and documented so that other subsidiary can improve their performance based on benchmarking and the application of new solutions. While explicit knowledge sharing is enabled through best practice and other reports, and learning systems, knowledge sharing in various knowledge teams complements such efforts, but tends to focus more on tacit knowledge exchange. Interdisciplinary teams often integrate knowledge that is existed separately from and dispersed across functions in the MNC (Grant, 1996). Thus, by educating employees across subsidiary boundaries and through specific language codes, their members increase their ability to combine and blend a variety of knowledge across the MNC's subsidiaries (Kogut and Zander, 1992).

Teamwork in knowledge teams does not only educate a subsidiary's employees, it also enhances their involvement to better utilize knowledge inflows from other team members, which are employed at other subsidiaries. Through integrating knowledge of individual community members, teams may not only blend knowledge insights beyond what individual members may achieve (Laursen and Mahnke, 2001). Moreover, new knowledge development may also be stimulated by conversations and language based learning in teams. As a result, knowledge teams influence a subsidiary's absorptive capacity through increasing the ability of subsidiary's employees to share knowledge in social interaction.

In contrast to prior empirical studies that seek to investigate knowledge absorption between firms, the current study was interested in intra-firm knowledge flows between MNC subsidiaries. Accordingly, following Minbaeva et al. (2003), we conceptualized a subsidiary's absorptive capacity and developed a model to capture the ability and motivation of employees to learn from other units in the MNC. Apparently, absorptive capacity, defined and measured in this way opens new avenues for further research on the influence of various antecedents on absorptive capacity as well as on the impact of knowledge transfer on MNCs.

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