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Knowledge management, innovation and creativity

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Contents

1 Introduction

Since five years, knowledge management remains high on the policy agenda of companies. Companies hope to improve their operations by introducing such knowledge and innovation programs. Also, at the EU-level, knowledge management is seen as an important item for research. The European Commission has included this topic in the IST-programs. The email-address of the EU-commission (km-rocket@topica.com) generates a lively European debate on knowledge management. This chapter looks into the change processes required to implement knowledge management.

2 Drivers for change and implementation

The prime reason for companies for changing to knowledge management is that knowledge and creativity are seen as the driving forces for the company of the future. The knowledge economy is based on knowledge centred companies. There is however no clear definition for such knowledge centred companies. The EU calls them 'smart companies' (Filos & Banahan, 2000). The constantly changing customer and market opportunities in the digital economy ensure that there can be no single universal formula for describing the *smart organisation*. Steven Goldman et al. (1995) describe four strategic dimensions of agile behaviour that is crucial to smart organisations. These are,

- Customer focus;
- Commitment to intra- and inter-organisational collaboration;
- Organising to master change and uncertainty;
- Leveraging the impact of people (entrepreneurial culture) and knowledge (intellectual capital).
- Several of these dimensions are discussed in other chapters of this report.

Central to knowledge management is the shift towards a competition on ideas. Cost competition is replaced by idea competition for several reasons. Commercial success today is not so much based on delivering cheap products to customers, but rather on products adapted to requirements of the user. A personalised customer approach is central to new production systems. A successful production system must be capable of delivering the right products to the customer, but also to be able to follow the changes in the daily mood of this customer. Stock production is therefore out-of-date. For such personalised production, companies and workers need to have a profound insight into wishes of customers. This requires more knowledge about what the market demands.
A second reason is that companies should not remain passive and act only on the wishes of the customer, but also try to attract the customer with new ideas and formulas. Creativity is one of the central building blocks of the new production system. Such creativity requires the capability of producing new ideas. Knowledge about past experiences and possible new ways is critical for a company.
A third and very important element for this 'creativity jump' is the changing nature of technology itself. Information and Communication Technology (ICT) is quite different in nature in comparison to machine technology. The function of machines and traditional technology is clear and limited. A drilling machine just makes holes. The

function of an ICT application is quite unlimited and gradually to be discovered by the user. To develop these new uses and possibilities, workers must develop their knowledge about ICT. ICT, as a communication technology, requires a social environment. Only by communicating with other can users learn the possibilities of the technology. Companies must help workers develop this knowledge and creativity.

The knowledge of workers, coupled to the intelligent use of technology, is the most valuable asset for a company. With this change, the central issue for a company becomes to improve it's innovative capacity. French and Bell (1990) call this the organisation's problem solving and renewal processes. This means several things:

- constantly generate new ideas,
- have the capability of getting these new ideas into products or services,
- assure that knowledge gets spread to all workers.

But the question is how to manage this knowledge and innovation process. Management and organisation are critical issues. Knowledgeable workers are also a capricious and stubborn kind. Knowledge management means management of technology, people and (inter- and intra-) organisational structure to suit the demands of these knowledge workers:

- Technology: companies need to find out how to develop their ICT in such a way that knowledge can easily be identified (ICT as a search instrument), allocated and combined into new forms of knowledge. This must be done in such a way that the technology is seen as helpful and supportive to the workers, and not as dominating and dictating the worker. Only 'playful technology' will be trusted by the user.
- People: companies need to develop new training, recruiting and selection procedures. Their Human Resources (HR)-policies should be suited to life long learning of their workers. This means that companies need to think about attractive careers and working environments. In this effort, companies need to find to a good mix between the central elements of knowledge creation process. These elements have been described by Nonaka and Takeushi (1996) as combination, socialisation, internalisation and externalisation of knowledge.
- Intra-Organisation: if tasks and jobs should be supportive to the innovative capacity of a company, then they should be designed in such a way that competence development is at the core of these tasks and jobs. Attractive jobs are needed.
- Inter-organisation: contacts with customers and suppliers must be managed. Companies need to acquire an 'open mind' for problems and needs of customers and suppliers. There problems and needs are the basis for new products and services.

3 Characteristics of change

The shift towards smart companies consists of three changes: changes in tasks, in the use of technology and in management systems.

Changes in tasks. The change to a successful knowledge management is built on the integration of tasks and functions within a company. Traditional Tayloristic production systems are built on the principle of separation of information and knowledge between functions within companies. Workers carry out the central tasks and only require operational information and task knowledge. Staff workers and managerial workers require tactical and controlling information on which they can act. In the smart

company, all workers and functions require an overview and insight into information which extends to all aspects of production and service. Only then can they work on new solutions and be inventive.
Successful knowledge management is also built on a new learning and training systems. The key to such new systems is not so much a stress on retraining of new tasks as is central to traditional Tayloristic production systems, but a stress on the development of new knowledge sources within a company. Companies have to be able to learn their workers to add new knowledge to the existing information and knowledge pool of the company. Training and retraining of small tasks must be replaced by open end learning of new skills and capacities.

Changes in the use of technology. ICT is the central technology in smart companies. This technology is not so much used to deliver one central product, but has more uses. ICT is used for retrieval of information, but also as a means to combine this information and reuse it into something practical. The technology is also used for the development of different and new contact possibilities between workers. Email systems are examples of time independent contact possibilities.

Changes in management systems. The last change is in the management systems of companies. These are now not so much oriented at control, but rather on cooperation on idea formation and development of knowledge and skills. If companies want to profit the most of the new market requirements, they need to step over from the control model with standardisation as main issue, to models which enhance creativity.

4 Benefits of such changes (sustainable growth, social benefits)

The benefits of knowledge management are much in line with the benefits described in the chapter on ICT. There does not exist any clear factual data on these benefits. A reason for this is that the benefits of knowledge management cannot be separated from other performance issues in companies: e.g. general market position and marketing strategies, technology position of the company etc. (Dhondt e.a., 2001).

A first clear benefit of knowledge management is that sharing of knowledge improves the labour market position of all of those involved. Any kind of investment in knowledge of workers enhances the learning capacities of these individuals on the longer term. These investments reduce the need for continuous retraining as is required in tayloristic production systems. Successful models of knowledge management also reduce the need for managerial intervention in the innovation process. Employees can manage their own destiny. For this it is necessary that the efforts are controlled at the group level (see further: obstacles). The re-education efforts of companies have a positive societal benefit. Companies bear the cost of such skilling of workers. This reduces the need for subsidized training schemes as exist in labor market bureaus.

Such models of knowledge management lead to sustainable growth of companies. The improvement is mainly in the innovative capability of these companies. There does not exist any information to prove this statement. On the long term, skilled and reskilled workers make companies more responsive to future market demands. ‘Learning’

workers can adapt themselves to the market demands in the future. They are not solely dependent on the demand for certain specialised task skills.

5 Obstacles to change

The current experience is that knowledge management is not as successful as it should be. Most of the interest in knowledge management is mainly technology oriented, in this sense that only the technological possibilities are examined and less the social consequences. Companies see knowledge management as successful if they have installed a database which is capable of centralising all efforts and information from employees. Also, little attention is directed to the limited use of implemented knowledge management systems (Damodaran & Olphert, 2000) or to the limited support knowledge management systems have to the goals companies have (Strikwerda, 2000). Most knowledge management examples only show the technological possibilities of database systems. The stress in such examples is only on databases which require workers to put in data, but show little possibilities for feedback to these workers. The main obstacle of such approaches is that they are pushed only by separate staff functions and have too little support from all participants concerned. A too functional or too control approach of knowledge management brings the employees in a position of distrust: it isn't clear to them why all their effort is needed to support staff workers or managers. Why shouldn't their own actions profit themselves? If this interest is forgotten, knowledge management remains an empty database.

Another obstacle is too big a reliance on external support and consultants. Consultants can bring new ideas and create the necessary support for the changeover to knowledge management. But it is central to knowledge management that all employees are committed to the goals of knowledge management. Only then knowledge management will be successful. External support carries with it the risk of alienating groups from the effort. The only way to cope with this risk is to make the groups or teams responsible for the development approach. A participative, bottom-up approach is the key to a successful knowledge management.

A lack of a coherent approach which builds in the interests of the organisation and of the individual is a third obstacle to a successful model of knowledge management. If only the interests of the organisation for knowledge management are stressed, then a control approach becomes too dominant. Users of the knowledge management system think that the profits are only for the organisation at the expense of the individual workers. Such approaches run the risk of too low commitment from the users. Too little information is collected in the databases or the quality of the data is of questionable quality so the profit of the system is doubtful.
At the other hand, if only the interests of the individual are stressed, then organisations are confronted with 'free rider behaviour' (Senge, 1990). Individuals can profit from the investments done in training, education and technology, but they are not committed to returning results or information to the company. In such models, profits are also lost. A coherent approach consists of looking after both interests: the organisation and the individual. The best way to balance both interests is to create systems which are group or team oriented. The group or team can insure the necessary commitment of all members to the goal of the group, and thus of the organisation. Groups can better look

to it that investments in training, skilling or education are to the profit of the group and not only to the individual getting the training. At the same time, if feedback systems are located at the group level, individuals are assured that their input doesn't disappear in the anonymity of the organisation. Only then individuals trust that their effort isn't misused.

A less clear, but not less important obstacle to knowledge management is the amount of uncertainty which accompany such investments. The rewards of knowledge management are more on the longer term. This makes that such investments are seen as too risky for a company. Companies sometimes choose to wait and let other companies make the investment. If all companies have the same reaction, then no investment will be made in knowledge and the advantages of knowledge production is lost. Knowledge management requires a risk taking mentality by management. A shortage of such mentality is an obstacle to change.

In short, obstacles to knowledge management-change are unattractive technology, unattractive HR-policy and unattractive jobs.

6 Dangers to this change

There are several dangers coming from the stress on knowledge management.

Since the issue is on knowledge, the risk is that only 'certified knowledge' (e.g. educational degrees) is recognised as knowledge. Such a criterion excludes lower qualified workers from the possibility of participating in knowledge management. This could also lead to the danger that knowledge management is only recognised as being an issue in high skilled service sectors. Knowledge production is then confounded with highly educated workers. This should not be the case: the improvement of the innovative capacities of companies should be the issue in all sectors. Another issue, linked to this first one, is that companies only let the younger workers profit from the educating aspects of their knowledge management programs. Ageing workers run the risk of being excluded from the benefits of knowledge management. At a societal level, such exclusion policies can lead to serious societal problems.

Such problems can coincide with power struggles within companies. If knowledge is the most valuable asset of a company, then the possession of this asset is a critical issue. Knowledge cannot be separated from the persons having this knowledge. Companies must not be mistaken about who owns this knowledge. As we have pointed out, this issue is also an obstacle to change. If companies do not recognise the ownership of knowledge, they run the risk of 'free rider behaviour'. Workers profit from the investments in knowledge, but do not give anything in return. Changing such situations can lead to power struggles which endanger the innovative capacity of the company.

7 Conclusion: The change process of knowledge management, innovation and creativity

The speed and innovation of companies rely more and more on knowledge and creativity. But most change approaches confound knowledge and innovation with information. Knowledge management is then seen as a centralised database with as main goal to collect the information within companies. Nothing is as fast outdated as information. The stress should be on innovative capacity. Knowledge management should support the improvement of this innovative capacity. This means that knowledge management should help workers to generate new ideas and solutions, should help to transform these ideas into working products or services and should insure that these capabilities are shared among as much as possible workers in the company.

To create working solutions, a developmental approach should be used. There are no quick wins in knowledge management. The reliance on external consultants does not guarantee long term success. Rather, because commitment of all members of the company is required, external or functional approaches to knowledge management run the risk of alienating groups of the goals of knowledge management.

Knowledge management requires a coherent approach in which groups or teams form the core of knowledge management. A database approach puts too much stress on elements outside of these groups. Workers are then not committed to the goals of knowledge management. At the other hand, too much stress on the individual in the organisation and the support he or she should get from the system, brings risks of 'free rider behaviour'. Only groups can assure that investments in individuals are shared by more than the person receiving knowledge investments.

At last, for a successful knowledge management, it is of central importance that management must have a 'risk taking attitude' and sufficient belief in the capabilities of its workers and teams. Only then, the changeover to the 'smart company' will be a successful one.

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