

Futures Studies Methods for Knowledge Management in Academic Research

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Abstract. The management of academic knowledge is a relatively young area of attention. Higher education entities accumulate a great deal of knowledge and the management of this asset is more than ever crucial for the strategic alignment. Hence, this paper aims at showing that knowledge management in academic research should work hand in hand with futures studies to develop and foster a strategic orientation. For this purpose the knowledge management model by Probst et al. (1998) with its eight building blocks serves as a framework. The focus of this paper lies on the processes of *knowledge goals* and *knowledge identification* and it is suggested that the futures studies methods monitoring, scenario technique and forecasting are suitable to complement knowledge management methods within academic research due to their ability to identify and concentrate information and knowledge relevant to the future.

Keywords: Futures Studies· Knowledge Management· Academic Research· Monitoring· Forecasting· Scenario Technique

1 Introduction

The assumption that science and research are independent from material incentives [1] is out-of-date for universities. These and other higher education institutions are increasingly exposed to market pressures caused by the demand to become more productive and competitive [2]. Hence, academic entities rely on external funding to realize innovative scientific and technological projects and ideas. Additionally, knowledge – especially novel knowledge – is the main capital of these entities. In order to manage this asset, the implementation of knowledge management in academia appears to become increasingly important [3]. Therefore it is necessary that knowledge management includes a future orientation to align a strategy well in advance in order to grant public research funds. In that respect knowledge management and futures studies are predestined to work hand in hand to develop and foster a strategic orientation in terms of targeted investments and the forward-looking identification of funding opportunities.

A central knowledge management model in German literature is the eight building blocks model by Gilbert Probst et al. (1998) [4]. It serves here as a framework due to its broad popularity in research and practice. These building blocks “provide an outline of the areas where active knowledge management is possible” [ibid]. Considering that in research the pivotal interest foremost lays in future requirements and challenges, the creation of yet unknown knowledge is fundamental. Hence, the focus lies on the building blocks *knowledge goals* and *knowledge identification* due to their future orientation with respect to novel knowledge. In the course of this paper the integration of the futures studies methods *monitoring*, *scenario technique* and *forecasting* to the knowledge management of these two building blocks is suggested in order to continuously monitor and evaluate the performance (monitoring), identify diverse future challenges (scenario technique, forecasting) and thus develop plans of action for the desired future state.

2 New Challenges for Knowledge Management in Academia

Since several decades the generation, exchange as well as diffusion of knowledge depicts a major field of research in various scientific communities. With regard to the growing research community of knowledge management, a couple of authors developed principles and models that are dealing with normative, strategic, tactic and operative knowledge management elements. Nonaka and Takeuchi (1995) [5] e. g. focus on the entire knowledge creation in companies and Bhatt (2000) [6] considers the organization of knowledge by describing a knowledge (management) cycle. A further framework for knowledge management, which is worth mentioning here, is provided by Wiig et al. (1997) [7]. It describes four activities of knowledge management – Review, Conceptualize, Reflect and Act – which are performed sequentially (ibid). In contrast, Probst et al. (1998) [4] do not consider knowledge management as a sequential process but rather a recursive one. The authors stress that the model was firstly developed to connect results of action research and organizational learning with real problems of managers in companies (ibid). The model comprises eight so called “building blocks”– integrating strategic and operative management levels – that are connected by an iteration loop (fig.1).

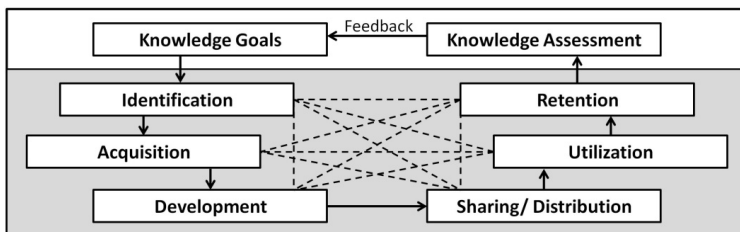


Fig. 1. Eight building blocks of knowledge management by Probst et al. (1998)

On a strategic level the iteration loop of the model begins with the building block *knowledge goals*. This is followed by the building blocks: *knowledge identification*, *knowledge acquisition*, *knowledge development*, *knowledge sharing/distribution*, *knowledge utilization* and *knowledge retention* on an operative level. In this operative

level systemic interconnections and cause-effect-relations of core processes are suggested by the authors (ibid). Ending with the building block *knowledge assessment* on the strategic level, the iteration loop is completed (fig.1).

Considering the expansion of different forms in new public management, such as a more entrepreneurial alignment of universities in single federal states of Germany (Hochschulfreiheitsgesetz NRW 2006) [8], a reflection of the model in terms of its transferability from business environments to academia can be a promising next step. However, there are obvious differences between an economic and an academic system with regard to knowledge [9]. A business organization usually faces the problem that knowledge assets are rarely visible. Hence, the detection, distribution and utilization of knowledge are the crucial tasks and building blocks. In contrast, the focus of academia lies on the constant generation of novel knowledge (ibid).

3 Knowledge Goals and Knowledge Identification

“Agreement on strategic goals is the core element in strategic planning, which in turn provides the basis for implementation and monitoring” [4]. In the case of a university, for example, it has become crucial to focus on future funding opportunities. Consequently, strategic research goals have to be set in order to identify future spheres of competence. In doing so it is important that the forecast and therefore the generated knowledge is reliable, i.e. it needs to be related to concrete research objectives. Already applied knowledge management methods, which support the process of goal setting, are “Strategic Knowledge Assets” [10] or knowledge-based “SWOT Analysis” [7]. The more detailed it is known, which knowledge is actually available, the more precise is the definition of the unknown. Therefore, the building block *knowledge identification* is highly linked to the previously introduced building block *knowledge goals*. “Our knowledge goals will point us towards the areas and sources of knowledge which we need in order to strengthen our existing competencies or create new ones” [4]. The challenge within academic research is to identify the boundaries of already existing knowledge in order to excel. Knowledge management methods such as “Competence Mining”, which is based on data mining techniques to identify the staff’s competences based on their publications, support the identification of individual competences [11] and enhance the transparency required to attain the previously set goals.

In the following the integration of futures studies methods in knowledge management is suggested as it comprises a potential and promising added value for new forms of knowledge management in academic research environments.

4 Integration of Futures Studies in Knowledge Management

4.1 Futures Studies and Its Methods: Why and Wherefore?

“Studying the future is not simply economic projections or sociological analysis or technological forecasting, but a multi-disciplinary examination of change in all major

areas of life to find the interacting dynamics that are creating the next age” [12]. Futures studies and its methods provide a long-range view and thus relevant knowledge to different facets of futures. Considering the remarks about the features of the building blocks *knowledge goals* and *knowledge identification* it is clear that they are future orientated. Society or nature is not deterministic but rather incoherent. Since the future cannot be predicted it is important to plan within the context of alternative futures. Futures studies can identify future spheres of competence and create knowledge, assured through structured and methodical procedures that are able to support decision-making processes. Futures studies methods are as heterogeneous as their object and thus combine qualitative and quantitative approaches. They identify and concentrate information and knowledge relevant to the future, and thus serve for the administrative work at educational providers [13]. That is why futures studies are able to support knowledge management processes not only in businesses but also in science.

4.2 Monitoring, Scenario Technique and Forecasting

The methods *monitoring*, *scenario technique* and *forecasting* are characterized by the fact that they are used variably for different time scales and thus are qualified for different requests in knowledge management processes.

Monitoring can be defined as a directed observation of key indicators relevant in a special field and is usually coupled with an undirected search for clues and evidence linked to the indicators. Special information about processes and findings are collected to stimulate activities that are able to enhance their efficiency and effectiveness. The purpose of monitoring-activities and processes is to steadily observe a particular object based on relevant information, to reflect it and to initiate change. With regard to *knowledge goals* and *knowledge identification* a continuous monitoring supports detecting concrete and possible developments in (academic) research. If an adjustment or reorientation in research is opted, a next step is the detection of the necessary know-how to pursue the new path successfully. Thus monitoring rather serves to assess developments over time descriptively and on the basis of reliable and regularly collected data [14] to develop plans of action. In the monitoring project ‘International Monitoring’, funded by the German Federal Ministry of Education and Research from 2007 to 2013, the monitoring method was exemplarily used and adapted to establish a continuous observation of fields of future action on the topic of innovative ability and thus to foster the sustainable competitiveness of Germany and Europe in the global market (<http://www.internationalmonitoring.com/home.html>).

Forecasting is likely to be understood as the prediction respectively the projection of future developments on the basis of both earlier developmental stages and the actual situation [15]. As it is usually aimed to find strategies suitable to influence the future developments in a positive, economically and socially responsible way, the statements carried out take the form of conditional statements [13]. Forecasts can be short-term, intermediate and long-term orientated. They can support the knowledge management building blocks by generating relatively assured data about future developments and therefore provide a reliable basis for decision making about future

research developments. As an example within the meta project 'DemoScreen', funded by the German Federal Ministry of Education and Research, expert workshops were taking place in order to elaborate future needs for research in terms of social innovation (<http://demoscreen.de/>).

Through *scenarios* future developments or states of a forecasting object under certain and alternative conditions will be investigated and an aggregated picture for a certain prognostic time horizon will be designed. Thus, scenarios are based on information, opinions, views and valuations which determine their probability of occurrence. Questions like "What can happen?" or "How can a specific target be reached?" define the range in which different types of scenarios can be classified [16]. Thus, goals, role models, options of action, recommendations and measures can be developed to shape the future as well as the journey towards it. In academic research scenarios allow to identify research desiderata and to anticipate possible developments. They help to detect interferences and support strategy development as well as the definition of research respectively knowledge goals. The scenario technique allows developing a long-term strategy which also includes unprecedented phenomena and developments. This aspect is interesting for research since it aims at finding out the yet unknown and increasingly depends on funding. Thus the main benefit deriving from the scenario technique method with regard to the building blocks *knowledge goals* and *knowledge identification* is the set of alternative futures which offers a plausible and consistent framework for the development of a strategy concerning required future knowledge.

5 Conclusion

In the present paper three selected methods of futures studies were discussed in terms of their added value to knowledge management of academia with a special focus on their value for the building blocks *knowledge goals* and *knowledge identification* by Probst et al. (1998). This knowledge management model provides several development options when applied for academic research, whereby this paper focused on two out of eight building blocks due to their importance for the definition of an academic strategy. The proposed integration of the three above mentioned futures studies methods into this model illustrates a useful and promising support for detecting future challenges and demands such as exemplarily highlighted for monitoring and meta projects, funded by the German Federal Ministry of Education and Research. The selected methods complement knowledge management and enhance the research strategy by examining future developments and their completion – an important aspect for academic research e.g. in terms of external funding opportunities. Hence, a current strategy can be adapted if profound future changes are detected and thus decisions for future research projects can be shaped. The strengths of the foregoing methods in the present case lay in thinking more systematically, anticipating a long-term perspective, considering alternatives when thinking about the future and improving the quality of decision-making. This paper aimed to introduce the idea of conducting knowledge management together with futures studies. There are many more suitable

methods available and a further investigation of combinations and benefits is a promising next step.

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