

# KNOWLEDGE MANAGEMENT IN E-BANKING: A COMPETENCE-BASED PERSPECTIVE

KOSTAS SAMIOTIS and ANGELIKI POULYMENAKOU

Athens University of Economics and Business

Athens 10434, Greece

## ABSTRACT

The claim that Knowledge Management is rooted in the foundations of contemporary strategic management and most specifically in the theory of resource-based view of the firm has not yet exhibited significant implications for the organizational arrangements of the work context. Based on a study of the implementation of Knowledge Management to support the e-Banking activities of a retail bank, a framework of competence-based Knowledge Management practice is proposed combining tacit and explicit forms of knowledge and collective forms of learning in the context of work practices. A conceptualization of the type of technological support required for the realization of the Knowledge Management practice framework is also provided through the case study discourse. The framework constitutes for organizations and especially banks an innovative proposition for Knowledge Management with clear methodological and technological implications.

## INTRODUCTION

Knowledge Management (KM) research has capitalized on the ideas originating from the strategic management field and more specifically the resource-based view of the firm (RBVF) (10, 13, 38). The particular strategic theory attempts to explain the factors affecting the achievement and sustainability of competitive position of firm within its market(s). Its argumentation is grounded on the perception of the firm as a unique bundle of idiosyncratic resources and capabilities upon which the firm resides its rent-generating mechanisms (32, 43). The emergent theory, anchored in the combination of organizational theory and economics, has captured the interest of researchers in a variety of research realms, most recently organizational learning, knowledge management and technology management (2, 22).

The socio-economic changes brought about by the emergence of "Knowledge Economy" and thereupon the shift toward "knowledge work" imposed the extension of the RBVF to the Knowledge-based view of the firm (KBVF). In tandem with the knowledge and learning prerequisites of the new era (20), the KBVF focuses upon knowledge as the most strategically important of the firm's resources (13). Most recent research has tried to operationalize the aforementioned strategic theories and thus introduced the notion of competence-based competition (14, 30, 33, 34) and dynamic capabilities (41). Managerial action-focusing competencies comprise tools managers use to conceptualize the firm's strategy but also its work arrangements. Prerequisite of every competence-based approach is the development of approaches targeting the management of knowledge.

While the strategic implications of exploiting a firm's

knowledge resources have received ample attention, the implications regarding operational and managerial arrangements on the level of everyday work practice are far less elaborated thus far. Prompted by the absence of operationalization for the KBVF, the current paper demonstrates a framework of Knowledge Management practice anchored on the realization of a competence-based strategy combining tacit and explicit forms of knowledge and collective forms of learning in the context of work practices. Theories of knowledge, learning and work practice provided us with the lens to investigate the transformation of the business strategy of a large retail bank entering the e-banking sector as perceived by executive management into a comprehensible and meaningful technological support for the implementers, i.e., various types of workers involved with the provision of e-banking services. Technology can enable and strengthen the utilization of firm specific resources, knowledge in our case, that constitute the organizational competencies within the scope of existing work practices.

The current paper addresses the part of e-commerce dealing with e-banking. E-banking comprises the latest strategic expression in the banking sector and thus attracts a lot of managerial but also research interest. The rate of business change that is being monitored in the banking sector and especially the e-banking makes inevitable the a priori development of work-based competencies that could assure the sustainable competitive advantage. The dynamic characteristics and the knowledge-intensive work embedded with the practices of e-banking have made obvious the necessity for knowledge management intervention in technological and managerial terms. Within these developments, our empirical work described in this paper is based on a longitudinal case study that monitors a Retail Bank in a state of rapid business development and intense innovative behavior. Knowledge management is being considered by this organization as a practice that could facilitate the sustainable development of new products and services and, beyond that, the transition to a radically different set of operational arrangements. Specifically, the organization under study has recently established an electronic banking division that is responsible for the creation of new electronic banking services and their promotion to existing and new clients. Ultimately, the strategic orientation of this organization is (in their own words) "to become a virtual service provider."

In tandem with these developments, the bank has proceeded with the development of an experimental knowledge management infrastructure. This infrastructure consists of a technological solution and a set of guidelines related to the management of its adoption. This initiative, the focus of the research, targets knowledge enactment requirements both at the functional level, where the clients interact with bank employees and at the tactical-strategic level, where the design and

implementation of the new e-banking services and products is taking place.

In what follows we discuss the constituents of the proposed KM practice framework putting emphasis on competencies as its originators and the implications of this perspective regarding the forms of knowledge and learning identified in the workplace. The case study description that complements the theoretical description of the framework is engaged with the continuum of events pursuing the strategic shift of the bank and the empirical constructs that informed our framework. Finally, we conclude our claims with the provision of a conceptualization for the technological realization of the proposed framework.

### THE ENACTMENT OF COMPETENCIES

Competencies are prominent in the literature of the knowledge-based theory of the firm dealing with the "strategic exploitation" of knowledge. Strategic thinking and the quest for growth are seen to require organizations to develop firm-specific patterns of behavior, i.e. difficult to imitate combinations of organizational, functional and technological skills (41). These unique combinations create *competencies* and are being manifested through the exploitation of the firm's intangible knowledge resources in its business behavior and more specifically in its value-adding work practices.

Competencies are reflected in the products and services offered by the firm and indicate its ability to sustain the coordinated deployment of resources in a way that helps the firm to achieve its goals (34). Thus, competitive advantage stems from the firm-specific configuration of its intangible knowledge, through which it adds value to the final product/service (8, 13, 27, 36, 39, 40).

The impetus for the operationalization of competencies that we sustain in this paper is nicely attributed by several scholars who attempted to outline the notion of competencies. Boisot defines competencies as the organizational and technical skills involved in achieving a certain level of performance in the production (4). Others ground this perspective on the notion of capabilities. Amit and Shoemaker interpret *capabilities* as *the firm's capacity to deploy combined resources, which filtered through organizational processes, can achieve a desired output* (1).

The choice of competency-based perspective seems to guide the strategic choices of many contemporary firms. At the extent it is treated as an issue of strategic management, firms encounter difficulties in achieving the prescribed results. In contrast to traditional firms that have been long fostering unique competencies, even sometimes unintentionally, new strategic initiatives suffer the absence of particular competencies, and thus the consequences of the missing strategic orientation. Lack of competencies impedes not only the achievement of an organizational identity and a strategic orientation but has severe implications on the organization of work and its practices through which they are reflected.

The KM practice framework that we are trying to constitute increases the value of competencies as a strategic decision about knowledge and is guided by their endeavor to become socially embedded within the context of work (11). Product of the unanticipated enactment of a technological intervention (3, 25, 28), introduced to support the e-banking activities of the bank (events described in the case study later), the KM practice framework reveals three basic operational constituents of competence-based strategies. The concepts of *Knowledge*, *Learning* and *Work Practice* that constitute the framework have been long studied either in isolation or in combination under the realms of Knowledge Management, Organizational Learning or

even e-Learning. The technological imperative, and thus the quest for operationalization, imposed new challenges for the aforementioned concepts as explanatory and normative elements of firm behavior. However, only lately have scholars started to notice the implications of the lack of understanding of the situated work practices for the strategic decisions and the underlying technological propositions (26, 31, 35).

### THE KM PRACTICE FRAMEWORK

The framework aligns itself with the considerations of contemporary strategy management for new business developments, i.e. e-banking, and provides a cohesive schema of the operationalization of the competence-based perspective. Grounded on the interpretation of events following the introduction of a KM solution in the e-banking sector of a bank and the stakeholder perceptions of this undertaking, the KM practice framework suggests a three-dimensional view for achieving strategic advantage through KM. Knowledge, Learning, Work Practice and their interplay comprise the framework.

The remainder reading engages in the discussion of the constituting components of the KM Practice framework in terms of its value-adding inter-relationships that ultimately determine the conceptualization of the competence-based perspective.

#### Knowledge Foundations of Learning

Sociocultural traditions of knowledge have been strongly underlying the relationship between knowledge and learning. Learning is inevitably implicated in the acquisition of knowledge and vice versa (17). The method by which organizational knowledge is acquired affects the knowledge processes of the organization. Thus, the concept of knowledge implies more than an accumulation of information, rather it is an *organized* collection that reflects the intentions of the humans who create it and interpret it (18).

Attempts to "organize" knowledge reveal a variety of aspects and categories identified in the organizational literature. Aspects of knowledge such as its nature (knowledge as an object or as a process), its context (i.e. social, organizational, group, individual) and its location (i.e. routines, intellectual capital, symbols, etc.) have been discussed by a variety of scholars. The distinction between tacit and explicit knowledge has a prominent position in this discussion (20, 23, 24, 29).

Polanyi encapsulates the leaning of tacit knowledge in the phrase, "We know more than we can tell" (30). Tacit knowledge is subjective, experiential and hard to formalize and communicate. Tacit knowledge has a personal quality; it is deeply rooted in action and understanding, involves both cognitive and technical elements, and is non-transferable without personal contact (23, 24, 37). On the contrary, explicit or codified knowledge is the knowledge that is objective and rational and can be expressed in a formal and systematic language. Explicit knowledge is very often codified in a written form such as manuals, brochures, standardized procedures, etc.

Views of knowledge that are socially constructed tend to emphasize the importance of knowing (7) as the enacting approach toward learning. In complementarity with this view, learning comprises the socially situated activity in organizations that creates its body of knowledge. Our proposition for the KM practice framework requires knowledge and learning to be treated as two mutually dependent concepts that embrace more than one organizational practice to support them. We have found that the operationalization of the competency-based perspective calls upon the collaboration of learning or skills development

initiatives and information management initiatives.

### Knowledge: Revealing the Tacit Component of Work Practice

The literature on organizational knowledge and learning is littered with implicit or explicit references to work practices. While the key role of work practice in the study of knowledge and learning in organizations emerges as a common theme, in our view more work is needed on the elaboration of these relations. Models related to the study of the organization of work (e.g. task analysis) usually address its execution and not its knowledge and learning dimension. A practice-oriented approach is essential in KM so that its tacit component can be revealed.

By work practice, we mean the conceptualization of work – the way in which work gets done. Schön thinks of practice as the process by which individuals acquire and practice artistry. Usually the concept of practice implies repeated actions that follow certain rules and principles to achieve a specific goal (42). Practices in the workplace are very difficult to interpret due to the individual and collective processes in place.

Prompted by the idea of practice, several scholars have attempted to reflect this notion on their distinction of knowledge. Consistent to Polanyi's distinction of tacit and explicit, Ryle proposes the distinction between "know how" (procedural knowledge based on experience and often embedded in practice) and "know that" (theoretical, declarative knowledge which can be codified and transmitted without loss of meaning) correspondingly. Ryle sustains also that none of the above types of knowledge is independent. To make "know that" useful requires appropriate "know how" and similarly "know how" usually derives from precepts and rules.

The practice approach contemplates that we can only understand knowledge in relationship to the context in which it was generated. Only in the real of action can knowledge become useful and valuable. The argument of the practice component of knowledge and vice versa should be taken into account for the design of KM practices and technologies.

In this sense, the organization under study considered business processes as the organizational manifestations of work practices. The notion of "business processes" seems to have captured the interest of firms, across industry sectors, in their quest for more flexible and responsive work designs (9). We argue that the scope of the business process construct can be broadened to become a rich unit of analysis for organizational learning studies.

Therefore, we have applied the business process concept as the descriptive instrument for work practice. As such, and in order for it to serve our knowledge oriented analysis purposes, a business process comprises *activities and tasks* carried out by organizational *actors* and *resources* (information and other) involved in the execution of these activities and tasks. This knowledge is usually tacit and held in the heads of practitioners. Hence, the technological proposition described in the case study was aiming at keeping the knowledge attached to the process.

### The Integration of Learning and Work Practice

Literature is not offering sufficient detail on how work practices could be conceptually organized in a sufficiently generic fashion that is relevant for organizational learning action. Based on Kim's distinction of operational and conceptual learning (16), we sustain that the learning processes should utilize the tacit knowledge embedded in work practices as they are being routinized. Learning associated with practice oriented

knowledge leads eventually to higher levels of understanding of the work arrangements in the organization (conceptual learning).

The integration of learning and work practices dictates the interplay between theory and practice. As put forth by Raelin, there are two dimensions that are fundamental to the process of work-based learning: theory and practice modes of learning and explicit and tacit forms of knowledge (31). Theory allows practitioners to explicitly reflect upon and actively experiment with their practice interventions, while experience reinforces the tacit knowledge acquired in practice.

The way we have conceptualized the issue of work-based learning is through the notion of Communities-of-Practice (CoP). The notion of CoP returns knowledge back into its context. CoP are supposed to embody tacit social knowledge through the interactions of individuals upon a common practice (19). Their success lies upon the intentions of individuals to act in a collective manner within the context of work. The employees inside the organization as social units interact and communicate with each other and build relationships that strengthen the workforce integrity. Individuals with the same interests and common recognized targets may form a community where they will share experiences and knowledge while they will work toward the benefit of the collective. Especially, employees participating in a same business process (our manifestation of work practice) may form a community that will place high interest in experience share or exchange and in the common effort to find solution. Within these CoP, the knowledge creation and sharing among the members is an ongoing continuous process. The CoP formation is a very common phenomenon inside organizations and lately their study is in the center of strategic and managerial research.

A common characteristic of CoPs is that their members share the same practices and that's why they share knowledge collectively (15). Its members may be located on the same place and/or time, or they may be geographically dispread, while they may come with different intellectual backgrounds and interests, ethics and cultures. In a knowledge rich environment like a CoP, people learn to construct shared understanding amidst confusing and conflicting data (5, 31). Personal relationships between the members are created and hence mutual respect and trust are established. These are essential in communication and share of tacit knowledge and are catalysts in community's knowledge enrichment. Perhaps the most attractive part of CoP is its capacity to assimilate unexpected environmental stimulus and in return to produce strong feedback loops. Each CoP encompasses a collective knowledge repository that is the organization's intellectual capital or collective expertise of the workforce. This is considered to be the most valuable resource for the organization.

### EMPIRICAL WORK

In the remainder of the paper, we turn to the description of our empirical experience that leads us to the elicitation of KM practice framework. Our reasoning for the development of this framework was unfolding as we were monitoring while managing the introduction of a KM technological solution. In the time spent in the research site, we have been engaged (both authors) as participant observers in the design negotiations to shape up the operational KM approach. The empirical work comprises details of the research site, briefing for the KM project in which the particular organization was engaged to, description of the technological features of the proposed KM solution and finally our main informants' responses and how they enacted our claim for the KM practice framework.



## Research Approach

Our research approach follows the interpretivist paradigm (42). We seek to apply our theoretical constructs into organizational settings with the primary goal of eliciting a deeper understanding on the phenomena surrounding the introduction of KM technologies and draw findings that could inform the formulation of a generic KM practice framework. Our unit of analysis is that of an organizational group and the nature of our research output comprises ultimately organizationally feasible and systematically desirable (6) proposals for knowledge management support.

Empirical research presented below comprises a single site (organization), longitudinal case study. It is a three-year long study in its second year of development. We work with multiple informants within this business organization, all of who have an expressed stake in encouraging and supporting knowledge enactment in their firm. Our involvement with this organizational setting is intense and multifaceted. More specifically:

- i. We are responsible for the design and delivery of a knowledge management application within an organizational unit whose work brief is deemed as critical for the sustainable development of the organization as a whole. The design of the system reflects the organization of work practices around business processes as discussed earlier.
- ii. We have undertaken the commitment to engage in appropriate action to support this organization in the process of adopting in a meaningful manner the technological proposition (i.e. the system) that is being developed.
- iii. We are complementing work done in (i) and (ii) with inquiry into knowledge management and its relation to strategic imperatives and work practices within this organizational setting.

Evidence is being collected primarily through interviews, brainstorming and issue resolution meetings (concerning the knowledge management system and its adoption), and participant observation of organizational activity (please refer to the following section).

In brief, we study the evolution of an organizational intervention comprising knowledge management technology and the potential for supporting competence-based strategies through the enactment of learning and knowledge management anchored on work practices. Technology in this research is viewed as the enabler for the operationalization of competencies within the functional levels of the organization.

## The Case Setting

The organization under study is a medium to small (by EU standards) retail bank. The bank is ranked fourth in size at a national level, it employs around 4000 people, and has a network of 200 branches all deployed in a single EU country (Greece). The focal organizational unit for our study is the e-banking department, created in January 2000. Preparatory work on the development and procurement of the necessary infrastructure to deliver electronic banking services started in the bank approximately one year before that date. The bank launched its first "bouquet" of e-banking services to the public in March 2000 with an extensive and intensive marketing campaign. It should be noted that at that time the bank was the first to offer such an extensive range of electronic banking services in the local market.

The bank's "digital strategy" (their own term) comprised a

number of banking services that its customers could access through "digital channels." Under digital channels, the bank grouped all types of transactions that a customer could perform over ATMs, Internet, phone (call center), mobile phone (based on SMS and WAP), while it also plans to develop services for interactive digital television.

At its inception, the e-banking department comprised groups responsible for marketing and sales, Internet activities, electronic commerce, call center services, ATM operations, and mobile phone banking services. A few months' later, call center operations were consolidated as a separate (subsidiary) business organization.

E-banking operations were supported within the bank by a network of people, identified as "e-banking agents," located in each branch of the bank network. Initially, the role of the e-banking agent was assigned to the people that were responsible for the technical maintenance of the transaction systems in each branch ("the platform officers"). Very soon it was realized that these people lacked the necessary customer communications skills needed to promote the new services to the bank's large, disparate and unaccustomed to technology customer base. Subsequently, e-banking agent responsibilities were redistributed among branch staff already experienced with customer service (e.g. loan and investments consultants). The assignment of the e-banking agent role to specific employees and the training of these people was undertaken by the Human Resource Development department.

The brief of the e-banking department was "the management of the banking products and services offered through digital channels" (their own words). Management refers to the design and support of the banking products and services. The e-banking agents are the human interfaces of e-banking department with bank's customers. Their role, at least in the beginning, was to promote e-banking services and products to external and internal customers. To facilitate the promotion e-banking services, agents were periodically subjected to face-to-face training regarding product and services characteristics, development of communication and marketing skills, and trouble-shooting.

At the time of the e-banking department establishment, a number of relevant initiatives were taking place in the bank. Of particular interest is the "competencies mapping project" handled by the Human Resource Development department. The scope of this project, still currently underway, is to reconceptualize the organization of work practices across all bank operations by placing emphasis on the skills required to meet the requirements in each operational front, rather than on job descriptions anchored on the detailed specification of tasks. This project, along with other reorganization initiatives is the result of a top-level decision to reshape all major operations "from inward looking functional silos, to customer oriented service provision by all bank employees" (their own words). The competencies mapping project is hailed by the bank as the groundwork required to inform human resource development strategy particularly in terms of redeploying personnel around new and restructured operations and in terms of managing training initiatives.

A second significant development was the provision of computer-based training services over the bank's Intranet. These services, also launched at the beginning of 2000, were meant as complementary to traditional classroom based training. Computer-based training courses were delivered organization-wide over the bank's intranet/extranet infrastructure packaged in what the bank termed "a first version of our learning portal." Instructional content developed to date in this portal targets primarily sales and customer communications techniques.

Last but not least, at the time that our study set off, the bank's main transactions systems had undergone extensive revamping "to exhibit a more customer-centric philosophy" (own words). In essence, the revamping comprised the integration of separate systems into a single platform, the redevelopment of all major user interfaces to operational systems, and the deployment of more management reporting tools. As a result, PC use penetration among the bank's employees more than doubled within the course of a year. An extensive personnel training effort on new systems functionalities is still underway across the bank.

### The KM Project and the Technological Proposition

Our involvement with the bank setting was initiated after their decision to engage in a KM project, which would provide them with a KM solution. The bank has chosen e-banking as the most appropriate banking sector to be supported by KM. This decision was made almost the same time of the e-banking kick-off. The implementers of the e-banking initiative welcomed this choice and considered KM as a strategically crucial factor for the efficiency and effectiveness of their business operations.

The participation of the e-banking department in the KM project involved hand-by-hand with us formulation of the KM solution. The case of the bank for the research described in this paper is not simply an organizational context we draw data from. Our involvement with the case setting is much more active and includes the following:

- i. The development of a knowledge management application tailored to the needs of the e-banking department both in terms of providing knowledge oriented support for their internal work arrangements and in terms of providing learning opportunities both to them and to e-banking agents located in the branches particularly through knowledge sharing and collaboration.
- ii. Appropriate facilitation and support throughout the scooping, specification, and (most importantly) deployment of (ii) with special emphasis given to work context-sensitive adoption guidance and on alignment of this effort with related projects such as the competencies mapping project and the development of the learning portal.

The design period resulted in a prototypal system that was incorporating most of the concerns of the e-banking department regarding its work practices. Throughout the design negotiations, it became evident that an appropriate KM solution requires a multidimensional approach, incorporating aspects of knowledge, learning that are grounded on work practices. The operationalization of the competence-based strategy that the e-banking initiative was pursuing was dictated by the appropriate utilization of the resources dedicated to e-banking and the enforcement of the work practice lens on management of knowledge and learning. The system described below encompasses in a technically viable way the practice-based perspective of knowledge and learning, as conceptualized in our KM practice framework.

The system is characterized by several distinguishing features. These are its ability to:

- store and diffuse information resources,
- describe the work practices in terms of business process elements,
- enable communication and collaboration,
- have the information resources attached to work descriptions, and
- trace information exchanges among practitioners and

anchor on the elements of the business process description from which they were initiated.

The aforementioned features have obvious implications on the three elements of our KM practice framework. The practice orientation is reflected through the codified description of the business processes in terms of tasks and its accompanying elements, i.e. actors, events, resources, etc. Tacit knowledge is captured through "annotations" that the user is attaching on specific process elements. Also, the tracing of any type of communication or collaboration, i.e. e-mail, chat, on the basis of finding a solution to a problem can be considered as tacit knowledge. Finally, the system allows the development of communities of practice through the association of employees with specific roles and thus tasks.

Our framework of KM practice has emerged out of the perceptions of the stakeholders for this KM technological intervention. Next we present their perceptions and our interpretation of them.

### Stakeholder Perceptions: An Interpretation

Our partners and informants in this study include major stakeholders in the evolution of the e-banking department and the related developments within its environment (the bank). In fact, the group of people we are working with share, among them, most of the decision-making responsibility for the development and redefinition of the bank's operations. The informant group includes one of the two vice presidents of the bank responsible for IT, organizational development and new products. We are also in contact with the Human Resource Development Director, who is responsible for the "competence mapping" project and the formulation of the training strategy. Regarding the e-banking department, the main stakeholders we work with are its director and the marketing manager. The former is responsible for e-banking strategy in terms of digital services and products offered, while the latter manages their promotion and the development of marketing skills to e-banking agents.

At the executive level (according to the VP responsible), the move toward electronic banking services is regarded as a business imperative. Change in the bank's business environment is seen to call upon the redefinition of value propositions, highlighting the importance of knowledge and its exploitation and the establishment of new organizational forms. At the moment, the bank is in a transitional period, in which the above issues are being discussed within the general debate regarding the shape and form of the bank's future as a virtual financial service institution. The new requirements affect several work fronts, which are contributing to the strategic reconfiguration of the traditional bank.

Special emphasis is given by our stakeholders to the exploitation of organizational and individual knowledge along with the establishment of a knowledge sharing and continuous learning culture that would set the groundwork of new strategic foundations. They perceive knowledge as the resource that would ensure the longevity and sustainable competitiveness of their organization in the emergent digital business landscape and therefore our stakeholders believe that knowledge should be accumulated systematically and most importantly incorporated within the design of electronic banking services and products. Traditional and hence physical paradigms of conducting banking operations are not viewed as useless though; they are being valued for the cumulative experiences they convey from traditional work practices derived from the daily interaction of employees with customers. This knowledge, which is tacit most of the time, is believed that it should be exploited not only by

the people who are still engaged in traditional functions but that it should also be supplied to those who are building and transforming traditional banking services and products to electronic artifacts.

An important observation here is that in our case setting work practices are increasingly being perceived throughout the bank from a business process perspective. This point is exemplified by the emphasis placed on the "customer orientation" of all operations and the integration of systems supporting day-to-day work (with its significant "side-effect" of creating a central pool of information resources). In addition to that, work practices in the newly established e-banking department have a definitive business process rather than functional orientation as the manner in which this department operates is crossing traditional functional hierarchies and creating virtual work teams (collaboration with the e-banking agents).

### Knowledge, Learning and Work Practices in e-Banking

When confronted with the issue of developing and exploiting knowledge resources, our respondents have articulated three areas of concern:

- (i) capturing customer knowledge and responses and communicating them to top management (strategic learning implications),
- (ii) facilitating the design of new products and services (learning implications) and
- (iii) improving existing business processes related with the promotion and support of electronic banking (routinization learning implications).

The customer and knowledge related to him are of primary concern to the bank. The expressed requirements of our respondents (stakeholders) are the capturing and exploitation of this "knowledge" "strategically" i.e. in terms that affect directly the enhancement and expansion of the spectrum of electronic services and products offered. To this end, they expect a supporting information system that will be deployed to facilitate the relevant "knowledge processes" of the organization.

Our inquiry in the case setting thus far, but also our planned intervention through the system and the organizational support that we will provide, need to target the sources and carriers of knowledge. Knowledge assets can be generally assigned to two categories. The first category is "knowledge of the customer" and the other is individual and organizational knowledge. Both types of knowledge are closely interrelated. Through the technological and organizational support envisaged, we actually seek to develop within the e-banking processes the competence to "manage" both types of knowledge and ultimately help the organization to incorporate them in its organizational work practices.

Learning processes emphasize the avoidance of passive absorption of information and target the development of tacit knowledge, in our case anchored on work practices. To this end, our intervention (system and organizational support) needs to involve the users in a learning process, where personal knowledge exploration and exploitation are taking place. Exploration contributes to learning by using the system and learning by doing, while exploitation refers to finding efficient ways of working, understanding and interpreting existing work practices.

### E-Banking Competencies

The short life of the e-banking department has not permitted them yet to consolidate their understanding on the

constituents of their competency base. It is reasonable to expect competencies to spawn from the newly established work processes in due course. The technological intervention we propose is envisioned to support the capabilities development process either by capitalizing on certain aspects of routinization of work practices (still quite volatile in this department) or by encouraging competence development by providing information that will challenge actors to adopt new ways of work. Moreover, our initial inquiry activities have urged the e-banking department to "contemplate on the way we work" (in their own words). In many cases, work practices documented in our study were considered for adoption as the norm.

Our inquiry has revealed three competencies that the e-banking department wishes to develop. The first competency refers to "mastering of the processes of the electronic banking department." These processes entail, for our respondents, the acquisition of the knowledge needed for promoting effective products and services and, more specifically, the tasks involved in this (business) process, the resolution of problems in the flow of work, and the efficient use of relevant systems (e.g. intranet, learning portal). Situations such as encountering an unusual problem or working with a new system may urge members of the department to adopt new ways of performing the process that in turn create new challenges for systems support and work performance.

The second competency targeted affects more organizational entities than the e-banking department. It refers to "mastering of the individuals' skills and competencies." In other words, based on our respondents' feedback, we suggest that management in the bank wishes to "know better what its employees are capable of doing." Moreover, an expressed requirement is to reorganize work around meaningful clusters of such capabilities. Our respondents expressed the wish to have systems that provide customized support for the execution of work tasks. Customization should follow competency profiles.

The third competency targeted is reflecting a need of top level management, namely "the creation of a shared mental model among the bank's customers: that the specific bank is synonymous with the notion of electronic banking in Greece." The development of this competency exceeds the potential offering of any technology, but using appropriate technology can definitely support customer orientation of work practices and thus lead to more efficient customer service.

### CONCLUSIONS AND FURTHER RESEARCH

Our inquiry thus far delivered findings that imply both the need but most importantly the constituent elements for the operationalization of competency-based strategies using knowledge management technology. In our case setting, the development of electronic banking competencies is anchored on existing resources and work practices. The proposed technological solution attempts to exploit this notion through the enactment of knowledge and learning processes. Competencies acquire strategic significance by advising the organization for the *how* and *why* of the work processes. Technology enables the realization of competencies and competencies reconfigure the way technology is being used. The system we are about to supply the bank with allows the users to "grow" as well as share resources associated with their competencies.

The interpretation of the organizational situation described in this paper is evolving in parallel with the actual deployment of the knowledge management initiative in which we are actively involved. The outcome of this process will provide useful indications of how the firm can approach knowledge management and how it should evolve to cope with the



knowledge requirements of its organizational work practices and vice versa. It is the intentions of the research to identify the relevance of ICT in the development of competencies and define the terms under which this is happening.

The contemporary knowledge environment of firms and the characteristics of its evolution comprise the drivers for describing the arrangements taking place in the workplace context. We propose a technological intervention, and we are primarily guided by this to explain the need and thereupon the phenomena, meaning the conditions and factors related to the organizational adoption of the knowledge-oriented technological offerings. The research will approach the need of a work-related knowledge management system from a social, organizational and certainly technological perspective.

To this aim, we have described the constituents of a framework of KM practice that has been driven by the technology deployment with regard to the empirical setting this research refers to. The need to manage knowledge across people and practices imposes certain imperatives for the development, introduction, adoption and use of any information technology. To this end, we have proposed *knowledge, learning and work practices* as the primary concerns of a KM practice to be embedded in any technological proposition driven by the impetus of a competency-based strategy.

#### REFERENCES

1. Amit, R. and P.J. Schoemaker. "Strategic Assets and Organizational Rent," **Strategic Management Journal**, 14:1, 1993, pp. 33-46.
2. Andreu, R. and C. Ciborra. "Organizational Learning and Core Capabilities: The Role of IT," **Journal of Strategic Information Systems**, 5, 1996, pp. 111-127.
3. Barley, S.R. "Technology as an Occasion for Structuring: Evidence from Observation of CT Scanners and the Social Order of Radiology Departments," **Administrative Science Quarterly**, 31, 1986, pp. 78-108.
4. Boisot, H.M. **Knowledge Assets – Securing Competitive Advantage in the Information Economy**. Oxford University, 1998.
5. Brown, J. and P. Duguid. "Organizational Learning and Communities-of-Practice: Toward a Unified View of Working, Learning, and Innovation," **Organization Science**, 2:1, 1991, pp. 40-57.
6. Checkland, P. **Systems Thinking, Systems Practice**. Wiley, 1981.
7. Cook, S.D.N. and J.S. Brown. "Bridging Epistemologies: The Generic Dance Between Organizational Knowledge and Organizational Knowing," **Organization Science**, 10:4, 1999, pp. 381-400.
8. Coombs, R. and A. Richards. "Technologies, Products and Firms' Strategies Part 1-A Framework for Analysis," **Technology Analysis and Strategic Management**, 3:1, 1991, pp. 77-85.
9. Davenport, T.H. **Process Innovation. Reengineering Work through Information Technology**. Boston: Harvard Business School Press, 1993.
10. Foss, J.N. "Knowledge-based Approaches to the Theory of the Firm: Some Critical Comments," **Organization Science**, 7:5, 1996, pp. 470-476.
11. Granovetter, M.S. "Economic Action and Social Structure: The Problem of Embeddedness," **American Journal of Sociology**, 91, 1985, pp. 481-510.
12. Grant, M.R. "The Resource-based Theory of Competitive Advantage: Implications for Strategy Formulation," **California Management Review**, 1991, pp. 114-135.
13. Grant, R.M. "A Knowledge-based Theory of Inter-firm Collaboration," **Organization Science**, 7, 1996, pp. 375-387.
14. Hamel, G. and A. Heene. In Hamel, G. and A. Heene (Eds.). **Competence-based Competition**. New York: Wiley, 1994.
15. Hutchins, E. "Organizing Work by Adaptation," **Organization Science**, 2:1, 1991, pp. 14-38.
16. Kim, D.H. "The Link between Individual and Organizational Learning," **Sloan Management Review**, 35:1, 1993, pp. 37-50.
17. Kogurt, B. and U. Zander. "Knowledge in the Firm, Combinative Capabilities, and the Replication of Technology," **Organization Science**, 3, 1992, pp. 383-397.
18. Laudon, K. and H. Starbuck. **Organizational Information and Knowledge**, vol. 4. London: Routledge/Thompson Business Press, 1996.
19. Lave, J.S. and E. Wegner. **Situated Learning: Legitimate Peripheral Participation**. New York: Cambridge University Press, 1991.
20. Leonard-Barton, D. **Wellsprings of Knowledge**. Boston: Harvard business School press, 1995.
21. Lundvall, B. and B. Johnson. "The Learning Economy," **Journal of Industry Studies**, 1:2, 1994.
22. Merali, Y. "Individual and Collective Congruence in the Knowledge Management Process," **Journal of Strategic Information Systems**, 9, 2000, pp. 213-234.
23. Moingeon, B. and A. Edmondson. **Organizational Learning and Competitive Advantage**. SAGE Publications, 1996.
24. Nonaka, I. "A Dynamic Theory of Organizational Knowledge Creation," **Organization Science**, 5:1, 1994.
25. Nonaka, I., R. Toyama, and A. Nagata. "A Firm as a Knowledge Creating Entity: A New Perspective on the Theory of the Firm," **Industrial and Corporate Change**, 9:1, 2000, pp. 1-20.
26. Orlikowski, W. "Improvising Organizational Transformation Over Time: A Situated Change Perspective," **Information Systems Research**, 7:1, 1996.
27. Orlikowski, W. "Using Technology and Constituting Structures: A Practice Lens for Studying Technology in Organizations," **Organization Science**, 11:4, 2000, pp. 404-428.
28. Orlikowski, W. and D. Robey. "Information Technology and the Structuring of Organizations," **Information Systems Research**, 2:2, 1991, pp. 143-169.
29. Penrose, E.T. **The Theory of the Growth of the Firm**. Oxford: Basil Blackwell, 1959.
30. Polanyi, M. **The Tacit Dimension**. London: Routledge and Kegan Paul, 1967.
31. Raelin, A.J. "A Model of Work-based Learning," **Organization Science**, 8:6, 1997, pp. 569-578.
32. Rumelt, R.P. "Towards a Strategy Theory of the Firm." In Lamb, R.B. (Ed.). **Competitive Strategic Management**. Englewood Cliffs, NJ: Prentice Hall, 1984, pp. 556-570.
33. Sanchez, R. and H. Heene. In Sanchez, R., A. Heene, and H. Thomas (Eds.). **Strategic Learning and Knowledge Management**. Chichester: Wiley, 1996.
34. Sanchez, R., A. Heene, and H. Thomas. "Towards the Theory and Practice of Competence-based Competition." In Sanchez, R., A. Heene, and H. Thomas (Eds.). **Dynamics of Competence-based Competition: Theory and Practice in the New Strategic Management**. London: Elsevier Pergamon, 1996.
35. Schultze, U. and J.R. Boland. "Knowledge Management Technology and the Reproduction of Knowledge Work

- Practices," **Journal of Strategic Information Systems**, 9, 2000, pp. 193-212.
36. Schumpeter, J.A. **Capitalism, Socialism, and Democracy**. New York: McGraw-Hill, 1942.
37. Senker, J. "The Contribution of Tacit Knowledge to Innovation." In **AI & Society**. London: Springer-Verlag, 7, 1993, pp. 208-224.
38. Spender, J.-C. and M.R. Grant. "Knowledge and the Firm: Overview," **Strategic Management Journal**, 17, 1996, pp. 5-9.
39. Teece, D. "Economic Analysis and Strategic Management," **California Management Review**, 26:3, 1984, pp. 87-110.
40. Teece, D. "Towards an Economic Theory of the Multi-product Firm," **Journal of Economic Behavior and Organization**, 3, 1982, pp. 39-63.
41. Teece, D., G. Pisano, and A. Shuen. "Dynamic Capabilities and Strategic Management," **Strategic Management Journal**, 18:7, 1997, pp. 509-533.
42. Turner, S. **The Social Theory of Practices: Tradition, Tacit Knowledge and Presuppositions**. Chicago: University of Chicago Press, 1994.
43. Walsham, G. **Interpreting Information Systems in Organizations**. Wiley, 1993.
44. Wernerfelt, B. "A Resource-based View of the Firm," **Strategic Management Journal**, 5, 1984, pp. 171-180.
-