

Improving interactions in knowledge intensive communities of practices for SMEs

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Abstract Knowledge is a key to success also for small and medium sized companies (SMEs) but many of them lack of understanding what they want to accomplish with a knowledge management (KM) environment and are not ready to implement/use it. In this paper we first present the readiness of SMEs for KM, then we discuss if Communities of Practice (CoPs) are a suitable environment for KM and learning within SMEs. Finally we offer an example for development of knowledge intensive CoPs with efficient interactions both between the actors and with the corresponding supporting IT platforms.

1 Introduction

It is known that a priority theme on many national government agendas and, in general, at the European level is the improvement of the competitiveness of business and industry. Knowledge is a key to all organisations and the success of many of them depends on the effective deployment and continual enhancement of their knowledge base to be competitive. The problem is getting more acute, particularly in the next period, when great challenges loom large for the world economy. Small and medium sized companies (SMEs) have particular needs in facing the challenges of their daily operations [3]. Many European SMEs are not ready for significant international social and economic changes [8]. Some of them have focused on knowledge management (KM) and used it as an enabler for innovation capability, but many of the practiced KM approaches failed. For a SME to manage and sustain business whilst engaging in KM and training for it can be very difficult. Their priority is survival, leading to just-in-time activities; the benefits of KM and learning to the business have to be very clear and measurable [1, 2]. To be effective and acceptable to staff, learning and knowledge management have to be directly related to activities on the job [9, 10]. These requirements can be met best by an intelligent use

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of IT based learning and KM, particularly Web 2.0 methods and applications [17, 18]. They are flexible, and they support the combination of formal and informal learning, collaboration and individualized work. Specifically, they enable a mode of work and interaction beneficial for SMEs and SME networks: the Community of Practice (CoP) [22] with participation of SMEs and other “practitioners”. Say [20] described how researchers try to develop now so-called “third generation” of KM systems which will be focused on enabling the sharing of tacit knowledge. Knowledge intensive and strong interactive CoPs fulfill such requirements. Results of studies, projects and discussions with SME experts and representatives show that one of the most critical but important aspect to be considered when developing/improving KM environments in companies is an evaluation of KM readiness of them. Many companies lack of understanding what they want to accomplish with a KM environment. They do not know if the organization, the management, the culture, the staff and technical infrastructures are “ready” for this or not and how to take advantages of new IT to improve interactions in such KM environments. In this paper we first present shortly a method to determine the readiness of SMEs for KM, then we discuss if CoPs are a suitable environment for KM and learning within SMEs. Finally we offer an example for development of knowledge intensive CoPs with efficient interactions both among the actors and with the corresponding supporting IT platforms.

2 Readiness of SMEs to develop KM environments

A wide variety of approaches have been proposed in conducting assessments of KM readiness but there is a lack of systematic approach and the practice varies with different industries and companies. In this part a systematic KM readiness model is presented. Some proposed categories for the model are Organization, Strategy, Human resources/Users, Culture, IT used. Experience shows that a suitable assessment of KM readiness in SMEs (having limited resources) can be realized in form of a simple questionnaire survey for managers and individual employees to fill in. The answers will be analyzed and strategies for KM should be planned. Some main and derived questions can be the followings:

Organisation/Management: Is your enterprise organized to use efficiently its knowledge, to acquire and create new one?

- Is the adequate understanding that KM means much more than implementing an IT tool or solution?
- There is a well structured knowledge base of the enterprise that can be used by the staff when they need?
- Are informal and/or knowledge intensive networks like CoPs across different units of the enterprise encouraged?
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- Are partners identified for developing of knowledge intensive networks like CoPs?
- There is knowledge to be used across different units available in standable formats?
- Are the interaction facilities with the knowledge base and other knowledge sources user friendly and reliable?
- Is the dissemination of best practice supported in your enterprise?
- Is the enterprise connected with external networks and knowledge sources?

Strategy: Has your enterprise a sustainable program for improvement of KM?

- There is a track record in the enterprise in successful implementation of innovative approaches?
- Has your enterprise a vision how KM can support the company business and staff work tasks?
- There is a strategy for doing this in the next 3 years?
- Are the tasks and responsibilities for this task clear?
- Are there some measures for improving KM in the next 3 years?
- There is a strategy to protect the key information and shared knowledge in the enterprise?
- There exist a complete IT security procedure for information?
- Are key performance indicators for KM in work place?
- There is a regular measurement of the impact KM has on the ways the staff do business and work in the enterprise?

Human resources/Users: Do the enterprise staff understand the concept of KM and commit the seniors managers to support it?

- Do the staff understand the term KM and how to use existing knowledge for their business and work?
- There is a board responsible with KM concepts?
- Do senior managers support knowledge sharing (i.a. during meetings)?
- Are the interactions among staff within and across company units favorable for knowledge sharing?
- There is a senior level systematical review of the effectiveness the staff use KM?
- Are new ideas of the staff encouraged for creating new knowledge?

Culture: Do the behaviors and interactions in the company enable effective KM?

- Is the recording and sharing of knowledge a routine in the company?
- Time is allowed for creative thinking and reflections?
- Are best practices systematically selected and the corresponding knowledge used whenever staff need it?
- Is everyone willing to give advice and to help on request to anyone else in the company?
- Are individuals rewarded for team work and knowledge sharing?
- There is a strong belief that the work can do best only by sharing ideas?

IT: Is there a suitable IT support for KM in the enterprise and is this used efficiently to support KM?

- Is the availability of technology suitable for knowledge sharing and using a main point when new IT acquisitions are discussed?
- Does the company IT unit/team check constantly if the existing IT platform for KM supports knowledge needs of the staff?
- Does the existing IT support effective communication across boundary and even time zones?
- Do the interactions of staff with the IT at work place constitute a normal working practice?

3 Knowledge intensive Communities of Practice

CoPs are groups of people working together at solving openended questions, learning in social and physical contexts of realworld problems and using collaboration and cognitive tools for KM and learning. Some main characteristics of CoPs are the following:

- a shared domain of interest of its members, their commitment to this domain and a shared competence,
- common ideas, joint activities. Members engage in pursuing their interest for the domain and build relationships that enable them to learn from each other,
- common practice because members of a community are practitioners with different levels of expertise. They develop a shared repertoire of resources e.g. experiences, tools, ways to solve problems, a knowledge base of best practices.

CoPs offer new opportunities for KM and learning processes by using new forms of interaction within the teamwork and loose contact between the actors. CoPs show differences to theme-specific cooperation and/or temporary networks. They are lasting for a longer period. Its members are ready to share knowledge and to create new one together and to deal with strategic fields of knowledge in business. Nonaka and Konno [16] have described a knowledge development cycle showing how tacit or implicit knowledge can be made explicit in learning processes. This work and others pointed out, that knowledge developed in CoPs is important for understanding how knowledge develops in different contexts. These distinctions are important when processes of learning and knowledge development in SMEs are analyzed. Important is also the design of CoPs as KM environments and of interactions among members of the CoP and with supporting IT. Some principles of “designing for aliveness”, which can guide organizations wishing to start a CoP are explained here. These we have followed in our current project SIMPEL (see below):

- Design for evolution e.g. design elements should be combined in a way acting as catalyst for a natural evolution to a knowledge intensive and life-long learning oriented CoP,

- Keep an open dialog between inside and outside perspectives of the CoP because the last one can help community members to see new possibilities to act effectively and to use them,
- Consider different levels of participation for the members of the CoP (leadership roles, core active group, rare participants, etc.) and different kinds of interactions,
- Develop public and private community spaces,
- Create a rhythm and rules of interacting within the community.

Internet technologies [6] extend the interactions within communities of practice beyond geographical limitations and make possible the building of virtual CoPs (VCoP). These communities free their members from constraints of time and space. In comparison with technical solutions for knowledge management, VCoPs can mark a change from “managing knowledge” to “enabling knowledge”.

“Effective knowledge creation depends on an enabling context. What we mean by enabling context is a shared space that fosters emerging relationships” [14]. In order to assure an optimal interaction between users and the IT platforms supporting VCoPs with SME participation, methodologies and processes should be used for the interfaces taking into consideration the IT competences and learning abilities of the learning staff. Interfaces should have a basic level of usability (“really just means making sure that something works well [13]. If it is possible the interfaces should be tested with staff from different SMEs but also with some experts. Heuristic Evaluation can be done by using Niensens ten Heuristics. The current generation Web 2.0 [15, 19], has a vast potential to create prospering environments for emerging CoPs. It very well can support activities within a community and for staff of SMEs to collaborate as well as the idea of connectivism developed by Siemens [21] where information is constantly changing, learning takes place in distributed networks of people and is based on diversity of opinions; content and services are adaptable and responsive for example to specific needs and goals of SMEs. For example: writing in public blogs encourages the writer to think about the issues in question. In communities, an individual will receive help from a network of peers, so unnecessary searching activity and time can be saved. Castro [5] underlines how the virtual environment helps the feedback mechanism by reducing costs of communication and of storing and effectively retrieving informal feedback. Referring tacit knowledge, interviewed CoP actors from Germany show that one of the useful ways for their work is by asking for and receiving opinions about their written work or about made decisions. A quick and easy system in blogs and the interactive environment of online forums provide a clear mean by which tacit knowledge can be shared. So knowledge intensive VCoP would have a positive impact on the sharing of tacit knowledge, i.e. tacit knowledge which would be shared spontaneously in an office, about new technologies or about company news finds a natural home in a VCoP.

Often a transition takes place from a face-to-face to a virtual CoP, in order to reach more continuous levels of information sharing. The lack of face-to-face contact within a CoP can often be an advantage, because it helps to suppress traditional group norm behavior. On the other hand, it remains open if a community of practice where face-to-face contact is entirely excluded can be sustained over a long period. Despite the great potential, there are also limitations of current technologies in

relation to virtual communities of practice: because virtual community infrastructure can be set up across cultures via Web, cultural and language differences can change the interactions and hinder the flux of activities in the CoP. Such aspects have been considered in the example presented next.

4 Example

We applied the above ideas within the activities of the EU project SIMPEL (SME Improving Practice in eLearning) tracking the suitability and our usage of Web 2.0 and utilizing the CoP structure as an intensive KM environment [4]. We developed strategies to enable SMEs to take full advantage of the eLearning in their training. We involved SMEs and eLearning experts in two communities of practice (one European and one German) [12] to share learning and knowledge and to develop continuous vocational education strategies based on Web 2.0 leading towards the creation of dynamic personalized learning environments. The European CoP is a loosely coupled (weakly framed) CoP, the German one strongly framed where the transmission of knowledge occurred closely between its members.

In the European CoP an “optimal vocational training model” based on eLearning in SMEs was developed. Best practice for capturing and sharing of knowledge and for using eLearning have been collected and guidelines for using them written. This CoP attracted sectors engaged in support, training, design/development, use, in consulting and in policy formulation concerning eLearning in SMEs in the European Union.

The German CoP focused particularly on analysis and testing how informal, workplace oriented learning can be used efficiently in SMEs by working and acting in CoPs. The topic was chosen because analysis shows that individual SME staff show more interest in achieving of competences based on intensive KM [11] for things they can do, rather than for certification. The framework of the CoP is useful for informal learning, knowledge sharing; the social participation of the members is the key for informal learning being embedded into practices and relationships of the workplace. For example keeping up-to-date with administrative and technical changes necessary to solve the daily tasks efficient, and strategies to help solve problems and communicate with colleagues and co-workers. This CoP has permanent members who make regular contributions but also occasional members who use the information and knowledge needed for their work and business and sometimes contribute. For the future it is intended to encourage more SME to participate and to use the CoPs knowledge and resources developed.

In looking for a suitable software to support communities of practice and to facilitate the processes of knowledge sharing and learning, the SIMPEL consortium decided on Moodle [7]. The choice of Moodle was first based on an analysis of some open source virtual learning environments (VLEs) referring sustainability and viability (that influence the costs for adoption and further developments of the system with personalized - PLE services) and of the pedagogical rationale of the environment (how the VLE fits the pedagogical aims of the organisations which uses it).

Some of the key points for evaluating sustainability and viability refer to implementation, maintainability and further developments and are: activity of the community, level of usability, requirements in hardware and software, reliability of the system, support, modular system architecture, compatibility with existing systems within SMEs. Moodle is used also because some project partners have experience with it. The platforms for supporting the two CoPs provide members with tools to capture and share knowledge like blogs, Wikis. The platform for the German CoP offers sites around typical work tasks and roles particularly in a virtual enterprise. Because the project partners have experience with scenarios a scenario was built showing how a knowledge intensive virtual enterprise model can support eLearning at work experience. The scenario was based on the idea that several organizations which CoP members belong put together their knowledge bases, technologies, competences, practice experience of the members. A wide range of media (music, video, animation) have been used to communicate the message of the scenario. Based on the scenario, knowledge-enabling services improved eLearning services, document sharing services and eCommerce services are in the development.

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