

## KNOWLEDGE MANAGEMENT MODEL

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**Abstract:** Building a community of knowledge workers who well understand their meaning is a decisive factor to meet the demands of the market and challenges formulated by modern society. Kept by the people knowledge have special value to the organization because of the range and endless possibilities to set it up. The main aim of this article is to present of knowledge development model. It is based on a combination of elements of the value chain and the Kirkpatrick model. The model assumes the possibility of creating a knowledge management strategy, which allows by measurement determine the appropriate action that are shaping the level and value of knowledge. Enterprise knowledge management requires involvement of employees and managers, and integrates the activities undertaken contributing to the development of knowledge to the needs of the recipient. The article therefore included a summary of the results of the assessment level of knowledge from the perspective of these groups.

**Key words:** knowledge, knowledge management, value chain, Kirkpatrick model, knowledge value, measurement

### Introduction

Today, modern businesses create and implement strategies that development and build sustainable competitive advantage, based on the use of knowledge. Companies should be able to provide human resources that ensure the highest level of knowledge, competencies and skills. Through the use of human capacity and knowledge arise new areas of activity based on the processing of information. Development in companies occurs when the organizations can properly take advantage of their possession and create new knowledge.

The key ingredient knowledge requires the measurement to be able to know its true status and selection of appropriate methods and management techniques. Definitions of knowledge suggest that it is strongly personified and closely related to the human factor. It can be concluded that people, and not the enterprise, are the main carrier of knowledge (Tabor, 2010; Dąbrowska-Paulewicz et al., 2014). It is recognized that knowledge is information embedded in the right context, which enables the effective operation of the company and its employees.

### Knowledge Value

While knowledge is increasingly being viewed as a commodity or intellectual asset, there are some paradoxical characteristics of knowledge that are radically different from other valuable commodities (Czerska and Szpitter, 2010). Knowledge management (KM) is defined as "providing the right knowledge, to the

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right people at the right time and to help in its creation. Sharing and decision-making on its basis, in such a way, to achieve measurable effects (Klak, 2010). Knowledge management in a broad sense is a critical aspect of globally distributed work processes (Holden, 2007).

Creating optimal process of knowledge management in organization should be divided into several stages. It is important to take into account the chosen method of dividing the opportunity to review the effects of the use of knowledge. Sequence which is used in the production of human capital management (HCM) or value creation was considered as a proper one for this study.

### Knowledge Value Chain

General human management activities can be described as manifestations of activity taking place in the context of learning and development. The value chain represents the capability to inform organization and the customer. The first element of chain is level of creating value, which represents the transformation of individual skills into organizational capability (Fearne et al., 2012). The HCM value chain describes a transformation in which inputs, including the existing capability of people in the organization, are evolving through a series of activities based on the organization's people management practices to provide tangible and intangible resources and capabilities (Ingham, 2007).

Based on the concepts of value chain created by J. Ingham, enterprise can create a combination of measures in the field of HCM with other areas of the implementation of the HR function. The process should be preceded by verification of individual knowledge and skills in order to create the desired organizational base and developed areas of expertise (Barber, 2008). The value chain can be transformed to create process able to provide knowledge useful for the organization. Figure 1 shows created knowledge value chain divided into 4 phases.

Input	Activity	Output	Impact
<ul style="list-style-type: none"> <li>• culture</li> <li>• organization values</li> <li>• CRM methods</li> <li>• HR process</li> <li>• resources</li> </ul>	<ul style="list-style-type: none"> <li>• knowledge</li> <li>• career development</li> <li>• engagement</li> <li>• talent management</li> </ul>	<ul style="list-style-type: none"> <li>• knowledge base,</li> <li>• knowledge codification,</li> <li>• knowledge personalization,</li> <li>• development of HC</li> <li>• CRM</li> </ul>	<ul style="list-style-type: none"> <li>• customer value</li> <li>• service value</li> <li>• human capital value</li> </ul>

Figure 1. Knowledge value chain (Ingham, 2007 and Barber, 2008)

Figure 1 shows what elements can be considered in every stage of creating knowledge value. The chain elements can be broadly described indicating what elements should be taken into account, allowing to customize the creation of value for other processes not only to create and develop knowledge. Additionally it can connect area of expertise with other areas of the HR function. The individual

elements of the chain should be shaped by taking into account some basic assumptions. The first level, which is input, refers mainly to tangible inputs such as budgets, management and the effectiveness of the HR function. Second element of the chain refers to the organizations specific actions. Implemented practices create intangible capability which increases the impact of people management on business results (Hohenstein et al., 2014). Those approaches help ensure that the intangibles which are developed can inform and drive business success. The output step focuses on both tangible and intangible deliverables. Tangible outputs include numbers of employees, their observable behaviors and readily assessable knowledge and skills. Intangible outputs refer to the creation of human, organizational and social capital and include people capability, engagement and opportunity to contribute. It should consider only these intangibles which are the real drivers of business success. Last chain level focuses on the business aspects.

This integration of every chain phase is crucial link between human resources (HR) practices and knowledge management. Figure 1 shows how the value chain can be used to create knowledge oriented process. Chain value is based on the transition from stage to achieve measurable creation of value, and includes the scope of different views. Recognition of contribution of streams and outputs is the basic assumption of efficient HCM processes (Baron and Armstrong, 2006). The value chain should consider measurements for every area of knowledge that is used in the organization.

Keeping of the sequence allows to create knowledge process perfectly matched to employees potential. Chain parent components affects the input actions and takes into account the actual state of resource. The measurement component is the basis for the decision in the later stages of the value chain creation.

The next step in creating a knowledge management model is the inclusion in the areas of creating value for individuals. It should take into account the groups that are directly involved in the creation and exploitation of knowledge. Enclose two dimensions of value and beneficiaries allows you to create a knowledge value matrix.

### **The Knowledge Value Matrix**

Table 2 demonstrates how the value chain of personal perspective and knowledge management are combined to form the knowledge value matrix. The matrix shows that the steps in the value chain are linked together.

Matrix should describe types of business strategy that correspond to the levels of value, which are:

- value for money: reflects client perspective, shows how process is adapted to customer needs. In this area financial data are necessary.
- adding value all process that are implemented in organization to help create knowledge should be included. Because of that the role of managers and leaders

is taken into consider. They are seen as individuals implementing and coordinating the process of creating organizational knowledge.

- creating value: Taking into account the perspective of the holder of specific knowledge is the basis assumption of the model. The ability and extent of knowledge depends on employees' potential (Ingham, 2007).

**Table 1. Knowledge value matrix**

<b>Creating value - refers to knowledge</b> Employees	General potential	Best fit people management practices	Intangible capability	Developing
<b>Adding value- refers to information</b> Managers	Measure system	Processes of involved and development	Human capital	Processes of forming the desired values, norms and conditions
<b>Value for money- refers to data</b> Clients	Measure data	Management	Development of knowledge	Processes which creates knowledge, training, reorganization
	<b>input</b>	<b>activity</b>	<b>output</b>	<b>impact</b>

It is important to pass through the various degrees of detail in the process of creating value. It allows to maintain consistency between the action and its usefulness.

### Different Perspectives of Knowledge in Enterprise

The presented in paper approach is based upon the premise of creating value through the use of intangible assets and the corresponding measurement tools. To show how important is the right creation of the input element in value chain this paper will include results of verifying the level of knowledge in the company. The study involved three groups of respondents: employees, managers and customers of service providing company. The opinion of each group reflects the specific element of the value chain. The study presented in the article is part of research devoted to human capital, whose main objective was to determine the role of human capital in the provision of postal services. It was conducted in year 2012 using a questionnaire and included within the scope of Koszalin region. Characteristics of the participants are presented in Table 2.

**Table 2. The characteristics of the study participants**

Category	Sex		Age				Seniority				Recipient	
	women	men	20-30	31-40	41-50	over51	1-10	11-20	21-30	over 30	individual customer	company
<b>Clients</b>	202	304	115	193	115	83					273	118
<b>Managers</b>	16	4		5	10	5	1	8	7	3		
<b>Employees</b>	260	242					193	232	147			

Knowledge sharing is tightly linked to a preexisting core value of the organization. The organization introduces the approach, tools, and structures to support knowledge sharing in a way that matches the overall style of the organization (Sveiby, 2001). Knowledge sharing activities are built on existing networks which people use in their daily work. Figure 2 shows the results of assessments of processes related to knowledge management of individual participants.

First consider in the knowledge value study group are employees who reflects the wealth for every company. Its effectiveness is determined by the employees who fulfill the given goals (Ślusarczyk and Golnik, 2014). The employees from rural and urban units evaluate the level of knowledge that they possessed in scale from one to five. The level of overall evaluation is less than four. The visible is a small advantage in the evaluation of employees of units in the rural areas.

Knowledge, skills and competences, as the most important factors of development today, by specific actions team managers should encourage the development and sharing of knowledge (Baruk, 2006). In the study managers were evaluated in two main areas: development and knowledge sharing within the organization. Results clearly indicate that the managers evaluate higher these measures in rural units. In the white paper on knowledge management it is stated that knowledge management is as much cultural as it is technological and that a culture that does not foster and reward sharing of knowledge cannot expect technology to solve its knowledge challenges. Successful knowledge management depends very much on the commitment of management (Magnusson et al., 2004).

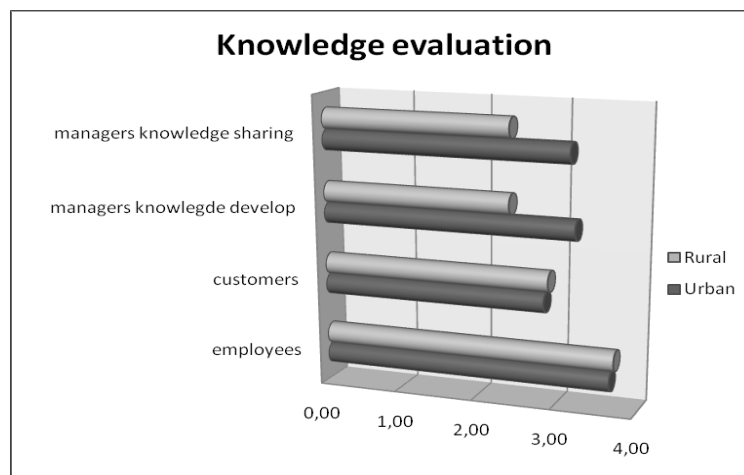


Figure 2. Rating the company's knowledge management

In learning organizations the managers should take on the role of creating the conditions that allow other activities. They should allow subordinates to self-manage their actions of under a common set of standards and values that promote

the common identity and attitude to learning (Jemielniak, 2012). Knowledge, skills and competences, are the most important factors of development today (Dobija, 2003). These elements are in the possession of knowledge workers, which is why personnel actions managers should promote better use and sharing them.

A reflection of accepted standards of behavior is forming relationships with customers. It is necessary to understand customer needs and demands, which means that the organization must create more valuable services based on collaboration with customers (Khodaparasti, 2013). They as the recipient of services provide the most valuable feedback.

In the presented study customers also evaluate the level of knowledge of the employees. As the results are showing customers evaluate the knowledge and it used lower then employees. Active communication, various methods of analysis and measurability of consumer's satisfaction (see Dima et al., 2010) and other forms of cooperation with customers helps to create relations and new knowledge which is based on the needs and demands of customers. The presented results demonstrate the diversity of assessments that reflects inconsistent assumptions or wrong way of implementation the concept of knowledge management.

### **The Development of Knowledge**

Competitive actions of enterprises is increasing its stake and limit the actions of competitors through acquiring new sources of supply, improving the potential of human capital and the acquisition of new markets. The sources of sustainable competitive advantage can be seen in the company in the management-oriented core competencies (Perez and Ordóñez de Pablos, 2003).

Skills and competence are qualities of people employed in the enterprise. Therefore, the competitiveness largely determines the knowledge possessed by them. For this reason, it is important not only to create new knowledge that could assimilate employees, but also the use of existing one. Therefore, in the further creation of knowledge management process should strive to obtain consistency between the plan and the result. A good introduction to this process will be to identify needs, actions and results for various dimensions of knowledge.

Created knowledge objectives can be defined for the optimization of services or the creation of new ones. A knowledge sharing strategy should define how, with, whom and by using which tools knowledge will be shared (Magnusson et al., 2004; Tabor, 2008). Knowledge resources are consider as the most essential from the standpoint of operation of enterprises because properly managed knowledge provides the basis for creation of competitive and valuable processes (Smolağ, 2012).

Creating appropriate way of knowledge development in the enterprise requires decomposition of strategic objectives to lower levels of management. Knowledge management absolutely requires the involvement of employees in this process. One of the techniques that can be used for these activities is Kirkpatrick model. Synthetically presented model assumptions were adjusted to the processes

associated with the use of knowledge in the organization. It focuses on a training and development event.

The proposed in paper approach is based on the creation and development of knowledge. It allows to dividing the Kirkpatrick model (*KM*) process of into four categories:

- *Reaction*. This type of evaluation measures how participants respond to a knowledge creating and sharing actions.
- *Learning*. This level evaluates what employee knows and remembers as a result of an implementation of specific activities. It involves testing participants' knowledge and attitudes before and after the action.
- *Behavior*. This category measures whether participants are applying new skills and demonstrating new behaviors.
- *Results*. Level reviews whether the chosen action has delivered the planned business impacts.

The model allows to reference the individual stages in relation to the value chain. Organization can create an integrated knowledge management process which taking into account the formation of values, diverse perspectives and personal processes aimed at knowledge.

### **Knowledge Management Model**

Integrated enterprise knowledge management creates real opportunities for the development of the organization in a competitive market. Effective knowledge management involves a combination of elements of both concepts, pointing to the close relationship the organization create value based on intangible assets. This value does not arise directly from the operation of the individual employee, but is based on interactions between employees, customers and managers. The company is able to create value based on *KM* model if all participants will be involved in the process. The degree of this involvement provides effective, dynamic, continuous and comprehensive implementation of integrated management (Kłak, 2010).

Based on the combination of knowledge value chain and the Kirkpatrick approach a knowledge development model was created. It helps to demonstrate the key aspects of operations and selected areas of the HR function, which together enable better use of workers knowledge. The model allows to integrate HR processes with the processes of forming value. The combination of the value chain and the Kirkpatrick model lets adjust the measures implemented with the process of their evaluation. This enables its comprehensive action in the field of knowledge management. Shown in Table 3 model shows the levels of integration of individual components of a model evaluation measures.

Created links are synthetically described. Input was added as an initial step in the knowledge value chain because it is important to measure results of financial

investment and HR function effectiveness of knowledge. Activity includes Kirkpatrick's reaction and learning levels are showing effects of actions determining the creating and sharing of knowledge.

**Table 3. Knowledge management model** (*Author's elaboration based on Ingham, 2007*)

Value chain elements		Description	Kirkpatrick model
<b>Inputs</b>		What are service key elements? Who are our key customers? What are our strategic objectives?	
<b>Proces</b>	<b>Activity</b>	Key performing indicators in HC process.	Reaction
<b>Reaction</b>		What are the effects of actions? What is the reaction of the recipients of services? What is the relationship results from the employees actions?	
<b>Learning</b>		How we develop knowledge of individual employees?	Learning
<b>Transfer</b>	<b>Output</b>	Have skills and knowledge improved? Has there been observable performance improvement?	Behavior
<b>Impact</b>		What is the knowledge influence onto services? What is the change to organization culture?	Results

Activity elements are implemented in order to increase the quantity and quality of employees' knowledge .Output includes Kirkpatrick's behavior level, which refers to changes in activities. Impact includes Kirkpatrick's results level because this refers to changes in the business that are caused by changes in people performance. Units for this level are quantity, quality, and customer satisfaction.

Answering the questions included in the figure enterprise can create appropriate measurement tool engaging multi-dimensional knowledge. For each of the value chain elements presented model requires creation of the adequate measures. While the right side of the model that uses the assumptions of Kirkpatrick model design and implement measures that will contribute to the attainment of the stated objectives of knowledge management strategy for individual dimensions.

Knowledge management model is proposed with an extensive range of interference in the organizational processes. Its effective implementation requires the integration of multiple areas, which determines its effective application. Model presented in the paper is a preliminary outline and needs to be developed, but above all a general utility is conditioned adjustment to the specific companies in which it will be implemented. Similar assumptions based on value chain were used in the researches described in articles published by B.G. Englis, R.M. Solomon.

Identify companies that may use the model requires the first order creation of the value chain by identifying areas for knowledge chain. It is essential to the implementing company to determine what area of its activity depends on the use of



knowledge, regardless of the scope of activities. Each area of knowledge which takes into account the different perspectives of the model is possible to implement in presented model of knowledge.

### The Evaluation

Considering the presented model, it is important to entering knowledge management strategy to take into account the following items:

- ensuring the loyalty of employees,
- employees should have the ability to learn,
- ensuring public access to information,
- implementation a continuous professional development of each employee,
- obtaining customer orientation, understood as identification, prediction and meeting its needs,
- creating an organizational conditions that foster innovation and learning.

Using of outlined assumptions to create a knowledge management process will increase the ability to integrate areas included in the presented model. Table 4 shows what advantages in specific areas of value creation can obtain enterprise using the assumptions of the presented model. The list in Table 4 recognizes the advantages of the model taking into account the three groups of respondents.

**Table 4. Benefits arising from the application of the model**

<b>Benefits Area</b>	<b>Examples</b>
<b>Organization</b>	Unique organizational culture that enables easy access to knowledge assets, exchange and codification of best practices, sharing of knowledge, processing and implementation of knowledge, improvements in internal communication, reducing management costs, increase creativity and innovation, investing in employee development.
<b>Employees</b>	Development of competencies, reducing employee turnover, easier access to sources of knowledge, promotes creating value for the enterprise, increase employees self-esteem, building an atmosphere of mutual trust, increase competitiveness of workers in the labor market.
<b>Customers</b>	Creating new value, better meeting the needs, faster perception of the needs of customers and market partners, creating new products and services and improving the quality of existing ones, create a positive company image, customer care, possibility of information exchange.

### Conclusions

In modern organizations that create value based primarily on intellectual assets increasingly emphasizes the need to develop measurement tools that provide a complete and accurate assessment of knowledge.

The main task of the measurement tool is to show both the state of knowledge and the impact of its development. Model described in this paper provides an integrated approach to the process of utilization of knowledge in the enterprise. Disproportion presented in the study shows that measurement process requires consideration of knowledge from the point of view of different perspectives and reflect the states obtained in the process of knowledge management.

Another key element for the competitiveness of companies is through the use of knowledge to provide the ability to create value, which also was included in the presented model. The final factor is the project HR processes as a means to implement the objectives of the organization to the level of individual employees.

The model of knowledge development identifies which knowledge areas have an impact on the business, how strong is the impact, which deficits exist in each of the knowledge areas. Model should determine how managers can react in the ranges of knowledge personalization, codification and diffusion. To raise the value of the presented model is indicated as the best fit its elements to the characteristics of the organization, which allows for a detailed definition of activities in the Kirkpatrick model area.

### References

- Barber E., 2008, *How to measure the "value" in value chains*, "International Journal of Physical Distribution & Logistics Management", 38(9).
- Baron A., Armstrong M., 2008, *Zarządzanie kapitałem ludzkim, uzyskiwanie wartości dodanej dzięki ludziom*, Oficyna Wolters Kluwer Business, Kraków.
- Baruk J., 2006, *Zarządzanie wiedzą i innowacjami*, Wyd. Adam Marszałek, Toruń.
- Czerska M., Szpitter A.A., 2010, *Koncepcje zarządzania Podręcznik akademicki*, Wydawnictwo C.H. Beck, Warszawa.
- Dąbrowska-Paulewicz S., Wacowska A., Bokwa M., 2014, *Personal and professional development as a value in a knowledge-based society*, "Polish Journal of Management Studies", 9.
- Dima I.C., Man M., Kot S., 2010, Use of Abraham Maslow's motivation theory for setting consumers' satisfaction-nonsatisfaction, *Polish Journal of Management Studies*, 2.
- Dobija D., 2003, *Pomiar i sprawozdawczość kapitału intelektualnego przedsiębiorstwa*, Wyższa Szkoła Przedsiębiorczości i Zarządzania im. Leona Koźmińskiego, Warszawa.
- Fearne A., Garcia Martinez M., Dent B., 2012, *Dimensions of sustainable value chains: implications for value chain analysis*, "Supply Chain Management: An International Journal", 17.
- Hohenstein N.O., Feisel E., Hartmann E., 2014, *Human resource management issues in supply chain management research: A systematic literature review from 1998 to 2014*, "International Journal of Physical Distribution & Logistics Management", 44(6).
- Holden N., 2001, *Knowledge management: raising the spectre of the cross-cultural dimension*, "Knowledge and Process Management", 8(3).
- Ingham J., 2007, *Strategic Human Capital Management Creating Value through People*, Published by Elsevier, Oxford.
- Jemielniak D., Koźmiński A.K., 2012, *Zarządzanie wiedzą*, Oficyna Wolters Kluwer Business, Warszawa.

- Khodaparasti R.B., 2013, *Analysis of personnel performance to improve quantity and quality services to the people*, "Polish Journal of Management Studies", 7.
- Kłak M., 2010, *Zarządzanie wiedzą we współczesnym przedsiębiorstwie*, Wydawnictwo Wyższej Szkoły Ekonomii i Prawa im. prof. Edwarda Lipińskiego w Kielcach, Kielce.
- Magnusson J., Nilsson A., Valentin K., 2004, *Knowledge Management Theory in interorganizational settings*, [in:] The Fifth European Conference on Organizational Knowledge, Learning, and Capabilities publication, University of Warwick, Insbruck.
- Perez J.R., Ordóñez de Pablos P., 2003, *Knowledge management and organizational competitiveness: a framework for human capital analysis*, "Journal of Knowledge Management", 7(3).
- Smoląg K., 2012, *Personalization of employee's knowledge in virtual labour space*, "Polish Journal of Management Studies", 6.
- Sveiby K.E., 2001, *Acknowledge-based theory of the firm to guide in strategy formulation*, "Journal of Intellectual Capital", 2(4).
- Ślusarczyk B., Golnik R., 2014, *The recruitment process in transnational corporations*, "Polish Journal of Management Studies", 10.
- Tabor J., 2008, *Strategie kreacji i absorpcji wiedzy technologicznej w małych i średnich firmach*, [w:] Zarządzanie przedsiębiorstwem w warunkach rozwoju wysokich technologii. Pod red. Stefana Lachiewicza i Agnieszki Zakrzewskiej – Bielawskiej, Wyd. PŁódź, Łódź.
- Tabor J., 2010, *Przedsiębiorczość pracownicza a transfer wiedzy*, [w:] Zarządzanie zasobami organizacji – wybrane problemy. Pod red. Ryszarda Barcika i Honoraty Howaniec, Wyd. Akademii Techniczno - Humanistycznej, Bielsko-Biała.

### MODEL ZARZĄDZANIA WIEDZĄ

**Abstrakt:** Głównym celem artykułu jest zaprezentowanie modelu rozwoju wiedzy w organizacji. Oparty jest na połączeniu elementów łańcucha wartości z modelem Kirkpatricka. Model zakłada możliwość stworzenia strategii zarządzania wiedzą, która pozwala poprzez pomiar określić odpowiednie działania kreujące poziom i wartość wiedzy. Zarządzanie wiedzą w przedsiębiorstwie wymaga zaangażowania pracowników i menadżerów, oraz integrowania podejmowanych działań służących rozwojowi wiedzy z potrzebami odbiorcy. W artykule ujęto, zatem syntetycznie przedstawione wyniki oceny poziomu wiedzy z perspektywy wymienionych grup.

**Słowa kluczowe:** wiedza, zarządzanie wiedzą, łańcuch wartości, model Kirkpatricka, wartość wiedzy, pomiar

### 知識管理模式

**摘要:** 建立知識型員工誰也明白自己的意思的社區是一個決定性的因素，以適應市場和現代社會制定了挑戰的需求。由人的知識保持有特殊價值的，因為範圍和無限可能的組織來進行設置。本文的主要目的是介紹知識的發展模式。它是基於價值鏈和帕特里克模型的元素組合。該模型假設產生的可能性知識管理戰略，這使得通過測量來確定正在塑造知識水平和價值進行相應的操作。企業知識管理要求員工和管理人員參與，整合開展促進知識發展到收件人的需求的活動。因此，文章包括知識，這些團體的角度評估水平的結果的摘要。

**關鍵詞:** 知識，知識管理，價值鏈，柯克帕特里克模型，知識的價值，測量。