

KNOWLEDGE SHARING OPPORTUNITIES AND CHALLENGES OF INNOVATIVE SMALL AND MEDIUM-SIZED ENTERPRISES IN WIDER EUROPE

Tiit Elenurm¹

Abstract

The paper studies knowledge sharing capabilities and knowledge development needs in the context of East-West technology transfer. The international technology transfer potential of innovative SMEs is treated as the combination of technology transfer and networking needs, entrepreneurship capabilities and market focus, innovative capabilities, knowledge sharing, networking and learning capabilities. This approach served as a departure point of an EU Specific Programme “Innovation & SME” project “Development of the innovative entrepreneurship potential of SMEs as knowledge-sharing trans-national technology transfer partners (EW ISME)”.

An objective of EW ISME is to develop, implement, validate, and disseminate the new methodology for integrating into one process the innovative and knowledge sharing potential assessment, action learning cycle by using demonstration projects, specifying entrepreneurial and managerial competence profiles for trans-national technology transfer.

Pre-survey results of 66 SMEs indicate that West-European SME-s are more focused on the competences supporting development of new technology and new products, whereas East-European firms concentrate on improvements in process quality and productivity and cooperation with partners in the supply chain. The paper discusses East-West differences in perceived training needs of SMEs and different information sources they use. Comparison of knowledge sharing practices of Western and Eastern SMEs leads to the conclusion that among Estonian SME-s experience of using virtual forums and e-learning environments is more widely spread than in Western SMEs participating in the project. They however miss systematic approach to participation in virtual learning communities.

The paper compares knowledge gaps that were identified in the EW ISME pre-survey with evidence from earlier surveys, training and consulting projects. SME-s representing the sub-contracting type of international operations are at the first development stage focused on the lack of institutional knowledge represented by legal aspect of foreign trade. Finding new business partners is also seen as an important learning challenge.

Competitiveness and strategic business involvement of SMEs from the new EU member states in Wider Europe can be supported by innovative learning applications that are based on trans-national learning communities. New networking opportunities at the same create pressures for changing internal organisational culture and introducing knowledge management practices.

Keywords: knowledge sharing, innovations, technology transfer, East-West co-operation, learning community, virtual networking

¹ Ph. D., Head of the Entrepreneurship Department, Estonian Business School, tiit.elenurm@ebs.ee ; +372 50 27 821. Tiit Elenurm holds the professorship in entrepreneurship at the Estonian Business School. He received his Ph. D. in 1980 for dissertation “Management of the Process of Implementation of New Organizational Structures”. He has been visiting researcher at the Helsinki School of Economics and Business Administration and at the London School of Economics. Present research interests of Tiit Elenurm are linked to management of change, international transfer of management knowledge, developing international business, knowledge management and learning organizations in Estonia. His aim is to develop synergy between management training, consulting and research activities.

1. Introduction

A challenge of the European Union and the Wider Europe is to develop innovative entrepreneurship as an essential factor of the global competitiveness. The enlargement of EU has opened new opportunities for developing co-operation between innovative SMEs in Western and Eastern Europe. Advanced forms of innovative co-operation and technology transfer assume knowledge sharing and learning processes that correspond to the new context. Development projects for improving the international technology transfer potential of innovative SMEs could enable synergy between SMEs in different regions of Europe.

Innovative SMEs and their development partners in five West-European states and two new East-European member states are involved in the project, "Development of the innovative entrepreneurship potential of SMEs as knowledge-sharing trans-national technology transfer partners (EW ISME)", launched in Autumn 2003. The project is being co-ordinated by the Executive Training Centre of the Estonian Business School. Other project team members include: Estonian Institute for Future Studies; Aide a la Decision Economique S.A. (ADE s.a.), Belgium; Thames Valley Technology and Henley Management College, United Kingdom; Helsinki University of Technology – Lahti Centre, Finland; Hungarian Computer and Automation Institute MTA SZTAKI; National Institute of Technology, Norway and the DemoCenter s.c.a.r.l., Italy.

An essential target of the project is to develop the innovative and technology transfer capabilities of SMEs as learning organisations through international networking and knowledge sharing activities. The paper discusses opportunities and challenges for developing and implementing such methodology. Pre-survey results that reflect perceived training needs, knowledge sharing, networking and learning capabilities of Estonian enterprises are compared with West-European results in order to reflect differences that are relevant for understanding development challenges for the innovative capabilities of SMEs in new EU member states.²

The present paper has three objectives:

- 1) to explain the conceptual framework for analysing knowledge sharing, networking and learning capabilities as factors of the international technology transfer potential of SMEs;
- 2) to analyse the basic differences between the pre-survey results from Estonian innovative SMEs and the results from SMEs from five West-European countries, which are related to a vision of core competencies, knowledge development needs and potential gains from co-operation in international knowledge sharing networks;
- 3) to discuss international knowledge sharing opportunities and challenges of introducing knowledge management and learning community practices in order to develop East-West innovative SME networks.

2. Innovative capabilities and knowledge sharing in the East-West technology transfer context

The innovative capabilities of new member states in the enlarged European Union have been studied within a national innovative capacity framework that organises indicators into four groups: research and development supply, demand (market pull) for R&D and innovation, capacity to absorb new knowledge and capacity to diffuse innovations. New East-European member states all have, at present, a low demand for R&D, but absorptive and diffusion capacities are higher in Estonia, Slovenia, the Czech Republic and Hungary (Radosevic 2003). Gaps in the innovation infrastructure and framework conditions in Estonia are connected to a limited access to capital for new technology based firms,

² The pre-survey was developed by by Alasdair Raid, Jacek Walendowski, Tiit Elenurm, Erik Terk and Silja Kurik and carried out by EW ISME consortium members in 7 states. The module of knowledge sharing and development capabilities was devised by Tiit Elenurm.

a limited number of intermediary organisations to support technology transfer and innovation, weaknesses in quality management and testing, the quality of training in new technologies and also the lack of pro-active diagnosis and advice services that could link technology to business performance (Reid 2002). A pro-active diagnosis assumes an understanding of the institutional and competitive environment of business actors, but also of capabilities that are influenced by learning and knowledge sharing processes.

Obtaining and sustaining competitive advantage through the development of specific organisational capabilities has become an important focus in the field of corporate strategy. Core competencies in organisations are linked to business concept innovation and reframing value chains as the main way of competing for the future (Hamel & Prahalad 1994; Hamel 2000; Normann 2001). The organisation's ability to achieve innovative forms of competitive advantage is referred to as dynamic capability. This term refers to the ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments (Teece et al. 1997). Dynamic capability requires constant knowledge flow within and outside the organisation and a continuously updated knowledge repository. Overcoming spatial boundaries of organisations, smoothing knowledge flow, promoting cross-functional and inter-organisational interaction as the primary methods of sharing tacit knowledge and introducing flexible structures have been pointed out among enablers of dynamic capabilities (Wang & Ahmed 2003).

The adaptability of an organisation can be defined as the organisation's ability to capitalise on emerging market opportunities that will imply changes in its strategic posture (Oktemgil & Greenley 1997). Adaptability is facilitated by technology, market, and organisation related factors (Tidd et al. 1997). It has been suggested that a superior learning environment will leverage the use of all resources that accompany a market orientation (Baker & Sinkula 1999), and that market-oriented organisations are more innovative in introducing new products (Lukas & Farell 2000). Positive interplay between an organisation's adaptability and ability to innovate through new product commercialisation has been found to be linked to global market monitoring, commitment of employees, and customer and technology linking. As such, market-driven business logic can, however, have a negative association with the ability to innovate if technology searching and monitoring is not an essential part of the business logic (Tuominen et al. 2003). Managers have to understand how technology-driven industries mature through the creation stage with high vendor power and emerging dominant design to the stage where power shifts from the vendors to the customers (Kampas 2003). One challenge of the EW ISME project is to deepen understanding of the interplay between technology-driven and market-driven development drivers taking into consideration different market positions of innovative SMEs in Eastern and Western Europe and related knowledge gaps. East-European SMEs have to assess whether their core competencies and market knowledge are sufficient to reach early adopters in international markets in order to attain high vendor power for an innovative product or process, or if it would be a safer strategy to follow the dominant design and to introduce incremental innovations in a more customer-focused and adaptive way than their competitors.

There are evident linkages between the adaptability of an organisation, the organisational learning and the learning organisation concepts. The essence of organisational learning is the organisation's ability to use mental capacity of all its members to create the kind of processes that will improve its own learning capacity (Dixon 1994). Peter Senge (1990) describes learning organisations as organisations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to learn together. The goal to increase the capability of an organisation to learn by systematically processing new information about a changing environment and by critically reflecting upon past experience is especially relevant to business organisations in transition economies. It is however not self-evident if organisations that need the qualities of learning organisation in order to face radical changes always have time and resources to apply Peter Senge's five disciplines of personal mastery, shared vision, mental models, team learning through reflection and inquiry and systems thinking in the coherent way. At the

period or rapid societal and economic changes an important factor influencing the knowledge management and organisational learning agenda is the dilemma of exploiting the “windows of opportunity” for rapid business gains versus developing an organisation that is directed by the vision of sustainable competitiveness. Sproull and Kiesler (1991) distinguished between relatively short-term technical learning and longer-term social learning that may lead to a redefinition of organisational objectives themselves. Organisations that have R&D capabilities and skills to implement certain technological innovations do not automatically possess all features of learning organisations. These organisations may have capabilities for solving technical problems but miss agents and supporting organisational conditions for dealing with broader nontechnical problems (Friedman 2003). A classic distinction between single-loop learning and double-loop learning that enables managers to re-assess their strategic objectives and theories in use (Argyris and Schön 1974) is also relevant to learning in organisations representing different business models and organisational cultures in Wider Europe.

Organisational culture and memory are two central and interrelated aspects of collective learning (Berthon et al. 2001). The culture and values of innovative SMEs may influence the reasons for the development and introduction of innovations, but also the readiness for co-operation and knowledge sharing with international partners. Potential value-driven barriers in the knowledge sharing process may be especially relevant to learning communities trying to involve SMEs from countries that in addition to a variety of national cultures represent different development stages of the market economy. Organisational memory, broadly defined, includes everything that is contained in an organisation that is somehow retrievable. Storage files of old invoices, copies of letters, spreadsheet data stored in computers and the latest strategic plan are all parts of that memory (Kim 1993). Computer-based systems support retrieving elements of the organisational memory in the learning process and make them available for learning communities if their members have sufficient level of mutual trust. Many East-European SMEs have however quite short track record and corresponding organisational memory compared to their Western partners. At the same time social learning for applying new information and communication technologies may happen in start-up companies even more rapidly than unlearning old routines in an organisation that has long traditions and rich organisational memory.

The resource-learning view of an organisation emphasises organisational capacity to deploy both tacit and explicit knowledge (Nonaka 1994). The knowledge-creating processes are based on four types of knowledge assets (Nonaka et al. 2002, pp. 55-57):

- Experiential knowledge assets – tacit knowledge shared through common experiences, including skills and know-how of individuals, care, love, trust, security, energy, passion and tension;
- Conceptual knowledge assets – explicit knowledge articulated through images, symbols and language, including product concepts and brand equity;
- Routine knowledge assets – tacit knowledge routinized and embedded in daily operations, organisational routines and culture;
- Systemic knowledge assets – systemized and packaged explicit knowledge in the formats of documents, manuals, databases, patents and licences.

In technology-driven innovative small enterprises, the role of tacit knowledge may be crucial in the field of technological and product know-how where this constitutes the basis of its core competence. Participation in international technology transfer processes assumes that part of this know-how is made transferable in a format, where intellectual property rights can be protected. The vision of future core competencies and their essential elements should be made explicit inside the management teams of innovative SMEs, and if there is enough trust, also between the partners of the East-West learning community of SMEs. International knowledge sharing between organisations can be linked to all four types of knowledge assets. Technology transfer is explicitly demonstrated by selling and buying patents and licences. These business transactions however often assume common recognition of such conceptual

assets as product concepts and tacit knowledge shared through common production experiences. Creation of high-profile brands and shifting the focus from material production to a form of cultural production (Klein 200) assumes marketing knowledge but may be also influenced by the degree of trust at the international marketplace towards the country of product origin. Efficient exploitation of systemic knowledge assets depends on sharing certain organisational routines and other routine knowledge assets. SMEs from established market economies and from new EU member states have experienced influences of different business environments on the structure of their knowledge assets that have to be taken into consideration in international knowledge sharing efforts.

The more connected members of the organisation are in relation to each other, the more likely this information will be communicated to relevant actors or decision makers within the organisation (Lenox 2002). Communities of practice as groups that deepen their knowledge and expertise in a common field or topic by interacting on an ongoing basis (Wenger et al. 2002) can be regarded important knowledge sharing and management tools (Brown and Duguid 2001). International knowledge sharing between SME representatives can be analysed as a participative process of doing, belonging, becoming and experiencing within the framework of social learning theory and Maslow's hierarchy of needs (Bettoni et al. 2003). Existing communities of practice inside organisations serve as an enabling factors for cross-border knowledge networks.

If the members of an organisation have more diversified external sources of information, they have more information inputs for developing and commercialising innovations. Cumulative knowledge accumulation and generation at the level of firm leads to technological trajectories and path dependence whereby one development appears to suggest the next (Dosi 1982). Companies find it difficult to extend their existing knowledge base into new fields of innovative activity. Networking relations between enterprises and research linkages are important means to see new technological and market options. Development mechanisms in strategic enterprise networks, and learning and innovation in these networks have become topical research fields (Hyötöläinen 2000). There is increasing body of knowledge about the organisational learning in supplier networks (Lane 2003). Networks represent a stock of knowledge for participating companies and firms's knowledge of the network is itself an important organizational resource (Kogut et al. 1993). The most important task in network construction is to coordinate mental maps or learning styles on the bases of mutual trust (Lane & Bachmann 1998). Differences of national learning styles (DiBella et al. 1996) and competition-oriented nature of supplier structures are potential sources of barriers to knowledge sharing in international networks. The concept of legitimate peripheral participation provides a way to describe dynamic relationships between newcomers and old-timers in a network. New members do not only learn from talk with other members of the community, they learn to talk with others as the key to more active participation and constructing their identities in relation to these communities (Wenger 2002).

When analysing innovative firms and their inter-organisational relations, geographical proximity has been seen as a prerequisite for the creation of close inter-firm relations based on trust and reciprocity, facilitating the transfer of complex knowledge (Storper 1997). Facilitating technological co-operation and innovative co-operation between enterprises in different European Union member states assumes the development of less proximity-dependent trans-national collaboration and learning networks of innovation that make use of information and communication technology. Knowledge management within strategic networks is influenced by strategic and institutional drivers of partner companies (Balint 2003). The reasons among these drivers for joining networks related to perceived knowledge gaps and potential knowledge sharing gains are especially relevant to the EW ISME project. A tool for assessing innovative and technology transfer capabilities should assist managers to identify knowledge gaps in their SMEs, but also knowledge development needs that can be satisfied through co-operation in international networks. It should also deal with knowledge sharing assumptions and attitudes in organisations.

3. Pre-survey concept and methodology

The pre-survey was the first step in developing and testing the tool for assessing innovative and technology transfer capabilities. Results of the pre-survey served three goals:

- to assess the technology transfer needs of specific SME-s introduced by the project consortium participants as potential technology transfer partners and their added value for the knowledge sharing network;
- to produce new knowledge about factors which influence the development of the innovative entrepreneurship potential of SME-s and its application in the knowledge-sharing technology transfer network;
- to collect preliminary data for specifying training and consulting priorities for further stages of the project.

The pre-survey has to be seen as part of the broader action research and development process that demonstrates to participants, through self-assessment, benchmarking, training and consulting inputs, the weak points in their market focus and capabilities, but simultaneously enables them to specify technology transfer needs and opportunities for learning and knowledge sharing (figure 1).

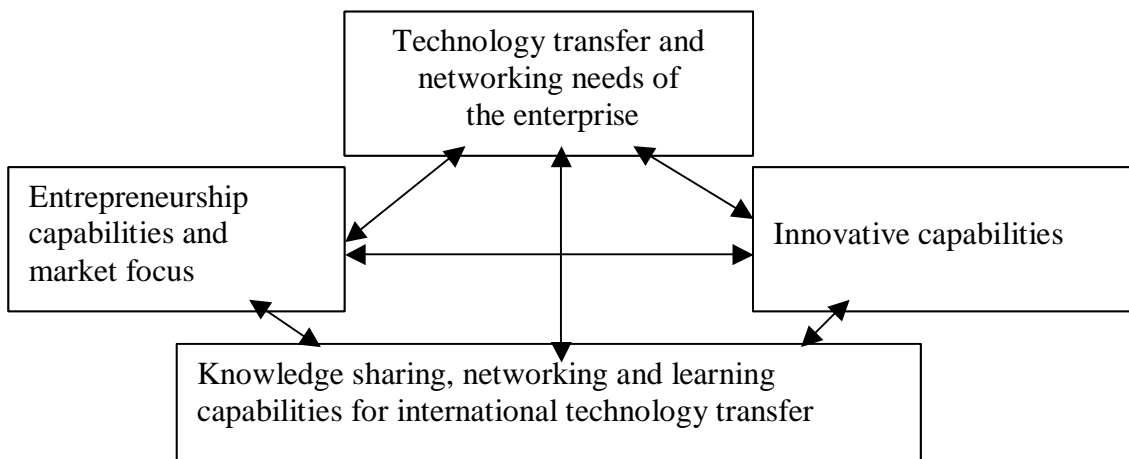


Figure 1: Relationships that were studied in the pre-survey

Evert Gummesson (Gummesson 2000, 35) treats action research as the most advanced step in qualitative research compared to interviews and observations. The full potential of action research can, however, only be used if the researcher manages to act as the change agent during the whole cycle of diagnosing the management problem, generating, assessing, selecting and implementing new solutions, checking outcomes of actions and introducing corrective actions. A change agent for innovative SMEs has to match the core competence visions of the company and new development opportunities that could make sense in this context. A pre-survey is an important tool for supporting critical self-assessment and benchmarking in this cycle.

The survey was based on a questionnaire that was structured as three modules. The first module started with assessments of entrepreneurial strategies and organisational practices that enable innovative activities. The competitive position of the enterprise and market trends were also assessed. In the second module the main parameters of innovative activity in the enterprises describing the output and process of the innovation were studied, as well as aims and motives for innovation, success factors in this field and the main barriers to success. Sources of ideas for the development of new products and processes and modes of technology transfer practised by enterprises were also assessed in this module. It may be said that the

second module deals with innovation and technology activities. The third module focuses on knowledge sharing and development capabilities. Important core competence components were specified first. A list of 26 knowledge development fields (appendix 1) was used for identifying existing knowledge gaps and potential gains from international learning networks. Knowledge sharing assumptions and virtual networking experience were assessed at the end of this module.

The pre-survey was conducted as face-to-face or phone-to-phone sessions with managers of SMEs. In addition to answers to the questionnaire, additional comments from respondents concerning situational and developmental challenges in their enterprise also constituted important information.

4. Comparing Estonian and Western innovative SMEs

Sixty-six companies were involved in the pre-survey (Belgium 6, United Kingdom 6, Italy 6, Finland 11, Norway 10, Estonia 19 and Hungary 8). SMEs interested in developing their capabilities for international technology transfer and analysing related organisational capabilities were selected for the survey as potential participants of the EW ISME project. In this paper we will only discuss the main differences between the average results from surveys of Estonian SMEs and the average results from SMEs in five West-European countries that are directly related to core competencies, knowledge development needs and knowledge sharing.

The majority of the companies assessed their innovative performance compared to competitors as above or well above average. The main innovative activities both in Estonian and Western companies were in internal R&D and the acquisition of external know-how directly related to product/process development. The differences between Estonia and the West came from limited cooperation between research institutions and the business sector in Estonia. At the same time training directly related to product/process development is a much more common activity in Estonia, probably because of the higher importance of the acquisition of equipment in innovative activities.

Interest in technology transfer among Western companies mainly involved exploiting their own new technology or technological solutions commercially (83% of respondents) or out-sourcing part of the existing production to another firm (60%). Another half (51%) wanted to provide the know-how and training in the field of the new equipment or solutions developed by them. Estonian companies are mainly (39%) interested in providing their own new technology or solutions or (equally) providing the know-how in this field. Pre-survey results also indicate that West-European SMEs are more focused on those competencies supporting development of new technology and new products, whereas Estonian firms concentrate on improvements in process quality and productivity and cooperation with partners in the supply chain.

Estonian managers rank product development know-how, followed by (equally ranked) know-how for production process quality and productivity and co-operation experience and trust with partners in the supply or value chain as the most important elements of their future core competence vision. Know-how about the existing and future needs of international clients is also considered to be important. The lowest position in the ranking given by Estonian managers is the legal protection of intellectual property, which is given a higher ranking by Western managers. The latter also tend to give a high ranking to new product and technology development know-how. At the same time know-how for production process quality and productivity and co-operation experience and trust with partners in the value chain are assessed as more important by Estonian than Western company managers. Turning to the assessments of features of their existing core competencies, the pattern is quite similar to that of the vision. New product development know-how is seen as the strongest element among existing core competencies followed by co-operation experience and trust with partners in the supply or value chain and know-how for production process quality and productivity. Estonians rank co-operation experience and trust with partners in research institutions, universities and consultancies as weaker elements of their core competencies than Western

respondents. One could interpret these results as reflecting more limited attention of Estonian SMEs on conceptual and systemic knowledge assets compared to routine and experiential knowledge assets among four types of knowledge assets specified by Ikujiro Nonaka. Knowledge sharing processes between SMEs in Estonia and in Western Europe are needed to align capabilities of partners for developing and applying different types of knowledge assets.

In order to identify perceived training needs among companies interested in participating in the EW ISME project, respondents were asked to assess the present knowledge of their staff on the basis of a checklist where 26 knowledge fields for undertaking international technology transfer were listed. Estonian SME managers gave a relatively high assessment to the present knowledge level of their staff on the five-point scale in the following fields (table 1).

Table 1: Fields of relatively high knowledge level in Estonian SMEs

Using information sources, databases and internet for monitoring new technology trends and identifying potential partners	3.4
Creativity, new idea generation techniques	3.4
Presenting your company know-how and business opportunities	3.3
Developing contacts with business partners and studying their background and motives	3.1

Knowledge in the field of using information sources, databases and the Internet for monitoring new technology trends and identifying potential partners is even assessed on a higher level in Estonian companies than in Western companies. On the other hand, Estonian SME managers recognised the most serious knowledge gaps of their staff in the following fields (table 2):

Table 2: Knowledge gaps of Estonian SMEs

Risk analysis in international technology transfer	1.6
Conducting international market research on a target market	1.6
Role of intermediaries and brokering in technology transfer	1.8
Managing international technological co-operation projects	2.0
Protection of industrial property: trademarks, purchasing and selling licences	2.2
International joint ventures and strategic alliances	2.4

Western SME managers shared this perception of knowledge gaps in the field of risk analysis, the role of intermediaries and brokering in technology transfer and conducting international market research in a target market. Although, their ranking of the existing knowledge of their staff was higher than that given by Estonian respondents.

International joint ventures and strategic alliances, managing international technological co-operation projects and protection of industrial property were among knowledge fields where Estonian managers gave lower rankings for the knowledge of their staff than their Western colleagues. They also gave lower rankings than the Western respondents for their knowledge of national and EU support for innovative entrepreneurs and technology transfer activities, export-import and agent contracts, assessing the company potential for outward technology transfer, managing and transferring knowledge in organisations and projects and creating and managing technology development teams. It can be concluded that market-driven development-drivers and corresponding knowledge gaps are recognized by managers of Estonian SMEs. Limited experience of dealing with risks in international technology transfer, limited resources for traditional market research and controversial relations with intermediaries and brokers are all fields, where an advanced East-West learning community of SMEs could create new opportunities of knowledge sharing.

Ranking list of five most important knowledge fields, where potential gains from international networking were anticipated to be the highest, however indicates more narrow approach by respondents. Direct business contacts with new business partners and shortcuts to business deals are seen as the key function on the networking activity. Estonian managers considered co-operation in the international learning network to be most important in the following knowledge fields: developing contacts with business partners and studying their background and motives, managing international technological co-operation projects, national and EU support for innovative entrepreneurs and technology transfer activities, and presenting your company know-how and business opportunities. Interviews with project participants reveal an important challenge: how to match expectations concerning new “windows of business opportunities” with ideas of double-loop learning and learning as a social process of sense-making and the vision of sustainable competitiveness? Network as a brokering environment and network as a long-term community of practice assume different composition of participants, different rules for newcomers and different scope for knowledge sharing.

In the pre-survey, seven statements concerning knowledge sharing assumptions and attitudes in their organisations were presented to respondents to agree or disagree. Estonian SME managers expressed the highest degree of agreement (4.2 on 5-point scale) with the following statements: electronic databases are more valuable sources of information than paper documents, our organisation has integrated electronic knowledge bases and full-text search tools that are actively used by employees for monitoring and sharing knowledge, our staff is used to searching for information in electronic data banks, web-based forums and discussion groups. Trust between employees and disclosing mistakes are also considered to be features of an Estonian innovative organisation (3.6 points). All these statements are more strongly supported by Estonian managers than their Western colleagues. Only 13% of Estonian SME-s have no experience of participating in e-learning environments and web-based discussion forums compared to 34% of western SME-s that do not have such experience. This can be partly explained by the strong presence of the ICT sector in the Estonian sample. 67% of Estonian SME-s have, however, only participated on a few occasions, while 13% participate regularly. This data indicates that the information technology infrastructure for knowledge management is relatively highly developed in many Estonian companies belonging to the sample. Estonian managers also have a substantially higher degree of agreement with the statement: we have plenty of social occasions (dinners, visits, sports) for informal knowledge sharing.

Estonian managers however agree a bit less than Western managers with the statement that people in their companies are used to the free circulation of information, and technological, market and client information is easily accessible for all staff members. We can conclude here that there is still room for developing the support culture for knowledge management and knowledge sharing inside organisations and between innovative enterprises. Such a comparison of knowledge sharing practices in Western and Eastern SMEs leads to the conclusion that among Estonian innovative SMEs, experience with using virtual forums and e-learning environments is more widely spread than in Western SMEs participating in the project. However, they lack a systematic approach to participation in virtual learning communities.

5. Discussion and conclusions

The pre-survey results were discussed with the participating companies and will be used as input for training and group consultations. The final aim is to develop an action-oriented methodology that enables the collection of research information in the process of identifying SME priorities for further co-operation in learning networks. This tool will be used as the diagnostic departure point that supports dialogue between consultants and SME key personnel and also as a self-assessment tool for SMEs. The pre-survey facilitated the design of specific training and support activities, which will be organised during the future stages of the EW ISME project.

An essential assumption of the learning process is to understand what you really know and where to find knowledge gaps. Wisdom starts from recognising the limitations of one's knowledge. An important challenge of the EW ISME project is to develop the action learning process, where participants gradually broaden their understanding of the role of social, economic and cultural factors, business planning and other knowledge fields that are essential for understanding "the big picture" and for making sound strategic choices for successful technology transfer. The relevance of "soft" topics, such as creativity and new idea generation techniques in the broader innovative context, has to be demonstrated through learning by doing in order to overcome narrow interpretations of creativity as a phenomenon mainly limited to research and technology.

As pointed out in the group work during the awareness-raising seminar in Estonia at the beginning of the EW ISME project, in the narrower field of professional research, invention and technological development some innovative SME managers strongly believe that acting creatively means relying on their intuition without any special creative techniques. In the international learning community it is relatively easy to demonstrate that presenting your company know-how and business opportunities is complicated, if partners represent differing cultural backgrounds and business experience. Creativity techniques may facilitate joint efforts for finding new business opportunities.

Taking into consideration the survey results and the principles of adult learning, the first stages of the training programme should not be limited to the rule "from general issues to specific topics" only. It is essential, right from the first training events, to meet the specific perceived training needs of participants and to offer hands-on solutions to practical problems already identified by participants. Combining cases of technology transfer based on practical experience with topics of risk analysis and expert advice in the field of legal issues related to international technology transfer and methods of international market research would enable an effective start to the learning process. Training should also be combined with sessions for bringing together potential partners from the East and the West. Contact building steps can be supported by appropriate training input in order to equip participants with tools for discussing their co-operation visions in more systematic ways. A combined training, consulting and contact building process should produce synergy and create assumptions for developing an international learning community of innovative entrepreneurs.

Some results of the present survey that reflect the perceptions of managers about the knowledge gaps among their staff have similarity with the survey of export-related training needs in Estonian companies that was carried out in 1998. This earlier survey demonstrated that SMEs representing the sub-contracting type of export operations are at the first development stage focused on the lack of institutional knowledge represented by legal aspects and customs requirements of foreign trade. They saw finding new business partners and clarifying contract-related legal issues as the main learning challenge. Only after accumulating some practical export experience did they start to understand the need to broaden their strategic business and management knowledge. Assessment of export potential, strategy and planning will gain higher priority if the organisation manages to grow and develop its resource base (Elenurm 2000). The sample in the present pre-survey represents the perceptions of Estonian managers, the majority of whom are equipped with good research competencies or technological knowledge. Their managerial experience, however, has been in many cases limited to reacting to business proposals initiated by occasional partners or to generating cash flow on the basis of quick-fix solutions.

Creation of the sustainable East-West learning network of innovative SMEs is not an easy task. Participating SMEs have to see strengthening their core competences, monitoring their international business environment and building the learning organisation as strategic priorities. Regular involvement and synergy in a virtual learning network assumes self-reflection and commitment of participants. They have to agree on these practices of common interest, where knowledge sharing will not be "one-way street" and will not be inhibited by lack of trust. Trust is especially important for sharing tacit knowledge. E-learning and virtual knowledge sharing have to be combined with face-to-face focus groups, creativity sessions and social events in order to build trust and share tacit knowledge through socialization.

Limited opportunities of SMEs to pay international travel costs may create serious obstacles to the blended learning, socialization and trust-building in an East-West learning community.

SMEs that participated in the pre-survey do not represent average Estonian SMEs. It complicates meaningful comparisons with surveys on inter-organisational knowledge transfer needs that have been conducted in other countries on the basis of randomly selected SMEs (Chen and Duan 2003). As part of a broader action research process and development programme for SMEs it can, however, produce more meaningful insights than a cross-sectional survey that would try to represent all Estonian SMEs, the majority of which are not related to the East-West technology transfer agenda. In action research the researcher has to capture a pre-understanding and the sense making patterns of managers. Comparing the quantitative results from the pre-survey and qualitative information about the specific problems and needs of SMEs participating in the EW ISME project is one way to do this.

The next steps in the EW ISME project will provide tools for discussing the core competence concept in more detail. The present beliefs of Estonian SME managers recognise the importance of client input and learning from the supply chain partners on the basis of experience acquired through direct business transactions. Opportunities to develop core competencies through co-operation with other types of partners, including universities, consultancies and international SME networks for knowledge sharing have to be discussed in the context of the broadening strategic horizons for Estonian innovative SMEs.

References

- Argyris, C., Schön, D. (1974) *Organisational Learning: A theory in action perspective*. Addison-Wesley: Reading, MA.
- Baker, W.E., Sinkula, J.M. (1999) The synergistic effect of market orientation and learning orientation on organizational performance. *Journal of the Academy of Marketing Science*, Vol 27 (4), pp. 411-427.
- Balint, S. (2003) Knowledge management within strategic networks: Developing a strategic process. In Fergal McGrath and Dan Remenyi (eds) *Fourth European Conference on Knowledge Management*. MCIL: Oxford, pp. 49-56.
- Bettoni, M. Braun, A., Weber, W. (2003) What motivates cooperation and sharing in Communities of Practice In Fergal McGrath and Dan Remenyi (eds.) *Fourth European Conference on Knowledge Management*. MCIL: Oxford, pp. 67-72.
- Berthon, P., Pitt, L. F., Ewing, M. T. (2001) Corollaries of the collective: The influence of organizational culture and memory deployment on perceived decision-making context. *Academy of Marketing Science*, Vol. 29 (2), pp. 135-150.
- Brown, J.S., Duguid, P. (2001) Knowledge and organisation: a social-practice perspective. *Organization Science*, Vol. 12, No 2, pp. 198-213.
- Chen, S., Duan, Y. (2003) An investigation on SMEs' inter-organisational knowledge transfer needs. In Fergal McGrath and Dan Remenyi (eds.) *Fourth European Conference on Knowledge Management*. MCIL: Oxford, pp. 171-179.
- DiBella, A., Nevis, E., Gould, J. (1996). *Organisational learning style as core capability*. In B. Moingeon and A. Edmonson (eds.) *Organisational learning and Competitive Advantage*. Sage: London, pp. 38-55.
- Dixon, N. (1994) *The Organizational Learning Cycle*. McGraw-Hill: London

- Friedmann V. (2003) The individual as agent of organizational learning. In Meinholf Dierkes, Ariane Antal, John Child, Ikujiro Nonaka (eds) *Handbook of Organizational Learning & Knowledge*. Oxford University Press: Oxford, pp. 398-412.
- Dosi, G. (1982) Technological paradigms and technological trajectories: a suggested interpretation of the determinants and direction of technological change. *Research Policy*, Vol. 11, pp. 147-162.
- Elenurm, T. (2000) Export-related training needs of Estonian companies in the process of internationalisation. In *Proceedings of the University of Vaasa. Reports 57*, pp. 122-142
- Gummesson, E. (2000) *Qualitative Methods in Management Research*. Sage Publications: London.
- Hamel, G., Prahalad, C.K. (1994) *Competing for the Future*. Harvard Business School Press: Boston
- Hamel, G. (2000) *Leading the Revolution*. Harvard Business School Press: Boston
- Hyötöläinen, R. (2000) Development mechanism of strategic enterprise networks: learning and innovation in networks. *VTT Publications 417*: Espoo.
- Kampas, P. (2003) Shifting cultural gears in technology-driven industries. *MIT Sloan Management Review*, Winter 2003, pp. 41-48.
- Kim, D. (1993) The link between individual and organizational learning. *Sloan Management Review*, Fall, pp. 37-50.
- Klein, N. (2000) *No logo*. HarperCollins: London.
- Kogut, B., Shan, W., Walker G. (1993) Knowledge in the network and the network as knowledge: the structuring of new industries. In G. Grabher (ed.) *The Embedded Firm*. Routledge: London, pp. 67-94.
- Kurik, S., Lumiste, R., Terk, E., Heinlo, A. (2002) Innovation in Estonian Enterprises 1998-2000. *Innovation Studies*, 2/2002. Foundation Enterprise Estonia: Tallinn.
- Lane, C. (1998) Introduction: Theories and issues in the study of trust. In C. Lane and R. Bachmann (eds.) *Trust within and between Organizations*. Oxford University Press: Oxford, pp. 1-30.
- Lane, C. (2003) Organizational learning in supplier networks. In Meinholf Dierkes, Ariane Antal, John Child, Ikujiro Nonaka (eds.) *Handbook of Organizational Learning & Knowledge*. Oxford University Press: Oxford, pp. 699-715.
- Lenox, M. (2002) Organizational design, information transfer, and the acquisition of rent-producing resources. *Computational & Mathematical Organization Theory*, Vol 8, pp. 113-131.
- Lukas, B.A., Ferrell, O.C. (2000) The effect of market orientation on product innovation. *Journal of the Academy of Marketing Science*, Vol. 28 (2), pp. 239-247.

- Nonaka, I. (1994) A dynamic theory of organizational knowledge creation. *Organization Science*, Vol. 5, (1), pp. 4-37.
- Nonaka, I., Toyama, R., Konno, N. (2002) SECI, Ba and Leadership: a Unified Model of Dynamic Knowledge Creation. In Little, S., Quintas, P., Ray, T. (eds.) *Managing Knowledge*. Sage Publications: London, pp. 41-67.
- Normann, R. (2001) *Reframing Business*, John Wiley & Sons: Chichester.
- Oktemgil, M., Greenley, G. (1997) Consequences of high and low adaptive capability in UK companies. *European Journal of Marketing*, Vol. 31 (7), pp. 445-466.
- Radosevic, S. (2003) A Two-Tier or Multi-Tier Europe: Assessing innovation capacities of the Central and East European countries in the enlarged EU. Working paper [online] <http://www.ssees.ac.uk/economic.htm>
- Reid, A. (2002) Estonian innovation policy in a comparative perspective: options and priorities with a view to EU accession. Presentation of the CIS III results, Tallinn 05.12.2002.
- Senge, P. (1990) *The Fifth Discipline: the Art and Practice of the Learning Organization*. Doubleday: London.
- Sproull, L., Kiesler, S. (1991) *Connections: New Ways of Working in the Networked Organization*. MIT Press: Cambridge, MA.
- Storper, M. (1997) *The Regional World, Territorial Development in Global Economy*. Guilford: New York.
- Teece, D. J. Pisano, G. Schuen, A. (1997) Dynamic capabilities and strategic management. *Strategic Management Journal*, Vol. 18, (7), pp. 509-533.
- Tidd, J. Bessant, J., Pavitt, K. (1997) *Managing innovations: integrating technological, market and organizational change*. John Wiley & Sons: New York.
- Tuominen, M. Rajala, A. Möller, K. Anttila, M. (2003) Assessing innovativeness through organisational adaptability: a contingency approach. *International Journal of Technology Management*, Vol. 25, (6/7), pp. 643-658.
- Wang, C.L., Ahmed, P.K. (2003) Structure and structural dimensions for knowledge-based organizations. In *Measuring Business Excellence*. Bradford, Vol.7, pp. 51-63.
- Wenger E., McDermott, R., Snyder, W. (2002) *Cultivating communities of practice*. Harvard Business School Press: Boston.

Knowledge development fields (an element of the questionnaire)

Considering all items in the list, select the five knowledge development fields, where you could potentially gain the most from co-operation in international networks. Then rank these five fields by importance for your company (highest rank 5 to lowest 1) and assess present knowledge of your staff in these fields on the scale 5 to 1. If necessary add to the following list of knowledge areas for using international technology transfer opportunities additional fields if something important for your company is missing.

No	Knowledge development fields	Highest potential gain from international networks (Most important 5 to least important 1)	Present knowledge of staff (Very good 5 to very weak 1)
1	Management of innovation and increasing innovative capabilities in organisation		
2	Managing international technological co-operation projects		
3	Managing and transferring knowledge in organisations and projects		
4	Assessing company needs for inward technology transfer		
5	Assessing the company potential for outwards technology transfer		
6	Business planning in innovative technology-based businesses		
7	Benchmarking best practices by using success stories of international technology transfer		
8	Social, economical, cultural and other related factors for international technology transfer		
9	Using information sources, databases and internet for monitoring new technology trends and identifying potential partners		
10	Creativity, new idea generation techniques		
11	Co-operative design, bidding and marketing in virtual enterprise		
12	Negotiating techniques		
13	Presenting your company know-how and business opportunities		
14	Developing contacts with business partners and studying their background and motives		
15	Conducting international market research on a target market		
16	Technical barriers, standards and quality assurance in technology transfer		
17	Using international fairs and conferences for networking		

No	Knowledge development fields	Highest potential gain from international networks (Most important 5 to least important 1)	Present knowledge of staff (Very good 5 to very weak 1)
18	Using virtual networks and communities of practice for knowledge-sharing, e-learning and e-consulting		
19	International joint ventures and strategic alliances		
20	Financing innovative ventures, risk capital		
21	Protection of industrial property: trademarks, purchasing and selling licenses, etc..		
22	Export-import and agent contracts, know-how protection in contracts		
23	Role of intermediaries and brokering in technology transfer		
24	Risk analysis in international technology transfer		
25	Creating and managing technology development teams		
26	National and EU support for innovative entrepreneurs and technology transfer activities		
27		
28		