



**European Commission**

## **Asia-Link Programme**

# **Sustainable Program on Intellectual Capital Education**

## **Key Course Text 3 Managing Knowledge Processes**

**August, 2007**

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# 1 KNOWLEDGE AND THE FIRM

*“Our long experience – embodied in the collective knowledge and skills of our people around the globe – is the core of our business today.” (TPG Annual Report 2001)*

## 1.1 Learning Goals

In this chapter, you work on these following learning points:

- Gain deeper insight in the knowledge-based theory of the firm
- Understanding of the consequences of increased importance of knowledge for organizations and employees.
- Understanding of the consequences of increased importance of knowledge for the value creation process.

## 1.2 Introduction

As we have seen in KCT 1, the past decades a knowledge-based view of the firm emerged. Starting point of this theory of the firm is that knowledge is the main source of competitive advantage. The economy has turned into a *knowledge economy*, organizations have become *knowledge intensive* and employees have become *knowledge workers*. Before jumping to the concepts of knowledge and knowledge management, this section elaborates on the new ‘knowledge intensive’ business context.

## 1.3 Knowledge intensive organizations

Consequence of the increased importance of knowledge as a source of competitive advantage is that organizations have become ‘knowledge intensive’. This new type of organization has been described as ‘knowhow companies’ (Sveiby & Lloyd, 1988), ‘knowledge organization’ (Drucker, 1993b), ‘knowledge-creating company’ (Nonaka & Takeuchi, 1995), ‘knowledge company’ (Stewart, 1997), ‘knowledge intensive organizations’ (Weggeman, 1997), ‘knowing organization’ (Choo, 1998), ‘knowledge intensive firms’ (Harrison & Kessels, 2004). Within this research I will refer to this type of organizations as ‘knowledge intensive organizations’ (KIO’s).

The concept *organization* is often defined as a purposive collaborative practice, in which different stakeholders work together in a coalition, in order to pursue a shared collective goal, and to realize individual goals (Keuning & Eppink, 1998). This definition seems to be applicable to organizations in the knowledge economy too. However, more and more the concept of the KIO is used to refer to a distinct type of organizations. Important elements seem to be:

- Knowledge creation is the vital task. Knowledge is the main resource of the organization. It is both input and output, and therefore, the essence of the KIO is the ability to create, transfer, assemble, integrate, protect and exploit knowledge assets.

- Focus on continuous innovation. As the main challenge of knowledge intensive organizations is to continuously adapt to the changing environment, the main concern is to build and maintain the capability to.
- Core to the KIO are the knowledge workers. As production of knowledge takes place through learning, the main production tool is the individual, or knowledge worker. Therefore, access to talented people is of eminent importance to KIO's.
- The production process is circular, rather than linear. As knowledge outputs also serve as inputs in a new production cycle, the production process has become a learning cycle. In other words, production has become the equivalent of learning and the organization has become a site for learning.
- The product, output, or outcome, of a KIO is intangible. Intangibles are non-rival assets, as they can be deployed at the same time at different places, for multiple purposes. Intangibles are characterized by large, fixed costs and minimal marginal costs. They profit from network effects, although it is difficult to secure ownership. Innovations in intangibles are often highly risky, and often they can not be traded, there is no market..
- As a result of the previous, KIO's 'travel light', they hardly possess any material assets (dematerialization). The traditional company was a collection of physical assets, bought and owned by capitalists who were responsible for maintaining them, and who hired people to operate them. The key assets of today's organization, however, are intangibles of which it is not clear who owns them, or who is responsible for taking care. For listed companies, this characteristic is reflected in the market-to-book ratio.

It seems as if there is no widely used and agreed definition. However, what they all, when taken together, seem to stress is the importance of knowledge, both as input and as output. If this is true, then the main function of the KIO is to process knowledge. Two useful definitions that explicitly stress this knowledge processing function are:

- A KIO is an organization with predominantly knowledge workers in the primary process and/or in the support staff, provided that they dominantly influence the functioning of the primary process. In a knowledge intensive firm, knowledge workers develop, share, codify, apply and evaluate knowledge, in order to achieve organizational goals and satisfy customers as well as themselves (Weggeman, 1997).
- KIO's are enterprises whose revenues depend on their ability to continually generate new knowledge and apply it successfully to clients (Harrison & Kessels, 2004).

Based on the above characteristics and considering the two definitions, the KIO can be defined as an organization with predominantly knowledge workers, which produce knowledge through learning, in order to achieve personal and organizational goals, and satisfy (internal or external) customers.

## 1.4 Knowledge workers

As knowledge has become our main asset, and as knowledge is created through learning, the main production 'tool' in today's organizations is the individual or 'knowledge worker'. This new type of employee has also been described as 'information

workers' (Porat, 1978), 'symbolic analysts' (Reich, 1991), 'professionals' (Maister, 1993; Weggeman, 1997), 'gold-collar workers' (Keursten, 1995; Groen & Vasbinder, 1999), 'creative class' or 'no-collar workers' (Florida, 2002). Within this course we will refer to this type of workers as knowledge workers.

It was probably Drucker who coined the term knowledge worker, when he described this emerging group as workers that work with intangible resources (Drucker, 1959). In a sense, the rise of the knowledge worker, and the consequences for management and organizations, has always been a central theme in his work. According to Drucker, the leading group within our society will be the knowledge workers – those who know how to make knowledge productive – like capitalists who knew how to make capital productive; people that own specialized knowledge; and people that work with knowledge (Drucker, 1993b).

The shift towards the new type of worker, can be characterized as 'from brawn to brain' (Drucker, 1993b). At first mechanization superseded muscle power in the industrial economy. Next automation took over routine activities. This process of automation will continue until we reach the point at which all routine work has literally been taken 'out of the hands' of people. In this respect, Stewart (1997) raises an interesting question: If two percent of the population can grow all the food we eat, and if another two percent can manufacture all the refrigerators and other things we need, what should the rest do? It seems as if the main concern of the rest of the workers is knowledge. Therefore, 'the work that remains requires independent decision-making and creative thinking; the physical activities of employees are being replaced by mental and social activities. In the economic context the value added to products and services is mainly due to the capability of applying knowledge' (Kessels & Van der Werff, 2002: p.20).

Since Drucker, many descriptions and definitions of knowledge workers have been given. Although these definitions differ, there seems to be some consensus about the different characteristics. Knowledge workers own and control valuable knowledge for the company they work for; they know how to make knowledge productive; and they are self-motivated.

#### *Knowledge workers own valuable knowledge*

Important aspect of the knowledge worker is that he owns valuable knowledge for the organization he works for. This knowledge is achieved through extensive education and experience in the field of practice. They primarily work with their brains. Ideas, concepts and models are their tools. As knowledge is the organizations main asset, knowledge workers own and control the means of production. Therefore, knowledge workers should not be considered as costs but as a 'capital asset'. They should not be controlled and reduced, but made to grow. Being the owners of the means of production, makes the knowledge workers a factor of power and influence. Contrary to Marx's supposition that capitalism would lead to alienation of the means of production, within the knowledge economy the employee owns and controls the most important means of production. Therefore, the main challenge is not to possess knowledge (because people can not be owned) but getting access to the knowledge that is owned by the employees.

#### *Knowledge workers know how to make knowledge productive*

Second distinguishing characteristic of knowledge workers is that they do not only own valuable knowledge, but that they also know how to make knowledge productive. In this sense knowledge can be defined as an 'ability to act'. This

second characteristic seems to be more important and more valuable to organizations than the first.

As organizations continuously have to adapt to change, the ability to learn has become the main competence. A knowledge worker is someone who, for the – good – execution of his primary task, should continuously and relatively learn a lot (Weggeman, 1997). So learning has become the critical competence in the value creation process and knowledge workers are people that earn money by learning. In other words, knowledge workers are workers that learn for a living.

#### *Knowledge workers are self-motivated*

Third characteristic of the knowledge worker is its high level of self-motivation. They are driven by personal interests and operate relative autonomous. They do not only require the opportunity to give direction to their own tasks and professional development, they are also averse towards management involvement. The latter fits into the shift from management-driven, hierarchical organizations, towards an organization driven by personal responsibility. Traditional hierarchical systems of control have been replaced with new forms of self-management and intrinsic forms of motivation. Today's professional workforce is like artists and musicians. They set their own hours, dress casual, and work in stimulating environments. They can not be forced to work, yet they are never truly not at work (Florida, 2002). Moreover, as they carry their work with them all the time, the division between 'at work' and 'not at work' has faded. Some refer to this situation as a 'passionate relationship' to work (Pyoria, 2005).

As work has transformed to knowledge work, workers have transformed to knowledge workers. Referring to the different types of output, distinction can be made between different types of knowledge workers. A useful distinction is made by Weggeman (Weggeman, 1997), when he refers to 'routine professionals' (r-profs) and 'improvisation professionals' (i-profs). The former refers to a professional that performs a certain task in a more or less routine manner. The latter refers to a professional that continuously produces new knowledge. A similar distinction can be found in Walz and Bertels (Walz & Bertels, 1995), when they make a distinction between 'adaptive' and 'innovative' employees. Whereas the adaptive employee mainly contributes to generating incremental improvements to existing practice, innovative employees constantly search for possibilities to create radical innovations. In other words, different types of employees generate different types of results.

Taken together, knowledge workers are workers that own and control valuable knowledge for the company they work for; they know how to make knowledge productive through learning; and they are to a large extent self-motivated.

## **1.5 Knowledge creation**

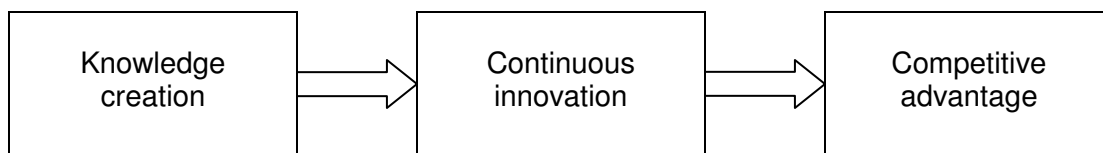
Within the knowledge economy, processing knowledge and generating new knowledge have become the main functions of most organizations. What does this mean? How is this function related to innovation? Within this section I will explore these concepts, and their relationship with knowledge management and knowledge productivity.

One of the characteristics of the knowledge economy is that, contrary to the relatively stable industrial economy, change has become the normal situation. Therefore, organizations should continuously enrich available knowledge, create new knowledge, and apply this knowledge to the renewal of products, services and processes. In other

words, to be successful in the knowledge economy, continuous innovation is vital, and the effectiveness of the knowledge creation process determines the level of innovation.

Nonaka and Takeuchi (1995) were very clear about the importance of knowledge creation and innovation in relationship to organizational success. Moreover, according to these authors, the specific Japanese way of knowledge creation and subsequent continuous innovation, had been the secret of the Japanese economic success after World War II. Therefore, they concluded that not knowledge as such, but the effectiveness of the knowledge creation process is the driving force of innovation. The aim of knowledge creation is to generate continuous innovation, which subsequently leads to competitive advantage (Figure 1.1).

Figure 1.1: From knowledge creation to competitive advantage



Source: (Nonaka & Takeuchi, 1995)

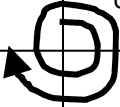
### *Knowledge creation*

According to Nonaka and Takeuchi, the process of knowledge creation has two dimensions: *ontological* and *epistemological*. Starting point of the ontological dimension of knowledge creation is that knowledge is solely created by people. An organization without people cannot create knowledge. Therefore, organizational knowledge creation is the process that enables knowledge creation by individuals and diffusion through the knowledge network. Starting point of the epistemological dimension is the distinction between tacit and explicit knowledge. Knowledge creation is the result of continuous interaction between tacit and explicit knowledge. The four different stages in this process are called Socialization, Externalization, Combination, and Internalization (see Figure 1.2). Together, these four stages are called the knowledge-creation spiral, the 'knowledge conversion model', or the SECI-model (Nonaka & Takeuchi, 1995).

The SECI-model has inspired many to develop similar models of knowledge creation. Important element of these models is that they make a distinction between different knowledge processes. The essence of knowledge processes is that they identify the different things we do with knowledge. Therefore, they are usually (but not always) expressed as verbs, like create, codify, share, evaluate. Taken together, the knowledge processes are labelled as a 'knowledge value-chain' (Weggeman, 1997), a 'knowledge flow' (Sprenger et al., 1995; Bertrams, 1999), a 'knowledge transfer system' (Dixon, 2000), a 'social learning cycle' (Boisot, 1998), or 'knowledge-creating and -diffusing activities' (Leonard-Barton, 1995).

Figure 1.2: SECI-model and the knowledge creation spiral

<i>From/To</i>	<b>Tacit</b>	<b>Explicit</b>
<b>Tacit</b>	<p><i>Socialization</i></p> <p>Creates knowledge through the sharing of experiences</p>	<p><i>Externalization</i></p> <p>Creates knowledge through articulation and conceptualization of tacit knowledge</p>
<b>Explicit</b>	<p><i>Internalization</i></p> <p>Creates experiential knowledge through learning by doing</p>	<p><i>Combination</i></p> <p>Creates knowledge through synthesizing different (explicit) knowledge components</p>



Source: (Nonaka & Takeuchi, 1995)

Another similar element within these models is that the process of knowledge creation is a cyclical process. Contrary to the linear industrial production model, the knowledge creation process is described as a continuous, spiral-shaped process that goes upwards. Newly created knowledge is not only the result of the past process, but also starting point for a new process, in which it will be recreated again. In this sense, the knowledge-creation process is very similar to the process of learning.

Finally, the logic of these models is that, in order to stimulate the knowledge creation process, all sub-processes should be activated. The division into different sub-processes helps to make the process of knowledge creation manageable, in the sense that they can be systematically monitored and controlled. Or stronger: the formal acknowledgement that the knowledge creation process consists of different knowledge processes, makes knowledge management inevitable. As we will see below, this is the core idea behind the concept of knowledge management.

### *Continuous innovation*

Considering the pivotal role of innovation with regard to the concept of knowledge creation, it is striking to notice that only so little has been written about this concept in the knowledge management literature. Although (or maybe because), continuous innovation of products, services, and processes is generally accepted as the ultimate goal of knowledge creation, the concept is hardly elaborated upon. However, based on the literature, it seems as if we can distinguish several elements of agreement.

- It seems to be generally accepted that in today's competitive environment, continuous innovation is a necessary precondition. Therefore, many authors, implicitly or explicitly equate the ability to innovate with competitive advantage. So, knowledge creation and knowledge management are not a goal in itself, but support the economic goal of continuous innovation as a decisive factor of competitive advantage.

- Another point of agreement, seems to be the acknowledgement of innovation as the result of the process of knowledge creation. Innovation is the result of the combination of the ontological and epistemological knowledge spirals. Moreover, innovation is the ability of organizations to connect internal and external knowledge. The process in which knowledge flows from the market into the company and back again in the form of new products and services. Within this process, both problems and solutions are redefined, in order to adapt to the changing environment.
- A third point of agreement, seems to be the distinction between incremental and radical innovations. Inspired by evolutionary biology, innovation is not seen as a process of gradual change, but as a process of intermitted change (punctuated equilibrium). Relative long periods of relative stability are altered with relative short periods of radical change. This implies that we can make a distinction between two types of innovation: incremental and radical.

The latter distinction is closely related to Hamel and Prahalad's (1993; 1994) distinction between 'stretch' and 'leverage'. Stretch can be defined as 'doing the impossible' or where ambition outpaces resources. It requires a total commitment to achieve the desired goal which is communicated to and accepted by the whole workforce. Leverage is about getting the most out of resources. This distinction between incremental and radical innovations is also closely related to the exploitation/exploration dilemma (March, 1991; Zack, 1999). This dilemma represents the two strategic options a company has: exploitation of old certainties or exploration of new possibilities. Finally, this dichotomy also illuminates the close relationship between innovation and learning, as many distinct types of learning can be compared to these two types of innovation. Most well known example is the distinction between 'single-loop' and 'double-loop' learning (Argyris & Schon, 1978). All of these distinctions refer to incremental improvements to existing practice on the one hand, and radical rethinking of basic goals, norms, and paradigms on the other hand.

As knowledge creation is the main value-creating process within knowledge intensive organizations, innovation must be the main result of these organizations. This reasoning implies that the ability to generate innovations is the biggest challenge of today's organizations. As knowledge is created by people, the biggest challenge is the improvement of the productivity of the knowledge worker (Drucker, 1993b, 1999).

Although knowledge is created by individuals, the knowledge creation process can (and should) be enabled. Enabling knowledge creation, in order to generate innovations, is the main purpose of knowledge management. The question then is, what is knowledge management, and how do we influence knowledge productivity? This will be the main issue in the following chapter.

## 1.6 Learning Points

- the KIO can be defined as an organization with predominantly knowledge workers, which produce knowledge through learning, in order to achieve personal and organizational goals, and satisfy (internal or external) customers.
- knowledge workers are workers that own and control valuable knowledge for the company they work for; they know how to make knowledge productive through learning; and they are to a large extent self-motivated.
- not knowledge as such, but the effectiveness of the knowledge creation process is the driving force of innovation. The aim of knowledge creation is to generate continuous innovation, which subsequently leads to competitive advantage
- Distinction can be made between incremental and radical innovations. The former refers to improvements to existing practice. The latter to radical rethinking of basic goals, norms, and paradigms.
- Enabling knowledge creation, in order to generate innovations, is the main purpose of knowledge management.

## 1.7 Discussion

- Some say that the employees have gained power and influence, because they own the main factors of production (knowledge). Do you agree? Why? Why not?

## 1.8 Exercises

- What are the main sources of competitive advantage?
- Can you make a distinction between different types of knowledge resources?
- Which of these resources are owned by the organization?
- For those resources that are not owned, how should the organization secure the access to these resources?

## 1.9 Recommended Literature

- Reich, R. (1991). *The Work of Nations*. New York: Knopf
- Drucker, P. F. (1988). The Coming of the New Organization. *Harvard Business Review*, 64(1)
- Drucker, P. F. (1993). *De post-kapitalistische maatschappij: onze maatschappij van organisaties, het staatsbestel en kennis*. Schiedam: Scriptum

## 2 KNOWLEDGE AND KNOWLEDGE MANAGEMENT

*“Knowledge is today’s hardest currency and tomorrow’s number one productivity factor. In the future, intelligent knowledge management will afford companies a critical competitive advantage”. (Siemens, Networking Knowledge, 2001)*

### 2.1 Learning goals

In this chapter, you work on these following learning points:

- To gain global insight in the concepts of knowledge and knowledge management
- The ability to differentiate between different kinds of knowledge

### 2.2 Introduction

The importance of knowledge has become evident. Beside the traditional production factors: land, capital and labour, knowledge is becoming the most important source of value creation. Knowledge about products, processes, customers, employees, knowledge stored in reports, documents, systems, and knowledge in the heads of our employees. In most companies knowledge has become an essential part of business operations. More and more organisations acknowledge the importance of knowledge and appoint a Chief Knowledge Officer or a knowledge management team focusing on the efficient and effective utilization of knowledge.

More and more, we see a search for alternative terms for knowledge management, for instance, knowledge productivity, talent management, intellectual capital management, human capital management, competence management, communities of practices. All these terms refer to the increased importance of knowledge and the challenge of utilizing knowledge efficiently and effectively. Knowledge management is not an exact science, and therefore a single theory of Knowledge Management does not exist. However, if we look at all the different theories and models, we see a lot of resemblances between the different approaches. The aim of this first chapter is to help you to “put on your knowledge glasses”. Based on the main knowledge management literature we will briefly introduce the concepts of knowledge, knowledge management and knowledge productivity. Next we will give an overview of trends in KM.

### 2.3 What is knowledge?

In our daily life, knowledge can mean anything: information, consciousness, science, experience, skills, wisdom, learning, etc. Knowledge has been subject to philosophic and academic debate for thousands of years. Despite these debates, there is no exact definition of knowledge. Therefore, it is not always clear what is meant with knowledge, and closely related concepts, such as ‘information’, ‘competences’, ‘experiences’, ‘wisdom’ and ‘intellectual capital’. More often than not, these concepts are used in an interchangeable manner, which can lead to confusion and hinders the success of knowledge management initiatives. As communication is an important element within knowledge management programs, it is important to develop a shared conceptual

framework. The aim of this framework is to develop a basis for mutual understanding. The latter is more important than the exact definitions of the different concepts. Within this course text, we use the following definitions:

*Data* and *information* are important building blocks for knowledge. Therefore we start with defining these concepts:

- Data are symbolic representations of observations. They consist of propositions that reflect reality. These symbolic representations or propositions can be either measurements or observations of a variable. These may comprise numbers, words or images. E.g. “*the company makes a profit of € 100.000.*” Although data, itself, has few or no meaning, it is an important raw material for creating information.
- Information comes into existence when data is arranged in such a way that it gives meaning. So information is an important element in the process of sense making (the original meaning of informing is “to give form”). In many cases, this happens through comparing data. E.g. the company makes 25% more profit than previous year.

Core concept of this course is *knowledge*. When defining knowledge, we make a distinction between *tacit* and *explicit* knowledge. This distinction is based on Polanyi (1974; 1983) and Nonaka and Takeuchi (1995).

- Tacit knowledge or *implicit* or *personal* knowledge, is the knowledge that is embedded in people. It is inextricably bound up with the person who carries it. It is about personal experiences, skills and attitudes (know-how). It is personal craftsmanship developed in practice. It is dynamic, and always ‘under construction’. Therefore, tacit knowledge is hard to transfer. However, tacit knowledge is very ‘rich’ and therefore very valuable<sup>1</sup>.
- Explicit Knowledge is the knowledge that is codified, stored or framed outside people. Whereas tacit knowledge is above all related to people, explicit knowledge is explicitly related to the organization. Explicit knowledge is recorded in formal language, such as theories, formulas, procedures and handbooks. Some call this information. However, the idea is that explicit knowledge reduces the dependence of people and supports the continuity of organizations. Explicit knowledge is less ‘rich’ than tacit knowledge, however it can be transferred very fast and easily.

So knowledge is the combination of tacit and explicit knowledge. It is both about knowledge embedded in people, and about knowledge stored in organizational structures, like documents, databases and procedures. This dichotomy is very well expressed the definition of knowledge by Davenport and Prusak (1998):

- “Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms.”

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<sup>1</sup> A closely related concept is *competence*. Sometimes, competence management is called the HR-perspective on knowledge management, as it mainly focuses on the tacit dimension of knowledge. The most common definition of competence reflects the definition of tacit knowledge: Competence: a unique combination of knowledge, experiences and skills. Competences are mental instruments to perform different professional tasks, to deal with critical professional situations, and to reflect upon their actions.

As we stated above, it does not really matter what the exact definition of knowledge is, however, when defining knowledge, we strongly suggest to address both the tacit and explicit dimension.

More and more authors acknowledge a third kind of knowledge based on the distinction that was made by Aristotle (*The Nicomachean Ethics*) between *episteme* (universal, context-free and objective knowledge), *techne* (practical and context-specific technical know-how) and *phronesis*. Whereas the first refers to explicit knowledge and the second to tacit knowledge, *phronesis* seems to be a next or even deeper level of knowledge. Therefore it is usually referred to as 'practical wisdom' or 'prudence'.

- *Phronesis* or practical wisdom is the virtue of making good decisions and taking actions that serve the common good. It is the capability to find the right answer in a particular context. According to Nonaka *phronesis* is "experiential knowledge to make context-specific decisions based on one's own value/ethics". To this he adds that it is "high quality tacit knowledge".

So *phronesis* seems to refer to the ability to apply the (ethical) right knowledge in the right context at the right moment. According to Nonaka, *phronesis* is the main reason why firms differ. He distinguishes between six different abilities that constitute *phronesis*:

1. ability to make a judgement on goodness
2. ability to share contexts with others to create ba/shared sense
3. ability to grasp the essence of particular situations/thinks
4. ability to reconstruct the particulars into universals using language/concepts/narratives.
5. ability to use any necessary means well to realize concepts for common goodness
6. to foster *phronesis* in others to build resilient organization

## 2.4 What is knowledge management?

Analogue to the increasing awareness of the importance of knowledge, a new discipline emerged within the management sciences. This discipline, not surprisingly called *knowledge management*, focused on knowledge and the consequences of its increased importance for management and organizations. In a sense, knowledge management is the discipline that gave content to the challenge expressed by Peter Drucker, that we needed a theory that put knowledge in the centre of the wealth creating process (Drucker, 1993b).

As knowledge has become the main resource in organizations, it seems inevitable that the focus of management – the process of leading and directing resources – shifts towards the process of systematically managing knowledge resources. Or even stronger, the ability to manage knowledge based intellect will be the crucial management skill of our time. This implies that managers become 'knowledge managers'. 'The rise of the knowledge worker fundamentally alters the nature of work and the agenda of management. Managers are custodians; they protect and care for the assets of a corporation; when the assets are intellectual, the manager's job changes' (Stewart,

1997: p.47). As knowledge has become the *raison d'être* of the organization, stimulating knowledge creation has become the *raison d'être* of management. In other words, management has become equivalent to knowledge management.

### **Box: Overview of definitions of KM**

- Systematically creating and recreating knowledge in order to innovate (Drucker, 1993b)
- The capability of an organization to create new knowledge, disseminate it throughout the organization, and embody it in products, services and systems. (Nonaka & Takeuchi, 1995)
- Combination of knowledge creating activities in order to enable innovation (Leonard-Barton, 1995)
- The art of creating value from intangible assets (Sveiby, 1997)
- Design and control of the knowledge processes in such a way that the return and the enjoyment of the production factor knowledge increases (Weggeman, 1997)
- Secure the effectiveness of the knowledge flow (Bertrams, 1999).
- The creation and subsequent management of an environment which encourages knowledge to be created, shared, learnt, enhanced, organised and utilised for the benefit of the organisation and its customers (www.tfpl.com).
- Knowledge management is the explicit and systematic management of vital knowledge and its associated processes of creating, gathering, organizing, diffusion, use and exploitation (www.skyrme.com).

In line with the above broad definition of knowledge, knowledge management deals with both the tacit and the explicit dimensions of knowledge. This means that it deals with both (tacit) experiences and skills embedded in people, and with (explicit) information codified in documents, databases, handbooks, procedures, etc. Whereas information management and competence management only focus on one of these dimensions, the distinguishing element of knowledge management is that it focuses on both. In a sense knowledge management is a fusion of the traditional HR and ICT function of the firm. Sometimes companies have difficulties with positioning the KM-function, as it does not fit in the traditional structure.

So, if knowledge is both about experiences and skills embedded in people, and about information codified in documents and databases, then what is knowledge management? We prefer the following basic definition:

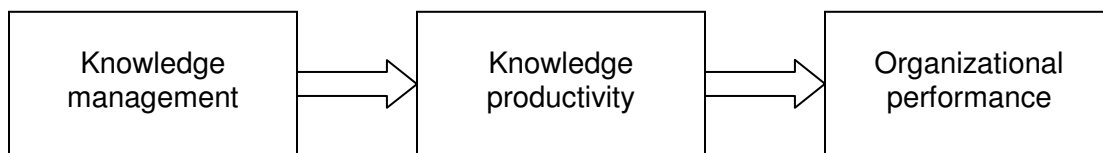
- Knowledge management is anything that we can do to enable knowledge productivity in order to realize individual and collective ambitions.

Important element of this definition is that it relates KM to the collective ambitions. In our opinion, anything related to KM should be grounded in the strategic objectives of the

organization. This grounding provides the legitimacy of KM-initiatives. The next chapter will elaborate on this idea of grounding.

Another important element of this definition is that it suggests that knowledge management initiatives aim at improving knowledge productivity (Nonaka & Takeuchi, 1997; Weggeman, 1997). This means that knowledge productivity is the result of knowledge management and one of the drivers of organizational performance. The latter implies that knowledge management directly contributes to improving knowledge productivity and indirectly to improving organizational performance (Figure 2.1).

*Figure 2.1 Relationship between knowledge management, knowledge productivity and organizational performance.*



The concept of knowledge productivity stresses that it is not knowledge in itself that provides a competitive edge, but the way we deal with knowledge. Organizational success depends on the extend to which we make knowledge productive. The extend to which we turn knowledge into value. The aim of knowledge management is to create and nurture the conditions for knowledge productivity. This concept of knowledge productivity will be further explored in one of the following chapters.

## 2.5 Learning points

- Knowledge is the combination of tacit and explicit knowledge. It is both about knowledge embedded in people (tacit), and about knowledge stored in organizational structures, like documents, databases and procedures (explicit).
- Knowledge management is anything that we can do to enable knowledge productivity in order to realize individual and collective ambitions.
- The aim of knowledge management is to create and nurture the conditions for knowledge productivity.

## 2.6 Discussion

More and more, the distinction between tacit and explicit knowledge is criticized, as the concept of explicit knowledge does not add anything to the concept of information. According to these critics, explicit knowledge is nothing more than information about the ability of another person. Explicit knowledge informs us about the knowledge of others, however, it does not help us to acquire the same knowledge, as knowledge can only be obtained through personal experience. Moreover, it's a misconception that knowledge – as an ability – can be shared or stored.

1. Do you agree with these critics? Why? Why not?
2. How would you define knowledge?
3. How would you define knowledge management?
4. Are these definitions important? Why? Why not?

## 2.7 Exercise

Every organization, intentionally or unintentionally, manages knowledge. Write down how your organization deals with knowledge. Make a distinction between measures and initiatives that aim at managing tacit knowledge, and initiatives that aim at managing explicit knowledge. What do we learn from this inventory with regard to your organization?

Tacit knowledge	Explicit knowledge

## 2.8 Recommended Literature

- Nonaka, I., & Takeuchi, H. (1995). *The Knowledge Creating Company*. New York: Oxford University Press
- Davenport, T. H., & Prusak, L. (1998). *Kennismanagement in de praktijk*. Amsterdam: Contact.

## 3 BASIC PRINCIPLES OF KNOWLEDGE MANAGEMENT (KM)

*“Being a knowledge-intensive company, we base our value creation on having the right knowledge resources based on close customer relationships, efficient processes and competent employees.” (Systematic, Intellectual Capital Report 2004)*

### 3.1 Learning Goals

In this chapter, you work on these following learning points:

1. Gain insight in the basic principles of knowledge management.
2. Develop a foundation for knowledge management projects.

### 3.2 Introduction

In the previous chapter we defined knowledge management as anything that we can do to enable knowledge productivity in order to realize individual and collective ambitions. This section elaborates on this concept. Based on a review of the knowledge management literature, distinction can be made between three ‘basic principles’ of knowledge management (Stam, 2004b).

1. Knowledge management is grounded in ambition.
2. Knowledge management is enabling knowledge processes
3. Knowledge management is the design of a knowledge-friendly environment

These principles seem to form the backbone of systematic knowledge management, and they are used as a starting point of many knowledge management models and methods.

### 3.3 KM is grounded in ambition

Within the KIO, knowledge has become the fundamental basis of competition. However, this does not automatically imply that knowledge has entered the organizational strategy, or that knowledge management is based on strategy.

‘Knowledge-based strategies begin with strategy, not knowledge. The new form of intellectual capital is meaningless without the old-fashioned objectives of serving customers and beating competitors. If a company does not have its fundamentals in place, all the corporate learning, information technology or knowledge databases are mere costly diversions’ (Manville & Foote, 1996). This quotation by two McKinsey consultants, more or less summarizes this first principle. Without a firm, there is no ground for knowledge management. Knowledge management is not a goal in itself. The legitimacy of knowledge management is in the strategic organizational (business unit, departmental) objectives. The aim of knowledge and knowledge management is to contribute to these objectives.

Before choosing a knowledge management strategy, executives should be able to articulate the company's competitive strategy. 'What value do customers expect from the company? How does knowledge that resides in the company add value for customers? If a company does not have clear answers to those questions, it should not attempt to choose a knowledge management strategy (...)' (Hansen et al., 1999: p.114). So, competitive strategy drives knowledge management strategy.

In this respect Nonaka and Takeuchi (Nonaka & Takeuchi, 1995) refer to the need to develop a knowledge vision. This knowledge vision should contain a demarcation of the organizational knowledge focus or strategic knowledge domains. This knowledge vision serves both as a foundation for the organizational strategy in general and the knowledge objectives in particular. According to Nonaka, the essence of a strategy should be the development of the organizational ability to acquire, create, enlarge, and exploit knowledge, within the strategic knowledge domains. A knowledge strategy gives meaning to work and gives direction to the process of knowledge creation.

Many others confirm the need to explicitly relate knowledge and knowledge management to the organizational goals. Dixon refers to the need to clarify 'the relationship between the knowledge to be transferred and the larger goals of the unit or organization' (Dixon, 2000: p.162). Van der Spek (Spek, 2004) stresses the importance of a knowledge-based strategy and the challenge of 'time-to-knowledge' as the foundation for a sustainable effectuation of the organizational strategy. Time-to-knowledge refers to the challenge of getting the knowledge that is needed to realize the strategy available at the right time, at the right place, and in the right form. 'In general, this does not happen automatically, and therefore should be organized deliberately' (ibid: p.27).

In order to be successful, knowledge management should be integrated in the existing strategy (Davenport & Prusak, 1998; Drew, 1999). Formal integration in the strategy influences the way employees deal with knowledge (Bertrams, 1999). Moreover, appreciation of knowledge as a decisive factor of competitive advantage, to a large extent determines the effectiveness of knowledge management. Pfeffer and Sutton (Pfeffer & Sutton, 2000) refer to the importance of 'why before how'. Important reason of failure of knowledge management initiatives is that too many managers focus on 'how' in terms of detailed practices, behaviours and techniques, rather than 'why' in terms of philosophy and general guidance for action.

Based on an extensive research among 25 firms, Zack (Zack, 1999) concludes that the most important context for guiding knowledge management is the firm's strategy. 'An organization's strategic context helps to identify knowledge management initiatives that support its purpose or mission, strengthen its competitive position, and create shareholder value' (ibid: p.125-126). According to Zack, a firm has two strategic options, either it can align strategy to what the organization knows (exploit), or it can develop the knowledge and capabilities needed to support a desired strategy (explore). Whatever the strategy, it should be translated into a plan for knowledge management. And for knowledge management, to be successful, it should be grounded within the context of business strategy (ibid: p.142).

Supplementary to existing strategy tools, knowledge management methods explicitly introduce the knowledge dimension into organizational strategy. First step within these methods is the identification of the 'knowledge gap'. In order to do so, the organization should know what knowledge is available ('knowledge-in-use'), what knowledge is needed, and what knowledge is crucial, considering the desired strategy (Spek &

Spijkervet, 1994; Weggeman, 1997; Bertrams, 1999). The answer to these questions will be different in each organization, because each organization will set different strategic priorities. And that is why knowledge management differs per organization.

### 3.4 Knowledge management is enabling knowledge processes

The second principle of knowledge management arises from the process of knowledge creation and represents the essence of the concept. No matter what school, epistemology, or approach, all sources seem to agree that the knowledge creation process can be divided into different knowledge processes, which have to be controlled, managed, nurtured or enabled.

Knowledge processes are the operational processes in the knowledge creation process (Weggeman, 1997). As they refer to the activities related to knowledge, they are usually expressed in verbs, like develop, share, apply, evaluate. Taken together, each subset of knowledge processes represents the essence of the knowledge creation process. The core idea of knowledge management is, that improvement of the knowledge processes will enhance the knowledge creation process, which subsequently will lead to better organizational performance. Different authors divided the knowledge creation process into different subsets of knowledge processes (Table 3.1).

*Table 3.1: Division of knowledge creation process into different knowledge processes by different authors*

<b>Author</b>	<b>Knowledge processes</b>	<b>Together</b>
Nonaka and Takeuchi (Nonaka & Takeuchi, 1995)	sharing tacit knowledge, creating concepts, justifying concepts, building an archetype, cross levelling	Five-phase model of knowledge creation
Leonard-Barton (Leonard-Barton, 1995)	shared problem solving, implementing and integrating, experimenting and prototyping, pulling in expertise from outside	Knowledge creating and diffusing activities
Sprenger (Sprenger et al., 1995)	absorption, diffusion, generation, exploitation	Knowledge flow
Weggeman (Weggeman, 1997)	develop, share, apply, evaluate	Knowledge value chain
Boisot (Boisot, 1998)	scanning, problem-solving, abstraction, diffusion, absorption, impacting	Social learning cycle
Dixon (Dixon, 2000)	create, leverage (transfer)	Knowledge transfer process

Nonaka and Takeuchi (Nonaka & Takeuchi, 1995) combine the four modes of knowledge creation (SECI-model) with a time dimension in order to create a dynamic five phase model of knowledge creation. Within this model, the different epistemological and ontological levels continuously interact in a cyclical movement. The result of this process is innovation.

The knowledge processes represent a series of, more or less, consecutive coherent activities, which have a begin and an end<sup>2</sup>. However, it is stressed, this does not mean that the knowledge creation process necessarily starts with the first knowledge process. The sequence of events in the knowledge creation process is not fixed. In reality it is more so that the different parts of the process can be tapped whenever necessary (Sprenger et al., 1995). Bertrams (1999) adds that knowledge creation is a dynamic process. Just putting knowledge in the process will not work. In order to create knowledge, it should flow through the organization. Moreover, energizing the knowledge flow is the *raison d'être* of knowledge management.

The different activities in the knowledge creation process are also referred to as (core) competences (Leonard-Barton, 1995; Sprenger et al., 1995). Moreover, expressing the knowledge creation process in terms of competencies stresses the pivotal role of the individual. According to Leonard-Barton (1995) it is *activities* that create a firm's capabilities. As knowledge creation is related to people, these activities do not have any meaning separate from the people who conduct them. 'Each person or team conducts the activity in a distinct manner. (...) [K]nowledge building for an organization occurs by combining people's distinct individualities with a particular set of activities. It is this combination that enables innovation, and it is this combination that managers manage'(ibid: p.8).

As we have seen, knowledge creation is closely related to learning. Therefore, it is stressed that the process of knowledge creation is a learning cycle (Spek & Spijkervet, 1994), and that it requires specific *learning competences* (Sprenger et al., 1995). Based on learning theories, Kessels (Kessels, 1996) developed a set of *learning functions* which enable the knowledge creation process. Aim of knowledge management activities is to support the learning cycle in general and the learning abilities in particular (Spek & Spijkervet, 1994). Therefore, knowledge creation and knowledge management are closely related to learning and the concept of the learning organization (Senge, 1992).

According to Boisot (1998), an organization is an 'information space' (I-space) in which data is processed through 'codification', 'abstraction', and 'diffusion'. Learning and the creation of new knowledge is the result of a particular sequence of events within the I-space, which he calls the 'social learning cycle'. However, the suggested sequence should be thought of as 'schematic', because different steps may run concurrently. Weggeman (Weggeman, 1997) argues that the value of knowledge increases, the more it advances in the knowledge value chain. However, the knowledge value chain is mere a fragment within the knowledge creation and –exploitation process, which passes through time, and consists of a series of identically structured knowledge value chains.

Finally, Dixon (Dixon, 2000) focuses on *common knowledge* – the knowledge that employees learn from doing the organizational tasks – and makes a distinction between

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<sup>2</sup> Which is the general idea of a process. In organization science, a process usually refers to a sequence of events which can be identified, because it has a clear starting point and a clear point at which it ends. Aim of a process is to transform some kind of input into some kind of output. In this sense, Weggeman (Weggeman, 1997) provides an overview of possible outcomes of each of the knowledge processes.

the translation of experience into knowledge (create) and transferring knowledge across time and space (leverage). Based on criteria related to the receiver, the nature of the task, and the type of knowledge, she makes distinction between five different types of transfer.

Without having the intention to create another subset, it seems as if we can make distinction between, four different activities in the knowledge creation process.

- *Absorb knowledge*  
Knowledge is created by individuals through education or through experience in the field.
- *Leverage knowledge*  
Within this process, individual knowledge is made available for others, in order to make leverage possible.
- *Exploit knowledge*  
This is the process in which available knowledge is combined, in order to create value for the (internal or external) customer. In a sense, all other knowledge processes are subordinate to this process.
- *Evaluate knowledge*  
Within this process, knowledge is created through systematically reflecting on action. This process is closely related to absorbing, and makes the knowledge creation circle round.

Knowledge management is the management of these knowledge processes. Moreover, knowledge management is needed mostly for those activities, which are least productive (Weggeman, 1997). Therefore, knowledge management initiatives often start with diagnosing the quality of these processes, because better understanding of the performance of the knowledge processes gives a starting point for action.

### **3.5 KM is the design of a knowledge-friendly environment**

The third basic principle of knowledge management is that the quality of the (organizational) environment determines the quality of the knowledge creation process in general, and the distinct knowledge processes in particular. Therefore, insight in what these specific determining characteristics are, and how *knowledge-friendly* they are, provides another starting point for knowledge management actions.

Within the knowledge management literature, these characteristics are usually expressed in terms of culture, structure, management style, etc. Frequently used models are the 7-S model (Pascale & Athos, 1983) and the ESH-model (Weggeman, 1997). These models should be seen as a checklist, containing the most important dimensions of organizations. These models 'pretend to be relatively complete, in the sense that when an organization is designed or analyzed with the model, only few relevant aspects will stay unnoticed' (Weggeman, 1997).

The 7s-model of McKinsey identifies seven dimensions of organizations: shared values, strategy, structure, staff, systems, skills, and style. The essence of this model is that it reduces complexity by identifying the main *levers* of organizations. However, although each lever is of greatest importance, the different levers can not be treated independently. *[T]he central point is that the FIT among and between them has to be good to get long-term leverage* (Pascale & Athos, 1983: p.202, italic in original). In other words, they are interdependent. Changing one of them affects the whole system.

A closely related model is Weggeman's *ESH-model* (1997). Next to 'balance' (Evenwicht) and 'coherence' (Samenhang), this model adds 'heterogeneity' (H), which stresses that the organizational factors refer to both intended and unintended, formal and informal, measurable and non-measurable, implicit and explicit, internal and external determined aspects. Based on these starting points, this model identifies strategy, management style, systems, personnel, culture and structure as the main organizational dimensions.

Managing knowledge requires designing an environment that encourages knowledge building activities. Leonard-Barton (1995) acknowledges four *knowledge assets* that support the growth of knowledge. First, the skills embodied in the people physical systems. Second, the managerial systems that enable and reward learning. Third, the underlying values, like respect, tolerance and openness. Fourth, the firm's unique interdependent system, which gives the organization distinctive advantage over others. Within these knowledge assets we clearly recognize dimensions of staff, systems, management style, shared values and culture. The latter stresses the interdependency of the dimensions.

It is the task of the organization to create a context that enables knowledge creation. In this respect, Nonaka and Takeuchi (1995) identify five *enabling conditions*: intention, autonomy, fluctuation / creative chaos, redundancy, requisite variety. Moreover, in terms of management style and structure, they explicitly refer to the importance of *middle-up-down* management and a *hypertext*-structure.

Boisot (1998) stresses the importance of culture as a knowledge asset, and knowledge as an extension of culture. Moreover, culture operates through institutional structures, which themselves should be considered knowledge assets. 'Over time, culture shapes these institutional structures and is in turn shaped by them' (ibid: p.119). This process of reciprocal influence takes place in the process of knowledge creation.

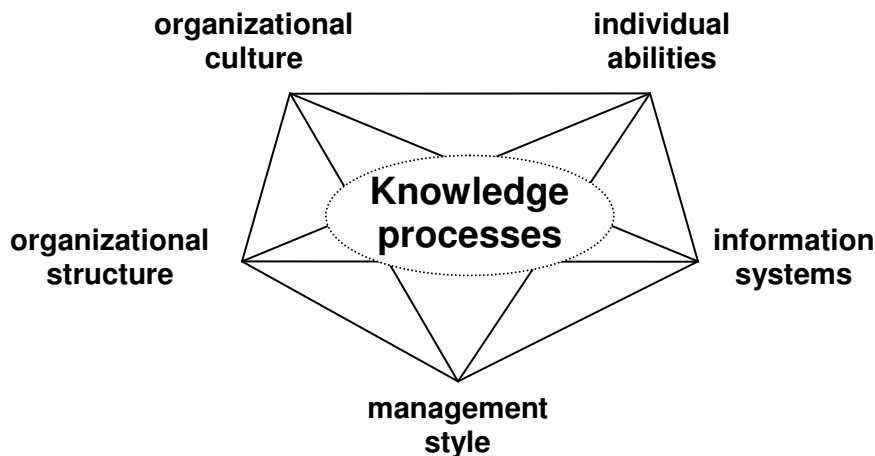
The importance of creating supporting conditions prior to knowledge management initiatives is stressed by Davenport and Prusak (1998). Based on practical experience, they argue that a knowledge-focused culture, a human infrastructure, and (top) management support, are the most important preconditions for knowledge management. Dixon (2000), however, warns for a too strong focus on a-priori organizational conditions, as these can lead to wrong assumptions, which eventually lead to a dead end. The first, *build it and they will come*, refers to the myth that databases and incentive programs in itself will improve knowledge creation. The second, *technology can replace face-to-face*, refers to the myth that it is no longer necessary to bring people together in order to share knowledge. The third, *first you have to create a learning culture*, refers to the myth that a learning culture comes before the exchange of knowledge. Within these assumptions we recognize the dimensions of systems, management style, and culture.

The strong interdependence between knowledge processes and organizational dimensions is reflected in Kessels' seven learning functions (Kessels, 1996), in which both are combined. Although we realize that it is difficult to separate these learning

functions, it seems as if three of these learning functions refer dominantly to the knowledge processes (acquiring expertise, problem solving, reflection). Next, two learning functions seem to refer more dominantly to individual abilities (communicative and social skills, and self-regulation of motivation). Moreover, the final two learning functions (peace and stability and creative turmoil) do not only refer to aspects in the organizational context, but also make the connection between the knowledge processes and the different types of knowledge that are created (incremental and radical innovations).

Based on the literature that has been reviewed, it seems as if we can identify, at least, five key organizational dimensions that influence the process of knowledge creation in general and the individual knowledge processes in particular (figure...).

Figure 3.1: Key organizational dimensions that influence the knowledge processes



- *Organizational culture*  
The culture-dimension refers to the shared values within the organization. Important values are trust, respect, and openness. A culture that is non-competitive and collaborative is in general seen as a knowledge-friendly culture.
- *Individual abilities*  
This second dimension refers to the skills that enable knowledge creation by and between employees. Communicative and social skills are important enablers to get access to each others knowledge and networks.
- *Information systems*  
This dimension refers to the systems that enable codification and dissemination of knowledge throughout the network. As knowledge creation takes place between people, knowledge-friendly systems are those that bring people (physically) together.
- *Management style*  
This dimension refers to the way in which the management facilitates, supports, nurtures its human capital. As knowledge workers are to a large extent self-motivated, a knowledge-friendly management style leaves room for self-control.

- *Organizational structure*

This last dimension refers to the formal design of the organization. As knowledge tends to flow along the organizational lines, and as each structure has its advantages and disadvantages, knowledge-friendly organizations create mechanisms that compensate the disadvantages of the chosen structure.

From the perspective of knowledge creation, these organizational factors can either contribute positively or negatively. For instance, a simple organizational structure, with a few hierarchical levels and an informal culture can contribute positively, whereas a complex structure and formal manners can hinder the process of knowledge creation. Therefore, the organizational environment should be designed in such a way that it enables knowledge creation. It is the aim of knowledge management to prevent that knowledge creation is disturbed.

The multitude of dimensions, the interdependence of these dimensions, and the influence of all these dimensions on the process of knowledge creation, reveals the complexity of managing knowledge. Moreover, successful knowledge management requires a multi-disciplinary approach (Spek & Spijkervet, 1994), which combines traditionally separated disciplines like human resource management and information management. This multi-disciplinary nature is reflected in the different strategies for knowledge management.

### **3.6 Learning Points**

- The legitimacy of knowledge management is in the strategic organizational (business unit, departmental) objectives. The aim of knowledge and knowledge management is to contribute to these objectives.
- The objective of KM is to strengthen the functioning of the knowledge processes. Improvement of the knowledge processes will enhance the knowledge creation process, which subsequently will lead to better organizational performance.
- The quality of the (organizational) environment determines the quality of the knowledge creation process in general, and the distinct knowledge processes in particular.

### **3.7 Discussion**

In general, it can be argued that KM contributes either to decreasing costs (e.g. through increasing efficiency, reducing mistakes, reducing 'time-to-knowledge', etc.) or to increasing quality (e.g. through better utilization of available knowledge or improving proficiency of employees). What, according to you, is the main contribution of KM to improving organizational performance?

## 3.8 Exercises

### 1. *Knowledge-based strategy*

We do not share knowledge because we want to share knowledge. We share knowledge, because we want to contribute to organizational (unit or department) objectives. This implies that every KM-initiative should be founded in objectives. What are the objectives of your organization (unit or department)? How can KM contribute to realizing these objectives?

### 2. *KM-scan*

An instrument that is often used to investigate the current situation with regard to KM is a KM-survey. In appendix A you can find a survey that can help you to gather information about the (perception of the) quality of the knowledge processes, and the knowledge friendliness of your organization (unit or department).

Please fill in this questionnaire (maybe also ask some colleagues), calculate the average scores per heading (absorbing, leveraging, etc.). Please note: the more people you ask to fill out this form, the more reliable the outcome will be.

1. which knowledge processes and which organizational aspects score high, which score low?
2. which questions score strikingly lower than others?
3. Do you recognize the outcome?
4. Do you think the knowledge processes, or the organizational aspects should be improved?
5. If so, which process(es) or aspect(s) would you start with?
6. What type of solutions (information systems, coaching, yellow pages, communities of practice, training, etc.) would you choose?

## 3.9 Recommended Literature

- Manville, B., & Foote, N. (1996, April/May). Strategy as if Knowledge Mattered. *FastCompany*, 66.

## 4 STRATEGIES FOR KM

*“The aim of KM is to use and leverage knowledge throughout the company and accelerate learning. Information technology is an important enabler but it is up to leaders to create a collaborative milieu in which people are eager to share their knowledge”*  
(Philips BEST brochure, October 2001)

### 4.1 Learning Goals

In this chapter, you work on these following learning points:

- Develop awareness about the importance of aligning KM-initiatives to the specific characteristics of the context
- Create insight in the different sets of assumptions about knowledge, and the consequences for managing knowledge processes
- Create insight in the distinct KM-strategies.

### 4.2 Introduction

Before starting a KM-initiative, it is important to investigate the ‘knowledge profile’ of the organization, because the development of KM-initiatives take different forms depending on the knowledge profile. As knowledge is subject to various meanings, and as different interpretations will result in different types of solutions, the assumptions about knowledge should be made explicit at the start of the KM-project. The different sets of assumptions about knowledge are called knowledge profiles. Distinction can be made between three different profiles memory, network, and self-creation (Venzin et al., 1998; Roos, 2005).

Another issue that has to be considered before starting a KM-initiative, is the desired KM-strategy. Like the knowledge profile, the chosen strategy also determines the type of KM-initiatives. The closer the fit between profile and initiatives, and between strategy and initiatives, the more likely it is that the KM-initiatives will succeed.

### 4.3 Knowledge profiles of organizations

Understanding assumptions about knowledge ensures effective knowledge management (Roos, 2005). According to Von Krogh et.al.(1998) managers benefit from recognizing distinct epistemologies because it enlarges the knowledge management repertoire and provides a better understanding of the limitations of each approach.

*The organization is a memory*

This approach considers organizations as open systems, which develop knowledge by formatting increasingly accurate representations of their predefined worlds. Hence, memory-approaches equate knowledge with data (observations of states of the world) and information (result of processing data).

### *Knowledge is in the network*

The network approach has many similarities with the memory approach, however the rules for processing information are not universal, but context or task-related. Organizations are seen as self-organized networks composed by relationships and driven by communication. Therefore, knowledge resides in the connections of experts and is problem-solution oriented.

### *Knowledge is self-created*

Finally, the self-creation approach considers the organization as an autonomous and observing system that is open to data, but closed to information. Information (and knowledge) cannot be transferred easily, since they require internal interpretation within the system according to the individual's rules. Consequently, knowledge resides in mind, body and social systems.

The underlying assumptions of these three knowledge profiles can be summarized as follows (Table 4.1):

*Table 4.1: Three knowledge-profiles of organizations*

	<b>Memory</b>	<b>Network</b>	<b>Self-creation</b>
<b>The organization ...</b>	... works as a memory. Information is collected and stored centrally.	... is a network. Individuals are connected through information technology.	... is composed of autonomous individuals, which are considered independent entrepreneurs.
<b>Management of processes</b>	Processes are managed by the (top) management.	Large degree of self-organization, within the context of local rules (unit, department, team, etc.)	Management supports and stimulates employees by creating opportunities.
<b>The environment ...</b>	... is a given fact. Adaption to the environment is the main challenge.	... is a given fact, but differs per unit or department of the organization.	... and the organization are one (co-evolving).
<b>Knowledge is seen as ...</b>	... an objective entity. Knowledge can be codified in databases, handbooks, procedures, etc...	... a function of the network. Knowledge is related to problems/challenges.	... related to people and thus subjective. Knowledge can not be separated from the individual.
<b>Knowledge development...</b>	... is the result of the dissemination of information throughout the organization.	... depends on, and takes place in the local setting of the network.	... takes place through individual observation and interpretation of data.
<b>Truth</b>	Is dependent on the amount of knowledge.	Is determined by the experts.	Is determined by the individual.

*Based on: (Von Krogh & Roos, 1995; Roos, 2005)*

As argued above, KM-initiatives take different forms depending of the knowledge profile. Whereas an organization with a memory profile will dominantly focus on enhancing the memory function, an organization with a network profile will focus on strengthening the ability to connect people. Finally, an organization with a self-creation profile will focus on strengthening the knowledge creating abilities of the employees.

## 4.4 Two strategies for KM

When talking about knowledge management strategies, Hansen et.al. (Hansen et al., 1999) is probably the most cited source. When analyzing the knowledge management strategies in different types of industries, they found out that organizations in general employ two distinct types of strategies. In some companies knowledge management centers on the computer. Knowledge is carefully codified and stored in databases, where it can be accessed and used easily by anyone in the company. This approach is called the *codification strategy*. Other companies, appeared to follow a more human-centred approach. Knowledge is mainly shared through person-to-person contacts, and the purpose of computers is to connect people. This approach is called the *personalization strategy*. It is argued that the choice between these two strategies is not arbitrary and closely related to the competitive strategy. Only when the overall strategy is clear (see first basic principle of knowledge management), and when the organization is able to formulate how knowledge can contribute to the overall goals, only then the right knowledge management strategy can be chosen. Moreover, choosing the right strategy is of eminent importance, because ‘emphasizing the wrong strategy or trying to pursue both at the same time can (...) quickly undermine business’ (ibid: p.107).

Table 4.2: How consulting firms manage their knowledge

	<b>Codification</b>	<b>Personalization</b>
<b>Competitive strategy</b>	Provide high-quality, reliable, and fast information-systems implementation by reusing codified knowledge	Provide creative, analytically rigorous advice on high-level strategic problems by channelling individual expertise
<b>Economic model</b>	<p><b>REUSE ECONOMICS:</b></p> <p>Invest once in a knowledge asset; reuse it many times.</p> <p>Use large teams with high ratio of associates to partners.</p> <p>Focus on generating large overall revenues.</p>	<p><b>EXPERT ECONOMICS:</b></p> <p>Charge high fees for highly customized solutions to unique problems.</p> <p>Use small teams with a low ratio of associates to partners.</p> <p>Focus on maintaining high profit margins</p>
<b>Knowledge management strategy</b>	<p><b>PEOPLE-TO-DOCUMENTS:</b></p> <p>Develop an electronic document system that codifies, stores, disseminates, and allows reuse of knowledge.</p>	<p><b>PERSON-TO-PERSON:</b></p> <p>Develop networks for linking people so that tacit knowledge can be shared.</p>
<b>Information technology</b>	Invest heavily in IT; the goal is to connect people with reusable codified knowledge.	Invest moderately in IT; the goal is to facilitate conversations and the exchange of tacit knowledge.
<b>Human Resources</b>	<p>Hire new college graduates who are well suited to the reuse of knowledge and the implementation of solutions.</p> <p>Train people in groups and through computer-based distance learning.</p> <p>Reward people for using and contributing to document databases.</p>	<p>Hire MBA’s who like problem solving and can tolerate ambiguity.</p> <p>Train people through one-to-one mentoring.</p> <p>Reward people for directly sharing knowledge with others.</p>
<b>Examples</b>	Andersen Consulting, Ernst & Young	McKinsey & Company, Bain & Company

Source: (Hansen et al., 1999)

These two opposite knowledge management approaches are acknowledged in many sources. Distinction is made between a *system-oriented* and a *behavioral* approach (Spek & Spijkervet, 1994), a *stock* and a *flow* approach (Weggeman, 1997), and an *objective* or *subjective* approach (Bertrams, 1999). On the one hand an approach that accepts that knowledge can be an objective entity, something that can be separated from people, captured in and shared indirectly through (ICT) systems. On the other hand an approach that considers knowledge to be subjective, per definition related to people, and therefore sharing knowledge goes directly, from person to person. The choice for one of these strategies determines the solutions. Whereas the former approach can lead to solutions like systems, databases, handbooks, and protocols, the latter can lead to solutions like training, development programs, coaching, mentoring, and job-rotation. The widely divergent character of these solutions stresses the multi disciplinary nature of knowledge management.

These approaches seem to be inherent to the Cartesian dualism between object and subject, which led to the two opposing philosophical traditions of rationalism and empiricism. The distinction between explicit and tacit knowledge (Nonaka & Takeuchi, 1995), seems to have fed this dualism, in the sense that some authors stress the importance of choosing between them (Hansen et al., 1999). However, the initial aim of the distinction between tacit and explicit knowledge was to present a framework that could overcome this dualism. In line with this reasoning we see more and more the acknowledgement of a third approach to knowledge management.

## **Knowledge Management at Philips**

### *Employability and knowledge management*

At Philips individuals are encouraged to take initiative in terms of their development. In turn, the company offers myriad opportunities for challenge. One example is the company's web-based Career Center, which helps employees manage their careers by providing the ability to view and search through all available Philips jobs worldwide, thereby facilitating internal mobility.

Increasing employee mobility – both internal and external – raises the issue of how to capture knowledge and accelerate learning. The company's ability to learn and apply knowledge faster than its competitors is becoming more and more critical as the pace of change accelerates, particularly in the technology arena.

Knowledge sharing is governed by the Philips Quality Policy Board, which is chaired by a member of the Group management Committee and includes executive representatives from all product divisions. This board governs our business excellence program BEST. Knowledge sharing is a vital part of the BEST management agenda for 2004.

A team has been assigned to develop ways to accelerate learning, incorporating an outside perspective through contact with universities and other large multinationals.

### *Building a knowledge network*

To enhance sharing and collaboration, a number of systems, both physical and virtual,

are available and in use throughout Philips. These range from standard email and intranet to virtual team rooms, newsgroups and personalized information systems.

One example is our intelligent Yellow pages system – which stores profiles of Philips people complete with their knowledge and experience. Participation is voluntary and users maintain information themselves. This data allows users to find people via searches of member profiles. Employees can pose questions and get answers from colleagues.

By posting interesting links, best practices and experiences, each member shares knowledge with the rest of the corporate community. Currently more than 26,000 people are members, and in a typical week 100 members join.

#### *Sharing knowledge*

For Philips Research, sharing knowledge with society has always been a basic principle of operation. We encourage our scientists to participate in the international scientific community.

We also encourage partnerships. In fact, approximately 45% of all research projects in 2003 were carried out in cooperation with a university or NGO.

A substantial number of senior scientists hold part-time professorships at universities. We host graduate and PhD students who work in our laboratories. We also offer opportunities for secondary schools to visit us to learn about working in an industrial laboratory. In this way we intend to counteract the decreasing numbers of students studying math and science in Western Europe.

Development programs for Research employees include international job rotation, cross-disciplinary projects, sabbatical leaves at universities, and career paths from research to development positions and back.

*Source: Philips Sustainability Report 2003*

## 4.5 A third strategy for KM

This third way is generally described as ‘creating a knowledge friendly environment’. It seems as if the practice of knowledge management is shifting towards this third approach, which aims at creating the right organizational conditions for knowledge creation. The concept of *communities of practice* (Wenger et al., 2002), and the *creative class* (Florida, 2002) can be seen as examples of this strategy. In this sense, Davenport and Prusak (1997; 1998) refer to an *ecological approach* in which elements of the other two strategies are combined. Similarly, Weggeman (2000) refers to the concept of *knowledge infrastructure engineering* – the synergetic combination of office layout, ICT, knowledge- and network management. ‘These disciplines are applied coherently, in order to create a productive work- and learning environment (...) (ibid: p.17). Other examples are the concepts of *enabling contexts* (Von Krogh et al., 2000) and the *corporate curriculum* (Kessels, 1996). Starting point of these concepts is that knowledge creation takes place in the heads of people. Therefore it can not be managed or controlled, it can mere be supported by an enabling environment. In this sense Kessels prefers not to use the term *knowledge management*, but *knowledge productivity*.

As knowledge resides in people, the knowledge creation process takes place in the heads of people, and as knowledge workers are to a large extent self-motivated, it could seriously be questioned whether knowledge can be managed, because 'you cannot be smart against your will' (Kessels, 2002). Knowledge management, in the sense of planning and control, seems to be a remainder of the industrial economy, and will appear to be an anachronism (Kessels, 1996) – assigning a phenomenon to the wrong time period – or an 'oxymoron' – an expression consisting of contrasting concepts (Malhotra, 2000). Kessels argues that, within the knowledge economy, the capacity to create value rests with the knowledge workers, and therefore, the power shifts from the manager to the worker. 'The question is whether the successful management approach from the past is fully applicable to promote knowledge development' (Kessels, 2002). Therefore, in the knowledge economy, the organization becomes a site for learning. The question then will be, how to design a workplace that enables the necessary learning. The next chapter will elaborate on this challenge.

### **Knowledge Management at Shell International Exploration and Production BV**

Story telling is not an optional extra but an old skill in a new context. The new context is the emerging discipline of Knowledge Management that has arisen in response to the growing understanding that Intellectual Capital is the core asset of organisations and of society itself.

The old skill is the human capability to tell stories. Story telling has many purposes, entertainment, teaching, understanding and cultural bonding to name a few. Stories can also convey complex meanings across culture and language barriers, in a way that linguistic statements cannot.

It is early days in understanding the use of stories in a modern business; however the results are sufficiently good that we now know that there are major benefits to be achieved from the use of stories, and the development of story telling skills.

Moreover, organizations are beginning to understand that story telling is not an optional extra. It is something that already exists as an integral part of defining what that organisation is...

In the booklet "Stories from the edge", many examples are given of (financial) benefits from story telling in the context of Shell International Exploration and Production. It was calculated that \$35 million was saved by using the question and answer function of the corporate network in 1999. Some of the many examples ...

1. Shell Brasil sought assistance regarding fishing challenges (retrieving stuck or broken tools from a borehole) through the Wells Global Network. Best practices from Shell, notably Brunei Shell Petroleum and Petroleum Development Oman, were presented to Petrobras as a potential partner. The information gained substantial credibility that will save in the order of \$1 million per well or \$7 million in total.
2. In the electrical engineering field, one Shell operating unit shared methods and results of their electrical cost savings efforts, worth \$400,000 per year, with the local utility company in negotiating rates for electrical peak avoidance. This practice was taken up at several locations with similar savings expected. An electrical systems

idea from the same operating unit has reaped benefits of over \$30,000 per year at several other field units. Another idea for lightening protection is saving approximately \$100,000 per year by reducing lost production caused by electrical damage from storms.

3. In maintenance, the use of V-belt tension gauges and sheave guidelines was implemented at over 10 locations, A cost saving of \$140,000 per year resulted from sharing maintenance practice.

*Source: Shell, Stories from the Edge, November 2001*

## 4.6 Learning points

1. Before starting a KM-initiative, it is important to investigate the 'knowledge profile' of the organization, because the development of KM-initiatives take different forms depending on the knowledge profile
2. Distinction can be made between three different knowledge profiles: *memory*, *network*, and *self-creation*.
3. Distinction can be made between three different KM-strategies: *codification*, *personification*, and *enabling*.

## 4.7 Discussion

As we have seen, some argue that knowledge management is an anachronism – assigning a phenomenon to the wrong time period – or an 'oxymoron' – an expression consisting of contrasting concepts. What do you think? Will the management approach from the past (focus on planning and control) appear to be fully applicable in the knowledge-based economy?

## 4.8 Exercises

1. Which knowledge profile fits your organization? Why?
2. Which KM-strategy would you prefer? Why?
3. What kind of initiatives could be successful in your organization (considering the answers to question 1 and 2)

## 4.9 Recommended Literature

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## 5 KNOWLEDGE PRODUCTIVITY

*“We turn knowledge into value for the benefit of our clients, our people and the capital markets.”* (www.kpmg.nl)

### 5.1 Learning Goals

Within this chapter:

1. We will learn what the preconditions for KP are.
2. We will learn to make a distinction between different types of results of KP.
3. We will get acquainted with the design rules for enhancing KP.

### 5.2 Introduction

It was Drucker (Drucker, 1981, 1993a) who realized that the increased importance of knowledge as a source of production, had to be followed by a revision of the concept of productivity. As the productivity of knowledge will be the determining factor in the knowledge economy, the main responsibility of today's management is to make knowledge productive (Drucker, 1993b). Moreover, as he realized that not only the main source of production (knowledge), but also the tools of production (brains) are owned by the employees, he also concluded that the biggest challenge in the knowledge economy was the productivity of the knowledge worker. Moreover, he proclaimed knowledge-worker productivity to be the biggest of the 21<sup>st</sup>-century management challenges.

‘The most important, and indeed the truly unique, contribution of management in the 20<sup>th</sup> century was the fifty-fold increase in the productivity of the *manual worker* in manufacturing. The most important contribution management needs to make in the 21<sup>st</sup> century is similarly to increase the productivity of *knowledge work* and *knowledge workers*. The most valuable assets of a 20<sup>th</sup>-century company was its *production equipment*. The most valuable asset of a 21<sup>st</sup>-century institution (whether business or non-business) will be its *knowledge workers* and their *productivity*’ (Drucker, 1999: p.79, italics in original).

But what then is knowledge productivity? How do we make sense of productivity in the knowledge economy? What are the sources or conditions of productivity? And how do we reveal the effectiveness of the knowledge creation process? In this section we will focus on these questions.

### 5.3 The Corporate Curriculum as precondition for KP

Closely related to and in line with Drucker, it was Kessels (1996; Kessels, 2001) who introduced the concept *knowledge productivity*. ‘Knowledge productivity concerns the way in which individuals, teams and units across an organization achieve knowledge-

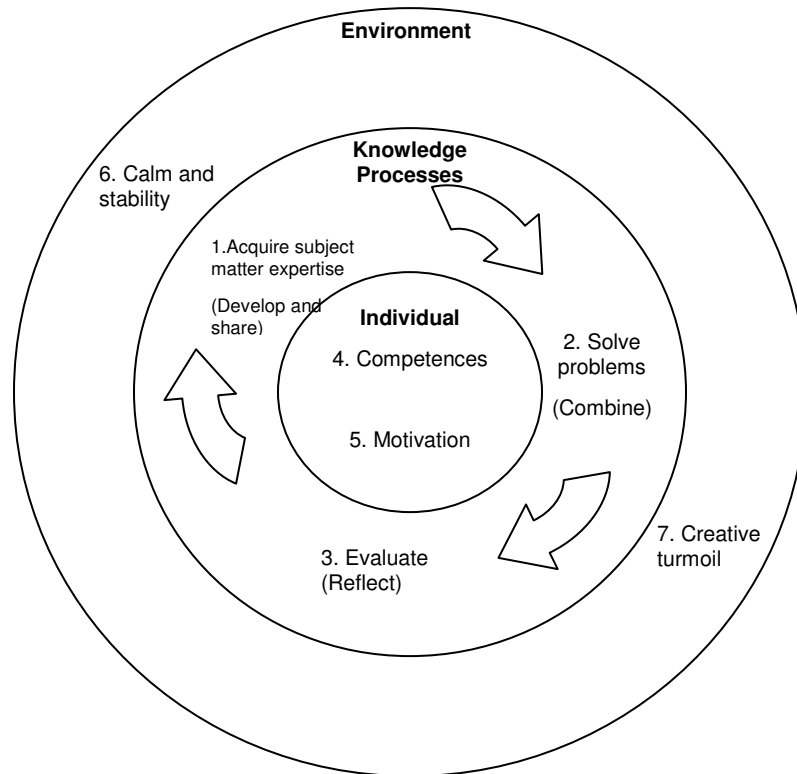
based improvements and innovations' (Harrison & Kessels, 2004: p.145). Whereas Drucker interpreted knowledge worker productivity as a management challenge, Kessels puts the individual in the centre of his theory. Main underlying assumption of this concept is that 'the character of labour is changing: routine work is more and more taken over by machines and computers. The work that remains requires independent decision-making and creative thinking; the physical activities of employees are being replaced by mental and social activities. (...) As this change of the character of labour takes place, it is inevitable that the workplace turns into a learning environment. (...) The conditions for good work become similar to the conditions for good learning' (Kessels & Van der Werff, 2002: p.20). So knowledge productivity requires a good learning environment.

In order to help organizations improve their knowledge productivity, Kessels introduced the *Corporate Curriculum*: the plan for learning to increase knowledge productivity, leading to constant improvement and radical innovation, and ultimately to economic advantage (Kessels, 1996). The Corporate Curriculum should not be seen as a formal educational or training curriculum. 'Rather, it involves transforming the daily workplace into an environment where learning and working can be effectively integrated. It facilitates the creation of a rich and diverse landscape that encourages and supports employees in the learning they need to do in order to continuously adapt and to innovate' (Harrison & Kessels, 2004: p.155). The Corporate Curriculum consists of all the intended and not intended conditions that affect the learning processes among workers in organizations and identifies seven critical *learning functions*:

1. Acquiring *Subject Matter Expertise* and professional knowledge directly related to the organization's business and core competencies
2. Learning to identify and *Solve problems* by using the acquired subject matter expertise.
3. Cultivating *Reflective Skills* and meta-cognitions that contribute to finding, acquiring and applying new knowledge.
4. Securing *Communication Skills* that provide access to the knowledge network of others and that enrich the learning climate within the workplace.
5. Acquiring skills for *Self regulation of Motivation* and affection related to working and learning.
6. Promoting *Peace and Stability*, in order to enable specialization and incremental improvement.
7. Causing *Creative Turmoil* in order to stimulate innovation.

Distinction can be made to those learning functions that directly refer to the learning processes (1 to 5) and those that refer to the conditions of learning (6 and 7). Within the 5 functions that refer to the learning processes we can make another distinction between those that dominantly refer to the knowledge processes (1-3), and those that dominantly refer to the human capital (4 and 5). The result is that we can make a distinction between three different kinds of learning functions: those related to the individual (competences and motivation), those related to the knowledge processes (subject matter expertise, solve problems, reflection), and those related to the organizational

environment or conditions (calm and stability, creative turmoil). Together they can be visualized in a circle with three layers (figure...).



*Figure 3: Three layers of the Corporate Curriculum*

This model ‘gives centre stage to the person of the learner, active within a complex of relationships, engagements and commitments with others’ (Alred & Garvey, 2000). Therefore the inner circle represents the learning functions that are dominantly related to the individual. The outer circle represents the learning functions that are dominantly related to the organizational environment or conditions for learning. The circle in between can be seen as a combination of the inner and the outer circle and represents the learning functions which are dominantly related to the organizational learning cycle or knowledge processes (knowledge spiral (Nonaka & Takeuchi, 1997), knowledge value chain (Weggeman, 1997), etc.) as defined by the knowledge management literature. Moreover, these knowledge processes are both related to the people and the organization. They are both human and structural capital.

The policy and activities that an organization develops to promote these seven learning functions form its Corporate Curriculum. At the end of the day, the quality of this ‘Corporate Curriculum’, or ‘plan for learning’ determines the knowledge productivity of a firm.

## 5.4 Three design principles for a knowledge productive environment

The question remains, how can we create an environment that firmly supports the seven learning functions of the Corporate Curriculum? Based on a design approach Kessels identified three principles of development (Kessels, 2001; Keursten & Kessels, 2002):

1. **Enhancing reciprocal appeal**  
A knowledge productive workplace is a rich learning environment in which the social context fosters collaborative efforts. In this respect, Kessels refers to the conditions for successful Communities of Practice as described by Wenger et.al. (2002).
2. **Searching for a passion**  
People can not be forced to be clever. A knowledge productive environment encourages people to find their passion. It stimulates curiosity and it encourages and facilitates the cultivation of a personal, substantive theme.
3. **Tempting towards knowledge productivity**  
The first principle refers to the social context. The second establishes the foundation for substance. The third principle is a meta-competence that enables us to work systematically on the social context and the substantive component.

Kessels' work, particularly the Corporate Curriculum, inspired many to further elaborate on knowledge productivity. Central theme of most of the publications is 'learning'. In this respect, the knowledge productivity movement seems to be more closely related to the concept of the 'learning organization', than to the concept of 'knowledge management' (Stam, 2004a). As we have seen above, Kessels interprets KP as a personal ability that can not be managed. The only thing managers can do is create an environment in which employees can thrive.

This dominant focus on the individual, and the subsequent marginalization of the role of management in organizations, is an important point of critique with regard to Kessels' work. Authors like Weggeman (2001) and Jacobs (2001) stress the importance of the organizational dimension of knowledge productivity. Knowledge productivity is not only about stimulating personal passion, it is also about management and control. The reality of management is that we have to do both. Within organizations it is about the balance between personal empowerment on the one hand and planning and control on the other: without clear organizational frameworks, -structures and systems, no minimal efficient and effective personal empowerment of the knowledge worker (Jacobs, 2001: p.32).

## 5.5 Results of KP

As we have seen, Kessels defines knowledge productivity both as a process and as a result. 'Knowledge productivity has been described as the key ability of an organization, a team, or employee, to signal relevant information and to develop new competencies. These new competencies are to be applied to the incremental improvement and radical

innovation of work processes, products and services' (Kessels & Van der Werff, 2002: p. 20). Whereas he, and many others, extensively elaborate on the first part of his definition, only very little has been said about the second part which refers to the result of knowledge productivity. Moreover, hardly any research has been done on the relationship between the preconditions of knowledge productivity (Corporate Curriculum) and the results in terms of incremental improvements and radical innovations.

Starting point of the concept of knowledge productivity is the precondition that organizations in the knowledge economy, to be successful, should continuously improve their processes, products and services, and radically renew from time to time (Drucker, 1993b; Nonaka & Takeuchi, 1997). Based on Walz and Bertels (1995), Kessels (2001) makes a distinction between *gradual improvements* and *radical innovation*. 'Gradual improvement (involving adaptive learning) elaborates on what is already present and leads to additional refinement and specialization. Radical innovation (involving investigative and reflexive learning) involves breaking with the past and creating new opportunities by deviating from tradition' (Harrison & Kessels, 2004: p.157). These different types of learning are acknowledged as the result of knowledge productivity (Keursten et al., 2004; Van Lakerveld, 2005). Similarly distinction is made between single-loop versus double-loop learning (Argyris & Schon, 1978), 'higher-level' and 'lower-level' learning (Hedberg, 1981; Fiol & Lyles, 1985); 'learning I' and learning II' (Bateson, 1972); 'generative' and 'adaptive' learning (Senge, 1992); 'tactic' and 'strategic' learning (Dodgson, 1993), 'reflexive' and 'adaptive' learning (Guile and Young, 1999 in: Harrison & Kessels, 2004). All of these distinctions refer to incremental improvements to existing practice on the one hand, and radical rethinking of basic goals, norms, and paradigms on the other hand.

The distinction between gradual and radical innovations can also be related to the exploitation/exploration dilemma (March, 1991). This dilemma represents the two strategic options a company has: exploitation of old certainties or exploration of new possibilities. These dual innovation strategies are acknowledged by many authors as well. Von Krogh et.al. (1994) distinguish between an organization's need to survive (maintain its position in its current environment) and its need to advance (forge ahead in an emerging new environment) (Harrison & Kessels, 2004). Abell (1999) summarizes these innovation strategies as 'competing today while preparing for tomorrow'. Zegveld (2000) makes a similar distinction between incremental and radical change. 'The essential difference between incremental and radical change is that incremental change is about aligning and can be related to the process of production and value creation, while radical change is about the process of forming a company's perspective and the process of forming resources' (Zegveld, 2000: pp 26-27). According to Zegveld incremental innovation is about '*doing things better*' and radical innovation is about '*doing better things*'.

Different types of innovation, require different types of employees. Based on the idea that incremental innovations require *adaptive* employees, and radical innovations require *innovative* employees (Walz & Bertels, 1995), it would be interesting to know what the innovation-profile of the workforce is, because this will provide insight in the organizational ability to produce either incremental or radical innovations (see exercises below).

## 5.6 Learning points

- The conditions for good work become similar to the conditions for good learning. Therefore, the conditions for knowledge productivity are called *learning conditions*. We can distinguish seven learning conditions.
- As knowledge productivity is a personal ability that can not be managed. The only thing managers can do is create an environment in which employees can thrive. We can distinguish three design principles for creating a knowledge productive environment.
- The results of knowledge productivity are incremental improvements and radical innovations. The first refers to gradual improvements of current processes, products and services, the second refers to radical change and deviations from current practice. Different types of innovation, require different types of employees.

## 5.7 Discussion

1. If it is true that knowledge can not be managed, then what is it that managers can do to enhance knowledge productivity?
2. Several authors have difficulties with Kessels' strong human-centred ideas about knowledge productivity. What do you think?

## 5.8 Exercises

1. *Assessing the quality of the learning functions*  
How would you assess the quality of the learning conditions (Corporate Curriculum) in your organization? Which learning functions need to be enhanced?
2. *Detecting your innovation profile*  
As we have seen, different types of results (incremental innovations and radical innovations) require different types of employees (adaptive and innovative employees).  
Please finish the sentences below. Or even better, ask your colleagues to finish these sentences. Calculate how many times the first option (a) has been chosen and how many times the second option (b) has been chosen. Express these numbers in percentages.  
The outcome of the questionnaire can be seen as an innovation profile of the organization, which indicates the organizational capability of generating incremental and radical innovations.  
Discuss this outcome with your colleagues. Considering the ambitions of your organization (business unit or department), is the ratio between adaptive and innovative employees right?

*Exercise 2: Detecting your innovation profile*

1. In order to be successful ...
  - a. we should better exploit existing solutions
  - b. we should consider new solutions
2. Existing structures and procedures ...
  - a. should be improved
  - b. should be replaced
3. We should search for opportunities in ...
  - a. existing services and/or existing markets
  - b. new services and/or new markets
4. Our clients want ...
  - a. predictable solutions
  - b. unexpected solutions
5. In the choices we make ...
  - a. we should continue building on proven successes
  - b. we should radically break with the past
6. I especially find satisfaction in ...
  - a. making a success of something that already exists
  - b. inventing something completely new
7. I like to ...
  - a. solve a problem as soon as possible
  - b. play with a problem
8. I do not like ...
  - a. to solve vague problems
  - b. to work out something into detail
9. Rules are there ...
  - a. to live up to
  - b. to deviate from
10. Change is ...
  - a. something you have to live with
  - b. a challenge that I enjoy very much

## 5.9 Recommended Literature

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## 6 APPENDICES

### 6.1 Quick scan: knowledge processes

What is the scope of your investigation? (the organization as a whole, a business unit, a department, a project team, etc.)

Scope: \_\_\_\_\_

To what extent do you agree with the following statements:

(1 = completely disagree, 3 = neither agree, nor disagree, 5 = completely agree)

1.	<b>Absorbing knowledge</b>	1	2	3	4	5
1.1	We systematically develop knowledge related to our strategic objectives					
1.2	We know what we know, and we know what we do not know.					
1.3	I get sufficient room to pursue my personal ambitions.					
1.4	I get sufficient room to experiment with new insights.					
1.5	We deliberately develop and maintain relationships with knowledge partners					
1.6	We acknowledge that knowledge development is not limited to the R&D department					

2.	<b>Leveraging knowledge</b>	1	2	3	4	5
2.1	Codifying knowledge is sufficiently facilitated (e.g. through knowledge systems)					
2.2	We only codify relevant knowledge of which we are certain that it will be reused					
2.3	Aim of codifying knowledge is to connect people (because the most valuable knowledge exchange takes place in direct contact between people)					
2.4	Our employees do not have difficulties with sharing knowledge					
2.5	Knowledge is actively shared between different organizational units and levels					
2.6	Knowledge sharing is rewarded by the management					

3.	<b>Exploiting knowledge</b>	1	2	3	4	5
3.1	We have access to each others knowledge					
3.2	It is clear where and how knowledge can be found					
3.3	We always check earlier experiences before starting a new project					
3.4	We deliberately reuse the knowledge from others					
3.5	We trust experiences from others					
3.6	We hardly ever invent the wheel for a second time					

4.	Evaluating knowledge	1	2	3	4	5
4.1	Projects are always (formally) evaluated					
4.2	Our evaluation method is accepted by all employees					
4.3	Important experiences are captured and shared with others (so that they can benefit)					
4.4	Evaluations affect the way we do our work					
4.5	Evaluations frequently lead to improvements of processes, products, services					
4.6	Mistakes are hardly ever repeated					

Calculate the average scores per knowledge process:

1. Absorbing:
2. Leveraging:
3. Exploiting:
4. Evaluating:

## 6.2 Quick scan: organizational aspects

What is the scope of your investigation? (the organization as a whole, a business unit, a department, a project team, etc.)

Scope: \_\_\_\_\_

To what extent do you agree with the following statements:

(1 = completely disagree, 3 = neither agree, nor disagree, 5 = completely agree)

5	Management	1	2	3	4	5
5.1	The management is aware of the importance of knowledge					
5.2	The management facilitates knowledge exchange					
5.3	The management stimulates personal development of the employees					
5.4	The management is regarded as a good example (with respect to knowledge sharing)					
5.5	The management rewards knowledge sharing					

6	Structure	1	2	3	4	5
6.1	Our organizational structure is simple, with few hierarchical levels					
6.2	Knowledge flows easily between different organizational levels					
6.3	Knowledge flows easily between different organizational units or departments					
6.4	Our structure does not hinder knowledge exchange (across organizational borders)					
6.5	We deliberately facilitate knowledge exchange between different organizational units					
6.6	Our office layout contributes positively to knowledge exchange					

7	Culture	1	2	3	4	5
7.1	In our organization , people feel free to exchange knowledge					
7.2	Our organization is characterized by a strong team-spirit					
7.3	Internal competition is unfamiliar to our organization					
7.4	In our organization a casual atmosphere prevails					
7.5	Our culture is based on trust and respect					
7.6	We are used to stimulating and motivating each other					

8	Systems	1	2	3	4	5
8.1	Our information systems focus on our strategic knowledge areas					
8.2	Our systems are up-to-date and are well maintained					
8.3	Our systems are easy accessible and user-friendly					
8.4	Our systems make our work more efficient					

<b>9</b>	<b>Individual abilities</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
9.1	Our employees like to experiment with new ways of working					
9.2	Our employees are very capable of getting access to each others knowledge and networks (communicative and social skills)					
9.3	Our employees know how to solve problems in unknown situations (creativity)					
9.4	Our employees acknowledge that collaboration is an opportunity to learn from each other (learning focus)					

Calculate the average scores per organizational aspect:

- 5. Management:
- 6. Structure:
- 7. Culture:
- 8. Systems:
- 9. Individual abilities:

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