Knowledge Work(ers) in the Digital Age

The most valuable assets of a 20th-century company were its production equipment. The most valuable asset of a 21st-century institution, whether business or non-business, will be its knowledge workers and their productivity
Peter Drucker (1999, p. 135)

Learning Outcomes
After completing this chapter
- You will know about the characteristics of knowledge workers and their evolving contractual relationships in the digital age;
- You will be able to name and explain the six major factors determining knowledge worker productivity according to Drucker;
- You will know the roles and tasks of the five groups of actors of the knowledge firm;
- You will know how to motivate knowledge workers
- You will be able to evaluate and develop competencies of employees
- You will know what makes a CoP successful or fail;
- You will be able to develop a competence matrix for a specific unit.

4.1 The Future of Knowledge Work

4.1.1 A New Social Contract

Increasingly, knowledge intensive companies are hunting for «brains» rather than traditional «manpower». Florida (2002) postulates the rise of a new social stratum, the Creative Class, whose values comprise of creativity, individuality and being unique and performance oriented. «Value creation through knowledge» is becoming the dominant source of our prosperity, but we can maintain and multiply this prosperity only if it is based on effective and creative knowledge work.

Definition

Knowledge work is an activity based on cognitive skills that has an intangible result and whose value added relies on information processing and creativity, and consequently on the creation and communication of knowledge. **Knowledge workers** are people who primarily engage in knowledge work.

Along the same lines, Davenport describes a knowledge worker as someone whose principal activity consists of acquiring, generating, packaging or applying knowledge; in other words «knowledge workers think for a living» (Davenport 2005).

» They are the key source of growth in most organisations. New products and services, new approaches to marketing, new business models—all these come from knowledge workers. So if you want your economy to grow, your knowledge workers had better be doing a good job. (Alter 2005)

4.1.2 Types of Knowledge Work

Looking deeper into knowledge work North and Gueldenberg (2011) present a role model of knowledge work which is comprises six roles (for further classifications of knowledge see Davenport 2005; Levy and Murnane 2004; El-Farr 2009). For each of the roles there corresponding management challenges are summarized.

The knowledge creators or «The Creative»   Under this role, we think of researchers, developers, architects, composers, and authors. They are defined as producers of new knowledge. Work outputs are designs, concepts, new product ideas and developments, processes, strategies, or scientific papers. The challenge on the one hand is to create enough room for creativity, and on the other hand to integrate knowledge creators in a market process; because creators of knowledge are of value only if the creative product finds a buyer.

Knowledge communicators   The competency of knowledge communicators lies in target group-relevant structuring, preparation, communication of knowledge, and thereby also motivation and persuasion. Knowledge communicators are logisticians: they store, pack, and deliver information and knowledge using multiple media and channels. People who play this role include, for instance, journalists, trainers, teachers, managers, marketing experts, and even librarians and research specialists. The challenge for productive knowledge work in this role lies in «packaging» knowledge suitably by being in direct or indirect contact with the «customers». Here, distribution of work and co-operation can be of great advantage. For example, not every teacher needs to create worksheets for every topic. Instead she can co-ordinate with his colleagues and distribute the work. Journalists for instance, fall back on the ready-made texts of press agencies and then present these suitably.

Knowledge-intensive service providers   Due to specific expertise, individual solutions are developed in this role in direct or indirect contact with people. Doctor, lawyer, counsellor, teacher, manager, psychologist, priest etc. are some examples enact this role. The challenge of this role lies in developing situation-specific solutions from an immense repertoire of possible measures. In many cases an individual expert is not in a position to have a view of all possible measures and it is therefore useful to encourage co-operation and teamwork. The much practised culture of individual expertise leads to sub-optimal results even for the customer (e.g. an illness is not diagnosed or incorrectly treated) and is also inefficient from the organisation's point of view (e.g. a lawyer starts work on a contract type for the first time, when another colleague has already handled it many times before). For this type of knowledge work experienced-based «intelligent» systems can provide decision support.

Processors of knowledge routines   Claims officers of an insurance firm, call centre agents, or accountants work on rule-based, standardised procedures which can be carried out individually or integrated in an overall process. The challenge of productive knowledge work lies in the continuous search for «Best Practices» or «Next Practices», systematic problem solving, and tailoring these routine knowledge processes to the changing requirements around us. Many of these jobs will be automated in the future.

Knowledge work is carried out also in **material production**. Service technicians or maintenance personnel are entrusted with tasks of problem solving, planning, and coming up with suggestions for improvements (idea management). The challenge in this is learning systematic problem solving and motivating employees to think of new ideas. In this sense, production employees can also be knowledge creators. «Intelligent» machines and experience-based systems will support or automate some these tasks particularly in industry 4.0 settings.

Knowledge workers as life-long learners   All knowledge workers are at the same time learners who reflect upon their experience and structure it, acquire new knowledge and build their competence profile. Learning new things requires time and freedom of thought and action. However, learning is not limited to being an individual activity, rather it is increasingly seen to take place in knowledge communities where experiences are shared and new ideas and solutions are developed together.

4.1.3 Knowledge Work(ers) 4.0

The impact of digitalisation, automation and big data exchange on the world of work is highly debated. A key question is whether today's technological transformation could inhibit rather that support the creation of jobs and what would be the quality of these jobs. Middle-skilled jobs appear to be the category most at risk of disappearance and/or transformation (▶ www.eesc.europa.eu/.../eesc-2016-05420-00-00-tcd-tra-en.docx).

In the following we will summarize major trends that affect knowledge work in the future as have been identified by a number of studies (cf. Lehtiniemi et al. 2015; Telekom 2015; BMAS 2015; Intel 2014).

Distributed value generation   The new world of work is characterized by networks. Standardized back-end processes are shared between companies, without being visible to customers or employees. This creates jobs without a clear organizational membership and products without a clear sender. Boundaries within and between organizations fade as work is organized in temporary projects done by people with temporary affiliations.

Work without borders   Highly qualified specialists work around the world as part of project work. Qualifications are globally transparent and comparable. The spatial location of the service provider no longer plays a role. For the first time, labor thus acquires the same mobility as capital. The traditional places and times of work dissolve. For employees, this results in new options, for example to improve the compatibility of family and work life, but also new burdens («always on»). Offices will serve as temporary anchor points for human interaction rather than daily travel destinations. Office as a Service (OaaS) will become a strategic tool to land employees in the right place, at the right time.

Crowdworking   Companies are increasingly focusing on customers instead of employees. Many (digitizable) services are offered voluntarily by volunteers and free of charge. Prosumerism blurs the boundaries between producers and consumers. Volunteer digital work replaces professional employment. In addition, digital services are divided into ever

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smaller parts and delegated to «Virtual Laborers». Big data analytics can be used to assign value contributions to specific individual workers. Cloud /Clickworkers provide their performance in the chord. In the foreseeable future, many of these activities will be fully digitized.

New forms of interaction between man and machine   Smart systems will emerge and collaborate with humans, changing the nature of work, and driving a re-imagination of work content and work process. Various forms will coexist in the future: From people who control machines, machines as people's peers to the merging of machine and man or the complete takeover of activities by intelligent systems. Creative activities, however, will remain a domain for humans.

Self-management as a core competence   As traditional work relationships and processes are dissolved knowledge workers have to learn self-management including self-organization and self-control. (Mládková 2015). Self- management means amongst others to organize work, define or redefine work objectives, choose adequate means and methods, organize one's own competence development as well as work-life-balance.

Digital Leadership   The distribution of work in different locations is accompanied by a shift from a presence culture to a result culture («do your work wherever you are»). Leaders need to learn to motivate these dispersed workforces more than to control them. The art is to build and maintain personal ties through impersonal channels enabled by information and communication technology.

What does this mean in terms of work and Human Resource practices (cf. Lewin 2005)? Until recently, most employees performed a pre-structured and clearly defined task for which they were paid. They were assured that they would be employed in the company as long as this task existed in the company and as long as they met a certain standard while carrying out their tasks. To a certain extent, they were assured a work place for a certain period of time. The new viewpoint of the company means a change in the social contract. Employees provide their intelligence, learning aptitude and knowledge to the company. In return, the company is bound to use, develop and safeguard these individual capabilities and skills with the purpose to convert them into «*organisational knowledge assets*» (collective intelligence) and create value out of it. Flexibility in allocation of resources is the need of the hour.

As the efficient and effective conversion of individual and organisational knowledge into innovative services is considered as a primary differentiation option in the market. Firms want to assure the access to knowledge resources on the one hand and get enough flexibility for an operation in the fast changing markets. The core of these thoughts establishes the form of future teamwork with different employee groups and a new definition of affiliation to the company. A workforce in this model comprises «core employees» who will decrease in number in the future and who will be assigned to the operative business units. These employees are supported by internal «knowledge centres» that develop and process highly specialised knowledge and implement it in customer solutions together with the operative employees. External employees, customers and suppliers also come along to provide additional knowledge of the organisation on a contractual basis. As a result, the borders between internal and
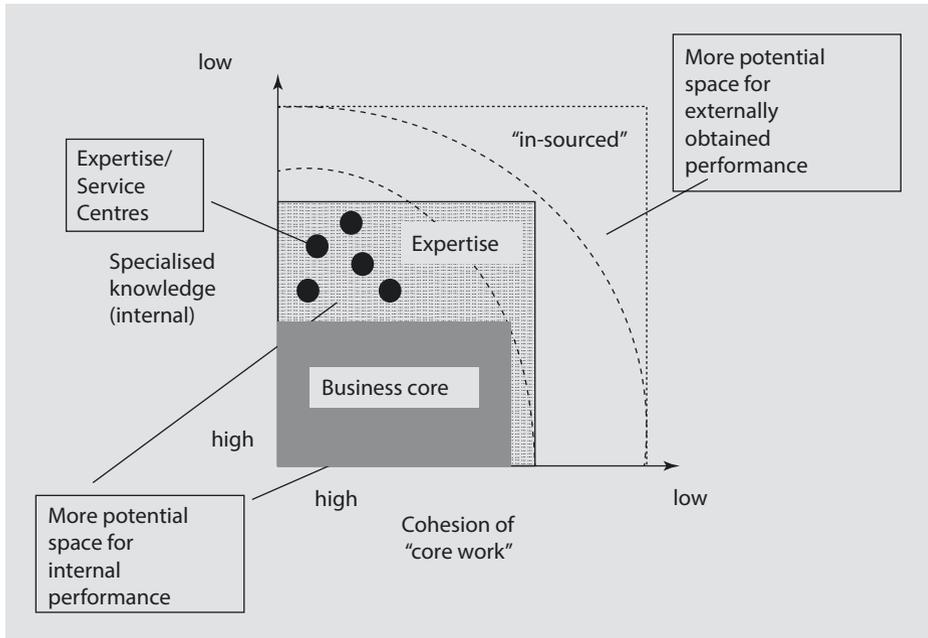
▫ Fig. 4.1 Possible structuring of work (Source: Escher and Bajenaru 1997)

external blur. The organisation turns into a contract network that comes into being under the criteria of knowledge creation and conversion of knowledge into customer solutions. The consideration for structuring such a workforce are visualised in ▫ Fig. 4.1.

Compensation patterns have also changed over the years. An individual is paid as per his/her contribution to the company's value creation. The company pays not only in monetary form but also offers the individual a chance to develop his capabilities and skills further and apply them in challenging tasks. The classical barriers between employees, customers and suppliers fade out. Thus, customers can contribute in the development of new products and can be remunerated for their efforts – similar to the existing practice of remunerating the suppliers for their contribution. Employees develop and control their own competence portfolio that must then stand the test of time in an operation portfolio that gets reconfigured time and again.

4.2 Drivers and Obstacles of Effective Knowledge Work

Peter Drucker suggests that **knowledge worker productivity** is the most important challenge for management in the twenty-first century. He describes six major factors determining knowledge worker productivity (Drucker 1999, p. 142, see also North and Gueldenberg 2011) which are still relevant in the digital age:

1. «Knowledge worker productivity demands that we ask the question: «What is the task?»

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2. It demands that we impose the responsibility for their productivity on the individual knowledge workers themselves. Knowledge workers have to manage themselves. They have to have autonomy.
3. Continuing innovation has to be part of the work, the task and the responsibility of knowledge workers.
4. Knowledge work requires not just continuous learning but also continuous teaching on the part of the knowledge worker.
5. Productivity of the knowledge worker is not – at least not primarily – a matter of the quantity of output. Quality is at least as important.
6. Finally, knowledge worker productivity requires that the knowledge worker is both seen and treated as an «asset» rather than a «cost». It requires that knowledge workers want to work for the organization in preference to all other opportunities.»

He also adds that to be successful, the knowledge work must be focused as part of a system, on the needs of the customer and business strategy.

In order to find answers to Drucker's challenge formulated above organisations should consider the following questions:
1. What performance are knowledge workers capable of achieving if they work under ideal conditions, and what fraction of these results do they deliver in a real organisation or as independent knowledge workers in a real work environment?
2. Under what conditions will knowledge workers be ready to tap their talents and utilise their potential for the benefit of organisations they work for?
3. How should an organisation therefore manage employees who align themselves to the organisation's goals, are self-driven and co-operative, detect opportunities and solve problems proactively?

Effective knowledge work is not merely a term that indicates efficiency and focus on the «right» issues; it also comprises conditions and resources which help harnessing and developing the performance potential of knowledge workers. Effective knowledge in our extended view comprises such factors as quality, creativity, ability to innovate, efficiency, effectiveness, and – from the individual's point of view – self-realisation, satisfaction and fun at work, development of one's own competencies, and maintenance of good health.

The dilemma of knowledge-intensive jobs is due to the organisation's dependency on the commitment and knowledge of its employees. Having said that, these are perhaps unaware of their own potential and the potential «best result» which could be achieved under ideal conditions is not known. «*The passion to go well beyond the extra mile is what drives people to create insanely great products and services.*» says Christopher Meyer (1997).

Kim and Mauborgne (2003) reason that it all depends on designing a «fair process». This process should be based on consistent, transparent, and comprehensible decision-making processes by involving the employees. In order to do so, all of those involved in the decision making processes should be equal as regards access to information. If the decision-making process and the teamwork are perceived as fair by the employees, they will be willing to accept responsibility for the decisions and work actively towards their implementation even if they do not wholly agree with what the decision entails.

Fairness Increases Performance – Two Lab Experiments

Numerous experiments have shown that employees respond to fair management with higher performance. Two lab examples conducted by Prof. Falk of the Laboratory for Experimental Economic Research at the University of Bonn (Germany) make this clear.

Experiment one shows that fairness leads to an increased efficiency. In this lab experiment, the employer pays a salary to the employee and the employee is requested to give an output as he deems appropriate. An absolutely self-interested employee would give the lowest possible output, irrespective of how high the salary is.

The management therefore has no reason to pay any salary, if all the employees start behaving like the «homo economicus». However, the experiment shows that many employees reward fair salaries. The more the salary, the more willing the employees are to take up more work. Companies which paid higher salaries earned more in the experiment than those which were willing to pay the bare minimum. Thus, it would be worthwhile for companies to handle their employees with a sense of fairness. This fairness also includes social recognition of performance (compare the economic model of efficiency wages[1]).

Experiment two proves that mistrust can be de-motivating. Employers in the experiment had the option to either limit the scope of action of their employees or let them make a largely autonomous decision regarding a productive task. In practice, examples of such limitations are rigid work instructions, strict attendance rules or checking of workflows. Keeping in mind the self-interest hypothesis, it would always be better to closely monitor employees and limit their scope of action so as to curb opportunistic behaviour at the earliest. In reality though, the experiment showed that the output level was higher if the employees were not restricted in thought and action; in fact, too many controls proved detrimental to employee commitment. When questioned after the experiment, the employees indicated that they interpreted the restrictions as mistrust and reacted with restrained output.

Falk's conclusion of the experiments: Instead of working solely with incentive and compliance mechanisms in human resource management, it would be useful to create freedom, give more responsibilities, and thus show trust in the employees. In doing so, the management obviously runs a risk, but also reaps profits from it.
Source: Falk (2008)

Buckingham and Coffman (1999, p. 21) studied the factors which are essential to recruit top-class knowledge workers, to retain them, and engage them in productive work. The following six factors have a highly positive correlation with productivity, profitability, employee retention, and customer satisfaction:
1. Knowing exactly what is expected of you at work
2. Availability of resources to execute the job correctly
3. Opportunity to do what one can do best
4. Regular recognition and appreciation for the work done
5. Recognition of an employee as a human being
6. Having a mentor at work who supports your development

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1 ► http://en.wikipedia.org/wiki/Efficiency_wages

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While these factors are also relevant in industrial work they are, however, critical for enabling effective knowledge work, which in its core is often an activity involving little structure, a lot of novelty, and dependence on individual expertise. Moreover, well-being and team spirit in the workplace also affect the productivity of knowledge work (Hube 2005). Another factor negatively affecting productivity is the situation wherein knowledge workers increasingly have to start freelancing, or are employed on short-term contracts, and perceive a high risk of losing their job (Dostal et al. 2001). In such situations knowledge workers would spend much energy to safeguard oneself, to position oneself vis-à-vis colleagues, and to put one's own future above everything else.

Therefore, one of the main tasks of top management is to **provide an environment where work is rewarding and fun**. The strategy of managing knowledge workers keeps the focus on people. With the provision of conditions that promote employee's initiative, creativity and knowledge transfer, companies expect to make intensive use of this freedom to create value. Effectiveness of knowledge workers is based on results and credibility, perceived reputation, and network of relationships rather than formal authority, job description, or position in the hierarchy (Saxenian 1996).

Freedom to create value goes along in many cases with high work loads. A software developer reports, «*Earlier, after closing a project, we had time for post-processing. Today, a project is immediately followed by a new one. Earlier, we had time for learning phases but today a couple of hours in the day-to-day business are supposed to be adequate.*»

Individuals to be employed for this type of work are mostly independent and extremely flexible in terms of time. Therefore, 75% of the employees in the development centres are young singles. On the other hand, giving freedom without specifying clear targets leads to certain arbitrariness like in the motto, «*Do what you want to but be profitable.*»

According to Meyer (1997) knowledge workers
- Primarily identify themselves with their profession rather than workplace; more sensitive to the kudos and esteem they receive from their peers than those they receive from management
- Are highly mobile and quick to change jobs
- Are driven primarily by the pride of accomplishment
- Have strong beliefs and personalities; they respond much better to being pulled than being pushed
- Have an informal network with peers, inside and outside their own company, which helps them benchmark their personal efforts and their company's competitiveness

Quinn et al. (1996) recommend how to make use of the potential of «*professionals*»: Employ only the best ones and let them ponder over new problems under high pressure to succeed. After initial training, these «*potentials*» are confronted immediately with the complexity of real problems. New employees are assigned to small teams that contain three to seven people – as found in Microsoft. The new employees participate immediately in the development of new complicated software systems under the guidance of their mentors. The legendary 80-h weeks and long nights praised by investment bankers and software engineers serve the purpose of advance training that is to be taken seriously. They enable the best employees to move up along the learning curve that turns out to be steeper than that of the other employees. Training on the job, guidance by mentors as well as pres-

sure of competition among colleagues helps the experts to reach the highest possible level of knowledge in their field. Quinn et al. are of the opinion that the specialised knowledge of these experts increases faster when they have to comply with tough demands.

The specification of targets that demand apparently impossible things (*stretched goals*) (Thompson et al. 1997) leaves the knowledge workers with two options – they can either sustain the pressure and go along with it or search other tasks within or outside the company. «*Top companies push their experts constantly from barricading themselves comfortably behind clever books, simulation models or even monitored laboratories. These companies mess around mercilessly with the most difficult tasks that exist such as the real customer outside, the existing system as well as highly complicated external circumstances and cultural differences. This is not seen in middle mediocre companies*» (Quinn et al. 1996, S. 98).

These companies not only have a tough internal competition, regular performance evaluation and feedbacks but also nurture a culture of sharing knowledge. This is because if one does not cooperate, one will also not succeed in the competition and have no chance of progressing in the company.

Even at the worker level in the production department, the pressure resulting from the expectation of better performance – as compared to the organisation based on division of labour – increases with the increased freedom of decision. When the employees decide their own work process, it is also expected that they examine their own work carefully and continuously and make improvements. It is also expected that they pass on their knowledge about process and product improvements as part of their normal activities and not as an extra remunerative service.

Risk of Burn-Out

However, not all employees will be ready to face this pressure. For instance, some may decide to cooperate as an external developer in specific projects or to be available as a company consultant in consulting firms only for X number of days. Others undertake repairs and maintenance tasks assigned externally or participate in the production network as sub-contractors. They earn less but may be able to organise their time freely. They may voluntarily or forcibly become «life entrepreneurs.»

Psychological overload occurs especially when workers are confronted with discrepancies between work requirements, rules and available re-sources that inhibit them from reaching their goals and that are linked to immediate negative consequences for them.

Reflect a bit on whether you feel overwhelmed with the following five types of disparities:

1. **Contradictory work goals**: Additional requests and tasks have to be accomplished and simultaneously the originally delegated tasks have to be completed within the given time without requiring additional resources.
2. **Disparity between tasks and execution framework**: Colleagues meant to provide help are not available or occupied elsewhere. The promised resources and tools are not provided.
3. **Disparity between tasks and learning framework** (i.e. learning restrictions): The necessary knowledge or concrete experience cannot be acquired due to lack of sufficient freedom of action. For instance, solutions have to be developed without proper knowledge of customer requirements.

4. **Disparity between individual and professional goals and expectations:** Due to unfulfilled technical and organisational prerequisites, knowledge workers are not able to do fulfil their professional standards. They are obliged to work under conditions that they normally cannot support.
5. **Conflict between professional and personal life**: There is a lot of stress caused by having to balance familial roles and responsibilities along with professional obligations such as long working hours, working over the weekends, etc.

For more information on the (self-) management of knowledge workers see North and Gueldenberg (2011).

After this description of the ways of working in the knowledge society or knowledge firm, we will look at the different employee groups in a knowledge-based company.

Case Study

Making Time-off Predictable & Required

People in professional services believe a 24/7 work ethic is essential for getting ahead, and so they work 60-plus hours a week and are slaves to their Blackberrys. Perlow and Porter based on their research in several offices of the Boston Consulting Group, however, suggest that consultants and other professionals can meet the highest standards of service and still have planned, uninterrupted time off – whether in good economic times or bad. In the action research a requirement that everyone on the team take one full day off a week was imposed. Since that meant everyone was now working 80%, another consultant was added to the team to ensure that the client would still have the equivalent of four full-time people on the project. Once it was demonstrated that taking full days off (working 80%) was possible, the researchers approached a further challenge whether people working full time could have predictable time off and still achieve similar benefits for themselves and the organisation. In a second experiment, they required each consultant to take one scheduled night off a week, during which he or she could not work after 6 PM – not even check or respond to e-mails or other messages. After initial resistance 5 months later participants reported more open communication, increased learning and development, and a better product delivered to the client. Perlow and Porter (2009) conclude that imposing a strict mechanism for taking time off works if it is accompanied by encouraging lots of talk about what's working and what isn't, promoting experimentation with different ways of working, and ensuring top level support
Source: Adapted from Perlow and Porter (2009), pp. 102–109

4.3   The Actors of the Knowledge Firm

4.3.1 Five Groups of Employees

We distinguish five specific groups of employees who are the main actors in the knowledge firm – see ◙ Fig. 4.2:

— *Knowledge practitioners:* Expert employees, the «knowledge practitioners» carry out mainly operational tasks professionally while they gain specialised knowledge continuously.
— *Knowledge engineers and entrepreneurs:* The second group of personnel comprises of middle level management, who convert market potential or customer problems into solutions. Middle managers are in fact knowledge engineers who gather the
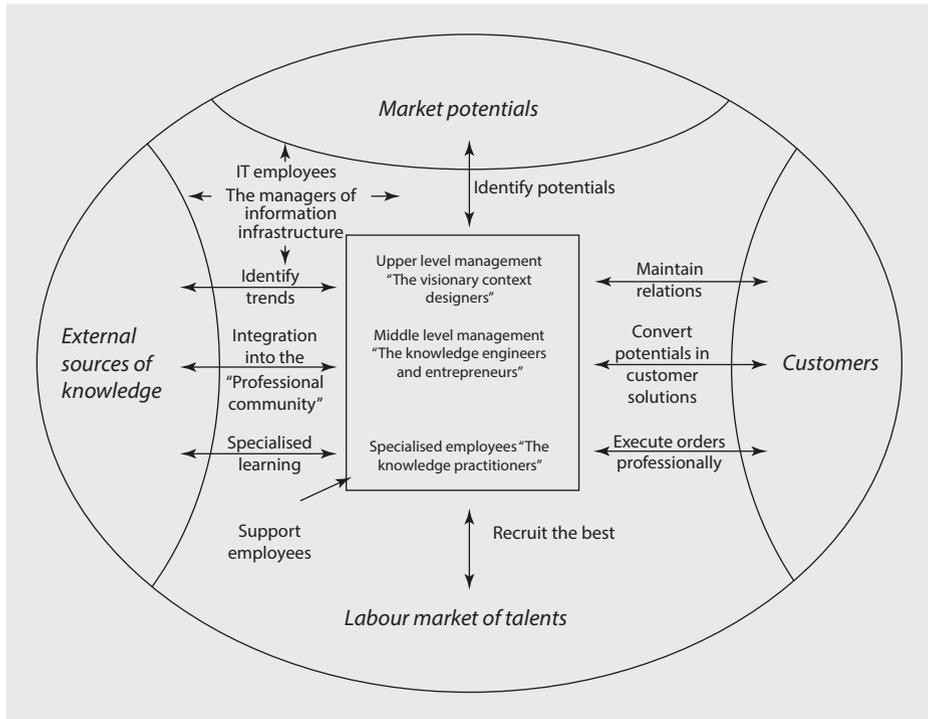
Fig. 4.2 Actors in a knowledge-oriented company

knowledge of their knowledge workers and convert it for internal use and package it as per customer requirements.

- *Visionaries and context designers:* Upper level management comprises of «visionaries and context designers», who identify the market potential, create a knowledge-ecology, act as leaders as well as keep a check on the focus of entrepreneurial activities.
- *Information brokers and infrastructure managers:* The fourth employee group that is to be attributed to the expert employees based on their qualification are the information and communication employees. They develop and manage the information and communication infrastructure of a company in terms of both technologies as well as content.
- *Support employees:* The fifth group of employees is the «support employees» comprising secretaries, back office, call centres, reception etc. which support the remaining employees. They are capable of influencing the image of the organisation decisively in the minds of the customers.

The functions and roles of these groups of persons are largely determined by the organisational concept or management approaches. Nonaka and Takeuchi analysed the top-down and bottom-up approaches from the viewpoint of knowledge creation (Nonaka and Takeuchi 1995, p. 125ff) and came to a conclusion that a third way, «*middle-up-down approach*», is more suitable for promoting knowledge creation in the company.

- *Top-down approach:* In the «*top-down approach*», upper management receives simplified and selected information through the hierarchical pyramid. From this information, upper management develops plans, orders and instructions that are binding on the middle management and are implemented by the «*knowledge practitioners*».
- *Bottom-up approach:* In contrast to the top-down approach, the «*bottom-up approach*» aims at the autonomy of entrepreneurially operating individuals without interaction. Tacit knowledge is gained at the lower levels but is not shared and converted into explicit knowledge. Development of knowledge does not have a clear target course.
- *Middle-up-down approach:* Unlike the aforementioned approaches, the «middle up-down approach» plays a key role in the process of organisational knowledge creation. In the middle up-down approach, upper management develops a vision or a «dream» while the middle management develops concrete concepts that can be understood and implemented by the employees at the front, i.e. the specialised employees. Middle management tries to resolve the discrepancy between the goals that the upper level management hopes to achieve and the reality at that point of time. To some extent, middle management is a *translator* that finds the right words, metaphors and slogans that can be understood by the specialised employees as well as the customers and inspire them to perform a task or develop a product concept.

◨ Table 4.1 juxtaposes the three management approaches referring to knowledge creation. Successful knowledge engineers and entrepreneurs display the ability of the middle level management of packing and bundling the specialised knowledge of the employees in such a way that the customers find a solution to their problems in it and are willing to buy these solutions. We shall now take a closer look at the roles and functions of individual employee groups from the viewpoint of an entrepreneurially oriented middle-up-down approach.

4.3.2 Redefining Middle Management in a Digital World

With the restructuring of the hierarchical organisation, reduction in management levels and self-organisation of semi-autonomous groups, middle management was often considered an obstacle to change. Management gurus explained that the companies of the future can manage almost without middle management (Kanter 1989; Quinn 1992). In reality, middle management has in many ways lost its traditional function as implementers of strategies or respected experts in the sense of traditional masters, while employee groups gained stature through the concepts of semi-autonomous teamwork and «*empowerment.*»

However, knowledge-oriented management of a company assigns a key role to middle management. Despite the heterogeneity in their roles (e.g. manager of a consulting firm, an operations manager of an electronic goods company or a manager of a developmental project), middle managers are characterised by common biographical elements that predestine them for these new functions of bundling knowledge and packaging it as per customer requirements. By the time the members of the middle management reach this level – after having worked in the company for a few years – they understand the rules of the organisation and take positions because they are competent and enjoy the

◼ **Table 4.1** Comparison of management approaches with respect to knowledge creation

		Top-down	Bottom-up	Middle-up-down
WHO	Main knowledge creator	Top management	Entrepreneurially operating individuals	Team with middle level management as knowledge engineers
	Role of upper level management	«Commander»	Sponsor/mentor	Promoter
	Role of middle level management	Processor of information	Autonomous entrepreneur	Team leader
WHAT	Accumulated knowledge	Explicit	Tacit	Explicit and tacit
	Conversion of knowledge	Partial, focused on combination/ internalisation	Partial, focused on socialisation/ externalisation	Spiral internalisation/ externalisation/ combination/ socialisation
WHERE	Storage of knowledge	In databases/ manuals	In individuals	In organisational knowledge base
HOW	Type of organisation	Hierarchical	Project groups and informal networks	Hierarchical and «task force» (and principles of the hypertext organisation)
	Communica-tion	Orders/ instructions	Principle of self-organisation	Dialog and usage of metaphors/analogies
	Tolerance to ambiguity	Chaos/fluctua-tions are not allowed	Chaos/fluctuations are required	Establishing and strengthening chaos/ fluctuations
	Weakness	High dependence in upper level management	Time-consuming, coordination costs of individuals	Exhaustion of employee, redun-dancy costs

Source: Adapted from Nonaka and Takeuchi (1995), p. 130

confidence not only of their superiors but also of their subordinates. They are not at a level in the organisation to lose contact with the customers and the ideas of employees. They are motivated and have the skill to initiate and implement changes and innovations.

This experience background helps them to carry out their tasks. «Instead of giving orders, they now put away obstacles, accelerate the granting of funds, conduct investigations and act as advisors» (Quinn et al. 1996, p. 102). This task description applies very well to the operative engineer, who has been turned from a disciplinary superior into a coach of work groups in the production department. The manager in a consulting firm acts as an entrepreneur to identify the potential of the consultation demand for a client and conduct acquisitions.

Lars Kolind, CEO of the innovative Danish hearing device manufacturer Oticon (see case study in ► Sect. 3.1), added yet another management task for middle management: the ability to make the employees «*happy*» and give them a feeling of security while they work in a very unstructured, chaotic, difficult and constantly changing environment (La Barre 1996, p. 50). Middle management, the knowledge engineers (Nonaka and Takeuchi 1995, p. 154), are intermediaries between what actually exists and what will exist.

Middle managers change their position in a digital organization to move from being administrators to leaders. Digital requires managers move from being in the middle of a hierarchy, managing a fixed team of people and activities – to the middle of a network managing flexible resources to achieve customer and company outcomes. McDonald (2014) argues that the e middle manager of the future is one that has the following characteristics:
1. She knows how the company wins at a conceptual and customer level.
2. He recognizes the difference between critical and commodity capabilities.
3. She sees technology through an information rather than application lens. She uses that perspective to raise the ability of her teams and staff to work smarter with information..
4. He connects technology investments with tangible outcomes at the customer and operations level.
5. Together they work in concert to meet specific challenges and customer situations. They recognize adapting to create customer value requires handling their various needs rather than harassing customers to fit into a standard solution.

◘ Figure 4.3 illustrates important functions of middle management. You can enter your personal role profile according to the actual and ideal profile. Every criterion can be
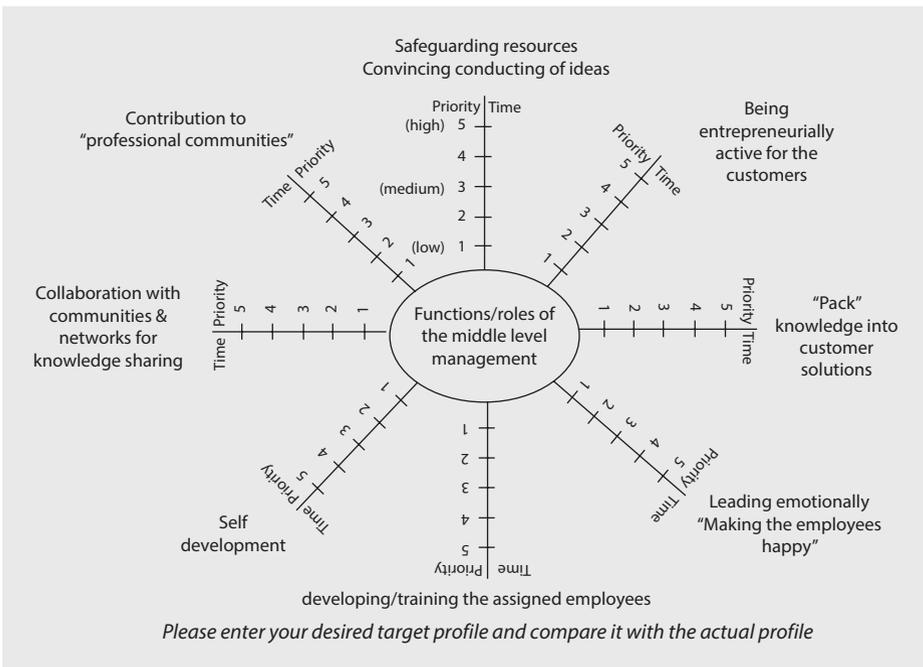
◘ **Fig. 4.3**   Functions and roles of middle management

evaluated based on its priority (how important it is…) and its time allotment (which part of my working time do I spend for…).

Following the logic of the middle-up-down approach, we will now describe the roles and functions of upper management in a knowledge-oriented company before turning to specialists and employees of information and communication technology.

4.3.3 Upper Management: Visionary Context Designers

Bearing in mind the concept of the Entrepreneurial Corporation as discussed in ► Chap. 3, upper level management performs the main tasks as shown below:
- Managing the tension between short-term success and long-term ambition
- Developing and incorporating values
- Setting strategic goals (guiding principle) and priorities.

The change from hierarchical to entrepreneurial action requires the management to change its role perception:

» Management should leave most of the decisions to the market, establish an organisational infrastructure that governs the behaviour and encourages teamwork within the company. (Halal 1994, p. 69)

While management in today's real companies spend a lot of time solving the problems of the operative business and grappling with the repercussions of misled incentive systems, the concept of knowledge-oriented management of a company considers upper management as visionary context designers. They identify market potential beforehand, create a buzz around the product and organise framework conditions, especially through incentive systems that promote creation and transfer of knowledge. They describe and evaluate the behaviour expected from the managers and the employees and exemplify it themselves by behaving accordingly. They develop leaders.

As individuals they represent the values of the organisation and are the highest moral entity in the company. Their actions are conducted by «*wisdom*» comprising the rules of conduct which govern the behaviour of the employees of the entire organisation (Galvin 1996).

Case Study

Mini Case: The «gardener» at MindTree Consulting

Subroto Bagchi is best known for co-founding **MindTree Consulting** in 1999 where he started as the Chief Operating Officer. MindTree is a global Information Technology services company with head-quarters in Bangalore, India. Bagchi has now taken on the role of a «Gardener» who develops leaders/entrepreneurs. This role is based on the concept that a gardener understands the requirements of each plant and nurtures it accordingly; the plants don't go to the gardener but the gardener identifies and nurtures the plants. Bagchi spends one-on-one time with the

Top-100 leaders at MindTree on their «personal-professional» issues to expand leadership capacity and build readiness for taking MindTree into the billion-dollar league. In addition, Bagchi works at the grassroots by making himself available to its 45 Communities of Practice that foster organisational learning, innovation and volunteerism within the organisation.
Source: ► www.mindtree.com

4

Upper management harmonises different interests, coaches middle management, discovers and develops talent and simultaneously keeps a check on whether the results of the entrepreneurial activity of the middle level matches the target specifications. Upper management urges all the others in the company to learn and to develop themselves continuously. However, it should also reserve a certain amount of time for its own development.

Nonaka and Takeuchi describe upper management as «*Knowledge Officers*» (Nonaka and Takeuchi 1995, p. 156). They say that these knowledge officers direct the activities of knowledge creation in a company firstly by articulating how the company should be, secondly by establishing a knowledge-oriented vision in form of a guiding principle, and thirdly by setting standards for the value of knowledge that is created. ► Chapter 7 contains the description of how of these individual actions materialise.

In ◘ Fig. 4.4 we have compiled a range of functions and roles for upper-level management. You can enter your personal role profile as per priority and time allotment of the function and compare it with the actual situation at a given point in time.
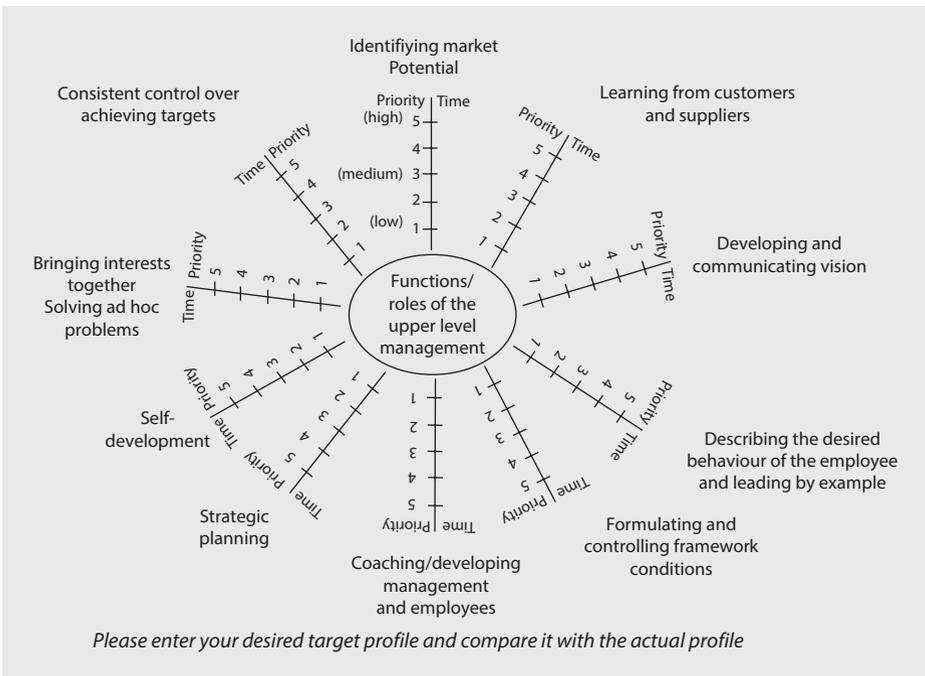
◘ **Fig. 4.4**   Functions and roles of upper management

4.3.4 **Professionals: The Knowledge Practitioners**

«Knowledge practitioners» often called professionals, specialists or subject matter experts are the primary knowledge resource of a company. They convert their specialised knowledge into customer solutions with the instructions and coordination of the middle level management under the context defined by upper management. In many cases, they convert the efforts of the company to products/services for customers which form the image of the company. They are capable of influencing customer satisfaction significantly. The value of specialists is equal to their knowledge. It is therefore in their best interest to gain new knowledge continuously and to confront new tasks so that they do not lose their value in the constantly changing environment.

> **Definition**
>
> *What experts like and do not like* (Sveiby 1997, p. 57)
> - Experts are characterised by profound knowledge of the field in which they specialise. They contribute actively to this field.
> - Experts like complicated problems, progress in their occupational area, freedom to search new solutions, well-equipped work place/laboratories and public recognition of their services.
> - Experts loathe routine work, bureaucracy and rules that restrict their freedom.
> - Experts often lack distinct management skills.
> - Experts admire specialists who are better than them.
>
> Experts condemn power oriented persons.

Sveiby (1997, p. 72) has explained this phenomenon as the life-cycle of professionals (see ◘ Fig. 4.5). Stated generally, the competence of an employee increases with age or the years of work he puts in. In positive cases, the company finds this increase to be
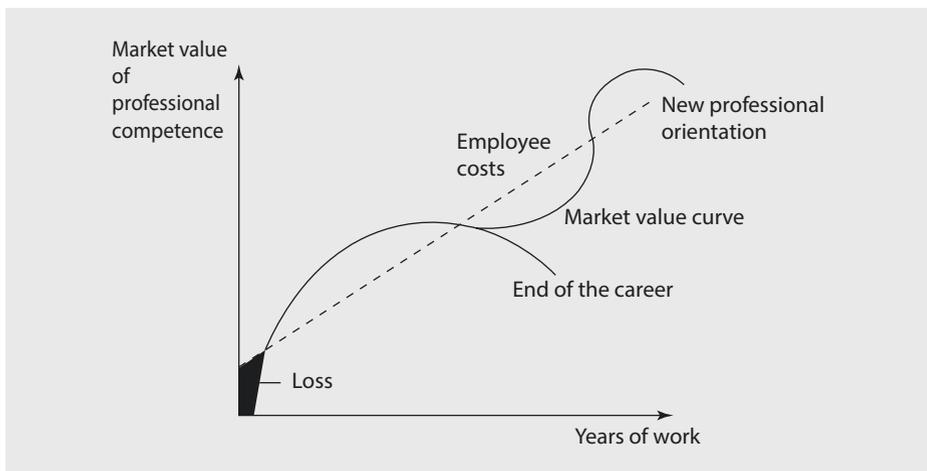
◘ **Fig. 4.5** Life-cycle model of the market value of specialised competence (Source: Diagrammatic presentation based on Sveiby 1997, p. 72)

4

higher than the employee cost. At the beginning of the career, the employee cost is higher due to training or restricted commitment. In succession, the market value increases at a faster rate than the employee cost; the employee «*rents himself*», «*brings in more than his cost*». At some point of time, a level is reached wherein the increase in the salary level does not bring in corresponding increase in the value of the employee's competence. At the latest before reaching this level, the company and the employee should think about profitable options of using the experience of the employee by undertaking new functions or a new qualification. Otherwise, the company will be inclined to part with this employee in the short-term or long-term. In reality, the competence and cost of an employee increase intermittently. Knowledge-oriented companies will increasingly evaluate the commercial value of the specialised competence of their employees. This is easily possible in consulting firms using the realised daily rate.

Apart from updating competences continuously, professionals have other options to make themselves indispensable in the company, e.g. by customer relations created by them. If a customer always wishes to work with Ms. X or Mr. Y, the transfer of this employee may affect the company's relation with such a customer adversely. From this viewpoint, in order to safeguard their position, it is important for professionals to work intensively with fewer customers than anonymously with large number of customers.

Another option of positioning the professional in the company is through cooperation in formal and informal networks and communities. Here, the employees provide their knowledge, distinguish themselves as experts of a topic, contribute to the company's internal information system or are available as contact persons for certain topics. Even though many experts are sceptical of self-marketing, it should be considered as an important component within the framework of career development in a knowledge-oriented organisation.

Individual knowledge management
Information overload and varied knowledge gives a feeling of helplessness and the pressure to react fast. Therefore, individuals need to develop strategies for dealing with information and knowledge personally. Here are some tips (Reinmann-Rothmeier and Mandl 2000; Reinmann and Eppler 2008):

- *View and throw*: Ask yourself which information you need and how often do you need it. Separate the wheat from the chaff courageously.
- *Reduce systematically*: Reduce the amount of information coming to you regularly. Are the distribution lists, mailing lists, magazines, etc. really relevant to you?
- *Filter instead of collecting*: Do not collect information without selecting. Instead, keep a record of where you can find information if required.
- *Set limits*: Say no to yourself when you are confronted with information overloads.
- *Courage for a break*: Call it a break when the effort of searching and collecting information exceeds the achievable benefits by gaining information.
- *Practice composure*: Develop an approach as per the motto «*No one knows everything but everyone knows something*». A solid personal knowledge base promises success more than a possibly complete information pool.
- *Use technologies that work for you*: You should not use every new technology just because it is new. Use the options of new media to adjust the time for feedback of requirements of your work situation.

Career development of professionals in flat hierarchies is a challenge faced by knowledge-based companies. On the one hand, these companies have very few levels of

hierarchy and on the other hand not all the specialised employees are interested or suitable to undertake management functions. There is a growth option towards middle level management for those employees, who wish to take up management positions and are capable of holding it. Generally, growth is possible after hard – but not necessarily uncooperative – internal competition, regular performance evaluations and feedbacks.

Fast growth is possible only when the company grows proportionately. Hence, growth inside the knowledge firm is connected very closely to the rate of the growth of the company.

Highly qualified researchers who do not aim at management functions or whose specialised competence is too valuable for the company to place them in management positions, can opt for a separate **expert career** and can be drawn close to the status of the upper-level management in terms of their compensation or competencies. In hierarchical companies, a chief department manager requires a specific number of employees or a certain budget to be able to rise to this position. This «*head count*» is not applicable to a knowledge-oriented company. Along these lines, the World Health Organisation, for example – an otherwise hierarchically organised body – has opened up career options to their qualified experts, other firms create positions of «chief scientist» or «chief technical advisor» ranking at upper management levels.

Personnel development
With perspective: lateral *thinkers instead of upward climbers.*[2] What does career actually mean?
- If one asks you,
- If one takes your advice,
- If one gives you information,
- If one has trust and confidence in you,
- If one gives you lot of space,
- If one gives you responsibility, then
- You have made a career at the firm.

In short, when you are in demand among customers and colleagues.

Despite all these retention efforts, companies continue to lose qualified employees. However, there are ways of losing the employee without losing their knowledge completely. Knowledge-based companies should ensure that professionals pass on their knowledge to team colleagues and save their information continuously in the information system of the company, pass on their knowledge in company's internal competence networks and familiarise new employees with the work and coach them.

In ◧ Fig. 4.6, you find functions and roles of professionals. Based on these elements and according to the priorities and time allotment, we have created a target profile that can be compared with an actual personal profile.

4.3.5 Information Brokers and Infrastructure Managers

The development of the knowledge firm and digitization gives rise to a new group of employees (a specific group of professionals) who operate the information and com-

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2   CSC Ploenzke information brochure.

4
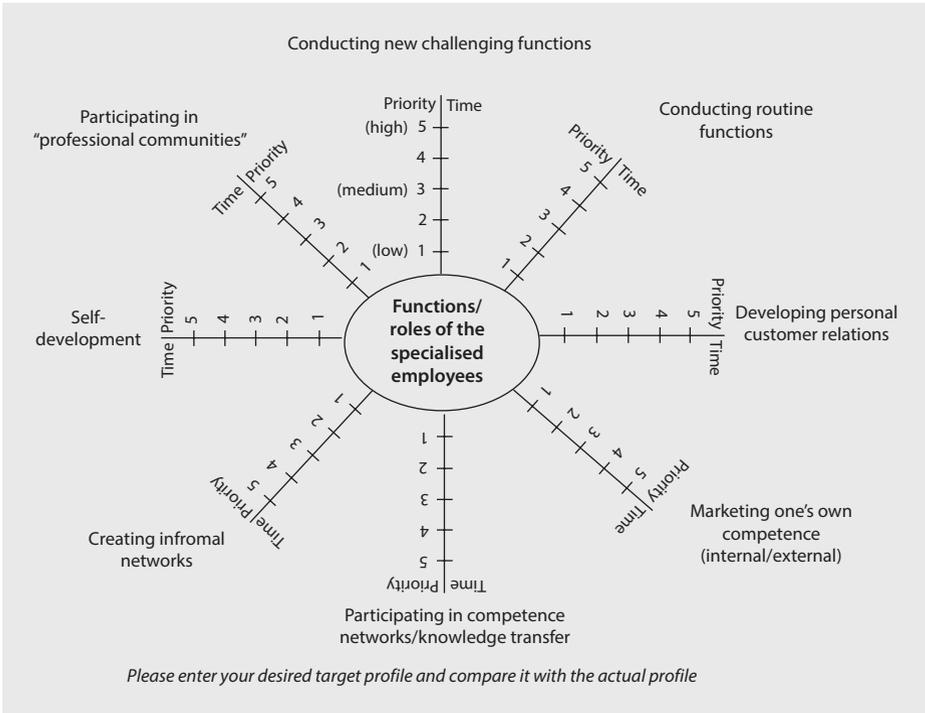
Fig. 4.6   Functions and roles of professionals

munication system of the company both in terms of content and technology. This group ensures that ICT technology and relevant applications support knowledge work (see 7 Chap. 7). While the technical operation of the information and communication system can be assigned partly or entirely to an external service provider, managing critical content should be carried in-house.

Knowledge of experts must be codified and stored. Journalists edit project reports to make them understandable to a third party. The knowledge of competence networks should be stored in a structured form and made available round the clock throughout the world. Expert systems and E-Learning units require constant updating.

Social software such as wikis and blogs require co-ordination and often editing support. Information «brokers» motivate colleagues to contribute content like writing wikis for important topic areas.

Furthermore, research is getting more and more complex and needs to be carried out in very short intervals. The client, the prospective customer or the senior employee expect to be informed quickly and comprehensively about a subject area. Simple research can be conducted by the end user himself on the internet or through the company's internal high-capacity search engines. In contrast to this, complex research or selective search requires specific information or information experts who carry out a search professionally.

4.3.6 Support Employees

It is often said that offices, communication centres and secretarial pools will become unnecessary following the improvements in information and communication technology. This might be true in drafting simple texts or routine data analyses. On the other side, there is a rise in demand for quality of presentations, updating content on the intranet, setting-uo collaborate workspaces, conducting information research and answering customer queries.

Hence, back office support gains importance with an increase in the variety of functions. A good command over text processing, graphical presentation and use of software tools as well as complex communication systems is a part of general qualification requirement of these employees; professionals, increasingly working under tight time constraints and with constantly changing tasks, become increasingly dependent on back office support to complete routine tasks.

4.4 Motivating Knowledge Workers

4.4.1 Extrinsic Versus Intrinsic Motivation

Motivation is an often discussed and controversial issue in theory and practice. Current thinking based on advances in neurological research argues that motivation means creating enabling conditions that reinforce personal motives and thus make people contribute and in a positive case give their best to achieve the goals of the organisation as long as they are in line with personal goals.[3]

In this respect we have to understand the difference between intrinsic and extrinsic motivation.

Extrinsic motivation functions via an indirect satisfaction of needs, mainly through factors like money or power. In this case, achievement of organisational goals is linked with monetary or career boosting incentive systems for the employee.

Against this, **intrinsic motivation** underlines the aspects of direct fulfilment of needs. Intrinsic motivation may be rooted in the joy of doing the work itself or in a perceived commitment. Commitment may result from a self-commitment – e.g. due to personally defined goals – or from commitment to other people, groups, or the society as a whole.

As a rule, the ideal incentive system for intrinsic motivation is the work itself, along with freedom and conditions which help establish a personal identification with this work and with the existing values. These three challenges are central in this context:

- Intrinsic and extrinsic motivation cannot be generated and changed to the same degree in every person.
- Intrinsic and extrinsic motivation cannot be considered independent of each other.
- Intrinsic motivation needs not be in line with the goals of the organisation and is very difficult to change.

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3 An overview of work motivation research can be found at Latham and Pinder (2005), an overview over motivation theories can be found under ► http://www.goldsmithibs.com/resources/free/motivation/notes/summary%20-%20motivation.pdf

Pink (2009) has identified three key factors that drive motivation in humans. These are the quest for autonomy, the innate desire for mastery and the need for purpose. These drivers are strong in knowledge workers. Therefore management styles that support autonomy, mastery, and purpose are required to enable a significant shift in the performance and productivity of knowledge workers. Carleton (2011) suggest for the retention of knowledge workers giving them attention, providing challenging work, offering developmental opportunities, providing appropriate resources, placing them in a supportive environment, and recognizing their contributions.

◘ Table 4.2 describes important extrinsic and intrinsic work motives and incentives that support them.

While traditional forms of performance related payment is largely based on the extrinsic motivation, the intrinsic motivation gains importance when it comes to sharing and developing knowledge. An intrinsic motivation compatible with the objectives of the company is necessary for promoting the transfer of knowledge. With regard to knowledge development, one can say that the creative activities rest largely on intrinsic motivation.

Learning processes in particular are boosted by intrinsic motivation («I learn because I like the topic» as opposed to the extrinsic motivation «I learn because I get something in return»).

While designing a knowledge-oriented incentive system it is to be borne in mind that every employee is a knowledge source for the company and it is essential to motivate him/her through individually configurable incentive systems for knowledge objectives and objectives of the company.

◘ **Table 4.2**   Work motive and incentive

Work motive	Incentive
Extrinsic work motives	*Material and status related incentives*
Money	Salary, bonus
Security	Pension, loans
Prestige	Status symbols
Intrinsic work motives	*Options to interact and personal development*
Contacts	Belonging to the professional community
Performance	Feedback about one's own performance (e.g. by appreciation and constructive critique)
Self-realisation	Independence (e.g. flexible working times empowerment)
	Learning options through challenging activities
	Good working conditions
	Job rotation, job enlargement and job enrichment

4.4.2 **Motivating Knowledge Workers**

How can well-trained professionals be motivated? Initially through a task or varying tasks that *challenge their specialised knowledge* and give them a chance to grow. The practice of assigning young employees with easy routine jobs at the beginning is disastrous from the knowledge viewpoint. Accomplishing challenging tasks leads to learning and a demonstration of competence which is motivating. Recognition from customers as well as from experts with higher qualification is generally considered as a very important motivational factor (Sveiby 1997; Maister 1993).

A further source of motivation is *enabling advanced learning*. From an employee perspective, an opportunity to participate in a highly rated seminar (thanks to his/her outstanding performance) or to train under the guidance of top experts in his/her field of specialisation is of much more value than an increase in the salary.

Another motivational factor is *efficient work equipment and a stimulating office environment.* This relates to an open information culture as well as workplace lay-out and equipment such as a high-performance computer or a laboratory that eases the work of a specialist on the one hand and accords a certain status among colleagues on the other, because traditional status symbols loose importance in a knowledge-oriented company.

Case Study

The Company Breakfast

In order to establish an open exchange of information as a component of the company culture, a manufacturer of optical and electronic equipments has introduced a regular practice of a common breakfast of all 150 employees approximately four times a year. There is a name card for each employee. These name tags are mixed like playing cards and distributed on the tables of the canteen randomly. Thus, employees from different departments and hierarchies sit together. Thereafter, over the course of the entire breakfast, the company management gives information about different topics like current business situation, new interesting projects, personnel changes or internal and external problems and gives an insight into the future. In turn, the employees are requested to ask questions, bring forth problems and give suggestions to the management.

Monetary rewards, naturally, continue to be yet another motivational factor. Incentive systems (e.g. share options) that are based on the success of the entire company can stimulate a positive behaviour and be supplementary to incentive systems designed exclusively for individuals (For more details see ▶ Sect. 4.4).

There are a number of options for *promoting teamwork* directed towards the interest of the entire company. One such option is paying the employees as a group instead of paying them individually. This compensates the success of the group and not the individual performance. Furthermore, there is an option of connecting a significant part of the salary to the success of the entire company. This is particularly important for the upper level management. For instance, in General Electric over 22,000 employees at all levels have share options in the company and thus a clear financial incentive to have the overall success of the company in view. Thus, the support of the colleagues in the same or in other business units contributes simultaneously to the improvement in the entire

situation of the company. The rewards from the shares are often significantly higher than the bonus that is linked to the performance of the individual business unit. A number of companies have abolished the individual-oriented bonus systems and award fringe benefits depending on the results of teams, units and the entire company. Even improvement suggestions can be arranged keeping the group in mind. Thus, the employees are motivated to work on and implement the improvement suggestions together.

4

> **Example**
>
> **Nudging to reinforce knowledge sharing and collaboration**
>
> Developed by nobel prize winner Richard Thaler "Nudge" theory is a concept in behavioural economics which proposes positive reinforcement and indirect suggestions to try to achieve non-forced compliance to influence the motives, incentives and decision making of groups and individuals (Thaler and Sunstein 2009). Nudges should appear when people are open to making a change. They should be connected to small steps that are easy to take and reward people's accomplishments rather than point out their shortcomings. Nudges are more successful when there's a plan behind how they're used, they're social, they hold people accountable in some way — but don't penalize them — and offer small incentives for reaching intended goals.
>
> Mobile devices, enterprise social network tools and other workplace apps have made it easy to deploy such digital nudges to encourage behaviors that benefit both employees and the organization. Companies are using nudges to reduce absenteeism, increase productivity, incentivate competence development improve communications, meet individual and team objectives, and boost performance in other ways. To nudge share knowledge so called "micro kitchens" were introduced by Google to increase knowledge transfer amongst knowledge workers in an easy and pleasant way (Ebert and Freibichler 2017).
>
> *Sources:* Thaler and Sunstein (2009), Ebert and Freibichler (2017), ► http://www.talenteconomy.io/2017/08/24/digital-nudges/

In case of «*Management by Objectives*», the targets are agreed upon between the seniors and the coordinators, the responsibility of every individual is defined in form of results expected from them and the result is measured based on the «target-actual» comparison. Extending the target catalogue by individual knowledge objects is called as «*Management by Knowledge Objectives*». Here, the operative and strategic knowledge objectives are the source of agreements on objectives. These objectives can be directed not only towards the enhancing personal competence but also towards passing the knowledge further (e.g. briefing a new employee about work). Qualification objectives are measured and adapted periodically. Employees are encouraged to participate in the development of objectives.

A firm has integrated incentives – in form of bonuses – into agreements on objectives. For this purpose, knowledge required for certain tasks was defined in «*skill blocks*». A successful completion of a «*skill-block*» leads to an increase in the salary. For this, the employee has to take a test that is assessed by seniors and colleagues who already have a command over these skill blocks. This incentive system resulted in an increased flexibility and improvement in the work processes.

Another version of objective agreements is the integration of knowledge objectives in the work process which is then linked to payment. In case of a consulting firm, the performance of the advisor is evaluated based on five categories, one of them being

«contribution to the knowledge of the company and its benefits.» In another company, a part of the salary of an individual employee is ascertained based on his activities to share his knowledge (e.g. lessons learned). Even the **employee appraisal** or the periodical employee discussion has a place for creation and transfer of knowledge. A management consultancy has developed these questions related to the topic of dealing with knowledge resources.

Knowledge and competence related criteria for employee appraisal
- Employees are asked the following:
- What have you done in the last year to increase your own competence?
- How have you contributed to the further development of the knowledge base of the company (e.g. by cooperating with networks, inserting presentations in the information system, by presenting project reports, project profiles etc.)?
- In addition to the above questions, the management is asked the following:
- How have you encouraged your employees to build up their competence?
- Have you managed to increase the revenue per employee?
- Have you contributed to innovations, to improve processes or to build new business areas?

The integration of *knowledge related criteria into employee appraisal* ensures that the employees are retained in the long run to generate and share knowledge in order to develop themselves in the company. However, this also means that «career» has gained a new definition that is based on the recognition of professional and social competence. Appreciating the know-how in a certain field is an important incentive for strengthening the intrinsic motive. At the same time, the belongingness to a social group is connected to this appreciation. The common engagement in trade unions, trade organisations and honorary office shows the effectiveness of motivation by appreciation. The option of presenting oneself as an employee with one's own homepage in the intranet, a competition of the documents downloaded from individual homepages are the options of rewarding the involvement in sharing the knowledge.

For example, a company has installed a «*Virtual Knowledge Centre*». The documents of which that are used most often are published in a «hitlist». The advisors who have placed the highest ranked case studies have the option to participate in the annual event of «*Knowledge Centre Conference*».

For a knowledge worker, time is becoming more scarce day-by-day. Sharing and developing knowledge can therefore be rewarded by giving time and space to the employees. The option to take a vacation for half a month, to attend an MBA program or «*10% of total work time at the employees' free disposal*» can be stronger incentives than payment and promotions. Employees are motivated by the option of working in a project team with the leading experts, solving complicated problems, making technical advances in their field, freedom of searching new solutions, well-equipped work places/laboratories and appreciation of their performance.

The «fun» incentives that supplement the formal incentives are useful for creating awareness and motivation for knowledge management. Following this, a consultancy firm launched the «*sharing knowledge earns you miles*» initiative that was used by a number of companies ever since it was coined (see also Box «gamification» on 137).

> **Case Study**
>
> ### «Sharing Knowledge Earns you Miles» – Initiative of a Management Consultancy
>
> Consultants are often under enormous time pressure and therefore, are often not completely willing to spend time on documenting and passing on their knowledge. Apart from the comprehensive incentive systems of the company, playful incentives can contribute in creating awareness about transfer of knowledge. Hence, analogous to the miles collection of airline companies, the «Sharing knowledge earns you miles» initiative was launched in one of the branches of the management consultancy. The message conveyed by this initiative can be articulated as follows:
>
> We want to motivate you to share knowledge, offer help to your colleagues and contribute successful concepts and lessons learned from project work. In order to achieve this, we want to find the «knowledge leaders» in our organisation, i.e. the employees who transfer knowledge actively to others.
>
> The rules: Every quarter, you receive 50 points which, if you wish to, you may distribute among the colleagues who have supported you. Every employee thinks about the following questions: Who has helped me actively in solving a problem, shared his experiences with me and particularly encouraged the creation and transfer of knowledge in our company? At the end of the quarter, you send the distribution of your points to the miles office through email. Colleagues considered for the points collect these points in their miles account and can pick up a gift from a range of gifts depending on the number of miles (e.g. top-class seminars of their choice, including seminar fees and travelling expenses). The redemption of «miles» should contribute to further creation of knowledge leaders.

If a company succeeds in developing in enabling conditions required for leveraging the motives of its employees, the «motivation spring» is twisted in the right direction. High motivation leads to higher productivity and quality of work that in turn leads to success in terms of customers. This success results in the success of the company which in turn is reflected in generous compensation in form of further training options and career development.

> **Case Study**
>
> ### Gamification: Get Employees to Share Knowledge and Expertise by Making Fun
>
> Gamification is about taking the essence of games – fun, play, transparency, design, and challenge – and applying it to real-world objectives rather than pure entertainment.
>
> Over the past several years, companies like Samsung and Nike have added gamification to their consumer websites to get customers to engage with them and take certain actions – anything from buying a particular product to answering questions in an online forum. Now, firms are starting to apply these tactics internally to motivate their work forces.
>
> The major gamification factors can be classified into the following aspects:
>
> A Scoring System where points are awarded for completion of tasks and accumulate over time. A progress bar which shows how close a user is to completing a task once the bar is full, the user is awarded a certificate or a badge as a token for achievement. This is reflected in the contributor's profile and signifies his expertise in a particular area. He/she can also appear on a public score board that displays the «Top 10 High Achievers» points tally which in itself is an award. The contributor can also be assigned a level which may signify a users' proficiency in the area such as beginner, intermediate, advanced.
>
> Gamification has a potential for increasing user generated content and engagement which enhances use of knowledge management systems by employees within organisations. Some

examples are Deloitte and Accenture. Deloitte has successfully implemented gamification with applications such as Yammer and Badgeville. At Accenture – a management consulting, technology and outsourcing company – gamification techniques are being deployed to, quite literally, «change the game» when it comes to encouraging and empowering its people to collaborate and share with one another across its global network of more than 250,000 employees. According to Gartner, gamification is «positioned to become a highly significant trend over the next five years,» with more than 70% of Global 2000 organisations set to have at least one «gamified» application by 2014.
Source: Stieglitz et al. (2017), Palmer et al. (2012), Rosenbaum (2012), APQC (2013)

4.5 Competencies for the «Intelligent Firm»

4.5.1 Managing Talent and Competencies

In a knowledge-oriented company management of competencies goes beyond the traditional concept of training. It includes self-learning, taking responsibility for one's own competence portfolio, using and marketing the competencies (see ► Sect. 4.6 Communities of Practice). This will be clear when we see typical problems that can be solved using competence management.

- *Project staffing based on competence:* We often assign projects to employees that we know, without knowing whether there are even more suitable colleagues. The «*competence profiles*» that describe the competencies of an employee offer the option to identify suitable employees for the project.
- *Identifying competency gap:* Imagine you have come from a strategy workshop and would like to realign your business units. You ask yourself questions – «*Do my employees have the competencies necessary for the future alignment? How can we impart selective training to the employees or which profiles should we hire*?» Increasing the present competencies, deriving the necessary competencies as well as the «actual-target» comparison enables us to take appropriate measures.
- *Passing on knowledge across employee generations:* Highly specialised employees work in the development, production, sales and IT department. The firm often does not know what individual experts know. The value of the knowledge that is lost becomes clear only after these employees have left the unit or firm. A customer complained that she is no longer advised as before, there are unexpected problems in the production process or crucial technology know-how is not available. Competence descriptions help identify the «*hidden experts*» to pass on knowledge to the employee generations.
- *Career by developing competence:* In flat hierarchies, it is often not possible for the employees to make a career by climbing up the greasy pole or promotion. Yet, we can offer a long-term development perspective and retain qualified employees in the company by means of competence extension and consolidation. The agreed development is incorporated in target agreements as well as appraisal and incentive systems.
- *Finding competent contact person:* Very often the company is on the look out for a particular skill/profile and is confronted with questions like-who is good at database programming? Who can help me quickly with the supply and knows the

customer? Who is an expert on US accounting in our company? We can locate expertise quickly using «*skill databases*» and take measures. Software solution of «*skill based routing*» can be used for this purpose to reach out to a wider circle.

— *Evaluating training needs and effectiveness:* A training provider serves many small companies with the function of determining training requirement of the employees and structuring a specific program. The training department within the company has a similar function. Employees often register for seminars without finding out how such seminar would contribute in developing their competence or of the working group. How can training needs be assessed and training effectiveness evaluated systematically? How can the employees manage their own «*competence portfolio*», especially if they change the companies more often and wish to increase their «*employability*» in the market?

The answer is provided by mapping a company's competence requirements of jobs with competence of existing employees. After assessing this, improvements in performance and changes required in behaviour can be evaluated.

4.5.2 How Does Your Organization Deal with Competences?

In the short analysis that follows, you can evaluate the competence management of your company by means of eight criteria.

A good approach to raise awareness would be to copy and distribute the form given below among your colleagues in order to discuss the results subsequently and answer the following questions:

— How different was the categorisation?
— Where was the maximum difference in grading?
— Where do we see the biggest obstacles towards a competent organisation and which measures should we take?
— What can each of us contribute to ensure that the required competencies are developed and the existing competencies are used optimally?

Grade each point according to the school grades: from 1 = very good to 5 = unsatisfactory.

Short Analysis: How does your organization deal with competences?

No competence management	5	4	3	2	1	Systematic competence management
1. Core competencies are not defined						Core competencies are defined and updated regularly
2. Employees do not have a competence profile						Employees have a competence profile for core processes, core functions. Profiles are updated regularly
3. Competence development is not interconnected with human resource development						Human resource development is based on a systematic competence evaluation

No competence management	5	4	3	2	1	Systematic competence management
4. In case of time pressure, learning and advance training must take a back seat to operative functions						Learning has a high priority (time and budget for every employee provided)
5. Informal learning at work is not recognised						Informal learning is supported with suitable measures (Coaching, mentoring, etc.)
6. There are no development plans for individuals						Individual development plans are implemented consistently
7. Training and application are not interlocked						Training is always connected to the application
8. Employees do not get incentives for developing competence						Competence development is supported consistently by incentive systems

4.5.3 Developing Competence

The objective of learning of knowledge workers is to develop professional skills and competencies. Knowledge, experience, intuition come together in concrete situations that require action. Competence (or competency) is therefore the capability to act adequately in a given situation. This includes the capability of self-organisation. Competency comes into effect in the interplay of individuals, groups and organisations.

Competence materialises at the time of knowledge application and can be measured with the result achieved from the action («performance»).

> **Definition**
>
> The term **competence** of a person or a group describes the relationship between the tasks assigned to or assumed by the person or the group and their capability and potential to deliver the desired performance. People mobilise knowledge, skills and behaviour to «do the right thing at the right moment».

The competence of a person encompasses a combination of skills and behaviours to carry-out a task (interpretation of a piece of music). Competencies embrace several skills. A **skill** is an ability that is learned and practiced for a period of time (playing violin). In contrast, a **talent** is defined by resources as the ability by a person that is inherent, inborn, or naturally occurring. A talent is said to be a special ability to do something without prior experience, study, or tutelage (e.g. musical talent). Because it occurs naturally, a talent is also seen as raw ability which can be developed and improved over time with direction like instruction and training.[4]

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4   Cf. ► http://www.differencebetween.net/language/words-language/difference-between-talent-and-skill/

The typical components of a competency-based approach are as follows (Draganidis and Mentzas 2006):

1. Identify the desired results: Which output or result is desired for a «successful» completion of a role or a job?
2. Describe the competencies that truly have an impact on results based on a competency model.
3. Evaluate employee competency using a competency model and grade the level of proficiency. Usually one would combine self-evaluation and peer–to-peer or rating by a superior.
4. Implement employee development strategies and resources to close the gap between real and desired competency level.

The more unstructured a job is and the more freedom knowledge workers have to reach their goals the more difficult is it to answer the question «which competencies are required in a specific job or role?» as people with different sets of competencies might achieve similar results.

For each of the competencies a description and proficiency level need to be formulated. For the purpose of structuring commonly competencies are categorised in «hard» and «soft» where technical and functional competencies are considered as hard competencies whereas creativity, interpersonal, and behavioural skills are soft competencies. Other frameworks classify competencies into functional, managerial, methodological as well as social and personality related competence (cf. Janjua et al. 2012), in reality these competencies interact and are difficult to separate.

After describing individual competencies, the level of each of the competencies should be evaluated. Different expertise models are recommended in the literature wherein the three tier evaluation of professional and method competence has established itself in reality.

Beginners have theoretical knowledge with less experience of application of such knowledge and are able to use the pre-structured solutions of problem in theory on real problems (e.g. project management course was conducted successfully and the first experience of executing project was collected).

The proficient have multiple experience in application and can react appropriately even to new unforeseen situations (e.g. multiple projects of different complexities were carried out at one's own authority).

Experts are capable of anticipating problems to a large extent by means of self-organisation and intuition. They are also capable of solving such problems. They stand out through profound knowledge of topics (e.g. managing complex and novel projects, contributing to further development in methods of project management). Further nuances are possible depending on the desired degree of differentiation. Social competence can be gauged with the levels such as «*less distinct*», «*distinct*» and «*more distinct*».

Case Study

Career in the CSC World: Become More Precious

In the service model of an organisational unit, the service know-how that is offered is presented in segments of a circle. This «competence wheel» describes the know-how of an employee and his/her know-how careers in the medium term (earn more during stability phase). The segments of the service model stand for the service spectrum that is relevant for the respective organisational unit with key elements from industry and technology. Thus, the main features of the fields of activity that are to be observed by the employees are documented. Simultaneously, it is shown which topics should be covered. One such sheet is a component of all the documents required for an employee review and is used to discuss medium-term career planning. Information on the segment wherein an employee works at present and the segments wherein he is supposed to go through in the next 3–10 years is also documented. This concept of personal development will promote not only multiple qualifications but also creativity, initiative, ability to learn and the courage to try new things (◨ Fig. 4.7).
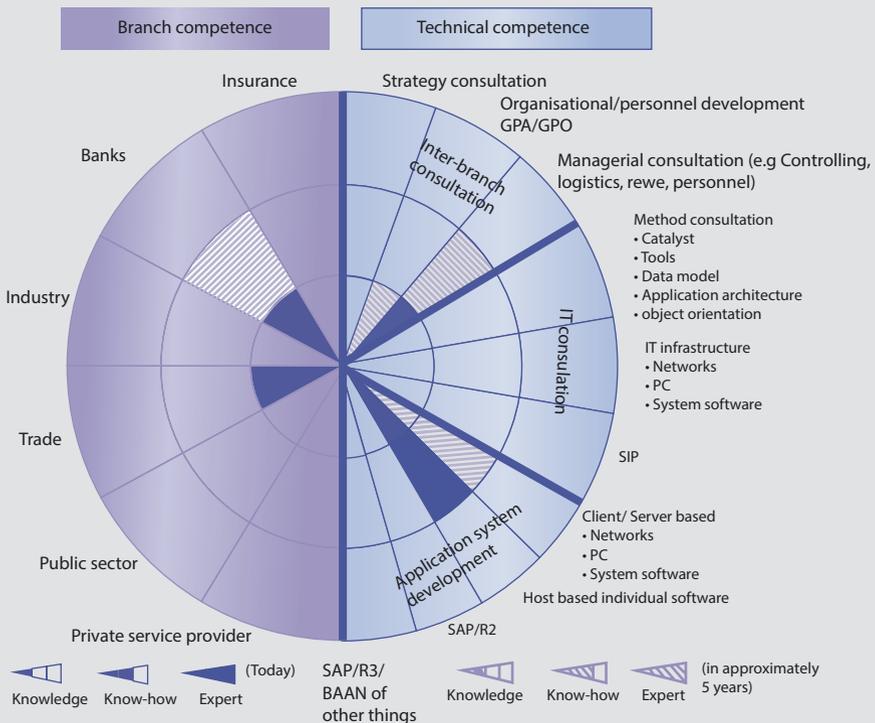
◨ **Fig. 4.7** Branch competence and technical competence (Source: Guidelines for junior advisors in the brochure of CSC Ploenzke AG)

4

Various Methods of Competency Development

Knowledge workers use various methods of competency development.

Mainly, the execution of new challenging tasks is a motivation and an opportunity for learning. The challenge for highly differentiated knowledge work is to be able to better integrate learning and work. The opportunities offered by *e-learning and blended learning* approaches support this.

The time consuming activity of following knowledge domains through newsletter subscriptions, observing technical portals, or reading through technical journals can be better organised. Colleagues can mutually assign topics and exchange knowledge periodically; for instance as a recurring item in the agenda of regular meetings. Initiatives such as «*colleagues learn from colleagues*» support this sort of mutual learning. This can also foster learning across professional groups.

Case Study

Dare2Share

In a survey of staff, British Telecom (BT) found out that 78% of its engineers preferred to learn from their peers, but to date, very little money or attention had been focused on affecting and improving the learning and development that naturally takes place in the workplace. Following the survey, BT replaced much of its traditional formal training programmes for its engineers with a social media, contribution-based platform that they called Dare2Share. The company deployed a YouTube-like platform that allowed engineers to pull learning content, in the form of content contributed by other engineers, when they need to do so. The overall outcome has been an increase in sharing and network building, faster problem resolution, lower costs and the replacement of off-the-job training with performance support.

If you want to know more about BT's Dare2Share visit ► http://www.youtube.com/watch?v¼gtVYkEdGtfo.

Coaching and supervision help knowledge workers reflect upon their learning process and reflect self and peer assessment. In the predominantly individualistic cultures of many professional circles, there are barriers to open up to colleagues and superiors. Coaching and supervision can provide personal support and also allow for taking individual learning to group learning sessions.

A fantastic form of combined learning is possible in *projects* where new interdisciplinary questions are tackled. Team members gain experiences which are of great value for the members themselves and for future teams with similar questions. In a process of self-reflection, every team has to summarise all the critical experiences gathered and what future teams with similar problems must pay particular attention to. Often different perspectives emerge only in such reflection sessions, which can thus prove to be a valuable source for participants to evaluate their own work.

Under the point «lessons learned» we urge organisations to more frequently revisit the experiences and learning experiences from their successes as well as from their failures. Lessons learned represent the essence of all experiences that were made during a project or in a particular position. In order to make adequate use of lessons learned, there should above all be a suitable framework for recording them.

What are your objectives for competence development and how do you want to achieve it?

4.6 Communities of Practice: A Learning Approach

4.6.1 Understanding Communities

Value creation in a knowledge-based organisation and beyond the limits of that organisation is determined considerably by the ability to mobilise the shared knowledge across markets, customers, products and processes with a specific purpose and generate a value out of it for customers.

However, traditional and formalised structures of hierarchy and business units are equipped inadequately to perform such functions. Hence, self-organised communities that take initiative, learn together, share experiences or develop new products and services thus overcoming the boundaries of hierarchy and organisational units gain importance. Innovation circles, experts, groups become increasingly popular.

Case Study

Knowledge Communities at MindTree

MindTree is a mid-sized Indian IT services company known for its knowledge management practices, its collaborative communities, and its strong culture and values. From the beginning, MindTree has considered communities as all those self-organised groups which take on a mission. They don't appear on the organisational chart and they don't report to anyone. Yet, they are driven by their self-defined objectives. These could be focused short-term goals (for example, building a software component) or broader, long-term goals (such as building capability in a domain).

At MindTree, communities with long-term goals are called «knowledge communities». The company has more than 30 of them and they are highly visible, while others with short-term goals use the available infrastructure, but are not tracked in the same manner as knowledge communities. «Overall, communities create the fractal structure – and the feeling of belonging – that keeps smallness alive,» says Datta.[5]

The various forms of learning and exchanging knowledge are discussed under the terms «*Communities of Practice*» (Wenger 1998a, b) or learning communities, or knowledge communities.

Definition

Communities of practice are groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis. (Wenger et al. 2002, p. 4)

Communities of practice have a range of functions for procuring, accumulating and distributing knowledge in the organisation and beyond the boundaries of the organisation (Wenger 1998a, b; Wenger et al. 2002):

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5   Ash, Jerry, «Ideas Emerging», Case Report on Mindtree.

— They are nodes for the exchange and interpretation of information. Since the employees involved in communities of practice have a common understanding, they know which information is relevant and can be passed on and how it can be presented in a useful manner. From this point of view, the communities of practice are also ideal for spreading information beyond the boundaries of the organisation.

— They can keep knowledge alive unlike databases or manuals. The tacit elements of knowledge are maintained and passed on and adapted to the local terms of use. Thus, these communities are also ideal for inducting new employees, educating them and sharing experiences with them.

— They help develop competencies further and bring about the latest developments in the organisation. They are often faster and less clumsy than the business units. The feeling of getting into the act at the start of latest developments gives an identity to the members of communities of practice.

— They are a «home» for identities. In times when the project, short-term teams and allocations to the business units change faster than ever, the communities of practice build a long-term professional identity for their employees. In flat hierarchies, the communities of practice build a space for experimenting and learning in which the employees can often exchange ideas.

According to Wenger, the approach of situational learning or social learning becomes important in contrast to a traditional view of learning and advanced training in the company:

» Our institutions, to the extent that they address issues of learning explicitly, are largely based on the assumption that learning is an individual process, that it has a beginning and an end, that it is best separated from the rest of our activities, and that it is the result of teaching. Thus, we learn in seminar rooms and organised computer-aided training programmes with individual sessions. We test the success of teaching by means of individual tests. Wenger argues that as a result a huge part of our institutionalised training and advance training is considered as boring and irrelevant to practical application (Wenger 1998a, b, p. 3).

In contrast to this, the basic assumptions of the social and situational learning define learning as a group process that is not restricted by time and takes place unknowingly to some extent. Learning takes place in the context of activities. Instead of directing training primarily towards abstract process descriptions, learning involves handling situations together (e.g. meetings with customer) and discussing how one can improve these situations or even sharing experiences. Situational learning or social learning is based further on a variety of forms of teaching and learning as close as possible to the environment experienced by the one who learns and the one who teaches. The

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Checklist

CoP – 10 Factors of Success: How Do Your Communities Perform?

- ▪ **Management Challenge**
1. Focus on topics important to the business and community members.
2. Find a well-respected community member to coordinate the community.
3. Make sure people have time and encouragement to participate.
4. Build on the core values of the organisation.

- ▪ **Community Challenge**
5. Get key thought leaders involved.
6. Build personal relationships among community members.
7. Develop an active passionate core group.
8. Create forums for thinking together as well as systems for sharing information.

- ▪ **Technical Challenge**
9. Make it easy to contribute and access the community's knowledge and practices.

- ▪ **Personal Challenge**
10. Create real dialogue about cutting edge issues.

Source: Richard McDermott ► http://www.co-i-l.com/coil/knowledge-garden/cop/knowing.shtml.

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following checklist provides ten factors of success of CoP. In the following we will discuss in more detail how to ensure that communities create value for its members and the organisation.

4.6.2 Ideal Type of Communities of Practice

We need a vision or guiding principle to launch communities of practice. *North* et al. (2000) have identified the features of an ideal type of community of practice from their personal experience with a number of knowledge communities.

Ideally, a community of practice is a community of people:

━ Who wish to cut through a topic
━ Who consider themselves to be teachers or students
━ Who open themselves completely to a topic
━ Who let others express their beliefs and experiences
━ Who talk openly about mistakes and failures
━ Who have enough time and space for sharing this information
━ Who protect each other
━ Who do not cling to the existing concepts and are open to think about new things
━ Who listen to each other and try to understand each other
━ Who do not wish to enter commercial competition with their knowledge

4

It seems to be plausible that such communities of practice can be effective only if they are embedded in a nurturing organisational culture. Therefore, the following four framework conditions are the essential components of a typical community of practice:

- The *inner values of the organisation*, inculcated in the members of the communities of practice, should be as follows: trust, openness to new things, individual responsibility, authenticity (of one's identity) and so-called «*boundary-less behaviour*», i.e. a behaviour that encourages teamwork beyond the boundaries of organisational units. Communities of practice will not flourish in a command and control culture.
- *A balance between short-term, medium-term and long-term results:* If we think about the events in the ecology, we can also formulate a balance between sowing and yielding. Predominantly short-term company objectives and short-term objectives of the communities of practice mean that we want the yield too soon without having sowed enough. The controller breathes down the neck of the researcher with a deadline. This appears to be a problem in many real research groups and competence networks.
- *Incentives for common activities:* Regulated communities of practices rarely prosper. The comparatively stable factors in such communities are a shared interest for the selected domain or shared values that can be followed or transported using the content of the communities of practice. Opportunism and differences in interests are bad starting points for working together in a domain. Incentive should never be searched in monetary form. However, many companies have introduced incentive mechanisms that are highly successful and motivating. (cf. ▶ Sects. 4.4 and 7.3).
- *Balance between implementing and experimenting:* Finally, companies should put the knowledge of the communities of practice to a practical application and incorporate it in the value creation process. But what could be a solution that can be realised? A visible product or a document? What about the participants' learning experience which is used in several other activities? Leonard Barton (1992) has shown the importance of experimenting to generate knowledge. This can mean that the communities of practice get resources for pilot applications and implementations. Thus, while restructuring the exchange of information in a company it was ensured that the members of the research groups comprised experts as well as members from the management who were competent to take decisions for implementing the targeted results.

Case Study

Two Examples of Communities of Practice

Case I: Sharing tipps and tricks
In a work analysis, a manufacturer of a photocopying machine found that the customer service employees spent a considerable amount of time chatting with each other in the warehouse or kitchen and not with the customers. A traditional rationalisation measure would have been elimination of this time so that the employees could focus only on the customers. However, the anthropologist who conducted the analysis found that the chats provided a forum to exchange important knowledge about improving maintenance or tips on techniques of repairing. Hence, the company encouraged this exchange by establishing framework conditions for communication among the technicians even when they were in transit. Thus, a second frequency was installed in the radio of

the technicians which turned into a knowledge channel. The French subsidiary established an information system in which one could enter important experiences of the service technicians so that they could also be provided to other groups of people (Brown and Gray 1999). This example shows that even self-organised informal groups can be supported by the organisation.

Case II: TechClubs
A car manufacturer operates since 20 years with Tech Clubs that reflect the problems of car platform structure. They are informal groups organised along disciplines like electronics or chassis. They take responsibility for the further development of relevant knowledge, innovation and new skills. They have provided a basis for and ensured success of the «Engineering Books of Knowledge» for reducing development cycle time (a group of 60 for 30 months) and development cost. These tech clubs have developed through different phases. In the first few years, the supervisors came together to discuss the problems pertaining to certain parts, suppliers or new technologies. In the second phase, they tried to carry the learning processes further by inviting all the engineers of a certain domain such as representatives of purchase, scientific laboratories, etc. In the subsequent phase, the tech clubs took over more responsibility, checked the plans for products and processes and recorded important knowledge in a Lotus notes database. Today, these forms of generation and exchange of knowledge should be spread worldwide and encouraged. However, the company is still searching for options to support these communities of practices all over the world (Blair 1997; Karlenzig 1999).
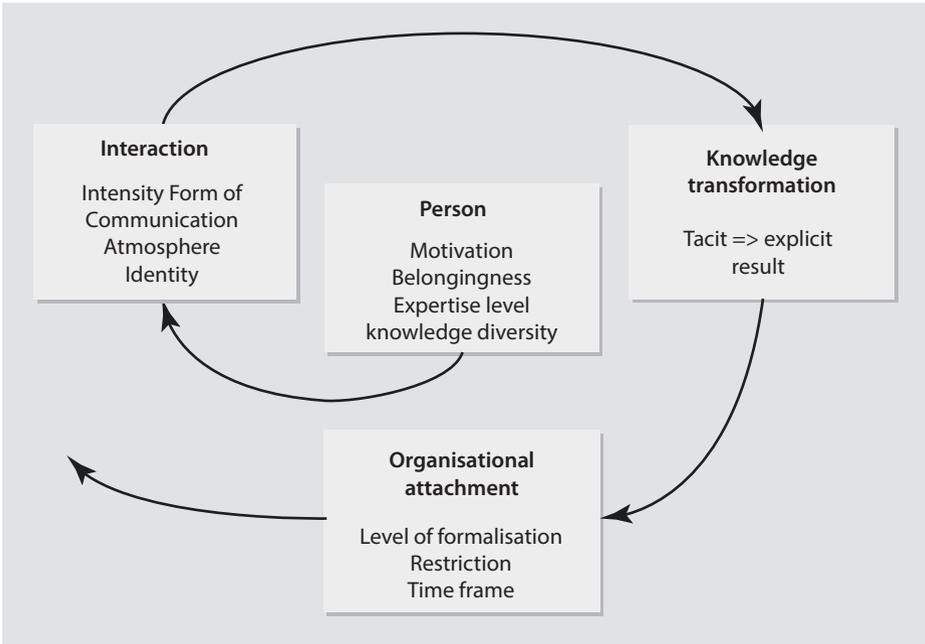
4.6.3 Dimensions of Communities of Practice

Raj Datta of MindTree believes that KM and community movements are inter-dependent. The fact is, KM will fail if you don't allow people to channel their passions and the best way to do that is to let them self-organise to create the right kind of conditions and enabling environments. The other fundamental shift – psychologically speaking – is to believe that people are intrinsically motivated to share and don't necessarily need to be motivated by external factors.

The contexts for active communities of practice can be developed consciously. The MIEO-Model shown in ◘ Fig. 4.8 comprises four dimensions (North et al. 2004): Members, interactive community, effect (result), organisational support.

According to the model, the individuals – through interaction in the communities of practice – contribute to a transformation of knowledge of the entire organisation and thus, change the value creation process of the company. Some of the dimensions are directly controllable, e.g. the membership criteria or the selection of people for communities of practice. Others can be influenced only indirectly by establishing valid framework conditions, e.g. the motivation of the members of communities of practice. We will now discuss the most important dimensions.

The «Member» Dimension: Challenging and Manageable Topics

The motivation for teamwork in communities of practice can be influenced indirectly by organising contexts that are conducive. The commitment to the challenging quantitative or qualitative objectives of the company such as «*increasing the productivity of all the factories by ten percent every year*» or «*increasing customer satisfaction*» can work as short-term motivation for exchanging experience. However, reasonable objectives that

4

Interaction

Intensity Form of
Communication
Atmosphere
Identity

Person

Motivation
Belongingness
Expertise level
knowledge diversity

**Knowledge
transformation**

Tacit => explicit
result

**Organisational
attachment**

Level of formalisation
Restriction
Time frame

◧ **Fig. 4.8**   Dimensions of communities of practice: the MIEO model

the groups of employees set for themselves and inspiring groups and meaningful meetings motivate the employees for high and long-term commitment. How is membership regulated in the communities of practice? Generally, the community of practice itself decides who can be a member. A number of difficulties may result if the self-organised selection process is impaired from outside in order to retain or retrieve «*control*». Members appointed by the management can easily become foreign bodies that can damage the trust that has developed, bring in an unwanted sense of hierarchy and damage the matured work culture. As CoP are learning instruments it is advisable to include members with different *levels of expertise* and k*nowledge diversity* be it functional experience (e.g. marketing, sales or product development) or cultural experiences (e.g. languages, courses, hierarchy levels).

Based on their study of 45 successful CoPs of multinational companies Probst and Borzillo recommend sticking to strategic objectives. They found evidence that setting clear and measurable objectives provides COP members with a concrete direction to follow. Such quantifiable objectives limit COP members to specific metrics (% of cost reduction, % of revenue increase, % of time reduction, increase in customer satisfaction, etc.) that must be respected when they participate in the process of developing and sharing best practices with other members. They also argue that classifying objectives into subtopics gives COP members absolute clarity regarding the goals that a COP must achieve (Probst and Borzillo 2008, p. 338).

The «Interactive Community» Dimension

The work of the people in communities of practice is characterised by their interaction that can be described in terms of intensity, communication form, atmosphere and identity.

The *intensity* is identified particularly by the frequency and duration of the meeting or contacts of the members of communities of practice. The form of these contacts – e.g. regular personal meeting, video conferences, and chat rooms on the internet or different seminars – determines the type of contact alternatives and options and limitations in the exchange of knowledge.

The selection of the *form of communication* is decisive for the quality of interaction. The authors have polled the members of communities of practice on the form of communication. The unanimous opinion was that the personal acquaintance of members of communities of practice simplifies the subsequent exchange through electronic media. The adequate form of communication is further dependent on the type of the knowledge exchanged. The higher the exchange of tacit knowledge, the higher is the reliance on the face to face personal communication. The higher the exchange of explicit knowledge, the higher is the suitability to use the electronic media.

The interaction of people in a community of practice is further characterised by the *atmosphere* in which they work together. For instance, a code of conduct that takes up the aforementioned rules of an ideal type of communities of practice and defines the behavioural rules of the members can be helpful here. Addressing each other with names and avoiding titles encourages an interaction at the same level. Atmosphere also includes selecting attractive venues for meetings.

Apart from the corporate identity of a company, one can also support in building an *identity* of the community of practice. Communities of practice can be given a space on the internet to showcase themselves or they can develop their own logo. The community can develop its own language over a course of time and perhaps even its own methods, rules and tools that mark the independent identity as an outline from the rest of the organisation.

The «Effect» (Result) Dimension

Interaction between people not only involves exchange of knowledge but also creates new knowledge. Communities of practice contribute in transporting knowledge to the company on the one hand and are germ cells for new thoughts on the other hand. Many thoughts that are developed and shared in communities of practice are not conveyed directly to the third party. A person who has not shared certain processes has a tough time understanding their cognition. In many cases, the trust in the integrity of the members of community of practice is given importance as against exact verifiability.

Parts of knowledge can be visualised, fixed and evaluated as result of knowledge transformation.

The questions at the individual level are:
- What have I learnt?
- What can I implement in my daily practice?

— The questions at the level of communities of practice are:
— Which knowledge was created?
— Which parts of our work have the highest demand?
— How have we developed our common resources (methods, language, etc.) further?
— How have we contributed to the value creation process of the entire company?

This analysis helps to connect to the entire organisation or to a network with other communities of practice.

The «Organisational Support» Dimension

The organisational support is decisive in implementing the knowledge for creation of value. This dimension considers the criteria of level of formalisation, restriction and time frame.

While some authors see CoPs as widely self-organised entities which are not accountable to anybody (Wenger 1998a) others argue that CoP must be tightly managed. Along these lines Probst and Borzillo (2008) recommend having a sponsor and a COP leader who are «best practice control agents» and that the COP leader must have a driver and promoter role.

The *extent of formalisation* of communities of practice ranges from complete «indefiniteness» to recognised strategic meaning. Wenger (1998b) came up with five categories of relation to formal organisation (extent of formalisation):
— *Unknown:* unknown to the entire organisation and to some extent even to the member of communities of practice
— *«Illegal»*: visible only informally for a group of people in the environment
— *Legitimised*: approved officially as useful unit
— *Strategic*: widely known as centrally important for the success of the organisation
— *Transformative*: capable of redefining their surrounding and the direction of the organisation

The organisational support from the communities of practice is further characterised by its boundaries or demarcations. Here, one should differentiate between communities of practice within the business units and those that exceed the business units or organisational boundaries. Yet another factor is the geographical distribution of its members. Thus, in terms of boundaries, we can differentiate between local, regional, national, international and global communities of practice.

Another aspect of communities of practice is their demarcation from each other. In reality, the communities of practice often overlap because no clear organisational limits are defined. For instance, this applies to a community of practice that is oriented towards customer satisfaction and other communities of practice that are oriented towards quality where customer satisfaction obviously constitutes the aspect of quality. A conscious overlapping by twin membership helps prevent later conflicts in coordination. Probst and Borzillo recommend forming governance committees with sponsors and COP leaders which discuss and assesses the overall activity of the various COPs in their specific functional area of the organisation.

The following checklist allows the reader to plan communities for success.

Investigation Results

Why Communities of Practice Succeed and Why They Fail

(Probst and Borzillo 2008)

An investigation of 57 COPs from major European and US companies led to the discovery of ten «commandments» that lead to the successful development and sharing of best practices. It also identified five main reasons for failure.

The ten commandments of successful COP governance
1. Stick to strategic objectives
2. Divide objectives into sub-topics
3. Form governance committees with sponsors and COP -Leaders
4. Have a sponsor and a COP leader who are «best practice control agents
5. Regularly feed the COP with external expertise
6. Promote access to other intra- and interorganizational Networks
7. The COP leader must have a driver and promoter role
8. Overcome hierarchy-related pressures
9. Provide the sponsor with measurable performance
10. Illustrate results for COP members

The main reasons for failure of cops
1. Lack of a core group
2. Low level of one-to-one interaction between
3. Members
4. Practice intangibility

4.7 Key Insights of Chapter 4

- There is an increasing international competition for talent.
- We witness the development of a «multiple-class knowledge working society» with different contractual bonds with the company. The roles of upper-level management, middle-level management and specialised employees have been redefined. Same applies to the functions of ICT employees and support employees.
- The knowledge of the company is to a great extent located in the brains of its employees. The evaluation of employee competencies and their targeted development are of great importance.
- Knowledge-based management of a company means creating motives and inspiring environments for employees to convert their creativity knowledge to profit the company and their own development.
- Incentive systems are essential for aligning behaviour for sharing and developing knowledge.
- Knowledge workers increasingly work and interact in (social) networks and share their experiences via communities. Companies should know how to support communities.

4.8 Questions

1. What are the differences between intrinsic and extrinsic motivation? And which are the implications for incentive systems?
2. Please name at least five success factors of communities of practice.

3. The need to share knowledge more broadly has increased as decision making has been pushed down to more people within organisations. While sharing knowledge is important, simply opening the floodgates is risky. Discuss.
4. Which factors influence/determine knowledge worker productivity?
5. List some important competences of a sales representative.

4.9   Assignments

1. **Making knowledge sharing happen**
   For 3 months you have been working in a consulting company. The firm has invited you to join a working group to improve knowledge sharing. The company has an intranet platform, a number of discussion forums and expert groups, but consultants keep important knowledge for themselves and share only information which is not central to their activities. Particular senior consultants are reluctant to share. They have been working for many years in their area of expertise, each of them has a different work style, some think that they are better experts than their colleagues, some of them believe that the firm depends on them and behave like this.

   The working group is asked to analyse the reasons for this behaviour and to propose possible solutions.
2. **"We have to have ideas"**
   The reason that we have to involve everyone in the process,' says Dr. Geoffrey Nicholson, Vice President, Corporate Technical Planning and International Technology Operations, 3M «is because we can't schedule creativity. We don't know who is going to have a good idea. But we do know that to have good ideas, we have to have ideas – the good, bad and the ugly. We must empower the individual to pursue his or her dream to help the good ideas survive.»

   You are asked to propose possible measures. Be inspired by examples of creative firms.

4.10   KM-Tool: The Skill or Competence Matrix

? **What is a skill or competence matrix?**
A skill or competence matrix is a widely proven and suitable method for structuring, evaluating and visualising the distribution of skill or competencies in a unit or a firm (an example is shown. in **▣** Fig. 4.9). It is also easy to apply SMEs.

? **Why use a skill/competence matrix?**
  − The matrix shows were skills/competences are lacking or a unevenly distributed
  − The matrix helps you to assess training needs
  − By the matrix recruitment of new staff (which competences and skills do we need?) and succession planning is supported
  − A wider skill/competence distribution (multiskilling) increases the flexibility of the organisation.

The skill/competency matirx :
overview over levels of proficiency

	Gita	Arun	Maria	Iman
Word	⭐	⭐	⭐	⭐
Powerpoint	⭐		⭐	
Excel	⭐	⭐		⭐
Access			⭐	

⭐ High competence   ⭐ medium competence   ⭐ Basic knowledge

Fig. 4.9 The competence matrix: who can do what and how well?

How to create a skill/competence matrix?

1. List tasks and skills/competences needes to carry-out these tasks.
2. The employees and skills/competencies are placed together in a matrix (see ► Fig. 4.9). Thus, you get an overview of the performance profile of your company. You can see whether particular competencies are covered satisfactorily and plan the creation of new competencies systematically. In a table, the skills that are typically found in daily work in the company are placed next to the employees. You might structure skills/competences according to process steps, technologies, language and social competences.
3. Every employee does his/her own evaluation and in parallel the supervisor assesses the competencies of collaborators. In an appraisal meeting evaluations of both sides are discussed and unified.
4. You can read the competence profile of an individual employee vertically. If you see horizontally, you get an idea of how well the respective competence is covered in the company. Set minimum standards. Depending on the size of the company, one or more employee should have top grades in each competence.
5. Knowledge gaps are formed if none or only one employee has top grades for a competence category. If this person is missing, the efficiency of the company reduces because no employee can fill in with matching skills. You should fill in such knowledge gaps. Create a goal for yourself: For example, in my company, each competence category should have three employees with «+++» and two employees with «++».
6. You can extend the table by entering new competencies. The central question is, «*which skills/competences must be available in the company in one, five or ten years?*» Subdivide the objectives in smaller actions or necessary individual skills.

You can set a deadline in the table for these tasks. It would be useful to note down not only the name of the employees but also further information such as cost centre, scope of work, activities or qualifications (for instance, ability to operate certain machines, first-aid knowledge etc.).

7. You can also use the table to set incentives for the employees. For instance, an employee who has top grades in four competencies would get a bonus.

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