Intra-organizational Knowledge Networks in a Multinational Company

Annukka Jyrämä, Olli-Pekka Kauppila and Risto Rajala

Department of Marketing and Management
Department of Business Technology, Information Systems Science
Helsinki School of Economics, P.O.Box 1210, FIN-00010 Helsinki, Finland [e-mail: firstname.lastname@hse.fi]

Abstract
This study focuses on a challenge faced by multinational companies: how to enhance knowledge sharing across national and divisional boundaries. Through an in-depth qualitative analysis, this article illustrates how cross-functional and virtual teams based on identified internal network structures assist in integrating the knowledge of sales, marketing, and R&D people. Moreover, the present paper demonstrates how the multinational company can create effective spaces and processes for knowledge sharing networks where their employees can both access knowledge and provide to it others, thus mitigating the negative effect of physical and cultural distance on the availability of support and information.

Keywords: Knowledge sharing, virtual teams, intra-organizational networks, management

Introduction

Intra-organizational networking via virtual teams is an emerging strategy for improving inter-functional knowledge sharing (Jarvenpa and Lehder, 1999). The present study investigates the implementation of virtual teams through a longitudinal qualitative research in a single case study setting. In the empirical analysis, we focus on the role of the virtual teams as a part of an intra-organizational knowledge management system. The study sheds light on the challenges and potential benefits of virtual teams in the context of an organization-wide multicultural knowledge networks and enables knowledge sharing. Therefore, this study contributes to the discussions on virtual teams and learning in networks in international and multi-cultural organizations.

The current article poses questions: "How can a multinational enterprise improve its knowledge sharing through internal networks?" and "What is the role of virtual teams in knowledge creating networks?" Particular attention is paid to the context of knowledge, knowledge creation processes, the global setting, and multiculturalism. Knowledge sharing is looked at the level of an intra-organizational network, encompassing virtual team structures and information systems support.

Theoretical discussion

The study builds on literature on learning in networks (e.g., Araujo, 1998, Bangö and Araujo, 1999, Håkansson et al., 1999, Knight, 1999, Håkansson, 1993, Lindqvist, 1993). Learning is commonly defined as the process of creating knowledge (Gibb, 1997). We regard learning and knowledge creation processes as ongoing, dynamic, and social processes that can occur intentionally or unintentionally, in everyday activities (e.g. Araujo, 1998, Ghirda, 1999).

In the IMP group, researchers generally assume that network actors learn by personal experiment, by using the knowledge that is available to them, and that this learning leads to adaptation. Learning occurs at the level of an intra-organizational network, encompassing virtual team structures and information systems support.

Virtual teams have been presented as one solution to the challenges facing multinational companies. Virtual teams are defined as those whose members collaborate, using technology in working across geographical, cultural, and functional boundaries (Kirkman et al., 2004; Martin et al., 2004). While previous studies have discussed virtual teams as few as three and as many as one hundred members (Martin et al., 2004), this paper focuses on teams that are more conventional in size, between five and ten individuals. Recent studies of Vlais et al. (2008) and Ratcheva (2008) argue that processes supporting knowledge synergy and shared understanding make virtual teams a potentially powerful new organizational form. The era of empowering employers to work collaboratively is well established in organizational practice (Peters and Manz, 2007). One of the key examples of collaborative empowered work in organizations is centered on creating virtual teams that are comprised of members who may reside in different time zones and countries (Hovorka et al., 2006; Kirkman et al., 2004). As technology has improved and collaborative software has been developed, virtual teams whose members spread across diverse physical locations have become increasingly prominent (Kirkman and Rosen, 1999).

Denton (2006) argues that it is the ability of electronic and web-based techniques, which has led to the concept of virtual teams. Cusco and Sharygolu’s (2003) emphasize that work can now be conducted anytime, anywhere, in real space or through technology hence overcoming the key challenges facing global companies. Denton (2006) argues that virtual teams can act in a coherent and coordinated way if they have a continuous realtime flow of information about where they are at and whether or not they are meeting expectations. The intranet, when combined with the proper equipment, this makes it easy for group members to see the results of their work and compare that to where they want to go. Thomas et al. (2007) conclude that technology is better technology, participation, team members can spend more time enjoying what they do, and less time under stress and working late-nights or weekends due to missed deadlines and failed virtual team interaction.

Literature on global virtual teams generally frame the impediments to coordination and collaboration as based on divergent national-based cultural attributes, language barriers, and the limitations of information and communication technologies (David et al., 2008). National and local cultures are seen to impact distributed work (Kirkman et al., 2004). Indeed, the literature on global distributed teams generally frames the impediments to coordination and collaboration as well as the limitations of information and communication technologies (ICTs) (Kankanhalli et al., 2007; Mihailova, 2007).

There are many potentially important factors that could impact on virtual teamwork in various ways. In literature, these include trust (Jarvenpa et al., 1998) and shared understanding (Liedtka, 1996), which can be defined as a clear sense of direction for all team members, and depth of relationships (Peters and Manz, 2007). First, without trust, virtual teams could not be effective as individual members would not be willing to take the risk that another team member would act in their self-interest, rather than the team’s (Jarvenpa et al., 1998). Second, in a virtual setting, because team members cannot see one another’s work, it is important that there is shared understanding among roles and responsibilities. This leverages expertise, facilitates coordination, and avoids redundancy and duplication of work (Duarte and Snyder, 2001). Third, Maznevski and Chudoba (2000) show that at the early stages of the formation of a virtual team, face-to-face meetings are important, especially if complex strategic issues are central to the performance of the team.

One of the major obstacles to overcome when using computer-mediated communication is the lack of personal interaction. Without face-to-face meetings, facial expressions and body language are lost making communications between team members difficult to understand especially when cultural differences exist among members of the team. However, organizations can overcome many of the implications posed by the lack of face-to-face meetings by interaction by effectively training (Rozen et al., 2006) and by empowering (Kirkman et al., 2004) virtual teams and their members. To summarize, prior research (e.g. Jarvenpa et al., 1998; Liedtka, 1999) notes that members of virtual teams need a 'sense of community', that is, an open mind and the ability to seek others out and listen to their team members. They also need to possess the ability to deal with conflict productively and be supportive, rather than authoritative, in the team environment.

As the above discussion implicates, knowledge sharing is difficult, particularly when sharing complex knowledge among remote members of homogeneous actors. Moreover, when different actors do not have an opportunity to be in the face-to-face context, as is the case with virtual context knowledge sharing becomes even more difficult. However, as the studies discuss above suggest, there possibly are means to transform virtual teams into effective knowledge sharing conduits. Concerns related to the development of shared, common, or mutual understandings include the influence of geographically dispersion, technology mediated, team members’ perceptions of others’ integrity, ability and benevolence, trust, training, and empowerment. Next we shall proceed to discuss the case and the design of the empirical research. In the same vein, the role of virtual teams is critical in augmenting an organization’s internal knowledge sharing on complex technology and customer-related matters.

Case Vaisala Instruments

Vaisala Instruments is one of Vaisala Corporation’s three business units. Its main business is developing, manufacturing, and selling industrial measurement applications. Of Vaisala’s other two business units Vaisala Measurement focuses on meteorological measurement devices, whereas Vaisala Solutions provides its customers, such as road administration agencies, with comprehensive environmental measurement systems. Vaisala Instruments (VI) accounts for approximately one third of Vaisala Corporation’s annual sales of 224 million euro (2007). In a similar vein, VI employs one third of Vaisala Corporation’s thousand employees and generates slightly more than one third of Vaisala’s annual profit of 17 million euro (2007).

Particularly interesting about Vaisala is that 97 percent of its sales come from outside its home country, Finland. Thus, the company has an extensive sales and service network, with 24 offices in 12 countries serving different customer groups. The company, therefore, on all have their own dedicated salespeople. Vaisala has some 440 (39 percent salespeople) scattered in different locations around the globe. Despite this global sales presence, most VIs other functions and operations are located in its headquarters in Finland. In particular, all VIs R&D and product line marketing functions reside in the company headquarters near Helsinki.
The only noteworthy exemption is Vaisala’s Boston office, which provides technical services to Vaisala’s customers in North America. Yet, neither R&D nor product line marketing have physical presence in Boston as these activities are centered in Finland.

The business process structure of VI’s organization builds on three main functions: R&D, product line marketing, and sales. The primary task of R&D is to generate new products that may reveal products’ deficiencies and can be further used when improving existing products or developing new products.

Second main function is the product line marketing, which acts as the commercial counterpart of R&D. The primary function of the product line marketing is to coordinate all activities that revolve around the products and product families. These tasks include, for example, providing salespeople with product-related information, representing the customer in product development, and finding new markets and applications for the products. The third main function is sales, which is the primary function of the sales organization. Thus, in this role, salespeople are in most need for product-related information, while at the same time, they are the main provider of information on customers, markets, and product feedback. Unlike the employees of other two main functions, salespeople are spread in numerous locations around the world. Further, where nearly all R&D and product marketing people are Finnish, salespeople represent more than 20 different nationalities.

Method

Because of the complexity of the phenomenon under study, a single case study approach (e.g. Stake, 2000) with several data collection methods; e.g. participant observation, interviews, and a survey based social network analysis (SNA) was chosen. The case company represents a multi-cultural organization with top level need to manage enterprise-wide knowledge creation and sharing. Abductive, qualitative research approach is taken in the analysis of knowledge creation in this study (Dubois and Gadde, 2002; Shank, 2002: 119). The rich case data provides us with both practical and theoretical implications.

The research process followed the realization of the actual knowledge project within the case company (see table 1). First the identified knowledge challenges were discussed and analysed by the project and research team, the material consisting of presentations and interviews of company personnel and company project member. Then the different models and understandings on knowledge visualization were reflected jointly. After the finalization phase the empirical research on sales and project organisations started. A company project member interviewed most of the international and local sales staff. Summary tables on each interview were provided for the research team and this company project member was interviewed by the researchers.

An SNA method was used to identify the knowledge sharing paths between the sales and product lines personnel. First, in order to uncover product-related knowledge sharing, salespeople were asked to indicate which product line marketing personnel supplied them with knowledge and what was the quality of that knowledge. Second, product line marketing personnel were respectively asked to indicate salespeople who supplied them with market-related knowledge and rate the quality of that knowledge. A link to an online form was sent to 105 individuals. For salespeople, the product line marketing personnel were asked who supplied them with the knowledge, and for product line marketing personnel who asked the salespeople and asked to indicate the quality of the knowledge. By checking a box before each name salespeople indicated who supplied them with product-related information. Furthermore, after each name there was a dropdown menu presenting numbers from 1 (least) to 3 (highest) for the perceived quality of the knowledge provided by the person in question. Identical online form was presented to product line marketing people, but it presented the names of salespeople and the question asked receiving market- instead of product-related knowledge. This analysis was then used to create knowledge teams for each product line.

Also a portal supporting the work of the teams in work by observing the created portal in connection to project team meetings was used. We learned our knowledge on the activeness of communication, depth of issues discussed, and the type of topics covered in the discussions. The analysis was conducted throughout the research process in line with the abductive research approach. Table 1 highlights the key theoretical frame and concepts used in each research phase. Yet, the concepts and theories are interwoven, hence for example, the ideas on nature of knowledge were used in all of the phases, but their role was emphasised in phase one.

### Table 1 Data collection methods and conceptual issues in each phase of the empirical study

<table>
<thead>
<tr>
<th>Data collection</th>
<th>Conceptual issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identifying challenges</td>
<td>Interviews with key actors (project team and virtual team members)</td>
</tr>
<tr>
<td>Learning in networks</td>
<td>Knowledge sharing models</td>
</tr>
<tr>
<td>Establishing teams</td>
<td>Previous experiences from research</td>
</tr>
<tr>
<td>Interviews</td>
<td>Network studies</td>
</tr>
<tr>
<td>Observations</td>
<td>Virtual teams</td>
</tr>
<tr>
<td>Knowledge sharing</td>
<td>Communities</td>
</tr>
</tbody>
</table>

**Functioning of teams**

**Interviews Learning in networks Observations Virtual teams Knowledge sharing**

**Analyses and findings**

**Knowledge sharing challenges before the founding of virtual teams**

“We have realized that there is a lot of knowledge in peoples’ heads that should be put into movement”

Although VI did not undergo any particular crisis on the matter, its internal knowledge sharing system was considered needing an improvement. On the one hand, salespeople did not always feel recycling all the knowledge needed to sell and serving the customer. This is understandable given that there are thousands of different products and product configurations that can differ even for different customers within the same user group. On the other hand, product line marketing personnel were not completely satisfied with the amount and the quality of customer information and product feedback that they got from salespeople. For example, they complained that salespeople did not tell them about the potential problems and deficiencies of the products or the dissatisfaction of customers, until these issues seriously started to hurt the sales. Moreover, instead of selling their newest and the most sophisticated products to the customers, they would pitch products that they were already familiar with, and instead of finding new customers, salespeople preferred to sell to their existing customers. As Kauppi (et al. in press) consultate, these difficulties are largely caused by the organization’s failure to support its salespeople.

The project manager was well aware of the need to share various types of knowledge. The previous systems had only concentrated on explicit knowledge, that is, knowledge in formal report format. Moreover, there were cases of seeing knowledge as possession enabling power – for example during company’s internal idea competition rather than jointly create ideas itself individuals preferred to keep their ideas to later be put into use, when building on their self-interest rather than for common good (e.g. Nenvel et al, 2006; Jarvenpaa et al., 1998). It was identified that salespeople and product line marketing personnel had five specific issues that complicated or impeded knowledge sharing in VI’s organization:

1. Geographical and cultural distances among the actors
2. Functional boundaries
3. Complexity of product-related knowledge
4. Dispersed markets
5. Overreliance upon a few individuals as knowledge providers

Geographical and cultural distances did not influence knowledge sharing between R&D and product line marketing, as both people from different locations were located in the same building and shared the same culture. However, for salespeople, whose business function was totally different. In general, salespeople were not only geographically and culturally distant from R&D and product line marketing, but they were also distant from one another. For example, the salespeople’s learning during customer’s calls about the customer needs was not passed on (see e.g. Hihannson 1993). This was potential source of problems as salespeople were present in multiitudes of markets, for example a multinational company could be a customer for both Boston and Japan sales office. At the more instrumental level, calling to Finland was also different from Vaisala’s office in Asia, Australia, and North America, because of different time zones. Cultural distances, in turn, were reported especially between employees in the Western countries (Western Europe and the United States, and Australia) and Asian countries (China and Japan). Facing similar challenges as has been found in many studies on multinational companies (see e.g. Krishna et al., 2004; Mikkel, 2006; Lucas, 2006; Minbaeva, 2007).

As employees in VI were mostly organized by their task function, boundaries between different functions are inevitable. The benefits of functional organizing are especially significant for R&D people, because the development of new product ideas is largely dependent on close collaboration among scientists and technical specialists. However, homogeneity within the functional groups accentuated the heterogeneity between the functions. In some cases, intergroup heterogeneity probably signifies difficulties in communication and knowledge sharing, as people in different functions did not always understand concerns, priorities, or even terminology that were used in other functions. Furthermore, functional boundaries reduced interfunctional face-to-face interaction, which restrained the development of trust and mutual understanding between people from different functions. (e.g. Horwitz et al., 2006; Jarvenpaa et al., 1998).

VI’s products are complex, highly sophisticated, and the product range is enormous. They differ in thousands of different product variations. This presents a huge challenge particularly to VI’s salespeople, who are expected to identify what the customer needs, find the appropriate product from VI’s product range to resolve the need, understand which variations the customer would need, and then provide help and assistance with the product. Because of these requirements, sellers need both product-related support, technical consultation help, and other necessary information, on pricing, for example. VI’s product line marketing and R&D people are primary providers of knowledge helping the salespeople to cope with their extremely demanding role. However, as discussed above, geographical, cultural, and functional barriers impede communication and knowledge sharing.

As there was a great variety of products as there was variety of customers and market needs. Atypical VI’s customer purchased only a few instruments once a year or even less frequently. Thus, the contribution of individual customers to VI’s annual sales was generally very modest, hundreds or thousands of Euros. Modest sales volume per customer implied that in order to reach high turnover, VI had to serve great numbers of customers. Again, this was a challenge to VI’s salespeople whereas the level of salesperson was still large compared to other industries and hundreds of product application areas. In the same way, dispersed markets and a large heterogeneous customer pool was a challenge to product line marketing and R&D people who were not only supposed to supply necessary technical and product-related information, but also utilize customer and market information in developing new products and targeting new markets. Moreover, the support force was not systematically utilized. Taken together, the organization’s knowledge sharing had to work in two basic directions: first, technical and product-related support from other functions to salespeople; and second, customer and market knowledge from salespeople to other functions. When the project elaborated in this paper begun, much of VI’s knowledge sharing burden rested on a few individuals who acted as bridges between salespeople and the rest of the organization. All of these individual were product line marketing person, whose job description described the mediating role between commercial and technological matters. However, even among the product line marketing people, the knowledge sharing burden in both directions tended to accumulate on a few individuals. This kind of sparse network involved several risks and disadvantages for VI’s knowledge sharing. For instance, most knowledge sharing is repetitive in nature as questions and requests usually touch upon same matters.
issues. These repetitious questions and answers to them obstruct knowledge flows in already congested bridging positions. The knowledge flows slow, resulting access to recipients gets difficult, and important requests get ignored under simple requests. This is a problem because virtual teams cannot act in a coherent and coordinated way if they do not have a continuous real-time flow of information about where they are and whether or not they are meeting expectations (e.g. Denton 2006). Moreover, the organization’s knowledge sharing system is seriously hampering individual knowledge flows. This is because these individuals have a great deal of tacit knowledge and social capital that are hard to replace. Their accumulated experiences and learning has not been passed on to others. The constant need to mediate large amounts of information and respond to numerous requests can also cause strain and fatigue to individuals in a few bridging positions, increasing the risk of employee quitting (e.g. Thomas et al., 2007).

Developing virtual teams and tools for knowledge sharing

As the first step in finding workable solutions for the challenges based on discussions among research and project team VI decided to establish global, interfunctional virtual teams to improve knowledge sharing within the company and eventually externalize all VI employees to participate actively in reciprocal knowledge sharing. Relaxed rules for strengthening ties across functions and countries, and overall build a denser internal network among VI employees. Denser network was perceived desirable because it increases the speed and effectiveness of knowledge diffusion. Moreover, the dissemination of complex product- and market-related, and even tacit knowledge, is much more likely to happen in dense than in sparse networks (Hannan, 1989).

Initial social network analysis

Before establishing virtual teams, the project team wanted to find out whom exactly did each employee turn to for seeking information, and how they would rate the quality of knowledge they received from these sources. After the SNA analysis the project teams could identify specific individuals being the nodes of knowledge flows. The analysis exposed both directions of primary knowledge flows. Figure 1 presents an example of the knowledge flow diagram that was created for one of the product lines.

Figure 1 A product line knowledge network

As the first step in finding workable solutions for the challenges based on discussions among research and project team VI decided to establish global, interfunctional virtual teams to improve knowledge sharing within the company and eventually externalize all VI employees to participate actively in reciprocal knowledge sharing. Relaxed rules for strengthening ties across functions and countries, and overall build a denser internal network among VI employees. Denser network was perceived desirable because it increases the speed and effectiveness of knowledge diffusion. Moreover, the dissemination of complex product- and market-related, and even tacit knowledge, is much more likely to happen in dense than in sparse networks (Hannan, 1989).

Selecting and training virtual team members

The results of knowledge flow analyses and sociograms were utilized in selecting virtual team members. A virtual team was established per each VI’s product line, which was established five teams, as there were five product lines. To each team VI’s project team selected the product line marketing people who were already active in sharing and mediating knowledge with. With this, the purpose was to strengthen the existing knowledge sharing structures that were active and that employees were familiar with. Moreover, one or two product line marketing people were added to each virtual team. This aimed to balance the burden among the product line marketing people and give them all an equal opportunity to participate in knowledge sharing.

Besides the product line marketing people, salespeople were the other elemental group in virtual teams. In general, each team composed of three product line marketing people, six salespeople and a person from R&D or technical services. As product line marketing people, salespeople were selected based on their existing ties, activeness and ability to share knowledge, as perceived by the product line marketing. Moreover, because the mission of virtual teams was to promote knowledge sharing within the whole global organization, salespeople were selected to teams from different geographical and cultural regions. This was also expected to help in overcoming the problems encountered by cultural differences (Krishna et al., 2004; Mitkull, 2006). Some of the long-term, important, and sustainable relationships were preserved, which might have increased the teams’ willingness to change to this new protocol in knowledge sharing.

Functioning of virtual teams and the Intranet Portal – Tools for knowledge sharing

As soon as the intranet portal opened, virtual teams started to engage in creating content in it. The team members were chosen per each virtual teams’ product line in the system. The system displays how long a question has been waiting for an answer. In the beginning, the virtual teams created comments on identified information needs by themselves to create content in the portal. This has not got the rules and effects of the team members visible to all. In the interviews with the users of the system, this was found to have leveraged expertise, facilitated coordination, even encouraged cross-function teams rather than directly controlled by the upper management. Moreover, after virtual teams had created content in the portal, also employees outside the teams began using it for seeking knowledge and for posting their knowledge for other users of the portal. The portal was a central marketplace, which was valuable to people, which might have increased the teams’ willingness to change to this new protocol in knowledge sharing.

Discussion and conclusion

This paper reports a case study on the role virtual teams augmenting knowledge sharing in Vaisala Instruments. In particular, the present study examines how virtual teams act as means of knowledge sharing in Vaisala Instruments. In this, virtual teams replaced VI’s former knowledge sharing system that relied heavily on individual product line marketing people as knowledge providers. The purpose of the new, virtual team-based knowledge sharing system was to even out the burden on knowledge activism among a larger pool of employees, construct an extensive knowledge network that reaches a higher number of employees, and improve coordination among different functions, especially sales, product management, and R&D.

In order to create a space for knowledge sharing, VI launched an intranet-based web portal where employees could freely interact, share their knowledge, and seek for an advice. A particular objective with the intranet-based portal was to enable not only sharing explicit but also tacit knowledge, at least among the members of virtual teams. For that purpose, web portal contained a special place for virtual teams members where they could mingle informally
and express themselves more freely and personally. Furthermore, team building activities and team orientation before the launch of the portal contributed to mutual trust and cohesiveness that enabled the subsequent sharing of tacit knowledge. In practice, tacit knowledge shared among the team members embodied a more in-depth grasp of different local markets and how VI’s technologies could be better matched with these heterogeneous market conditions.

As the case demonstrates, the portal became the most prominent forum for cross-functional and multi-locational knowledge sharing in VI. It was quickly adopted for use by virtual teams and also by other employees of VI. Virtual teams were thus successful in their task of extracting also employees outside the teams to participate in knowledge sharing processes. The new knowledge sharing system ensures means and spaces for knowledge sharing at all levels: individual, group and the network (Crossan et al. 1999). The results demonstrate that case company’s head office is a knowledge hub where product line marketing people act as key knowledge activists. However, a lot of their time is consumed by repetitive knowledge sharing tasks, hence, there was a need to develop means to enable these key persons to devote more of their time to new knowledge creation processes (cf. Crossan et al. 2006). Hence, it revealed that the active relationships of a few individuals cover the distinct units at dispersed locations across the organization. The new knowledge sharing process uses the internal knowledge network’s knot people in virtual teams. Virtual platform was created to allow a companywide knowledge sharing in one joint space. In VI it appears that particularly virtual teams that were formed around new product lines were willing and capable to exert employees all over the organization to participate in knowledge sharing in the virtual space. Perhaps this is because these teams did not yet have strongly established knowledge sharing structures that would have been difficult to change. If this explanation holds, it may not be advisable to build virtual teams based that are too closely intertwined with established patterns of the organizational structure. However, we also discover that taking advantage of existing knowledge networks can benefit virtual teams, and they provide an already working platform or a spin to the team. Therefore, managers creating virtual teams always have to balance between the inertia that may lurk in the firm’s existing knowledge networks and convenience that existing knowledge structures can bring about. In VI it seems that particularly new product lines with an already established knowledge network could strike the balance between these two.

The managerial contribution of the paper builds on these solutions made during our research process that enable a wider knowledge sharing through a virtual team structure. In addition, the studied case highlights the importance of internal knowledge networks as means for good and efficient customer case globally and as means to build the company’s competitive edge against its competitors. This case study puts forward at least three corent implications that managers should consider when aiming to improve internal knowledge sharing through virtual teams. First, VI’s case strongly suggests that virtual teams are effective conduits of knowledge in MNCs. This means that managers, who have not already done so, should find out whether and how they could utilize virtual teams in their organizations. Second, managers should leverage their organizations’ existing knowledge structure and utilize employees that already play a key role in sharing knowledge. As this study shows, social network analysis provides a fitting tool for unravelling these structures and identifying key actors in the knowledge sharing processes. Finally, as VI’s case indicates, training and team-building activities form a steady basis for the subsequent virtual knowledge sharing. Thus, while they probably consume both time and money, they are likely to turn out good investments as they improve trust, readiness to collaborate, and mutual understanding among the team members.

Analysis of the performance effects of the virtual team structure provides a fruitful area for future research.

References


