

Connecting Diaspora for Development

Literature Review

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Sarah Langley

Dr. Katie Kuschminder

Maastricht Graduate School of Governance (MGSoG)



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1. Introduction

Evidence has demonstrated that skilled emigrants and diaspora populations can have a positive influence on development through economic, social and intellectual contributions to both origin and destination societies (Castles & Miller, 2009; Kuschminder, 2011; Levitt, 1998; Meyer et al., 1997; Siar, 2014). Several large-scale initiatives have functioned in the past to encourage knowledge transfer from skilled members of the diaspora to the country of origin, including the United Nations Transfer of Knowledge through Expatriate Nationals Programme (TOKTEN) and the International Organization for Migration's Migration for Development in Africa (MIDA) and Temporary Return of Qualified Nationals Programme (TRQN). The Connecting Diaspora for Development (CD4D) acts as a continuation of TRQN.

The primary objective of the CD4D project is to support the development of prioritized sectors in six countries (Afghanistan, Ethiopia, Ghana, Morocco, Sierra Leone and Somalia) by strengthening the capacity of targeted institutions through the engagement of qualified diaspora. Specifically, this will entail the facilitation of 250 physical "assignments" and 50 virtual assignments in which diaspora members with Dutch residence will temporarily return to their country of origin and work within their field of expertise. During this time, the individuals on assignment, or "returning experts" (REs) are expected to transfer their knowledge and expertise to their colleagues to the greatest extent possible.

This review examines the concept of knowledge transfer, and the most appropriate tools and indicators to measure the quantity and quality of knowledge transfer activities. This review draws on literature from the fields of management theory, organizational change, organizational effectiveness, psychology, and migration studies. The purpose of this review is to inform the CD4D evaluation and project development to enable the greatest environment for successful knowledge transfer and development impacts within the programme. The methodology used to conduct this review consisted of an in-depth search of the academic and grey literature, followed up by snowball referencing techniques. The result has been the examination of 88 sources to inform this literature review.

Two studies in particular are noteworthy in this review and are directly relevant to CD4D. The first is that of Wang (2015), which is frequently cited in the below literature review. This study is based on a survey sent to previous participants in the U.S.'s Exchange Visitor Program (or J-1 visa holders), which encourages work- and study-based exchanges among research scholars, specialists, teachers, trainees and students (U.S. Department of State, 2016). Wang specifically surveyed those who had worked in the U.S. and asked returnees if they have shared knowledge acquired in the U.S. with their current colleagues and if their organization has adopted or practiced the knowledge transferred. A similar approach was used by Kuschminder et al. (2014), who conducted a survey and interviews with past participants of the German Government's Migration for Development Returning Experts programme. The survey asked past participants about the specific KT behaviours they had undertaken, including methods of KT and frequency of transfer. Together, these two works provide valuable examples of studies in which a survey methodology is applied to participants of international exchange and temporary return programmes to analyse KT occurrence and effectiveness.

This review is divided into five sections; first, knowledge transfer is defined; second, the various types and methods of knowledge transfer are examined. Third, the factors that facilitate or obstruct knowledge transfer are examined; fourth, the various documented tools and indicators used to measure the incidence or quantity of knowledge transfer are listed. Lastly, the documented tools and indicators used to measure the quality or effectiveness of knowledge transfer are discussed.

2. Defining Knowledge Transfer

Knowledge transfer (KT) can be generally defined as the process of an individual's or group's experiences affecting another individual or group (Argote and Ingram, 2000). Bender and Fish's (2000) definition regards KT as **a multistage process, noting that it includes both the transmission of information and the absorption of said information by the receiving individual or group.** They also add that **to hold value, transferred knowledge should impact behaviours, policies, processes and practices within the recipient party.** Wang (2015) builds upon this definition by adding the element of **success**, noting that **KT is successful when a practice adopted from another individual or group becomes routine within the recipient unit¹.**

3. Types and Methods of Knowledge Transfer

Polyani (1966) classified the knowledge held by human beings into two categories; tacit and explicit knowledge. Today, these categories are widely used in the academic literature. **Explicit knowledge can be defined as knowledge that can be codified and transmitted through a systematic language** (Levin and Cross, 2004; Nonanka, 1994). Joia and Lemos (2010) add that explicit knowledge is somewhat **independent from context** and is therefore more accessible to a wide range of people. Examples of explicit forms of knowledge include manuals, reports, assessments, patents and databases (Goh, 2002). Due to its ease of articulation, Goh (2002) notes that explicit knowledge is more readily transferred through structured or formal processes sometimes involving technology or information systems. Interpersonal reaction is not required for the successful transfer of explicit knowledge from one person to another. Table 1 illustrates various methods that may be used to transfer explicit knowledge.

Conversely, tacit knowledge is difficult to articulate and codify as **it is personal in nature and is created through performing actions and gathering experiences** (Joia and Lemos, 2010). Nonanka (1994) notes that **tacit knowledge is rooted in an individual or group's commitment and involvement within a specific context.** Goh (2002) adds that this sort of knowledge is also more complex than its explicit counterpart. **Due to the difficulty of formalizing and articulating tacit knowledge, it is inherently more difficult to transfer, and also to measure or quantify.** Reagans and McEvily (2003) and Levin and Cross (2004) note that the transfer of tacit knowledge requires a great amount of effort by all parties involved as verbal explanations may be insufficient. Goh (2002) notes that interpersonal interaction is almost always required for successful tacit KT, as up-close observation and hands-on experience are often necessary. Table 2 illustrates various methods that may be used to transfer tacit knowledge.

¹ To measure whether or not transferred knowledge became routine, Wang asked the following survey question: "Did your company implement any of the suggestions you made as a routine procedure or repeated practice?"

Table 1 Explicit Knowledge Transfer Methods

| Type/ method of transfer | Description | Source |
|--|---|--|
| Manuals and up-to-date documentation | Written handbooks or publications that instruct the reader on how to perform specific tasks or become familiar with specific subjects | Caltrans, n.d. |
| Formal trainings/ boot camps | Lectures, seminars, or presentations that aim to develop new skills, develop theoretical knowledge, and teach participants how to use equipment or new technologies | Caltrans, n.d.; Kuschminder et al., 2014 |
| Memos or guidance notes | Written materials that share positions, best practices, experiences, or advice | Kuschminder et al., 2014; Raytheon, 2012 |
| Translated foreign language materials | Subject-relevant materials that have been translated into the language used in the country of return so that colleagues can utilize materials that would have otherwise been inaccessible | Kuschminder et al., 2014 |
| Process documentation | A flowchart of how various work-tasks should be performed | IMPA-HR, 2004; Raytheon, 2012 |
| Critical incident interviews/ questionnaires | Documentation of the lessons learned when a difficult situation arises so that they can be learned from in the future | Caltrans, n.d.; IMPA-HR, 2004 |
| Expert systems | Automated electronic systems that instruct employees on how to troubleshoot commonly logged problems | IMPA-HR, 2004 |
| Job aids | Low-tech tools to aid employees in performing tasks, such as a checklist or a sign | IMPA-HR, 2004; Raytheon, 2012 |
| Storyboards | Groups of pictures used to instruct employees on performing a specific procedure or technique | IMPA-HR, 2004 |
| Knowledge maps | Maps of the location, form, utilization and value of knowledge within an organization created to identify barriers and gaps | Caltrans, n.d. |
| Wikispaces | An online communication tool that allows users to create, capture, edit, share and comment on information | Caltrans, n.d.; Raytheon, 2012 |

Table 2 Tacit Knowledge Transfer Methods

| Type/ method of transfer | Description | Source |
|--|--|--|
| Mentoring/ coaching | Formal or informal sessions in which a more experienced employee offers advice, training and knowledge to a less experienced employee | Caltrans, n.d.; Kuschminder et al., 2014; Huffman, 2012; IMPA-HR, 2004; Raytheon, 2012 |
| Problem solving | A colleague helps other colleagues in solving problems that may occur | Kuschminder et al., 2014 |
| Learning by example | A colleague models behaviours such as organization, punctuality and discipline that can be adopted by other colleagues | Kuschminder et al., 2014 |
| Teamwork encouragement | A colleague encourages collaboration through initiating team meetings or peer learning | Kuschminder et al., 2014 |
| Targeted work assignments | A more experienced employee works jointly with a less experience employee on a specific task to develop understanding and gain experience | Huffman, 2012 |
| After action review | A more experienced employee, together with a less experienced employee, review successes and failures that were experienced in performing a joint activity | Huffman, 2012 |
| On-the-job training | An employee is given the opportunity to practice job tasks in a hands-on manner at the job site. Usually follows a structured learning process | Caltrans, n.d.; Huffman, 2012 |
| Job-shadowing programs | A more experienced colleague is paired with a less experienced colleague to share knowledge and hands-on practice on how to deal with difficult situations that can arise in the field | Caltrans, n.d.; IMPA-HR, 2004; Raytheon, 2012 |
| Job rotation programs | A program which introduces an employee to a variety of responsibilities and tasks to prepare him or her to take on more responsibilities in their present position | Caltrans, n.d.; Raytheon, 2012 |
| Communities of practice | A group of colleagues that gather to share information on common issues, topics or problems | Caltrans, n.d.; IMPA-HR, 2004 |
| Storytelling | The passing of a description of an event between colleagues in an informal manner | Caltrans, n.d.; IMPA-HR, 2004 |
| Information exchanges/ knowledge fairs | An event in which knowledgeable employees are stationed at a booth or table and can be visited by less experienced personnel to dispense wisdom and information | Caltrans, n.d.; IMPA-HR, 2004 |
| Best practice meetings | Meetings at the organizational or work-group level in which best practices are shared | Caltrans, n.d.; IMPA-HR, 2004 |
| Cross training/ position backup | A program in which an employee is trained to perform another employee's work | Caltrans, n.d.; Raytheon, 2012 |
| Transitional training/ double-fill | A program in which an experience colleague is paired with a less experienced colleague to perform the same position at the same time, for a set time period | Caltrans, n.d.; Raytheon, 2012 |

In following the categorization of knowledge commonly used in the literature, this section has defined explicit and tacit knowledge in a binary fashion. However, it is critical to note that the transfer of explicit and tacit knowledge have been found to be mutually reinforcing; the transfer and effectiveness of explicit knowledge is often aided by the transfer of tacit knowledge, and vice versa (Mowery et al., 1996).

4. Factors that Impact Knowledge Transfer

Factors that impact knowledge transfer can be described as either a facilitator leading to knowledge transfer success, or an inhibitor that obstructs the transfer of knowledge. Both facilitators and inhibitors of knowledge transfer can be assessed at the individual, organizational, and the national level. Each of these will be discussed in this section.

4.1 The Individual Level

The ability of an individual to successfully transfer knowledge is centred around the relationship a potential knowledge transferor has with his or her teammates, colleagues, and superiors. How an individual is viewed by his or her colleagues is essential in determining how they are treated and respected within the working environment. As such, the importance of **trustworthiness** is often noted in the literature as being crucial for KT success (Joia and Lemos, 2010; Kuschminder et al., 2014; Levin and Cross, 2004; Narteh, 2008; Riege, 2005; Sun and Scott, 2005). Narteh (2008) notes that trust is tantamount to co-workers being in some part dependent upon each other without being fearful of the vulnerability that may entail. In addition to strengthening relationships and reducing conflict, trust also aids in KT success. The presence of trust between colleagues allows for the dismantling of barriers and safeguards and weakens defensive behaviours that would otherwise prohibit KT (Joia and Lemos, 2010; Narteh, 2008; Riege, 2005). Boh and Xu (2013) find that the presence of trust increases the willingness of both sides to spend the time and resources necessary to complete a transfer of knowledge and Levin and Cross (2004) note that trust reduces the need to verify information, thereby decreasing the time required to complete KT. It is important to note that trust (and mistrust) can occur between individuals or within a team. Kuschminder et al. (2014) observe that in the case of returning experts (REs), the team the returnee is placed in may decide collectively that it does not trust the RE, or vice versa. Trust may be perhaps more difficult to gain in the case of REs as mistrust can stem not only from a lack of confidence in a co-worker's capacity, but also from cultural differences and a lack of shared values (Riege, 2005; Sun and Scott, 2005).

Linked to the notion of trust is an individual's **organizational status**, or place within the organization's hierarchy. In the case of REs, both Sun and Scott (2005) and Kuschminder et al. (2014) note that a returnee who is not perceived to be an "expert", or is perceived as being too junior or inexperienced, will have a difficult time establishing competence-based trust, which is a prerequisite for KT.

If a RE is a true expert, Sie and Yahklef (2009) argue that he or she should be **passionate** about their subject of expertise. They suggest that expertise itself is a form of tacit knowledge and that the more passionate the expert is on their subject of expertise, the more likely they are to practice KT. This is because experts acquired their expertise not solely through their own pursuits, but through dialogue and mutual understanding with others. Accordingly, true experts view KT not as a one-way exchange but as a process of co-learning in which the participants involved are both learning and creating knowledge together. Research on TRQN in Afghanistan demonstrated that a key element of success in the programme was the passion and motivation of the participants (Kuschminder, 2011). In the case of CD4D passion most likely expands beyond their expertise to passion for the country of origin and being able to contribute to development and change in the country.

Another prerequisite for KT is thought to be a **common language** shared by the transferor and the transferee (Joia and Lemos, 2010; Kuschminder et al., 2014). While speaking the same language is critical for meaningful communication, this may also extend to a shared understanding of the

terminology and jargon used by professionals in a specialized field. Being able to utilize and employ this type of specialized language can greatly aid in the transfer of tacit knowledge (Joia and Lemos, 2010).

Co-workers can only reach a shared understanding of field-specific terminology and jargon if a certain level of capacity is held. In the case of REs, the expert's colleagues need to have sufficient **experience and capacity** to absorb and utilize the highly specific knowledge transferred. Kuschminder et al. (2014) found that one of the most frequently reported barriers of successful KT was a lack of experience and low capacity of an expert's colleagues.

In addition to the capacity of a RE's colleagues, it is also crucial that they are **open-minded in nature**, as a successful working environment is dependent upon all participants being open to working with diverse groups of people from different backgrounds (Boh and Xu, 2013). This requirement goes beyond simply accepting foreign colleagues, but also requires that **colleagues be open to new ideas and ways of doing things**. Sun and Scott (2005) note that common barriers include the team being unwilling to deviate from the standard line of thinking or not wanting to absorb new ideas, which can negatively impact KT.

While the previously discussed factors have focused on the RE themselves and the relationship between the RE and his or her direct colleagues, the following factors use a broader lens to examine the importance of the REs network in facilitating KT. A returning expert's social network has a crucial impact on his or her ability to complete KT successfully and various specific aspects have been identified in the literature as impacting KT success, including the range of the RE's network, its social cohesion, tie-strength, and the embeddedness of the individual. Reagans and McEvily (2003) define **the range of an individual's network** as the incidence of social connections that transcend institutional, organizational or social boundaries. **Connections of this sort are useful in transferring knowledge in that individuals exposed to different groups and various worldviews usually evaluate an issue from various perspectives.** These individuals are also more likely to communicate in a way that is easily understood by people from various groups. In their study, Reagans and McEvily empirically show that **network range is associated with a greater ease of KT.** This reasoning is also demonstrated in the migration literature through the concept of transnationalism. Returnees with transnational networks are more likely to be continually generating new ideas and sharing knowledge for development in their environments upon return, due in part to their regular interactions with transnational networks that share knowledge and new ideas (Kuschminder, 2014).

Reagans and McEvily (2003) also comment on the **social cohesion** of an individual's social network. When analysing a single relationship, social cohesion refers to the extent to which that relationship is supported by strong mutual connections to third-parties. KT is then supported through an individual's desire to gain or maintain a positive reputation among the third-party connections, as well as through cooperative norms.

In a similar vein, **tie-strength**, or the strength of the connection between two people, also impacts an individual's motivation to participate in KT. Some argue that **stronger tie strength increases the likelihood of KT success** (Levin and Cross, 2004; Reagans and McEvily, 2003; Szulanski, 1996;). Specifically, **individuals who communicate frequently and have a strong emotional connection** may be more accessible and willing to transfer useful knowledge when necessary. In this case, **the motivation to transfer knowledge lies within the transferor's desire to help the transferee.** Both Levin and Cross (2004) and Reagans and McEvily (2003) find empirical support for this idea. However, weak-ties, or connections between individuals characterized by infrequent or distance communication, also have advantages in the field of KT.

Table 3 Factors that Influence KT: The Individual Level

| Factor | Interaction with KT | Predicted Impact on KT |
|-------------------------------|--|---|
| Trustworthiness | -Dismantles barriers between colleagues -Increases willingness to spend time or resources needed for KT -Reduces the need to verify information | -Higher levels of trust facilitate KT -Lower levels of trust inhibit KT |
| Organizational status | -Knowledge from “junior” or “inexperienced” individuals will not be well-received | -Higher org. status facilitates KT -Lower organizational status inhibits KT |
| Common language | -Allows co-workers to communicate using field-specific terminology and jargon | -Common language and use of field-specific terminology facilitates KT -A lack of a common language or inability to use field-specific terminology inhibits KT |
| Capacity of colleagues | -A sufficient level of experience and knowledge is necessary to absorb transferred knowledge | -Higher levels of capacity among colleagues facilitates KT -Lower levels of capacity among colleagues inhibit KT |
| Open-mindedness of colleagues | -KT requires a willingness to accept new ideas and ways of thinking | -Having open-minded colleagues will facilitate KT -Having closed-minded colleagues will inhibit KT |
| Passion | -Experts acquire expertise through dialogue and mutual understanding -Experts that are passionate about their subject are more likely to engage more frequently in dialogue and mutual understanding | -Higher levels of passion facilitate KT -Lower levels of passion inhibit KT |
| Network Range | -Individuals exposed to diverse groups of people evaluate issues using multiple perspectives -Individuals exposed to diverse groups of people can communicate more easily | -Broader network ranges facilitate KT -Narrower network ranges inhibit KT |
| Social Cohesion | -KT is completed to fulfil the transferor’s desire to maintain a positive reputation or fulfil cooperative norms | -Higher levels of social cohesion facilitate KT -Lower levels of social cohesion inhibit KT |
| Tie-strength | -Individuals with a close relationship are accessible and willing to transfer useful knowledge | -Stronger ties facilitate KT -Weaker ties inhibit KT |
| Embeddedness | -High home-country embeddedness is correlated with having novel information and being able to recognize opportunities for KT success -High host-country embeddedness is correlated with familiarity with the local work environment and higher trust levels | -Higher levels of home and host country embeddedness facilitate KT, <i>as long as trust is high</i> -Lower levels of home and host country embeddedness inhibit KT |

Narteh (2008) notes that weak-ties may allow for the transfer of a different kind of knowledge than strong-ties. For example, because weak-ties are characterized by infrequent communication, they may lead to the provision of non-redundant or novel information such as employment opportunities (Garnovetter, 1985; Narteh, 2008).

Wang (2015) discusses the “**embeddedness**” of an individual as a sort of composite score including social cohesion, tie strength, and network range. An individual can be embedded in either the home-country, the host country, or in both, with each providing unique advantages and sometimes disadvantages². Wang notes that returnees with a high degree of home-country (the Netherlands) embeddedness are more likely to have novel ideas and are more likely to be able to recognize opportunities for KT success while working on assignment in the host-country. Conversely, embeddedness in the host country (Afghanistan, Ethiopia, Ghana, Morocco, Somalia or Sierra Leone) gives the returnee familiarity with the local culture and work environment and can lead to higher levels of trust among the work team. However, Wang notes that these two factors may be mutually contingent in that to utilize novel ideas, trust from colleagues is necessary and many returnees are not deeply engaged in both the home and host country. This again highlights the **importance of transnationalism and simultaneous dual-engagement for enhancing knowledge transfer**.

4.2 The Organizational Level

While knowledge is often transferred from one individual to another, there are a wide variety of environmental factors that can either facilitate or obstruct the transfer process. These factors can be found at both the organizational level and at the national level and generally centre around **leadership styles, availability of resources, culture and attitudes towards change and uncertainty**. This section will detail the organizational level factors that can work to encourage or block KT practices.

The impact that **organizational culture** has on KT success has been widely discussed in the literature (McDermott and O’Dell, 2001; Riege, 2005). Organizational culture can be seen in an organization’s goal orientation or in its mission and values, while also being visible in the way employees interact with each other and complete tasks. Accordingly, organizational culture is both articulated and unarticulated (McDermott and O’Dell, 2001). In order to effectively implement knowledge management and sharing initiatives, the authors argue that **the initiatives must be intrinsically integrated into an organization’s culture, meaning that the organization’s values and goals, as well it’s leadership’s managerial style should all value knowledge management**. Accordingly, knowledge sharing approaches and techniques are not one-size-fits-all, but instead should be **customized to fit as closely as possible the values and style of the organization**. In such an environment, knowledge sharing is intrinsically motivated and expected by organizational members, not something that is coerced or required. In order to achieve this, organizations should create clear and visible connections between knowledge sharing practices and practical business objectives, enhance existing social networks to create incubators for knowledge sharing, and instruct managers to encourage and support employees in knowledge sharing practices. Susanty et al. (2012) noted the positive impact organizational culture can have on knowledge sharing in their study of Indonesian small and medium enterprises. After examining aspects of organizational

² The term *home* country is used in the review to indicate the country that experts return to after assignment completion (the Netherlands). The term *host country* is used in the review to indicate the country that experts visit on assignment (Afghanistan, Ethiopia, Ghana, Morocco, Somalia, or Sierra Leone).

culture such as encouraging trust, learning and collaboration, they found that these aspects had a positive impact on KT success.

Organizational culture is a very broad concept that is comprised of numerous elements. Specific elements such as enabling a safe psychological environment, trust, power sharing, and small power distances have been shown to facilitate knowledge sharing practices. First, a **safe psychological environment** within the organization is also thought to be essential in promoting knowledge sharing behaviours. Joia and Lemos (2010) note that **employees need to feel able to express a variety of opinions and ideas without encountering negative feedback**. Bender and Fish (2000) and Joia and Lemos (2010) also argue that **employees need to feel comfortable in admitting that they do not know something, as it is often more efficient for an employee to learn from a co-worker than to discover the information by themselves**. A safe psychological environment can be created through practicing **mindful leadership**. Specifically, this entails tolerance when employees make mistakes, supporting employees' efforts to learn from mistakes, encouraging group problem-solving and experimentation, treating employees fairly, and being open about mistakes made by leadership (Goh, 2002; Riege, 2005).

Second, although **trust** was already discussed in the section on individual level factors, it also applies at the organizational level. Goh (2002) notes that **trust is essential to developing an organizational culture of collaboration and collective problem-solving** and lists actions organizational leadership can take to encourage trust among employees. Practices can include open and multilateral decision-making structures, making information widely accessible to employees and fair treatment of employees in regards to discipline and rewards. Within this type of environment, Goh argues that knowledge sharing practices such as team-wide meetings and best practice networks will be most easily adopted.

Third, the source of power within an organization has a substantial impact on the likeliness of KT occurring. **If an organization's culture signals that knowledge is a source of power** (such as superiority, status or job security), **then employees will subsequently fear the loss of that power and actively work to isolate and retain their knowledge for their individual use** (Joia and Lemos, 2010; Riege, 2005; Sun and Scott, 2005). Accordingly, organizations in which knowledge is valued when it is shared and utilized instead of when it is hoarded will be more successful in implementing KT practices.

Fourth, the structure of an organization can also impact KT success. Specifically, **hierarchically structured organizations or large power-distances³** tend to have a negative impact on KT (Rivera-Vazquez et al., 2009; Riege, 2005; Kuschminder et al., 2014). Joia and Lemos (2010) note that factors such as narrow job specializations, standard operating procedures and a top-down chain of command affect the amount of time available for and ease of completing (especially tacit) KT. People that hold tacit knowledge need to be accessible when their knowledge is required by others within the organization. Riege (2005) also notes that strong hierarchies and organizational regulations punish mistakes and do not encourage experimentation or creative thinking. Lastly, Goh (2002) observes that organizations with strong hierarchies and strict regulations encourage the creation of **knowledge "stickiness", where knowledge is created and stays in only one area or "silo" of an organization and is not easily transferred**. To counteract this, Goh suggests horizontal lines of communication such as the creation of business teams across working groups.

³ Power-distance refers to the distance between organizational leadership and lower-level employees. A large "distance" is equated with organizational rules and norms that dictate little to no interaction between the two levels (Keida and Bhaget, 1988)

Fifth, within organizational culture, **time restrictions** have been noted as a major barrier to KT (Michailova and Husted, 2003; Riege, 2005). As KT costs both the transferor and the transferee time, working in a time-pressured environment may limit employees' willingness to partake in KT if not enough time is set aside for it. Joia and Lemos (2010) note that tacit KT may be especially hindered by a lack of time, as its transfer requires time set aside for face-to-face contact and personal interaction.

Sixth, in addition to a lack of time, a **lack of organizational resources** may also hinder KT. Mitton et al. (2007) and Riege (2005) note that organizations must make a financial commitment to facilitating knowledge sharing practices. This could include providing formal and informal **spaces** in which employees can share their knowledge and providing **equipment and infrastructure to facilitate KT** (Kuschminder et al., 2014; Riege, 2005). Sun and Scott (2005) also comment on the usefulness of proper information sharing systems in facilitating KT. Specifically, Goh (2002) notes the importance of best practice networks, which are computer or technology based systems that link employees within and across different business working units so that they can share what works and what doesn't.

Seventh, **employee rewards** given in exchange for practicing KT are an often discussed aspect of organizational culture, although their impact is debated (Bender and Fish, 2000; Goh, 2002; Joia and Lemos, 2010; Narteh, 2008; Sun and Scott, 2005; Sie and Yahklef, 2009; Riege, 2005;). Riege (2005) notes that some researchers doubt the effectiveness of rewards systems in encouraging KT as they argue that these systems don't encourage long-term knowledge sharing and that they are not sufficient in hostile sharing organizations. However, **many argue for the effectiveness of increased compensation, incentives, recognition, and other tools in encouraging knowledge sharing practices.** Joia and Lemos (2010) note that performance appraisal systems should take into account whether the employee engages in knowledge sharing practices. Narteh (2008) argues that higher **remuneration leads to employees being more dedicated to knowledge acquisition**, while Bender and Fish (2000) and Sie and Yahklef (2009) highlight the need for **intrinsic motivating factors**, such as career advancement and increased visibility or recognition. Even if knowledge sharing is not rewarded specifically, Goh (2002) argues that organizational reward systems should not be based on financial success alone, as this discourages collaboration and sharing. Instead, a **"balanced scorecard approach"** should be used in employee reward and recognition and this will additionally promote knowledge sharing and collaboration within the organisation.

Beyond organizational culture, there are several other factors that have been identified as being influential in the KT process, including industry similarity, absorptive capacity and the number of knowledge brokers/ REs. Wang (2015) notes that KT may be easier to complete if the industry a RE previously worked in and is currently working in are similar (**industry similarity**). This may be due to the RE **having more relevant knowledge** and being able to **establish common ground** (and higher levels of **competence-based trust**). However, it could also be that a RE who has previously worked in and is currently working in similar industries may only be able to provide redundant information and accordingly, a returnee may not be seen as being distinct enough. In his study, Wang finds that it is not supported that returnees working in the same industry will experience greater KT success. He does find, however, the organizational similarity positively interacts with home-country embeddedness, meaning **that employees must be both embedded and have relevant knowledge to be able to successfully participate in KT.**

Linked to the idea of individual capacity is an organization's **absorptive capacity**. Goh (2002) and Mowry et al. (1996) note **that organizations need to have a base level of knowledge or in-house expertise to be able to understand and absorb new knowledge that may be transferred to it.**



Table 4 Factors that Influence KT: The Organizational Level

| Factor | Interaction with KT | Predicted Impact on KT |
|---------------------------------------|--|--|
| Organizational culture | -KT initiatives must match or be intrinsically linked to an organization's values and goals | -Organizational culture that encourages trust, learning and collaboration facilitates KT -Organizational culture that encourages competition and independence inhibits KT |
| Safe psychological environment | -Employees need to feel safe in admitting they don't know something and in trying out new ideas or ways of thinking | -A safe psychological environment facilitates KT -An insecure or dangerous psychological environment inhibits KT |
| Organizational trust | -Organizational trust is essential to encouraging collaboration and collective problem-solving | -A high level of organizational trust facilitates KT -A low level of organizational trust inhibits KT |
| Fear of losing power | -Organizations can place higher values on knowledge when it is shared and utilized versus when it is hoarded | -A low level of fear of power loss facilitates KT -A high level of fear of power loss inhibits KT |
| Time restrictions | -Having ample time to participate in KT activities is essential | -A low degree of time restrictions facilitates KT -A high degree of time restrictions inhibits KT |
| Lack of organizational resources | -KT requires an organizational financial commitment | -Dedicated organizational resources facilitates KT -A lack of dedicated organizational resources inhibits KT |
| Employee rewards | -Rewards for employees that participate in KT, such as better performance appraisals, higher remuneration, or increased recognition may encourage KT | -Employee rewards facilitate KT -A lack of employee rewards inhibits KT |
| Industry similarity | -Working in the same industry before and during return is correlated with having relevant, but sometimes redundant information | -Industry similarity facilitates the positive effects of home-country embeddedness -Industry dissimilarity inhibits the positive effects of home-country embeddedness |
| Absorptive capacity | -Organizations must have a base level of knowledge to be able to absorb industry-specific ideas and information | -Higher levels of absorptive capacity facilitate KT -Lower levels of absorptive capacity inhibit KT |
| Number of knowledge brokers/returnees | -Individuals who are the sole link between two distinct groups that value each other's information will hold power | -Unclear relationship between the number of knowledge brokers and impact on knowledge transfer: A higher number of knowledge brokers have the potential to increase or decrease knowledge transfer |

According to Sie and Yahklef (2009) and Narteh (2008), individuals and organizations as a whole can more easily absorb new ideas and information if they can **associate them with prior knowledge**. Reagans and McEvily (2003) find empirical support for the idea that sharing common knowledge increases the ease and success level of KT.

Lastly, much of the literature notes that the **number of knowledge brokers** present in an organization can impact KT success. In structural hole theory, an individual who serves as a mediator between two separate groups, such as a returnee mediating information between his or her home and host countries, is able to act as a gatekeeper for valuable knowledge (Burt, 2000). Buskens and van den Rijt (2008) point to the structural advantage held by an individual who is the sole linkage mechanism between two distinct social networks as they can control and monitor the flow of information between the two groups. They find that this advantage is only present when **the person filling the structural whole acts independently, or when there is only one knowledge broker mediating flows between the two groups**. Ryall and Sorenson (2007) confirm this argumentation as do Reagans and Zuckerman (2008). In other words, an actor **becomes powerful and impactful when he or she bridges groups of actors who are disconnected yet who place value in the knowledge held by the other**. If there are multiple actors in this position, dependence on the knowledge broker decreases and he loses power and impact. Wang (2015) tests this in his study and finds that his hypothesis that multiple knowledge brokers (or returnees) will be seen as less novel and important and finds that it is not supported. However, he does find that the positive impact of a returnee's home country embeddedness decreases as more returnees are added.

4.3 The National Level

National cultures promote and support a specific set of values and beliefs. Wang (2015) notes that organizational attitudes have a tendency to correspond with national culture and that the national culture may influence how employees conduct business and interact with one another. This section therefore details the factors identified in the literature at the national level that may work to encourage or discourage knowledge transfer.

First, scholars have found that **basic cultural differences can impact the success of KT** (Kuschminder et al., 2014; Narteh, 2008; Wang 2015). Specifically, Narteh (2008) argues that national and ethnic backgrounds accompany individuals into collaborative relationships and can accordingly affect how an individual defines and values knowledge. Furthermore, cultural differences can negatively impact effective communication through **variances in communication styles and value orientations**. If effective communication is not easily achieved, KT will require more time and resources on the parts of both the transferor and the transferee.

Second, when national culture features a fear of foreigners as evidenced through discriminatory policies or economic protectionism, this can manifest as **xenophobic attitudes**, which can undermine a foreign colleague's impact in the workplace. REs can be specifically targeted as being both foreigners and "turncoats". While Wang (2015) does not find that REs are less successful at KT in more-xenophobic countries, **he does find that the benefits of home-country embeddedness decrease in more-xenophobic countries**. Accordingly, embeddedness in the host-country may be used by the returnee to counteract this effect in more-xenophobic countries.

Third, KT success is highly dependent on the degree of individuality present in the culture, or whether a culture can be deemed more "**collectivist**" or more "**individualist**" (Boh and Xu, 2013). Rivera-Vazquez

et al. (2009) refer to a “collectivistic index”, which indicates an employee’s awareness that teamwork and collaboration produces superior results to those achieved through individual work. Kedia and Bhagat (1988) note that in collectivist cultures, “in-groups”, consisting of relatives, clan members or members of an organization, are contrasted with out-groups, consisting of foreigners or members of different communities. This mind-set encourages cooperation and greater knowledge sharing within the in-group. However, it must be noted that knowledge sharing within collectivist cultures usually occurs only once a high level of trust has been established, meaning that a returnee would first need to achieve a trustworthy status. Heike and Wilkesmann (2009) observed in their study of an organization in Hong Kong (which is deemed to be a collectivist culture) that high levels of knowledge sharing occur, but only among trusted individuals and only through face-to face interactions. Accordingly, employees working within a collectivist culture may exhibit wariness or mistrust for computer or phone communication, as the necessary level of trust cannot be established through these mediums.

Forth, the degree of **uncertainty avoidance** accepted within a culture can impact KT success. Heike and Wilkesmann (2009) and Kedia and Bhagat (1988) note that in societies that feature high uncertainty avoidance, individuals try to avoid ambiguity and accordingly may be more apt to follow formal rules and regulations, reject new ideas, or accept the idea of absolute truths. Rivera-Vazquez et al. (2009) find that in these societies, trust levels tend to be low and knowledge sharing must accordingly be facilitated by regulations and instructions. Alternatively, in societies with low uncertainty avoidance, trust levels are higher and knowledge sharing is seen as an expected behaviour. In Heike and Wilkesmann’s (2009) study of knowledge sharing in both the German and Hong Kong contexts, he finds that due to a low level of uncertainty avoidance, knowledge sharing in Hong Kong is less organized but also more innovative and flexible.

Table 5 Factors that Influence KT: The National Level

| Factor | Interaction with KT | Predicted Impact on KT |
|---|---|--|
| Cultural differences | -Differences in backgrounds can lead to ineffective communication and different definitions and valuations of knowledge | -A low degree of cultural differences will facilitate KT -A high degree of cultural differences will inhibit KT |
| Xenophobic attitudes | -A fear of foreigners undermines the credibility of an RE and prevents trust from being established | -A high degree of xenophobia inhibits the positive impacts of home-country embeddedness -A low degree of xenophobia facilitates the positive impacts of home-country embeddedness |
| Collectivist vs. individualist cultures | -KT within collectivist cultures may only occur within trusted “in-groups” | -A high degree of trust facilitates KT in a collectivist culture -A low degree of trust inhibits KT in a collectivist culture |
| Uncertainty Avoidance | -High uncertainty avoidance leads to more formal regulations and the need to facilitate KT | -A low degree of uncertainty avoidance facilitates innovative and flexible KT -A high degree of uncertainty avoidance inhibits innovative and flexible KT |
| Power-distance | -A large power distance restricts intrinsic motivation to participate in KT and it may only occur only after explicit instruction | -A small power distance facilitates KT -A large power distance inhibits KT |

Lastly, the amount of **power-distance** that is promoted within a national culture can impact KT success. Kedia and Bhagat (1988) follow Hofstede (1980, 1983) in stating that power-distance refers to how willingly less-powerful members of society accept an unequal power distribution as a normal aspect of their society. In an organizational setting, a large power-distance would equate to a large gap between management or leadership and lower-level employees, or a strong hierarchical structure (Rivera-Vazquez et al., 2009). The amount of power-distance commonly accepted in a society has various implications for knowledge sharing success. Rivera-Vazquez et al. (2009) and Heike and Wilkesmann (2009) find that **when a large power-distance is present, knowledge sharing generally only occurs after an explicit instruction or invitation from senior personnel to lower personnel, in a top-down manner.** - He also notes that **high-power-distance hinders the development of intrinsic motivation to share knowledge** in that employees fear that the knowledge they share may be **taken advantage of by someone higher up in the company.** Finally, Kedia and Bhagat (1988) note that in societies that encourage a large power-distance, **the sharing of technologies that may change power, status and reward distributions are often not welcome and are not likely to be transferred successfully.**

5. Tools to Measure Knowledge Transfer

While there is no internationally agreed upon method for measuring the transfer of knowledge, a handful of approaches have gained prominence within both academic literature and the business world. As KT involves both a sender and a receiver, measurement approaches have evolved around each actor; studies have measured KT by analysing *knowledge* or the *performance* of recipients and have also analysed the *behaviour* of senders. Each approach carries with it advantages and disadvantages and some types of knowledge are better measured by one approach over another. This section will accordingly discuss in detail the different approaches used today to measure KT.

5.1 Knowledge Metrics

Referring to what is perhaps the least commonly used approach, Argote and Ingram (2000) observe that KT can be measured by directly measuring the knowledge of recipients. This generally entails the employment of a large-scale survey in which respondents (potential KT recipients) are asked to self-report changes in their knowledge or skill-set after participating in a KT initiative (Rich, 1997). This approach has been criticized however due to several drawbacks. First, organizational knowledge does not reside solely within the individual, but also within an organization's culture, practices, structures, and operating procedures (Argote and Ingram, 2000; Walsh, 1991). Accordingly, exclusively testing the knowledge of an individual may not capture knowledge transfers that have affected or influenced the organization as a whole. Second, tacit knowledge may not be captured through direct tests or assessments of an individual's knowledge as tacit knowledge is difficult to codify and articulate. It is even noted that individuals may not be aware that they have received and absorbed tacit information, but it may still influence how they carry out their work tasks (Argote and Ingram, 2000; Reagans and McEvily, 2003).

5.2 Performance Metrics

A more widely used approach to measure KT is to track the changes in the performance of KT recipients, as knowledge manifests itself in performance (Argote and Ingram, 2000). Performance can of course be measured in various ways and indicators need to be selected based on the context the knowledge is

transferred within. For example, Darr et al. (1995) studied the incidence of KT within the pizza industry by measuring the unit cost of production, while Ingram and Roberts (2000) conducted their study within the hotel industry and operationalized performance as revenue per available room.

This approach has also been widely used to answer the question of how well universities perform in transferring their research knowledge to the economic and social sectors of society. A 2008 Library House report identified indicators that could be used for this purpose. It is important to note that in addition to the context within which KT takes place, indicators of KT need to be tailored to fit the method of transfer used. For example, Library House noted that when knowledge was intended to be transferred through teaching, the graduation rate and the rate at which students are hired in their field of training can be used as an indicator of KT. Further examples can be found in Table 6.

Table 6 Indicators to Measure Knowledge Transfer

| Mechanism of knowledge transfer | Measures of quantity | Measures of quality |
|---|---|--|
| Networks | # of people met at events which led to other Knowledge Transfer Activities | % of events held which led to other Knowledge Transfer Activities |
| Continuing Professional Development (CPD) | Income from courses, # of courses held, # people and companies that attend | % of repeat business, customer feedback |
| Consultancy | # and value/income of contracts, % income relative to total research income, market share, # of client companies, length of client relationship | % of repeat business, customer feedback, quality of client company, importance of client relative to their company |
| Collaborative Research | # and value/income of contracts, market share, % income relative to total research income, length of client relationship | % of repeat Business, customer feedback, # of products successfully created from the research |
| Contract Research | # and value/income of contracts, market share, % income relative to total research income, length of client relationship | % of repeat Business, customer feedback, # of products successfully created from the research |
| Licensing | # of licenses, income generated from licenses, # of products that arose from licenses | Customer feedback, quality of licensee company, % of licenses generating income |
| Spin-Outs | # of spin-outs formed, revenues generated, external investment raised*, market value at exit (IPO or trade sale) | Survival rate, quality of investors, investor/ customer satisfaction, growth rate |
| Teaching | Graduation rate of students, rate at which students get hired (in industry) | Student satisfaction (after subsequent employment), employer satisfaction of student |
| Other Measures | Physical Migration of Students to Industry, Publications as a Measure of Research Output | |

Source: Library House, 2008

The European Commission's Expert Group on Knowledge Transfer Indicators also created a set of indicators to measure KT from higher education institutions (HEIs) and public research organizations (PROs) to other sectors of society (Finne et al., 2011). Specifically, the Expert Group proposed indicators to measure knowledge transferred through trained people, through co-operative agreements, and

through the commercialization of research, which they then combined into a composite KT score. Table 4 below details the indicators chosen.

Table 7 Indicators to Measure Knowledge Transfer

| Knowledge transfer through trained people | Institutional co-operation in R&D and other phases of innovation | Commercialisation of research |
|--|---|---|
| 1.1. Stock of HEI graduates employed in business enterprise sector | 2.1. Number of R&D contracts in HEIs/PROs with firms and other users | 3.1 Invention disclosures from HEI/PRO employees |
| 1.2 Stock of doctorate holders employed in business enterprise sector | 2.2. Number of consultancy contracts in HEIs/PROs with firms and other users | 3.2 Priority patent applications submitted from HEIs/PROs |
| 1.3. Continuing professional development revenue for HEIs | 2.3. Revenue to HEIs/PROs from R&D contracts with firms and other users | 3.3 Patent applications submitted from public sector actors to the European Patent Office |
| 1.4 Employed adults (age 25-64) engaged in university level training or education | 2.4. Revenue to HEIs/PROs from consultancy contracts with firms and other users | 3.4. Patents granted to HEIs and PROs |
| 1.5 Teaching in HEIs performed by people with their primary job outside the HEI/PRO sector | 2.5. Firms co-operating with HEIs | 3.5. New licensing agreements |
| 1.6. Entrepreneurship propensity among HEI students | 2.6. Firms co-operating with PROs | 3.6. Licensing revenue to HEIs and PROs |
| | 2.7. R&D in HEIs/PROs funded by business | 3.7. International licensing trade from HEIs and PROs |
| | 2.8. Co-publications between private and public authors | 3.8. Number of new spin-offs |

Source: Finne et al., 2011

5.3 Behavioural Metrics

A third and commonly used approach in measuring KT is to examine the self-reported behaviours of the knowledge sender. Using this method, a survey or questionnaire is commonly sent to respondents (potential knowledge transferors) which asks about the respondent's methods and frequency of transfer, as well as the perceived impact of the knowledge transferred. Two examples of this approach (Kuschminder et al., 2014 and Wang, 2015) were discussed in the introduction section of this review.

Larger organizations such as universities also use surveys and questionnaires to learn more about the KT behaviours of their employees. These surveys vary in size and frequency. On the small side, for example, Wayne State University implemented a KT questionnaire for employees to complete after they had given their notice of resignation. The survey is short and simple in nature, asking the respondents about open projects, key contacts, critical job functions performed, passwords, and user IDs or other sign-on data (Wayne State, n.d.).

Other universities have conducted much larger-scale surveys, such as the University of Melbourne's Knowledge Transfer Survey. The survey began by asking participants about their motivation for participating in KT activities, with possible answers including fostering partnerships, developing better

policy, commercializing intellectual capacity, or readying students for professional life.⁴ Next, the survey asked which KT method was used by the respondent within the last 12 months, including blogging, contributing to Wikis, collaboration, improving professional practices, putting on a performance or exhibition, registering patents, and report writing, among other methods. Respondents were then asked about the perceived impact or outcome of their knowledge sharing activities, with possible answers including engagement, adoption, benefit, or no perceived outcome. The survey concluded by asking respondents to provide specific details of their KT activities, including the number of activities undertaken, the length of time committed, the proportion of work time spent on KT activities, the resources expended, and specific collaboration partners (University of Melbourne, n.d.).

Another example of a large scale university survey was done by Bangkok University and aimed to examine facilitators and barriers to KT among expatriate managers transferring knowledge to local Thai subordinates within the University.⁵ Respondents were asked to comment on the following subjects:

- The level of knowledge complexity faced and the difficulty encountered in codifying it
- Their willingness and ability to transfer knowledge
- The ability of their Thai subordinates to absorb, retain and utilize transferred knowledge
- The perceived impact of the University's structure, environment and culture on KT
- Perceived differences between Thailand and the respondent's home country, in regards to national culture, workplace norms, acceptance of power inequalities, the degree of collectivism, and the tolerance for uncertainty
- The reward system in place within their department (monetary/ recognition/ sanction, etc.)
- Barriers faced in completing KT activities

This survey is extremely relevant for the project at hand as it focuses specifically on experts abroad and touches on many of the facilitating and obstructing factors for KT discussed earlier in the review.

In addition to KT surveys and questionnaires analysing the behaviour of universities, surveys have also been used to examine the status of knowledge transfer activities within an industry as a whole. An organization called NoGAP works to achieve this goal within the sustainable energy field and conducted a KT questionnaire among all types of stakeholders within the industry.⁶ Each respondent represents one organisation. Respondents are first asked about the types of cooperation and knowledge sharing programs their organization participates in, including dual education programs, contract research projects, business collaborations, and knowledge clusters, among others. Next, respondents are asked about perceived needs for knowledge and technology transfer to take place, including long term cooperation strategies, handbooks of best practices, trainings, flexible communication, and mentality shifts. Lastly, respondents are asked to list the barriers they have seen or experienced in knowledge and technology transfer, including a lack of financing, a lack of knowledge, a lack of communication, a lack of innovation, and a lack of entrepreneurial knowledge (NoGAP, 2013).

⁴ The full survey can be viewed at <https://www.surveymonkey.com/r/NYVKY8N>

⁵ The full survey can be viewed at <http://ikisea.bu.ac.th/ExpatQuestionnaire.pdf>

⁶ The full survey can be viewed at <http://www.no-gap.eu/en/1503.php>

5.4 Tacit v. Explicit Knowledge Transfer and Implications for Measurement

As there are numerous indicators to measure the incidence of KT, the type of knowledge to be measured should be taken into account when selecting an indicator. Specifically, tacit and explicit knowledge are often best captured by different types of indicators (Rosli and Rossi, 2015). First, explicit knowledge (that can be easily codified and articulated) is well-measured through indicators that record the amount, diffusion or value of tangible outputs, such as citations or patents. Examples of this approach include Rinia et al. (2002), who analyse interdisciplinary knowledge exchange by examining the external citation averages of a discipline, or Mowery et al. (1996), who examine knowledge diffusion through analysing the citation patterns of firm's patent portfolio. Mowery et al. explicitly note that their study only captures explicit knowledge, but argue that explicit and tacit knowledge are complements to each other and are often closely linked.

Conversely, tacit knowledge is poorly measured by output-oriented indicators. Instead, Rosli and Rossi (2015) argue that process oriented indicators, such as the number, duration, intensity, characteristics, and quality of interactions should be used to measure tacit knowledge transfer, as an element of interpersonal interaction is required for this to be successful. Examples of this approach include Lee (2000), who measures KT within a social network using indicators such as the frequency of advice seeking and the number of "links" per respondent, or Carrillo et al. (2004), who measure KT through tracking the frequency of meetings, the number of conferences attended, the number of active communities of practices, and the satisfaction of those community members.

6. Tools to Measure Knowledge Transfer Effectiveness

While there is little agreement or convergence on how to measure the incidence of KT, there is even less research on measuring the *effectiveness* of KT. The OECD identified three basic issues with attempting to measure KT effectiveness; 1) timing, or the gap between the completion of the KT initiative and societal effects, 2) attribution, or isolating the impact of KT alone, and 3) appropriability, or identifying all of the individuals effected by the KT initiative (Garnder, n.d.). Keeping these issues in mind, many of the identified indicators for measuring KT effectiveness are the same as the indicators used to measure its incidence. Returning to the indicators identified by Library House (2008) and Finne et al. (2011) (see Tables 6 and 7), indicators such as the number of students working in their trained field, the percentage of repeat business, or the survival rate of spin-outs already hint at the impact of KT activities. Furthermore, Gardner finds that the most widely used measures of KT effectiveness among North American companies include the number of start-up companies formed, income from licenses, the number of patent applications, and the number of invention disclosures.

While the indicators identified above are useful, they can only be applied to certain circumstances and instances, such as in the field of education or the corporate sector. A more widely-applicable approach may therefore be to take an indirect measure of KT effectiveness by monitoring the effectiveness of practices that inherently entail the transfer of knowledge, such as mentoring/ coaching, teamwork, formal trainings, job rotation programs and communities of practice.

6.1 Mentoring/ Coaching

Mentoring or coaching of colleagues, as defined in Table 2, is noted to be one of the most common methods of KT (Caltrans, n.d.; Kuschminder et al., 2014; Huffman, 2012; IMPA-HR, 2004; Raytheon, 2012). There are numerous studies that comment on the expected results of successful mentorship programs, with these studies analysing different industries functioning within different country contexts (Agwu and Luke, 2015; Mundia and Iravo, 2014; Neupane, 2014; Ofobruku and Nwakoby, 2014; Orpen, 1997; Velasquez, 2015). **The most notable effects of a successful mentoring/ coaching program are decreased turnover rates within the organization, higher levels of job engagement, motivation and satisfaction, and lastly and most measured, increased employee performance.**

Velasquez (2015) notes that participating in a mentoring program helps employees to foster and nurture strong relationships with their colleagues and superiors, which in turns helps to build a stronger sense of belonging to the organization. These factors combined then work to increase the likelihood that an employee will remain at an organization. Agwu and Luke (2015) test this idea in the context of the Nigerian natural gas industry using an employee survey and find that respondents who partake in a mentoring program are less likely to express a desire to leave the company.

Another expected impact of an effective mentoring or coaching program is a higher level of engagement, motivation or satisfaction among the participants. Velasquez (2015) notes that employees that know that they will receive career development guidance from experts in their field are more motivated to do their best work. Orpen (1997) found empirical support for this relationship, especially among mentors and mentees that had a close physical proximity to each other and had work schedules that allowed time for mentoring. While Velasquez points to the reward of expert counsel as a motivating factor for employees, Orpen notes that mentoring practices allow the employee to feel liked and respected by organizational leadership and satisfies their need for affection and belonging within the workplace.

Lastly, increased employee performance is likely the most studied result of a successful mentoring program. Many authors have used a survey or questionnaire methodology which asks employees and sometimes their supervisors if participating in a mentoring program has improved their performance, however Mundia and Iravo (2014) note that other measures of employee performance could include improved performance appraisals and higher levels of customer satisfaction. In their study, Mundia and Iravo found a positive and significant relationship between career development guidance (mentoring programs) and employee performance. Similarly, Ofobruku and Nwakoby (2014) find that mentoring programs within the construction industry in Nigeria resulted in a positive effect on employee performance. Ismail et al. (2009) studied the Malaysian context and found similar results, namely that both formal and informal mentoring had a positive and significant impact on individuals' career development and performance. Neupane (2014) studied the UK hotel industry and also found that coaching or mentoring had a positive and significant effect on employee performance. However, Orpen (1997) represents the dissenting voice, as he did not find evidence for better job performance as a result of participating in a mentoring program, noting that mentoring usually results in better relationships between the mentor and the mentee, but not always in improved skill sets, which is seen as necessary for increased job performance.

6.2 Encouraging Teamwork

Encouraging teamwork, as defined in Table 2, has also been observed as a method of KT (Kuschminder et al., 2014). **Studies note that the positive impacts of increased teamwork include heightened mutual support among colleagues, a greater sense of accomplishment or job satisfaction, and lastly, increased job performance** (Bacon and Blyton, 2003; Boakye, 2015; Boundless, 2016; European Foundation for the Improvement of Living and Working Conditions, 2007; Manzoor et al., 2011).

It is widely thought that teamwork or working in a team environment heightens levels of mutual support between team members. This is due to the fact that team members take on related tasks and can therefore assist and support each other with tasks that they are not confident in completing by themselves (Boundless, 2016). It is also thought that teamwork can lead to a greater sense of accomplishment and job satisfaction among team members. According to a 2007 report published by the European Foundation for the Improvement of Living and Working Conditions, an incidence of teamwork within the EU 15 countries was positively and significantly correlated with being satisfied with working conditions. However, it should be noted that these results did not hold when applied to the 12 acceding and candidate countries.

Furthermore, increased work performance is often noted as a positive effect of increased levels of teamwork within an organization. As with mentoring, work performance is often measured through a direct survey asking team members how they felt that teamwork had impacted their job performance. Other measures could include a change in production costs, customer satisfaction levels or product quality. The 2007 report from the European Foundation for the Improvement of Living and Working Conditions notes that teamwork can impact work performance through various channels, including boosting employee well-being through decreased stress levels and increasing efficiency. This idea has been tested empirically in various industries and country settings. Boakye (2015) found that teamwork was positively and significantly correlated with work performance within the Ghanaian healthcare industry. Manzoor et al. (2011) also finds similar results within the Pakistani Higher Education Department (Peshawar). Lastly, Bacon and Blyton (2003) find that within the UK manufacturing sector, participating in teamwork was associated with the employee feeling that their skill level, variety of work, and work quality had all increased. However, they note that the benefits of teamwork varied across the hierarchy of an organization, with employees on the lowest rung of the organizational ladder reporting the smallest increase in positive job aspects.

6.3 Formal Training

Formal training, as defined in Table 1, is another standard method of KT (Caltrans, n.d.; Kuschminder et al., 2014). **The impact of successful formal trainings are noted in the literature to be similar to those of mentoring and encouraging teamwork and include increased organisational commitment, higher levels of job satisfaction, and increased employee performance** (Avgoustaki, 2015; Bafaneli and Setibi, 2015; Chiang, 2005; Cho, 2009; Jagero et al., 2012; Jones et al., 2008; Royal Economic Society, 2012; Truitt, 2011; US Department of Labor, 2014). In studying a life insurance company in South Korea, Cho (2009) finds through a questionnaire that the incidence of structured on-the-job formal training is positively and significantly correlated with a sense of organizational commitment.

In regards to an employee's intention to remain at the organization and their level of job satisfaction, Jones et al. (2008) and Chiang (2005) find a positive relationship to formal training. Jones et al. (2008)

find that formal trainings in the workplace are positively and significantly associated with increased levels of job satisfaction and Chaing finds similar results in the hotel industry, but notes that in order for the relationship to hold, employees also had to be satisfied with the *quality* of the training received. As was the case with the impact of mentoring and encouraging teamwork, increased employee performance is the most noted impact of formal training. The US Department of Labor observes that high quality, relevant trainings can improve productivity and decrease the costs associated with turnover (2014). Empirical evidence for this claim is provided by Truitt (2011), who found that employees who felt that they had received updated training felt that their job proficiency level had increased. Jagero et al. (2012) examined the courier industry in Tanzania and found the same results. Bafaneli and Setibi (2015) found similar results when studying Botswana's hotel industry, but noted that in order for employees to successfully implement lessons learned during the training, work and time constraints needed to be manageable. Avgoustaki (2015) further specifies this relationship, noting that formal trainings can increase work productivity through two channels; trainings increase an employee's skill level and trainings also work to increase an employee's motivation.

Beyond the impact of formal trainings on participants themselves, evidence of spill over effects have also been found. De Grip and Sauermann found that when half of a team or unit has participated in a training, the performance of trained team members increased by around 10 percent, while the performance of untrained team members notably increased by around 2.5 percent (Royal Economic Society, 2012). However, the authors also find that the results are time sensitive in that improvements are highest in the weeks immediately following training and decrease over time. Jones et al. (2008) also add caveats to the positive relationship between formal workplace trainings and increased employee performance, noting that trainings lasting less than two days in length do not appear to have a beneficial effect on employee performance and also noting that the training must cover a large proportion of the work population or team if it is to be effective.

In regards to methodology, most of the studies discussed above use a questionnaire approach in which the training participant is asked directly about how they thought the training impacted their job performance. However, Jones et al. (2008) used five different indicators to measure job performance; the rate of absenteeism, the rate of quitting, and an evaluation by managerial staff of the organization's financial performance, labour productivity and product quality.

6.4 Job Rotation Programmes

Job rotation programmes, as defined in Table 2, are another method of KT, although somewhat less common than mentoring/ coaching or formal trainings. **Impacts of effective job rotation systems include enhanced networks, higher levels of employee motivation, increased organizational performance, and most noted, higher retention or lower turnover rates** (Bruce, 2012; Coy, 2013; Kaymaz, 2010; McLean and Co, n.d.; Mohan and Gomathi, 2015; Willer, 2016). Willer (2016) notes that participation in an organization-wide job rotation program allows employees to expand their networks as they come into contact with colleagues that they had previously had less interaction with. This also aids in a breakdown of departmental knowledge silos common in some organizations.

In regards to higher levels of motivation, Mohan and Gomathi (2015) found that job rotation systems can work to decrease feelings of monotony in employee's work tasks and ready employees to deal with managerial challenges, which in turn increases the level of motivation of the employee. Empirical evidence from Kaymaz (2010) studying the Turkish case also supports this conclusion.

While in the previous sections, increased employee performance was commonly seen as an indicator of effectiveness, here increased organizational performance is seen as an indicator of success. This organization wide improvement can be linked to improved skill sets among individual employees (Willer, 2016), addressing organizational skill gaps, finding the right job-placement or “fit” for employees and meeting fluctuating organizational demand through mobility (McLean and Co, n.d.).

The most noted impact of effective job rotation programmes is a reduced rate of staff turnover, or a higher retention rate. McLean and Co. (n.d.) note that job rotation schemes signal an emphasis on employee development and find that companies that emphasis employee development through initiatives such as job rotation schemes are 1.5 times more likely to retain their employees as compared to companies that do not emphasis employee development. They also note that rotation programmes retain high quality employees through increasing their engagement and may attract younger employees due to the increased development opportunities (Coy, 2013; McLean and Co., n.d.). Bruce (2012) observes that this decreased turnover also results in lowered costs for the organization as learning and on-boarding costs subsequently decrease.

6.5 Communities of Practice

The impacts of effective communities of practice, as defined in Table 2, are somewhat less studied compared to the impacts of the KT methods discussed in the previous sections. **The literature that does exist notes that the impacts of effective communities of practice include broadened networks and increased domain competencies among employees and reduced costs for organizations** (Fontaine and Millen, 2004; Ropes, n.d.; Zboralski and Gemunden, 2006; World Bank, n.d.). Zboralski and Gemunden explain that participation in an effective community of practice, which could involve frequent communication through a common language and shared knowledge base, members increase the size and strength of their social networks and accordingly develop higher levels of social capital. Fontaine and Millen, Ropes and Zboralski and Gemunden also note that through this increased networking, personal knowledge is shared and retained by participants, resulting in a higher level of competence within the subject area of the community of practice. This may in turn lead to the participant being seen within the organization as a subject-matter “expert”.

Lastly, it is also argued that effective communities of practice will result in a cost savings for the organization that hosts them. Specifically, it is noted that communities of practice can work to decrease the amount of time and resources spent on on-boarding new employees, help existing employees learn new subject matter faster and ultimately lead to increased customer satisfaction as employees will be more knowledgeable in addressing customer demands and needs (Fontaine and Millen, 2004; Zboralski and Gemunden, 2006). However, the World Bank (n.d.) notes that being a member of a community of practice does not automatically instil the benefits discussed. Instead, members must actively participate and engage within the group to reap the potential benefits, meaning that results or impacts of communities of practice will vary widely between employees/ individuals.

7. Conclusion

This review of KT literature has elicited numerous valuable findings that can be used to guide the implementation of the CD4D project. First, the review has shown that there is a wide array of methods used to transfer knowledge from one colleague to another and that the method selected is usually

dependent upon whether the knowledge to be transferred is explicit or tacit in nature. Commonly used methods to transfer explicit knowledge include manuals, formal trainings, process documentation, expert systems and job aids. Methods commonly used to transfer tacit forms of knowledge include mentoring, teamwork, on-the-job training, storytelling and communities of practice.

Second, the review has also exposed factors that can work to facilitate or inhibit knowledge transfer at the individual, organizational and national levels. Individually, most of the literature concurs that a high level of trust, organizational status and passion, the sharing of a common language, a high level of capacity and open-mindedness among colleagues and a social network that is comprised of a broad range and high levels of social cohesion, tie-strength and embeddedness will lead to increased levels of KT. At the organizational level, scholars largely agree that a collaborative organizational culture, a safe psychological environment, a high degree of organizational trust, a lack of time restrictions, ample organizational resources, the offering of rewards, organizational absorptive capacity and industry similarity improve the chances that KT will occur. Lastly, at the national level, scholars find that the presence of distinct cultural differences, xenophobic attitudes and a small power-distance may obstruct or make KT more difficult to complete.

Third, the review thoroughly assesses metrics and indicators commonly used to measure the incidence of KT. It was discovered that metrics can be knowledge-based, performance-based, or behaviourally-based and that each of these approaches have their unique merits and disadvantages. The review identified the measurement of the quality and effectiveness of KT to be a critical gap in the literature, as there are very few studies that aim to address this subject. It is suggested in the review that KT effectiveness can be indirectly measured through examining the individual and organizational effects of effective mentoring, teamwork, formal training, job rotation programmes and communities of practice.

The review also identified a broader literature gap in that most of the sources consulted in this paper were either written for a corporate audience or focus on for-profit businesses. While this literature provides useful information on knowledge transfer in general, very few studies focus specifically on knowledge transfer in the context of the temporary return of diaspora members. Maastricht Graduate School of Governance's evaluation of the CD4D project therefore aims to address this gap by providing crucial information on what actually facilitates or obstructs knowledge transfer and how knowledge transfer behaviours and activities can be properly measured.

8. References

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