



Framework for managing knowledge in an enterprise to gain competitive advantage

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1 Introduction

As every business has to operate in an increasingly competitive environment, businessmen and women should base all decisions on their competitive standing in the world economy and the competitiveness of their knowledge competencies. In the face of growing competition in a global economy, most firms have already begun to look for ways of improving their competitive capabilities.

Firms obtain a competitive edge when they possess particular assets, abilities or characteristics. Factors that contribute to an enterprise's competitive advantage include ownership of patents, brands, know-how or other intellectual property (Bennet 1996:69).

The ability of a company to mobilize and exploit its intangible or invisible assets has become far more important than investing and managing physical, tangible assets. All employees must

contribute value by what they know and by the information they can provide. Investing in, managing and exploiting the knowledge of every employee is essential for the success of information age companies.

As the intellectual assets of enterprises become more complex, the ability to inspire employees to invest in knowledge will become more important (Barclay 1999). Knowledge organizations have been characterized as enterprises in which the key asset is knowledge. Their competitive advantage comes from having and using knowledge effectively. The purpose of managing knowledge in an enterprise is to maximize the knowledge-related effectiveness of the enterprise and to renew this knowledge constantly so as to secure sustained viability and profitability. Finding and applying methodologies to generate and apply knowledge faster and more effectively has become one of the most promising and valuable new management practices.

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2 Problem statement

Managing knowledge and intellectual capital in the enterprise allows for research on how to integrate knowledge management with strategic thinking and planning. In this article the management of knowledge in an enterprise is examined. The core problem that was addressed was: What is the most effective framework for managing knowledge to achieve competitive advantage for an enterprise?

The following questions arose from the problem statement:

- What does knowledge management entail?
- What knowledge management frameworks are available for managing knowledge in enterprises?
- What are the characteristics of a sound knowledge management framework?

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3 Definitions of knowledge management

The term *knowledge management* is a relative newcomer to the business lexicon. According to Murray(1998), the term *knowledge management* has been in use for at least 13 years, or longer. One view of *knowledge management* is that it is 'a strategy that turns an organisation's intellectual assets – both recorded information and the talents of its members – into greater productivity, new value, and increased competitiveness... [whereas] intellectual capital ... generally refer[s] to an organisation's recorded information (and, increasingly, human talent itself)' (Murray 1998). As *knowledge management*, drawn from many disciplines and technologies, has become part of the business currency, interest has grown as to how it can add value to the bottom line. With the growth of the information age and with knowledge workers increasingly taking centre stage in the world economy, intellectual assets have replaced the traditional assets of capital, land and physical inventory as the main source of value. As stated by Stewart (1999:56): 'Intellectual capital has become so vital that it's fair to say that an enterprise that is not managing knowledge is not paying attention to business.' To enhance competitiveness in the enterprise, knowledge management and intellectual capital can, however, be of value only if there is a culture of learning.

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4 Existing knowledge frameworks

In the wake of the boom of artificial intelligence and expert systems in the mid eighties, the topic of knowledge management has received increasing attention within the knowledge engineering community. Trends in the business and international markets have caused many influential authors to publish articles about the 'rise of the expert company' (by Feigenbaum), the 'intelligent organisation' (by Quinn) and the 'knowledge creating company' (by Nonaka) (Van der Spek and De Hoog 1995:380). Confronted by these emerging challenges, enterprises were forced to think about the way in which they managed their most competitive asset, knowledge. Different methodologies were followed to enable them to manage this asset.

Wiig's Knowledge Management Framework (Skyrme and Amidon 1997:90) covers the exploration of knowledge, establishing its value and the management thereof explicitly. The Skandia Navigator (Skyrme and Amidon 1997:143) covers the customer, human, process and the renewal and development focus. The Dow Intellectual Asset Management Model (Skyrme and Amidon 1997:102) consists of the business strategy, an assessment of the competitors, the classification and valuation of assets and the assembling of a portfolio of these assets. The Price-Waterhouse Three-level Framework (Skyrme and Amidon 1997:91) consists of the business and value contribution of knowledge, the management processes and the knowledge networks and infrastructures. The Intellectual Capital Management Framework (Huang 1997:151) incorporates strategy, values, processes, knowledge communities, technology and measurements. Lastly, the Intangible Asset Monitor Framework (Sveiby 1998) covers the intangible assets such as customer relationships, intellectual capital, skills and experiences.

From the different frameworks, it is clear that various aspects of knowledge management played an important role in developing these methodologies or frameworks. Intellectual assets, customers, processes, renewal, development, people or the human focus, competitors, business values, networks and infrastructure all played an integral part in the development of these frameworks. In developing a new framework for knowledge management, all these aspects must be taken into account.

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5 New framework for managing knowledge in an enterprise

The Seven-S system developed by McKinsey Management Consultants to analyse the core determinants of the performance of an enterprise is used as the basis of the new model for setting a framework for managing knowledge (Bennet 1996:95). This system was extensively used to audit the strategic and operational configurations of organizations. It also emphasizes the inter-connectedness of the factors leading to successful business, and focuses on the key determinants of business success. Although Skyrme and Amidon (1997:92) said that the number of key elements is usually five or less, the seven elements identified by McKinsey Management Consultants provide a convenient checklist of the major areas in which decisions may be required.

5.1 Strategy

The correct management of knowledge is important for the success of an enterprise. It should be integrated into the other management activities in the enterprise and linked to the strategic plan. The links between the knowledge assets and the core business processes are the people, processes, infrastructure and technologies that enable the application of knowledge assets to the benefit of the enterprise. Maximum benefit may be derived from knowledge assets when they support the business objectives and core processes. The knowledge strategy may be seen as a long-term plan aimed at managing knowledge for competitive advantage. The knowledge strategy results from the knowledge workers' awareness of, and response to, virtually imperceptible trends emerging within the marketplace. The knowledge strategy should be aligned to the business strategy and support core business processes and key strategic

decisions. It is self-evident that, for the knowledge strategy to have business value, it must support the core business processes of the enterprise that are employed to attain specific business objectives. The link between the knowledge assets and the core business processes are the people, processes and infrastructures that enable knowledge assets to be utilized to maximum benefit. The strategy complies with the worldview and theories of a good framework.

Enterprises gain the most from knowledge management when they map their knowledge *activities* to sharply defined *strategic goals*. Four basic business goals that lend themselves to improvement through knowledge management are innovation, responsiveness, productivity and competency (Lotus 1999). Some form of strategy is essential, and even the largest and most successful organizations are unlikely to be able to deal with vast economic and technological turbulence unless they have made informed assumptions about the future, set some strategic guidelines by which they will conduct themselves, and have an idea of the form they will be assuming at some time in the future. Turbulence makes it extremely difficult for managers to identify the required corporate strategy and align the necessary knowledge management strategy in support.

The use of knowledge for competitive advantage has become of prime importance and more enterprises have recognized the resultant opportunities and threats. The impact of knowledge management will extend to most parts of an enterprise; often it is bound up in the corporate and competitive strategies, changing many traditional functional areas.

According to Skyrme and Amidon (1997:33), there are four distinctive strategies with which to pursue knowledge management:

- Managing knowledge as a core asset.
- Managing knowledge to enhance product or service capability.
- Managing knowledge as a business.
- Managing knowledge to enhance business and management processes.

5.2 Systems

It is no coincidence that the use of information technology to connect people and information has blossomed at the same time as knowledge is becoming recognized as a firm's most valuable asset. There are powerful symbiotic relationships between knowledge management and information technology. This relationship drives increasing returns and increasing sophistication on both fronts. As information technology has become a personal desktop tool and the link to other employees, it covets even more access to information and people's knowledge. In turn, it demands ever better information technology tools, and so becomes part of the way in which work is done. Information technology has proven to be a necessary, though not solely sufficient, component of profitable knowledge management (APQC 1997).

Today, information technologies are as much about creating direct connections among people through such applications as electronic mail, chat-rooms, videoconferencing and other types of groupware as they are about storing information in databases and other types of repositories. As for information databases, they may also be fruitfully re-thought, in a knowledge management perspective, as a resource for the sharing of best practices and for preserving the intellectual capital of enterprises. Investments in information technology seem to be unavoidable to scale up knowledge management projects. The best way of applying information technology to knowledge management is a combination of two factors. On the one hand, there is the awareness of the limits of information technology, and the fact that information technology deployment will not achieve much if it is not accompanied by a global cultural change towards knowledge values. On the other hand, there is an awareness of the availability of information technology that has been designed with knowledge

management in view (Borghoff and Pareschi 1997:840).

Infrastructure assets are the technologies, methodologies and processes that enable the enterprise to function. These include a company's financial structures, databases of information on the markets and customers the firm holds, and its communication systems. These assets provide structures and rules as well as an environment in which employees can work and communicate with each other and with the outside world (APQC 1996).

5.3 Style of leadership

Leadership may be described as one of the four key enablers of an effective knowledge management programme. Good leadership is attributed to four essential properties:

- Management of organizational knowledge is recognized as being central to the organizational strategy.
- The organization grasps the potential of its knowledge resource and develops strategies for marketing it.
- The organization uses knowledge and learning to support existing core competencies and to create new ones.
- Individuals are appointed, evaluated and rewarded on the basis of their contribution to developing organizational knowledge.

Leadership forms part of the interrelationship between business processes and knowledge items and, therefore, covers the worldwide and theoretical aspects of the framework. Many businesses are doing just that by drawing on the abilities, insights and skills of a new category of professionals. These professionals include information, learning and knowledge officers to increase organizational competitiveness and enhance the productivity of all employees.

Knowledge leadership drives the process of knowledge management, orchestrating the efforts of all the knowledge workers and keeping the issue constantly though unobtrusively in the corporate eye. This is the critical factor in effective management of knowledge. Without strong leadership, any management process fails to reach its full potential, and the management of knowledge is no different. As the shape of the knowledge economy becomes more obvious, so the need for systematic practices that capture and disseminate organizational knowledge that can be used for competitive advantage will increase. Knowledge management will not come about spontaneously and neither will it thrive without sustained human intervention. Leadership is vital in this regard. Knowledge leadership posits the management of organizational knowledge as a core strategy that helps achieve corporate strategic goals (Skyrme and Amidon 1997). Knowledge must support the purpose of an enterprise in such a way that every operational level is enriched by the organization of its knowledge requirements and its products. In this way, the rich tapestry that is corporate knowledge is crafted and made into capital that can assist in the development of business advantage.

Knowledge management requires a knowledge champion with the vision to motivate people within organizations to engage in knowledge-sharing practices. Interpersonal and communication skills are particularly important knowledge management skills, as are emotional maturity, enthusiasm and the ability to create networks both internally and externally. The chief knowledge officer's role is to act as a knowledge leader and ensure that the structures, networks and culture that make knowledge management possible are implemented and fostered. While appreciating the value of technology, the chief knowledge officer is more concerned with the human side of knowledge management processes. He is primarily a facilitator and a motivator. The new emphasis on knowledge management has led to the rise of new knowledge roles that facilitate the acquisition, classification, editing, packaging and distribution of knowledge. These are early days still in the life of knowledge management as a discipline and, as it matures, more roles are sure to follow.

5.4 Staff

Knowledge management is a collaborative affair and everyone in a knowledge-based organization should ideally play a part in the process. Still, without defined roles, and especially champions who root for knowledge management and extol its benefits, the process of acquiring, creating, packaging and applying knowledge may lose its focus within the organization.

By 2002, knowledge-based work characterizes the majority of jobs in the majority of industries. In these positions, more than 50% of job activities was not prescribed in advance, but was dynamically determined by the employee, based on the events and knowledge at hand (Harris 1999). The roles that workers play with respect to knowledge are an integral part of enhancing the knowledge process.

These new and changing roles and relationships demand new skills and capabilities. An increasing number of employees are being classified as knowledge workers. Enterprises should address the changing nature of jobs by implementing a knowledge management environment that allows knowledge workers to do a dynamic selection of the work tasks they will perform, determine the timing and sequence of these tasks, and have access to the information and people required to complete each task.

These professionals include information, learning and knowledge officers. It is very important for corporations to employ these people with their skills to increase organizational competitiveness and enhance the productivity of all employees.

5.5 Skills

Knowledge creation and knowledge sharing are at the heart of knowledge management. This calls for a new set of skills. Today, the qualities that really matter to organizations are 'fuzzier' than in the past. For example, enthusiasm and open-mindedness may be more valuable than jaded experience and obstinate know-how. People skills are just as important as task-performing skills. The growing interest in emotional intelligence (EQ as opposed to IQ) is evidence of the new emphasis on interpersonal skills. Of course, more traditional analytical and conceptual skills, and a broad general knowledge coupled with enterprise specific knowledge, are required. A general idea of information technology systems, applications and capabilities is also necessary.

Knowledge management is about connecting 'islands' of knowledge throughout the enterprise, and beyond, and making the right knowledge available when and where it is needed. Tom Stewart (1999) says: 'Networking ... is the most important development since Du Pont, General Motors, and others invented the modern corporation.... In companies whose wealth is intellectual capital, networks, rather than hierarchies are the right organizational design'. The ability to network is one of the most important knowledge management skills. Knowing who the people with the knowledge are, where they are and how to access them when you need them is essential. It is also about knowing where the non-human knowledge bases are and capturing knowledge to create new ones. Networking and capturing knowledge rely heavily on the ability to communicate effectively by using the technologies available for such a purpose – speech, writing, presentation techniques, e-mail and videoconferencing.

Drucker (1993:183) comments that 'in the knowledge society subjects may matter less than the students' capacity to continue learning and their motivation to do so'. The ability to learn and self-motivation are two important knowledge management skills. In Senge's view of a learning organization (cited in Willard 1994), learning involves teamwork, shared visions, mental models, personal mastery and systems thinking. Learning produces human capital, one of the three pillars of intellectual capital (the others are structural capital and human capital),

the very assets that knowledge management is designed to manage. The ability to initiate, to work outside the confines of a brief, to question assumptions and to think outside the box, are all skills necessary for knowledge management success.

The principal challenges for knowledge workers include a need to manage on the basis of competence rather than status; the need to manage at the interface between organizations; the need to manage with reduced levels of certainty, in the face of ambiguity and change; the need to manage the new technologies; and the need to learn the art of the possible.

Keeley and Caplan (1993:131) identify the characteristics of the best performers in knowledge management as: initiative; good networking; self-management; effective team work; strong leadership; supportive followers; broad perspectives; show-and-tell; and organizational savvy.

The knowledge-based enterprise calls for skilled knowledge workers. The skills must leverage personal networks and set a core personal networking process in which alliance building, the crossing of boundaries and communications skills are exercised effectively.

5.6 Structure

For several years, there has been growing recognition that new organizational structures are required to cope with more dynamic and competitive environments. In the wake of their business process's re-engineering initiatives, many enterprises realized that they needed to create new organizational structures based on business processes. These changes should be accompanied by a management philosophy based on clear vision, a customer focus and the harnessing of human potential. The structures of these enterprises are now described as federal and virtual, multi-functional teams, virtual teams, 'network of knowers', networked organizations, natural work teams, boundary-crossing and project teams. All of these indicate structures and ways of working distinct from functional hierarchical structures (Skyrme and Amidon 1997:263). The production of the knowledge enterprise is also solving problems that are hard to solve in a standardized manner. Therefore, the staff tend to be very competent, highly educated and with long experience in a profession often involved with information processing (Sveiby 1999).

Hastings (cited in Skyrme and Amidon 1997:266) defines seven characteristics as the 'hallmark' of the new organization':

- Radical decentralization.
- Intense interdependence.
- Demanding expectations.
- Transparent performance standards.
- Distributed leadership.
- Boundary busting.
- Networking and reciprocity.

Networking, multi-skilled teams, boundary crossing and communities of practice all form part of these levers for the effective sharing of knowledge. Organizational structures for enhancing competitiveness must therefore incorporate these aspects.

A new organizational structure has to be built to enhance the capability of the enterprise to create organizational knowledge. Communication channels between workers are established and the enterprise thrives on direct relationships between employees and the information sharing between individuals, irrespective of their functions, culture, location, role or status. The crossing of boundaries and the informal networks that exist between workers form the basis of these new structures.

5.7 Shared values

At the deepest layer, culture is a pattern of interwoven core assumptions about how the world works. These assumptions are usually not consciously recognized, yet they are the foundation of the organization, expressed through values, behaviours and physical aspects such as facilities, equipment, written materials and products. Surfacing existing core assumptions is critical to attempting to change the enterprise's culture.

Sharing the same values and adopting a common culture are the most significant aspects of the successful implementation of knowledge management. Culture may be defined as a set of collective values and beliefs that shape the way people behave. Members of an enterprise tend to adopt the same values and beliefs relating to their enterprise (Bruss 1999:37).

The shift in transmitting information and knowledge changes the nature of work and management, requiring levels of collaboration that is far beyond the typical work environment of modern enterprises. Workers are valued and rewarded for their individual contributions by the most enterprises. While sharing is viewed as helpful, true collaboration is not generally viewed as a critical component of an enterprise's success. A fundamental concept of knowledge management is that of sharing and collaboration. As commitment to change is generated by senior leaders, opportunities should be created for leaders to learn about the enterprises that have significantly changed their cultures to be more collaborative (Bruss 1999:37).

Organizational culture is changed by sharing and learning from each other so that the core values of individuals and organizations overlap, which represents a change from the classical way of interacting. The understanding and optimizing of the interaction of people and information, and people with people practising knowledge management, is being able to engage the collective intellect of people. Realizing those expectations will yield tremendous competitive advantage. Formalizing the roles of people who make sense of information and ensuring the conversion of information to insight in an ongoing upward spiral are critical factors in realizing these goals (Barclay 1999).

Knowledge must be disseminated throughout the enterprise to increase productivity and to foster innovation. Many companies still operate under the mistaken assumption that employees automatically share their knowledge.

Finally, the effectiveness and value of knowledge management depend on the active participation of each and every professional. Employees need to make it a habit to contribute their ideas and knowledge for reuse, and to refine existing intellectual capital attentively. Every knowledge domain should promote and encourage others to use and submit intellectual capital as well. Each employee's willingness to take the time to share his or her knowledge is critical. The time that employees spend on contributing will be more than compensated for when they tap into the reservoirs of intellectual capital to provide efficient, quality service to customers. Teamwork is the key to the success of knowledge management (Huang 1997:156).

Huang (1997:152) said that one of the major processes that are used to energize knowledge sharing and collaboration is the development of a knowledge culture. The components of these processes are shared values and cultures, a reward system, the sharing and exchange of knowledge, shared mindsets and, lastly, trust among employees. The culture that underlies the shared values of the enterprise and that is needed by the knowledge creating company is, therefore, that of innovation and continuous learning (Skyrme and Amidon 1997:275).

The increasingly important role that knowledge plays in all aspects of the economy, and the dramatic rise in the incidence of innovation and organizational learning, is not coincidental. Innovation needs to be informed by knowledge to be successful, and innovation in turn leads

to the creation of new knowledge in a self-renewing cycle and learning organization. There is an inter-relationship between knowledge, innovation and organizational learning rather than a one-dimensional cause-and-effect correspondence. The rise of the knowledge-based economy and the workers, who make use of intellectual assets to produce this economy's information intensive products and services, is dependent on innovation and organizational learning. The significance of innovation in economic growth makes it necessary to re-evaluate what constitutes competitive advantage and the core competencies the enterprise needs to survive and thrive in a turbulent environment in which the rules have changed forever. Organizational learning plays an important role in ensuring that knowledge is created and transferred to promote innovation. The shared values of innovation and organizational learning are major sources of value in the knowledge economy and need to be managed and utilized successfully to sustain economic growth.

Table 1 Proposed new framework for knowledge management

Proposed new framework for knowledge management						
Strategy	Systems	Style	Staff	Skills	Structure	Shared values
Strategic analysis	Knowledge maps	Leadership	CEOs	Networking	Networking	Innovation
Systematic knowledge processes	Data mining	Management	CLOs	Asset building	Boundary crossing	Learning
			CIOs	Motivation	Multi-skilled teams	
	CKOs		Communication	Communities of practice		
	Knowledge workers		Champion learning			
Push and pull						
Data repositories						
				Technology		

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6 Conclusion

The seven aspects of the Seven-S model of McKinsey Business Consultants all conform to the characteristics of a good framework for knowledge management. In conclusion, it can be said that to enable an enterprise to manage its knowledge assets effectively all seven aspects of the framework must be taken into account to enable the enterprise to gain a competitive advantage.

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