Repatriate knowledge transfer
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Repatriate knowledge transfer:
Towards the development of a new measurement instrument

Abstract
To date, no reliable and valid instrument exists that measures repatriate knowledge transfer. Therefore, this paper demonstrates the initial steps of the item and scale development process of a new instrument measuring repatriate knowledge transfer. The original item pool was reduced and four scales were developed based on the following selection criteria: individual item performance ($M$, $SD$, skewness, kurtosis), the reliabilities of the scales (inter-item correlation, item-total correlation, Cronbach’s alpha) and the factor structures of the scales (factor loadings, scree test, Eigenvalues, % variance explained). The four scales measure (a) the type of repatriate knowledge transferred, both (b) the ability and (c) the motivation of repatriates to transfer their newly acquired knowledge, as well as (d) the success of repatriate knowledge transfer into the domestic work unit. The next steps in the scale validation process, implications for practitioners and future research opportunities are discussed.

Keywords: Repatriate knowledge transfer; exploratory factor analysis; international human resource management; item development; knowledge transfer; repatriation; scale development.
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Knowledge is one of the most important resources in today’s business environment. The dissemination and application of knowledge that has been acquired or created by individuals can help organizations to achieve and sustain competitive advantages (Argote, 2013; Conner & Prahalad, 1996; Ipe, 2003). One type of knowledge, namely tacit knowledge (Kogut & Zander, 1993; Polanyi, 1962), is especially useful for organizations, because it resides within individuals as knowledge reservoirs and therefore cannot be easily imitated by competitors (Argote, Ingram, Levine, & Moreland, 2000; Shariq, 1999). Thus, the tacitness of knowledge inhibits unwanted interorganizational knowledge flows; however it also complicates desirable intraorganizational knowledge transfers (Teece, 1977). Szulanski (1996) has coined the term stickiness to describe the difficulty of transferring knowledge within organizations and to explain why organizations ‘do not know what they know’.

Due to the ever more globalized operations of multinational organizations, the strategic use of knowledge gained during international assignments has received increasing attention by researchers and practitioners alike (Berthoin Antal, 2001; Oddou, Szkudlarek, Osland, Deller, Blakeney, & Furuya, 2013; Riusala & Suutari, 2004). Researchers agree that the knowledge acquired abroad by international assignees, such as knowledge about foreign cultures, markets, customers, and business operations, is highly useful for the management of global organizations (Ipe, 2003). This knowledge could be used strategically by organizations upon repatriation (Berthoin Antal, 2000; Blakeney, Oddou, & Osland, 2006; Fink & Meierewert, 2005). With surprisingly few exceptions, the majority of multinational enterprises (MNEs) do not harvest repatriate knowledge, according to the repatriate literature. Their failure to recognize and utilize this valuable asset might make repatriates more vulnerable to recruitment by other MNEs (Lazarova & Cerdin, 2007; McEvoy & Buller, 2013; Oddou et al., 2013). A small but growing number of researchers are studying the process of repatriate knowledge transfer (RKT) and
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repatriates have been described as important enablers of intraorganizational knowledge transfer, due to their ability to adapt the acquired knowledge to different contexts and their motivation to share their newly acquired knowledge with others (Huang, Chiu, & Lu, 2013; Oddou et al., 2013; Reiche, 2012). At the same time, the absorptive capacity of knowledge recipients has also been identified as a relevant variable that influences the success of international knowledge transfers (Cohen & Levinthal, 1990; Minbaeva & Michailova, 2004). Scholars who study knowledge transfers usually focus on the individual motivation and ability to explain behavior at work, which can be traced back to the motivation-opportunity-ability framework of work performance by Blumberg and Pringle (1982).

However, the few existing quantitative studies that aimed to test hypotheses about the variables that influence the degree of repatriate knowledge transfer face some theoretical and methodological limitations (Lazarova & Tarique, 2005; Oddou, Osland, & Blakeney, 2009). First, while very helpful, the constructs at hand are insufficiently grounded in theory and do not build on clearly identified conceptual models. This is not uncommon in a nascent field characterized by exploratory research and a lack of theoretical models, but the result is that no shared understanding about the relevance of independent variables for repatriate knowledge transfer (RKT) exists to date. Second, the existing quantitative studies lack methodological rigor in terms of item and scale development, because the reliability, the content validity, and the construct validity of the newly developed scales have not been confirmed with an independent sample prior to their application in the respective studies (Schriesheim, Powers, Scandura, Gardiner, & Lankau, 1993). As Hinkin (1995a) has pointed out, problems with the reliability and the validity of the measures used for survey questionnaires and the “poor reporting of newly developed measures continue to threaten the understanding of organizational phenomena” (Hinkin, 1998b: 104).
Consequently, this study aims to address these shortcomings and introduces the results of the development of an instrument that measures RKT. In contrast to existing studies, the constructs are developed based on a theoretically grounded and clearly defined conceptual model (Oddou et al., 2009). In addition, the conceptual model has been tested previously in a qualitative study with an independent sample (Oddou et al., 2013). The methods and results of the item and scale development process follow the steps suggested in the literature by authors such as DeVellis (2012), Hinkin (1998b), and Worthington and Whittaker (2006): theory development and qualitative theory test, generation of an item pool and selection of answer format, and item reduction and scale development. The necessary subsequent steps of the scale validation process, namely construct and criterion-related validation of the measurement instrument, will be outlined in the discussion section.

**Literature review**

**Definition of the Repatriate Knowledge Transfer construct**

Repatriates are employees who have completed their company-initiated international assignment and returned to their domestic work unit (Huang et al., 2013; McEvoy & Buller, 2013). They might also be assigned to other work units within the parent company in their home country. In terms of the type of knowledge that repatriates gain during their international assignments, Berthoin Antal (2000) showed that repatriate knowledge is comprised of more than just declarative knowledge about foreign cultures, markets, products, and customers. She reviewed different knowledge typologies and described the relevance of five types of repatriate knowledge, namely know-what (declarative), know-how (procedural), know-when (conditional), know-why (axiomatic), and know-who (relational). Given the tacit (i.e., complex, difficult to teach, and difficult to codify) nature (Zander & Kogut, 1995) of many of these categories, some repatriate knowledge can be characterized as sticky.
Finally, as with all types of knowledge transfer (c.f., Szulanski, 1996) RKT involves the dissemination, receipt and application of knowledge by domestic work unit members. Knowledge transfer in general goes beyond knowledge sharing or knowledge exchange because it includes the receipt and acquisition of the shared knowledge by the knowledge recipients (Wang & Noe, 2010). Thus, the key element of knowledge transfer is “the extent to which the receiver acquires potentially useful knowledge and utilizes this knowledge in [his or her] own operations” (Minbaeva, Pedersen, Bjoerkman, Fey, & Jeong, 2003: 587). This definition is similar to the construct of organizational learning because it puts an emphasis on the potential changes in organizational outcomes resulting from the knowledge transfer experiences.

**Repatriate Knowledge Transfer model**

Knowledge researchers have identified several variables that might influence the success or failure of knowledge transfer attempts, namely knowledge characteristics (Szulanski, 1996), individual characteristics (Minbaeva et al., 2003), relationship characteristics (Argote, McEvily, & Reagans, 2003), and contextual characteristics (Kostova, 1999). These variables can impact knowledge transfer outcomes on the individual level (e.g., individual characteristics), the dyadic level (e.g., relationship characteristics), and the organizational level (e.g., contextual characteristics). This study starts from the most central aspect of the process and investigates the ability and motivation of repatriates as knowledge senders. Therefore, this paper is centered on the individual aspects of Oddou et al.’s (2009) conceptual RKT model.

[Please insert Figure 1 about here]

This conceptual model draws on social categorization theory to explain how repatriates are reintegrated into their domestic work unit after their reentry and how the process of RKT unfolds. To generate this model, the authors built on the basic communication model by Shannon and
Weaver (1949) and reviewed the existing evidence in the both general and repatriate knowledge transfer literature in order to identify the key variables that influence the success of sending and receiving knowledge. The ability and motivation of transferors to transfer knowledge influences the success of knowledge transfer (Gupta & Govindarajan, 2000; Minbaeva et al., 2003; Szulanski, 1996). These two categories also apply in the case of repatriates. Their ability depends on individual attributes, namely “expertise, networks and relationships, and job-related attributes in the form of position power and responsibilities” (Oddou et al., 2009: 188). Repatriates’ motivation is related to their organizational commitment and career considerations (Lazarova & Tarique, 2005).

Successful knowledge transfer also depends on the ability and motivation to receive knowledge (Simonin, 2004). In the case of RKT, domestic work unit members need the ability and motivation to receive repatriate knowledge. Their ability is affected by their orientation towards learning and their absorptive capacity (Cohen & Levinthal, 1990). Recipients’ motivation to receive is impacted by the perceived knowledge criticality of repatriate knowledge (Oddou et al., 2009), the global mindset of the work unit (Levy, Beechler, Taylor, & Boyacigiller, 2007), and a collaborative management style (Wiig, 2004). Following this explanation of the effect of the individual attributes of repatriates and knowledge recipients on RKT outcomes, this study can be further contextualized by looking at the findings and methodological shortcomings of the few already existing quantitative studies on RKT.

**Existing results of quantitative studies on Repatriate Knowledge Transfer**

The first quantitative studies on RKT were only published in 2007 (Furuya, Stevens, Oddou, Bird, & Mendenhall, 2007b; Newton, Hutchings, & Kabanoff, 2007). To date only six quantitative papers exist (Table 1). Thus, theory-testing quantitative research that focuses on
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RKT is still scarce and remains in need of improvement and development (Oddou et al., 2009); it can, nevertheless, provide initial interesting insights.

For example, Furuya et al. (2007b) showed that companies’ human resource practices and repatriates’ self-adjustment efforts are positively related to successful competency transfer upon repatriation. These findings were supported and extended when Furuya, Stevens, Bird, Oddou, and Mendenhall (2009a) demonstrated that the variables labeled by them as intercultural personality characteristics, self-adjustment, organisational support, and repatriation policies influence the success of global competency learning while abroad, as well as global competency transfer to domestic work unit members upon return. In addition, global competency learning and transfer were positively related to repatriates’ job motivation and performance.

Newton et al. (2007) surveyed 52 human resources managers from Australian organizations that were responsible for the management of international assignments. They found that the function of the international transfer and an organization’s belief about the value of the international experience of assignees, affect the scope of the repatriation program offered. In order to harvest the value of the repatriates’ newly gained knowledge, the functions of their international assignments and the organizational support offered need to be aligned.

In 2012, Reiche investigated the knowledge benefits of repatriates’ structural and relational host-unit social capital (i.e., structural: number of work group contacts; relational: proportion of trusted ties at the host unit) upon their return to the domestic work unit. He found that structural host-unit social capital enables continued access to host-unit knowledge, whereas repatriates’ relational host-unit social capital facilitates both access to and transfer of knowledge upon return.

In addition, Santosh and Muthiah (2012) researched RKT and found that workplace professionalism, source credibility based on reputation and work experiences, high knowledge
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quality, source awareness of who has international knowledge, and a facilitating organizational climate had a positive impact on the knowledge-seeking environment. In turn, this kind of environment facilitated RKT.

Finally, Huang et al. (2013) examined the role of formal (e.g., performance evaluation and rewards) and informal (e.g., lounge areas) knowledge governance mechanisms (KGMs) on RKT success. The results indicated that both formal and informal KGMs have significant influence on the knowledge-sharing motivation of repatriates as well as knowledge-sharing opportunity. Consequently, knowledge-sharing behavior was facilitated.

Looking at these quantitative papers from a methodological perspective, it must be noted that except for the study of Newton et al. (2007), which utilized scales that had previously been validated and published, the remaining studies mostly applied scales that were specifically developed for the research project and had not been validated with an independent sample beforehand. However, and at the least, all studies except for Santosh and Muthiah (2012) reported the Cronbach’s alpha of the scales they applied. In addition, three studies explored or confirmed the factor structure of their newly developed measures (Furuya et al., 2007b; Huang et al., 2013; Reiche, 2012). Thus, some of the necessary precautions have been taken in order to test the reliability and, to a lesser extent, the validity of the utilized scales. Nevertheless, according to Schriesheim, Power, Scandura, Gardiner, and Lankau (1993), the methodological approach outlined above can limit the reliability and validity of measurement instruments, meaning the interpretability of the results can be reduced (Hinkin, 1995a). Consequently, the initial steps of the item and scale development process of an instrument that is supposed to measure RKT and to overcome these methodological shortcomings will now be presented.
The Repatriate Knowledge Transfer item and scale development process

The item and scale development process in the present study followed the steps suggested in the literature (DeVellis, 2012; Hinkin, 1995a; Worthington & Whittaker, 2006). First, a conceptual RKT model (Oddou et al., 2009) was developed and tested in an independent qualitative study with 45 repatriates from Germany, Japan, and the United States (Oddou et al., 2013). The thorough analysis of the qualitative data following Krippendorff (2013) and Mayring (2010) yielded four constructs, namely (a) the type of knowledge transferred, (b) the ability of repatriates and (c) the motivation of repatriates to transfer their newly acquired knowledge, and (d) the success of repatriate knowledge transfer to the domestic work unit. Second, based in the analysis of the interview data and therefore directly derived from interview results, a pool of 80 items was generated in order to measure the four constructs. Afterwards, the original item pool was reviewed by experts in the field and refined to ensure content validity. Third, the revised item pool was administered to a sample of 193 repatriates via an online questionnaire. Finally, exploratory factor analysis yielded a reduction in the resulting scale items while retaining the breadth of the constructs. These steps are described below in greater detail.

Step 1: Theory development and qualitative theory test

Open ended questions for a qualitative interview were developed, guided by Oddou et al.’s (2009) RKT model. In addition to the factors in Figure 1, (repatriate ability and motivation to transfer; work unit ability and motivation to transfer, and RKT success), the interview questions also covered all factors in the extended model, (e.g., the reentry socialization process which involved communication frequency, development of trust, in-group/out-group status of repatriates, career considerations, and formal and informal RKT methods). Questions were designed to allow subjects to go beyond the variables in the model and report their own
experiences with respect to any factors that hindered or facilitated RKT. To ensure rich qualitative data, interviewers employed both specific and naturally occurring follow-up questions. A multi-country sample was devised to cover three economic areas (North America, Europe, and Asia) and gather more perspectives to avoid the potentially limiting influence of only one nationality. Overall, the researchers interviewed an independent sample of 45 repatriates from Germany, Japan, and the United States, all countries with numerous repatriates. The results were used to verify and slightly refine Oddou et al.’s (2009) original RKT model.

**Step 2: Generation of an item pool and selection of answer format**

After the interview transcripts were double-coded and content analyzed (Oddou et al., 2013), items were developed based on representative quotations in a painstaking deductive approach. Thus, all categories in the qualitative data were reflected by one or more items, and each item could be traced back to specific quotations in the categories of qualitative data. Great care was taken to craft clear, exclusive items and to avoid redundancy and subjective interpretations of item language. In addition to research team members, independent experts rated the items and critiqued their clarity and readability. Items were modified only when inter-rater agreement was reached by the independent experts. The items in the transferred repatriate knowledge scale were first included in a pilot test with students at two universities before they evolved into the version utilized in this study.

**Step 3: Item reduction and scale development**

**Method.**

**Participants.** The following selection criteria were devised for the sample. First, the duration of repatriates’ international assignment had to be at least 12 months. Second, the time between their reentry into the domestic work unit and their participation in this research project had to be...
at least six months but not more than five years, which meant that the subjects were repatriated between 2008 and 2013. The length of time abroad in the first criteria was chosen to ensure that the repatriates had enough time abroad to acquire knowledge. The length of time since repatriation was chosen to allow the subjects enough time to engage in knowledge transfer after their reentry (i.e., 6 months) but not so much time as to cause forgetfulness of the knowledge transfer experiences (i.e., more than 5 years). A sample of 193 repatriates was generated that met both these criteria.

The researchers also attempted to generate a mixed sample in terms of age, gender, nationality, industry, and function. Most repatriates were between 30 to 50 years old (75%), whereas limited numbers were under the age of 30 (7%) or older than 50 (18%). Participating repatriates were mostly male (73%), and the majority of repatriates worked in Europe, the United States, and Australia. However, participants covered a broad range of countries and each of the following countries was represented by more than five participants: Germany (n = 85), United States (n = 16), Australia (n = 14), Netherlands (n = 9), United Kingdom (n = 8), Austria (n = 7), and Italy (n = 6). Repatriates also worked in diverse industries, but the majority worked in the following industries: manufacturing (n = 48), utilities (n = 28), logistics (n = 13), information technology (n = 12), finance and insurance (n = 10), and professional services (n = 10). Finally, participants also covered a broad range of functions. Most repatriates worked in engineering and technical services (n = 36), finance and accounting (n = 27), general management (n = 21), and marketing and sales (n = 20).

**Procedure.** The researchers used a variety of channels to generate a large enough sample of repatriates that met the selection criteria. First, the researchers contacted the HR departments of large multinational companies and requested their participation. Potential respondents were identified and asked if they were willing to participate by HR personnel but were under no
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pressure to do so. Second, the researchers activated their personal network of highly international
individuals and asked suitable candidates to participate in the research project or refer the request
to their contacts. Third, the researchers contacted individual repatriates via online repatriate
communities and social networks.

The researchers administered the items as an online questionnaire. Due to concern that the
length of the total questionnaire would appear too onerous and hamper completion, the survey
was halved and presented as two versions (version A and B). After completing the first half of the
questionnaire (e.g., version A), participants were asked whether they were willing to continue
with the second half (e.g., version B). The number of participants starting with each version was
relatively balanced (version A, \( n = 110 \); version B, \( n = 83 \)) to arrive at the total sample of 193.

**Data analysis.** Analyses were performed with SPSS version 20 and MPlus version 7. A series
of statistical decision criteria was used for exclusion or inclusion of items on the newly derived
scales: item performance, scale reliability, and factor structure of the scales. In addition,
theoretical considerations guided the decision process concerning exclusion or inclusion of scale
items in order to construct scales that reproduce the conceptual model and the breadth of the
identified constructs as completely as possible (Oddou et al., 2009). This only applied in a few
situations, if the decision to include or exclude items was not clear based on the statistical
criteria. In these rare cases, those items were kept that contributed most to keeping the breadth of
the theoretical constructs.

First, item analysis was performed, and items were excluded if they showed values for
skewness and kurtosis larger than +/- 0.50, which is indicative of departure from normality
(Runyon, Coleman, & Pittenger, 2000). In addition, items were not included if they deviated
significantly from the other items of the scale in terms of their means (DeVellis, 2012; Judge,
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Erez, Bono, & Thoresen, 2003). Finally, items with a standard deviation smaller than $SD = 0.40$ were also excluded (Churchill, 1979; DeVellis, 2012).

Second, the reliability of the scale items was assessed using three indicators. Items that showed inter-item correlations of moderate magnitude $0.20 > r < 0.70$ and corrected item-total correlations above $r = 0.30$ were retained (Briggs & Cheek, 1986; Clark, Lee, Anna & Watson, 1995; Ferketich, 1991; Judge et al., 2003). Moreover, Cronbach’s alpha of the scale had to be larger than $\alpha = 0.70$ (Hinkin, 1995a, 1998b).

Third, exploratory factor analysis (maximum-likelihood extraction, direct oblimin rotation) was used to explore the factor structure of the scales, and items were excluded if they showed cross-loadings of more than $r = 0.40$ and factor loadings on the intended factor of less than $r = 0.40$. In addition, the researchers aimed to identify a factor-solution that was supported by a combination of measures, such as the results of a scree test, Eigenvalues that were greater than one, and total variance explained above 60%. An examination of the Kaiser-Meyer Olkin measure (KMO = .88) suggested that the sample was factorable.

**Results**

The results of the analyses based on the decision criteria described above are explained in detail for each of the four scales under study. Tables 2-5 display the new revised scales with their means, standard deviations, factor loadings, and Cronbach’s alpha.

**Type of repatriate knowledge transferred.** As a first step, the initial number of 28 items developed to measure the type of repatriate knowledge transferred was reduced by 10 items due to unsatisfactory item performance, particularly significant deviations from the mean and high skewness. Subsequently, redundant items were excluded if their inter-item correlations were above $r = 0.70$. Item-total correlations of all items were satisfactory from the beginning, which
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indicates high consistency. Finally, exploratory factor analysis was used to produce a high-performing one-factorial solution that consisted of seven items. The resulting seven items are characterized by good item performance, high internal consistency ($\alpha = .91$), and they explain 66.18% of the total variance (see Table 2). A sample item is “How to understand situations from the perspective of people from other countries.”

[Please insert Table 2 about here]

**Repatriate knowledge transfer ability.** The initial pool of 20 items was reduced to a 7-item scale, based on the decision criteria. First, six items were excluded based on their unsatisfactory item performance. Second, three items were eliminated because their reliability ratings for internal consistency were substandard. Third, four items showed cross-loadings and were therefore not retained. The derived one-factor solution had an internal consistency of $\alpha = .84$ and explained 51.75% of the total variance (see Table 3). Thus, the total variance explained was below the pre-defined criterion of 60%. However, the researchers agreed that the selected items covered the range of abilities that had been defined in the conceptual model by Oddou et al. (2009): the ability to reflect on the knowledge gained (e.g., item 1), the ability to take into consideration the abilities of domestic work unit members (e.g., item 4), and the ability to adjust one’s transfer approach to the work unit context if needed (e.g., item 6). A representative item from the new revised scale is “I took into consideration the work unit’s ability to absorb my IA knowledge before making suggestions.”

[Please insert Table 3 about here]

**Repatriate knowledge transfer motivation.** The original item pool of the repatriate motivation scale consisting of 21 items was reduced to eight items. First, four items were excluded due to their insufficient item performance. Second, three items had to be eliminated based on their low
item-total correlations. Third, and after performing the exploratory factor analysis, six items needed to be excluded because of their low factor loadings and/or cross-loadings on unintended factors. Finally, the researchers decided to derive a two-factorial solution with eight items (Table 4). These eight items explained 61.15% of the variance with an internal consistency of $\alpha = .76$. The first factor contains items that measure extrinsic motivators, such as the support received from the direct manager and rewards given by the company. A representative item from the extrinsic motivation factor is “My manager made me feel that what I had learned could be of real value to the work unit.” Factor two, however, consists of items that measure intrinsic motivators, such as feeling a personal obligation to share knowledge or wanting to help members of the domestic work unit to be successful. A representative item from the intrinsic motivation factor is “Sharing knowledge is simply part of my job.”

Success of Repatriate Knowledge Transfer. The original item pool of the scale that measures variables that impact RKT success contained 11 items that were reduced to a one-factorial solution with 8 items. Three items were excluded due to unsatisfactory item performance in the form of deviating means and high skewness. Ratings for internal consistency were satisfactory, and the exploratory factor analysis yielded one factor that explained 62.03% of the total variance (see Table 5). Internal consistency of the scale was very good with $\alpha = .91$. A sample item for the new scale is “As a repatriate I have successfully transferred my IA knowledge to my reentry work unit.”
To summarize, in accordance with the analytical rules for validated scale, four scales were created. Their original item pool of 80 was thereby reduced to 30 items, a 63% reduction.

[Please insert Table 6 about here]

Discussion

The current study reports the initial steps of the item and scale development process of an instrument measuring RKT. The instrument is composed of four scales: (a) the type of repatriate knowledge transferred, both (b) the ability and (c) the motivation of repatriates to transfer their newly acquired knowledge, as well as (d) the success of repatriate knowledge transfer into the domestic work unit. The aim is to eventually contribute a reliable and valid measurement instrument for use in quantitative studies in the field of RKT. This is a response to calls in the general and repatriate knowledge transfer literature for standardized measures (Oddou et al., 2009; Wang & Noe, 2010). For example, Wang and Noe (2010: 126) argued that “because measures of knowledge sharing are not readily available in the literature, researchers need to devote time to develop valid and reliable measures.”

By following the time-consuming and difficult route of developing reliable and valid scales (Hinkin, 1995a; Schmitt & Klimoski, 1991), a more rigorous methodological approach for collecting data about organizational phenomena is advocated. In order to actually add to the understanding of the organizational phenomena of interest and to enable integration of different empirical results, researchers must apply reliable and valid measurement instruments (Hinkin, 1998b; Schriesheim et al., 1993; Wang & Noe, 2010). Otherwise, the interpretability of empirical results is limited, and some findings that might appear interesting and novel might not be attributable to a real effect in the population, but actually be based on measurement deficiencies of the instrument applied. This is particularly true if researchers follow the common albeit
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inadequate approach of using modified or shortened versions of previously published scales without assessing the reliability and validity of the modified and therefore new instrument (Schriesheim et al., 1993).

This study also advances the RKT field by supporting, expanding or refining previous conceptualizations and findings. With regards to the type of knowledge transferred during RKT, the items of the new revised scale particularly highlight the relevance of repatriates’ tacit as well as cross-cultural knowledge. First, many of the items of the new revised scale have a procedural component. According to Berthoin Antal (2000: 36) procedural knowledge “has a significant tacit dimension”, in that procedural knowledge means to have the skills to do something, and is usually acquired during social interaction with the knowledge holder (Nonaka & Takeuchi, 1995). Therefore, this aspect of the current findings supports previous research results that had highlighted the tacit dimension of repatriate knowledge (Hocking, Brown, & Harzing, 2007; Lazarova & Tarique, 2005; Oddou et al., 2009; Stahl, Chua, Caligiuri, Cerdin, & Taniguchi, 2009).

Second, except for one item of the new revised scale (item seven: “My increased ability to get things done.”), all of the other items mention the international context or refer to effectively working with and understanding people from other countries. Thus, the cross-cultural knowledge of repatriates and their role as “boundary spanners” (Fang, Jiang, Makino, & Beamish, 2010) or “bridge builders” (Riusala & Suutari, 2004) between the domestic and foreign countries is emphasized. Previously, this role had largely been assigned to expatriates, who were sent abroad to transfer knowledge from headquarters to foreign subsidiaries and to achieve company aims such as standardisation and homogenization across global operations (Riusala & Suutari, 2004). However, the current results demonstrate that returned expatriates (i.e., repatriates) continue to be equally effective bridge builders for knowledge transfers from foreign subsidiaries to
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headquarters by integrating the dispersed knowledge that resides within the employees at the different foreign subsidiaries into the common knowledge base. Accordingly, and as previously outlined, repatriates can help to create a more global mindset (Furuya et al., 2009a; Oddou et al., 2009) and contribute their social capital or social networks (Reiche, 2012; Stahl et al., 2009) to the organizational knowledge base at headquarters. Consequently, repatriates can function as agents of learning (Berthoin Antal & Walker, 2011; Tsang, 1999) and increase the effectiveness of how organizations address international challenges that oftentimes require the involvement of foreign subsidiaries and also affect global operations. Thereby, the value of repatriate knowledge for gaining and sustaining competitive advantages is highlighted (Crowne, 2009; Fink & Meierewert, 2005; Nery-Kjerfve & McLean, 2012).

As can be seen in Table 3, the items of the repatriates’ ability to transfer scale reflect great concern among repatriates regarding the receptivity of the work unit members to their newly acquired knowledge. Thus, repatriates must be able to reflect on the usefulness of their knowledge for domestic work unit members (e.g., item 1), carefully consider the absorptive capacity (Cohen & Levinthal, 1990) of domestic work unit members (e.g., item 4), and have the ability to adjust their approach to different circumstances (e.g., item 6). In short, they have to be able to contextualize, format, adapt, translate, and diffuse their knowledge (Parent, Roy, & St-Jacques, 2007). This type of ability has been labeled disseminative capacity in previous research on knowledge transfer (Minbaeva & Michailova, 2004; Mu, Tang, & MacLachlan, 2010).

In addition, the example items above also demonstrate that RKT is a process that requires at least two actors, namely knowledge senders and knowledge recipients (Oddou et al., 2009; Santosh & Muthiah, 2012) and is dependent on their interaction to successfully transfer knowledge (Huang et al., 2013; Lazarova & Tarique, 2005; Oddou et al., 2013). Knowledge researchers have long agreed that knowledge transfer, particularly of tacit knowledge, requires
social interactions between knowledge senders and recipients, and that the process is iterative and circular, rather than linear (Argote, 2013; Nonaka, 1994; Nonaka & Takeuchi, 1995; Parent et al., 2007). The focus of repatriates on the receptivity of the knowledge recipients in the domestic work unit emphasizes this interactional and dynamic aspect of RKT. Oddou et al. (2009) had drawn attention to this dynamic aspect in their conceptual model through the description of the socialization process that repatriates undergo upon their return. In addition, they used the term *shared field* to emphasize that repatriate knowledge is transformed and translated in dynamic social interactions between repatriates and knowledge recipients before it can eventually be applied and used in the new context; when this process is successful, knowledge has been transferred.

Finally, the two-factor scale that measures repatriates’ motivation to transfer knowledge allows for a more nuanced view on the factors that influence the motivation of knowledge senders. Repatriate motivation seems to be driven by a combination of intrinsic and extrinsic factors, an insight that supports the results of Kwan and Cheung (2006). They argued that knowledge senders are motivated by intrinsic factors, such as their individual propensity to share knowledge with others as well as extrinsic factors, such as the culture of knowledge sharing within the organization. However, most previous studies on knowledge transfer behavior looked at these two factors separately, either highlighting the need for extrinsic motivators, such as compensation and rewards (Argote et al., 2003; Minbaeva et al., 2003), or internal motivators, such as the desire to be a good organizational citizen (Oddou et al., 2013). The results of the current study provide confirmation that both factors are relevant and should be viewed in combination. First, repatriates are motivated by supportive managers and rewards for their knowledge sharing behavior. Second, the personal obligation to “do the right thing” (Oddou et al., 2013) and the intention to help others are driving forces. Therefore, the motivation of
repatriates to share their newly acquired knowledge should be understood as a combination of intrinsic and extrinsic motivators.

**Implications for practitioners**

The development of a methodologically rigorous measurement instrument is the basis for deriving reliable and valid recommendations for organizations that wish to facilitate RKT processes. In addition, organizations could use the RKT measurement instrument described here to assess the status quo with regards to the type of repatriate knowledge transferred, the ability and motivation of repatriates to transfer their knowledge, and the actual RKT success within their firm. Based on this assessment, measures could be taken to create new RKT processes or to support or improve existing RKT processes. For example, if an organization were aware of the amount of repatriate knowledge that had been acquired and transferred (Table 2), they could consider whether it made sense to preserve this knowledge electronically. It might also provide human resources and knowledge experts with more leverage when discussing the strategic importance of international assignments with business representatives. Furthermore, if the assessment results indicated that repatriates lacked the ability to transfer their acquired knowledge (Table 3), the organization could train repatriates to improve their communication and transfer skills.

**Limitations**

Although the researchers attempted to generate a diverse sample in terms of age, gender, nationality, industry, and function of repatriates, the majority of repatriates came from Germany \((n = 85)\), the United States \((n = 16)\), and Australia \((n = 14)\). Therefore, the generalizability of the results particularly with regard to countries with less developed economies might be limited. The applicability of the results in different economic contexts needs to be established in the future,
Measuring Repatriate Knowledge Transfer

because there is some evidence that domestic work units in India are more motivated to receive the knowledge that Indian repatriates bring home from advanced economies (Valk, van Engen, M. L., & van der Velde, M., 2014). The results of this item and scale development process should be viewed as a first step towards the development of a completely validated measurement instrument for RKT. Additional steps need to be taken in order to assess the construct and criterion-related validity of the measurement instrument by using culturally diverse and independent samples.

Implications for future research

Future studies could advance the scale development process of the four RKT scales and investigate the construct and criterion-related validity of the measurement instrument. Following Worthington and Whittaker (2006), the researchers did not include additional scales in the development stage of these RKT scales to test for convergent and discriminant validity. In addition, no criteria were included in order to assess the criterion-related validity of the scales. Therefore, researchers doing empirical research in the field of global mobility can use the four scales and include validation scales and criteria in order to support the development of a reliable and valid measurement instrument for this strand of research in the area of international human resource management.

In addition, the four scales do not represent the complete conceptual RKT model by Oddou et al. (2009). Due to the focus of this paper on the knowledge senders’ (i.e., repatriates’) aspects of the model and the complexity involved with reporting on numerous scales, the motivation and the ability of potential knowledge recipients in the domestic work unit and the reentry socialization process are not included in this item and scale development process (Figure 1). Future research, however, should develop items and scales to measure the ability and the motivation of potential
Measuring Repatriate Knowledge Transfer

knowledge recipients to receive repatriate knowledge. A complete set of fully validated RKT measures will help generate a comprehensive understanding of the RKT process and produce reliable results. Such results can be compared across studies, thereby advancing the field of repatriate knowledge transfer.
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Table 1. *Overview of quantitative studies on RKT*

<table>
<thead>
<tr>
<th>Authors</th>
<th>Sample</th>
<th>Item and scale development</th>
<th>Variables and scales</th>
<th>No. of items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Furuya et al. (2007)</td>
<td>Japan, repatriates, $N = 305$</td>
<td>Survey items were specifically developed for this research project (p. 13). Cronbach’s alpha reliabilities and EFA results reported (pp. 14f).</td>
<td>IV: Repatriation policies and practices (strategic, general) 11</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>IV: Employee self-adjustment (work, interaction, general) 14</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>DV: Competency transfer upon repatriation 7</td>
<td></td>
</tr>
<tr>
<td>Newton et al. (2007)</td>
<td>Australia, HR managers, $N = 52$</td>
<td>Survey items utilized were taken from previously published research (p. 302). Cronbach’s alpha reliabilities reported (p. 304).</td>
<td>IV: Function of international transfer 5</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>IV: Value of international experience 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>DV: Scope of repatriation programs offered 11</td>
<td></td>
</tr>
<tr>
<td>Furuya et al. (2009)</td>
<td>Japan, repatriates, $N = 305$</td>
<td>Survey items were specifically developed for this research project, except for “Intercultural personality characteristics” (p. 206). Cronbach’s alpha reliabilities reported.</td>
<td>IV: Intercultural personality characteristics (see Global Competencies Inventory) 117</td>
<td>241</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>IV: Organizational support 18</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>IV: Employee self-adjustment (work, interaction, general) 14</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>IV: Repatriation policies and practices (strategic, general) 11</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>IV: Global management competencies learning 55</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>IV: Global management competencies transfer 19</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>DV: Job motivation 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>DV: General work performance 4</td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>Country</td>
<td>Sample Size</td>
<td>Sample Description</td>
<td>Methodological Notes</td>
</tr>
<tr>
<td>-----------------------</td>
<td>---------------</td>
<td>-------------</td>
<td>--------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Reiche (2012)</td>
<td>Germany</td>
<td>N = 85</td>
<td>Repatriates</td>
<td>Survey items were specifically developed for this research project (pp. 1062f), except for “Inpatriates’ relational host-unit social capital” or adapted from previously published research. Cronbach’s alpha reliabilities and CFA results reported (pp. 1063f).</td>
</tr>
<tr>
<td>Huang et al. (2013)</td>
<td>Taiwan</td>
<td>N = 140</td>
<td>Repatriates</td>
<td>Survey items were specifically developed for this research project or adapted from previously published research (p. 684). Cronbach’s alpha reliabilities and CFA results reported (p. 685).</td>
</tr>
</tbody>
</table>

Note: CFA = confirmatory factor analysis, EFA = exploratory factor analysis, IV = independent variable, DV = dependent variable.
Table 2. *Type of repatriate knowledge transferred*

<table>
<thead>
<tr>
<th>Item</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>Factor: Knowledge type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How to adapt work objectives to fit the local context.</td>
<td>192</td>
<td>3.16</td>
<td>1.14</td>
<td>.82</td>
</tr>
<tr>
<td>2. Knowing who to contact in the foreign country to obtain relevant information.</td>
<td>190</td>
<td>3.30</td>
<td>1.13</td>
<td>.70</td>
</tr>
<tr>
<td>3. How to manage international projects/joint ventures.</td>
<td>190</td>
<td>2.95</td>
<td>1.22</td>
<td>.73</td>
</tr>
<tr>
<td>4. Working successfully with people with different cultural values and beliefs.</td>
<td>191</td>
<td>3.26</td>
<td>1.15</td>
<td>.86</td>
</tr>
<tr>
<td>5. Better ways of doing things elsewhere in the company.</td>
<td>191</td>
<td>2.98</td>
<td>1.20</td>
<td>.75</td>
</tr>
<tr>
<td>6. How to understand situations from the perspective of people from other countries.</td>
<td>190</td>
<td>3.32</td>
<td>1.18</td>
<td>.85</td>
</tr>
<tr>
<td>7. My increased ability to get things done.</td>
<td>190</td>
<td>3.35</td>
<td>1.22</td>
<td>.72</td>
</tr>
<tr>
<td>Scale average</td>
<td>191</td>
<td>3.19</td>
<td>1.17</td>
<td>.78</td>
</tr>
</tbody>
</table>

Cronbach’s alpha .91
Variance explained in % 66.18
Table 3. *Repatriate knowledge transfer ability*

<table>
<thead>
<tr>
<th>Item</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>Factor: RKT ability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I gave careful thought to what I gained from my IA so that I could more readily articulate it to the work unit.</td>
<td>120</td>
<td>3.46</td>
<td>0.83</td>
<td>.64</td>
</tr>
<tr>
<td>2. I waited to share my IA knowledge until I understood the work unit’s habits and norms.</td>
<td>111</td>
<td>3.13</td>
<td>0.89</td>
<td>.66</td>
</tr>
<tr>
<td>3. I consciously limited the number of times I referred to my IA experience to avoid resentment.</td>
<td>114</td>
<td>3.45</td>
<td>0.92</td>
<td>.65</td>
</tr>
<tr>
<td>4. I took into consideration the work unit’s ability to absorb my IA knowledge before making suggestions.</td>
<td>112</td>
<td>3.43</td>
<td>0.78</td>
<td>.81</td>
</tr>
<tr>
<td>5. I tried to figure out how to best transfer my IA knowledge to the work unit.</td>
<td>113</td>
<td>3.33</td>
<td>0.89</td>
<td>.68</td>
</tr>
<tr>
<td>6. I adapted the way I transferred IA knowledge to the work unit context.</td>
<td>114</td>
<td>3.66</td>
<td>0.79</td>
<td>.48</td>
</tr>
<tr>
<td>7. I waited until the work unit trusted me enough to accept my IA knowledge before I tried to share it.</td>
<td>111</td>
<td>2.89</td>
<td>0.82</td>
<td>.69</td>
</tr>
<tr>
<td>Scale average</td>
<td>114</td>
<td>3.33</td>
<td>0.84</td>
<td>.66</td>
</tr>
</tbody>
</table>

Cronbach’s alpha  
Variance explained in %

.84  
51.75
Table 4. *Repatriate knowledge transfer motivation*

<table>
<thead>
<tr>
<th>Item</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>Factor: Extrinsic motivators</th>
<th>Factor: Intrinsic motivators</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. My manager went out of his/her way to help me transition into the work unit.</td>
<td>129</td>
<td>2.76</td>
<td>0.97</td>
<td>.87</td>
<td></td>
</tr>
<tr>
<td>2. My manager made me feel that what I had learned could be of real value to the work unit.</td>
<td>134</td>
<td>3.14</td>
<td>1.08</td>
<td>.80</td>
<td></td>
</tr>
<tr>
<td>3. My company rewards me for transferring knowledge.</td>
<td>125</td>
<td>2.49</td>
<td>1.04</td>
<td>.47</td>
<td></td>
</tr>
<tr>
<td>4. Transferring knowledge is expected of all employees in our company.</td>
<td>133</td>
<td>3.47</td>
<td>1.06</td>
<td>.53</td>
<td></td>
</tr>
<tr>
<td>5. Transferring IA knowledge is the responsibility of all repatriates.</td>
<td>135</td>
<td>4.08</td>
<td>0.88</td>
<td>.70</td>
<td></td>
</tr>
<tr>
<td>6. Sharing knowledge is simply part of my job.</td>
<td>133</td>
<td>4.19</td>
<td>0.86</td>
<td>.65</td>
<td></td>
</tr>
<tr>
<td>7. I wanted to help some of my colleagues be successful.</td>
<td>132</td>
<td>3.98</td>
<td>0.71</td>
<td>.57</td>
<td></td>
</tr>
<tr>
<td>Scale average</td>
<td>132</td>
<td>3.44</td>
<td>0.95</td>
<td>.71</td>
<td>.61</td>
</tr>
<tr>
<td>Cronbach’s alpha</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.76</td>
</tr>
<tr>
<td>Variance explained in %</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>61.15</td>
</tr>
</tbody>
</table>
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#### Table 5. RKt success

<table>
<thead>
<tr>
<th>Item</th>
<th>$n$</th>
<th>$M$</th>
<th>$SD$</th>
<th>Factor: RKt success</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. As a repatriate I have successfully transferred my IA knowledge to my reentry work unit.</td>
<td>186</td>
<td>2.96</td>
<td>0.99</td>
<td>.72</td>
</tr>
<tr>
<td>2. As a repatriate I have successfully transferred my IA knowledge beyond my work unit to other parts of the company.</td>
<td>185</td>
<td>2.65</td>
<td>1.02</td>
<td>.70</td>
</tr>
<tr>
<td>3. My IA knowledge is generally perceived by the work unit as relevant to its performance.</td>
<td>185</td>
<td>2.81</td>
<td>1.08</td>
<td>.74</td>
</tr>
<tr>
<td>4. I transferred my IA knowledge to the work unit via informal mechanisms (e.g., one-on-one meetings, social events, informal chats).</td>
<td>183</td>
<td>2.98</td>
<td>1.12</td>
<td>.73</td>
</tr>
<tr>
<td>5. As a repatriate, I have transferred my implicit/tacit knowledge to my work unit.</td>
<td>186</td>
<td>2.96</td>
<td>0.97</td>
<td>.78</td>
</tr>
<tr>
<td>6. As a repatriate, I have transferred my explicit knowledge to my work unit.</td>
<td>186</td>
<td>2.76</td>
<td>0.96</td>
<td>.73</td>
</tr>
<tr>
<td>7. My work unit members have come to me with questions related to implicit/tacit knowledge acquired during my international assignment.</td>
<td>185</td>
<td>2.73</td>
<td>1.06</td>
<td>.84</td>
</tr>
<tr>
<td>8. My work unit members have come to me with questions related to my explicit knowledge acquired during my international assignment.</td>
<td>185</td>
<td>2.66</td>
<td>1.03</td>
<td>.77</td>
</tr>
<tr>
<td>Scale average</td>
<td>185</td>
<td>2.80</td>
<td>1.03</td>
<td>.75</td>
</tr>
</tbody>
</table>

Cronbach’s alpha  
Variance explained in %  

$.91$  
$62.03$
Measuring Repatriate Knowledge Transfer

Table 6. *Original item pool and reduced item pool*

<table>
<thead>
<tr>
<th>Scale</th>
<th>Original item pool</th>
<th>Reduced item pool</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Type of repatriate knowledge transferred</td>
<td>28</td>
<td>7</td>
</tr>
<tr>
<td>(b) Repatriate knowledge transfer ability</td>
<td>20</td>
<td>7</td>
</tr>
<tr>
<td>(c) Repatriate knowledge transfer motivation</td>
<td>21</td>
<td>8</td>
</tr>
<tr>
<td>(d) RKT success</td>
<td>11</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
<td>30</td>
</tr>
</tbody>
</table>
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Figure 1. The RKT model by Oddou et al. (2009)
References


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