



ELSEVIER

Available online at www.sciencedirect.com

SCIENCE @ DIRECT®

International Journal of Information Management 24 (2004) 201–220

International Journal of

**Information
Management**

www.elsevier.com/locate/ijinfomgt

Corporate portal: a tool for knowledge management synchronization

Hind Benbya*, Giuseppina Passiante, Nassim Aissa Belbaly

*E-Business Management School, Department of Innovation Engineering, University of Lecce-ISUFI,
Via per Monteroni sn-73100 Lecce, Italy*

Abstract

As the basis of value creation and success of organizations increasingly depends on the leverage of knowledge available internally, knowledge management systems (KMS) are emerging as vital tools for competitive advantage. Among these KMS, corporate portals present the potential of providing organizations with a rich and complex shared information workspace for the generation, exchange, and use of knowledge. But developing corporate portals and building the critical mass of users required to make them successful is not an easy task. In this paper, drawing upon the literature review and an analysis of early adopters of corporate portals, we address the strength of this tool which consists mainly in synchronizing and supporting knowledge processes, put the emphasis on factors inhibiting its adoption by companies and finally propose some perspectives for a successful implementation.

© 2004 Elsevier Ltd. All rights reserved.

Keywords: Knowledge management systems; Knowledge management processes; Corporate portal

1. Introduction

The widespread adoption of networks and information technology has vastly increased our ability to store, transfer and generate knowledge, enabling and accelerating the emergence of an economic, organizational and technological landscape, that is knowledge-based (Schwartz, Eamonn, & Boyer, 1999; Romano, Elia, & Passiante, 2001). This perspective builds upon and extends the resource-based view (RBV) of the firm initially promoted by Penrose (1959) and expanded by others (Barney, 1986; Chandler, 1992; Prahalad & Hamel, 1990; Teece, Pisano, & Shuen, 1997). The premise of the RBV is that organizations employ a mix of acquisition and

*Corresponding author. Tel.: +39-0832-297210; fax: +39-0832-297211.

E-mail addresses: h.benbya@benbel.com (H. Benbya), giuseppina.passiante@unile.it (G. Passiante), n.belbaly@benbel.com (N. Aissa Belbaly).

configuration of resources to change how their business is accomplished. Knowledge is often the basis for the effective utilization of many important resources. In this context, Information and Communication technologies may play an important role in effectuating the knowledge-based view of the firm by enhancing the firm's capability to manage the knowledge it possesses. This awareness is one of the main reasons for the exponential growth of knowledge management systems (KMS). KMS are technologies that support knowledge management in organizations, specifically, knowledge generation, codification, and transfer (Ruggles, 1997). In fact, a 2000 survey conducted by KPMG shows that the use of KMS is common in organizations worldwide and has numerous benefits (KPMG, 2000). However, despite the potential benefits from KMS, the report also finds that companies were experiencing difficulties in effectively using these technologies. To address this issue, this paper focuses on a particular type of KMS, which is corporate portal, that presents the potential of providing organizations with a rich and complex shared information workspace for the generation, exchange, and use of knowledge. Building upon a large literature review, insights from eight case studies of early adopters and our own experience in dealing with some aspects of the implementation phase of STMicroelectronics portal, we address the strengths of this tool which consist mainly in supporting knowledge development phases and focus on challenges and problems that organizations may face during its implementation.

The paper is organized as follows: Section 1 presents a review on knowledge, knowledge management processes and systems. The following section focuses on a particular tool of KMS, that is the corporate portal; we present a comprehensive view of definitions and characteristics of this tool based on a comparative analysis of eight case studies in order to identify the potential role of corporate portal features in the various stages of the knowledge management processes. We then focus on the major barriers limiting its adoption and use by organizations. In the final section, building on the factors identified, we provide some perspectives for a successful implementation.

2. Knowledge management processes and systems

Before focusing on portals as KMS, it is necessary to define knowledge and knowledge management processes.

2.1. Knowledge definitions

Multiple definitions of knowledge have been proposed in the literature, and debates about this concept have been expressed from a variety of perspectives and positions. In fact, ever since the ancient Greek period, the quest of philosophy has been to find what knowledge is. Early thinkers such as Plato and Aristotle were followed by Hobbes and Locke to name just a few of the more prominent western philosophers. It seems we have no choice but to return to the question that has kept philosophers occupied for thousands of years. However, we should not approach it from a philosophical perspective. As observed by Alavi and Leidner (2001), the knowledge-based theory of the firm was never built on a universal truth of what knowledge really is but on a pragmatic interest in being able to manage organisational knowledge. In recent years, we have witnessed a

booming interest in knowledge also from other disciplines. Mainly two perspectives are dominant, an Information Technology view and a Strategic management view. While the IT view makes the distinction between data, information and knowledge, and considers the ambiguity existing between these three concepts, the strategic management perspective views knowledge as a state of mind, a capability or a process. In fact, data is mainly considered as raw numbers that once processed becomes information, and when put in specific context this information becomes knowledge (Vance, 1997). Whereas, the perspective of knowledge as a state of mind posits that individuals expand their personal knowledge through the inputs received from their environment. Further, the view of knowledge as a capability to act suggests that it is not the specific actions of knowledge “per se”, but the ability to interpret and use information and experience that influences decisions (Watson, 1999). Finally knowledge as a process, focuses on applying expertise, i.e. simultaneously knowing and acting (Zack, 1999). In this article, we emphasize the view of knowledge as a “capability to act effectively”. Knowledge is seen as a justified personal belief that increases an individual’s capacity to take effective action. Knowledge management in this view is best understood by considering knowledge management as the systemic and organizationally specified process of acquiring, organizing and communicating knowledge of employees so that other employees may make use of it to be more effective and productive in their work (Alavi & Leidner, 1999).

2.2. Knowledge processes

We can describe knowledge management life cycle as an iterative sequence of activities (Nissen, 2000). Building upon this notion, we outlined from knowledge management frameworks, key elements of several life cycle models (Table 1).

Several key points emerge from our review of the analyzed knowledge management frameworks:

- (1) There is no single or commonly accepted definition of what constitutes a knowledge management framework.
- (2) There are many concepts that are similar in the frameworks analyzed, but their ordering or structure varies.

For example, while the majority of the frameworks refer to the first phase as *knowledge creation*, Davenport and Prusak use the term *generate knowledge*, whereas Van der Spek and

Table 1
Summary of knowledge management processes identified in different frameworks

Authors	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
Holsapple and Joshi (1998)	Acquisition	Selection	Internalization	Use	
Gartner Group (1998)	Create	Organize	Capture	Access	Use
Davenport and Prusak (1998)	Generate		Codify	Transfer	
Wiig (1993)	Creation	Manifestation	Use	Transfer	
Arthur Anderson and APQC (1996)	Share-create	Identify	Collect	Adapt-organize	Apply
Van der Spek and Spijkervet (1997)	Develop	Distribute	Combine	Hold	
Mertins, Heisig and Vorbeck (2001)	Create	Store	Distribute	Apply	

Spijkervet title this analogous phase *knowledge development*. In general, the different frameworks proposed share considerable similarities. Most of the life cycles are articulated in four phases where the first one is a “create” phase. The second phase corresponds to the organization of knowledge. Phase three uses different term across the models, but they all address some mechanism for making knowledge formal. Finally, the fourth phase concerns the ability to share and use knowledge in the enterprise. Therefore, in this article, the knowledge development cycle is defined as the process of knowledge generation, knowledge storage, knowledge distribution and knowledge application. A detailed definition of these processes will be presented when linking them with the different tools of the corporate portal that support them.

2.3. *Knowledge management systems*

Following Tiwana (2001), we believe that knowledge and expertise existing in organizations generate more value when they are rapidly applied, emphasizing mainly the role of expertise transfer. Indeed, knowledge is of limited value if it is not shared. As a result, companies are beginning to implement information systems designed specifically to facilitate the generation, integration, sharing and dissemination of organizational knowledge (Alavi, 1997; Bartlett, 1996; Sensiper, 1997). Such systems are referred to as KMS and fall into four categories (Ruggles, 1997; Wensley, 2000):

1. *Content management tools*: Tools that offer abilities to integrate, classify, and codify knowledge from various sources.
2. *Knowledge sharing tools*: Tools that support sharing knowledge between people or other agents.
3. *Knowledge search and retrieval systems*: Systems that enable search and retrieval and have some knowledge discovery abilities.
4. *General KMS*: Systems that propose an overall solution for a company’s knowledge management needs.

Among these general KMS, corporate portals seem to present the potential of providing organizations with a rich and complex shared information workspace for the creation, exchange, retention and reuse of knowledge.

3. **Portals support for knowledge management processes**

3.1. *Portal definitions*

Portals enable e-business by providing a unified application access, information management and knowledge management both within enterprises, and between enterprises and their trading partners, channel partner and customers (Gartner Group, 1998). From this definition, we can distinguish two types of corporate portals: extranet portals which provide depth content rather than breadth of content, offer special advantages for business-to-business, e-commerce because they can provide something closer to a solution; and enterprise intranet portals that support knowledge management and internal communications and they are emerging as home bases for employees. In this article, we will focus on the second type of portals. A portal can be viewed as a

way to access disseminated information within a company since information chunks can be stored in various systems using different formats. One of the major differences between a traditional web site and a portal resides in the fact that the portal is usually tailored according to the users' need. A portal is consequently, a single point of access to Internet resources, an integration platform focusing on unification oriented towards the business processes of the company. Therefore, portals synchronize knowledge and applications, creating a single view into the organization's intellectual capital. Portals have seen an evolutionary approach, the first ones were search engines, that evolved by integrating a variety of services such as virtual communities, real time chat, i.e. the best example in this category is Yahoo; Today the term is used widely to describe many different types of products with different purposes.

The terms Employees Portals, Enterprise Intranet Portals, Corporate Portals, Business-to-Employees Portals and Business-to-Employees Systems are sometimes used interchangeably as synonyms to refer to the category of portals, which aim at providing employees with in-time relevant information they need to perform their duties and make efficient business decisions. Table 2 integrates the main definitions identified from the literature.

In order to identify portal characteristics, benefits and challenges, we have conducted an empirical analysis where the data-gathering stage involved four different phases:

1. Identification of the main players in corporate portal market, the solutions and features they propose and the clients that have already adopted their solutions. In this phase we started the gathering of portal's key functions, their description and potential benefits.

Table 2
The main definitions identified from the literature

Authors	Definitions
Plumtree	A corporate portal is a web portal to corporate information and services.
Delphi	A personalized workspace that integrates our most relevant sources of information and the underlying connections that make this information valuable to us in a single point of access.
Gartner	A portal is a web site targeted at a specific audience that provides: content aggregation and delivery of information relevant to the audience, collaboration and community services, and application access for the target audience, delivered in a highly personalized manner.
Giga	A portal leads somewhere or to something, it is a doorway. In the enterprise, the doorway leads to content, data and services within and beyond the organization. The value of the enterprise portal lies in its ability to provide a single access point to disparate information.
Merrill Lynch (1998). Shilakes and Tylman.	Enterprise information portals are applications that enable companies to unlock internally and externally stored information, and provide users a single gateway to personalized information needed to make informed business decisions.
White (1999)	A tool that provides business users with a single web interface to corporate information scattered throughout the enterprise.
Detlor (2000)	Enterprise portals are single-point web browser interfaces used within organizations to promote the gathering, sharing and dissemination of information throughout the enterprise.

2. Identification of early adopters of corporate portals through some specialized information sources, integrated with Internet-based analysis, a core of approximately 15 adopters emerged.
3. Then, we selected eight case studies according to the following criteria:¹
 - 3.1. Successful implementations of corporate portals;
 - 3.2. Different implementation phases (Initial phases and already running portals);
 - 3.3. Wide industry coverage (Consumer products, Telecommunications, Automobile, Pharmaceutical, High-Tech, Microelectronics).

The primary objective of the analysis was to confront the information provided by portal vendors (Corporate features, eventual benefits) with the reality of early adopters, more specifically, we have focused on the following issues:

- Main characteristics and features of corporate portals;
- Benefits associated with its implementation, focusing on the potential role portals can play in managing knowledge processes effectively;
- Challenges facing organizations in the implementation phase.

The main results of the research are presented in [Table 3](#).

According to our analysis results and the information available on the corporate portal market it emerges many characteristics and features. [Fig. 1](#) presents a framework of corporate portal with its main features, which can be classified mainly in three categories.

3.2. *Portal's features*

A Portal's features can be classified in three categories: Core capabilities, supportive capabilities and web services. The results of our analysis show that some applications are common in the majority of the cases studied, they concern mainly the core and supportive capabilities listed hereafter, while the web services differed from one company to the other ([Table 4](#)).

3.2.1. *Core capabilities*

These are the tools that support the knowledge development phases and consist of:

3.2.1.1. *Taxonomy.* Taxonomies are sometimes called “classification schemes” or “categorization schemes”. Each refers to grouping together similar items into broad “buckets” or “topics” which themselves can be grouped together in ever-broader “hierarchies. Corporate taxonomy benefits include search, support, navigation, data control/mining, schema management, and personalization/information delivery.

3.2.1.2. *Publishing.* A facility that supports content creation, authorization, inclusion and includes the ability to render or publish documents in alternate formats including HTML, PDF, XML, etc. in portal content collections.

¹Some information was gathered through web-based analysis while in some cases, companies provided us with the necessary information.

Table 3
Results of our analysis

Company	Industry	Portal's name	Characteristics	Features/information available	Benefits	Challenges
Hewlett-Packard	High Tech	@hp	90.000 users	Open enrollment health insurance and other benefits selection or administration Product, research, competitive information Compensation and salary adjustments Stock options, savings bonds and profit sharing	Better decision making through knowledge sharing More effective knowledge/content management Improved communications Global integration and standardization	Consolidation of over 2000 intranet websites Standardize technologies and eliminate duplicity in infrastructure
Ford Motor	Automobile	Hub. Ford.com	200.000 users	Collaboration tools Internet services Publishing and categorization services Healthcare, Finance and accounting services	Increased ROI on IT Closer collaboration Self-service savings Increased productivity	Allowing easier access to corporate information
STMicroelectronics	Microelectronics	Stway	20.000 ^a users	Content access by directories and taxonomy Organization and community based information (forum) General Information and services (people search, Travel and expenses, Stock) Corporate communications and internal news	Effective information search New communication channels (Alerts, Notifications, SMS, online communication) Structured communities for knowledge exchange	Integrate 189 sites grouping 800.000 static web pages or documents. Information overload Ineffective knowledge dissemination Poor knowledge awareness High cost of distribution High turnover of information

Table 3 (continued)

Company	Industry	Portal's name	Characteristics	Features/information available	Benefits	Challenges
GlaxoSmithKline	Pharmaceutical	MyGSK	80.000 users	Web-based HR applications	More exposure of any service deployed from headquarters while lowering development costs and increasing ROI	Let employees reach all the information they need, whether it comes from headquarters, a business unit, a project team or anywhere else
				Online supplies procurement; Employee directory	The portal also allows employees to carry out supplies procurement online, view corporate news announcements and access an employee's directory	
GlaxoSmithKline	Pharmaceutical	MyGSK	80.000 users	Postings of frequently asked questions and answers Corporate news and events CEO updates Links to internal and external Web sites and applications Search and categorization technologies		
				Self-services applications (including pay stubs, update address and contact information and review benefits statements online)	Allow business units to stop producing intranet "sites" and focus on web "content" and e-business transactions	Create a secure, scalable, customizable employee portal to streamline human resources functions, enable self-service applications, facilitate communications, and offer employees access to company information from home
General Motors	Automobile	MySocrates	190.000 users	Automated retirement program Search for information and people	Elimination of paper-based statements Employee self-service model reduces costs	

				Collaboration and communication tools	and bureaucracy Improve worker satisfaction and productivity Increase collaboration and knowledge sharing	
				Corporate communications (News, leadership messages, global regional, functional and business unit) Personal productivity and learning tools		
				Corporate directory	Give employees targeted information	The BT corporate intranet was so successful that it had grown too big to be manageable-employees couldn't find the information they needed to do their jobs effectively
				Virtual meeting place	Improves team collaboration Reduces training costs	
BT	Telecommunications	BT corporate portal	20.000 users	e-learning applications (online lectures...) Search engine		
Procter & Gamble	Consumer-products	My.PG.Com	100.000 users	Key services, ERP systems	Improve access to internal information and applications.	Provide a powerful and scalable solution to integrate 6000 intranets an connects more than 100.000 employees
	Cleaning products			Business intelligence applications	Content consolidation and cost reduction	
Eli Lilly	Pharmaceutical	MyELVIS	35.000 users	Search tools (Taxonomy) Healthcare news, Patent services Collaboration tools to support online communities and virtual work team	Improve efficiency in searching information and research Extending knowledge company-wide	Provide employees within in time relevant information

^a Estimated number of users by the end of 2004.

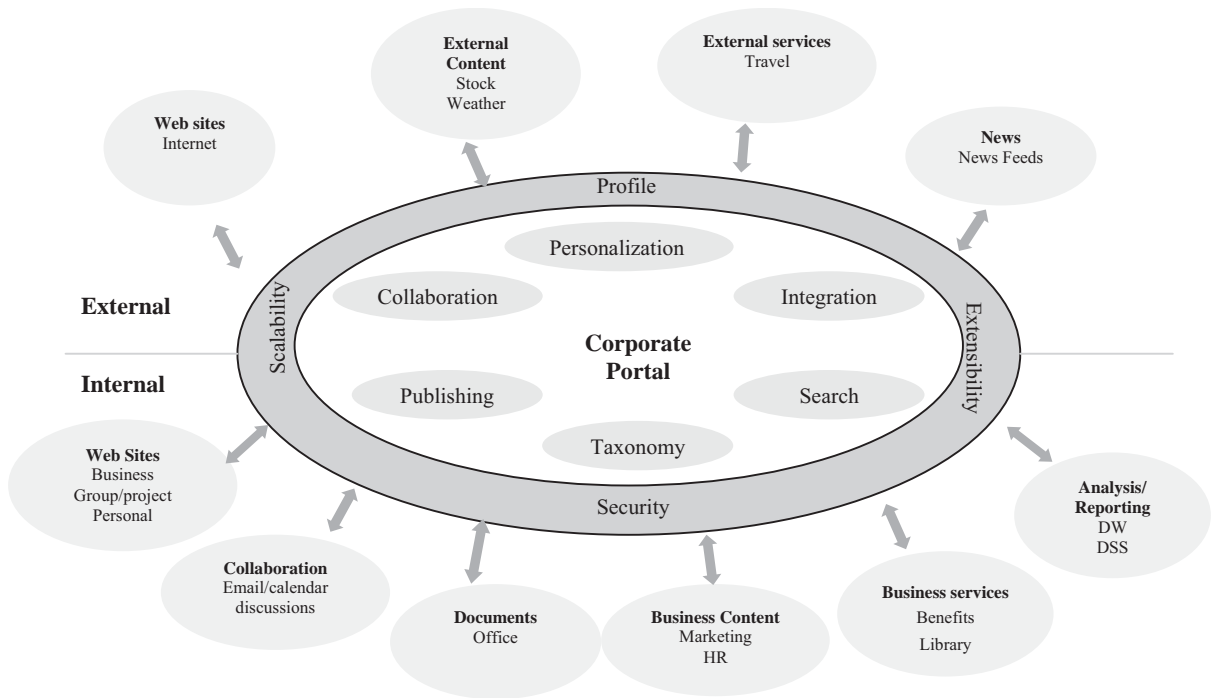


Fig. 1. Corporate portal framework source: Intel Technology Journal (Aneja, Rowan, and Brooksby, 2000).

Table 4

Some examples of web services provided by leading companies to their employees

Company	Web services provided
General motors	Self-services applications including (pay stubs, update address and contact information and review benefits statements online) Automated retirement program
Cisco	Self-service (Office equipment, mobile phone) Health care program, Benefit program
Ford MotorCo	Health-care program (medical information, network health care provider, etc.)
STMicroelectronics	Travel and expenses application, Stock quotation, group calendar
BT	e-learning applications (online lectures...)

3.2.1.3. *Search.* The documents created by employees, partners, customers and competitors are often the most important information available to the organization that remains in general dispersed in numerous places. For these reasons an integrated search capability across multiple information repositories is essential.

3.2.1.4. Personalization. Consists not only on the ability for users to modify their own interfaces and specify their preferences, but also the ability of the system to use such information to dynamically deliver specific content to users in order to propose to them the most relevant information to perform their job. Personalization includes both push and pull technologies.

3.2.1.5. Integration. The ability to present a unified view of corporate information that integrates information from different organizational repositories instead of having corporate information spread across many sources within the organization.

3.2.1.6. Collaboration. Corporate portals can also give organizational participants the ability to create a shared community because they present a natural forum for online collaboration by assembling a set of content and services to which members of a group have special accesses. Collaboration can also entail offering native portal services such as threaded conversation, project management tools such as task lists, calendars, document sharing or instant messaging.

3.2.2. Supportive capabilities

These are mainly tools necessary for the well-functioning of the corporate portal and consist of: security, profiling and scalability.

3.2.2.1. Security. The ability to secure access to diverse range of resources with incompatible security controls is an enormous challenge for corporate portals.

3.2.2.2. Profiling. A technique aimed at sending personalized information to the user depending on his profile. Two techniques can be used: explicit profile based on the expressed preferences of the user or implicit profile based on data obtained from the human resources.

3.2.2.3. Scalability. The ease with which the system can expand to support an increasing number of users or can be modified to fit the problem area.

3.2.2.4. Web services. A wide range of services that the firm can provide to users ranging from analyses, news to an e-marketplace where a company offers employees discounts on products and services that it has negotiated with vendors. Table 4 shows some examples of web services provided by companies to their employees.

3.3. Portals support for knowledge processes

Our analysis shows many benefits of corporate portals but we consider that the most important functionality of portals is their ability to synchronize and support knowledge development phases. We consider that corporate portal technology if built correctly holds the promise of being the brain of the organization that can equip employees with all the knowledge and vital information required to successfully perform their engagements. The portal tools should be viewed as the mechanisms to augment and interconnect resources so that information can be distributed,

consonant with the organization's requirement for individual and team-based management, and responsiveness to change, etc. Based on the knowledge life cycle depicted in Table 1, we analyze how the different features of the portal can support the processes at the heart of the knowledge life cycle.

3.3.1. Knowledge generation

Knowledge generation requires tools that enable the acquisition, synthesis, and creation of knowledge. The following components of portal features listed in Table 5 support the knowledge generation process.

3.3.2. Storage process

In this stage, the organization should classify the filtered knowledge and add it to the organizational memory. The stored knowledge in manuals, databases, case studies, reports and even corporate processes and rules of thumb makes up one column of the core activities. The other columns consist of the knowledge stored in the brains of thousands of employees who leave their respective organizations at the end of each working day. Corporate portal includes many components supporting the storage process (Table 6).

Table 5
Components of portal's features supporting the knowledge generation process

Component	Description	Challenges
Communication/ Messaging	A set of tools used for portal users to communicate with each other. Includes web-based email, discussion boards, chat tool and instant messaging	Effective use of communication (frequency of communication must be managed to increase effectiveness) Education/Usability of tools and processes. Incorporation of existing tools into enterprise portal offering
Application sharing	Enables multiple parties to share and collaborate on applications at a distance. Includes web-based meeting facilitation	Management of protocols and bandwidth constraints Must be used to augment (not replace) document management and approval workflow Ensuring a common "look-and-feel" for all portal applications
Community Building	Creates virtual community (collaboration opportunities) for users with similar interests and needs.	Control of proliferation of communities; some should be controlled centrally Providing leadership within a community; identify specific people to lead communities (e.g., "moderators") Communities can become in conflict with organizational charts and existing lines of authority Communities may represent significant cultural change

Table 6
Components of portal's features supporting the Storage process

Component	Description	Challenges
Storage	This is a core service, traditionally served by expert systems and artificial intelligence, that aims at transforming information into valuable knowledge, by providing intelligent assistance to users and accompanying the execution of tasks	Storage and metadata services should define and Inset new knowledge elements into the different layers of the corporate knowledge management system
Archiving	The ability to manually or automatically index information (both content and context)	Determining the correct audience for documents Providing easy to use content creation procedures
Life cycle management	Includes the ability to store information efficiently, make it readily available from an archive over time	Instill responsibility for individual maintenance of personal information

3.3.3. Distribution process

Knowledge needs to be distributed and shared throughout the organization, before it can be exploited at the organizational level (Nonaka & Takeuchi, 1995). To what extent a firm succeeds in distributing knowledge depends on organizational culture and the amount of explicit knowledge available in the firm. Corporate portal includes many components supporting the distribution process (Table 7).

3.3.4. Usage process

In the application stage, the organization's knowledge worker should use the retrieved knowledge in performing tasks such as: solving problems, making decisions, researching ideas, and learning. The application of knowledge is the most essential task of knowledge management. Corporate portal includes many components that facilitate the knowledge usage process (Table 8).

Yet research indicates that many companies are just starting their corporate portal efforts, and experience shows that their needs are as diverse as their businesses. In fact, many factors inhibit the adoption of this knowledge portals by companies. And implementing a knowledge management system does not automatically induce a willingness to share information and build a new intellectual capital (Gottschalk, 2000). A KPMG report also found that while many organizations have the necessary technological infrastructure in place to support knowledge management its application has not been entirely focused (Parlby, 1997). In other words, companies are not exploiting the full potential of the technology they already possess.

4. Factors inhibiting the adoption of corporate portals

There are three categories of factors: managerial, technical, and social that stimulate or inhibit the successful adoption of corporate portals (see Fig. 2).

Table 7
Components of portal's features supporting the distribution process

Component	Description	Challenges
Profiling	A critical ingredient that provides information filtered for an individual's working style, delivered in a highly personalized manner. In other words the profiling allows the distribution of "the right information to the right person"	Collection of relevant personal data Confronting explicit and implicit profile Ability for individuals to declare their expertise in a given area Updating Users profile
Push/pull technology	Delivery via web distribution, web content management, push delivery, e-mail notification, etc.	Determining the correct audience for the documents Integration of document management with content management
Publishing	Includes the ability to render or publish documents in alternate formats including HTML, PDF, XML, etc.	Providing easy to use content creation procedures Creating governance process so that publishers can effectively balance "freedom" to contribute within syle, quality, confidentiality, approval and other necessary guidelines

4.1. Managerial context

One of the major factors inhibiting portal's adoption is their cost effectiveness. The method is cost-effective because portal technology uses artificial agents, tiny programs developed to find and organize information, rather than salaried employees. The cost of portals include, hardware costs, software license costs, software development costs, design costs, system integration costs and maintenance. Gartner group estimated in 1999 that an enterprise portal featuring full workplace integration would cost between \$1 million and \$3 million. Corporate portals need to show an ROI in the same way as every other IT project, especially since the purchase of a portal is now clearly seen as a strategic investment and that CEOs demand greater justifications and outputs of the dollars spent or projected in the initiative. After considering cost issues managers should adopt a complete strategy to support the implementation phase that includes communication and training aspects. In many cases, users are unaware of a technology's existence or do not know how to use it effectively (Connelly, 2000). Which clearly stresses the fact of a lack of strategy supporting effective portals implementation. To remediate to these problems and stimulate employee's participation to the knowledge base, some managers propose financial incentives to the worker. In many cases, using straightforward monetary incentives does not appear to be an effective

Table 8
Components of portal’s features supporting the application process

Component	Description	Challenges
Integration	The ability to access and index information from disparate data stores such as file servers, databases, business systems, groupware systems, document repositories, and the web	Integrating incoming data into existing content repository structure Selecting an array of content that can satisfy the entire enterprise
Process automation	Business process automation capabilities such as routing and workflow	Aggregation of information from all internal Information System sources—ERP, CRM, SCM, Legacy System, databases, text files and integrate it into the corporate portal
Life cycle management	Includes the ability to store information efficiently, make it readily available from an archive over time	Identification and creation of relevant business reports Important to instill responsibility for individual maintenance of personal information

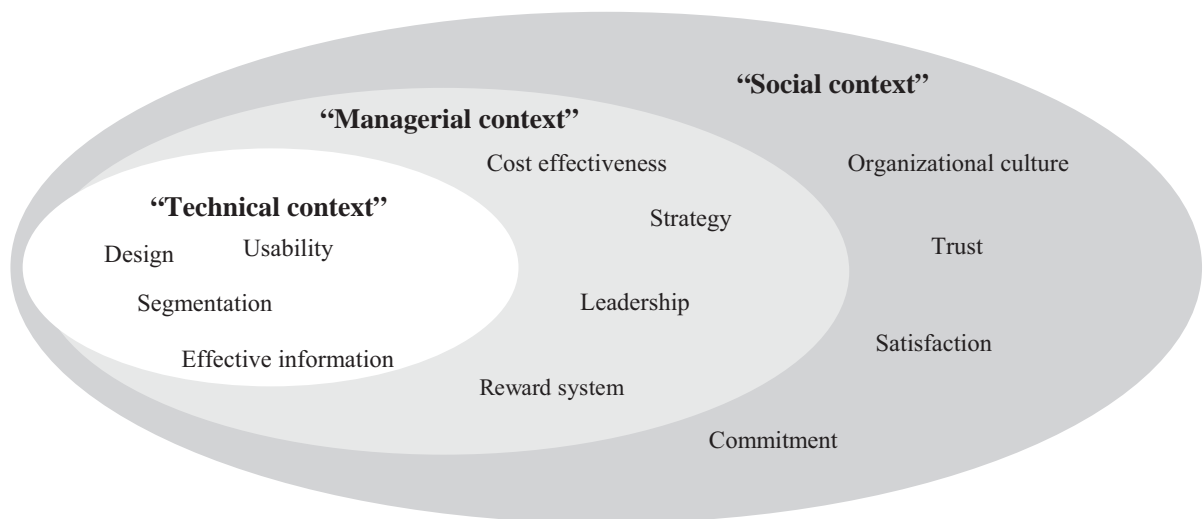


Fig. 2. Optimal implementation of corporate portal occur when social, technical and managerial factors intersect.

solution. Wenger, McDermott, and Snyder (2002) observe that people often value the satisfaction derived from giving reasons of professional affiliation or commitment to a larger cause not because they are rewarded with a “carrot”. They offer the example of Xerox technicians

who value their name being posted in “lights” before thousand of peers over small financial incentives.

4.2. *Technical context*

Another difficulty companies are facing while using these technologies is an ignorance of information needs and practices of users that often result in ineffective use of technology. This is mainly due to:

- *Poor design*: Frequently, technology is not designed for the work people actually do but rather for the work technologies think they should do (Hickins, 1999).
- *Poor usability*: People will only use technology if it provides: an easy way to locate the information they need; effective interfaces; and quality service delivery (Griffiths, 1999).
- *Failure to match the medium with the message*: Technology can be an effective way to speed information around an organization, especially if it’s geographically dispersed. However, it is not a very rich medium. For deeply contextual, tacit information, the best way to share can be using technology to connect people to experts and then let them exchange information (Drucker, 2001).

Another reason behind the ineffective use of portals often cited by users is the lack of time to search information, here in principle, a portal can play two major roles. In one role it has a more passive function and acts as a container of knowledge relevant for the organization, it can be queried by a user who has some specific information need. The second role a portal can adopt is an active system that disseminates knowledge to people wherever they need in their work. This second functionality is not just mere luxury but of considerable importance as users often do not know that a knowledge base may contain knowledge currently helpful to them. Furthermore, querying a portal whenever the user thinks it might be possible that the portal contains relevant knowledge is not practical because the user does not always think of querying the portal when it might actually be helpful and because it would be too time consuming (as it interrupts the users primary work and takes time for searching and browsing). For the portal to be able to actively provide the user with the appropriate knowledge it needs to know what the user is currently doing.

4.3. *Social context*

Another critical element which can stimulate or inhibit the effective use of corporate portal is the social environment within which people operate. The level of trust that exists between the organization, its sub-units, and its employees greatly influences the amount of knowledge that flows both between individuals and from individuals into the firm’s portal (Delong & Fahey, 2000). Therefore, companies should to pay considerable attention to the supporting norms and behavioral practices that manifest trust as an important organizational value. In an organization with a positive social interaction culture, in which both management and employees socialize and interact frequently with each other, people would share their knowledge; while in an organization that promotes individualistic behaviors people will be more reluctant to give away their most valuable knowledge because they will feel it too risky. Consequently, an important element that must be considered in any discussion of knowledge sharing is how to motivate an individual to

share knowledge that they believe to be valuable to themselves within their organizations. In fact, practitioners are beginning to realize that people and the culture of the workplace are the driving factors that ultimately determinate the success or failure of any knowledge management system. With this in mind, it is important to consider a number of critical issues or design goals when planning to implement a corporate portal.

5. Perspectives for a successful implementation

Based upon the earlier analysis, we can offer some perspectives in order to define, implement and execute effective corporate portals.

5.1. Commitment and support of the CEO

Many authors suggest that leadership commitment is a key challenge for the success of any knowledge management initiative (Nonaka & Takeuchi, 1995). If management spends a significant amount of resources on either purchasing or developing and implementing such technology, employees could interpret this as a sign of management's support for this ideal, and act accordingly. However, as Martinsons (1991) acknowledges, if employees perceive that management is not very committed to implementing this new technology, then the initiative to promote a strong knowledge sharing culture is not likely to be successful.

5.2. Motivation and commitment for adoption of these technologies

Understanding what motivates people to apply their expertise is key to avoiding the trap of building technology marvels that no one uses. Frequently, a critical mass of employees end up not using the applications because they are not convinced the applications will benefit them. Managers should not assume that they know what employees want. They must research the needs and latent dissatisfactions of their employees, much as they do those of their customers and then create a compelling offering that encourages employees to use the new online tools.

5.3. Linking knowledge and business processes

It has become largely agreed that knowledge management activities should be integrated within day-to-day business processes to ensure continual process improvement and facilitate learning and the gradual development of "organizational memory". The portal should present an ideal environment to integrate the business process aspects with knowledge processes and actively supports the worker in using and adding to knowledge resources by establishing standards for information collection, processing, and presentation.

5.4. Information sharing culture

It is the culture of the organization that supports or impedes knowledge creation and transference both internally and to its customers. Therefore, rather than just

encouraging or mandating knowledge sharing, fostering the motivation to share knowledge must precede it.

5.5. *Learning from failures*

Companies must review their successes and failures, assess them systematically, and record the lessons in form that employees find accessible. Many companies like Microsoft, are following this process of identifying and transferring Internal Best practices. This process is referred as the “Santayana Review”, citing the philosopher George Santayana, who coined the phrase, “those who cannot remember the past are condemned to repeat it” (Garvin, 1994).

5.6. *Immaterial incentives*

In line with Malhotra (2002), we consider that, design of incentives must consider that institutional controls as well as some monetary rewards and incentives are inadequate and do not necessarily ensure desired knowledge sharing behaviors. Instead they can be replaced by immaterial incentives and recognition. Companies should champion the new ethics and values that are at the heart of a knowledge-based enterprise. At the core of this new understanding lies a very simple ethic that Verna Allee calls *the principle of fair exchange*: “Do people feel that they are being treated fairly for the intelligence, creativity innovation, experience and passion they bring to their work”.

6. Conclusion

This article, based on an analysis of eight case studies of early adopters of corporate portal, focused mainly on the benefits and challenges presented by this tool. Corporate portals seem to present the potential of providing organizations with a rich and complex shared information workspace for the generation, exchange, and use of knowledge. They synchronize knowledge and applications, creating a single view into the organization’s intellectual capital. But developing corporate portals and building the critical mass of users required to make them successful is not an easy task. Given the risk that corporate portals fail to deliver the expected benefits, an important task for knowledge management research is to contribute knowledge that will support researchers and practitioners in their efforts to successfully develop and implement corporate portals. This article contributes to this stream of research by studying potential barriers in portal’s implementation and suggesting some perspectives for a successful implementation.

Acknowledgements

We are grateful to Prof. Aldo Romano Director of the *e-Business Management School* for his generous support.

References

- Alavi, M. (1997). KPMG Peat Marwick U.S.: One Giant Brain, Case 9-397- 108 Boston, MA: Harvard Business School.
- Alavi, M., & Leidner, D. (1999). Knowledge Management Systems: Issues, Challenges, and Benefits. *Communications of the AIS*, Vol 1, Article 7.
- Alavi, M., & Leidner, D. (2001). Knowledge Management and Knowledge Management Systems: Conceptual foundations and research issues. *MISQ Quarterly*, 25(1), 107–136.
- Aneja, A., Rowan, C., & Brooksby, B. (2000). Corporate portal Framework for transforming content Chaos on Intranets. *Intel White paper*.
- Arthur Andersen, & The American Productivity and Quality Center. (1996). *The Knowledge Management Assessment Tool: External Benchmarking Version*, Winter.
- Barney, J. (1986). Organizational Culture: Can it be a source of sustained competitive advantage? *Academy of Management Review*, 11(3).
- Bartlett, C. (1996). *McKinsey & Company: Managing Knowledge and Learning, Case 9-396-357*, Boston, MA: Harvard Business School.
- Chandler, A. (1992). Organizational Capabilities and the Economic History of the Industrial Enterprise. *Journal of Economic Perspectives*, 6(3), 79–100.
- Davenport, T., & Prusak, L. (1998). *Working knowledge how organizations manage what they know*. Boston: Harvard Business School Press.
- DeLong, D. W., & Fahey, L. (2000). Diagnosing cultural barriers to knowledge management. *Academy of Management Executive*, 14(4), 113–127.
- Detlor, B. (2000). The corporate portal as information infrastructure: Towards a framework for portal design. *International Journal of Information Management*, 20(2), 91–101.
- Drucker, D. (2001). Knowledge management: Theory doesn't equal practice. *Internet Wee*. January 29, www.techweb.com.
- Gartner Group. (1998). Knowledge Management Scenario. Conference presentation.
- Garvin, D. (1994). *Building a Learning Organization*. Harvard Business Review, July–August.
- Gottschalk, P. (2000). Knowledge management systems: a comparison of law firms and consulting firms. *Informing science*, 3(3), 117–124.
- Griffiths, J. (1999). Social, behavioral and ethical factors. *Bulletin of the American Society for Information Science*, 26(2), 21–22 Dec. 1999–January 2000.
- Hickins, M. (1999). Xerox shares its knowledge. *Management Review*, September, 40–46.
- Holsapple, W., & Joshi, D. (1998). *In search of a Descriptive framework for Knowledge Management: preliminary Delphi Results, Kentucky Initiative for Knowledge Management [Paper No. 119]*.
- KPMG (2000). *The knowledge management research report 2000*. www.kpmg.nl.
- Malhotra, Y. (2002). Why knowledge management Systems fail? Enablers and constraints of knowledge management in human enterprises. *Handbook on knowledge management Knowledge Matters*. Heidelberg, Germany: Springer-Verlag, 577–599.
- Martinsons, G. (1991). Management philosophy and IT application: The east–west Divide. *Journal of Technology Management*, 18(3), 1.
- Mertins, K., Heisig, P., & Vorbeck, J. (2001). *Knowledge Management: Best practices in Europe*. Berlin: Springer-Verlag.
- Nonaka, I., & Takeuchi, H. (1995). *The knowledge-creating company: How Japanese companies create the dynamics of innovation*. New York, NY: Oxford University Press.
- Parlby, D. (1997). *The power of knowledge: A business guide to knowledge management*. KPMG Management Consulting, internal report.
- Penrose, E. (1959). *The Theory of Growth of the firm*. London: Basil Blackwell.
- Prahalad, C., & Hamel, G. (1990). The core competence of the Corporation. *Harvard Business Review*, May–June: pp. 79–91.
- Romano, A., Elia, V., & Passiante, G. (2001). Creating Business Innovation Leadership. An ongoing Experiment: The e-Business Management School at ISUFI. Edizioni Scientifiche Italiane.

- Ruggles, R. (1997). *Knowledge management tools*. Oxford: Butterworth-Heinemann.
- Sensiper, S. (1997). *AMS Knowledge Centers Case N9-697-068*. Boston: Harvard Business School.
- Schwartz, P., Eamonn, K., & Boyer, N. (1999). The emerging Global Knowledge Economy. In: *OECD, The future of the Global Economy: Towards a long boom?*
- Teece, J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7).
- Tiwana, A. (2001). Affinity to Infinity: Peer-to-peer Knowledge Platforms. *Communications of the ACM*, forthcoming.
- Vance, D.M. (1997). Information, Knowledge and Wisdom: The Epistemic Hierarchy and Computer-Based Information System. *Proceedings of the 1997 America's Conference on Information Systems*, <http://hsb.baylor.edu/ramsower/ais.ac.97/papers/vance.htm>.
- Van der Spek, R., & Spijkervet, A. (1997). Knowledge Management: Dealing intelligently with knowledge. In J. & Liebowitz, & Wilcox (Eds.), *Knowledge management and its integrative elements*. New York: CRC Press.
- Watson, R. (1999). *Data management: Databases and organizations* (2nd ed). New York: John Wiley.
- Wenger, E., McDermott, W., & Snyder, W. (2002). *Cultivating communities of practice*. Harvard Business Press.
- Wensley, A. (2000). *Tools for knowledge management*, BPRC Conference on Knowledge Management: Concepts and Controversies, 10–11 February, University of Warwick, Coventry.
- Wiig, K. (1993). *Knowledge management foundations*. Arlington: Schema Press.
- Zack, M. (1999). Developing a knowledge strategy. *California Management Review*.

Hind Benbya is a Ph.D. candidate at the E-business Management school (EBMS), Lecce University, Italy. Her areas of interest include, E-Business, Knowledge management processes and systems and organizational culture. After her graduation from the ISCAE Casablanca (Morocco) in Marketing, she followed a DEA at the IAE of Aix en Provence in Management sciences in France in the field of Marketing and then hold a master in E-Business in Italy.

Giuseppina Passiante is associate professor at the department of Innovation Engineering and at ISUFI- e-Business Management School, University of Lecce, Italy. Her research fields concern models of local systems development in the digital/knowledge economy, and more specifically the management of learning processes. She is also expert in Innovation Management, and has realized programs and projects for Science and Technological Parks; she has published several papers on these topics.

Nassim Aissa Belbaly is a Ph.D. candidate at the E-business Management school (EBMS), Lecce University, Italy. His areas of interest are Knowledge management and organizational learning. After his graduation from the ISCAE Casablanca (Morocco) in Marketing, he followed a DEA at the IAE of Aix en Provence in Management sciences in France in the field of Marketing and then hold a master in E-Business in Italy.