

2004

# Using IT for Strategic Competence Management: Potential Benefits and Challenges

Eli Hustad

*Agder University College, eli.hustad@hia.no*

Bjorn Erik Munkvold

*Agder University College, bjorn.e.munkvold@uia.no*

Brigitte Vigemyr Moll

*Agder University College, brigitte-vigemyr.moll@amersham.com*

Follow this and additional works at: <http://aisel.aisnet.org/ecis2004>

---

## Recommended Citation

Hustad, Eli; Munkvold, Bjorn Erik; and Moll, Brigitte Vigemyr, "Using IT for Strategic Competence Management: Potential Benefits and Challenges" (2004). *ECIS 2004 Proceedings*. 53.

<http://aisel.aisnet.org/ecis2004/53>

This material is brought to you by the European Conference on Information Systems (ECIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in ECIS 2004 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact [elibrary@aisnet.org](mailto:elibrary@aisnet.org).

# USING IT FOR STRATEGIC COMPETENCE MANAGEMENT: POTENTIAL BENEFITS AND CHALLENGES

Hustad, Eli, Agder University College, Serviceboks 422, 4604 Kristiansand, Norway,  
Eli.Hustad@hia.no

Munkvold, Bjørn Erik, Agder University College, Serviceboks 422, 4604 Kristiansand,  
Norway, Bjorn.E.Munkvold@hia.no

Møll, Brigitte Vigemyr, Agder University College, Serviceboks 422, 4604 Kristiansand,  
Norway, Brigitte-Vigemyr.Moll@amersham.com

## Abstract

*The recent development in IT-based HRM systems implies increased potential for using these systems to support the strategic competence management process in organizations. The paper discusses potential benefits and challenges related to implementation of IT-based competence systems, based on a case study of the implementation of a global competence management system in the telecommunications company Ericsson. In addition to providing overview of the competence resources in the organization and identifying competence areas in need of further development, the system also supports Ericsson's knowledge networking strategy, through locating experts and stimulating emerging 'communities of knowing'. Several challenges were identified, related to designing a suitable competence framework, tensions between global standardization and local practices, and in gaining commitment among the employees.*

*Keywords: Global competence management, competence system, knowledge networking, communities of knowing*

# 1 INTRODUCTION

The role of human resource management (HRM) in organizations has changed from measuring individual productivity among the employees towards strategic management of the human resources, focusing on competence development, human learning management, knowledge management and learning organizations (Berardine 1997, Hagan 1996, Nordhaug 1993).

Strategic competence management is increasingly important for innovative organizations, and may be critical to uphold strategic advantage (Davenport and Prusak 1998). Increasing globalization implies tougher competition and more dynamic markets, but also offers the possibility for increasing the competence potential of an organization through utilizing competence from different geographical locations in the global workforce (Borghoff and Pareschi 1998). Strategic competence management should thus be highly prioritized among managers (Bergenhengouwen, Horn and Mooijman 1998, Niederman 1998, Pickett 1998).

To increase efficiency in knowledge processes, researchers and practitioners currently focus on design, implementation and utilisation of information systems to support knowledge work. Commonly referred to as knowledge management systems (KMS) (Alavi and Leidner 2001, Bowman 2002), this class of systems aims at supporting the creation, transfer and application of individual and organizational knowledge. This article focuses on *competence systems*, which is a particular type of KMS providing an integrated picture of the organization's total competence resources that may be mapped against competence requirements and used as a basis for planning and implementing competence development actions. Competence systems may also represent an important resource for the knowledge management processes of an organization, by serving as the "knowledge yellow pages" of an organization in terms of "who knows what", identifying the knowledge bearers (Alavi et al. 2001, Borghoff et al. 1998, Marchand 1998, Schüppel, Müller-Stewens and Gomez 1998) and tracking different competence development initiatives (Lindgren, Stenmark and Ljungberg 2003).

Modern, IT-based HRM systems today offer comprehensive support for the various activities involved in strategic competence management. Major HRM vendors (e.g. SAP 2003) offer special modules for competence planning and management that can be integrated with basic HRM functions (employee records, recruitment, payroll, etc.) as well as other business functions and processes. An increasing number of companies are becoming aware of the strategic potential of implementing competence systems. However, this is a comprehensive process, and the resources required to identify, register and maintain the required competence data have made several companies realize that their initial ambitions regarding the scope of information to be stored in these systems have been too high. Despite the increasing interest and strategic emphasis on this type of HRM systems (Beradine 1997, Kallis 1999, Totty 2001), there are still few empirical studies that report from the organizational experiences related to implementation and use of these systems.

In this article we discuss the potential benefits to be gained from implementing IT-based competence management, based on a case study in the telecommunications company Ericsson. The company is in the process of implementing a global competence management system that will replace the locally developed solutions and support global competence sharing and 'communities of knowing' throughout the company. The integrated focus on competence management and knowledge networking in Ericsson serves to illustrate the potential role of competence planning in knowledge management. Finally, the case study also provides insight into potential challenges related to the implementation of this type of global competence management system.

The next section highlights the key principles and elements of IT-based competence management. This is followed by a presentation of a case study of the implementation of a global competence management system in Ericsson. We present Ericsson's formalized competence management process and competence model, and features of the competence management system being implemented.

Further, potential benefits and experienced challenges are reported. The final section presents conclusions and implications for further research and practice.

## **2 AN OVERVIEW OF IT-BASED COMPETENCE MANAGEMENT**

The HRM function in organizations has gained increasing strategic emphasis, and the importance of aligning HRM strategy and business strategy is well acknowledged (Agarwal and Ferratt 1999, Lengnick-Hall & Lengnick-Hall 1988, Ulrich and Lake 1990). Effective HRM is vital for being able to meet market demands with well qualified employees at all times. Competence management is an important part of HRM practice where the aim is to generate competencies that provide the organization with the right mix of talent to meet existing and future needs (Nordhaug 1993, Ulrich et al. 1990). Further, the core competencies of the organization should provide guidelines for the competence management process to increase sustainable competitiveness (Bergenhengouwen et al. 1997, Hagan 1996). In a competence-based organization, the description, stimulation and development of the individual competencies of the employees are highlighted, rather than focusing on job descriptions and duties (Lawler 1993).

Organizations wanting to establish long term employment need to focus on career development and long term goals for their employees. This requires an overview of the competence and knowledge of each employee, an area well suited for IT support. A competence system typically includes functionality for registering competence data (formal education, skills, experiences, etc.) mapping of present and future target competence levels for business units and employees, analyzing competence gaps at various organizational levels, recording outcome of personnel discussions, suggesting, storing and tracking competence development actions, and serving as a repository for CVs, training and course offerings. These systems also offer various search capabilities, e.g. for conducting organization-wide competence searches related to global staffing (Wiechmann, Ryan and Hemingway 2003, Ryan, Wiechmann and Hemingway 2003), as well as extensive report generating options.

A recent development in the functionality of HRM systems has been the transition from client-server based systems to web-based access. This has resulted in new options for 'self-service' routines, where managers and employees themselves can be responsible for registering and maintaining their CVs, as well as filing and tracking hour budgeting, leave permits, and payroll information on-line. This functionality increases the perceived usefulness of the system, and relieves the HRM staff of some of the more routine everyday jobs that instead may be replaced by more strategic tasks (Berardine 1997, Totty 2001).

Global companies may experience problems with locating their most talented employees. Global HRM systems can here be used to provide a detailed overview of the employees in the entire organization. This type of system also enables common definitions and standardization of data across the company, thus contributing to streamline the organizations' HRM processes (Greengard 1995). However, this form of standardization may also result in that cultural and practical needs of local offices no longer can be served, thus creating resistance from the units being enforced to adopt these standards (Greengard 1995, Hellström, Kemlin and Malmquist 2000, Hellström, Malmquist and Mikaelsson 2001, Rolland and Monteiro 2002).

IT-based competence systems may also contribute to the knowledge management processes in an organization, through supporting identification and distribution of knowledge and competence (Davenport et al. 1998). Marchand (1998) focuses on how knowledge-based organizations use meta-information to develop so-called knowledge maps, providing information on who possesses what knowledge and competence in the organization. In this sense, competence systems give indispensable information about where the knowledge resides rather than the knowledge itself, thus supporting the network model of KMS (Alavi 2000). This may form the basis for developing 'communities of knowing', defined as a network of specialists sharing knowledge, experience and tools within a

common area of interest (Boland and Tenkasi, 1995). It is also argued that competence systems may affect the socialisation process among employees, by providing awareness of communities of individuals with similar interests (Lindgren and Stenmark 2002).

### **3 IT-SUPPORTED COMPETENCE MANAGEMENT IN ERICSSON**

In this section, the principles and possibilities for IT-supported competence management are illustrated through a case study of an on-going implementation project in the telecommunications company Ericsson. Ericsson is a global company, operating in more than 140 countries and with approximately 52.000 employees (Ericsson 2003).

#### **3.1 Data collection and analysis**

Data collection mainly took place in the Norwegian branch of Ericsson, comprising 700 employees at the time of study. Two thirds of the Norwegian employees were working on research and development, mainly in mobile communication, mobile commerce and mobile phones. In 2002, Ericsson Norway started implementing the SAP Competence Planning module. We collected data during a five months period, involving nine semi-structured interviews and document analysis. The interviewees included the implementation project manager, as well as key users such as competence managers, the HR manager, and the IT/IS manager. The interviews lasted from one to two hours in length, and were taped and transcribed. The interview transcripts were emailed to the informants for verification and adjustments. The interviews focused on Ericsson's competence management practices, expected benefits from the new competence system under implementation, and its significance for the company's knowledge management strategy. Further, experienced challenges from the early stages of the implementation were discussed. To complement the implementation experiences, we also conducted a telephone interview with the competence manager in Ericsson Croatia, as a key person in one of the first pilot implementations of the competence management system in Ericsson.

The main source for the document analysis was material accessed from the Ericsson intranet, including strategy reports, project documents, newsletters, workshop reports, product information, implementation plans, and other internal presentation material. This provided important contextual information on the company's HR policies, knowledge management strategies, training and development programs, as well as the implementation project.

The process of data collection and analysis proceeded iteratively, allowing themes to emerge and then be examined more deeply as relevant, before final categorizing into key benefits and challenges related to the implementation.

In the following, we present Ericsson's competence management process, and current initiatives for implementing related IT support. The relationship between competence management and knowledge management is discussed, and potential benefits from the competence management system are highlighted.

#### **3.2 The Competence Management Process in Ericsson**

The Competence Management (CM) process in Ericsson is established as part of the organization's strategic process. In Ericsson, CM is defined as to keep informed on the existing competence situation, define future competence needs related to strategy plans, visions, goals and scenarios, and continuously work on filling the competence gap. In addition, CM encourages continuous competence development. The CM process in Ericsson is divided into three stages:

- Analysis; Identifying the organization's strategic (long-term), critical (short-term) and obsolete/declining (phasing out areas) competence requirements by analyzing future market and technology demands, based on the Ericsson Strategic Plan.
  - Assessing the present competence situation, i.e. the organizational and individual competence levels.
  - Personal development discussions used for individual assessments, where managers and employees come to an agreement about the present situation.
  - Defining the *competence gap* between the competence requirements and the present competence situation.
- Planning; Preparing a competence development plan for the organization as well as each individual, based on the competence gap. The development plan describes the competence requirements, the present level, the competence gap and the actions to be taken to bridge this gap. The plans are updated and reviewed regularly.
- Implementation; Establishing a more detailed plan for competence development, concretizing different action programs in terms of theoretical courses, further education, practical learning, job rotation, and project participation in different locations. Outcome evaluation is important in this stage, implementing follow-up, and corrective actions where needed.

Operating in a dynamic market Ericsson constantly faces new competence requirements. People and units move frequently and projects are often run across organizational as well as national boundaries. This creates an urgent need for sharing competence and communicating on competence issues in a structured and flexible way, and has resulted in the development of a common *competence model*. This model provides a structure and terminology which support the communication on competence issues throughout the organization. The model includes dimensions of professional, business and human competencies as the main categories. Further classification of these categories defines the competence areas and competence elements in details. A common scale is applied for assessing competence, comprising five competence levels from trainee to expert. When assessing the competence level for each relevant competence, a competence chart can be prepared.

The model supports the aim of getting a clear picture of relevant competence requirements, and provides a flexible framework for competence assessment on both the individual- and the organizational level. On an organizational level, the model can be used to describe the strategic and critical competencies, the present situation and the competence gap for the whole organization.

### 3.3 The Global Competence Planning System

Although the CM process is well established in the company, the lack of a common IT system for supporting CM on a global basis has limited the efficiency and speed of this process. In line with the decentralized nature of the Ericsson group, the different Ericsson companies have developed their own, local solutions for IT-based competence management. For example, Ericsson Norway has used an Excel-based application in combination with manual, paper-based solutions for supporting their local CM process. Several different web-based applications are also in use in the different business units, for managing competence and personnel. An example of this is the Talent Tool, developed by Ericsson Business Consulting (Baladi 1999). Intended as a common application for Ericsson, this supports CM both at the individual- and organizational level. However, due to the lack of a unified strategy mandating use of a common support tool in the CM process, this application has only been used in some countries.

To improve this situation, the Ericsson concern has selected the ERP system SAP R/3 as a global solution integrating all major business functions, including the HRM area. The intention is to standardize processes and supporting applications in the entire organization. Implementation of SAP HRMS (Human Resource Management System) as Ericsson's global HRM system was initiated in 2002, involving the discontinuation of further use of all local competence management systems. This system includes a Competence Planning (CP) module that has been adapted to the Ericsson

competence management process, representing a further development of the Talent Tool application. This is a shared installation on a global basis, supporting the competence management process throughout the company.

### 3.4 Functionality of the CP module

The design of the CP module is based upon the stages in Ericsson's competence management process and the competence model. The Ericsson Strategic Plan provides input to the IT system in terms of strategic and critical competence areas. A global competence catalogue constitutes the foundation for the CP module, containing information on business-related, professional and human competencies. In addition, there exists local competence catalogues, comprising elements that are not part of the global catalogue.

The employees' competence level, assessed according to the five point scale from trainee to expert (0, A, B, C and D), is stored in the system as a result of the personal development (PD) discussions. These discussions constitute a vital element in the CM process. The preparation for the PD discussions is conducted through the system, with the competence manager and the employee presenting their goals and needs for further development. The system also provides access to historical data from previous PD discussions, making it easy to follow up, evaluate and improve competence development actions when needed. The outcome of the PD discussion is an individual competence profile, comprising existing competence level and future competence goals, and a competence map showing the competence gap and development need for each employee.

The competence profiles for all employees are aggregated to an organizational competence profile representing the present level of all competence areas in detail, and the competence gap which needs to be filled to achieve the future organizational requirements.

Summing up, the CP module has a wide range of functionality, including among other:

- organizational analysis of strategic competencies
- common access to individual data for PD discussions
- competence gap analysis, and suggestions for development needs and action plans
- extensive search functionality, e.g. for competencies on certain levels, individuals meeting certain competence requirements, and people currently working in a specific job area.

### 3.5 Potential benefits from the CP implementation

The rationale for Ericsson's implementation of the new global competence system resides in a comprehensive set of expected benefits, for various levels of the organization. These benefits are summarized in Table 1.

### 3.6 Relationship between competence management and knowledge management in Ericsson

*"I think CP can play an important role in knowledge management. You can search for persons with certain competencies very easily through that tool. People having the same competencies and interests can be accessed and get together and they can more easily come to some kind of virtual conclusions and discussions".*

(Competence Manager, Ericsson Croatia)

<p><b><i>Organizational benefits</i></b></p> <ul style="list-style-type: none"> <li>• Supporting systematic development of strategic competence</li> <li>• Identifying competence gaps for each business unit to ensure global competence development in targeted business segments</li> <li>• Basis for developing individual competence plans supporting the strategic goals</li> <li>• Supporting talent management, i.e. global search for identifying employees with high levels of expertise, to further develop these</li> <li>• Supporting location of experts, facilitating exchange of employees and competence building across locations and units</li> </ul> <p><b><i>Management benefits</i></b></p> <ul style="list-style-type: none"> <li>• Providing detailed overview of organizational competencies, through competence profiles and statistics for employees, positions and organizational units</li> <li>• Increasing flexibility, speed and accuracy, by identifying who knows what on a global basis, and improving effective utilization of the overall human resource potential</li> <li>• Supporting staffing of project teams with specific competence demands</li> </ul> <p><b><i>Employee benefits</i></b></p> <ul style="list-style-type: none"> <li>• Increasing consciousness and focus on personal competence development – pushing management harder for support and development</li> <li>• Increasing visibility of know-how and possibility for marketing this in the organization</li> <li>• Exposing previously hidden/unknown competencies, giving possibilities for new and interesting assignments</li> </ul>
---

*Table 1. Potential benefits from a global competence planning system*

As illustrated by this statement from one of the competence managers, Ericsson sees a clear link between their knowledge management processes and the new competence system.

Figure 1 illustrates how the competence system supports processes both related to HR and knowledge management in Ericsson, and how these processes need to be aligned with corporate strategy.

A key concept in Ericsson’s knowledge management strategy is Knowledge Networking – the company’s philosophy for making the employees share and reuse knowledge and experiences, and establish networks of specialists in order to improve organizational performance and innovation. These networks consist of different ‘communities of knowing’, Ericsson’s adaptation of Boland’s and Tenkasi’s term (1995), and involve global collaboration both internally in the company and with customers and business partners. The knowledge networks are based on interpersonal connections, taking place both virtually and face-to-face. The virtual interaction is supported by a variety of IT-based collaboration technologies, such as e-mail, audio and video conferencing, local intranet portals, virtual project rooms, bulletin boards and discussion groups, and knowledge and experience databases. For face-to-face interactions, ”manual” collaboration techniques and forums in use include knowledge sharing seminars, training in specific topics, brainstorming, and network meetings to organize core teams and reference groups.



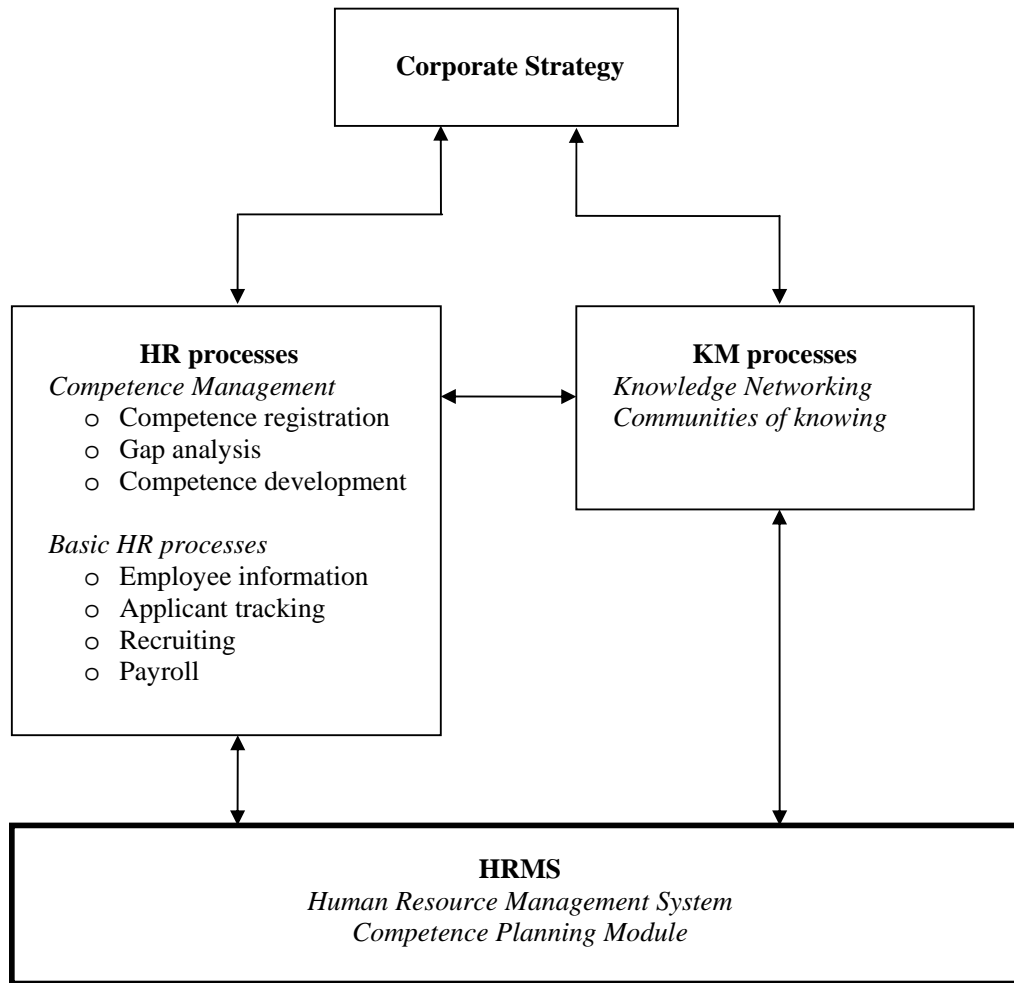


Figure 1. The relationship between competence management, knowledge management and IT support in Ericsson

Through the common focus on facilitating interpersonal communication, this blend of face-to-face and IT-supported interaction addresses the potential limitation of a ‘technology-centric’ approach to supporting ‘communities of knowing’ (Walsham 2001a).

The competence management process is a key activity in the knowledge networks, and the functionality of the CP module contributes to the emergence of new ‘communities of knowing’, by making employees with similar interests aware of each other. We identified several examples of employees in Ericsson Norway participating in such communities on a regular basis, such as networks of senior engineers, HR managers, and competence managers. Former research in Ericsson has identified several important factors related to the implementation and management of knowledge management initiatives in the company (Magnusson and Davidsson 2001). The employees’ motivation for searching and sharing knowledge, the perception of the value of knowledge, and the capacity to absorb new knowledge were identified as critical issues in the process of knowledge exchange. The role of management in this process was identified as to ensure alignment of the communities’ efforts to the goals and strategies of the organization, and stimulate the development of the communities.

This requires a difficult balancing of control and facilitation, since the basic philosophy is that these communities should emerge naturally and not be subject to the formal control mechanisms of the organization.

## 4 IMPLEMENTATION CHALLENGES

In this section we discuss some potential challenges to the implementation of a global competence management system, based on findings from the Ericsson case and previous research. These challenges are broadly categorized into three major issues: designing a competence framework, tensions between global standardization and local practices, and gaining commitment from the employees.

### 4.1 Designing a competence framework

A competence management framework in terms of a well-defined competence management process is necessary to achieve effective utilization of the IT-based tool (Houtzagers 1999, Pickett 1998). This framework also needs to include a competence catalogue, specifying the different skills and competencies needed throughout the organization. These entities form the base for specifying job profiles. Organizations often tend to lose scope in the definition of these entities, resulting in a level of detail that finally could 'choke' the system (Houtzagers 1999, Pickett 1998). Defining too many competence elements results in an 'over specified' competence catalogue, and the process for mapping, registering and maintaining this becomes too resource-demanding so that the system risk not being used. A focus on the competence areas of most critical importance for the organization's performance should guide the identification of central competence elements (Houtzagers 1999). In Ericsson, the existing competence model and process provided a good foundation for implementing the system, as the employees were familiar with these and the related terminology. Yet, defining a global competence catalogue proved to be a challenging task.

### 4.2 Tensions between global standardization and local practices

Several informants in Ericsson raised concern about the new global, standardized competence management process not being able to support local needs. They pointed to the risk that the common global competence catalogue could be too general, losing the necessary local detail. In Ericsson Norway, the existing competence tool now being phased out offered the possibility to define needed competence elements locally. The new HRMS module controls the local competence catalogue and its development, which was not considered favourable:

*"We do not want to be managed in our choice of competence elements. We would want to select those elements that we need. We would rather not be governed in the local catalogue."*

(Line manager, Ericsson Norway)

However, one informant also pointed to the need for taking on a more holistic perspective on the possible global benefits for the company of a standardized competence management process:

*"We are working under the NOBA umbrella [Nordic and Baltic cooperation]. So we have to admit that we are part of a larger unit, and we need to wear a common company hat instead of the preference of isolating from the overall company."*

(Competence Manager, Ericsson Norway)

Another dilemma between local and global practices is related to local creativity versus global dissemination of best practices:

*"Spontaneity and creativity could be the losers in some areas by implementing global solutions. However, the 'Best practice' policy in Ericsson concerns capturing good ideas which of course may come from other areas in the organization."*

(HR manager, Ericsson Norway)

These expressed concerns indicate that global homogeneity and standardized solutions could result in reduced responsiveness to local needs and flexibility. Effects from increased globalization in business processes and application of common information systems are widely discussed in the literature (e.g. Hanseth et al. 2001, Rolland et al. 2002, Walsham 2001b). By making several business processes global, organizations try to generate benefits from coordination and standardization across geographical boundaries. However, implementing IT to support global processes in general may influence on the organizational structure and can be a struggling process (Hellström et al. 2001, 2000). The organizational structure of Ericsson consists of decentralized units where autonomy and independence are strongly established in the culture of the company. This has stimulated local innovation patterns and emergence of local knowledge projects with little influence and monitoring from the central top management in Ericsson. The implementation of a global competence management process requires that top management develop criteria for balancing attention to local culture and traditions of HRM practices in each unit towards the centralized coordination and standardization.

#### 4.3 Gaining commitment

Several informants point to the need for changing the attitudes among the employees and management towards increased understanding and focus on competence development, to be able to increase organizational performance through utilization of a global competence system.

*"We have a job to do to gain commitment from the employees towards the system. It will require a change in their mindsets; they must take responsibility of their own competence development. We need to motivate them; we want to build individual competence and qualifications to increase their efficiency."*

(Line manager, Ericsson Norway)

However, creating behavioural change is a challenging issue (Blumenthal and Haspeslagh 1994). Further, as Ericsson currently is experiencing a severe market decline, the main focus in the company is not on the competence management process.

*"Despite the top management and project leaders having motivated the employees to use the CP module, this is not considered business critical. There is a risk of not prioritizing the CP system. There are other tasks that are more important for making money."*

(IS manager, Ericsson Norway)

The economic situation of the company has also affected the implementation process of the CP module, in the form of some delay in the registration and training activities.

## 5 CONCLUSION AND IMPLICATIONS

The findings from Ericsson and related discussion have highlighted the potential role of IT-based competence systems for supporting strategic competence management, and in contributing to KM processes in the form of knowledge networking and 'communities of knowing'. Compared to manual and/or nonconforming, local competence management practices, a global standardized competence management process supported by an advanced IT system such as the CP module currently being implemented in Ericsson represents a large potential for improving the efficiency and effectiveness of

competence management in the organization. Gaining systematic, global access to the company's competence resources may also increase innovativeness and stimulate new learning processes.

However, the study also illustrates how realizing this potential may be a challenging effort, involving specification and design of a competence catalogue including competence levels that cover both global and local needs, and redesigning local competence management processes to align with global processes. Centralized, top-down initiatives such as the SAP CP implementation in Ericsson here face a difficult challenge in balancing standardization efforts towards allowing sufficient flexibility for stimulating continued local innovation. Gaining acceptance and commitment from employees at various levels for the related organizational changes is of key importance here. The experiences from the early stages in the Ericsson implementation indicate that local champions may play an instrumental role in fostering commitment among the adopters, and also in keeping up the long-term focus and interest in the project in times where market decline may change the company's priorities.

Further research may add to this exploratory study, by conducting detailed field studies on the different issues discussed in this paper. Longitudinal studies are needed to evaluate to what extent the potential benefits from competence systems are really achieved, and what the long-term impact from introducing this type of system on an organization's competence management and knowledge management processes may be.

## References

- Agarwal, R. and Ferratt, T.W. (1999). Crafting an HR Strategy to Meet the Need for IT Workers. *Communications of the ACM*, 44 (7), 58-64.
- Alavi, M. (2000). "Managing Organizational Knowledge". Zmud, R.W. (ed.), *Framing the Domains of IT Management. Projecting the Future...Through the Past*. Cincinnati, OH, Pinnaflex Educational Resources.
- Alavi, M. and Leidner, D.E. (2001). Review: Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues. *MIS Quarterly*, 25 (1), 107-136.
- Baladi, P. (1999). Knowledge Networking and Competence Management: Ericsson Business Consulting. *Business Strategy Review*, 10 (4), 20-28.
- Berardine, T. (1997). Human resource information systems improve management decision-making. *Canadian Manager*, 22 (4), 17-18.
- Bergenhengouwen, G.J., ten Horn, H.F.K. and Mooijman, E.A.M. (1996). Competence development – a challenge for HRM professionals: Core competences of organizations as guidelines for the development of employees. *Journal of European Industrial Training*, 20 (9), 29-35.
- Blumenthal, B. and Haspeslagh, P. (1994). Toward a Definition of Corporate Transformation. *Sloan Management Review*, 35 (3), 101-106.
- Boland, R.J. and Tenkasi, R.V. (1995). Perspective Making and Perspective Taking in Communities of Knowing. *Organization Science*, 6 (4), 350-372.
- Borghoff, U.M. and Pareschi (1998). *Information Technology for Knowledge Management*. London, Springer.
- Bowman, B.J. (2002). Building Knowledge Management Systems. *Information Systems Management*, Summer, 32-40.
- Davenport, T. and Prusak, L. (1998). *Working Knowledge. How Organizations Manage What They Know*. Boston, Harvard Business School Press.
- Ericsson (2003). Ericsson. [Online]. Available: <http://www.ericsson.com> [2003, 10<sup>th</sup> of December].
- Greengard, S. (1995). When HRMS goes global: Managing the data highway. *Personnel Journal*, 74 (6), 90-98.
- Hagan, C. M. (1996). The Core Competence Organization: Implications for Human Resource Practices. *Human Resource Management Review*, 6 (2), 147-164.

- Hanseth, O. and Braa, K. (2000). "Globalization and Risk Society". Ciborra, C.U. (Ed). From Control to Drift. Oxford, Oxford University Press.
- Hellström, T., Malmquist, U., and Mikaelsson, J. (2001). Decentralizing knowledge: Managing knowledge work in a software engineering firm. *The Journal of High Technology Management Research*, 12 (1), 25-38.
- Hellström, T., Kemlin, P. and Malmquist, U. (2000). Knowledge and competence management at Ericsson: decentralization and organizational fit. *Journal of Knowledge Management*, 4 (2), 99-110.
- Houtzagers, G. (1999). Empowerment, using skills and competence management. *Participation & Empowerment: An International Journal*, 7 (2), 27-32.
- Kallis, S. (1999). HRIS software can help firms retain workers. *Computing Canada*, 25 (24), 29.
- Lawler, E. (1993). From job-based to competence-based organizations. *Journal of organizational behaviour*, 15 (1), 3-15.
- Lengnick-Hall, C.A. and Lengnick-Hall, M. L. (1988). Strategic HR Management: A Review of the Literature and Proposed Typology. *Academy of Management Review*, 13 (3), 454-470.
- Lindgren, R., and Stenmark, D. (2002). Designing Competence Systems: Towards Interest-Activated Technology. *Scandinavian Journal of Information Systems*, 14, 19-35.
- Lindgren, R., Stenmark, D., and Ljungberg, J. (2003). Rethinking competence systems for knowledge-based organizations. *European Journal of Information Systems*, 12 (1), 18-29.
- Magnusson, M. and Davidsson, N. (2001). Creating and Managing Communities of Knowing. *International Conference on Entrepreneurship and Learning*. [Online]. Available: [http://www.dea.unibo.it/italiano/seminari/Papers/Magnusson\\_Davidsson.pdf](http://www.dea.unibo.it/italiano/seminari/Papers/Magnusson_Davidsson.pdf) [2003, 25<sup>th</sup> of November].
- Marchand, D.A. (1998). "Competing with intellectual capital." Krogh, G., Roos, J. and Kleine, D. (eds.), *Knowing in Firms*. London, Sage Publications Ltd.
- Nordhaug, O. (1993). *Human Capital in Organizations*. Oslo, Scandinavian University Press.
- Niederman, F. (1999). Global Information Systems and Human Resource management: A Research Agenda. *Journal of Global Information Management*, 7 (2), 33-39.
- Pickett, L. (1998). Competencies and Managerial Effectiveness: Putting Competencies to Work. *Public Personnel Management*, 27 (1), 130-115.
- Rolland, K. H. and Monteiro, E. (2002). Balancing the Local and Global in Infrastructural Information Systems. *The Information Society*, 18 (2), 87-100.
- Ryan, A. M., Wiechmann, D., and Hemingway, M. (2003). Designing and Implementing Global Staffing System: Part II - Best Practices. *Human Resource Management*, 42 (1), 85-94.
- SAP (2003). SAP. [Online]. Available: <http://www.sap.com/> [2003, 10<sup>th</sup> of June]
- Schüppel, J., Müller-Stewens, G., and Gomez, P. (1998). "The Knowledge Spiral". Krogh, G., Roos, J. and Kleine, D. (eds.), *Knowing in Firms*. London, Sage Publications Ltd.
- Totty, P. (2001). Human resource information systems. *Credit Union Magazine*, 67 (8) 53-55.
- Ulrich, D. O. and Lake, K. (1990). *Organizational capability: Competing from inside out*. Canada, John Wiley & Sons.
- Walsham, G. (2001a). Knowledge Management: The Benefits and Limitations of Computer Systems. *European Management Journal*, 19 (6), 599-608.
- Walsham, G. (2001b). *Making a World of Difference. IT in a Global Context*, Chichester, Wiley.
- Wiechmann, M.A., Ryan, A. M., and Hemingway, M. (2003). Designing and Implementing Global Staffing System: Part I - Leaders in Global Staffing. *Human Resource Management*, 42 (1), 71-83.