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KNOWLEDGE MANAGEMENT TO SUPPORT INNOVATION PROCESSES

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1. Introduction

The tendency to still more rapid change and increasing modification rate still continues and concerns all areas of our society. In special way this applies to companies, because the dynamics in the surrounding field of the company cause there appropriate dynamics in the companies themselves [1].
Shorter product life cycles with increased product complexity are a challenge for the operational innovation and knowledge management. Technological developments, particularly in the information and communication technology, are the base for many of these modifications.

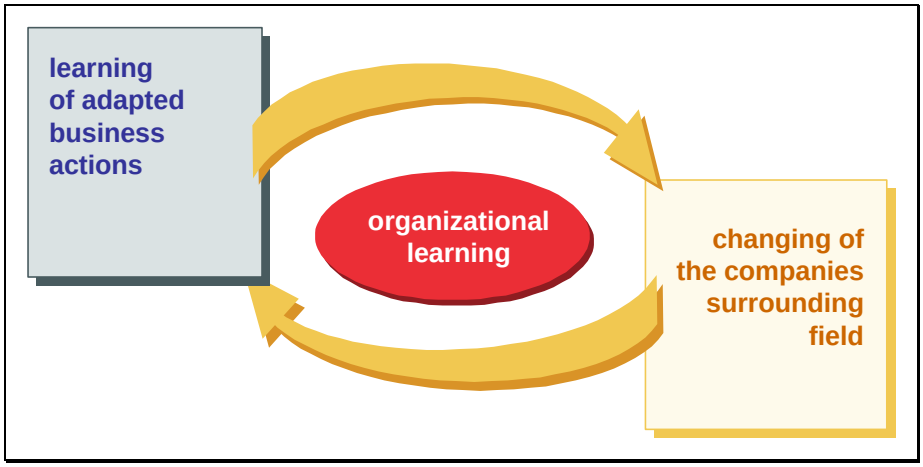

Figure 1. Cycle of organizational learning [2]

Because of the rapid change of the surrounding field, the own willingness of modification is constantly submitted to a hard examination. Companies therefore must increase the own flexibility to be able to react on trend breaks in markets and technologies. Exactly that can be obtained by stabilization of the organizational adaptability (see fig. 1).
Knowledge management, thereby, can be understood as function-spreading instrument of control for the purposeful management of an organization by special consideration of “knowledge”.
Beside the financial basis knowledge is the most important resource for innovations. These innovations are again basis and engine for the structure and the lasting protection of a competition advantage (see fig. 2). In order to lead a company successfully, systematic handling of “knowledge” becomes more important.

"Today the increase in value develops from "the productivity" and "the innovation". Both mean the use of knowledge to the work." [3]

Because of the increasing innovation dynamics, knowledge moves into the focal point of the business performance. To regard innovation processes under the focus “knowledge”, leads to new or until now neglected organization measures for the management of innovation processes in companies.

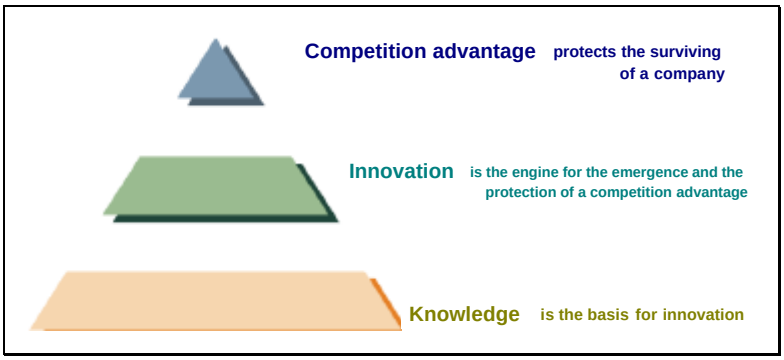

Figure 2. From knowledge to competition advantage [4]

2. Base model of the knowledge management

Knowledge management means carefully directed co-ordination of the factor of production “knowledge” and the management of basic conditions, which support the process from individual available knowledge to organizational knowledge. Non-standard and collective knowledge are to be applied then during creation of value processes. Knowledge management thus means not the management of the factor of production “knowledge”, but the management of the organization with special consideration of the aspect “knowledge”.

In order to facilitate this management, one differentiates - referring to a base model of knowledge management (see fig.3) - between data and knowledge level. This differentiation is based on the one hand on the traditional separation from knowledge of the employees (social subsystem) and on the other hand on data in information and communication systems (technical subsystem).

On the data level all data of an organization can be found, i.e. its documented, collective knowledge. The knowledge level contains the organizational knowledge base and is that area, where a social networking takes place in the form of communication. Here are the “memories” of all employees.

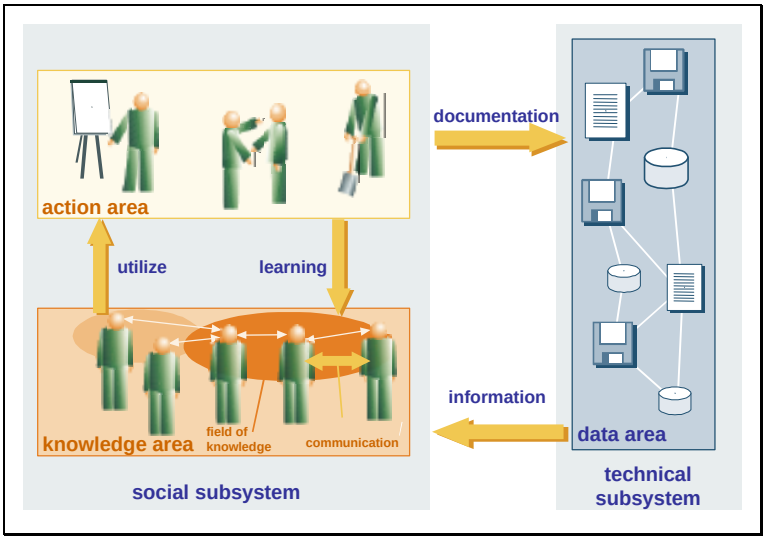

Figure 3. Base model of knowledge management [4]

The two levels are connected by the processes of information and documentation. Knowledge is generated from data, transferred by the process of information. By the process of documentation knowledge is transferred into data again (made explicit).

Additionally an action level is described, on which the development of knowledge and the use of knowledge during the creation of value processes take place. By the process of the application of knowledge this is transferred on the action level into concrete actions. Via assuming the results of action an extension of the "memory of a company" can take place via learning again.
Knowledge level, data level and action level are coupled with the five essential processes as information, documentation, communication, application and learning and make up a base model of knowledge management. In further consequence this model will be used to point out specific aspects. The organization of basic conditions on the three levels and the support of the processes between the levels can be implemented by different measures.
On data level it is in particular the support of the data networking by means of information and communication technologies. However a climate of the knowledge division and - networking can only be created on the knowledge level by an appropriate organization development and organization culture development. Likewise it can be guaranteed on the action level, with the help of an appropriate process organization, that knowledge, which has been created in individual projects, is also available to future projects.

3. Innovation management as part of knowledge management

Today, the organization of company-internal innovation processes can be regarded as an existence-crucial success factor. „Innovation" is not only a word, which came into fashion, but a central term of future-oriented company guidance. The question is not any longer whether innovations have to be implemented in a company, the questions are when and how the specific innovations are realizable, as successfully as possible, in order to introduce a new product, a new service or a new process
To manage innovation processes nowadays does not only mean to react time-fairly and purposefully on modifications in the company surrounding field but also being the time ahead, participating in the organization of the future actively. The innovation ability of a company, which is finally determined by the willingness of its employees to modification, today can be seen as the core competence of a successful company.

4. Modification of the organizational knowledge base

Each modification is connected with learning processes, which finally enable an adjustment to a new situation. The target of the company is to become a constant learning company, which understands and operates innovation actively from the inside out as a permanent, organic process. "Organizational learning" and thus the internal extension of the organizational knowledge base becomes an important target of companies in the knowledge management.

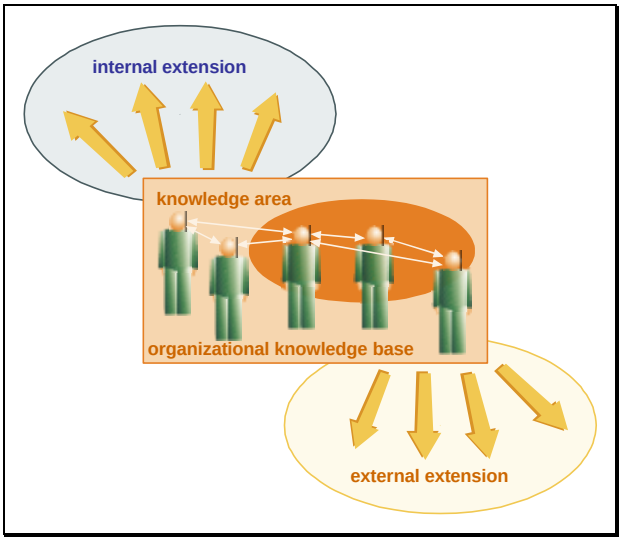

Figure 4. Extension of the organizational knowledge base [5]

The increasing specialization into individual branches of science increases the number of fields of knowledge. The focusing on few core fields of knowledge is necessary and becomes one of the strategic major tasks in the operational knowledge management. Networking with other companies, participating with their core fields of knowledge, can be seen as an external extension of knowledge (see fig. 4).
Apart from external networking, internal networking offer good possibilities to attain strategic knowledge advantages. Today these possibilities for many companies represent unused potential. The range is from informal exchange of knowledge to the formation of legally obligatory alliances As a matter of principle it can be said that, the more largely the organization, the more important becomes internal networking, the smaller, the more important is the external networking. In figure 5 possibilities for a knowledge transfer are pointed out on the basis of the base model.
In the operational innovation and knowledge management the inclusion of external resources or external sources of knowledge seems to be at first sight a rather critical measure. The danger of knowledge discharge from the company and the increase of the dependency on other organizations are questions and problem definitions, which occur. Nevertheless an increasing networking of companies with external partners can be observed also during the accomplishment of innovation processes.

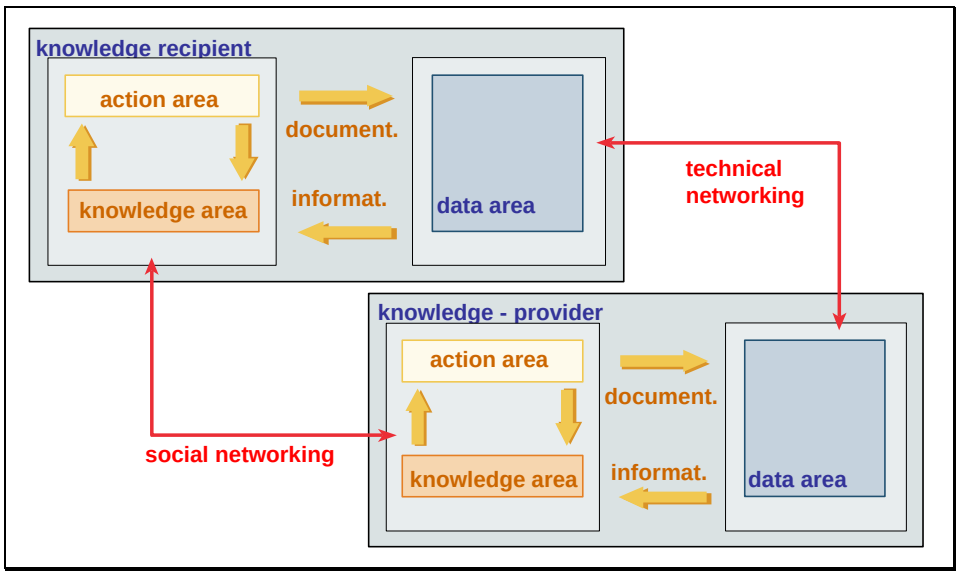

Figure 5. Possibilities for a knowledge transfer [4]

5. Development by new knowledge

If the available knowledge supply does not cover the knowledge requirement, either an internal extension or an additional external extension of knowledge must take place from external services. The basis of the decision making process are the core competences of creating products and services for the customers of a company.
The internal extension of the knowledge supply takes place via generation of knowledge, which can be understood as a function of the innovation management. In addition necessary basic conditions must be created. The development of knowledge requires the use of creative potentials and teamwork. The methodical support is based on a multiplicity of established creativity techniques, depending on the definition of the problem. The technical emphasis of the team members of so called creativity workshops should differ if possible and go beyond the field of knowledge of the problem definition.
In order to break out and to find new methods of solution it is meaningful to cooperate with external knowledge carriers and experts, if necessary. The interaction and communication of the users within the problem field can open up new solutions, which resulted e.g. by the transfer of solutions from complementary fields of knowledge. The inclusion of external knowledge potentials for company-internal innovation processes can have the following motives:

- the field of knowledge cannot be covered for temporal and economic reasons

- internal generation of knowledge seems not to be not meaningful strategically

The external extension of the base can be implemented by outsourcing. Potentials, which do not rank among the core fields of knowledge of the company, can be bought as customized services. Therefore also specific functions can be counted apart from routine activities, which can be completed only by appropriate experts or knowledge carriers. On the other side it is also important to use the experience of external partners who can help to structure and develop the fields of knowledge that are relevant for the company.

6. Conclusions

A global knowledge management is to guarantee that the factor of production "knowledge" is used just like the traditional factors of production effectively and efficiently, in order to achieve the company targets. Another advantage is the improvement of the adaptability of an organization; additionally the action potential is increased. Knowledge management especially is useful with creation of new products and services.

The following points describe the use of knowledge management in companies:

- transparency over knowledge potentials and knowledge gaps
- higher motivation of the employees as "thinking" people
- Establishment of a learning organization
- increase of competition ability
- Guarantee of long-term survivability of the company

In the knowledge of the employees there are almost inexhaustible reserves for the future success of the company. Therefore the systematic use of the resource knowledge becomes the central strategic topic of companies.

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