Knowledge Economics Based Upon a 4-Pillar-Model - A Field Report

Prof. Dr.-Ing. Alexandra Kees
Hochschule Bonn-Rhein-Sieg
alexandra.kees@h-brs.de

Abstract

Knowledge economics is the most important issue when designing an enterprise knowledge management system. This paper presents a 4-pillar-model which enables the design of an economically efficient knowledge management system and it documents how this model was applied to establish a knowledge management system in the internal consultancy unit of a large German enterprise in the information and communication technology sector. Eventually, the knowledge economics of the conceived system are assessed in order to improve the enterprise knowledge management system. The structure of the 4-pillar-model itself anticipates utility in all types of (re-)organisation projects.

1. Introduction

The constant improvements in information technology and the big-data-phenomenon have led to a society in which knowledge has become THE critical resource for enterprises to remain competitive in their respective markets. This applies especially to consultancies (external and internal) because:

- By nature, knowledge is the most important resource in order to conduct consultancy projects successfully.
- New management trends and new markets must be identified quickly in order to remain competitive in the consultancy market.
- Due to a strong presence on site most consultancies comply with the characteristics of virtual enterprises and are forced to enhance knowledge management among their staff in order to overcome spatial and temporal barriers.
- There is a high fluctuation of personnel in consultancies because successful consultants leave after some years to undertake a leading position in other enterprises, and unsuccessful consultants are made redundant according to the ‘grow-or-go’ principle.
- The dynamics in information technology, globalisation and privatisation of state-owned enterprises have led to an escalation of consultancy projects in the last two decades.

Therefore, this paper presents a model for designing a knowledge management system for the in-house consultancy unit of a large German company in the (ICT) sector. In compliance with the objectives of the enterprise, the economic efficiency of the knowledge (= knowledge economics) management system should be the overall paradigm of the model. The model itself is to be conceived so that it can be applied in other enterprises to establish a knowledge management system and so that it can also be used for any other type of (re-)organisation project.

The following paragraph outlines existing methods and approaches in the knowledge management area. Based upon that, a 4-pillar-model for enterprise organisation is presented which will then be used as a framework to design the knowledge management system of a consultancy unit in a large German enterprise in the ICT sector. The results will be evaluated and the scientific contribution extracted. Finally, the limitations of the work will be discussed and an outlook on future work be given.

2. Approaches to knowledge management

In the 1990s, knowledge was recognised to be one of the most important enterprise resources and enterprise managements headed towards enterprise knowledge management [1]. North / Kumta provide an acclaimed view on the nature of the resource ‘knowledge’ compared to the resource ‘capital’ [2]. Established taxonomies distinguish between explicit-tacit and individual–social/organisational knowledge (e. g. [3, 4, 5]).

According to North / Kumta, knowledge consists of a body of information which has been linked by context, experience and/or expectation [2]. It can thus be interpreted as valuable information. Based upon this, enterprise knowledge can be defined as
information which is valuable for an enterprise. Since
the objective of an enterprise is profitability, and
profitability results from competitiveness, the value
of enterprise knowledge can be measured by the
extent to which it contributes to the profitability /
competitiveness of the respective enterprise (see
figure 1).

Figure 1: The knowledge ladder [2]

The term ‘management’ comprises the following
activities [6]: defining objectives, planning, deciding,
implementing, controlling, informing and
coordinating. This leads to the following
etymological definition of enterprise knowledge
management (in contrast to semantic definitions as
listed in [7]):

‘Enterprise knowledge management’ is
the capability of a profit-oriented
organisation to define, plan, decide on,
implement, control, inform about and
coordinate activities concerning valuable
information in order to reach
competitiveness.

There is a number of knowledge management
maturity models and metrics which assess the quality
of an existing knowledge management system. The
application of these models leads to identifying
opportunities for improvement [2, 8, 9, 10, 11],
makes the knowledge management system
economically more efficient, and thus improves
knowledge economics.

In this paper, the term knowledge economics goes
beyond classical definitions which focus on financial
aspects [12]:

‘Knowledge economics’ is the economic
efficiency of knowledge and can be measured
by the extent to which the knowledge
contributes to reaching the defined

knowledge objectives (benefits) in relation to
the resources necessary (expenses).

Most knowledge management approaches
investigate specific views – they focus e.g. on
societal aspects (e.g. [13]), on social aspects (e.g.
[14, 15], on decision-making (e.g. [16]) or on
information technology [17]. In particular, there are
numerous reference models which deal with
knowledge management processes [18, 19, 20, 21,
22, 23, 24, 25] among which the ‘Building Blocks of
Knowledge Management’ is the most established
[26]. It is comprised of eight sub-processes to support
knowledge management. The reference model is very
well documented and of significant relevance for
practical use when designing a knowledge
management system in an enterprise or enterprise
unit.

A number of publications deal with knowledge
management case studies (e.g. [1, 2, 27]). A closer
revision of these reveals that the documentation of
the cases is either too generic or focuses on certain
aspects of knowledge management (e.g. knowledge
transfer, e-learning), or is rather hands-on, i.e. does
not comply with a systematic approach. None of
these quantifies the economic efficiency of the
respective knowledge management system.

Existing knowledge management approaches are
either too generic to or do not comprise all the
aspects required to establish a full knowledge
management system. There are hardly any
publications on quantifying the monetary aspects of
knowledge economics.

On a more general level, there are numerous
enterprise organisation approaches, e.g. business
process reengineering [28], Kaizen / continuous
improvement [29], learning organisation [30, 31],
lean management [32], and six sigma [33]. They all
focus on REorganising enterprises or enterprise units
and mainly deal with business processes. Only the
business transformation framework takes cultural
aspects into earnest consideration [34]. None of them
provides a systematic view of the economic
efficiency of (re-)organisation measures.

Thus, there is no comprehensive approach that
can be used as a basis for the design and
establishment of a new enterprise knowledge
management unit which respects the aspects of
knowledge economics. This gap needs to be bridged.
3. The 4-pillar-model of enterprise organisation

The classical aspects of enterprise organisation are: implementing business processes, organizing the hierarchical structure (organisation chart) of the enterprise / business unit concerned, and defining the IT-support to be provided. Apart from this, the nature of knowledge requires the respecting of cultural aspects. Since pillar models can be regarded as an established representation of organisation approaches [e.g. 35, 36, 37, 38, 39] this leads to a 4-pillar approach to enterprise organisation.

The main objective of an enterprise is profitability, all organisational activities therefore need to further economic efficiency (here: knowledge economics). The framework underlying the approach presented here corresponds with the 4 pillars of the knowledge economy proposed by the World Bank [40, 41] and can be visualized as follows (see figure 2):

![Figure 2: The 4-pillar-model of enterprise organisation](image)

3.1. Processes

“A business process is an organised group of related activities that together create customer value. The focus in a process is not on individual units of work, which by themselves accomplish nothing for a customer, but rather on an entire group of activities that, when effectively brought together, create a result that customers value.” [37].

To design the processes of the future knowledge management system the eight building blocks for knowledge management defined by Probst / Romhardt turned out to be of substantial practical relevance [26]. This model is the most established reference model for knowledge management processes and can therefore be used as a reference model for defining the individual knowledge management processes in the enterprise / enterprise unit concerned (see figure 3).

![Figure 3: The building blocks for knowledge management [26]](image)

This individual knowledge management process model then serves as a basis for deriving the tasks – these are the elementary activities, i.e. activities that cannot be split up into smaller activities (“The difference between process and task is the difference between whole and part, between ends and means.” [42].

3.2. Hierarchical Structure

Today, process-oriented design of the hierarchical structure is recognised as a standard for defining the organisation chart of an enterprise. Aligning with this paradigm the organisation chart is derived from the underlying processes. Therefore, the smallest elements of the process model – the tasks – are identified and the required manpower is estimated. Based upon that, the tasks are assigned to an appropriate number of jobs which are then integrated into the organisation chart of the enterprise. The most important paradigms in this context are flat hierarchies and as few staff as possible.

3.3. Information Technology

As to the IT-support, the first decision to be taken is the extent to which the processes – or more precisely the tasks – need to be supported by software. The software requirements can be derived from this. Since every software functionality incurs an extra cost, the paradigm ‘as much as needed, as little as possible’ is to be followed here, too.

There are different types of information systems that can be used to support knowledge management [17, 43] (e.g. collaboration software, communication software), social software (e.g. wikis, weblogs), knowledge / document management software,
content management software, artificial intelligence software (e. g. expert systems), business intelligence software (e. g. data warehouse software, data mining software) etc. The task-based software requirements lead to the choice of one of these information system types.

Established software selection procedures then suggest the following steps:

• pre-selection based upon investment methods [44, 45] since the underlying problem can be interpreted as an investment issue, and

• final selection based upon (a) visiting the software vendors of the best 3-5 software systems on site, (b) testing the software with individual data, and (c) decision for a software system.

3.4. Culture

Enterprise culture (or the culture of an enterprise unit) means the way the employees interact with each other and with external persons (i. e. clients, suppliers). It is strongly influenced by the management style of the management board or the line manager [6], see figure 4.

Since knowledge is bound to a person and since it lies in the nature of knowledge that it cannot be shared against a person’s will, the management style of the enterprise unit concerned can promote or hinder knowledge management.

The culture of an enterprise (or enterprise unit) can be influenced by an appropriate incentive system combining hard and soft incentives according to the management style intended.

3.5. Economic Efficiency

All the four pillars of (re-)organizing an enterprise (processes, hierarchical structure, IT-support and culture) need to comply with the facets of economic efficiency. The criteria that have a positive or negative impact on the economic efficiency can be subdivided into benefits and expenses and each of these further into recurrent and non-recurrent benefits or expenses respectively. Again, the underlying problem can be interpreted as an investment issue so that investment methods apply, such as payback method, simple rate of return, net present value, internal rate of return, benefit analysis etc. [44, 45], see figure 5.

This section documents how the 4-pillar-model was used to design an economically efficient knowledge management system for the in-house consultancy unit of a very large German enterprise established in the ICT sector. The enterprise is a globally active concern with numerous subsidiaries.

The in-house consultancy employs 52 consultants and operates in the form of a cost centre. An analysis of the in-house consultancy’s business revealed that an average project is staffed with two consultants and is conducted within a period of two months. This leads to a total number of 156 projects per year:

\[
\text{Total projects} = (52 \text{ consultants} : 2 \text{ consultants per project}) 
\times (12 \text{ months per year} : 2 \text{ months per project}) 
= 156 \text{ projects per year}
\]

The clients of the in-house consultancy are the different business units of the whole concern. Due to the internal service charge system, the in-house organisation...
consultancy finds itself in direct competition with external consultancies. To improve its competitiveness, the consultants started a bottom-up initiative to establish a knowledge management system complementing the traditional back office functions of the consultancy and, in addition, attained the commitment of the appropriate management board. As a consequence, a project team was established to design the knowledge management system according to the 4-pillar-model of enterprise organization with a focus on knowledge economics. Since organisational issues have a much deeper impact on knowledge management than technological issues [46], the focus of the 4-pillar-model is on the processes and on the hierarchical structure of the knowledge management system. The expenses for conducting the project (working hours of the project team, workshops with all the consultants etc.) were taken into consideration when investigating knowledge economics (non-recurrent expenses).

4.1. Knowledge Processes

The project workshops showed that the ‘eight building blocks for knowledge management’ could be used as a reference model for the process design. Its outcome is described in the following paragraphs.

4.1.1. Knowledge Objectives. The knowledge objectives are to be derived from the objectives of the enterprise or enterprise unit. Since this field report deals with establishing knowledge management as a back office function within an in-house consulting unit, the knowledge objectives need to be derived from the objectives of the in-house consulting unit. The objective is to conduct projects for all the units of the concern in order to support them in reaching their respective objectives. These projects should be acquired and executed in an efficient manner with a steady improvement of the quality of the project results / outcome. An increasing competence of the in-house consultancy unit would lead to further consulting projects and therefore to an increase of revenue. Reaching the knowledge objectives leads to recurrent benefits but each objective defined also leads to an increase of resources required and therefore has a negative impact on knowledge economics. It was therefore initially decided to reduce the knowledge objectives to a minimum.

Thus, the knowledge objectives of the in-house consulting unit need to relate to the following aspects:

- specific:
  - projects in the concern
  - stakeholders in the concern
  - business strategy of the concern
  - ICT market
  - competitors
- general:
  - project management approaches
  - management methods

4.1.2. Knowledge Identification. Managing knowledge necessitates the identification of the relevant artefacts because only relevant artefacts comply with the principles of knowledge economics. Here, the project team interviewed all 52 consultants to discern what knowledge they consider to be relevant for their work. The results of the interviews were presented and discussed with all concerned. Finally, everybody agreed on the following so called ‘knowledge pieces’:

1. project – i.e. projects conducted by the in-house consultancy
2. method – i.e. methods applied in the past or methods to be applied in the future
3. person – i.e. (potential) stakeholders and/or experts for certain topics
4. institution – i.e. organisations which have been important in the past or might be important in the future
5. seminar / congress – i.e. seminars and congresses which have been attended in the past or should be attended in the future
6. publication – i.e. publications that are considered to be important for consultancy or might become important in the future
7. business document – i.e. internal documents, guidelines etc. that are important or might become important in the future

4.1.3. Knowledge Acquisition. In a workshop with all the consultants it was decided to conduct so-called debriefings on a regular basis with each consultant, and at the end of each project in order to attain new knowledge pieces. Furthermore the staff responsible should be charged with evaluating the internal enterprise communication concerning further relevant projects, persons, seminars / congresses, publications and business documents. To get external knowledge into the in-house consultancy, standard management literature needed to be evaluated by the staff responsible (knowledge management staff), too
All these activities should be conducted recurrently and necessitate appropriate human resources provision (knowledge staff). They have a negative impact on knowledge economics (recurrent expenses).

4.1.4. Knowledge Development. In order to develop knowledge according to the needs of the consultancy, the consultants identified two typical situations:

1. A consultant or a project team faces a problem which requires reflection and/or discussion with other consultants. To encourage quick problem-solving the consultant(s) responsible can form or ask for spontaneous formation of a so-called ‘Quick Win Team (QWT)’ within a maximum of 24 hours.

2. One or more consultants identify a complex knowledge piece everybody should be familiar with, therefore a so-called ‘Short University’ workshop. This should be a minimum of two and a maximum of four hours and should be offered within four weeks either by skilled consultants, or by external experts to convey knowledge and develop it for consultancy needs.

As to knowledge economics, only the expenses for organizing QWTs and Short Universities by the knowledge staff need to be taken into consideration because the consultants’ contracts imply working overtime. These expenses are recurrent.

4.1.5. Knowledge Distribution / Sharing. QWTs and Short Universities are not only a means of developing knowledge – they strongly support distributing / sharing knowledge. Nevertheless, there is no underlying systematic approach. In order to establish knowledge distribution / sharing on a regular basis, the agenda of the weekly consultancy ‘jour fixe’ was extended to include knowledge management on the agenda. On that occasion, the staff responsible ought to give an overview on new knowledge pieces, and consultants should have the opportunity to highlight knowledge pieces they consider noteworthy. The most important measure taken to distribute / share knowledge was the decision to introduce a knowledge management software which allows the storing and accessing of the acquired knowledge pieces (see knowledge acquisition). In addition, a so-called ‘knowledge space’ – a kind of library – was established where all knowledge piece related media could be stored.

The so-defined knowledge distribution / sharing processes therefore led to recurrent expenses for staff preparing the respective item on the agenda of the weekly ‘jour fixe’ and for managing the knowledge space. The expenses for establishing the knowledge space are non-recurrent expenses.

4.1.6. Knowledge Utilisation. Among all the building blocks, knowledge utilisation is the most difficult. In compliance with the knowledge ladder, applied knowledge – here: applied knowledge pieces – improves the capabilities of the consultants and (hopefully) leads to actions which then – if appropriate – improve the quality of consultancy projects. Knowledge utilisation can be enhanced by using the knowledge pieces stored in the knowledge management system in order to improve the outcome of ongoing consultancy projects, and by participating in QWTs in order to assist other consultants. This requires retrievability of the knowledge pieces from the underlying database. Therefore, a thesaurus structure based upon the following six dimensions was conceived according to the needs of the consultants. Due to the complexity of the full thesaurus structure only the main elements are listed here: (1) topic, (2) method, (3) stakeholder, (4) consulting process, (5) department and (6) main process (enterprise internal).

According to North / Kumta [2], knowledge increases when used and/or shared. Knowledge utilisation / sharing therefore improves knowledge economics. This directly leads to reaching the knowledge objectives discussed above (recurrent benefit).

4.1.7. Knowledge Retention. The only means of retaining knowledge in a consultancy unit with a high fluctuation rate is making as much of it as explicit as possible, and storing it in a database. This is realised by conducting debriefings with all the consultants. The retained knowledge is stored in a knowledge management software system. In terms of knowledge economics, this leads to recurrent and non-recurrent expenses for information technology (see 4.3).
4.1.8. Knowledge Assessment. In the first six months after implementing the knowledge management system, the quality, quantity and accessibility of the knowledge pieces were anonymously assessed by the consultants. This assessment took place on a monthly basis with a standardized questionnaire. After the initial period, the frequency was reduced to a quarterly assessment. The results of the assessment helped to identify weak points and led to improvements in the knowledge management system.

Since the assessment processes are executed on a regular basis they can be denoted as recurrent expenses. On the other hand, knowledge economics benefit from knowledge assessment because hereby the whole knowledge management system can be improved continuously in order to fulfill the objectives.

4.2. Hierarchical Structure for Knowledge Management

4.2.1. Identification of tasks and derivation of manpower. From the eight building blocks of knowledge management the following elementary tasks can be identified: (1) derivation of objectives, (2) identification of artefacts, (3) project debriefings, (4) consultant debriefings, (5) evaluation of enterprise communication, (6) evaluation of literature, (7) QWTs, (8) short universities, (9) journ fixe, (10) improvement of knowledge piece quality, (11) software management, (12) knowledge space management, (13) thesauri adjustment and (14) questionnaire evaluation. For each of these tasks, the required weekly manpower was estimated in a workshop by the project team. In addition to the commitments stated, it was decided to add a weekly buffer of four hours for unforeseen tasks. This led to a weekly personnel requirement of 47 hours (see figure 7). Given the statutory German working week of 37.5 hours, this equals 1.25 employees.

4.2.2. Assignment of tasks to staff and their integration into the organisation chart. All the consultants agreed to establish a so-called ‘knowledge management center (KMC)’ as a cost center supporting the consulting unit. According to the ‘one-face-to-the-customer’ paradigm it was decided that there should be one senior knowledge manager responsible for the KMC. To keep the KMC working even during the holiday season and/or illness of KMC-staff, the senior knowledge manager should be supported by two more staff members. Thus, the 1.25 jobs was designed for three staff members (see figure 8).
Finally, the knowledge management center was integrated into the organisation chart as a support unit for the in-house consultancy unit (see figure 9).

![Organisation chart](image)

**Figure 9: Organisation chart**

The expenses related to the hierarchical structure mainly result from the 1.25 employees in charge of the knowledge management system (KMC staff) and the related processes. As discussed above, these are recurrent expenses and need to be entered into knowledge economics.

4.3. Information Technology for Knowledge Management

The software requirements could be derived from an analysis of the tasks. Figure 10 lists which of the identified tasks needed to be supported by IT.

![IT-support for tasks](image)

**Figure 10: IT-support for tasks**

This led to the following functional software requirements:
- definition and administration of different individual knowledge pieces (e.g. projects, methods, persons, institutions, seminars / congresses, publications, business documents) with a flexible structure,
- definition and administration of individual thesauri (e.g. for topics, methods, stakeholder, consulting process, department, main Process (enterprise internal)),
- statistical evaluation of knowledge management system quality (esp. use of knowledge management software / knowledge space).

The functional requirements could thus be considered to be very low which complies with the paradigm ‘as much as needed but as little as possible’. This concurs with the principles of knowledge economics.

Apart from the functional requirements, there were numerous further requirements concerning:
- software technology (e.g. browser-based software, underlying database),
- usability (e.g. user-friendly surface, acceptable response time),
- adaptability (e.g. user exits, software interfaces),
- acquisition of hardware equipment (e.g. expenses for licenses and for software maintenance), and
- software vendor (e.g. size, yearly turnover, cooperativeness).

Since the software requirements appear to be very low, the information system type ‘document/knowledge management system’ was appropriate to support the knowledge management system. The listed non-monetary requirements (criteria) were then included in the benefit analysis whereas the monetary criteria were entered into the present value method. The respective data could be acquired from established market surveys and from the respective software vendors. Finally, the benefit / present value - ratio was calculated for each software system. Due to shortage of space, this issue cannot be documented in depth in this paper.

In the case under consideration there was one software system which provided an outstanding benefit / present value - ratio. As a consequence, the final selection focused on this single software system (not the top 3-5 software systems as proposed). Since the performance of this software system met the expectations, this system was approved and the contract made with the software vendor so that the knowledge management software could be introduced into the KMC. The software introduction phase itself took six months whereafter the routine
operation stage started. Figure 11 depicts the contents of the knowledge management system at the end of the introduction phase / beginning of the routine operation stage.

4.4. Knowledge Culture

The management style in the in-house consultancy was identified to be cooperative and/or participative respectively – and it should remain so. Since individuals who are highly competent in their work abilities are more likely to share their knowledge when this is recognised by the organisation [47], an incentive system was conceived which comprised of both soft and hard incentives.

The hard incentives were:

- integration of knowledge management targets into the objectives agreement for every consultant
- half a knowledge management day was integrated into every project schedule and project budget for conducting debriefings.

The soft incentives were:

- weekly knowledge management awards (in terms of chocolate)
- informal meeting-points (kitchen, lounges) with free drinks (coffee, water etc.)
- innovative and communicative office (morphing-office concept)
- personal responsibility of the consultants (flexible working hours etc.)
- fortnight consulting development training for every new consultant with a strong emphasis on teambuilding and knowledge management.

Among the incentives listed, furnishing the informal meeting-points and the offices in compliance with the morphing-office concept led to non-recurrent expenses. Apart from that, free drinks in the informal meeting-points generate recurrent expenses. All these expenses needed to be taken into consideration when knowledge economics were dealt with.

4.5. Knowledge Economics

An analysis of all the expenses and all the benefits led to the list in figure 12.

For confidentiality reasons the exact numbers will not be disclosed. Nevertheless, figure 13 shows that the break-even period (payback period) for the knowledge management system amounted to five years.
5. Evaluation and Findings

The evaluation of the knowledge management system was conducted by two parties: The consultants of the in-house consultancy unit were interviewed on a regular basis (see process ‘knowledge assessment’), and the auditing department of the enterprise audited the knowledge management system. The outcome of these evaluations was: (1) All the consultants are very content with the knowledge management system, (2) the search function of the knowledge management software needs improvement (especially wildcard-search e.g. ‘?’, ‘*’), and (3) a five-year payback period is absolutely acceptable for large and very large enterprises (like the one underlying the study in this paper) – for a start-up company though, a five-year payback period might be too long. Start-up companies should thus consider starting with a leaner enterprise knowledge management system in order to reduce the payback period by reducing the costs of the knowledge management system.

Furthermore, the following success factors were identified:

- The most important success factor for knowledge management is an extremely good knowledge culture – this applies especially to the so-called ‘lessons learned’ made explicit by debriefings. In the case underlying this study, a former consultant who knew (1) most of the consultant-staff and (2) the specifics of the consultancy projects very well moved to the senior knowledge manager position. It turned out that especially this person was entrusted with sensitive lessons learned and asked for advice.
- The quality and the level of the knowledge culture needs to be observed and improved continuously – without irritating the staff. Short monthly questionnaires (preferably online) proved to be helpful in this context.
- A senior knowledge manager position must be integrated into the organisation chart. This senior knowledge manager should not only feel officially responsible for, but also really commit him-/herself to knowledge management. According to the size of the enterprise or enterprise unit, a knowledge management group (i.e. one senior knowledge manager and one or more subordinate knowledge managers with their full working time or part-time) should be defined in the organisation chart. In this case, one knowledge manager could usually suffice for 50 employees – this leads to a 1:50 rule of thumb for an economic enterprise knowledge management system.
- In the long run, the knowledge management system must be economically efficient. The expenses can be quantified easily by monetary criteria whereas the qualitative nature of the benefit is more difficult to express. Therefore, especially the benefits and their impact on knowledge economics need to be documented and communicated transparently.

6. Contribution

This field report can be used as a best-practice example including success factors to establish knowledge management in any enterprise or enterprise unit.

From a more generic point of view, it can be anticipated that the ‘4-pillar-model for enterprise organisation’ is a holistic approach that comprises all the aspects of enterprise organisation and can thus be used to design any new unit in an existing enterprise or start-up company.

7. Limitations and Outlook

Like every academic paper this work has some limitations which might lead to future activities: (1) Due to shortage of space, details of the benefit and present value analysis in the context of software selection could not be presented in this paper – this will be executed in a further publication in the near future. (2) The maturity of the designed knowledge management system has not been assessed with any of the existing maturity models or metrics. This is one of the next steps that need to be taken. (3) The knowledge management approach discussed may be transferred to other enterprises or enterprise units. (4) The 4-pillar-model was conceived to be applied to all (re-)organisation issues in any enterprise. Future work needs to verify this.

8. References


