A model for effective international knowledge exchange

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ABSTRACT

Road transport administrations around the world learn from each other by taking part in various forms of knowledge exchange. A qualitative study using an inductive approach has been conducted to explore the potential for improvements of impact and results of such exchanges based on views and experience of exchange participants. To collect data, individual interviews with exchange participants in one organization have been undertaken. The data have been analyzed using thematic analysis. The interview findings have been consolidated and triangulated by focus groups and discussions with individuals.

The investments in knowledge need to be justified in terms of increased capacities and improved performance. The findings indicate that there is a potential for increasing the returns of the knowledge investments by making improvements throughout the entire knowledge exchange process. A model is proposed to make knowledge exchanges more effective. The model emphasizes needs definition at the outset of initiatives and results orientation. Well-defined needs determine the design and implementation of the knowledge exchange process and form the foundation for assessing results.

The study is context-bound and small-scale, and the validity and the reliability are therefore restricted. Although the study is undertaken within one organization, the results are likely to have relevance for other organizations that take part in such international cooperation.

Keywords: international cooperation, knowledge exchange, capacity development, public sector
INTRODUCTION

In the road transport sector, as in other sectors, people and countries depend on each other for development. Organizations in different countries work under different external and internal conditions, but the ideas and solutions of others can be adapted to and applied in individual working environments. Knowledge exchange is a process that connects people and organizations for the purpose of learning from each other and strengthening capacity and performance. The capacity development takes place at both the individual (participant) level and the organizational level. At the individual level, it occurs when employees of one organization interact with professionals of organizations abroad. At the organizational level, the exchange of knowledge amongst individuals translates, over time, into the organization’s capacity, consisting of systems, policies, practices, etc.

The large number of organizations and professionals that take part in various forms of knowledge exchange demonstrates that knowledge from abroad is in demand. Knowledge exchange across borders takes different forms, such as through long-term bilateral cooperation between national road transport administrations and membership in international forums. It can also take more ad hoc forms, such as conduction of study tours abroad and attendance at international conferences, seminars, and that alike. Committee work, working groups, cooperation projects, and staff exchanges are common long-term methods, while study tours and conferences are common short-term methods.

An organization’s investments in knowledge exchange need to be justified in terms of increased capacities to perform its functions and responsibilities. The question of justifying the resource use becomes particularly significant in times of economic recession and budgetary restraints. This research is triggered by a perception that there is a potential for getting more out of this learning and development opportunity and resource use. While the aim of the study is to explore the potential for improvements in the process of international exchanges, the overall purpose is to improve the results of such exchanges. Based on the study findings, a needs-based and results-oriented model for knowledge exchange is developed.

LITERATURE REVIEW

International knowledge exchange is a complex process involving individual, interpersonal, intra-organizational, inter-organizational, and multicultural aspects. Most academic literature related to the study topic concerns private companies that see knowledge as a means of fostering innovation and competitive advantages in the market. Public organizations are also regarded as knowledge-based organizations, but there exists little research in this area, neither within nor between such organizations. A probable reason for this limited body of research could be the non-profit nature of the public sector, and thus, there is little motivation for researching the issue (1). In contrast to private companies, public entities are concerned with producing public services and goods, and they are driven by political goals and priorities. Despite different drivers and goals, research on private companies is useful for the study. This review provides a theoretical context of the study and includes issues of particular relevance to the topic.

To avoid possible confusion, the paper uses the term knowledge exchange for exchange of knowledge between organizations, and the term knowledge sharing for sharing of knowledge within an organization.

Knowledge Management

International exchanges involve different strategies to learn from other organizations abroad, and to manage and make use of the knowledge acquired. In knowledge exchange, tacit knowledge has a key role. As opposed to explicit knowledge, which is knowledge that can be expressed in words, numbers, and symbols, and stored in books, computers, etc., tacit knowledge can only be obtained from personal experience and social interaction (2 and 3).

The importance of tacit knowledge in organizations has received considerable attention. Studies have found that around 80 percent of what an organization knows can be characterized as tacit knowledge (4), and that workers spend a third of their time looking for information and are five times more likely to turn to a co-worker rather than to an explicit source of information (5).

There are various perspectives of knowledge management in organizations (4): the technology perspective, the organizational structure perspective, and the environmental perspective. The technology perspective favors the use of information technology to enhance knowledge storage and
sharing. The organizational structure perspective implies that knowledge should flow by means of social interaction and administrative practices. In the environmental perspective, human behavior and social norms determine how effectively an organization manages knowledge. Some research is critical to the technology perspective (5, 6 and 7). It is argued that knowledge work depends primarily on behaviors, attitudes, and motivation of those who undertake and manage it, and not on using information technology.

**Individual and Collective Learning**

In knowledge exchanges, participants learn both individually and collectively. Individual learning styles is a complex and contentious issue. There exist various models including the experiential learning model (8 and 9), the model of managerial experiences of decision-making and problem-solving (10), the VARK (neuro-linguistic programming) model (11), and the Myers-Briggs Type Indicator (12). Unlike other models, the latter addresses a person’s entire personality, including learning style.

When it comes to collective learning, there are two concepts that have particular relevance to this study: team learning (13) and communities of practice (14). The former is a collective learning process in which a team is formed to carry out a project or solve a specific task. A community of practice is a group of people (network) who engage in a shared domain of activities. Both teams and communities facilitate in particular the transfer of tacit knowledge among the members.

**Knowledge Sharing within Organizations**

The sharing of knowledge acquired abroad within the participating organizations forms an essential part of the knowledge exchange process. Knowledge sharing within organizations is challenging for many reasons. It is largely voluntary and subject to employees’ perceptions of knowledge ownership (15). Employees who perceive organizational ownership of knowledge are more prone to share their knowledge than those who perceive individual ownership of knowledge. Individuals may believe that they own their tacit knowledge in particular, since it is embedded in people’s minds.

Conditions that influence knowledge sharing within organizations have been subject to considerable substantial research. Most of the research that has been published in this field focuses on large, commercial companies (16). It is argued that there are differences between private and public organizations, but there is no evidence of which barriers are more dominant than others in the various environments. Studies in the public sphere indicate that organizational factors can be more critical than individual factors (17 and 18). While organizational factors include lack of rewards, recognition, and management support, individual factors include lack of time, interaction, and interpersonal skills.

**Innovation**

Knowledge exchange across borders facilitates disseminating and stimulation of innovation. The concept of open innovation (19) implies that organizations should use both external and internal ideas in order to advance their processes and products. To foster innovation, the organizational environment needs to breed rather than squelch new ideas. As boundaries between an organization and its environment have become more permeable, innovations can more easily flow inwards and outwards.

In open innovation processes, boundary spanners play a key role in linking internal networks with external sources of information and ideas. Good ideas tend to develop over time in people’s minds as they stumble across related ideas from others (20).

**Cross-cultural Communication**

In international knowledge exchanges, professionals interact and communicate in multicultural settings. The greater the differences between cultures, the greater the chance of cross-cultural miscommunication (21). Traditionally, cross-cultural communication focuses on comparative differences and similarities between cultures. More emphasis is now being placed on cross-cultural interdependence, and the management of cross-cultural issues is increasingly seen as a form of knowledge management (22). Knowledge about basic traits of other cultures can reduce frustrations and enhance interactions and communication across borders. Both training and international experience are necessary for developing competence and sensitivity in cross-cultural issues (23).
There exist several models in the field of cross-cultural communication (23, 24 and 25). These models present stereotypes on different nations’ and groups’ cultures, and they are intended to serve as guidelines for better understanding of cultural conditions at the societal level, not at the individual level. There exist, however, little empirical data on where countries are located in the various dimensions and classifications used by such models.

METHODOLOGY

The study is conducted in a real life setting with the intention of obtaining insights into the topic from the perspective of participants in exchanges. The methodological approach is qualitative and inductive; an approach that is well suited for this kind of studies. The primary method for data collection has been individual semi-structured interviews. Such interviews allow for probing of opinions and for following up new leads, and this is important when exploring subjective meanings. The interviews were analyzed using thematic analysis.

The interviewees in this study are employees of a public organization, who take part in cross-border knowledge exchange. The number of interviews in this kind of studies tends to be around 15 +/- 10 (26). In order to obtain a representative sample, six women and twelve men with varied professional background, work experience, and knowledge exchange experience were interviewed. The 18 participants work within 13 different road-related disciplines. As a means of ensuring quality and triangulation of the findings, two series of focus group sessions and discussions with individuals were held. The first series of focus groups involved interviewees only and served to share preliminary findings, get feedback and consolidate findings, and build a collective understanding of the emerging themes. The second series involved non-interviewees from the same organization, and in this series, participants were selected based on their experience and knowledge about international activities and organizational structure and culture. Individual discussions were held with a range of professionals of organizations abroad, who are involved in international exchanges.

The study is context-bound and small-scale, the sampling purposive, and the validity is therefore restricted. It is located within one organizational context, and the findings do not necessarily have application to other contexts. As concerns reliability, this is difficult to achieve in qualitative studies dealing with unique settings. It can be argued, however, that in qualitative research, generalizability of knowledge can be replaced by transferability of knowledge from one situation to another (27). So-called face generalizability is often found in qualitative studies, meaning that there is no apparent reason not to believe that the results apply more generally (28). Discussions with professionals abroad indicate that the results are applicable in other organizations.

FINDINGS

The thematic analysis resulted in six themes. This section summarizes the key findings of each theme and the potential for improvements in the knowledge exchange process.

Preferences for Ways of Exchanging Knowledge

This theme refers to how participants value interaction and communication in exchanges, structuring of exchanges, and kinds of methods and activities.

When it comes to interaction and communication, there is a clear preference for sharing of tacit knowledge through social interaction and networking with other professionals. Face-to-face contact that helps build trust is more valued than virtual contact.

Exchanges of knowledge in small groups are most appreciated, since they ease interaction and communication, and thus tacit knowledge sharing. Exchanges that have clear objectives and relevant technical focus are most beneficial. While well-scoped and bounded exchanges facilitate in-depth exchanges, mingling with professionals of other related disciplines hold the possibility of unexpected ideas and insights. Such boundary spanning can enrich the exchanges.

Multidirectional activities (i.e. knowledge flows in all directions, participants directly exchange their experience, practices, and tacit knowledge) are preferred to unidirectional (i.e. knowledge passed in one direction, involves explicit knowledge, such as lectures, presentations, and written materials), since they involve more dialogue and interaction, and more sharing of tacit knowledge.
The findings show that participants feel more comfortable with, and learn more from, some methods and activities than others. It appears, however, that little or no attention is paid to learning styles and preferences. By taking into account individual preferences for ways of exchanging knowledge, when selecting methods/activities, it is likely that the learning will increase.

**Facilitation of Knowledge Exchange Partaking by the Organization**

This theme refers to how participants view ways of organizing the partaking in knowledge exchange by their home organization.

There is some dissatisfaction among interviewees about the current practice of appointing participants, since it is not consistently based on professional qualifications and responsibilities. The selection process also seems to lack transparency. Successful exchanges depend largely on the participants, and they should be selected based on qualifications and responsibilities. In addition to clear selection criteria, the selection process needs to be transparent in order to gain acceptance among employees.

Participants appreciate shared learning experiences with colleagues. While groups of colleagues go on study tours and conferences abroad, usually only one person takes part in international groups and projects without any formal involvement and support by colleagues. If a group/team of colleagues takes part in the work of the same international group or project, they will gain collective experience and are likely to learn more than one person alone. It will further ease the introduction of new knowledge to the home organization.

Participants sometimes get disappointed at conferences because presentations are outside of the scope of their domain and interest. The conferences themselves are, however, not to blame for this, but rather the organization that sends employees to conferences that are not particularly relevant, and the employees who have problems choosing which presentations to listen to. One cannot expect that all sessions at a conference are relevant and interesting to all attendees. Regardless, there is a need for more careful preparations of conference attendance to make sure that at least parts of the program are relevant. Attendees can also share the conference program with colleagues in advance to see if there are sessions of interest to others. They can attend sessions of own interest and other sessions as proxy information gatherers for colleagues. They can also use social media, such as Twitter, to interact with colleagues during conferences. There is a potential for increasing the benefits of conference attendance by assessing carefully the relevance of conference topics, and by introducing structured arrangements for sharing information between attendees and colleagues during and after conferences.

**Interactions in Multicultural Settings**

This theme refers to how participants experience interactions between different cultures and countries.

Language is the most frequently expressed barrier in multicultural settings. English is the working language in most international cooperation, and the problem arises because of one’s own lack of English skills, other people’s lack of English skills, or both. The sample demonstrates the significance of language for effective communication, and that English skills should be considered in the selection of participants along with their professional qualifications and responsibilities.

Participants should be prepared for improving their English through training when needed.

Other challenges are rooted in different cultural styles, worldview, and individual personality. Interviewees experience greater cultural clashes when the countries represented in exchanges are at different stages of development and have very different needs. Participants may also hold a different worldview that by itself makes it hard to communicate and develop a shared understanding. Different attitudes to time and deadlines cause frustrations. Different time orientations hamper the work in international groups and projects that depends on timely contributions by all members. Furthermore, it takes time for some people to feel confident and develop trust in a multicultural group. In addition to tactful and sensitive conduct, it is necessary for participants to understand the social and cultural contexts of the knowledge and experience found abroad. The technologies and solutions of others usually need to be adapted for utilization in a new context, or may not be applicable at all.

The challenges in multicultural settings give rise to a preference for cooperation within the same geographic region. At the same time, participants stress that knowledge needs should guide the selection of partners and forums for cooperation, and that they have to cope with various cultures. In addition to good language skills, it is also important to be cross-culturally competent. In order to
increase the outcomes of exchanges, the organization should provide for cross-cultural training to raise awareness of cultural diversity, and develop cultural sensitivity among participants.

**Introduction of New Knowledge in the Organization**

This theme refers to how participants introduce knowledge from abroad in their home organization, and factors that influence the introduction.

Sharing of new knowledge in the organization is largely self-organized and informal, and it occurs mainly when participants carry out their ordinary tasks and socialize in networks. In general, participants prefer dialogue and social interaction, and they seemingly emphasize the environment and organizational structure in their knowledge sharing rather than the use of information technology. They miss, however, the opportunity to present and discuss knowledge acquired abroad in organized, formal sessions. With the view to improve the introduction of new knowledge, the organization should facilitate organized, formal sharing schemes.

The knowledge sharing is constrained by both individual factors (time and attitudes) and organizational factors (organized sharing schemes and support from managers and colleagues). While many participants appear to be motivated to share knowledge, both participants and their colleagues and managers seem to lack time. More time should be set aside for knowledge sharing by everyone involved, and managers and colleagues of participants should take a more active part in the introduction of foreign knowledge.

It is important that participants act as catalysts to initiate and influence developments and changes in the home organization, but many of them are not fully aware of, or conscious about, this role. The participants’ capacity to act as catalysts should form part of the selection criteria in addition to professional qualifications, responsibilities, availability, and language proficiency.

**The Receiving Environment**

This theme refers to how participants perceive conditions in the organization in terms of receiving knowledge from abroad.

Participants do not perceive the receiving environment as favorable as it ought to be. The organization is not properly prepared for receiving foreign knowledge because of both cultural and structural barriers. Cultural barriers include resistance to change and negative attitudes toward foreign knowledge. Structural barriers include lack of demand for the knowledge, and lack of integration and priority of knowledge exchange initiatives. It is reasonable to assume that the structural barriers have to do with a lack of proper needs definition, and anchoring of knowledge exchanges in the organization.

Results of international exchanges are likely to increase by better needs definition and anchoring of knowledge exchanges. Cultural barriers are hard to change, but they can probably be reduced by improving structural conditions.

**Benefits of Knowledge Exchange**

This theme refers to how participants perceive benefits for themselves as individuals and for the organization.

Individual benefits include professional and personal development, enhanced cross-cultural understanding and skills, and increased job satisfaction. Participants appreciate the opportunity to work internationally, and they regard the activities as a source of inspiration and motivation for doing a better job.

While the returns of exchanges at the individual level appear to be substantial, the returns to the organization seem to be more varied. The intended capacity development at the organizational level should be reflected in the application of the knowledge from abroad. New knowledge is applied when a change in policy, standards, guidelines, or practice takes place. The sample shows great variations in this regard. The constraints in the knowledge exchange process identified in previous themes apparently impede the organization from taking full advantage of the international exchanges. The organization should therefore adopt a more results-oriented approach and make efforts to remove or reduce the identified factors that constrain the application of new knowledge from abroad.

The capacity development of the organization is not always known, and accordingly, hard to show since there is no monitoring and assessment system in place. It therefore seems appropriate to
introduce a system for monitoring of progress and for assessment and demonstration of results. The defined knowledge needs should form the foundation in such a system. It appears most suitable and acceptable to base such a system on participants’ accounts and reflections.

**PROPOSED MODEL**

The findings indicate a potential for enhancements throughout the knowledge exchange process, and it therefore seems reasonable to take a holistic look at the process and consider it in a life cycle perspective. From the findings, it is possible to establish process steps to make up the life cycle. While each step is critical on its own right, they are interdependent and follow a certain sequence.

**FIGURE 1** The knowledge exchange life cycle.

The eight steps forming the life cycle are illustrated in Figure 1. The various steps can be grouped into four phases as shown in the figure. It should be noted that the sequence of steps of the design phase (2, 3 and 4) can be altered, but ideally, participants should be selected first, then be involved in the further design of initiatives. It should also be noted that for long-term exchanges, the steps of the implementation phase (5, 6 and 7) form a cyclic and continuous sub-process, as sharing and adaptation of knowledge in the home organization happens both during and after exchanges. Monitoring of progress should be embedded in the implementation phase. The defined knowledge needs should guide the monitoring. Here follows a description of the process steps.

**Step 1 – Defining Knowledge Needs**

A decision to acquire foreign knowledge should be based on defined knowledge needs. Defining knowledge needs is about identifying, articulating, and justifying needs for knowledge from abroad. Clearly defined needs are important as they determine the intention and direction of a knowledge exchange initiative, guide the other steps, and form the foundation for monitoring progress and assessing and demonstrating results of the knowledge exchange.

A knowledge need is the gap between current knowledge and desired knowledge. The organization may have a number of areas in which it needs to develop capacity. Time and money will usually not allow all needs to be addressed through knowledge exchanges with other countries, and it will be necessary to prioritize the most pressing needs or needs in areas of high priority.

Knowledge needs can be classified as reactive and proactive. Reactive needs are needs that emerge in response to identified gaps in knowledge. Such needs can be based on concrete problems or...
projects that require new solutions or ways of working. Proactive needs are intentions to identify opportunities for improving capacity. In such cases, the intention can be to identify good practices, benchmark, and keep pace with the developments.

When a reactive need is identified, one has to consider whether it is necessary to go abroad to acquire new knowledge, or whether the knowledge needed already exists within the country, or within the organization. Another issue of attention is what other capacity development efforts are ongoing or planned within the organization.

Teams consisting of employees (including prospective participants) and managers within the disciplines concerned should be involved in the process of defining knowledge needs, while the management should make decisions on knowledge exchange initiatives. Defined knowledge needs should express expected intermediate results (participant capacity development) and expected knowledge exchange results (organizational capacity development).

It is important to anchor defined needs for foreign knowledge in the strategic and operational plans of the organization, and to align the needs with organizational goals and priorities. A knowledge exchange initiative is usually one of several capacity building efforts the organization implements to achieve organizational goals, and thereby improving performance. Organizational goals state the level of performance the organization has to achieve. Knowledge exchanges alone will not enable the organization to achieve its goals; they can only contribute to the achievement.

**Step 2 – Selecting Participants**

Participants play a critical role in the knowledge exchange process, as its success largely depends on having the right kind of employees involved. It is important that participants have a strong sense of the defined knowledge needs, and that they work in an environment that allow them to act on and share the knowledge they acquire. The organization should select employees who are willing and suited to partake in exchanges and act on what they learn.

Participants should be selected according to certain criteria and in a transparent manner in order to gain acceptance among employees. Criteria for selecting participants should include: i) professional qualifications and work experience that match the defined knowledge needs, ii) a good command of the English language. (The organization should provide for English language training if needed.); iii) position and responsibilities that foster introduction of new knowledge in the organization, iv) catalytic skills and ability to initiate, influence, and drive developments and changes in the organization, and v) time available to take part in exchanges throughout the process.

In addition to these criteria, it is important that participants are able to act in multicultural settings. The organization should provide for cross-cultural training in order to raise awareness of cultural diversity and for the participants to develop cultural sensitivity.

Groups/teams of colleagues, rather than individuals, should be engaged in all kinds of knowledge exchanges. Groups/teams engaged in exchanges will gain collective experience and is likely to learn more than one person alone, and it will become easier to share and introduce new knowledge in the organization. By involving groups/teams, the organization also becomes less vulnerable to staff turnovers. Groups/teams of participants will require more resources, but, if budgets are restricted, it is better to have groups/teams in fewer exchanges than to have one participant in many.

Participants should take part in short-term exchanges (study tours and conferences) in groups. With the view to enrich the learning process, they should preferably have diverse qualifications, experience, and perspectives. In long-term exchanges (committees, working groups, cooperation projects), participants should take part as team members rather than as individuals. Teams should be small – 2-4 members – to ease cooperation and communication. As for short-term methods, they should preferably have diverse qualifications, experience, and perspectives. They should further have the ability to contribute to positive group dynamics. Each team member should know his/her role and responsibility in the team.

**Step 3 – Selecting Methods**

The defined knowledge needs should guide the selection of methods. In addition, one should consider the participants’ preferences for ways of exchanging knowledge (if they have already been appointed), budgets, and timeframes. Finding a good match between individual preferences for ways of
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Exchanging knowledge and methods can enhance the learning process. Participants can make use of diagnostics, such as the Myers-Briggs Type Indicator, to learn more about their personality and how they function in exchanges. A knowledge exchange initiative can consist of a single method or multiple methods depending on the knowledge needed.

Each participant has his/her preferences, but there are some common features. Participants tend to prefer sharing of tacit knowledge through social interaction and networking with other professionals. It is easier to build relationships and trust by face-to-face interactions than by virtual means of communication. Exchanges of knowledge in small groups ease the interaction and communication among group members. While well-scoped and bounded exchanges facilitate in-depth learning, crossing the boundaries of one’s own discipline can lead to unexpected insights and ideas.

Multidirectional activities (knowledge flows in all directions, participants directly exchange their experience, practices, and tacit knowledge) are generally preferred to unidirectional (knowledge passed in one direction, involves explicit knowledge, such as lectures, presentations, and written materials), since they involve more dialogue and interaction, and more sharing of tacit knowledge.

**Step 4 – Selecting Forums and Partners**

Like the selection of methods, the defined knowledge needs should guide the selection of forums and partners. The selection of forums and partners is closely connected to the selection of methods. Participation in international forums usually offers both long-term methods (committees, working groups, and cooperation projects) and conferences and similar short-term events. There exist both multidisciplinary and specialized forums, and they serve global or regional audiences. In cooperation with partners (usually similar organizations in other countries), common methods are study tours, staff exchanges, and cooperation projects. A blend of participation in international forums and bilateral cooperation can be useful, since it provides for different perspectives and exposure to various ideas, experiences, and solutions.

Participants should be engaged in the search for relevant and transferable knowledge and in the choice of forums and/or partners. Information on where to find relevant knowledge might exist, but it can be worthwhile to explore different sources before making decisions. One can consult with prospective international forums and national organizations abroad, and conduct searches in virtual libraries and databases. As regards partners, one has to make sure that prospective partners have the resources and capacity to take part in exchanges.

Both regional and global cooperation should be considered depending on the knowledge needed. By way of example, hard-core technologies can more easily be adapted from everywhere, since context and sociocultural factors do not matter significantly. Soft issues, such as work practices, usually require more cultural similarity.

**Step 5 – Exchanging Knowledge**

Exchanging knowledge in multicultural settings can be challenging. When people with different ethnic and cultural background, language, worldview, attitudes, personalities, and expectations gather, there will usually be some tensions and problems. In addition, budgets and time constraints can hamper the learning process. At the same time, working with people from other countries and cultures can be inspiring and enriching. People with different frames of reference and mind-sets, who work under different internal and external conditions, can provide each other with new ideas, insights, and perspectives. Although conditions in other countries can be very different and not comparable, learning about them can contribute to a better understanding one’s own situation and trigger new thinking.

While the primary intention is learning, knowledge exchange is also about contributing. It is important that participants actively engage in the work by contributing their knowledge, discussing the knowledge, and absorbing and making sense of others’ knowledge. As emphasized in step 2, groups/teams of colleagues from the organization should take part in exchanges, and participants should share impressions and viewpoints among themselves during exchanges in order to enrich the learning process.

In international settings, one cannot expect active cooperation and contribution by all participants. There might be people who, for various reasons, are not able or willing to make a substantial contribution to the work. Participants further have to pay attention to cultural and social
norms, and act tactfully and be sensitive to cultural diversity. They need to understand the social and cultural contexts of knowledge and experience found abroad.

Attendance at international conferences needs particular attention. In contrast to other methods, they mainly facilitate sharing of explicit knowledge without a defined context. In order to optimize benefits from conferences, the organization and prospective attendees should make sure that the conference topics match the knowledge needs. Attendees should review the conference program with colleagues before the events, and they should act as proxy information gatherers for non-attending colleagues during conferences. The use of social media, such as Twitter, during conferences allows anyone to participate virtually, and attending and non-attending colleagues can interact during conferences in addition to having discussions after the events.

Step 6 – Sharing Knowledge

If the participants do not share and disseminate what they learn abroad with their colleagues and managers at home, the exchanges are of little use to the organization. Both individual and organizational factors influence the knowledge sharing. The willingness and ability of employees to share their knowledge depends on factors such as attitudes and time. Organizational factors include arrangements and opportunities for sharing and support from colleagues and managers. While organizational structures and working environment have high impact on the flow of knowledge within the organization, the use of ICT for storing and sharing of knowledge plays a supplementary role.

Both participants, colleagues, and managers have to set aside time for knowledge sharing activities. The role of managers is to encourage, facilitate, and monitor the sharing. Sharing of knowledge is not a one-off activity; it should take place continuously. In order to engage the participants’ colleagues and managers, they should be involved from the beginning of exchanges. It is particularly important that colleagues and managers are supportive and engaged during long-term exchanges.

Sharing of knowledge should take place within participants’ unit, in existing networks, and at the organization level. It should emphasize dialogue and social interaction (oral sharing) that allow tacit knowledge to be shared, in addition to explicit knowledge. Sharing should further take place in both informal and formal ways.

Informal sharing is the self-organized and spontaneous sharing that occurs when participants interact and socialize with colleagues while carrying out their daily tasks. Managers should encourage such informal sharing, and they should also facilitate formal and structured sharing arrangements where participants can present and discuss their new knowledge and experience with colleagues. Such arrangements can consist of presentations and discussions in staff meetings and projects meetings, in existing networks, and in information sessions and seminars.

In addition to informal and formal oral (face-to-face) sharing that provide for high richness of knowledge, sharing should take written forms to increase the reach of new knowledge. Participants should distribute or make colleagues and managers aware of relevant documents resulting from exchanges (technical reports, study tour reports, conference papers, etc.). In order to reach everyone in the organization, participants should make use of the organization’s intranet to publish information, own reports, newsletters, articles, etc.

Step 7 – Adapting and Applying Knowledge

A successful knowledge exchange implies application of the knowledge acquired abroad in a way that contributes to achieving organizational goals. However, one cannot transfer knowledge directly from one country and culture to another. Useful approaches, practices, and solutions in one country have to be adapted to suit the specific context and needs of another. It is therefore necessary to appraise to what extent, and in which ways, the knowledge of others are applicable and can be effective in the organization’s environment.

The adaptation process includes appraisals of applicability. Such appraisals may include further research, practical testing, and/or demonstration to verify the applicability and usefulness of new knowledge. For new knowledge to be applied, it may also be necessary to change or modify existing administrative, legislative, or technical regulations. The adaptation process may therefore take considerable time. Appraisals of applicability may even conclude that knowledge found abroad cannot be put to use in the home environment, or that it does not suit the specific needs of the organization.
It is crucial that participants act as catalysts to initiate, influence, and drive the process of adapting new knowledge. Managers need to motivate participants and monitor the adaptation process.

**Step 8 – Assessing and Demonstrating Results**

Results assessment and demonstration is important in order to know and show what has been achieved. Assessments of result can also serve to guide future knowledge exchange initiatives and reduce the risk of perpetuating bad practices.

Both intermediate results (participants’ capacity development) and knowledge exchange results (organizational capacity development) should be assessed. The defined knowledge needs should express the expected results. Results are difficult to measure, but they can be assessed or observed. To provide information on results, one should rely on participants’ self-assessments.

**Assessing intermediate results (participant capacity development):** Participants (in groups/teams) should provide their accounts and reflections of what knowledge they have acquired compared with expected intermediate results as expressed by the defined knowledge needs. Participants’ written accounts should be disseminated and discussed with colleagues and managers concerned. In addition, participants should report on unexpected results, such as new ideas and insights they have acquired in related disciplines. The assessments of intermediate results should take place upon completion of exchanges.

**Assessing knowledge exchange results (organizational capacity development):** Participants (in groups/teams) should provide their accounts and reflections on the developments and changes they have created or observed compared with expected knowledge exchange results as expressed by the defined knowledge needs. The participants’ written accounts should be disseminated and discussed with colleagues and managers concerned. In addition, participants should report on unexpected results, such as new ideas and insights in related disciplines that have resulted in changes in the organization. The assessments should take place upon completion of the implementation phase.

**Demonstrating results:** The knowledge exchange results are reflected in the application of new knowledge in a way that contributes to achieving organizational goals. Some results are tangible and easy to observe. By way of example, the organization has increased its capacity in the field of road pavements as it applies new and more cost-effective methods resulting from knowledge exchange. Intangible results, on the other hand, can be hard to observe and demonstrate. For example, the organization has improved its capacity in strategic planning as it applies effective processes that are influenced by knowledge from abroad. It is, however, difficult to trace the foreign knowledge part of the improved capacity, since there are other contributing factors. Attribution can be tenuous, but it is still important to look for connections with the knowledge exchange. In any case, the organization should be informed about the results of knowledge exchanges and the contribution to achieving organizational goals.

**CONCLUDING REMARKS**

The findings provide insights into the knowledge exchange process from the perspectives of exchange participants. It is clear that international exchanges contribute to both individual and organizational learning and development. At the same time, the findings show that the process of knowledge exchange is multifaceted and complex and that there are constraining factors throughout the process that prevent the participants and the organization from taking full advantage of the exchanges.

There is a considerable potential for making improvements in the way the organization practices knowledge exchange with other countries. The proposed model is intended to guide policies and practices on effective knowledge exchanges. While the study is undertaken within one organization, discussions with professionals abroad show that the findings have relevance to other organizations involved in international exchanges. The real value of the model can, however, only be demonstrated when it has been used for some time.

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