

13 Organization

This chapter will first investigate important aspects of the structural and process organization of the KM initiative (section 13.1). The second section of this chapter will deal with important dimensions of organizational culture, willingness to share knowledge and turnover in employees (section 13.2).

13.1 Organizational design

Organizational design that takes into account the handling of knowledge is not an entirely new phenomenon. Thus, some form of knowledge management is supposedly an ongoing effort in organizations and has been there for a long time. All the tasks related to KM and carried out in an organization are called the KM function in analogy to the information function which describes all tasks in an organization that are related to the efficient and effective use of information and communication technology (Heinrich 1996, 8). Successful organizations have always organized their knowledge resources efficiently (Roehl 1999, 13). However, in many organizations the relevant activities have rested in the hands and minds of talented individuals. New is the systematic approach to the management of the knowledge resource which requires organizational (re-)design.

The most visible phenomenon in this context is the establishment of the position of a Chief Knowledge Officer (CKO) in many organizations which leads to the creation of new corporate executive positions and corresponding organizational units³⁴. New roles are defined, such as subject matter specialists or knowledge brokers, which are assigned responsibility for knowledge-related tasks. The scope of a KM initiative is another important aspect of the organizational design. Organizations differ largely with respect to the share of employees that participates in such an effort.

In the following, the organizational design of the knowledge management function in the responding organizations is described structured into the scope (section 13.1.1), the structural organization (section 13.1.2) and the organization of KM tasks and roles (section 13.1.3).

13.1.1 Scope

An important criterion for the distinction of approaches to knowledge management in organizations is the scope of the KM activities. “Scope” denotes here the share of employees or the share of organizational units (e.g., divisions, departments, work groups related to business processes or the whole organization) that participate in the KM efforts.

It seems that in many organizations the “first steps” of KM are taken by rather small project groups with limited scope, sometimes called “nucleus” of knowledge

34. See Earl/Scott 1999; see also section 6.1.2.1 - “Knowledge manager (CKO)” on page 163.

management (e.g., KM to support one work group, project, business process, business or project goal etc.). Other organizations have a broader view on KM and establish enterprise-wide groups serving the whole organization. Big multinational companies (e.g., Siemens, DaimlerChrysler and the like) have many individual KM efforts on different levels of the organizational hierarchy.

Several measures were used to get a picture of the scope of KM in the organizations or, in other words, the rate of penetration of KM:

- *supported business processes*: number of business processes that are supported as opposed to all business processes if the whole organization is supported,
- *rate of participation*: *breadth of participation*: number of employees, teams/work groups participating in KM efforts divided by the total number of employees, *depth of participation*: number of active participants divided by the total number of employees participating, number of communities/groups of interest supported with the KM initiative,
- *regulation of access to KM-related ICT systems*: number of employees having access to Intranet functions, Groupware and KMS as portion of the total number of employees.

First, it was asked how many *business processes* the organizations targeted with their KM initiatives. About one third of the respondents answering this question (7 out of 20, 35%) did not know how many business processes their organization targeted. This relatively high share might be due to the fact that many organizations had not yet implemented process-orientation in a profound manner. In the interviews, many respondents indicated that their organizations had undergone a process management or a business process reengineering project. However, a substantial portion of the organization was still designed in a more traditional form focused on resources, regions or business functions rather than business processes. The results of the process management efforts was in these cases mainly used to guide the implementation of business standard software (enterprise resource planning systems) or workflow management systems.

Of the remaining 13 respondents answering this question nine did not restrict their KM initiatives to selected business processes, but supported all business processes throughout the organization. The other four respondents focused 2, 3, 4 and 10 business processes respectively (one case per answer). As hypothesized, it seems that process orientation is not yet focused in KM activities of German organizations despite the fact that most organizations had already undergone business process reengineering or process management programs in the past. However, in no case only one business process was focused, in other words, KM is an approach which is implemented to support the flow of knowledge between business processes. This supports Hypothesis 3: 'Knowledge management activities span business processes rather than focusing on exclusively one business process'.

In order to calculate the *rate of participation* of the members of the organizations in knowledge management activities it is useful to first take a look at the distribution of the number of participants and the number of active participants (see Table C-23 and Table C-24).

TABLE C-23. Number of employees participating in KM

number of participants	frequency	percent
< 10	2	5.41
10 – 49	7	18.92
50 – 99	4	10.81
100 - 499	9	24.32
500 - 999	5	13.51
1,000 - 4,999	7	18.92
5,000 - 9,999	2	5.41
≥ 10,000	1	2.70
total	37	100.00

The numbers vary considerably. Three sizes of KM activities can be identified in terms of the *number of participants* with each size being represented by an almost equal number of organizations:

- *small KM activities* with up to 99 participants: 13 cases (35.1%)
- *medium KM activities* with between 100 and 1,000 employees: 14 cases (37.8%)
- *large KM activities* with 1,000 or more employees: 10 cases (27%).

Table C-24 shows the distribution of the responding organizations with respect to the number of active participants.

TABLE C-24. Number of employees actively participating in KM

number of active participants	frequency	percent
< 5	2	6.67
5 - 9	3	10.00
10 - 24	13	43.33
25 - 49	5	16.67
50 - 99	2	6.67
100 - 499	2	6.67
500 - 999	1	3.33
≥ 1,000	2	6.67
total	30	100.00

Active participants are participants who directly or indirectly interact with other participants with the help of KMS. They act for example as authors of knowledge documents published in the KMS or as contributors in newsgroups. As expected,

the number of active participants were in most cases much lower than the number of participants. Seven organizations that provided the number of participants could not tell the number of active participants. It was expected that there would be more passive participants than active ones because it is a lot easier to read than to write a document or to just listen to a discussion than actively participating in it. The numbers of active participants will be compared to the numbers of participants below (see Table C-27 on page 487).

In 18 out of 30 organizations answering this question (60%) the number of active participants was lower than 25. Only five organizations (16.7%) reported more than 100 employees actively participating in their KM efforts. Thus, in many cases KM seems to be a quite exclusive initiative where only a core group of employees is actively involved in.

Table C-25 shows that about two thirds of the KM initiatives supported between 2 and 24 *teams* or *work groups* (13 out of 20 cases, 65%). Only two organizations (10%) had their KM efforts focused on just one team or work group. Another two organizations had organization-wide efforts with a large number of teams or work groups involved. The maximum number of teams/work groups indicated by a respondent was 1,000.

TABLE C-25. Number of teams and work groups participating in KM

number of teams/work groups	frequency	percent
< 2	2	10.00
2 - 4	4	20.00
5 - 9	4	20.00
10 - 24	5	25.00
25 - 49	3	15.00
50 - 99	0	0.00
100 - 499	0	0.00
≥ 500	2	10.00
total	20	100.00

Table C-26 shows the number of *communities* the organizations supported. Only 11 out of those 39 organizations (28.2%) which answered at least one of the questions about the rate of participation reported on the number of communities. One might suppose that many of the other organizations do not apply the concept of a community in a systematic way at all. Of these eleven organizations, only two organizations (18.2%) had more than ten communities with a maximum of 100 communities which could be seen as an intensive application of the concept.

In three cases (27.3%) only one community was established. This might be a community of those members of the organization who are interested in KM—the “KM community”. Thus, it seems that the community concept is still in its infancy

with most organizations not having supported any communities systematically and those who have communities just use a very small number of such collectives. The “real” share of organizations exploiting more or less systematically the concept of theme-oriented informal collectives of people might be higher than the 28.2% found here.

TABLE C-26. Number of communities participating in KM

number of communities	frequency	percent
< 2	3	27.27
2 - 4	4	36.36
5 - 9	2	18.18
10 - 24	1	9.09
25 - 49	0	0.00
50 - 99	0	0.00
100 - 499	1	9.09
≥ 500	0	0.00
total	11	100.00

One interviewee responsible for KM in a large industry organization responded that his organization does not call their networks communities, but “knowledge networks”. This is due to the fact that members of these networks are suggested by a central KM unit that also supports the networks. Consequently, these networks lack the self-organizing character of communities³⁵. Also, the networks observed in the interviews were of varying degrees of formality from unrecognized or bootlegged communities unknown to the next level of hierarchy to strategic or even transformative collectives openly supported by the organization by allocated time and budgets (e.g., in the case of a post-merger integration project).

In the 1998 KPMG study, 63% of the organizations with a KM initiative said they had already established some form of informal KM network (KPMG 1998, 13). It might be that in some of the organizations these networks could be qualified as communities or as a network of employees interested in KM or both. The observation that organizations with KM initiatives pay a lot of attention to informal networks of knowledge sharing is supported by the finding that while 63% of the organizations established informal KM networks, only 40% had formal KM networks (KPMG 1998, 13).

In the following, the number of participating employees or employees with access to certain KM-related ICT systems will be compared to the total number of

35. See section 6.1.3.3 - “Communities” on page 180.

employees. Table C-27 shows the distribution of responding organizations according to the two measures for participation and KM activity:

- *rate of participation*: the share of employees participating in KM activities compared to the total number of employees (Table C-27),
- *rate of KM activity*: the share of active participants compared to the number of employees participating in KM activities (Table C-28).

In seven organizations (18.9%), all employees participated in the KM activities, thus the *rate of participation* was 100% (see Table C-27). In eight organizations (21.6%), less than one percent of the employees shared in the benefits of KM efforts. In more than two thirds of the organizations (70.3%) less than half of the employees participated. Generally, the rate of participation varied widely: from core groups or nuclei of knowledge management (share < 1%, 8 cases) via low (< 10%, 6 cases), medium (< 50%, 12 cases) and high penetration (< 100%, 4 cases) to all-encompassing efforts (100%, 7 cases).

TABLE C-27. Rate of participation

$x = \frac{\text{participants}}{\text{employees}}$	frequency	percent
$x < 0.10\%$	3	8.11
$0.10 \leq x < 1.00\%$	5	13.51
$1.00 \leq x < 10.00\%$	6	16.22
$10.00 \leq x < 25.00\%$	6	16.22
$25.00 \leq x < 50.00\%$	6	16.22
$50.00 \leq x < 75.00\%$	3	8.11
$75.00 \leq x < 100.00\%$	1	2.70
100%	7	18.92
total	37	100.00

Concerning the *rate of KM activity*, in more than two thirds of the organizations (69%) at least every tenth participant actively contributed to KM whereas in only one case the rate was lower than 1 percent (see Table C-28). The mean rate of KM activity in the responding organizations was 32.5%. Thus, it can be concluded that KM is in most organizations a highly interactive effort turning a great proportion of the supported employees from passive receivers of organizational communication into active participants of KMS.

The distinction between a high and a low rate of KM activity is especially important for mid-range KM initiatives because it might reflect the process of selecting participants. If experts with special KM needs spread across organizational units are selected, then the rate of KM activity will be high. If a selected business process or organizational unit is targeted no matter whether there are a

sufficient number of experts who can actively contribute, then the rate of KM activity will be low. The rate of KM activity is an important descriptor of an organization's KM initiative, especially if it is related to other measures.

TABLE C-28. Rate of KM activity

$x = \frac{\text{active-participants}}{\text{participants}}$	frequency	percent
$x < 0.10\%$	0	0.00
$0.10 \leq x < 1.00\%$	1	3.45
$1.00 \leq x < 10.00\%$	8	27.59
$10.00 \leq x < 25.00\%$	6	20.69
$25.00 \leq x < 50.00\%$	6	20.69
$50.00 \leq x < 75.00\%$	3	10.34
$75.00 \leq x < 100.00\%$	3	10.34
100%	2	6.90
total	29	100.00

One of the most propagated benefits of the use of KMS is that a lot more employees would actively contribute to KMS due to the fact that it is a lot easier to publish documents or to share in an electronic discussion than before (Hypothesis 21: 'Organizations with KMS have a higher rate of KM activity than organizations without KMS'). The hypothesis was tested using the correlation between the rate of KM activity as the first variable and whether or not the organizations used KMS as the second variable. The correlation showed a negative sign meaning that those organizations that had KMS had a higher rate of KM activity, but the correlation was not significant (Spearman's rho: -0.112, significance: 0.571, n=28). A more detailed analysis reveals that those organizations that had exclusively used KMS bought on the market had a significantly higher rate of KM activity (Spearman's rho: -0.387, significance: 0.042, n=28). The hypothesis therefore was supported for organizations with KMS bought on the market, but rejected for organizations with KMS developed internally³⁶.

As mentioned above, the rate of KM activity decreased with an increasing rate of participation. The corresponding negative correlation was highly significant (Spearman's rho: -0.523, significance: 0.004, n=29). The average rate of KM activity was 65% in organizations with core KM groups and a rate of participation smaller than 1% and compares to a low average rate of KM activity of 12.8% in organizations with a high rate of participation of 50% or more. Table C-29 com-

36. For this distinction see also section 14.1.2 - "Knowledge management systems" on page 526.

compares the average rate of KM activity for organizations with a low, medium and high rate of participation.

TABLE C-29. Rate of participation and rate of KM activity compared

x = rate of participation	rate of KM activity (in %)		
	mean	std.dev.	n
x < 1.00%	65.00	32.27	7
1.00 ≤ x < 50.00%	25.66	24.97	16
50.00 ≤ x ≤ 100.00%	12.84	13.62	6

Table C-30 shows the distribution of responding organizations according to the share of employees having *access to email* and *WWW* in a restricted or unrestricted form.

TABLE C-30. Shares of employees with access to email and WWW

x = share of: ^a	internal email		unrestr. email		restr. WWW		unrestr. WWW	
	freq.	percent	freq.	percent	freq.	percent	freq.	percent
x < 0.10%	1	1.45	1	1.56	0	0.00	2	3.08
0.10 ≤ x < 1.00%	0	0.00	0	0.00	2	9.52	5	7.69
1.00 ≤ x < 10.00%	5	7.25	10	15.63	4	19.05	26	40.00
10.00 ≤ x < 25.00%	8	11.59	11	17.19	5	23.81	10	15.38
25.00 ≤ x < 50.00%	14	20.29	10	15.63	5	23.81	7	10.77
50.00 ≤ x < 75.00%	7	10.14	6	9.38	2	9.52	4	6.15
75.00 ≤ x < 100.00%	11	15.94	7	10.94	2	9.52	1	1.54
100%	23	33.33	19	29.69	1	4.76	10	15.38
total	69	100.00	64	100.00	21	100.00	65	100.00

a. legend: freq. = frequency; restr. = restricted, unrestr. = unrestricted

Generally, by now every organization surveyed had access to the Internet. The organizations varied widely with respect to the rate of penetration—the share of employees with access to the Internet. Access to email was standard for at least half of the employees in 41 out of 69 organizations (59.4%) in the restricted and 32 out of 64 organizations (50%) in the unrestricted case.

In the case of the WWW, only 15 out of 65 organizations (23.1%) had unrestricted access to the WWW established for more than half of their employees. In most organizations, between 1 and 25% of the employees had access to the WWW (36 out of 65 cases, 55.4%). In the majority of organizations that restricted the use

of the WWW between 1 and 50% of the employees had access to restricted parts of the WWW (14 out of 21 cases, 66.7%). The overall means of the share of employees were in the case of internal email 62.7%, in the case of unrestricted email 54.1%, in the case of restricted WWW 32.2% and in the case of unrestricted WWW 28.2%.

Industry organizations reported on average a significant smaller share of employees with access to internal (mean = 47.8%) and unrestricted email (mean = 40.1%) than service organizations with means of 78.1% and 68% respectively (Spearman's rho: 0.462, significance: 0.000064, n=69 for internal email, Spearman's rho: 0.351, significance: 0.00451, n=64 for unrestricted email). However, in the case of both, restricted and unrestricted WWW, the differences were not significant. Thus, Hypothesis 2: 'Service organizations have a higher share of employees with access to KM-related systems than industry organizations' is predominantly supported for the basic information and communication infrastructure supporting KM.

Table C-31 shows the same measures for employees having access to more advanced systems like *external on-line knowledge sources*, *Groupware*, *knowledge management systems* and *other Internet services*.

TABLE C-31. Shares of employees with access to advanced Internet systems, Groupware and KMS

x = share of: ^a	ext. sources		Groupware		KMS		Internet services	
	freq.	percent	freq.	percent	freq.	percent	freq.	percent
x < 0.10%	2	3.77	2	5.71	2	12.50	0	0.00
0.10 ≤ x < 1.00%	11	20.75	0	0.00	2	12.50	3	14.29
1.00 ≤ x < 10.00%	19	35.85	5	14.29	0	19.05	5	23.81
10.00 ≤ x < 25.00%	6	11.32	4	11.43	2	12.50	4	19.05
25.00 ≤ x < 50.00%	6	11.32	3	8.57	2	12.50	2	9.52
50.00 ≤ x < 75.00%	3	5.66	5	14.29	1	6.25	0	0.00
75.00 ≤ x < 100.00%	1	1.89	4	11.43	2	12.50	2	9.52
100%	5	9.43	12	34.29	5	31.25	5	23.81
total	53	100.00	35	100.00	16	100.00	21	100.00

a. legend: freq. = frequency; ext. = external

There were fewer valid responses to the questions of employees having access to external electronic sources for information and knowledge, other Internet services, Groupware and especially to KMS. This is partly due to the fact that many organizations had no KMS in place. A part can also be attributed to the fact that a substantial portion of respondents had to be omitted because they obviously misunderstood the question and indicated the number of different Groupware platforms

they used (21 respondents misunderstood the question, 33.9% of all respondents answering this question) or KMS in use (8 respondents, 15.4%) instead of the number of employees having access to these systems.

In most organizations, having access to external sources was a rather exclusive privilege. In 60.4% of the organizations (32 out of 53) less than 10% of the employees had access to external sources. However, as the organizations were large on average, the absolute numbers still by far exceeded a mere group or department. In 68% of the organizations (36 out of 53), 50 or more employees had access to external sources.

In the case of KMS and especially Groupware, the picture is quite different. In about a third of the organizations answering these questions every employee had access to Groupware and KMS. Groupware platforms were accessible by at least half of the employees in 60% of the cases (21 out of 35). Only 7 organizations (20%) reported less than 10% of the employees with access to Groupware. In the case of KMS the distribution was quite similar to Groupware with the exception that 4 organizations (25%) reported less than 1% of the employees with access to KMS. The organizations can be split into three groups according to their policy for accessing KMS. Half of the organizations had a high rate of penetration concerning their KMS with more than half of their employees and in most cases more than 1,000 employees having access to KMS. Some organizations had a very restrictive rollout of their KMS with fewer than 10 employees having access (= less than 1% of the employees). In the rest of the organizations a larger group of employees had access to KMS with anywhere in between 30 and 450 employees (= between 1 and 50% of the employees).

The organizations were fairly evenly distributed with respect to the share of employees with access to other Internet services, e.g., newsgroups. About a third of the organizations reported 75% or more of the employees and again about a third of the organizations reported less than 10% of the employees with access to other Internet services. The earlier might have a completely unrestricted access policy with access to all services for (almost) every employee and the latter might view only a small group of employees as working on organizational tasks that required them to efficiently use advanced Internet services.

Again, industry organizations reported on average a significantly smaller share of employees with access to external sources (mean = 14.1%), Groupware (33.1%) and KMS (28.9%) than service organizations with 28.4% for external sources, 80% for Groupware and 74.8% for KMS respectively (Spearman's rho: 0.387, significance: 0.00421, n=53 for external sources, Spearman's rho: 0.621, significance: 0.000069, n=35 for Groupware and Spearman's rho: 0.578, significance: 0.019, n=16 for KMS). In the case of other Internet services, the difference is not significant. Thus, Hypothesis 2: 'Service organizations have a higher share of employees with access to KM-related systems than industry organizations' again is predominantly supported for these advanced KM-related systems. Service organizations reported on average a very high share of employees with access to Groupware or KMS when these systems were in place. In most of the service organizations both,

Groupware and KMS, were seen as organization-wide platforms for the quick and easy exchange of knowledge whereas in industry organizations these platforms remained reserved for a much smaller portion of the employees.

13.1.2 Structural organization

The design of the structural organization of KM efforts varies greatly in practice. Indicators are the organizational positioning of the KM effort (level of reporting of the head of KM), the organizational design of the KM initiative or of a separate KM unit as well as the overall size of the effort in terms of the number of employees and the budget allocated for KM³⁷.

The design alternatives range from an informal initiative with no separate organizational unit or project over a temporary installation of KM as a project to a fixed, formal installation in the organizational hierarchy either as a service unit or as a functional unit. Thus, an ordinal variable has been defined that describes a range of design alternatives for the structural organization of the KM function which ranges from a formal, lasting approach to an informal, temporary approach:

1. separate organizational unit (formal, lasting),
2. project (formal, temporary),
3. no separate organizational unit (informal).

In the case of “no separate organizational unit”, KM initiatives were performed either by committees with a budget coming from each member of the committee and senior management support, or by entirely informal initiatives not supported by formal authorities.

Figure C-7 shows what kind of organizational design the organizations applied for their KM initiatives.

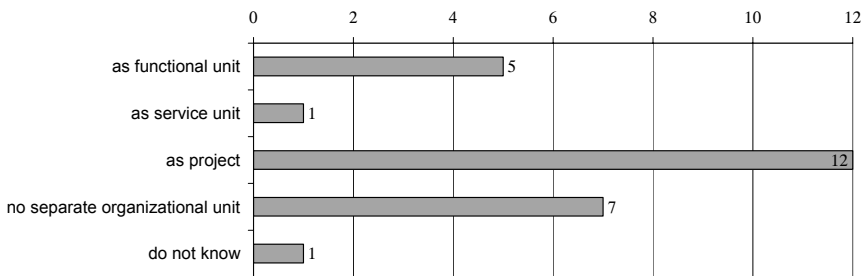


FIGURE C-7. Organizational design of the KM function³⁸

Almost three quarters of the organizations (70.4%) had established the KM function either as a project (12 out of 26 organizations responding to this question, 46.2%) or informally with no separate organizational unit (7 organizations,

37. See section 15.1 - “Funding” on page 564.

38. n=26.

26.9%). Six organizations (23.1%) had a formal organizational design with all but one organized as a functional unit (e.g., group or department). One respondent indicated that their KM initiative was organized as a service unit (staff).

In the case of KM activities with no formal organizational unit, most organizations established or supported a committee or network of employees interested in KM to develop the initiative which might be approved and turned into a project or a formal organizational unit later.

Similarly, the FH Cologne found 38.5% of the organizations surveyed with no separate organizational unit responsible for KM: 28.7% performed KM activities together with like-minded colleagues and 9.8% of the organizations had only one single person engaged in KM (Döring-Katerkamp/Trojan 2000, 4). However, 83.2% of the respondents in that study said that KM was an “official” theme in their organizations and in 70.5% of the organizations KM was also supported by management (Döring-Katerkamp/Trojan 2000, 4). The higher share of organizations with no formal organizational unit compared to the study presented here can be explained by the fact that the organizations surveyed by the FH Cologne on average were smaller and had less experience with KM. About two thirds of the organizations (64.5%) had started KM within the last year (Döring-Katerkamp/Trojan 2000, 2f, 5). There are supposedly fewer resources to fund a separate organizational unit or even a dedicated KM project in smaller organizations. Still, 31.7% had a KM project and 21.9% had a separate organizational unit (Döring-Katerkamp/Trojan 2000, 4). Like in the study presented here, there were more projects than formal organizational units responsible for KM.

Jäger/Straub found similar results in the TOP 200 German organizations in 1999 with only a minority of organizations having institutionalized a separate organizational unit responsible for KM. Most of these organizations had KM projects or were planning to start one (Jäger/Straub 1999, 21).

In the APQC benchmarking study 7 out of 11 organizations had a centralized KM function that was partly responsible for KM activities (APQC 1996, 47). The organizations investigated by the APQC were pioneers in KM and considered knowledge as an important part of the products or services they sell. Thus, it seems that the more serious an organization is about the implementation of KM, the more likely it is to have established a separate organizational unit, even though no organization exclusively relies on the centralized approach, but also defines decentral KM roles & responsibilities within the business units³⁹.

To sum up, KM is organized in a variety of ways in the organizations with a trend towards more formal organizational design. Those organizations that set up a separate organizational unit or a project dedicated to KM use a variety of approaches. Considering the statements made by knowledge managers in the interviews, there are at least three approaches to be distinguished:

- *new informal initiative*: A number of employees set up a community which starts out rather informally and might get supported or funded by senior man-

39. See also section 13.1.3 - “Knowledge management tasks and roles” on page 498.

agement and (later) turned into a formal initiative, either as a KM project or as a separate organizational unit.

- *new formal initiative*: KM is implemented as a separate project or organizational unit with employees assigned partly or exclusively to this initiative from the beginning.
- *extending an existing organizational unit*: The to-do-list of an already existing department is changed or extended to include KM. Examples for former names of the unit are: market research, competence center, technology management, center for business intelligence. This approach can be found in many professional services companies which had turned those organizational units into KM units that previously had helped “front line” consultants to satisfy their information needs. In the 1998 KPMG study, a third of the organizations who had a named person responsible for KM said it was a person in an existing position whose responsibility was extended to include KM (KPMG 1998, 13).

Table C-32 shows which hierarchical level KM reported to. In 13 of the 16 organizations responding to this question KM reported to the first or second level of the organizational hierarchy (81.25%) with five organizations (31.25%) reporting directly to the board of directors or chief executives.

TABLE C-32. Hierarchical level to which knowledge management reports

KM reporting level	frequency	percent
1	5	31.25
2	8	50.00
3	1	6.25
4	2	12.50
valid total	16	100.00

Thus, in most cases KM was located on a high organizational level. This reflected the strategic relevance organizations attributed to this function. The result is supported by the 1998 KPMG study that found in 60% of the organizations a member of the board being responsible for the KM initiative (KPMG 1998, 13).

There is a significant correlation between the total number of hierarchical levels in an organization (see also Table C-19 on page 470) and the hierarchical level KM reports to (Spearman’s rho: 0.509, significance: 0.0439, n=16). The more hierarchical levels there are the lower is the reporting level of KM.

The *relative KM reporting level* is defined as follows:

$$rrl(KM) = \frac{hl - rl(KM)}{hl - 1}$$

rrl(KM) = relative KM reporting level

hl = number of hierarchical levels

rl(KM) = KM reporting level

Thus, the relative KM reporting level is defined in the interval $[0;1]$. A mean of 0.73 shows that the average KM reporting level is quite high. Table C-33 shows the distribution of organizations according to the KM reporting level relative to the number of hierarchical levels in the organization.

TABLE C-33. Relative knowledge management reporting level

x = relative KM reporting level	frequency	percent
$x < 0.40$	1	6.25
$0.40 \leq x < 0.60$	4	25.00
$0.60 \leq x < 0.80$	3	18.75
$0.80 \leq x < 1.00$	3	18.75
$x = 1.00$	5	31.25
valid total	16	100.00

21 organizations answered the question “Is knowledge management organizationally embedded in a functional area (e.g., Marketing, Research & Development, IT). If yes, in which functional area is knowledge management embedded?”. 38.1% of the organizations (8 respondents) said that KM was not part of a functional area and the remaining 61.9% (13 respondents) said it was part of a specific functional area. Table C-34 shows which functional areas KM was embedded in.

TABLE C-34. Functional areas in which KM is embedded

functional area	frequency	percent
(centralized) technical area	4	30.77
information technology (IT)	4	30.77
research & development	2	15.38
sales	1	7.69
strategic development	1	7.69
other	1	7.69
total	13	100.00

In 8 cases (61.5%) KM was part of a technical area, either a technical department, the technology area, IT or information management. The technical departments were usually those organizational units that handled the organization’s product and process innovations and thus were obvious candidates in need of a more systematic handling of knowledge. In the cases where the IT departments were responsible for KM, the KM effort primarily consisted of the implementation of an ICT infrastructure and the corresponding organizational processes supporting the handling of knowledge. In two organizations KM was part of R&D. One KM ini-

tiative was placed in the sales area (customer relationship management) and one initiative was part of the strategic development group. One respondent used an internal organizational code unknown to the author shown in the table as “other” functional area.

Comparing these results to those of related studies helps to detail this picture. Table C-35 gives an overview of what organizational units were found as being responsible for KM or as advancing KM as a topic in the organizations.

TABLE C-35. Related empirical studies compared concerning organizational units responsible for KM

organizational unit	KPMG 1998	Jäger/ Straub 1999	FH Cologne 2000	FH Cologne 2001
IT/organizational design	44.1%	11.1%	22.2%	27.0%
strategic development/planning	20.3%			13.0%
functional area	8.5% ^a		14.3% ^b	26.0% ^c
human resource management	11.9%	55.6%	2.0%	
research & development		14.8%		16.0%
internal communication		11.1%		
board of directors, CEO, CKO	15.3% ^d		21.3% ^e	
interdisciplinary team			40.2%	

a. finance

b. a functional area with a KM project

c. marketing and sales

d. every department head or every director (6.8%); CKO (8.5%)

e. board of directors or CEO

The results differ widely which can be attributed at least partially to the substantial differences between the samples of the related empirical studies⁴⁰. Also, the typologies of the organizational units used in these studies differ which explains some of the differences and empty cells in Table C-35 (e.g., only one study used the category “interdisciplinary team”).

In the 1998 KPMG study, of those organizations which had appointed responsibility for their KM initiative, it was put in the hands of an IT function (44.1%), strategic development or business improvement respectively (20.3%), HRM (11.9%) or finance (8.5%). The rest of the organizations either had every department head or board director responsible (6.8%) or they had established a dedicated CKO position responsible for the initiative (8.5%, KPMG 1998, 14).

40. See section 10.1 - “Surveys” on page 439.

The FH Cologne found 40.2% of the organizations having appointed an interdisciplinary KM team responsible for the initiative (Döring-Katerkamp/Trojan 2000, 5). Unfortunately, the study did not ask for what disciplines participated in these teams. In 21.3% of the organizations the board of directors or the CEO were responsible for KM, 14.3% assigned responsibility to a functional area with a concrete KM project, 13.5% held IT responsible, 8.6% organizational design and 2% HRM. In the same study, about a third of the respondents (33.5%) reported that they had called in or planned to call in external support (e.g., by consultants, Döring-Katerkamp/Trojan 2000, 9).

In the follow-up study performed in 2001, it were IT (27%), R&D (16%), planning (13%), marketing (13%) and sales (13%) that primarily advanced KM as a topic (Döring-Katerkamp/Trojan 2001, 3). Compared to the earlier study of the FH Cologne responsibility seemed to have moved higher up the organizational hierarchy. In 49% of the organizations the board of directors decided about the implementation of KM, in 20% it was a head of a division/functional area and in only 6% it was a department head (Döring-Katerkamp/Trojan 2001, 2).

Jäger/Straub found that in 55.6% of their cases HRM was responsible for KM. This surprisingly high share can be explained by the fact that their questionnaire was directed to the HR managers of organizations. Strategic development and R&D scored second with 14.8% each followed by internal communication and IT with 11.1% each (Jäger/Straub 1999, 21).

Taken all these results together, many organizations placed their KM efforts within IT which is all the more interesting because in the literature KM is certainly viewed as a function which should be placed outside technical departments to show its clear non-technical focus. One explanation for this finding could be that in the beginning, KM was mostly occupied with technical issues like developing the information and communication infrastructure suitable for KM in these organizations. This might be the installation of a corporate Intranet which in most organizations is certainly seen as an IT task.

Apart from the major role that IT plays in many KM efforts, the findings vary widely as to what other organizational units were responsible for KM. At least three different approaches can be distinguished:

- KM is assigned to a concrete project or program within a functional area, such as marketing or sales, within R&D or a technical department that have a serious interest in applying KM instruments,
- KM is advanced as part of the organization's strategic development, planning or HRM programs,
- the board of directors, a member of the board or the CEOs themselves are responsible for the KM initiative.

In accordance with the literature, in many organizations KM involves a number of different departments that are each responsible for a certain part of the effort. This suggestion is supported by the results in the FH Cologne 2000 study that found most of the organizations had appointed interdisciplinary teams reflecting the heterogeneity of requirements encountered when implementing KM. The state-

ments that were made in the interviews seemed to point in that direction as well. Some organizations had split their KM efforts into a technical department being responsible for the set up of the electronic infrastructure and a functional area (e.g., corporate strategy) being responsible for the (non-technical) KM concept. The latter might include the structuring of the content, the organization of KM events and the internal “selling” of KM to knowledge workers, the establishment of communities and the like.

However, the interdisciplinary nature of KM teams might also be at least partly responsible for the lack of a clear definition, model or goals of KM in the organizations. Only 42.9% of the organizations surveyed by the FH Cologne had developed a common understanding of KM or had taken over an existing KM model (e.g., the building blocks for KM, Probst et al. 1998). Also, just 40.8% of the organizations had a clarified understanding of how KM should be implemented in their organization (Döring-Katerkamp/Trojan 2000, 6).

13.1.3 Knowledge management tasks and roles

Apart from the structural organization it is primarily the systematic design of KM tasks and the consequent assignment of responsibility for KM-related tasks to roles that makes knowledge processes visible and subject to evaluation and improvement. It is interesting to know to what extent organizations have already implemented KM tasks, whether they have assigned formal responsibility for these tasks, who is responsible for the KM tasks in organizations and finally whether KM tasks are performed centrally or decentrally. Due to the limitations of a written questionnaire, the focus was on the most important KM-related tasks which have an impact on the use of KMS or can be supported by KMS (see also below). The extensive list of KM roles presented in part B had to be substantially reduced⁴¹.

The list of KM tasks as used in this study does not cover all knowledge-related tasks which have been discussed in the literature⁴². The list was derived from the definition of knowledge management systems⁴³ and the model of the tasks and flows in knowledge management⁴⁴. Figure C-8 once again shows this model with those KM tasks highlighted that were used in the questionnaire.

All four levels, the strategic level, the design level, the operational management level and the operational level were considered in the questionnaire. One of the goals here is to determine the degree of centrality of the KM initiatives. Thus, those tasks were selected that

- were supposedly well suited to differentiate between organizational design alternatives with respect to the degree of centrality. The selection of the tasks was based on a number of expert interviews before the questionnaire in which vary-

41. See section 6.1.2 - “Knowledge management roles” on page 162.

42. See section 6.3.1 - “Knowledge management tasks” on page 207.

43. See section 4.3 - “Knowledge management systems” on page 82.

44. The model was presented in chapter 6 - “Organization” on page 153; see particularly Figure B-22 on page 154.

ing organizational designs of knowledge management were identified and compared to each other,

- the corresponding questions could be quite easily understood and answered by a single respondent in an organization.

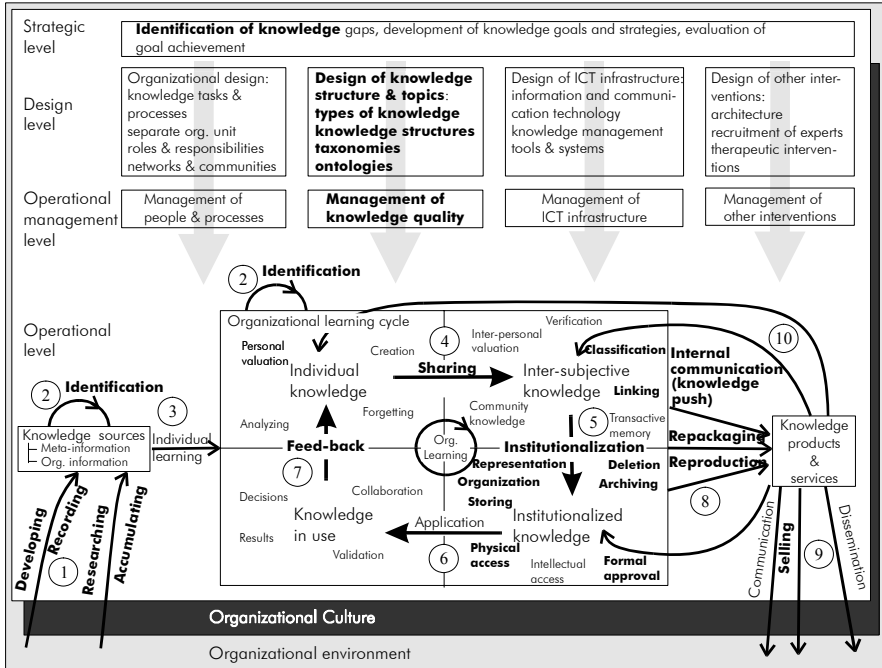


FIGURE C-8. Model of the tasks and flows in KM and its application in the questionnaire⁴⁵

Strategic level. On the strategic level, the identification of knowledge was selected because every organization engaged in a KM initiative more or less fulfilled this task. Identification is an ongoing effort due to the dynamic nature of an organizational knowledge base and thus is also an operational task.

Design level. On the design level as well as the operational management level, the focus was on the design of the knowledge structure and topics. The assignment of responsibility for the design of the content of KMS was found to be a crucial task in a KM initiative. The organizational design alternatives reach here from a central and rigid approach with one committee defining the structure and categories which can only be changed by that committee to a decentral approach where every participant can alter the knowledge structure (e.g., add a new category).

45. Tasks considered in the study are highlighted.

As for the other two elements on the design level, the organizational design of the KM function is assumedly a quite central task which might be influenced by broader groups, but not fulfilled. The organizational design was considered elsewhere in the questionnaire⁴⁶. As for the design of the ICT infrastructure, the corresponding processes and tasks were in most organizations part of the IT function and thus the organizational design was dependent primarily on the organizational design of the IT function.

Operational management level. Management of the knowledge structure and topics in terms of operational management is primarily a task of managing knowledge quality which was reworded into quality assurance of knowledge elements in order to be well understood by the respondents.

Operational level. On the operational level all KM tasks except for *individual learning* and *application* were considered. These two tasks were omitted because every individual or participant targeted by a KM initiative is responsible to learn on his or her own and to apply the knowledge so that there are supposedly no organizational design alternatives for these tasks.

The complete list of KM tasks finally used is as follows (in case of rewording of tasks the original terms as used in Figure C-8 are given in parenthesis):

- identification of knowledge,
- acquisition of external knowledge (developing, recording, researching, accumulating),
- semantic release of new knowledge elements (formal approval),
- storing of new knowledge elements (representation, storing, physical access),
- integration of knowledge into existing structure (knowledge classification, linking, organization),
- update of knowledge structure (design of knowledge structure and topics),
- distribution of knowledge (internal communication, knowledge push, knowledge sharing),
- quality assurance of knowledge elements (management of knowledge quality),
- refinement of existing knowledge (repackaging, reproduction; feedback),
- deletion or archiving of knowledge,
- selling of knowledge.

In the following, the roles that are responsible for the KM tasks are focused. Central hypothesis in this section is that the organizational design alternatives of KM efforts differ largely in terms of centralization. The extreme points of the dimension centralization are:

- a liberal, laissez-faire approach where only the base technology in the sense of an information and communication infrastructure is installed and content of

46. See section 13.1.2 - "Structural organization" on page 492.

knowledge repositories as well as networks and communities of participants evolve on their own and

- a central approach where all the knowledge elements are developed, institutionalized and distributed by one single central KM unit and where networks are established by central authorities.

These are only the extreme points. Actual implementations in organizations supposedly use a mixed approach in which some KM tasks will be more centralized than others. Therefore, it was examined (a) whether KM tasks were fulfilled centrally or decentrally and (b) which role was responsible for what KM tasks. The questionnaire contained for each KM task the following checkboxes:

- *central*: task is carried out centrally,
- *decentral*: task is carried out decentrally,
- *not fulfilled*: task is not carried out at all,
- *no responsibility*: task is carried out, but no specific responsibility is assigned for it,
- *do not know*: respondent does not know about the assignment of responsibility for this specific KM task.

Additionally, the questionnaire comprised knowledge management roles for each KM task. The list of KM roles⁴⁷ had to be simplified for the questionnaire for two pragmatic reasons: firstly, the results should be comparable to each other. Thus, the questionnaire had to contain terms that were widely used in practice. What is called a knowledge integrator might be called a knowledge steward or knowledge administrator in a different organization. Additionally, a knowledge broker in one organization might have an entirely different list of tasks and responsibilities assigned than a knowledge broker in a different organization (homonyms/synonyms). It seemed impossible to use such vaguely defined terms in a questionnaire as long as KM roles have not been consolidated. Secondly, the full list of roles would have been too long to be included into the questionnaire. However, the full list was used in the interviews to get a more detailed picture of the distribution of responsibility in the organizations. Finally, the following three roles were distinguished in the questionnaire:

- *knowledge manager/integrator*,
- *subject matter specialist*,
- *participant/author*.

The three roles were predefined in the questionnaire and just had to be checked. Again, these three roles reflect different degrees of centralization. The knowledge manager is the most central role responsible for certain knowledge processes or tasks. He or she resides within a separate organizational unit (no matter whether temporarily as project manager or permanently as head of a department). The subject matter specialist is an expert in a specific (or a list of specific) topic(s) and is

47. See section 6.1.2 - "Knowledge management roles" on page 162.

responsible for exactly this (list of) topic(s). Supposedly, there are a much larger number of subject matter specialists than the number of knowledge managers. Also, subject matter specialists are supposedly formally recognized in the respective organizations. Thus, it is assumed that to assign responsibility to a subject matter specialist is less central than to assign responsibility to a knowledge manager. Lastly, to assign responsibility to the participants means a decentralized approach, because every employee with access to KMS is responsible for the respective knowledge process or task.

In the following, the results are presented for all tasks according to the organizational design variables (de-) centralization and roles responsible for the tasks⁴⁸.

Figure C-9 shows the distribution of responsibility to the KM roles according to the eleven KM tasks as defined above.

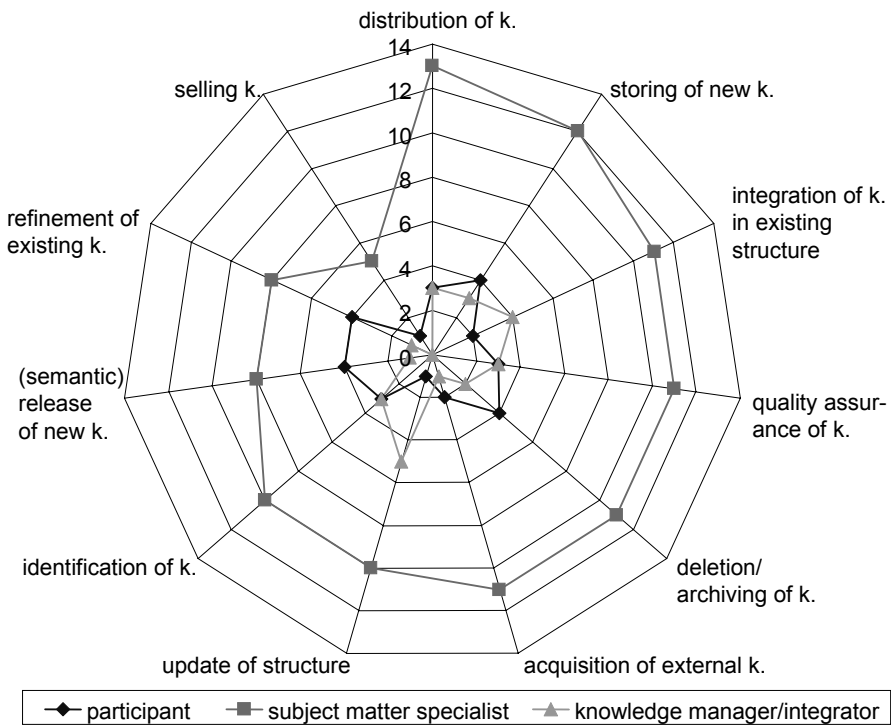


FIGURE C-9. Responsibility for KM-related tasks assigned to knowledge management roles⁴⁹

48. The detailed results for the individual tasks can be found in URL: <http://iwi.uibk.ac.at/maier/kms/>.

49. Legend: k.=knowledge.

The data points show the number of respondents who indicated that their organization had established the corresponding role responsible for a particular KM task. Example: in the case of distribution of knowledge 13 respondents indicated that they held subject matter specialists responsible for this task. Multiple responses were possible to indicate that more than one role was responsible for a certain task. The KM tasks are ordered clockwise according to descending values for subject matter specialist (first criterion) and for knowledge manager/integrator (second criterion).

In the majority of cases subject matter specialists were responsible for the tasks. This is true for every KM task questioned. Participants were held responsible in only a few organizations. The only tasks for which in more than three cases participants were responsible were *storing of new knowledge*, *(semantic) release of new knowledge*, *refinement of knowledge* and *deletion/archiving of knowledge*. These tasks can be compared to the basic operations insert, grant privileges, update and delete of a relational data base system. All other tasks were not in the hands of the participants in all but one or at most two organizations, especially the design task *update of the structure*, but also the *integration of knowledge into an existing structure* and those tasks that cross organizational boundaries, *acquisition of external knowledge* and *selling of knowledge*.

Knowledge managers or integrators in many cases seemed to cooperate with subject matter specialists in order to administer the knowledge structure(s). Apart from these tasks, knowledge managers were rarely held responsible for KM tasks. *Selling of knowledge* is a special case. Most organizations currently do not seem to care about this new and potentially profitable source of revenue.

Table C-36 gives an overview of the share of organizations that assigned responsibility for KM tasks to more than one role and/or to both, central and decentral units.

TABLE C-36. Assignment of responsibility to multiple roles

KM task	multiple roles		central and decentral	
	frequency	percent	frequency	percent
deletion/archiving of knowledge	5 of 12	41.67	2 of 11	18.18
storing of new knowledge	5 of 14	35.71	4 of 12	33.33
distribution of knowledge	5 of 14	35.71	5 of 12	41.67
update of structure	4 of 12	33.33	5 of 10	50.00
refinement of existing knowledge	3 of 10	30.00	3 of 7	42.86
knowledge identification	3 of 12	25.00	2 of 12	16.67
quality assurance of knowledge	3 of 13	23.08	3 of 9	33.33
integration of knowledge in existing structure	3 of 14	21.43	4 of 10	40.00
release of new knowledge	2 of 11	18.18	1 of 10	10.00

TABLE C-36. Assignment of responsibility to multiple roles

KM task	multiple roles		central and decentral	
	frequency	percent	frequency	percent
acquisition of external knowledge	2 of 12	16.67	2 of 15	13.33
selling of knowledge	0 of 6	0.00	2 of 9	22.22

One can conclude that the *degree of centralization* of knowledge management is low for tasks on the *operational level* (with subject matter specialists and participants in most cases responsible for the corresponding tasks) and medium for tasks on the *level of operational management*, the *design level* and for the *strategic level* (subject matter specialists, knowledge managers). However, as subject matter specialists could either belong to central or decentral parts of the organization, more clarification is needed on the degree of centralization.

Figure C-10 shows the results to the question whether the knowledge processes and tasks were assigned to central or decentral positions or roles respectively.

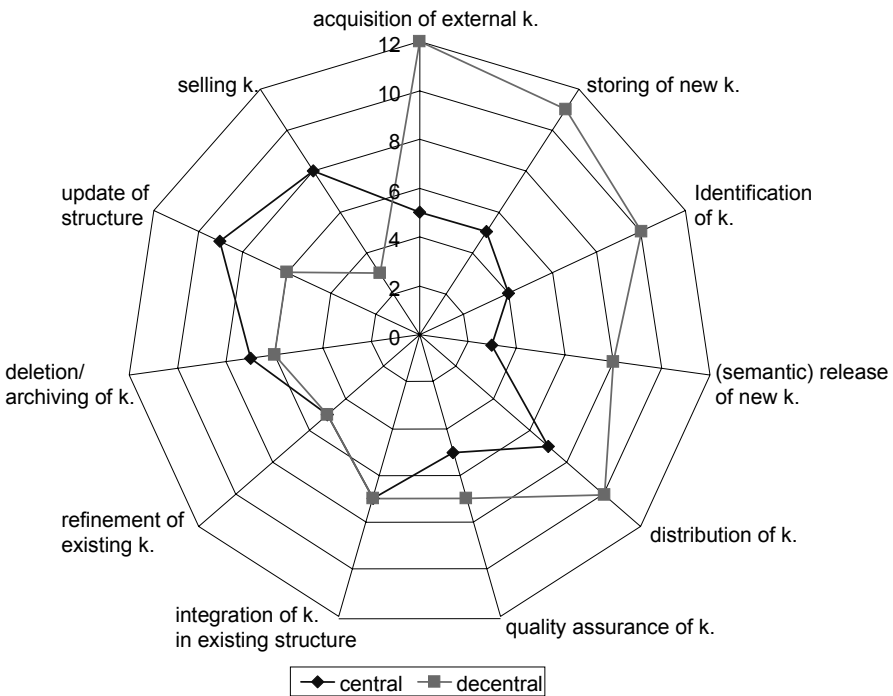


FIGURE C-10. Centrality/decentrality of KM-related tasks⁵⁰

50. Legend: k.=knowledge.

Again, the data points show the number of respondents who indicated that they had assigned the corresponding task to either a central or a decentral position. The results are ordered according to the difference between the values for decentral and central responsibility in descending order (first criterion) and according to descending values for decentral responsibility (second criterion).

Most organizations acquired external knowledge decentrally. Of the four tasks that were assigned in most cases to participants as shown in Figure C-9 on page 502—*storing of new knowledge*, *(semantic) release of new knowledge*, *refinement of existing knowledge* and *deletion/archiving of knowledge*—only the publishing part was organized decentrally in most organizations: *storing of new knowledge* and *(semantic) release of new knowledge*. Once the knowledge was documented and inserted into a KMS, both, central and decentral organizational positions took care of it. This was also true for *quality assurance of knowledge* which in some cases might mean *deletion*, *archiving of knowledge* or *refinement of existing knowledge*. The design level task *update of structure* was in most organizations primarily a central task. The same was true for *selling of knowledge*. This task might be imagined as assigned to one department that is responsible for licensing patents to other organizations or employees in a particular organizational unit work as consultants for other organizations.

These variables describing the distribution of responsibility to central and decentral units of organization were aggregated to the construct *decentrality of knowledge management*—written *decentrality (KM)*—which is determined by the following formula:

$$\text{decentrality}(KM) = \frac{\text{number of decentral KM tasks}}{\text{number of decentral KM tasks} + \text{number of central KM tasks}}$$

Values for decentrality (KM) are defined in the interval [0;1]. An overall mean of 0.64 shows a tendency for organizations to assign responsibility to decentral units rather than central ones. Table C-37 shows the distribution of organizations according to the level of decentrality of KM.

TABLE C-37. Decentrality of knowledge management

x = decentrality (KM)	frequency	percent
x < 0.40	3	17.65
0.40 ≤ x < 0.60	5	29.41
0.60 ≤ x < 0.80	3	17.65
0.80 ≤ x < 1.00	2	11.76
x = 1.00	4	23.53
valid total		100.00

Figure C-11 shows which KM tasks were not carried out or for which no responsibility was assigned in the organizations. The tasks are ordered according to the number of respondents indicating that they had no such task in place (first criterion) and the number of organizations with such a task, but with no formal responsibility assigned (second criterion). Not surprisingly, every organization carried out the tasks *storing of new knowledge* and *deletion/archiving of knowledge*, the basic operations insert and delete of an organizational knowledge base. But almost 45% of the respondents indicated that they would not *sell knowledge* which is not surprising as a “market” for knowledge elements was – apart from licensing of patents and consulting services – still not widely established. However, more than a quarter of the organizations (27.8%) did not *refine their existing knowledge*, four organizations (22.2%) indicated that there was no formal (*semantic*) *release of new knowledge*, three had no *quality assurance* and two organizations (11.1%) had not implemented tasks systematically handling a *knowledge structure*.

As for the assignment of responsibility, *identification of knowledge* seems to be an informal task in many organizations, as is the case for *storing of new knowledge*.

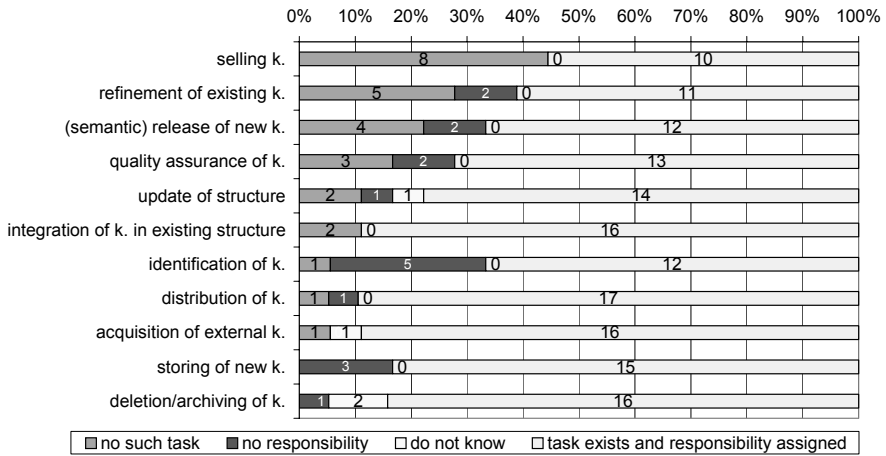


FIGURE C-11. Formally “unorganized” knowledge-related tasks

One of the reasons why some organizations had no explicit responsibility defined could be that organizations doubt that the benefits gained by a separate function or organizational role would justify the expenses that the implementation of such a role would require, possibly due to the unclear profile of such a role. One other reason might be that organizations fear a loss of control of important knowledge if its systematic treatment is concentrated in the hands of just a handful of employees. Even though 85% of the organizations responding to the Fraunhofer Stuttgart questionnaire indicated their positive attitude towards the installation of a knowledge broker, it was precisely these arguments that made some of them hesitate to implement this concept (Bullinger et al. 1997, 23).

Also, organizations might not find every task equally important for their organization. In the Fraunhofer Berlin study, the four general KM activities generate, store, distribute and apply knowledge were distinguished along with the two management functions define knowledge goals and identify knowledge. Most organizations found the distribution of knowledge (91%) either important or very important (Heisig/Vorbeck 1998, 7) with the latter share being quite as high as the 89.5% of organizations who had assigned formal responsibility for that task in the study presented here. A much smaller share of organizations in the Fraunhofer Berlin study (65%) thought the identification of knowledge was important or very important, a result closely matching the finding presented here that 66.7% of the organizations had a formal responsibility defined for this task. 78% thought the same of storing knowledge compared to a similarly high value of 83.3% of organizations in the study presented here. Thus, some of the organizations might concentrate on the personal side of KM and might not pay equally high attention to the codification of knowledge.

The list of tasks presented here seems to focus more on the codification side of KM whereas the personalization side does not receive equally high attention. However, “knowledge” in an organizational knowledge base which is handled by the tasks listed here is by no means restricted to codified knowledge as the analysis of contents will show⁵¹. Moreover, knowledge repositories contain in many cases links to experts, skills, projects, business partners etc. and thus support the personalization side of KM as well. Specific personalization tasks such as the moderation of communities were not included because the expert interviews conducted before the broad questionnaire had shown that these functions were neither well-known nor widespread in the organizations.

In the 1998 KPMG study, the redesign of jobs and processes was the single most frequently applied or planned initiative in those organizations that were pursuing KM. 49% of these organizations had already redesigned jobs and/or processes and an additional share of 28% of respondents said they were planning to do so (KPMG 1998, 13). This once again shows that organizations are well aware of the importance of a systematic organizational design that considers KM tasks, roles and processes.

13.1.4 Résumé

In the following, the most important findings with respect to scope, structural organization and the organization of KM processes, tasks and roles will be summarized.

Scope. Taking all the different measures into account that assess the scope of an organization’s KM-related activities, there is a distinctive difference between

- the number of business processes supported by a KM initiative and the regulation of access to basic ICT infrastructure on the one hand and

51. See section 14.2.1 - “Types of contents” on page 532.

- the rate of participation of employees in KM initiatives, the rate of KM activity as well as the regulation of access to KMS and more advanced KM-related ICT infrastructure on the other hand.

All KM efforts investigated in this study span *business processes* supporting the proposition that it is the knowledge flows between business processes that matter most for knowledge management and thus have to be systematically handled and supported. In the majority of organizations all business processes were targeted and thus the KM initiative represented an organization-wide effort.

Also, in the majority of organizations *basic ICT infrastructure*, such as email and Groupware, was accessible for at least half of the employees. More than a third of the organizations even offered access to all of their employees. By now, Internet access is standard in every organization as is the use of Groupware or an Intranet platform to support internal electronic communication. This finding is at least representative for big organizations as surveyed here which all have established email and WWW. Service organizations generally reported significantly higher shares of employees with access to KM-related systems than industry organizations⁵².

However, the picture is different with respect to the *rate of participation*, the share of employees who actually participate in an organization's KM effort. There are a number of organizations that have only a small group of employees share in the KM activities and only this group has access to the organization's KMS. Organizations can be classified according to the scope of their KM activities into the following three groups:

- *core KM groups or nuclei*: About 20% of the organizations had small KM activities with up to 99 participants, which means less than 1% of the employees participating and a core group responsible for the activities. The narrow focus is also reflected in a rather low rate of participation and also restrictive policies limiting access to advanced KM-related information and communication systems, such as KMS or external sources to less than 1% of the employees.
- *mid-range KM initiatives*: In about 50% of the organizations KM efforts are much broader than the ones in the first group, though participants are still selected carefully, e.g., a selected group of knowledge workers of an organization or all employees working in a couple of organizational units with special KM needs. KM activities are targeted mostly to between 100 and several 1,000 employees depending on the size of the organization, which gives between 1 and 50% of the employees. Correspondingly, the access to KM-related systems is loosened, but far from being completely unlimited.
- *pervasive KM initiatives*: In about 30% of the organizations KM is viewed as an approach rolled out to the entire organization with every or close to every employee participating in the effort (more than 1,000 employees, 75% or more). Access to KM-related systems is (almost) unrestricted, no matter whether or not every employee actually is able and/or willing to use the systems and no matter

52. For a detailed analysis of KM-related systems in use see chapter 14 - "Systems" on page 524.

whether his or her role requires access to KM-related systems. Consequently, in these types of organizations the rate of KM activity is much lower (less than 25%) than in the rest of the organizations.

Thus, the *rate of KM activity* is negatively correlated with the rate of participation in a KM effort. Most organizations have a high rate of KM activity with more than 10% of the targeted employees actively participating in a KM initiative.

Communities are not a widespread organizational phenomenon with about a quarter of the respondents reporting the number of communities they had established. Although in most cases there were only a handful of communities established, organizations generally seem to pay a lot of attention to supporting informal knowledge networks and the informal exchange of knowledge. Some of the organizations might not have been familiar with the concept of communities.

Structural organization. Organizations vary according to the structural organization of their KM function. If an organization had established a separate organizational unit that provided other areas with e.g., studies or reports thus assuming the role of an information broker before, this organizational unit was likely to be turned into a *separate KM unit*. The unit's responsibility was extended to broaden its perspective to include KM and to introduce and support KM-specific organizational and ICT instruments. Many professional services companies have followed this approach providing case studies highly visible in the KM literature. In the study presented here, less than a quarter of the organizations with a systematic KM initiative actually had established a separate KM unit.

In more than a quarter of the organizations KM was advanced in the organization by an *informal group of employees* interested in KM. This could be a network of employees, a committee or a community with varying degrees of support from formal authorities. The most prevalent form of structural organizational design applied to KM, however, was the *KM project*. Projects were established in almost half of the organizations.

In many organizations, KM quickly gains high visibility and its efforts are closely watched by senior management. Many CEOs even of large corporations such as Siemens and DaimlerChrysler have put KM on their agendas. This is reflected by the high *reporting level of KM*. Most of the KM initiatives reported to the two highest levels of the organizational hierarchy.

More than a third of the organizations did not integrate KM within a single *functional area*, but employed an interdisciplinary approach which is regularly considered most suited for this kind of activity. There is also a shift from exclusively embedding KM in a technical environment, especially IT, to an involvement of business-oriented areas responsible for KM, such as strategic development, marketing or sales. Whereas a couple of years ago the establishment of an information and communication platform—Groupware and Intranet—required most attention, organizations now have sophisticated functions implemented and are in search of concepts, measures and instruments to effectively use these platforms for KM⁵³.

Additionally, it seems that in many cases the IT focus, the business focus and the organizational or HRM focus of KM co-exist without taking very much notice of each other. This might be one explanation for the finding that many organizations had difficulties in exactly defining how they will implement KM measures and thus being hesitant to allocate substantial resources to this approach.

KM tasks and roles. Knowledge management was implemented as a predominantly decentral approach leaving as much responsibility with decentral functions as possible. With few exceptions⁵⁴ all KM tasks were assigned to decentral organizational units or members rather than central ones. In many organizations the responsibility is shared between central and decentral authorities. Also, responsibility in most cases is shared between the author of a knowledge document (active participants) and subject matter specialists who help the authors to document, link and organize their experiences.

The key role in KM initiatives therefore is the *subject matter specialist*. Most of the organizations surveyed assigned responsibility for the majority of their KM tasks to this role. Subject matter specialists are primarily responsible for KM tasks on the operational level⁵⁵. In many cases they share responsibility for these tasks with *participants*.

Subject matter specialists also provide the “linking pins” for knowledge-related design and operational management tasks⁵⁶. In these cases they share responsibility with *knowledge managers*. The strategically relevant identification of knowledge and the operational distribution of knowledge are in many organizations joint efforts with responsibility split between all three roles.

There are also several organizations in which responsibility for KM tasks is not assigned at all. About a third of the organizations just assigned responsibility for basic tasks related to the publication and distribution of knowledge, but did not pay equally high attention to what happens to the knowledge once it is documented and inserted into the organizations’ knowledge bases⁵⁷. Moreover, a third of the organizations had not assigned responsibility for the identification of knowledge. This might be taken as a signal that organizations had difficulties to decide how to achieve this KM goal at which all respondents aimed strongly⁵⁸.

53. See also section 14.3 - “Functions” on page 548.

54. The exceptions were the deletion or archiving of knowledge which was almost equally distributed between central and decentral authorities, the design level function update of knowledge structure and the selling of knowledge which in almost half of the organizations was not defined at all.

55. Examples are the storing and release of new knowledge, refinement of existing knowledge, deletion and archiving of knowledge as well as the acquisition of external knowledge.

56. Examples are the update or reorganization of knowledge structure(s) or the integration of knowledge into the existing structure.

57. This is especially true for quality assurance, refinement of existing knowledge elements or the (semantic) release of knowledge.

58. See section 12.2.1 - “Targeted goals” on page 472.

To sum up, the typical organizational design of a KM initiative can be described as follows. One or more interdisciplinary KM project(s) are responsible for the implementation of KM instruments. Strategic development, functional departments, IT and organization as well as HRM jointly drive the KM initiative in the organizations. The organization-wide activities are targeted at a selected group of employees who have unrestricted access to sophisticated ICT infrastructure and who are expected to actively participate in KM. Subject matter specialists and participants share responsibility for most of the defined KM tasks which are performed mostly decentrally. Only coordination of the KM activities, the management of a corporate knowledge structure as well as the commercialization of knowledge are in the hands of central authorities.

13.2 Organizational culture

Organizational culture is an implicit phenomenon, is natural and obvious to the members of the organization, comprises collective orientations and values that impact the individual's behavior, is the result of a learning process about how the organization has dealt with the internal and external environment, provides patterns for the selection and interpretation of behavior, provides orientation in a complex world and is handed on in a social process⁵⁹.

Most researchers and practitioners agree that a culture supportive of knowledge sharing is one of the key requirements for a successful application of KM. However, the organizations differ in what steps they take to create or improve a supportive cultural environment. *Cultural goals* that were reported in the interviews were for example to raise awareness about the importance of knowledge and its systematic handling, to foster a strong professional ethic encouraging knowledge sharing, to instill trust among employees, especially across borders of organizational units, to reduce the importance to "save faces" and to "be creative"⁶⁰ and to increase the positive attitude towards reusing ideas invented somewhere else.

The *instruments* applied to foster a supportive organizational culture are also manifold. Examples are material or immaterial rewards for knowledge sharing, mentoring programs, HR trainings in sophisticated skills in teaming, especially with respect to cross- or multi-functional teams (e.g., APQC 1996, 49). A third of the organizations with a KM initiative surveyed by KPMG had established KM training and awareness programs and about another third of these organizations (32%) was planning to do so (KPMG 1998, 13). The organizations participating in the benchmark study by the APQC thought that leadership, the selling of successful

59. For a more in-depth discussion of the notion of organizational culture see section 6.4 - "Organizational culture" on page 221.

60. Sometimes this overly stressed importance to be inventive results in the "not invented here" syndrome (NIH) well described in the literature. Organizational units refuse to take over results from other organizational units or from outside. In some cases reported, organizational experts rather accepted knowledge brought in by external experts than by their peers within the organization.

KM business cases (success stories, quick wins), endorsement by senior managers and a common information and communication infrastructure (technological as well as conceptual, e.g., a standardized business language) were best suited to create a culture more supportive of KM (APQC 1996, 54).

It is commonly agreed upon that *leadership* is important to foster an organizational culture supportive of KM. Managers have to encourage knowledge sharing and set good examples by their own behavior. The CKO's own behavior has the most symbolic character in an organization, e.g., with respect to knowledge sharing (see Bontis 2001, 31). Nevertheless, behavior that is adequate for KM cannot simply be delegated. The CKOs colleagues, middle managers and KM promoters have to set good examples as well because managers' behavior is closely watched by their peers and subordinates if a fundamental change to a more open organizational culture is targeted by the KM initiative.

One of the requirements for this is that senior managers support the KM initiative. In the APQC study, it turned out that the highest commitment to KM was found among knowledge workers and professionals. Between 80 and 100% of this group strongly bought into the KM initiative. Senior management also committed itself strongly at between 63 and 73%, but middle and supervisory management was less convinced of the approach at between 43 and 55% (APQC 1996, 49). This result is not really surprising as KM in many cases requires middle management to adapt most to the new ways of handling knowledge. Participants and experts profit most of the approach and senior management is not directly involved in the change processes of the implementation of KM.

The *assessment or measurement of organizational culture* is a serious problem⁶¹. The actual values and assumptions of people about other people, time, space and goals are less observable than official statements about values and indicators such as stories, symbols, language, clans (Schein 1984, Drumm 1991, 166). Cultural analysis thus is a complex undertaking. In the study presented here, the single dimension measured reflecting organizational culture is willingness to share knowledge.

In the following, section 13.2.1 will present the results of the investigations about willingness to share knowledge. Then, section 13.2.2 will address fluctuation which is partly determined by organizational culture, but also influences the atmosphere in an organization. More generally, different rates of fluctuation potentially require different KM instruments and activities.

13.2.1 Willingness to share knowledge

Measuring willingness to share knowledge in a questionnaire directed to a single person in an organization certainly is a compromise⁶². Most of the interviewees,

61. See also section 6.4.2 - "Willingness to share knowledge" on page 223.

62. For a detailed discussion of the pros and cons of alternatives to include measures of organizational culture into the empirical study see section 6.4.2 - "Willingness to share knowledge" on page 223.

however, stated that they had studied KM-related cultural issues in their organizations regularly. Examples for the instruments applied are employee surveys, structured interviews and workshops. Several organizations had called in consultants to help them design and evaluate employee surveys on contentedness with the KM initiative, with KM services or with the organizations' KMS. These surveys also contained several questions to analyze willingness to share knowledge. As a consequence, the respondents might have had a reasonable feeling about the general situation in their organizations⁶³. Still, the results have to be interpreted carefully.

17 statements were used in order to determine the willingness to share knowledge in an organization as the main construct measuring organizational culture⁶⁴. Responses were measured along a seven-point Likert scale. Respondents had to indicate to what extent they thought that the corresponding item described the situation in their organization. The higher the value they assigned to an item, the more they agreed that this item described the situation in their organization.

In order to ease the interpretation, this relatively large number of variables was reduced to a number of underlying factors using the statistical method *factor analysis*. Factor analysis attempts to identify underlying variables, or factors, that explain the pattern of correlations within a set of observed variables. Factor analysis is often used in data reduction to identify a small number of factors that explain most of the variance observed in a much larger number of manifest variables (for a detailed description of factor analysis e.g., Backhaus et al. 1996). Goal was to use factor analysis to reduce the number of observable variables of organizational culture to a handful of dimensions of organizational culture which influence the organization's willingness to share knowledge. The factors shall be interpreted as dimensions of organizational culture.

The method used for factor extraction was *principal components*. The criterion used to determine the number of factors was a minimum *Eigenvalue* > 1 . The application of this criterion lead to a four-factor solution. The four factors together explain 68.9% of the total variance. Thus, the data reduction led to a loss of information. In order to ease the interpretation of factors the initial solution was rotated according to Kaiser's Varimax method of factor rotation. Missing values were excluded listwise. Table C-38 shows the rotated factor matrix⁶⁵.

The interpretation of factors is an important, although difficult step in factor analysis as there remains room for subjective assessment. The dimension of organizational culture describing the first factor can be called *inter-group organizational learning atmosphere* which reflects mutual understanding, trust, influence and support of teams and/or work groups and the general willingness to learn from each

63. The general situation, however, might hide possibly important aspects of sub-cultures in organizations. It would be interesting to detail the results and shift the unit of analysis from the organizational level to the level of organizational sub-cultures.

64. Most of the statements used here have been tested in other empirical studies before. For a description and discussion of the statements and the literature where they have been developed see section 6.4.2 - "Willingness to share knowledge" on page 223.

65. See URL: <http://iwi.uibk.ac.at/maier/kms/> for detailed results.

other. The second factor can be called *workspace-related organizational learning atmosphere* and comprises the exchange of ideas in the work environment as well as communication and support within teams and/or workgroups. The third factor describes that part of the organization's reward system which targets knowledge sharing. It can be called *rewards for knowledge sharing*. The fourth and last factor encompasses those variables that describe the most voluntary part of knowledge sharing activities: the exchange of ideas outside the "normal" work environment. It can be called *knowledge sharing outside the workspace*.

TABLE C-38. Rotated component matrix of the variables describing willingness to share knowledge

observable variables^a	factor 1	factor 2	factor 3	factor 4
emp. often communicate with other g/t	<u>0.80045</u>	0.16062	0.09383	0.13435
emp. influence decisions of other g/t highly	<u>0.78656</u>	0.08928	0.29010	0.00962
emp. know work of other g/t well	<u>0.76724</u>	0.17305	0.20837	-0.00721
emp. value achievements of other g/t highly	<u>0.71031</u>	0.35185	0.22983	0.02192
emp. often help other g/t	<u>0.67942</u>	0.26068	-0.14515	0.12645
trust between g/t is high	<u>0.55924</u>	0.22594	0.29133	-0.36835
willingness to learn is high	<u>0.53009</u>	0.23336	0.11357	0.03883
strong exch. in, before and after meetings	0.24615	<u>0.79772</u>	0.32300	-0.00699
emp. often help within group/team	0.27485	<u>0.74275</u>	-0.21684	0.16825
emp. communicate openly within group/team	0.40307	<u>0.70084</u>	-0.03095	-0.06350
strong exch. during work hours	0.40002	<u>0.61324</u>	0.23624	0.18518
strong exch. in breaks	0.08853	<u>0.61082</u>	0.19878	0.43823
k. sharing supports careers	0.18086	0.12149	<u>0.85215</u>	0.21348
k. sharing strongly rewarded financially	0.27440	-0.19046	<u>0.80313</u>	0.17728
cooperative behavior strongly rewarded	0.12044	0.36733	<u>0.76855</u>	-0.15758
strong exch. at company events, parties	0.14919	0.13169	0.12176	<u>0.91660</u>
strong exch. privately, outside work environment	-0.01829	0.10588	0.05556	<u>0.88015</u>

a. emp. = employees; exch. = exchange of ideas; g/t = groups/teams; k. = knowledge

In the following, respondents' estimations how their organizations score on the organizational culture items are aggregated and presented factor by factor. Figure C-12 through Figure C-15 show for each item the means of the estimations and the interval $[\mu - \sigma; \mu + \sigma]$ which is one standard deviation to the left and to the right of the means. The items are ordered by descending means (first criterion) and

ascending standard deviations (second criterion). Additionally, the overall means encompassing the whole set of 17 variables is given. At 4.14, it is slightly higher than the middle of the scale. Detailed results can be found in the appendix⁶⁶.

Factor 1: inter-group organizational learning atmosphere.

Figure C-12 shows the seven items making up inter-group organizational learning. The means of five out of the seven items were higher than the overall means. Thus, the inter-group organizational learning atmosphere was relatively positive on average. This was especially true for those items that describe the more personal, voluntary or informal relationships between groups or teams like *groups helping each other* or the *communication between groups*. The *actual influence on decisions of other groups*, but also *knowledge about the work of other groups or teams*, were rather low. The latter result suggests that transparency about what is going on in other groups or teams, even within the same business processes, was neglected in many organizations. It might help for example to orient the KM initiative in general and KMS structure and organization in particular on the organization’s business processes in order to reduce this lack of visibility.

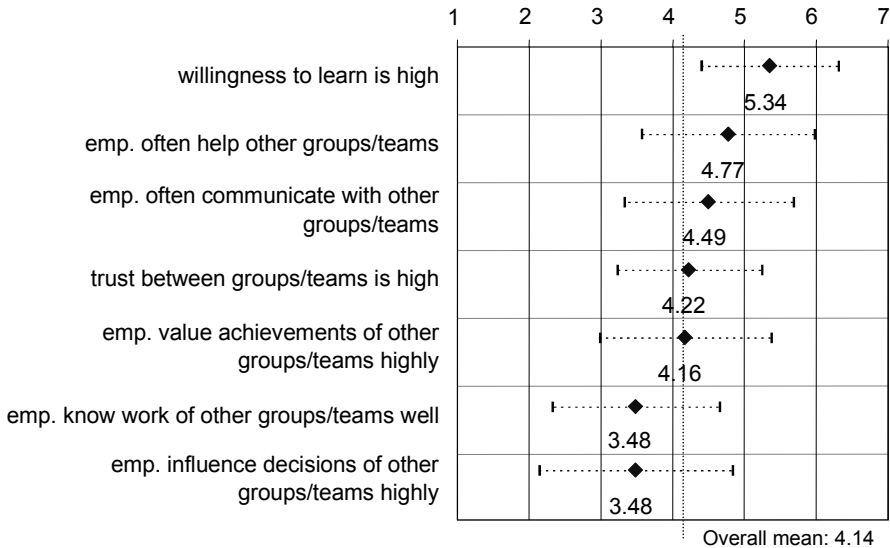


FIGURE C-12. Factor 1: inter-group organizational learning atmosphere⁶⁷

Willingness to learn had a somewhat special position in this factor as it could apply to both situations, learning within the learner’s work environment and learning between groups and teams. The coefficient of the item “willingness to learn is

66. See URL: <http://iwi.uibk.ac.at/maier/kms/>.

67. Diamonds represent the means μ of the item. The ranges indicate the interval $[\mu-\sigma; \mu+\sigma]$ using the standard deviation σ .

high” in the factor analysis showed a much higher value of 0.53009 for factor 1—inter-group organizational learning atmosphere as compared to 0.23336 for factor 2—workspace-related organizational learning atmosphere. One explanation for this finding might be that respondents interpreted willingness to learn as a description of learning from experiences made outside the daily work environment, because it requires a much higher willingness to learn in order to accept or reuse knowledge from outside the learner’s team or work group than from within (see also factor 2).

Factor 2: workspace-related organizational learning atmosphere.

The estimates describing workspace-related organizational learning atmosphere were on average significantly higher than those for inter-group organizational learning atmosphere (see Figure C-13). Thus, as expected willingness to share knowledge was substantially higher within the workspace than between groups and teams and also substantially higher than outside the traditional work environment. Hypothesis 9: ‘Employees are more willing to share knowledge within than outside their work environment (group or team)’ thus was supported.

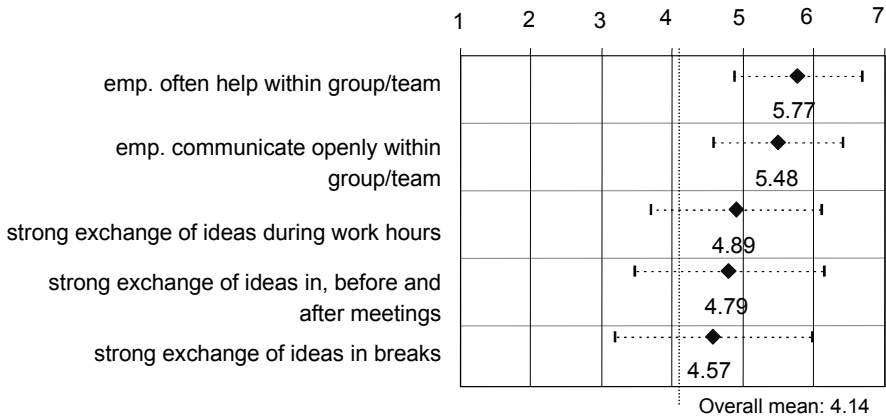


FIGURE C-13. Factor 2: workspace-related organizational learning atmosphere⁶⁸

Factor 3: rewards for knowledge sharing. On the contrary, organizations having a sophisticated reward system for knowledge sharing seemed to be still the exception. This was especially true for financial rewards and incentives, but also for the support of careers (see Figure C-14). The interviews showed that in those organizations that made their careers dependent on the contribution to knowledge sharing, the employees were subjectively assessed along general, basic categories like “cooperative behavior” or “helpfulness”. In some organizations, there were already advanced evaluation procedures in place that contained not only subjective, but also objective measures like the requirement to become a (recognized) expert in

68. Diamonds represent the means μ of the item. The ranges indicate the interval $[\mu - \sigma; \mu + \sigma]$ using the standard deviation σ .

one or multiple subjects, to review contributions to that subject or to answer questions within a given time (e.g., 24 hours).

However, one organization also experimented with objective criteria like the number of articles published in the corporate Intranet. Within a year they abandoned this practice as it only led to a flood of articles of questionable quality, but neglected other important KM goals like the reuse of existing knowledge. Thus, it seems very important to design the reward system around the KM goals and to ensure that the system is understood by the participants.

The immaterial rewards for cooperative behavior ranged in the middle of the scale. So far, it seems that in many organizations to be a helpful and cooperative organizational member was not strongly credited, neither in terms of recognition, nor in terms of financial profit or advancements in the career.

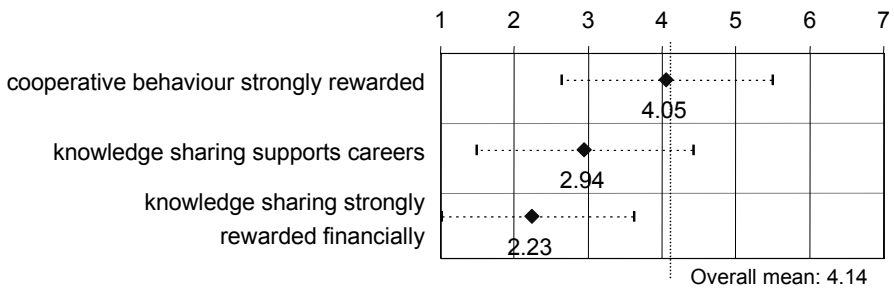


FIGURE C-14. Factor 3: rewards for knowledge sharing⁶⁹

Organizations questioned in the ILOI study reported quite similar results. 17% of the organizations had a reward system for holders of key knowledge and only 11% had measures in place to give material incentives to employees according to the knowledge transferred or shared (ILOI 1997, 16). Similarly, in the 1998 KPMG study, a total of 23% of the organizations with KM initiatives gave incentives and/or rewards for knowledge-related activities and 14% were planning to establish a system (KPMG 1998, 13). 36% of the very innovative organizations studied by the APQC, rewarded employee behavior supporting effective KM. Especially those organizations that focused the individual employee’s responsibility for knowledge development and sharing, monitored KM related activities as part of their professional and career development programs (APQC 1996, 50).

Factor 4: knowledge sharing outside the workspace. The fourth factor shows to what extent organizational members meet outside their work environment and normal work hours to exchange ideas. Some organizations invested considerably to create opportunities for their employees to spend their leisure time together, e.g., at company events, company-specific sports clubs or sports facilities, or even holi-

69. Diamonds represent the means μ of the item. The ranges indicate the interval $[\mu - \sigma; \mu + \sigma]$ using the standard deviation σ .

days organized by the company or at company-owned facilities. Figure C-15 shows that this kind of knowledge sharing was more the exception than the rule in big German organizations. However, the ranges of answers were wide showing that there were some organizations for which this kind of knowledge sharing was very important whereas others did not pay much attention to these activities.

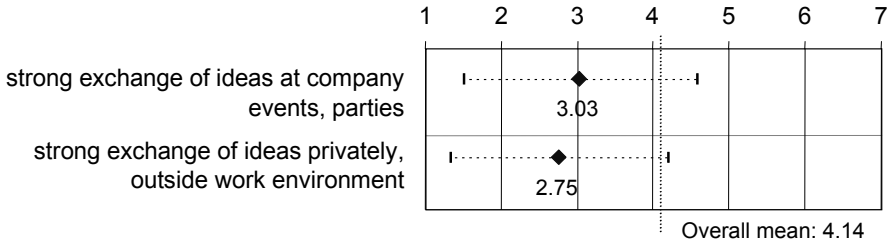


FIGURE C-15. Factor 4: knowledge sharing outside the workspace⁷⁰

In the following, the relationships between willingness to share knowledge and factors describing the existence of a systematic KM initiative as well as access to KM-related systems will be investigated. Table C-39 shows the statistical results of the correlations.

TABLE C-39. Summary of correlations with willingness to share knowledge^a

correlated variables	statistics	factors			
		1. inter-group OL atmosphere	2. work-space OL atmosphere	3. rewards for k. sharing	4. k. sharing outside workspace
systematic KM	Spearman's rho	0.011	-0.154	0.013	-0.338
	significance	0.930	0.209	0.919	0.005
	n	68	68	68	68
share of employees with access to Groupware	Spearman's rho	0.272	0.311	0.289	0.098
	significance	0.138	0.089	0.115	0.599
	n	31	31	31	31
share of employees with access to KMS	Spearman's rho	-0.021	0.188	0.358	-0.146
	significance	0.939	0.485	0.173	0.589
	n	16	16	16	16

a. k.=knowledge, OL=organizational learning

A correlation matrix of 4 X 3 was tested with 4 factors describing willingness to share knowledge and 3 variables describing whether KM was systematically implemented and describing the share of employees with access to Groupware or

70. Diamonds represent the means μ of the item. The ranges indicate the interval $[\mu - \sigma; \mu + \sigma]$ using the standard deviation σ .

KMS. Thus, the adjusted significance level using a Bonferroni type correction was 0.008⁷¹.

The existence of a *systematic knowledge management* in an organization correlates with factor 4—knowledge sharing outside the workspace. The negative sign means that respondents who indicated that their organization had implemented a systematic KM initiative estimated a higher level of knowledge sharing outside the workspace than organizations without such an initiative. The correlation with factor 2 also showed the expected negative sign, but was not significant. In the case of reward systems, both, the quantitative data obtained in the survey as well as the qualitative results gained in the interviews suggest that neither organizations with nor without a systematic KM initiative were actively engaged in the design and implementation of a reward systems for KM (see also above).

The existence of systematic KM so far seems to have the most profound effect on the most informal knowledge sharing outside the traditional workspace. Hypothesis 12: 'In organizations with systematic knowledge management, willingness to share knowledge is improved' was therefore supported. One explanation for these findings might be that organizational culture is an organizational phenomenon which changes rather slowly and systematic KM has not been around for long enough in most organizations to already show profound effects on employees' willingness to share knowledge.

The correlations with the *share of employees with access to Groupware systems* all showed the expected positive sign meaning that organizations with a higher share of employees with access to Groupware also experience a higher willingness to share knowledge⁷². However, none of the correlations was significant. A more detailed analysis correlating the individual variables of the factor with the highest correlation coefficient, factor 2—workspace-related OL atmosphere, revealed a significant positive correlation with a *strong exchange of ideas in, before and after meetings*⁷³. Thus, Hypothesis 22: 'The more employees have access to Groupware and/or KMS, the more they are willing to share knowledge' was supported for Groupware systems. The more employees have access to Groupware systems, the more they exchange ideas in, before and after meetings.

The correlations between the *share of employees with access to knowledge management systems* and willingness to share knowledge were statistically insignificant. Correlations with factor 1—inter-group organizational learning atmosphere and factor 4—willingness to share knowledge outside workspace even showed a negative sign. Hypothesis 22: 'The more employees have access to Groupware

71. See section 'Statistical analysis.' on page 455 for an explanation of the Bonferroni type correction.

72. The results of the investigations on access to Groupware systems, KMS and other KM-related systems were presented in section 13.1.1 - "Scope" on page 482.

73. The adjusted significance level after a Bonferroni type correction for this extension of the test to include all 17 individual items (17 X 3 matrix) was 0.0019. The correlation analysis with the item *strong exchange of knowledge in, before and after meetings* produced a Spearman's rho correlation coefficient of 0.520 and a significance of 0.00163 (n=34). Detailed results can be found in URL: <http://iwi.uibk.ac.at/maier/kms/>.

and/or KMS, the more they are willing to share knowledge' was not supported for KMS. This might be partly due to the fact that the number of respondents with KMS is much lower than the number of respondents with Groupware systems. Another explanation might be that it takes time until platforms and systems are rolled out and really used in daily operations so that employees' willingness to share knowledge might be positively influenced from an increased ability to share knowledge. Groupware platforms have been installed in most organizations for quite a while whereas KMS are a recent development.

13.2.2 Turnover in employees

Turnover in employees was measured with two questions reflecting the percentage of newly recruited employees and the percentage of employees leaving the organization per year. Categorical variables were used as it was expected that most of the respondents would not have real figures. Figure C-16 shows the absolute number of organizations with the percentage of employees leaving the organization per year. Four in five organizations (54 respondents, 80.6%) had a low or moderate rate at which they lost people with less than 10% of employees leaving per year.

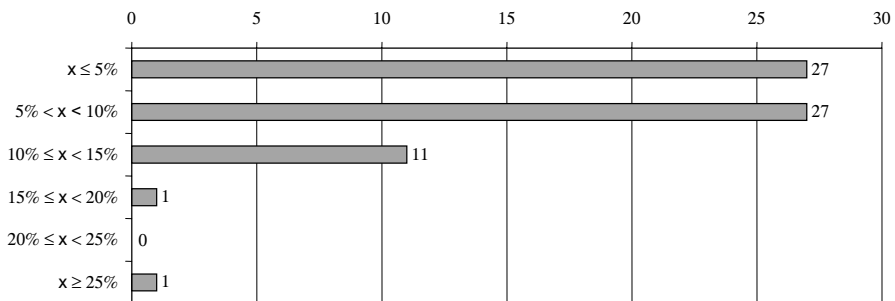


FIGURE C-16. Share of employees leaving the organization per year⁷⁴

Figure C-17 shows the distribution of organizations according to the percentage of newly recruited employees per year. Again, almost three quarters of the organizations (48 respondents, 72.7%) had a low or moderate rate at which they hired new people with less than 10% of newly recruited employees per year. However, 18 organizations (27.3%) had a high rate of growth of 10% or more and four of these organizations (6.1%) grew at a fast pace with 15% or more newly recruited employees per year.

As expected the correlation between the two variables was highly significant (Spearman's rho: 0.589, significance: 0.000001, n=66) which means that the more employees left an organization, the more these organizations recruited new members. A detailed investigation reveals that 45 out of 66 organizations (68.2%) indi-

74. As percentage of total number of employees, absolute numbers of organizations, n=67.

cated the same categories for both questions. Nine organizations (= 13.6%) seemed to downsize whereas another 12 organizations (18.2%) grew. Four organizations (= 6.1%) reported that their rate of newly recruited was two or three categories higher than their rate of employees leaving the organization.

In the following, the relationships between fluctuation and willingness to share knowledge will be investigated.

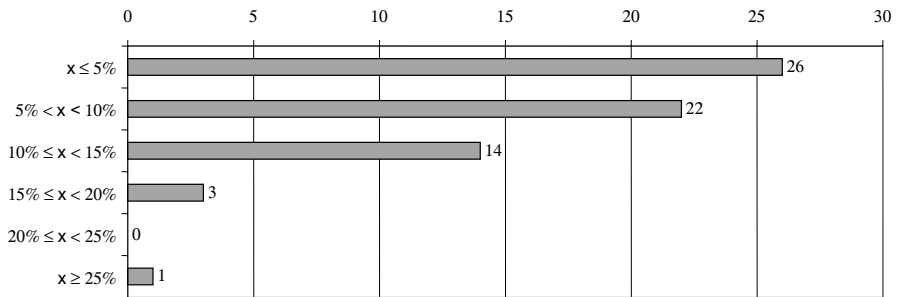


FIGURE C-17. Share of newly recruited employees per year⁷⁵

Table C-40 shows the statistical results of the correlations. A correlation matrix of 4 X 2 had to be tested with 4 factors describing willingness to share knowledge and the 2 variables of fluctuation. Thus, the adjusted significance level using a Bonferroni type correction was 0.0125⁷⁶.

TABLE C-40. Summary of correlations between fluctuation and willingness to share knowledge

correlated variables	statistics	factors			
		1. inter-group OL atmosphere	2. work-space OL atmosphere	3. rewards for k. sharing	4. k. sharing outside workspace
share of newly recruited employees	Spearman's rho	0.124	-0.058	0.191	0.197
	significance	0.336	0.653	0.137	0.126
	n	62	62	62	62
share of employees leaving organization	Spearman's rho	-0.125	-0.118	-0.063	-0.065
	significance	0.334	0.359	0.628	0.614
	n	62	62	62	62

None of the correlations was significant. Thus, Hypothesis 10: 'The higher the share of newly recruited employees is, the more knowledge exchange is taking

75. As percentage of total number of employees, absolute numbers of organizations, n=66.

76. See section 'Statistical analysis.' on page 455 for an explanation of the Bonferroni type correction.

place outside traditional work environments' was not supported. The positive signs for the correlations between the share of newly recruited and factors 1, 3 and 4 show a tendency that organizations with a higher share of newly recruited in the sample experienced an increased willingness to share knowledge. According to the interviews, the level of recruitment in an organization is a crucial factor that strongly impacts organizational culture. It is often the newly recruited employees who are most open to knowledge sharing between work groups and also outside the work environment (also Swan 2001).

Willingness to share knowledge, particularly parts of the inter-group organizational learning atmosphere, supposedly suffer in those organizations that experience a high share of employees leaving the organization. The corresponding correlations all showed the expected negative sign, but no correlation was significant. Hypothesis 11: 'A high share of employees leaving the organization negatively affects willingness to share knowledge between groups and teams' was therefore not supported.

13.2.3 Résumé

Once again, it must be noted that results concerning organizational culture generally have to be interpreted carefully. The item measured here, willingness to share knowledge, not only carries the well-known conceptual problems as reported in the literature (e.g., Drumm 1991). The measurement of this item also lacks representativeness as only one member of the organization was asked to judge this organizations' willingness to share knowledge. However, the construct was included in the questionnaire for two reasons:

1. The person responsible for KM supposedly had a good overview of that part of his or her organization for which he or she was responsible. Pretests also revealed that knowledge managers considered organizational culture as one of the most important factors in KM and thus watched it carefully. Many had also initiated representative culture analyses (some had undergone this process several times) supporting that their judgements might be more adequate than one might expect at a first glance.
2. Willingness to share knowledge certainly varies between groups and teams and even within one group from individual to individual. However, the variables of interest here were aggregate measures of all the estimations of individuals at an organization-wide level. As the whole questionnaire was directed exclusively at the knowledge manager, all answers reflect the perspective on the implementation of the KM initiative he or she takes. Thus, the judgement of the organizational culture completed the "picture" which knowledge managers paint of their initiatives and activities.

Four factors were extracted to reduce the sixteen items describing willingness to share knowledge. *Workspace-related organizational learning atmosphere* seems to be easier to achieve than *inter-group organizational learning atmosphere*. The other two factors, *rewards for knowledge sharing* and *knowledge sharing outside*

the workspace showed lower ratings than the two factors describing the organizational learning atmosphere.

These four factors were correlated to variables describing the fluctuation, systematic KM and the penetration of the organizations with Groupware platforms and KMS. Turnover in employees was in the majority of the organizations low to medium. However, one in five organizations grew rapidly whereas fewer than one in seven organizations shrunk.

Systematic KM is positively correlated with high knowledge sharing outside the workspace. Also, in organizations in which more employees have access to Groupware platforms, there is a strong exchange of ideas in, before and after meetings. The correlations showed a stronger tendency for Groupware to positively influence willingness to share knowledge than in the case of KMS. This might be because cultural changes take some time and employees in many organizations might have been exposed to Groupware platforms for a much longer time than to KMS. The rest of the correlations was not significant.

However, the interviews showed that many knowledge managers consider the rate of newly recruited employees as one of the most critical factors in KM. Newly recruited employees often seem to be more open to adapt new ideas, to learn from their colleagues and to share knowledge outside traditional work environments. Additionally, knowledge islands might be connected with the help of new employees bridging previously isolated “clans” or “knowledge families”.

The four factors describing willingness to share knowledge will be correlated with business goals in section 15.2.4 - “Correlations with goals” on page 575. The next chapter is devoted to the results about systems applied to KM initiatives.