An Exploratory Study of the Role of Advisory Committees in the Dynamics of Transfer to the Workplace of Knowledge Generated by Research

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Abstract:
Knowledge transfer (KT) is of great concern in the field of Occupational health and safety (OHS). A great number of approaches reveal the complexity related to the dynamics involved in the KT process. This study looked into how advisory committees' use of strong and weak tied networks to better transfer knowledge between the scientific community and the workplace. Our exploratory research uses a case study method and our findings show a positive response to the use of advisory committees including multiple partners.

Keywords: weakly / strongly tied network, committee, OHS

Introduction
For the last few years, the Institut de recherche Robert Sauvé en santé et en sécurité du travail (IRSST) has been interested in the question of knowledge transfer (KT) in occupational health and safety (OHS). One of the reasons for this interest is the fact that the knowledge generated by IRSST-supported research often responds to a need for risk reduction in the workplace. The literature on KT describes a wide variety of
approaches, thus demonstrating the complexity of the KT process. Roy et al. (1995) emphasize the importance of involving the groups of actors concerned at different stages of the process, from the creation stage to the stage of KT. Some authors have studied the characteristics of the ties forged within the networks involved during the creation, development and transfer of new knowledge (Dyer et al. 2000; Hansen et al. (1999); Hansen 1999).

The IRSST plans the use of advisory committees during the conduct of most research projects so as to make optimal use of the networks of intermediaries involved in the KT process. These advisory committees are composed of representatives of employer and unions, the Commission de la santé et la sécurité du travail (CSST), joint sector-based OHS associations and stakeholders concerned with the use of the research results.

This paper will report on the experience of use of advisory committees by IRSST researchers in the particular context of generation of knowledge intended for transfer to workplaces in order to improve their safety. Our results suggest that the use from the outset of an advisory committee comprising a variety of partners and generating rich exchanges among the actors increases the likelihood that a project will generate research results that will be useful to the workplace communities identified at the start of the project.

Literature review

Although the transfer of knowledge (KT) generated by OHS research is of definite interest to workplace communities, we did not find a single empirical study dealing specifically with this issue. Therefore, we extended the scope of our survey, focusing our attention on publications examining the networks and the nature of their relationships within the framework of transfer activities.

To clarify the notion of a network, we used the definition proposed by Jacob and Ebrahimpur (2001). This definition is sufficiently precise and representative to encompass the characteristics noted in most of the literature, and is appropriate for our study. For these authors, the notion of a network, although difficult to pinpoint, is defined as follows:

"... a social network consists of a series of direct and indirect ties from one actor to a collection of others, whether the central actor is an individual person or an aggregation of individuals (e.g. a formal organization)" (Jacob and Ebrahimpur 2001:76)

According to Jacob and Ebrahimpur, the network configuration is presently the most popular structure for promoting KT and organizational learning. Hansen (1999) focuses particularly on KT involving R&D teams and functional (e.g. operational) teams during the creation of new products. He observes that contacts within these networks are distinguished by their closeness and frequency. They can be frequent and close (strong tie) or non-frequent and distant (weak tie), as the case may be. The author raises the problem of redundancy of information in networks characterized by strong ties. In his view, the weak ties existing in certain networks allow them to avoid this information redundancy, which is often non-productive, during product creation. However, although redundancy is avoided during information gathering, this type of
network may generate problems because of the multiplicity of contacts, advice, solutions and ideas put forward by members.

The results suggest that for complex (e.g. tacit) knowledge, networks characterized by strong ties show better results with respect to production time. However, when the transfer involves less complex (e.g. explicit) knowledge, networks with weak ties are more efficient (least time-consuming) (Hansen 1999).

Time is an important consideration in the calculation of transaction costs associated with the creation and maintenance of social networks. For tacit knowledge transfer, the benefits obtained fully justify the maintenance costs (Hansen 1999; Hansen et al. (1999); Dyer et al. 2000). For example, in the automobile industry, KT between producers and suppliers appears to be more effective when the ties within the networks extend over a long period (Kotabe et al. 2003; Dyer et al. 2000). Hansen et al. (1999) mention other costs associated with networks having strong ties. In particular, frequent contacts imply a high degree of emotional intensity and require more energy for maintenance. The authors emphasize the importance of reciprocity (exchanges among actors) in the network. Sometimes, the central (focal) actor must temporarily suspend the pursuit of his objectives to assist his partners in the pursuit of theirs. Although these costs are difficult to quantify, they are an important factor in the decision to use and maintain networking activities.

Hansen et al. (1999) conducted another study on the nature of the ties within networks. They distinguished two types of tasks related to product development, that is, exploration tasks and operating tasks. Exploration tasks require expertise at the outset by the focal actor. These tasks relate to creation and, at this stage, the knowledge is difficult to articulate and generally falls into the category of tacit knowledge. When a new idea is involved, the focal actor benefits from the network by discussing his ideas and views and brainstorming to obtain the maximum amount of information on the subject. On the other hand, operating tasks involve the use of explicit knowledge. The experience required for this type of task includes understanding of the problem and problem solving.

The authors pay particular attention to the richness of the ties within formal networks. Richness is characterized by variety, closeness and reciprocity of contacts. The ties may be strong or weak, depending on whether there is a variety of contacts, greater or lesser closeness and greater or lesser reciprocity. For informal networks, the authors tried to measure the extent of the ties in terms of frequency of contacts, that is, frequent (very dense) or rare (very sparse). The results of the study show that teams assigned to exploratory tasks (as compared to operating tasks) complete their project more rapidly if they have access to a rich formal network (many, strong, reciprocal ties).

Foss and Pedersen (2002) try to identify the most appropriate mechanisms for facilitating KT according to the source of the knowledge. One of their hypotheses is that choosing the right mechanisms can significantly reduce the obstacles to transfer. The advisory committee used by the IRSST could be one such mechanism serving to reduce the obstacles to KT between OHS researchers and the workplace community.

The literature review confirmed the observations put forward earlier by Roy et al. (1995) regarding the challenges of KT. For these authors, the KT challenges are found
not so much in content or technologies, but in the social systems generating and using the knowledge and the interactions among the different systems (Roy et al. 1995:33).

To summarize, the studies uphold the superiority of rich networks for tacit KT because the redundant contacts among the members abet the search for relevant knowledge and strong ties encourage the development of trust, which is needed to facilitate tacit KT. Weak ties, by creating inter-network bridges, are useful for the renewal of ideas through access to non-redundant information.

The studies point to a significant relationship between KT and the types of ties existing within networks. Less complex knowledge, such as technical exchanges, is easily transferred, whether the network’s ties are rich or sparse. However, for complex, often tacit, KT, rich formal networks appear to make transfers possible within shorter periods of time. Thus, rich networks are conducive to tacit KT and using an advisory committee may significantly reduce the obstacles to this type of transfer.

The Quebec Occupational Health and Safety (OHS) Network Context

"University – company" or "researchers – workplace" research consortiums or partnerships are not all networked in the same way. While certain models prefer to clearly separate the creation process from that of KT between the university (researchers) and the company (workplace) (Santoro and Gopalakrishnan, 2000), others consider these processes inseparable, or prefer not to separate them so as to reduce the cultural obstacles between the generators and the users of knowledge, or among the social groups concerned by the knowledge (Roy et al. 1995; Amabile et al. 2001). Roy et al. (1995) emphasize the importance of integrating the creation and KT processes by involving all groups of actors concerned. Amabile et al. (2001) take a similar line, stressing that the creation of new knowledge about organizations requires close collaboration between researchers and practitioners at different stages of the knowledge creation and dissemination process.

The Academy of Management Journal devoted one of its issues to the question of KT between academics and practitioners in the field of organizational management. Few of the studies in the manuscripts submitted involved practitioners in the initial definition of the research problem (14%) or as co-authors once the research was completed (16%). Fifty three percent (53%) of the authors had direct contacts with practitioners during their research, and approximately 3/5 of the articles mentioned the fact that academics and practitioners could learn from each other, suggesting that transfer is not a one-way process.

In Quebec, in the OHS field, the knowledge sought by university or IRSST research generally responds to an identified need for risk reduction in workplaces. Therefore, close ties between researchers and practitioners are essential to ensure the creation of knowledge that is transferable to the requesting workplaces. For this reason, the IRSST has provided for the establishment of advisory committees to co-ordinate the efforts to bring the scientific and workplace communities together and optimize the transferability of the knowledge generated under its auspices through the applied research it supports.

The IRSST operates in an environment where joint management is the norm. Union-employer co-operation implies participation in the decision process by employer and
worker (union) representatives. Quebec law has instituted a network of actors working in OHS on the provincial, sectoral and organizational levels.

At the provincial level, we have the CSST, which is responsible for administering the entire plan, including aspects related to funding of the plan, compensation and prevention. As for the IRSST, it is responsible for developing OHS knowledge and delivering laboratory services to its client groups as needed. The CSST and the IRSST have a joint board of directors comprising seven employers and seven worker representatives. At the sectoral level, certain economic sectors have created joint sector-based OHS associations (ASPs), which are managed by a joint board of directors. Their role is to provide advisory, training and information services to firms in their economic sector. At the organizational level, a joint OHS committee may be established.

Responsibility for occupational health lies with the Ministry of Health and Social Services (MSSS), which works mainly through the regional occupational health agencies. These agencies are responsible for financial administration, strategic directions on occupational health interventions and support for local occupational health teams. They take direct action with companies, producing environmental and health assessments for workers exposed to specific health risks. These actors make up the core of the formal OHS network in Quebec (Figure 1).

Figure 1: Formal Network

There are other stakeholders having ties that are not prescribed by the Occupational Health and Safety Act. These actors intervene occasionally in OHS areas along with the main actors from the formal network. These stakeholders’ ties are normally less frequent, indirect and very often related to specific mandates (e.g. occupational training) (Figure 2). The partners who join the advisory committees often have a variety of informal networks (e.g. manufacturers, consultants, company personnel…). These informal networks enrich the relationships forged within the formal networks. Therefore, these different partners help in the maintenance of ties within the formal OHS network. For example, the IRSST sits on over 75 technical committees, which
contribute to the maintenance of inter-network ties (e.g. CSST-MSSS permanent committee; technical committee on regulatory review, IRSST-CSST prevention committee, the MSSS hygienists group, etc.).

**Figure 2: Informal Network**

![Informal Network Diagram]

**Methodological Framework**

For the purposes of this study, we opted for a synthetic type of research strategy. This strategy is defined by Contandriopoulos et al. (1990: 37) as follows:

*TRANSLATION* Synthetic research is research which, in order to explain and foresee complex behaviours or phenomena, examines all the relationships that cause several dependent and several independent variables to act simultaneously in an interdependent relationship model.

More specifically, we chose an approach based on case study (Yin 1984), which is a detailed study of a specific case. This choice allowed us to describe and explain, in general terms, the situation regarding the OHS network’s contribution to KT aimed at the adoption and use of research results generated by the IRSST. In specific terms, our study focused on the role of advisory committees in the dynamics of transfer of the results of IRSST-supported applied research.

Our study is exploratory. The first stage of our research consisted of identifying the research projects in which KT had proven successful. Our sample of respondents was drawn from the population of researchers working for the IRSST. Six projects were identified as successful by the officer responsible for transfer activities and we conducted interviews with the researchers associated with these projects. The projects were conducted by different multidisciplinary research teams working in the following fields: work organization, safety and ergonomics, safety and engineering, and occupational hygiene. We had access to the available documentation on the projects under study. The interviews with the researchers were recorded with their permission and we had the tapes transcribed by research professionals. The content analysis was done using AtlasTi qualitative data processing software. Several categories emerged in relation to the aspects of networks identified in the previously reviewed literature. The focus of our observations was the role of the advisory committee as liaison between the
different actors of the Quebec OHS network and the researchers (focal actor). We selected a certain number of categories for the content analysis with respect to the ties within the advisory committees. The dimensions considered for the analysis are presented in Table 1.

Table 1: Categorization of the ties between researchers and OHS actors

<table>
<thead>
<tr>
<th>Category:</th>
<th>Criterion or index</th>
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<tbody>
<tr>
<td>Frequency of contacts</td>
<td>Number of contacts among the actors at different stages of the research project</td>
</tr>
<tr>
<td>Variety of actors</td>
<td>Diversity of the actors involved in the research project</td>
</tr>
<tr>
<td>Proximity of interests among the actors</td>
<td>Interest in collaboration between the researcher and the OHS actors (e.g. credibility; complicity)</td>
</tr>
<tr>
<td>Reciprocity of exchanges among the actors</td>
<td>Usefulness of the exchanges for the actors concerned by the research project (e.g. return of results, exchange activities)</td>
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These notions will be used to categorize the researchers’ experience regarding successes and failures during the KT process.

We met in an interview with the IRSST KT officer to learn about the transfer process used by the Institute and to gather information about the advisory committees. This person identified the researchers at the Institute who would be able to answer our questions. The initial objective was to understand the KT "success stories." We had access to researchers in all four IRSST research teams.

The interviews lasted two hours on average. The researchers had over 10 years of service in their positions at the Institute; three had more than 20 years of service.

We had access to a number of documents related to the research projects conducted by the researchers. The researchers shared with us information about their successful KT experiences; however, as more questions were asked, they often compared their successes to their failures, thus enabling us to compare the factors facilitating knowledge transfer to the obstacles to transfer activities.

Results

We are presenting the observations obtained from analysis of the content of our interviews and the documents made available to us using the categories described above: the frequency of contacts, variety of actors, proximity of interests and reciprocity of exchanges among the actors concerned.

The frequency of contacts among actors does not appear to be a major factor for researchers in KT success. During the interviews, the researchers rarely referred to frequency. Rather than frequency, it appears that the time (e.g. phase of the project)
when the actors get involved is a more important factor. Two observations seem to
differentiate the research projects of the “work organization/safety and ergonomics”
teams from those of the “occupational hygiene/safety and engineering” teams. In these
two cases, while the importance of involving the actors concerned at the start of the
process is mentioned, this choice appears to be made for different reasons. For the first
teams, the need to obtain the collaboration of the workplace at the start of the project
stems from the fact that the transfer occurs during the process (interactive and
continual) and without the agreement of the actors involved, no transfer could take
place. For the other two teams, the involvement of the actors at the start of the process
relates to the researchers’ need to be accompanied during the process, so that the actors
can assist the researchers, at the results dissemination stage, by helping popularizing the
results. Thus the creation of the advisory committee at the outset of the project fosters
close linkage between the IRSST researchers and the main stakeholders concerned by
the project. However, the creation of an advisory committee is not an automatic
process (e.g. requires a lot of energy) and as we shall see, certain ties can pose
problems, particularly in relation to proximity of research interests and possibly,
reciprocity in exchanges.

The researchers emphasized the necessity of creating an advisory committee composed
of actors who are able to contribute, through their respective input, to solving the
problems on which the research is focused. Concerning the variety of actors involved
in the advisory committees, the projects characterized by successful KT had an
advisory committee comprising a wide variety of actors. As union-management co-
operation is mandatory in the Quebec OHS context, having employer and union (or
worker in the absence of a union) actors is unavoidable. Thus, the advisory committees
inevitably meet the minimum requirements of joint representation, but they may go far
beyond that. The examples of successful KT identified by the researchers often
involved actors from outside the traditional OHS network (e.g. suppliers, consultants,
hospitals, universities, competitors…). Conversely, the examples of failures usually
involved an advisory committee with a limited variety of actors.

An actor that appears to play a pivotal role in the success of the transfer is the CSST.
The importance of its role is borne out by the statements made by some of the
researchers. The absence of collaboration by the CSST may cause a project to fail. To
this effect, one of the respondents (# 5) stated: “(..) this has happened in the past and
things did not go well (..) With the ASPs it’s OK, but the inspectors who are part of our
advisory committees, it’s not so simple (..) if the CSST doesn’t want to follow up on the
recommendations or the problems, it blocks (..) they have a lot of power.” On the other
hand, having the CSST’s agreement abets KT according to respondent #1, who said:
“what I like about the CSST is the whole inspector network which has direct access (..)
but the CSST is 10,000 (companies), it’s a lot more visibility(..).” Thus it appears that
in some cases, this actor, the CSST, plays a significant role in influencing the results
regarding transfer of knowledge generated by OHS research.

Proximity of interests determines the credibility of the ties forged among the
multiplicity of actors concerned by the research project. According to a respondent
(#6), “it is not true that the workplaces approach the realities of OHS in a disciplinary
manner.” Despite the apparent distance existing among the actors, they may find each
other through common interests associated with the research problems and thus create
sufficient proximity to encourage the generation of knowledge until its transfer. When
the researchers met with the multiplicity of actors involved in the advisory committees, each one played a specific role that contributed to the exchanges. The concerns of these diverse actors are strongly associated with the research problems. For example, while the management and union representatives care for the interests of their respective members (#2, 3), the manufacturer gets involved in the design of the proposed remediation (#1, 3). Or whereas the ASPs are concerned with the impact of the research results on the companies in their sector (#1, 5), the CSST inspectors are concerned about compliance with the regulatory framework (#4). This multitude of interests can eventually create a certain reciprocity between the researchers and the OHS actors.

To have reciprocity of exchanges between actors, there must be discussion of appropriate procedures between the researchers and the workplace community. One respondent (#5) stated: “Naturally, they will facilitate access to collection, to the field, and when we begin to produce preliminary versions of our results, if we are not well aligned, we will know it right away. We will readjust with them, and this is essential.” It sometimes happens that the researchers suspend their scientific activities to respond to specific requests from the workplace, in this way maintaining good relationships with their partners. This reciprocity is essential if the researchers are to maintain their access to the different fields needed for their research project. However, the researchers prefer that the workplaces themselves take responsibility for ensuring the transfer within organizations. One respondent (#3) noted: “They are the ones who will bring it, who will sell it (...) let them get involved and they will do it much more than you ever can.” Moreover, as another respondent (#2) remarked: “Negotiation takes place all the time; it is during this negotiation that a lot of the transfer takes place; that’s a lot more interesting (...) because there is direct collaboration with the engineers.” This was in reference to an ergonomics project where discussions fed the thinking of both parties: researcher and engineers alike, to correct risks at the source.

In conclusion, richness of ties in an advisory committee composed of actors from a variety of networks appears to promote OHS KT (e.g. shorter time, facilitation of popularization…). The researchers never mentioned redundancy of exchanges as a hindrance to the creation of new OHS knowledge. However, the absence or defection of actors associated with the joint OHS network appeared to pose a major obstacle to OHS KT. According to the researchers, the costs and efforts involved in creating and maintaining relationships within the advisory committee are justified by the establishment of solid and lasting ties. Maintaining reciprocity sometimes requires an emotional investment from both sides (e.g. debate, negotiation…), which in itself, if it is well managed, enriches rather than hinders KT.

Discussion and Conclusion

Our results are in line with those of previous studies (Hansen 1999; Hansen et al. (1999); Dyer et al. 2000; Roy et al. 1995) carried out in different fields. They reveal the superiority of networks characterized by rich relationships. The use of “researchers – company” networks may remedy the insufficiency of KT between academics and practitioners by encouraging much more frequent interactions among them, which can promote the sharing not only of explicit knowledge, but also of tacit knowledge. If there is co-operation right from the phase of new OHS knowledge generation among all
the actors concerned by this knowledge, the chances of successful transfer are increased. OHS KT often requires that changes be made to managers’ and employees’ practices and these practices are part of work routines that may be complex and difficult to change.

With the joint labour-management OHS system, time must be spent at the outset of research projects to determine the strategic focus of the projects. The creation of an advisory committee is a helpful, although not sufficient, condition for obtaining IRSST research funds. If the decision to grant research funding is made, this implies the concurrence of management and labour, parties whose objectives may not harmonize initially. However, once this stage is surmounted, the project has a much greater chance of reaching the phase of research results appropriation.

Having a joint labour-management structure, the IRSST was obliged early on to give thought to the problems of KT between researchers and workplaces. In Québec, this thinking has placed the IRSST at the forefront of universities and research centres regarding the dynamics of KT between the scientific community and practitioners. Today, the problem of KT is at the centre of the scientific community’s concerns regarding knowledge-creating activities. This concern is motivated by improvement in information technologies, but also by the funding methods used for supporting research agencies.

The advisory committee is a mechanism of co-ordination that is proving its usefulness for KT at the Institute and could be tried at other research agencies involving the academic scientific community and the practitioner community.

References


