



Knowledge transfer and expatriation in multinational corporations

The role of disseminative capacity

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Abstract *Research on multinational corporation (MNC) knowledge transfer has argued continuously for the behavior of knowledge senders to be a determinant of knowledge transfer. Although the importance of disseminative capacity regarding knowledge transfer has been illustrated in numerous conceptual studies, substantial empirical support is largely absent. Based on previous studies, re-operationalizes disseminative capacity as being dependent upon the ability and the willingness of organizational actors to transfer knowledge where and when it is needed in the organization. Using the context of expatriation, suggests that MNCs may apply different mechanisms depending on whether they want to develop expatriates' ability or willingness to transfer knowledge. Suggests that MNCs may enhance expatriates' willingness to transfer knowledge through the employment of long-term expatriate assignments, whereas expatriates' ability to transfer knowledge may be increased through their involvement in temporary assignments such as short-term assignments, frequent flyer arrangements, and international commuting. Tests the hypotheses empirically based on data from 92 subsidiaries of Danish MNCs located in 11 countries.*

Introduction

A number of earlier contributions to the field of international business, particularly Perlmutter's (1969) seminal work, cast light on the evolving relationship between headquarters (HQ) and subsidiaries as the multinational corporation (MNC) grows towards maturity. More recently, observers of international coordination mechanisms have taken issue with the emphasis placed on control through formal organizational structures and systems of planning (Ferner, 2000). Tsai (2002) concluded that the means of hierarchical coordination, in the form of centralization, tend to have a negative impact on units' willingness to share knowledge, whereas units that interact socially are more likely to share knowledge with one another. Hierarchical coordination of knowledge sharing between two business units is often cited as a less fertile approach (Tsai, 2002; Grant, 1996) as the asymmetric distribution of knowledge combined with the tacitness of knowledge prevents individuals other than those who possess it from taking part in the exchange. Besides being costly, centralization of knowledge also risks its distortion as knowledge passes through the hierarchy. Furthermore, units may lose their intrinsic motivation to share knowledge directly



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with other units and, consequently, will only provide knowledge to other units when a higher authority demands it. Martinez and Jarillo (1989) found that increasing attention was being given to the informal and subtle managerial tools employed by corporations, such as networking, informal communication, acculturation, and socialization (Galbraith and Kazanjian, 1986) as well as organizational culture (Jaeger, 1983). Martinez and Jarillo (1989) assert that formal and informal control mechanisms invariably operate in conjunction with each other in dealing with the complexities of multinational organizations.

In dealing with the complexities caused by the interplay of formal and informal coordination mechanisms, MNCs rely heavily on expatriation. Traditionally, expatriation has been associated with an ethnocentric approach and indicated the practice of using parent-country nationals for staffing key positions in foreign-owned subsidiaries. Consequently, the primary goal of expatriation was explicit and well-defined control and coordination: by relocating expatriates, parent organizations have been able to exert control and achieve global integration across subsidiaries (Black *et al.*, 1992; Schuler *et al.*, 1993; Tung, 1993; Evans *et al.*, 2002). Edstrom and Galbraith (1977) have explicitly addressed the transfer of managers as a coordination and control strategy in MNCs. According to Harzing (2001), expatriates are used to effect control, in both a direct and indirect manner.

Over the last decade or so, the nature of expatriate assignments has gradually changed. The old motto of expatriation – “just get the job done” – is no longer relevant. Today, expatriates are expected to engage in local staff development and support skills transfer from the HQ. Research reveals various possible strategic targets for expatriates in that area. Some of these targets include developing top talent and future leaders of the company, improving the trust/commitment of the subsidiary, training local employees in order to improve their individual and team skills, implementing knowledge practices, developing, sharing, and transferring best practices, and developing international leadership (Bonache and Fernandez, 1997; Harris *et al.*, 2003). The knowledge-related function of expatriates is complementary to the traditional function of coordination and control. Delios and Bjorkman (2000) noted that under the control and coordination function the expatriate works to align the operations of the unit with those of the parent organization, while the complementary knowledge function requires the expatriate to transfer the parent company’s knowledge to the foreign subsidiary under conditions where the parent has greater proprietary knowledge.

Indeed, the role of expatriates as vehicles for disseminating knowledge across MNC units has emerged as a new area of inquiry in the international human resource management (HRM) literature, and organizational practices of expatriation (selection, training, repatriation) have become a subject of recent academic debate (Tsang, 1999; Downes and Thomas, 2000; Delios and Bjorkman, 2000; Bonache and Brewster, 2001). One of the main conclusions of these studies is that if MNCs are interested in using expatriates as knowledge transfer agents, they should invest in areas such as selection, pre-assignment, on-the-job training, language abilities, etc. The studies also found that the nature of international operations and country experience determine the number of expatriates permanently located in the host country and their role as knowledge transfer agents.

What remains under-researched is whether different types of expatriate assignments influence knowledge transfer in different ways. Increasing awareness of relocation challenges for international managers and their families as well as company-related cost considerations lead organizations to change the traditional form of expatriate assignments and experiment with various alternatives (Harris, 2002; Harris *et al.*, 2003). In addition to long-term assignments, expatriates are increasingly being sent abroad on more temporary assignments. However, the literature is silent on whether and how the new forms of international working influence knowledge transfer. This paper addresses this gap by examining how different types of expatriation assignments influence the knowledge-sharing behavior of expatriates and thereby enhance the degree of knowledge transfer to subsidiaries.

The paper is structured as follows: first, we review expatriation in relation to different types of expatriate assignments. Then, we present and discuss the notion of disseminative capacity by grounding it in the findings of a few selected studies on knowledge sharing behavior. We operationalize disseminative capacity as a function of the ability and willingness of knowledge senders to transfer their knowledge, and on this basis we formulate hypotheses related to these two constructs and the degree of knowledge transfer to the focal subsidiary. We then bridge the two bodies of literature, namely knowledge transfer and expatriation, and develop hypotheses linking expatriates' knowledge-sharing behavior with the types of expatriate assignments. We test the hypotheses empirically with the data collected in 92 subsidiaries of Danish MNCs in 11 countries and discuss the results. The paper concludes with a discussion of the key findings and proposes directions for future research.

Types of expatriate assignments

Although the failure rate of expatriate assignments may be overestimated (Harzing, 1995, 2002), they are often deemed unsuccessful (Tung, 1987; Stening and Hammer, 1992; Stroh *et al.*, 1998). On average, as many as 40 percent of expatriate assignments are aborted (Tung, 1981; Black, 1988), resulting in considerable costs for MNCs (Dunbar, 1992). Indirect costs for individuals are even higher, but more difficult to quantify. Reasons for the failure of assignments include various family issues, managers' inability to adjust, the level of managers' personal and emotional maturity, and the inability to cope with greater overseas responsibility (Tung, 1981). The literature also provides a rich source of ideas for effective management of expatriation as well as the organizational support necessary to ensure the success of an expatriate assignment (Tung, 1987; Black and Mendenhall, 1990; Stroh, 1995). In particular, focusing organizational efforts on selection criteria (managerial skills, adaptability, diplomacy, positive attitude, maturity, etc.), pre-assignment training (language ability, cultural literacy, technical ability), dual career opportunities, flexible organizational approaches to expatriation, career development programs, and new ways of utilizing the international experience are recommended. Recently, MNCs have begun to consider both host-country nationals and third-country nationals for expatriate assignments, allowing a more comprehensive search for the best-qualified candidate, regardless of his or her nationality. Changes in the expatriate profile and increasing awareness of relocation challenges for international managers and their families lead organizations to experiment with alternative forms of expatriate assignments (Harris, 2002; Evans *et al.*, 2002; Harris *et al.*, 2003).

The *traditional (long-term) expatriate assignment* is usually defined as an assignment where the international manager and his/her family move to the host country for over a year (in the majority of cases, for approximately three years). According to Harris (2002) and Harris *et al.* (2003), alternative forms to the traditional assignment include short-term assignments, international commuters, and frequent flyers. A *short-term assignment* is an assignment with a specified duration, usually less than one year. In this case, the family may accompany the expatriate. An *international commuter* is an employee who commutes from the home country to a workplace in another country, usually on a weekly or bi-weekly basis, while the family remains at home. A *frequent flyer* is an employee who undertakes frequent international business trips but does not relocate.

The New Forms of International Working survey, developed and conducted by the Center for Research into Management of Expatriation at the Cranfield School of Management, aimed at understanding the management issues surrounding alternative forms of international working. According to Harris (2002, p. 2), long-term assignments remain critical for skill transfer, managerial control, and management development. In contrast, short-term assignments are used mainly for skill transfer and, to a lesser extent, management development; international commuter assignments are used to resolve family constraints, and frequent flyer assignments are used mainly for managerial control.

Evans *et al.* (2002) also distinguished between short- and long-term expatriate assignments. They further classified the assignments as demand-driven or learning-driven. According to these authors, traditional expatriate jobs fit mainly into the former category: employees who are dispatched abroad to fix a problem or for reasons of control. On the other hand, a learning-driven assignment is motivated by the idea and objective of individual and/or organizational learning. Accordingly, Evans *et al.* (2002) identified (without providing empirical support) four types of expatriate assignments: corporate agency (long-term, demand-driven), problem solving (short-term, demand-driven), competence development (long-term, learning-driven), and career enhancement (short-term, learning-driven).

Disseminative capacity

Developing organizational capabilities by sharing and integrating different aspects of a multiunit firm's knowledge is an important source of competitive advantage, especially because such intra-organizational firm-specific knowledge sharing and combination is extremely hard for others to imitate (Zander and Kogut, 1995; Grant, 1996). Sharing of knowledge across boundaries – organizational, institutional, or social – poses a special challenge, as it is more likely that knowledge sharing needs to span different bodies of knowledge since individuals on each side of the transfer are less likely to possess highly overlapping knowledge (Reagans and McEvily, 2003). Efficient knowledge sharing demands a collaborative effort, implying that it is not only dependent on the recipients' absorptive capacity (Cohen and Levinthal, 1990) but also very much on the knowledge sender's attitudes and behavior. This is particularly true when sharing spans distinctive knowledge areas. In such cases, sharing depends on the ability of the source to communicate his/her knowledge in a way the receiver can understand. This ability of the source is related to previous experience and an ability to

frame his/her knowledge in different ways and consider different perspectives (Reagans and McEvily, 2003).

Research on MNC knowledge transfer has argued continuously for the behavior of knowledge senders' disseminative capacity to be one of the determinants of knowledge transfer. Although the importance of disseminative capacity in relation to knowledge transfer has been illustrated in numerous conceptual studies, substantial empirical support is largely absent. Attention to this matter was given by Szulanski (1996), Simonin (1999), and Gupta and Govindarajan (2000). However, these empirical studies present different conclusions regarding the behavior of knowledge senders. This is hardly surprising since they had reached no consensus on the appropriate definition and measure of the concept of disseminative capacity. Moreover, the operationalization proposed in the studies referred to does not seem to have captured adequately the essential aspects of knowledge senders' behavior.

In the rest of the section, we re-operationalize disseminative capacity as being dependent on the ability and the willingness of organizational actors (in the case of this paper, expatriate managers) to transfer MNC knowledge where and when it is needed in the organization. For this purpose, we limit ourselves to internal knowledge transfer from the rest of the MNC to the focal subsidiary.

Cabrera (2003) reviewed the main sociological and psychological theories to identify factors related to knowledge-sharing behavior. She identified nine factors which could possibly influence knowledge-sharing behavior, particularly of knowledge senders. Trust was found to positively predict knowledge sharing within as well as between work units. A feeling of obligation to share knowledge was positively related to the knowledge-sharing behavior of individuals. According to Cabrera's (2003) study, norms that encourage open exchanges of knowledge among organizational members will lead to a greater degree of knowledge sharing. A strong sense of group identity also influences individual knowledge-sharing behavior. Furthermore, individuals will be likely to share their knowledge if they perceive a clear benefit (reward) for doing so. Thus, the perceived cost of sharing knowledge is positively associated with the knowledge-sharing behavior of individuals. The perception that others are willing to share their knowledge (reciprocity) is an important factor in determining whether an individual chooses to share his/her knowledge with others: one will only be motivated to share one's knowledge if one believes that the particular piece of knowledge is worth sharing. Thus, beliefs regarding various individual competencies and skills are positively associated with the knowledge-sharing behavior of individuals. Personality traits, in particular extroversion, agreeableness, conscientiousness, and openness, are positively associated with the knowledge-sharing behavior of individuals. According to Cabrera (2003), norms are expected to influence knowledge-sharing intentions directly, while the other factors are expected to influence knowledge-sharing intentions indirectly through their impact on knowledge-sharing attitudes.

Other recent contributions have been made by Husted and Michailova (2002) and Michailova and Husted (2003). They argued that knowledge senders' behavior depends on their willingness to share knowledge with other organizational members on request. The decision not to share is individual, and often rational and well justified from the perspective of the knowledge sender (although usually preferred and desired from an organizational perspective). Husted and Michailova (2002) outline six reasons for knowledge senders' hostility towards sharing their knowledge:

- (1) Potential loss of value, bargaining power, and protection of individual competitive advantage due to a strong feeling of personal ownership of the accumulated, “hard won” knowledge.
- (2) Reluctance to spend time on knowledge sharing. Knowledge senders may not be interested in knowledge sharing since the time and resources spent on it could be invested in activities that are more productive for the individual.
- (3) Fear of hosting “knowledge parasites”. Knowledge senders may be reluctant to share their knowledge with someone who has invested less or no effort in his/her own development.
- (4) Avoidance of exposure. By not sharing knowledge, individuals protect themselves against external assessment of the quality of their knowledge.
- (5) Strategy against uncertainty. Due to the uncertainty regarding how the knowledge receiver will perceive and interpret shared knowledge, knowledge senders may be highly cautious about revealing the relevant knowledge.
- (6) High respect for hierarchy and formal power. Knowledge senders may be reluctant to share crucial knowledge for fear of losing a position of privilege and superiority.

The overall conclusion of the studies reviewed is that the behavior of knowledge senders depends on individual characteristics, which include senders’ previous knowledge and experience as well as their willingness to transfer knowledge. The decision to transfer knowledge is largely individual, and is driven by at least two behavioral factors – *ability* and *willingness*. To achieve high performance at any level, both the ability and motivation to perform effectively are required (Baldwin, 1959). “More is to be gained from increasing the motivation of those who are high in ability than from increasing the motivation of those who are low in ability. [. . .] More is gained from increasing the ability of those who are highly motivated than from increasing the ability of those who are relatively unmotivated” (Vroom, 1964, p. 203). Knowledge senders may not be able to transfer their knowledge because they lack the skills to do so, may lack competencies, or have a language deficiency, etc. (Cabrera, 2003). Furthermore, knowledge sharing is marked by different interpretations of the same idea, false starts, and disruptions (Zellmer-Bruhn, 2003). Consequently, sharing knowledge is often very resource demanding and dependent on iterations and patience. On the other hand, knowledge senders may have good experience and strong abilities to transfer, but may be unwilling to do so for reasons outlined above. Thus:

H1. The greater the ability and willingness of knowledge senders to transfer knowledge, the higher the degree of knowledge transfer to the subsidiary.

The remainder of this section is devoted to a discussion of how the disseminative capacity of expatriate managers (in terms of their ability and willingness to share knowledge) may be developed by employing them on different types of expatriate assignments.

Developing expatriates’ ability to share knowledge

Valuable knowledge is often of a tacit nature. Transferring tacit knowledge demands teaching (Winter, 1987). Therefore, among other traits, knowledge senders should have

well-developed abilities to articulate and communicate knowledge. These abilities could be acquired, for example, through education, training, observation, and involvement. Expatriates on temporary assignments (short-term assignment, international commuters, and frequent flyers) are sent on a temporary basis to different locations to work with local employees to help them solve particular operational problems. These expatriates are frequent visitors to different units of MNCs. For example, highly mobile teams of experts – troubleshooters – are often sent on short-term assignments (Center for Research into Management of Expatriation, 2002). These expatriates also enhance their own competencies by extracting the best solutions from different locations; they increase their individual understanding and vision of international operations; they continuously increase their skills and develop their competencies; they improve their language abilities, and learn how to communicate in different cultures. Thus:

H2. The more the MNC uses temporary assignments, the greater the expatriates' ability to transfer knowledge.

Developing expatriates' willingness to share knowledge

Expatriates employed on long-term assignments are permanently stationed at the foreign-based subsidiary. They experience high autonomy and role discretion (Stewart, 1982). The greater an individual's discretion as to what work is carried out, how it is done and by whom, the greater the sense of responsibility the individual tends to feel for these decisions and the greater commitment an expatriate exhibits (Gregersen and Black, 1992). According to Downes *et al.* (2000, p. 124), it seems logical that task autonomy, which is similar to role discretion, should lead to greater satisfaction, since the expatriate manager has the freedom to modify the role to fit his/her abilities. Organizational commitment originally focused on an individual's emotional attachment to an organization (Mowday and McDade, 1979). If employees have high levels of emotional attachment toward their job or organization, it could be expected that they would be motivated to perform better. Therefore, permanently placed expatriates who are abroad may show greater willingness to contribute to the organizational goals. Thus:

H3. The more the MNC uses long-term expatriate assignments, the greater the expatriates' willingness to transfer knowledge.

The hypotheses are summarized in the model presented in Figure 1.

Methods

The hypotheses are tested on a data set of the subsidiaries of Danish MNCs (headquartered in Denmark). For the construction of the data set, the Hermes CD Direct from Kobmandstandes Oplysnings Bureau (a company specializing in collecting and processing data on Danish businesses) was used. The database query was initiated by selecting firms with headquarters in Denmark, and then limiting the query to those with two or more subsidiaries abroad. This limitation was introduced as a result of the chosen operationalization of the degree of knowledge transfer. As will be discussed later, this study has adopted the measure of knowledge transfer as a composite index of various types of knowledge transferred to the focal subsidiary from the

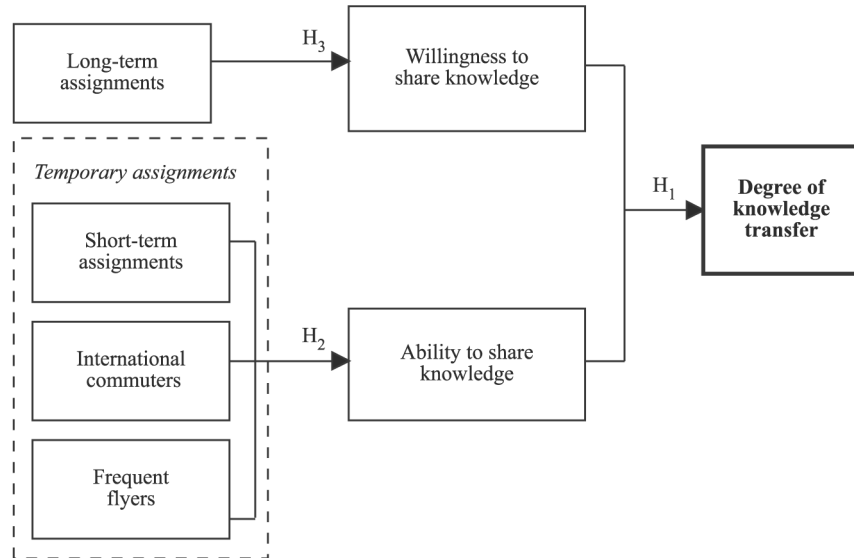


Figure 1.
The hypothesized model

headquarters *and* the sister subsidiaries. The procedure resulted in a list that was crosschecked with the Borsen 500 database (an annual status report of Danish businesses) in order to ensure that the population was as complete and relevant as possible. The number of MNCs included in the sample was then further limited to subsidiaries with more than 30 employees. This limitation was necessary since small-scale companies in general and small subsidiaries in particular do not employ a wide range of formal HRM practices (Miner and Crane, 1995).

Some of the Danish headquarters provided names and contacts at their subsidiaries. For other subsidiaries, contacts were obtained from the foreign commercial sections of the Danish embassies in the respective countries. The final data set consisted of 305 Danish subsidiaries located in Europe, Asia and North America.

To test the hypotheses empirically, a questionnaire survey methodology was chosen. The questionnaire was developed using a combination of prior related surveys (Gupta and Govindarajan, 2000; Szulanski, 1996; Simonin, 1999; Zander, 1991; Brewster *et al.*, 2001; Harris, 2002) and findings from pilot case studies (on measures see the next section). The variables were captured through perceptual, self-report measures. To deal with the reliability of the perceptual measures, the inter-rate reliability test recommended by Gupta and Govindarajan (2000) was conducted before the analysis. The language of the questionnaire was English. Explanations of such terms as “knowledge”, “knowledge transfer”, and “degree of knowledge transfer” were provided at the start of the questionnaire. The questionnaire was pre-tested. The purpose of the piloting stage was to test the preliminary version on a small sample of:

- potential respondents;
- people knowledgeable about the subject; and
- people without knowledge of the subject.

Managers interviewed in the pilot study were asked to complete the questionnaire and provide written feedback. The feedback from research colleagues proved to be very useful. Comments from unknowledgeable pilot testers were also beneficial in identifying where the questionnaire wording was difficult to understand, where the language was incorrect, where the answering process was felt to be boring, and where questions invited multiple interpretations.

Selecting appropriately knowledgeable key respondents was critical since the reliability of information about activities related to a subsidiary depended on whether the selected persons had the required knowledge. As the survey had a number of questions on HRM practices and employees' behavior, it was decided to address the questionnaire to the HR manager/general manager of the focal subsidiary. If the approached manager was unable to complete the survey, he/she was requested to forward the questionnaire to another senior or middle manager with sufficient knowledge regarding the themes of the study.

Due to time and cost considerations, it was decided to use a Web-based survey. The respondents were approached by cover letter sent by e-mail. The e-mails were as personalized as possible since personalization was reported to be "an important element in increasing the response rate" (Schaefer and Dillman, 1998, p. 380). Each e-mail was addressed to one individual and had the name of that individual at the top of the e-mail as well as the name of the person through whom the contact was obtained (if applicable). In earlier studies, it was found that unsolicited questionnaires sent via e-mail are unacceptable (Schaefer and Dillman, 1998). Instead, the cover letter/e-mail explained the purpose of the survey, informed about the research process and analysis procedures, offered follow-up reports and related working papers, and provided the respondent with straightforward directions on how to complete the questionnaire. The cover letter also contained a link to the questionnaire. The survey was placed on a Web page that could only be accessed through that link. This restricted unwanted responses and decreased the risk of potential error. An additional Web page was established to back up the survey. The respondents were invited to visit the Web page and read more about the survey subjects and the related themes.

The resulting data set consisted of 92 subsidiaries (a response rate of 30 percent). There were 20 subsidiaries located in Germany, 17 in the USA, 15 in Russia, 14 in China, ten in Sweden, six in the UK, six in France and one each in Sri Lanka, The Philippines, Spain, and Portugal. Measures for all variables are presented in Table I. Descriptive data (mean values, standard deviation, minimum and maximum values) on all variables are provided in Table II. The correlation matrix for all variables is presented in Table III.

Results

Table IV provides an examination of the relationship between the characteristics of knowledge senders and the degree of knowledge transfer. Model 1 presents the results of the regression analysis on the impact of the ability and willingness of knowledge senders on the degree of knowledge transfer. The model was statistically significant ($p < 0.05$) with an R^2 of 0.086. The ability of knowledge senders to transfer knowledge had a strong positive effect on the degree of knowledge transfer ($p < 0.05$), providing partial support for *H1*. The second independent variable was not significant. Furthermore, the coefficient had a negative sign. This may be explained by the fact

| Variable | Label | Description |
|--|---------|--|
| Degree of knowledge transfer, Cronbach's $\alpha = 0.84$ | DoKT | Please evaluate the degree of knowledge transfer from sister subsidiaries to your subsidiary: marketing know-how, distribution know-how, packaging design/technology, product designs, process designs, purchasing know-how, and management systems and practices. Likert-type scale ranging from 1 for "very low" to 5 for "outstanding" Please evaluate the degree of knowledge transfer from the parent corporations (HQs) to your subsidiary: marketing know-how, distribution know-how, packaging design/technology, product designs, process designs, purchasing know-how, and management systems and practices. Likert-type scale ranging from 1 for "very low" to 5 for "outstanding" |
| Ability of knowledge senders to transfer | SeAb | Please evaluate the ability of the knowledge senders (HQs and sister subsidiaries) to transfer new internal knowledge. Likert-type scale ranging from 1 for "very low" to 5 for "outstanding" |
| Willingness of knowledge senders to transfer | SeMot | Please evaluate the willingness of the knowledge senders (HQs and sister subsidiaries) to transfer new internal knowledge. Likert-type scale ranging from 1 for "very low" to 5 for "outstanding" Please mark the number that best indicates the degree to which each statement describes HRM practices employed across all subsidiaries within the MNC. Likert-type scale ranging from 1 for "no or very little extent" to 5 for "very great extent." |
| Long-term expatriation | LTExpat | Presence of expatriates on long-term assignments (usually over one year) |
| Short-term expatriation | STExpat | Presence of expatriates on short-term assignments (usually less than one year) |
| International commuters | ICExpat | Presence of international commuters (an expatriate who commutes from country to country usually on a weekly basis) |
| Frequent flyers | FFExpat | Presence of frequent flyers (an expatriate who undertakes frequent international business trips but does not relocate) |

Table I.
Measures for all variables

| Variables | Minimum | Maximum | Mean | SD |
|-----------|---------|---------|--------|---------|
| LTExpat | 1.00 | 5.00 | 2.9778 | 1.25401 |
| STExpat | 1.00 | 5.00 | 2.1957 | 1.07150 |
| ICExpat | 1.00 | 4.00 | 2.0769 | 1.12774 |
| FFExpat | 1.00 | 5.00 | 2.4565 | 1.16178 |
| SeAb | 1.00 | 5.00 | 3.2857 | 0.80672 |
| SeMot | 1.00 | 5.00 | 3.1196 | 0.93577 |
| DoKT | 1.00 | 4.36 | 2.6235 | 0.66051 |

Table II.
Descriptive statistics

that the ability and willingness of senders were strongly positively correlated ($p < 0.001$) (see Table III). Model 2 of Table IV reports the results of the same regression analysis when controlling for the interaction effect between the senders' ability and willingness. The model was significant, with an R^2 of more than 10 percent.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---------|-----------|-----------|-----------|--------|-----------|-------|-------|
| LTexpat | 1.000 | | | | | | |
| STexpat | 0.367**** | 1.000 | | | | | |
| ICexpat | 0.098 | 0.483**** | 1.000 | | | | |
| FFexpat | -0.071 | 0.219** | 0.590**** | 1.000 | | | |
| SeAb | -0.008 | 0.049 | 0.183* | 0.201* | 1.000 | | |
| SeMot | 0.278*** | 0.261** | 0.034 | 0.091 | 0.495**** | 1.000 | |
| DoKT | 0.078 | 0.057 | 0.088 | 0.183* | 0.293*** | 0.132 | 1.000 |

Notes: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$; **** $p < 0.001$

Table III.
Correlation matrix

| Variable | Model 1 | | Model 2 | |
|---------------------|----------|-------|---------|-------|
| | β | SE | β | SE |
| Constant | 1.880*** | 0.304 | 0.874 | 0.900 |
| SeAb | 0.248* | 0.097 | 0.549* | 0.272 |
| SeMot | -0.020 | 0.083 | 0.334 | 0.309 |
| SeAb \times SeMot | | | -0.102 | 0.086 |
| R^2 | 0.086 | | 0.102 | |
| F | 3.967* | | 3.127* | |

Notes: * $p < 0.05$; *** $p < 0.001$

Table IV.
Regression analyses on knowledge transfer

The effect of the senders' ability continued to be positive and significant. The effect of knowledge senders' willingness on knowledge transfer was in the expected direction but insignificant. A comparison of F -values and adjusted R^2 values of the two models indicates that results generally improved when the interaction of ability and willingness was added to the model.

In the correlation matrix presented in Table III, four types of expatriate assignments showed high degrees of association. Some of the correlation coefficients indicated the possibility of multicollinearity (i.e. $r > 0.5$). To uncover the underlying factor structure associated with four independent variables, they were factor-analyzed using principal component analysis as an extraction method (following Huselid, 1995). Factor analysis provided the possibility of decreasing the number of independent variables and reducing problems associated with multicollinearity. Moreover, the factor analysis had a confirmative rather than an explorative nature. It was expected that four types of expatriate assignments would form two groups: permanent and temporary assignments. Indeed, two factors with eigenvalues >1 were determined from the factor analysis. Factor 1 included temporary expatriate assignments employed to improve the ability of knowledge receivers ($H2$). Among these were short-term expatriates, international commuters, and frequent flyers (Cronbach's $\alpha = 0.70$). Factor 2 was represented by one type of assignment – long-term expatriation. This type of assignment was expected to influence the willingness of knowledge senders to transfer knowledge ($H3$). Factor loading for each factor, eigenvalues, and percentages of variance explained by each factor are reported in Table V.

To test *H2* and *H3* we ran regression analyses with four types of expatriate assignments (factor-analyzed) as independent variables, and ability of knowledge senders (Model 1) and willingness of knowledge senders (Model 2) as dependent variables. The results are presented in Table VI.

Model 1 was slightly significant with an R^2 of 0.053. The employment of expatriates on a short-term basis, the use of international commuters and frequent flyers positively influence the ability of knowledge senders to transfer knowledge ($p < 0.05$). *H2* was therefore confirmed.

Model 2 showed statistical significance with $p < 0.05$ and an R^2 of 0.095. The model provided support for *H3*: the presence of long-term expatriates positively influences the willingness to transfer knowledge to MNC subsidiaries.

Discussion and directions for future research

The international HRM literature agrees that expatriate assignments tend to be more problematic than domestic transfer. MNCs continue to rely heavily on expatriation even in an era of widespread, powerful, and cheaper information technology (Brewster and Scullion, 1997), and even in those markets where there is plenty of skilled labor (Boyacigiller, 1990). One recent trend widely discussed in the literature is the role of expatriate managers as primary vehicles for disseminating knowledge (Downes and Thomas, 1999). In the current paper, we have explored the knowledge-sharing behavior of expatriates as knowledge senders. The paper’s contribution is two-fold: first, it further develops and empirically tests the notion of disseminative capacity, and, second, it argues that MNCs may consider different types of expatriate assignments

Table V.
Factor loading

| Variables | Factor 1 | Factor 2 |
|------------------------|----------|----------|
| LTexpat | 0.332 | 0.821 |
| STexpat | 0.740 | 0.418 |
| ICexpat | 0.880 | -0.222 |
| FFexpat | 0.692 | -0.558 |
| Initial eigenvalues | 1.912 | 1.209 |
| Percentage of variance | 47.79 | 30.23 |

Notes: Extraction method was principal component analysis

Table VI.
Regression analyses for ability and willingness of knowledge senders to transfer knowledge

| Variables | Model 1 (ability to transfer) | | Model 2 (willingness to transfer) | |
|-----------|-------------------------------|-------|-----------------------------------|-------|
| | β | SE | β | SE |
| Constant | 3.284**** | 0.086 | 3.101**** | 0.096 |
| Factor 1 | 0.187** | 0.086 | 0.062 | 0.097 |
| Factor 2 | 0.002 | 0.086 | 0.284*** | 0.097 |
| R^2 | 0.053 | | 0.095 | |
| F | 2.387* | | 4.538** | |

Notes: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$; **** $p < 0.001$

depending on whether the aim is to increase expatriates' willingness or ability to transfer knowledge to the subsidiaries.

The empirical studies, which focus on knowledge senders' behavior, are limited in number and concentrate exclusively on the senders' willingness to transfer knowledge (Szulanski, 1996; Gupta and Govindarajan, 2000). At the same time, the ability of knowledge senders to transfer their knowledge is under-researched. In this paper we have argued for the need to address both willingness and ability as important characteristics of knowledge senders in the process of knowledge transfer. We have introduced disseminative capacity as being dependent on both the ability and willingness of knowledge senders to share knowledge, and we operationalized the concept of disseminative capacity based on these two constructs. We hypothesized that the greater the knowledge senders' ability and willingness to share knowledge, the higher the degree of knowledge transfer to the subsidiary was expected to be (*H1*). Our analysis provided partial support for this hypothesis. We found that while knowledge senders' ability to transfer knowledge had a strong positive effect on the degree of knowledge transfer, the effect of knowledge senders' willingness was not significant. The lack of results concerning willingness seems to be in line with Szulanski (1996), who argued that knowledge transfer might fail because although organizations want to engage in knowledge transfer, they do not know how to. On the other hand, the behavioral literature argues that *both* ability and willingness should be present to achieve better performance of any kind. The hypothesized link of senders' willingness and knowledge transfer, which the current analysis does not show to be of substantive significance, may nevertheless be a highly significant relationship. It may not be strong enough, however, to be identified as present, given the sample size in the analysis. Clearly, the ability and willingness of knowledge senders in the process of knowledge transfer is a subject that needs further careful investigation.

We have not merely explored the nature of disseminative capacity and its impact on knowledge transfer. We went a step further and examined whether MNCs may contribute to the development of disseminative capacity. In particular, we considered how different types of expatriate assignments, long-term expatriate assignments, short-term expatriate assignments, international commuters, and frequent flyers, may contribute to expatriates' ability and motivation to share knowledge. According to the Executive Report on New Forms of International Working by the Center for Research into Management of Expatriation (2002), organizations appear to be making increasing use of all four types of expatriate assignments. Moreover, skills/knowledge transfer is among the main reasons for using each type of assignment. The need for knowledge transfer was highest for long-term assignments and lowest for frequent flyers. In this paper we proceeded further, suggesting that although all four types are connected to knowledge transfer, different types of assignments increase expatriates' ability and willingness to transfer knowledge to the subsidiaries to differing extents. We suggested that expatriates' willingness to transfer knowledge can be enhanced by the employment of long-term expatriation assignments, while expatriates' ability to transfer knowledge may be increased through their involvement in temporary assignments, such as short-term assignments, frequent flyer arrangements and international commuting. The classification of the types of expatriate assignments was verified through factor analysis.

The data analysis confirmed *H2* that expatriates' ability to transfer knowledge is positively associated with the use of temporary expatriate assignments. Indeed, the alternative forms of expatriation are tools of expatriate development. By moving between several countries, expatriates deepen their knowledge, acquire globally applicable skills, and become better teachers, for example. The analysis also provided support for *H3*, namely that long-term assignments positively influence expatriates' willingness to transfer knowledge across MNC subsidiaries. When permanently stationed at a foreign subsidiary, expatriates experience greater autonomy and responsibility for employees' performance and exhibit greater commitment and willingness to perform better.

Our study has several limitations. One of the challenges, as also pointed out by Huselid (1995), was the methodological problem of survey-based research in general, i.e. the reverse causality between expatriation practices and organizational outcomes, as well as survey response bias. A study of this type requires as broad a sample as possible. Future research is needed in order to collect data from multiple respondents to minimize the risk of common method bias. The validity of the current data on employees' ability and willingness was limited due to the use of only one respondent per subsidiary, a weakness in most international research.

The study is among the first attempts to examine empirically the role of expatriation assignment types in the process of knowledge transfer within MNCs. One obvious implication of the study is that merely making knowledge available does not constitute a transfer. Following Szulanski (1996, 2000, 2003), this study assumes that MNCs should deal with various determinants associated with various stages of the transfer process – determinants which may either hinder or stimulate successful knowledge transfer in MNCs. Only one of these determinants, namely knowledge-sharing behavior of knowledge senders, was analyzed in this study. Focusing on expatriates, our findings suggest that MNCs could employ formal organizational mechanisms to enhance the ability and willingness of expatriates to share knowledge. However, dealing with only one determinant is not likely to enhance knowledge transfer unless other determinants are also considered too. Thus, further research is required to explore other determinants of knowledge transfer and managerial practices that MNCs could employ to influence knowledge transfer determinants and thereby enhance knowledge transfer to overseas subsidiaries.

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