

KNOWLEDGE MANAGEMENT AND ITS USE IN AN INDUSTRIAL ENTERPRISE

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Knowledge management arose as a result of the need to incorporate the dynamics of an enterprise environment into an enterprise model. It requires a holistic approach integrating technological and human aspects by building and developing key competencies. Knowledge management makes possible correct strategic decisions, correct investments into product, minimizing risks, process innovations and effective update of the business strategy. Furthermore it leads to reduction of costs, improvement of quality in all aspects of an enterprise and reduction of delivery times of goods and services. In the knowledge enterprise, the creation of an internal climate favourable towards innovative approaches, employee development, cooperation between employees, knowledge sharing and fulfilment of organization goals must be provided. A synergy of functions is crucial for managing a knowledge enterprise.

KEYWORDS

Business strategy, knowledge strategy, knowledge transfer, knowledge support, strategic decision, knowledge enterprise

1 INTRODUCTION

The current situation in the global market is hyper-competitive and turbulent with a hard to predict future and can be characterized by the following trends (Table No.1):

Factor	Trend
Number of competitors	growing
Strength and awareness of clients	growing
Advantage of difference	dropping
Length of product life cycle	dropping
Role of substitutes	growing
Number and seriousness of risks	growing

Table No. 1 – Current trends in the global market

Leading role of global manufacturers is being replaced by global customers who are becoming more and more demanding. Under the conditions listed above, the management of industrial enterprises is becoming one of the most complicated, risky and uncertain human activities – business strategy and its functional strategies (marketing, research and development, human resources, production, procurement, financial) must be therefore in full alignment with the knowledge strategy in order to maximise the use of the knowledge potential.

Knowledge is becoming the most important and critical strategic resource – the central premise of knowledge use is in continuous innovations (in products and processes) across an enterprise with parallel management of innovations and their risks. The foundation of the present position in the post-industrial (knowledge) economy is the application of an approach that, in addition to classic resources (i.e. an effective interconnection of people, technologies and processes), increasingly emphasizes a new, more important resource – knowledge, the management of which we then call knowledge management.

Knowledge management arose as a result of the need to incorporate the dynamics of an enterprise environment into an enterprise model but at the same time an enterprise must actively create changes in external environment. It is not only a set of isolated standard management tools but also a holistic approach integrating technological and human aspects by building and developing key competencies. Success of knowledge management depends on the successful implementation of processes and procedures leading to permanent learning in an enterprise and to removal of all organizational, technological and cultural barriers hindering knowledge sharing [4]. Figure No. 1 shows schematically the interconnection between people, processes and technologies making possible effective communication and knowledge sharing, use of up-to-date technologies and effective processes and their control.

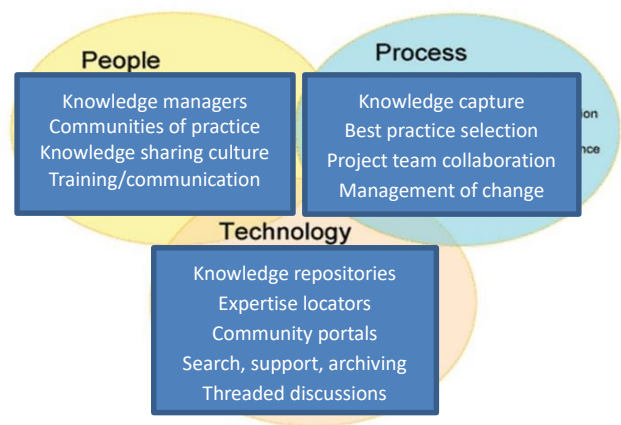


Figure No. 1: Interconnection of people/technologies/processes [s.: www.pinterest.com]

Knowledge management creates conditions for effective reduction of costs, improvement of quality in all aspects of an enterprise and reduction of delivery times of goods and services – resulting in an increase of competitiveness of an enterprise through improved key competencies thanks to more massive and effective use of corporate and external knowledge.

2 KNOWLEDGE AS A SOURCE

Knowledge as a resource of key competencies must fulfil the requirements of the VRIO analysis – it must answer the questions of value, rarity, inimitability and organization [1]. If these conditions are fulfilled then it is hard for competitors to copy it. There are various resources of knowledge and they can be divided into internal and external resources:

- Internal resources of knowledge – employees, internal processes/methods of cooperation, documents with company’s know-how, organization structure, research and development, a combination of existing knowledge and its confrontation with new information coming from the external environment (exploitation)
- External resources of knowledge – business partners, competitors, licenses, joint ventures, technology transfer, participation in clusters, conferences, professional journals and reports, cooperation with scientific institutes and universities (exploration)

Figure No. 2 shows a more detailed division of knowledge sources:

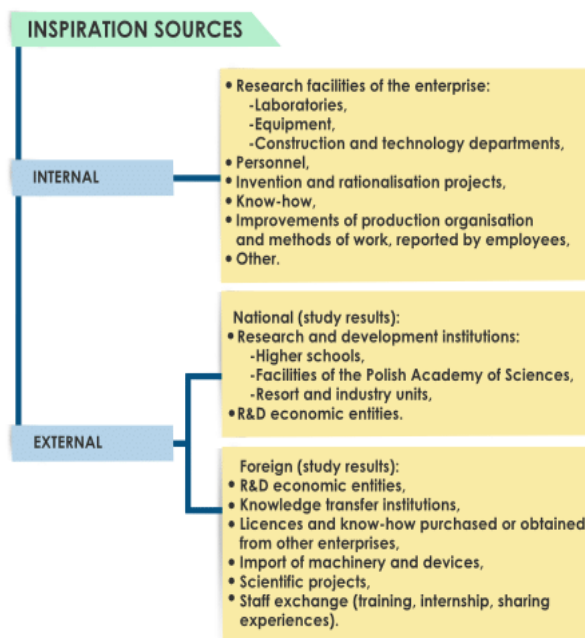


Figure No. 2: Examples of internal and external sources of innovation [s.: researchgate.net]

3 KNOWLEDGE ENTERPRISE

In the knowledge enterprise, the creation of an internal climate favourable towards innovative approaches, employee development, cooperation between employees, information and knowledge sharing and fulfilment of organization goals must be provided. Enterprise management must enable the fulfilment of the goals of both the individual and the organization. This model emphasizes the role of organization culture and requires the balancing of hard and soft prosperity factors. Three basic attributes are defined for a knowledge enterprise:

- Human factor – motivation, the art of leading people, learning organization
- Appropriate organization structure, correctly selected and adjusted information and communication technologies, clear and achievable vision
- Process orientation of an enterprise – even if also enterprises organised hierarchically achieve good results, process orientation makes possible to react faster to unexpected changes in the technological environment and customer behaviour

Enterprise management in the industrial era was based on a system of management functions – the quality of individual functions was emphasized but their inter-connectivity was underestimated (it was left up to individual managers). This view does not comply with the present paradigm of a knowledge enterprise – a synergy of functions is crucial for managing a knowledge enterprise [10]. The basic factor here is the organization culture creating a ‘social glue’ which is the inevitable condition for acceptance of responsibility by all employees. The improvement of all organizational activities is handed over to a team of employees who are selected and trained to handle self-management, self-control and self-organization. The basic element of the synergic effect is now a qualified and permanently learning employee.

The basis for management of the knowledge enterprise in a turbulent environment remains a vision of quality – it must take the best from the organization’s history and transform it into an ideal but realistic and achievable concept for the future. Employees must become co-owners of the vision. Therefore, vision must also include an emotional dimension. Vision should help employees to realize what they should and should not do. Correctly adjusted vision is followed by a business strategy which defines future actions in more detail and is focused on the fulfilment of declared goals.

4 REASONS FOR KNOWLEDGE STRATEGY

To keep its competitiveness, an enterprise must permanently innovate its products/services, internal processes and develop relationships with customers. But each innovation is expensive and risky, requiring changes in design, production procedures and mostly also in organization structure. Bad

investment can result not only in large financial losses but also can endanger the existence of an enterprise. Here, knowledge enters the scene as the most important measure for minimizing risk and making the right decisions for where investments are to be directed [10]. Building and development of knowledge are also financially demanding and time consuming. Therefore an enterprise must also build a strategy to manage its knowledge potential – an enterprise must build a knowledge strategy.

5 ANALYSIS OF EXISTING STATUS FOR BUILDING A KNOWLEDGE STRATEGY

Commencement of work on knowledge strategy requires obtaining a complete picture of an enterprise in relationship to knowledge management – the analysis is focused on:

- Information and communication technologies – their ability to support the growth of knowledge quality and internal work with knowledge
- knowledge resources - schematic (goal, strategy, culture, structure) and content (artefacts and participants)
- knowledge processes (invention/capturing, verification, transfer, use, replacement by new knowledge)
- enterprise internal processes (definition, interconnection, owners/responsibilities, inputs/outputs, internal/external clients, criteria for evaluation)
- enterprise culture (strength, attributes supporting/weakening knowledge management)

If during these analyses of an enterprise it is found that the internal processes are not operating effectively (unclear owner, unclear inputs/outputs, unclear customer, unclear evaluation criteria, process produces outputs not contributing to making key competencies, wrong definition of connected processes), then a properly designed and timed reengineering of processes is the necessary condition for implementing successful knowledge management. The output from this step is a complete picture of the existing knowledge status in an enterprise.

6 KNOWLEDGE STRATEGY CREATION

After all the necessary analyses have been completed, work on the knowledge strategy can begin. This strategy is built in the following sequence of steps:

- definition of required status of knowledge in an enterprise - prediction of the knowledge status at the end of the knowledge strategy validity
- definition of the difference between current and required knowledge status – comparison of current and required knowledge status
- selection of a path leading to the required knowledge

status – decision about which knowledge is to be obtained by internal development (exploitation) and which from an enterprise environment (exploration)

- definition of metrics and indicators of evaluation – they must be harmonized with metrics and indicators of the business strategy. They can be categorized from the view of customers, internal processes, innovations and employees and management
- selection of knowledge activities, plans and programmes – they are focused on the effective acquisition of new knowledge and an upgrading of existing knowledge and removal of weaknesses in working with knowledge

7 KNOWLEDGE STRATEGY IMPLEMENTATION

Finalization and implementation of the knowledge strategy – this step is done in the form of the implementation of specific projects (resulting from the activities, plans and programmes mentioned above) [7]. This is done to upgrade the existing knowledge status and apply it in the business strategy fulfilment and update (see Figure No. 3).

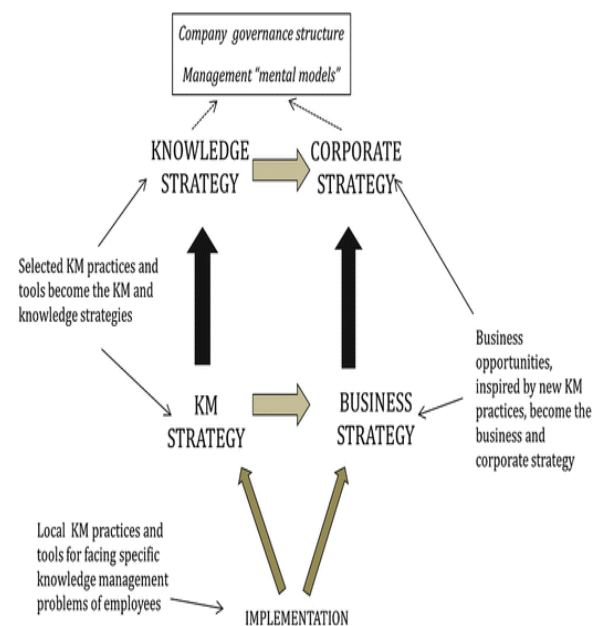


Figure No. 3 – Knowledge and Strategy Formulation in a Turbulent World [7]

8 KNOWLEDGE STRATEGY APPROACHES

The knowledge strategy must follow the philosophy of “the 2nd order of knowledge management” (nobody is an observer standing outside the system – everybody is a part of a dynamic environment). Before knowledge management is provided in detail, the knowledge strategy concept must be selected. There are four basic approaches:

- 1) technological approach (based on explicit knowledge and information and communication technologies)

2) human approach (based on tacit knowledge and cooperation - information and communication technologies serve only as supporting tools)

3) combined approach (combination of technological and human approaches – one of them to be dominant, recommended ratio 80/20 %)

4) dynamic approach (flexible change of technological/human approaches depending on the changing environment)

The specific choice of an approach depends on the basic character of an enterprise – the technological approach will be probably preferred in an enterprise manufacturing simple consumer goods while an enterprise with a high ratio of research and development activities will probably prefer the human approach [10]. Due to the current turbulent and hard-to-predict development in the world market, the dynamic approach is becoming more and more important.

9 ASSUMPTIONS FOR SUCCESSFUL KNOWLEDGE MANAGEMENT IMPLEMENTATION

Even if enterprises are different in their products and services, the following aspects for successful knowledge management implementation and use can be generalized as follows:

- Development and control of intellectual potential
- Purposeful care for an environment conducive to developing knowledge management
- Timely definition of realistic goals and quality business strategy for achieving them
- Continuous evaluation of fulfilment of enterprise goals
- Selection of optimal variant for division of responsibilities
- Appropriate motivation of all enterprise employees to fulfil enterprise goals and to use all available knowledge effectively
- Respect and additional support of knowledge management through specific activities of enterprise management at all organization levels
- Building regulations supporting effectivity of managing an enterprise by use of knowledge
- Ability to use knowledge and skills of employees in all divisions and sections of an enterprise focusing on better development of competitive advantage than its competitors

10 BENEFITS OF SUCCESSFUL KNOWLEDGE MANAGEMENT IMPLEMENTATION

If an enterprise is successful in knowledge management implementation then the following benefits are clearly seen:

- Correct strategic decisions
- High quality prediction of customers, markets and

technologies including ability to predict a large disruptive change which is able to reshape quickly either customers' behaviour or technologies or both

- Building a knowledge base and knowledge processes following in time changes in enterprise environment, markets and technologies
- Correct direction of investments into product and process innovations (based on benchmarking of main competitors and business partners) and simultaneous minimization of all important uncertainties
- Initialization of necessary changes in organization structure including establishment of new main positions connected with knowledge management (chief knowledge officer and knowledge leader)
- Initiating changes in organization culture
- Effective evaluation and update of the business strategy
- Permanent knowledge and skills growth of employees
- Increase of customer satisfaction

Sustainable competitive advantage of an enterprise is based on the ability to combine knowledge resources with other resources available there. Knowledge unfortunately cannot be observed or measured directly [9]. Knowledge interacts with other resources – this process results in its social complexity and causal ambiguity. This fact leads to the conclusion that a mathematic interconnection or an algorithm between knowledge and financial indicators of an enterprise cannot yet be established. But this missing connection could be largely replaced through a holistic approach using discussions with managers and senior specialists who know every detail of their enterprise. The main issues of knowledge management implementation are described in Figure No. 4.

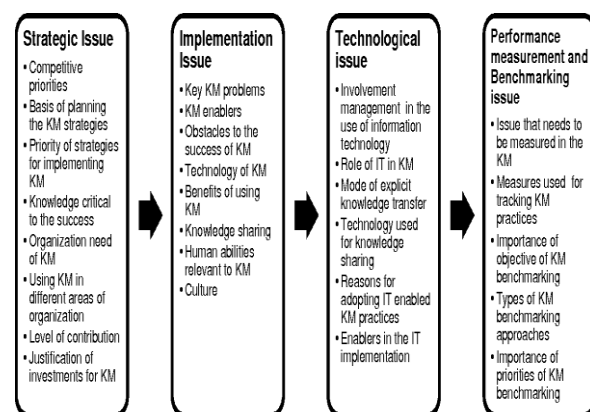


Figure No. 4 – Knowledge Management Implementation Steps [9]

11 CONCLUSION

Knowledge management makes possible reduction of costs, improvement of quality in all aspects of an enterprise and reduction of delivery times of goods and services resulting in an increase of competitiveness. Enterprise management

must enable the fulfilment of the goals of both the individual and the organization. This model emphasizes the role of organization culture and requires the balancing of hard and soft prosperity factors. Three basic attributes are defined for a knowledge enterprise: human factor (motivation, the art of leading people), appropriate organization structure and process orientation of an enterprise. Knowledge enters the scene as the most important measure for minimizing risk and making the right decisions for where investments are to be directed. Building and development of knowledge are also financially demanding and time consuming. Therefore an enterprise must also build a strategy to manage its knowledge potential – an enterprise must build a knowledge strategy to manage its knowledge potential. If an enterprise is successful in knowledge management implementation then the following benefits are seen: correct strategic decisions, high quality prediction of customers/markets/technologies, correct direction of investments into product and process innovations, initialization of necessary changes in organization structure and culture, effective evaluation and update of the business strategy, permanent knowledge and skills growth of employees and increase of customer satisfaction.

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