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Model of Knowledge Management Factors and their Impact on the Organizations' Success

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Purpose: The purpose of this research is to identify the factors of knowledge which have a significant impact on the outcome (measured as value added per employee) of the company. The existence, long-term survival, profitability, etc. of the company depends on the competitiveness of the products and services (regardless of industry or economic branch). Transformation of "raw materials" into competitive products is possible only with the knowledge of employees. Therefore, it is necessary to identify the factors of knowledge which can influence a positive result of the company.
Methodology: We reviewed the relevant literature in the field of knowledge management. On this basis, we summarized the factors of knowledge. We performed a survey among the 69 largest Slovenian commercial companies (public and banking sectors excluded). Based on the research, we developed a regression model of value added per employee in euros.
Results: The study showed that, of all factors studied, motivation in the form of assessing employees' performance has the largest positive correlation with the value added per employee. Furthemore, training for the performance, the use of technological tools and organizational climate can bring significant value added per employee. The most important factor that affects the value added per employee is the industry branch which the company deals with. The factors which follow are the simplicity of using IT tools and the example that the managers give to the employees.
Conclusion: A model of knowledge management factors helps to identify which knowledge factors should be given priority to for increasing the company's performance. The model also considers the industry in which the company operates.

Keywords: *Knowledge management; knowledge factors; human capital*

1 Introduction

Continued development and rapid distribution of information technology caused a cyclical - continuous struggle for market share and fight for every customer between manufacturers and suppliers of similar products. As demonstrated by several studies, e.g., *Linking intellectual capital and intellectual property to company performance* (Bollen, Vergauwe & Schnieders, 2005, 1182) and *Impact of knowledge management capabilities on knowledge management effectiveness* (Bharadwaj, Chauhan, Raman &, 2015), the existence of a company primarily depends on the success of the intellect materialization of its employees and their intellectual potential. Therefore, it is crucial to understand the importance and impact of the knowledge of those involved in the production process, development department and commercial activities.

Our primary objective was to analyse the relationship

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between the factors of knowledge and value added per employee as indicator of economic performance of the company. Consequently, our secondary objective was to propose a model that explains the relation between the factors of knowledge and value added per employee. The motive of the survey was to discover whether the knowledge available in the company can provide a better management of the company in terms of increasing its revenues. In our research question, we wanted to find out which factors are most important, and how and to what extent they affect the performance of the organization, with the benchmark of the company being the value added per employee in euros.

2 Literature review and theoretical basis

2.1 Knowledge, inovativeness and competitive environment

Critical skills to the company's success in the business environment are the creative ideas and knowledge which the company can realize at the right time and in the right market (Ovsenik and Ambrož, 2010, 78). Knowledge is a multifaceted concept with a multifaceted range of meanings and is defined as a justified true belief which results in a value increase (Nonaka, 1994, 21). On the other hand, Bhatt (Bhatt, 2001, 70) notes that data is a set of raw facts which by means of processing and organizing turn into information, whereas knowledge is a piece of logically completed information. Knowledge can be classified as tacit knowledge or explicit knowledge (Nonaka, 1994, 19). Tacit knowledge is knowledge, which can not be defined (Smith, 2001, 313). Smith defines tacit knowledge as automated knowledge which requires very little time for taking a decision. It can be said that this is collective behavior and collective consciousness of the organization (Smith, 2001, 314). It can also be considered as a structural concept that describes the relationship between different types of knowledge (Gupta, Iyer, & Aronson, 2000, 17). Explicit knowledge is academic or technical data (or only information) described in formal language (Smith, 2001, 316).

Examples of explicit knowledge are manuals, mathematical expressions, copyrights and patents (Smith, 2001, 316). Seen from the distance, the development of the company is directly connected to the development of employees (regardless of their position in the company) and their knowledge. Various authors (e.g. Hsu & Shen, 2005, 355) researched the link between the life cycle of the product, knowledge and development of the company. Knowledge management (KM) is a systematic approach to improving the organization's ability to mobilize knowledge for the purpose of making more precise decisions in the formulation of business strategies (Hsu & Shen, 2005, 354). When the life cycle of the product reduces, the role of KM increases, because faster manufacturing cycle (also investments in company development and increased commercial activities) of the product results in greater competitiveness on the market, forcing the competition to adapt to the new situation or withdraw from the market. Such a continuous process leads to an increasingly competitive environment which offers survival only to those organizations that are able to produce products with value added, based on innovations. Innovations are the result of a creative business environment that is stimulated by the market demand or also crisis (Ovsenik & Ovsenik, 2015, 155). The condition for increasing production is the result of knowledge or knowledge – innovation correlation (Hsu & Shen, 2005, 355). Moreover, generally only the third generation of products following the introduction of KM delivers the benefits of the innovation process, the first and the second generation bring only advantages from synergies and optimization of working processes (Hsu & Shen, 2005, 355). In today's competitive world, the value of organizations is based on the intellectual capital. Therefore, knowledge is power that can bring changes and improvements with which the organizations aim to maintain long-term sustainable growth and development (Akhavan, Hosnavi, & Sanjaghi 2009, 283).

2.2 KM factors

There has been a lot of research done on the subject of knowledge and its relationship to the organizations' performance. We focused on qualitative and quantitative findings of some of the research studies. They offered us tested framework and the scientific matter for the study. Based on qualitative case studies and findings on knowledge management, it has been confirmed that the most important internal KM factors are the organizational infrastructure and employee's motivation (Davenport & Prusak, 1998, 159) or "knowledge management is the management of people and vice versa" (Davenport & Volpi 2001, 218). Similar to Davenport and Prusak, authors Wong and Aspinwall (2005, 74-75) also confirmed the hypothesis that the most important internal KM factors which affect the result of the company (measured in value added per employee) are organizational culture, organizational infrastructure and employee's motivation. Later, a more recent study (*Impact of knowledge management capabilities on knowledge management effectiveness*) confirmed that the organizational infrastructure is a very important internal factor that has a significant impact on improved communication, collaboration and exploitation of knowledge within the organization. All the above mentioned has a positive effect on productivity.

They also found that organizational culture is deeply rooted among the employees in the organization and requires a lot of effort to change. Larger companies are managed centrally, therefore it is easier to change their

organizational culture as in smaller organizations, which, from this perspective, gives them an advantage in the implementation of KM (Bharadwaj, Chauhan, Raman &, 2015, 430). Empirical research by Valmohammadi (2010, 920) showed great deviations from the findings by Davenport, Wong and Aspinwall. They noted that rewarding and motivating employees were insignificant factors in the medium-sized companies. However, other factors, such as limitations in the implementation of KM, education and training of the employees and the relevance of human resources, were identified as very important in achieving the organization's objectives. Valmohammadi (2010) notes that it is important to distinguish between large and small companies while exploring KM. Moreover, the results obtained should be interpreted correctly, for example, the KM factor which is ranked the highest in the survey needs to be addressed prior to the other factors by the managers. The empirical research on a sample of 301 selected respondents in major private and public research centers, (Akhavan, Hosnavi, and Sanjaghi, 2009, 283-285) revealed that the scope of KM consists of three important groups of factors. The first group, human resources management, consists mainly of concepts that are the foundation of the KM system in the organization. These include: organizational culture, collaboration and communication among employees, motivation, teamwork and job security. The second most important group is KM (storage, transmission and renewal of knowledge). The third group of factors involves certain issues which are more general in comparison to the other two groups. These are necessary for the successful establishment of the organization not only of a KM system. These factors are measurement, transparency and support of the company's management (Akhavan, Hosnavi, & Sanjaghi 2009, 283-285).

Many studies, for example, the research by Tasmin, Rusuli, & Hashim (2010, 9-11) in companies dealing with multimedia, revealed that successful knowledge management within the company depends heavily on the behavior of the employees. In cases where all of the employees do not participate in the exchange of knowledge, no matter how good and how strong their information technology, culture or organizational structure is, KM does not reach the targets. Furthermore, the establishment of KM in companies does not guarantee progress, if the implementation and strict adherence to the strategy do not follow the defined KM objectives. A common cause for poor KM results is exactly its incomplete implementation (Brahma & Mishra, 2015). In addition to that, the lack of the management support, poor control over the results, improper planning and misplaced organizational structure also occur as negative factors. These can be understood as "causal" for the poor implementation of KM. However, there are also negative factors that occur as a result of KM, these are the improper planning of resources, shifting responsibility for tasks, loss of knowledge due to retirement and staff turnover as well as incorrect selection technology (Frost, 2014). The authors Luo and Lee (Luo & Lee, 2015, 62-69) propose the inclusion of a special procedure - "failure mode" in the KM strategy with the goal to prevent errors during the implementation of KM strategies.

Immediately, when a deviation is detected, the process of determining causes and the start-up of elimination procedure is initiated. They suggested a list of potentially dangerous deviations from the implementation of KM strategies, which are evaluated with the critical factors, and the procedure to eliminate the deviation (Luo & Lee, 2015, 62-69). Another important aspect of KM is transfering the experience from the elderly to the younger. Recent surveys also show a correlation between KM and the protection of intellectual property. Intellectual property (in terms of patents, stored knowledge in the form of products, etc.) can be understood as a form of KM, therefore, it is necessary to protect it and increase the cumulation of human capital in companies, with a view to identify market opportunities (Manuel, 2016, 62). Table 1 presents a list of the literature on which we built the factors of knowledge. Literature is reproduced according to the article Akhavan, Hosnavi, & Sanjaghi (2009, 276-288). We updated the literature and we also replaced (Table 1, highlighted in bold) those parts which relate to the cultural and organizational differences (original study from a different cultural environment).

3 The research method and hypotheses

The survey questionnaire is reproduced from the research of the author Valmohammadi (2010, 915-924). We looked at the knowledge in organizations from 31 perspectives – hereafter defined as elements of knowledge. For the purposes of analytical data processing, we combined the 31 elements of knowledge into 12 meaningful sets of "knowledge factors" (Table 2). When reducing the elements of knowledge into the knowledge factors, we used the methodology used in the study (Valmohammadi 2010, 915-924). We connected the elements of knowledge with knowledge factors from the questionnaire (the questionnaire states which knowledge elements belong to a certain knowledge factor). For proper connection, we reviewed the literature from Table 1. The hypotheses are based on the 12 knowledge factors resulting from the examined literature (Table 1).

Table 2 shows the link between the elements and factors of knowledge, where a factor of knowledge is defined as a logical unit, consisting of different elements of knowledge. The table shows the elements that we combined into our knowledge factors.

Table 3 shows the structure of the questionnaire, resulting from the links between the elements and the factors.

Respondents were asked to respond to the question

Table 1: Reference literature of factors of knowledge
Source: Adapted from Akhavan, Hosnavi and Sanjaghi (2009, 276-288) and supplemented with recent sources.

Knowledge elements	**Source**
Transparency, trust and organizational culture	· (Akhavan, Jafari, & Fathian, 2006, 97-113) · (Luo & Lee, 2015, 62-75)
Database and technological tools for knowledge searching	· (Davenport E., 2001, 61-75)
Documentation of knowledge	· (Davenport & Volpel, 2001, 212-221)
Measuring performance	· (Moffett & McAdam, 2009, 44-59) · (Bharadwaj, Chauhan, & Raman, 2015, 421-434)
Comparative analysis	· (Moffett & McAdam, 2009, 44-59) · (Frost, 2014)
Structure of knowledge	· (Davenport & Prusak, 1998) · (Bharadwaj, Chauhan, & Raman, 2015, 421-434)
Management of changes	· (Ovsenik & Ambrož, 2006)
Knowledge exchanging	· (Davenport & Volpel, 2001, 212-221) · (Mustafa, Lundmark, & Ramos, 2016, 273-295)
Company's willingness for KM strategy	· (Akhavan, Jafari, & Fathian, 2006, 97-113)
Systematic approach to KM	· (Akhavan, Jafari, & Fathian, 2006, 97-113)
Knowledge and measurement of knowledge	· (Wong & Aspinwall, 2005, 64-82)
Architecture of knowledge	· (Skyrme & Amidon, 1997, 27-37) · (Brahma & Mishra, 2015)
Continuous learning	· (Skyrme & Amidon, 1997, 27-37) · (Luo & Lee, 2015, 62-75)
Creating knowledge	· (Skyrme & Amidon, 1997, 27-37) · (Manuel, 2016)
Administrator of knowledge	· (Moffett & McAdam, 2009, 44-59)
Organizational structure	· **(Ovsenik M., 1999)** · **(Ovsenik & Ambrož, 2010)**
Repositories and transmission of knowledge	· (Davenport E., 2001, 61-75) · (Kim, Mukhopadhyay, & Kraut, 2016, 133-156)
Knowledge management	· (Davenport & Prusak, 1998)
Teamwork	· **(Šumanski, Kolenc, & Markič, 2007, 102-116)** · (Jafari, 2015, 82-93)
Information infrastructure	· (Wong & Aspinwall, 2005, 64-82) · (Kim, Mukhopadhyay, & Kraut, 2016, 133-156)
Cooperation and communication	· (Drucker, 2001) · (Mciver, Lengnick - Hall, Lengnick - Hall, & Ramachandran, 2013)
KM integration with existing systems	· (Moffett & McAdam, 2009, 44-59) · (Kim, Mukhopadhyay, & Kraut, 2016, 133-156)
Knowledge and winning organization	· (Coulson - Thomas, 2007, 108-112)

Table 1: Reference literature of factors of knowledge (continued)

Job security	· (Egbu, 2004, 301-315) · (Frost, 2014)
Climate in the organization	· (Wong & Aspinwall, 2005, 64-82)
Human resources management and motivation	· (Egbu, 2004, 301-315) · (Jafari, 2015, 82-93)
Flexible and dynamic organizational structure	· **(Bukovec, 2009, 4-23)**
Management support and commitment to the goals	· (Davenport & Volpel, 2001, 212-221) · **(Bukovec, 2006)**
Awareness and understanding of employees	· (Garrick, Chan, & Lai, 2004, 329-338)
Training and education of employees	· (Garrick, Chan, & Lai, 2004, 329-338)
Teamwork and problem solving	· (Zarraga-Oberty & De Saa-Perez, 2006, 60-76) · (Jafari, 2015, 82-93)

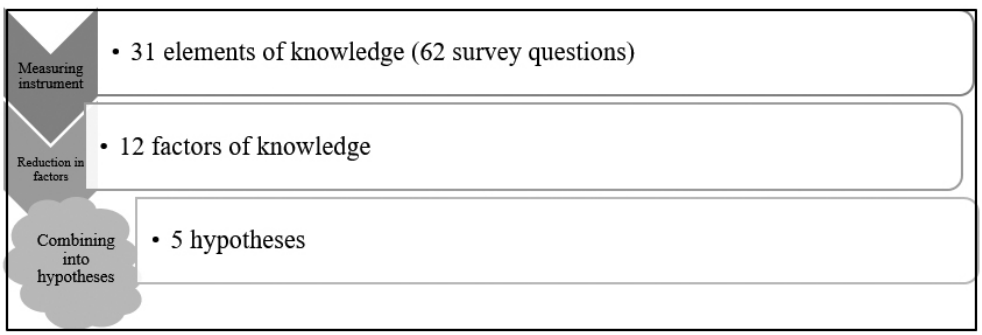

Chart 1: Reduction of knowledge factors into hypotheses

"To what extent do these arguments apply to a company in which you are employed (rating from 1 to 6)?". We chose an even graduated scale because we wanted to avoid arithmetic central responses.

Table 4 is presenting links between the factors of knowledge and the hypotheses.

In formulating the hypotheses, we based on the already conducted research (Akhavan, Hosnavi, & Sanjaghi 2009, 277-283). The hypotheses were partially summarized from the mentioned research, the difference being in the elements of knowledge. With the H1 and H2, we wanted to check whether KM (or what managers believe) is detected as a part of the innovation process and if the KM, according to the employees' opinion, participates in the realization of the company's objectives. The same applies for H3 and H4. We wanted to determine whether KM is recognized as a positive factor that contributes to the company's success. We adjusted the reference literature (Table 1) for designing the elements of knowledge in the fields which deviate from the environment in which we conducted the research. In particular, these areas relate to the cultural aspect, the organizational structure and understanding of work in general. We added hypothesis 5 that was not included in the reference research (Akhavan, Hosnavi, & Sanjaghi 2009, 277-283). Respondents could respond to the listed hypotheses by CONFIRM or REJECT. With the study, we wanted to identify the factors of knowledge that affect the performance of the organization, so it was very important that the respondents identify KM - knowledge as a potential factor impacting the performance of the organization. The last hypothesis allowed us at least a partial view of the sincerity of the answers. If the respondent decided to reject the first four statements and confirmed the fifth, this would mean that we could reasonably suspect the validity of the responses and we eliminated the complete questionnaire. The same applies to the contrary, e.g., if the respondent rejected the last statement and confirmed the other four.

4 Sampling, conducting a survey and analysing

Our target research group were managers, researchers or people who make essential decisions in an organization.

Table 2: Link between factors and elements of knowledge

Knowledge factor	Knowledge elements
Factor 1: Management leadership and support	Teamwork
	Management support and commitment to the goals
	Transparency, trust and organizational culture
Factor 2: Organizational culture	Climate in the organization
	Organizational structure
	Cooperation and communication
	Awareness and understanding of employees
Factor 3: Information technology	Database and technological tools for knowledge searching
	Information infrastructure
Factor 4: KM strategy	Company's openness for implementing KM strategy
	Knowledge management
	Administrator of knowledge
	Knowledge and measurement of knowledge
Factor 5: Performance measuring	Benchmarking
	Teamwork and problem solving (measuring the effectiveness of cooperation on challenges)
Factor 6: Infrastructure of the organization	Documentation of knowledge
	Knowledge exchanging
	Repositories and transmission of knowledge
Factor 7: Processes and activities	Architecture of knowledge
	Systematic approach to KM
	Creating knowledge
Factor 8: Rewarding and motivation	Human resources management and motivation
	Knowledge and winning organizations
Factor 9: Elimination of restrictions	Job security
Factor 10: Training and education	Continuous learning
	Training and education of employees
Factor 11: Human resources management	Flexible and dynamic organizational structure
	Change management
Factor 12: Comparative analysis	KM integration with existing systems
	Measuring performance
	Structure of knowledge

The sample included people who are heads of development departments, managers and experts. In terms of education, respondents were in most cases highly educated (Table 5). We collected the data for our research from a nonrandom sample of companies.

We targeted all the companies that were listed in the article *"300 biggest and best Slovenian companies in 2010"* (Bertoncelj Popit, 2011), which included data about value added per employee. The list of companies included 300 of the biggest companies in Slovenia, excluding the financial sector. All companies gave consent prior to the publication of data in the electronic version of Delo. The list includes most economic activities in which the companies are engaged in general and, from the revenue point of view, present the largest proportion regarding to the total numbers of activities. We carried out a parallel test of the correctness of the data published by the web application Gvin[1]. The review showed that there were no deviations from the published data.

Before carrying out the actual survey, we conducted a pilot study to determine whether the measuring instrument is appropriate. The respondents were selected among the authors' colleagues and acquaintances. All of them met the conditions for the target population in terms of education

1 Web service that allows registered users an insight (in Slovenian registered companies) into business, ownership share, market developments, etc. (Internet source).

Table 3: Factors of knowledge and survey questions
Source: Reproduced from the questionnaire (Valmohammadi, 2010, 915-924).

Factor 1: Management leadership and support
- Managers act as catalysts for KM.
- Managers create the necessary conditions for KM.
- Managers act as an example to show the desired behavior.
- Managers encourage knowledge creation, sharing and use.
- Managers recognize KM as an important factor that contributes to the business success.
- Managers show attachment and support of KM.

Factor 2: Organizational culture
- High organizational culture that values knowledge and problem solving.
- A high degree of trust among employees is important when exchanging knowledge.
- Frank exchange of errors between employees without fear of punishment.
- Collaboration between employees is important.
- Encouraging of teamwork among employees.
- Empowering employees to explore new possibilities.
- Encouraging people to ask questions.
- Accepting the exchange and sharing of knowledge (not accumulation) as organizational strength.

Factor 3: Information technology
- The use of an appropriate system for managing KM.
- Using technological tools (tools for collaboration, knowledge base, search engines, document management systems, intelligent systems, etc.).
- The utilization of intranet or internet.
- Easy use of technology.
- Relevance of KM system according to the user's needs.

Factor 4: KM strategy
- Having clear goals and objectives of a shared vision that employees support.
- It is necessary to develop a KM strategy at any cost.
- Having clear tasks and clearly defined objectives of KM.
- Alignment of KM strategy with business strategy.

Factor 5: Performance measuring
- Measurement of the benefits of KM depending on initiatives stemming from KM.
- Monitoring the progress of the development of the KM.
- Assessing the impact of KM on financial performance.
- Updating of indicators (financial and the organizational climate ones) for measuring KM.
- Measuring the value of intellectual capital.

Factor 6: Infrastructure of the organization
- The company has a knowledge trustee (administrator of knowledge, etc.).
- The company defines the roles and responsibilities for the purpose of carrying out the tasks of KM.
- The company has a clearly defined ownership of the initiatives arising from the KM group.
- The company has a flat organizational structure of the KM working groups.

Factor 7: Processes and activities
- Generating new ideas and knowledge.
- Documenting the key skills and knowledge.
- Effective classification and storage of knowledge.
- Improving procedures for finding the necessary knowledge.
- Sharing knowledge with the use of electronic media or personal contact.
- Communication (formal and informal) among employees.
- Immediate implementation of best quality knowledge in products and services.
- Promotion of continuing education at all levels.
- Providing for the protection of knowledge assets from unauthorized exposure or theft.

Factor 8: Rewarding and motivation
- Guaranteeing the right motivators to encourage the production of new knowledge.
- Motivating employees to use new knowledge.
- Visibly rewarding employees who share their knowledge.
- Rewarding employees for successful teamwork.
- Motivating work performance by means of assessment system.

Factor 9: Elimination of restrictions
- Provision of funds for investment in KM.
- Sufficient funding investment for the construction of KM technological system.
- Ensuring sufficient human resources to create new knowledge.
- Providing employees with time for knowledge management related activities.

Factor 10: Training and education
- Training on the concept of knowledge and KM.
- Training on the use of KM systems and tools.
- Training individuals to assume roles related to KM.
- Training to develop knowledge skills such as creative thinking, problem solving, communication, team building, etc.
- The possibility that employees are involved in both internal and external learning opportunities such as conferences, training seminars, etc.

Factor 11: Human resources management
- Employment of workers in order to fill gaps related to knowledge.
- Employment of workers due to their positive attitude to knowledge.
- Rewarding employees for the purpose of retaining.
- Providing opportunities for career promotion.

Factor 12: Comparative analysis
- Constant care for benchmarking system performance (measuring the usefulness of KM initiatives with regard to financial or non-financial indicators of the company).
- Encouraging employees to compare with other organizations.
- Establishing the internal mechanism with a view to coordinating the company's strategy, budget and human resources management.

Table 4: Link between the hypotheses and the influential factors of knowledge management

Hypotheses	Influential factors of knowledge management
H 1 - Knowledge management creates innovation processes.	Factor 7: Processes and activities
	Factor 8: Rewarding and motivation
H 2 - Knowledge management realizes the company's strategies.	Factor 9: Elimination of KM restrictions
	Factor 4: KM strategy
	Factor 5: Performance measuring
H 3 - Knowledge management creates conditions for the competitiveness of the organization.	Factor 2: Culture of the organization
	Factor 6: Infrastructure of the organization
H 4 - Knowledge management provides the foundations to new knowledge.	Factor 3: Information technology
	Factor 10: Training and education
	Factor 11: Human resources management
H 5 - Knowledge management helps to the success of the organization.	Factor 1: Leadership management and support
	Factor 12: Comparative analysis

and the workplace. We conducted a survey among 21 people by interviewing them personally, using the questionnaire in printed form. The collected data was processed using the SPSS programme. We focused on data reliability analysis calculating Cronbach's coefficient α (alpha). The selected respondents filled the questionnaire twice, because the first time we did not reach the minimum value of Cronbach's coefficient α of 0.7; the average of all factors was 0.54. Therefore, the questionnaire was corrected, especially in terms of further clarifying the survey questions. Some questions were reshaped and some of them excluded, because we realized that they did not contribute to the further clarification but in certain aspects even gave rise to doubts into questions that had already been answered. The revised questionnaire was tested again in the circle of colleagues and acquaintances but this time among different people. The second pilot study included 19 people. In this case, the critical value for Cronbach coefficient α (alpha) was reached (0.76).

As a tool for collecting survey responses on-line, we used Google documents - Forms (Do more in cooperation with other office applications with Google Drive, 2013). Only the selected companies could access the questionnaire. The invitations for filling out the questionnaire were distributed by e-mail. They listed all the relevant information about the study, the recipient of the invitation (it was intended for managers, researchers or people in organization who make crucial management decisions) and the electronic link to the online form. We deliberately avoided the e-mail addresses that included personal names, so that the respondents would not regard (perceive) them as spam and delete them. Therefore, we prefered using e-mail addresses such as info@company.si.

5 Results

When gathering the companies, we realized that 14 (4.7%) of the companies from our range had ceased their activities for various reasons, therefore 286 or 95.3% of the initially planned electronic invitations were sent. In 97 cases (33.9% of all outgoing emails), we received notice that the e-mail address does not exist anymore. We concluded that these were mainly companies, which ceased to exist since the list had been published. A total of 71 completed questionnaires (24.8%) were returned. We excluded four responses from the analysis because they were incomplete. Responses came from 28 men and 34 women, five respondents did not indicate their gender. The average age of the participants was 43.2 years.

5.1 Testing hypotheses

To analyze the reliability of the questionnaire, we used the Cronbach's coefficient α (alpha). We checked whether the responses vary because of different opinions of the respondents, and not because the survey was unclear or because multiple-choice questions could have several explanations (Cronbach, 1951, 297-334). We confirmed or rejected the hypotheses in the following successive steps:

1. We reviewed the responses according to each hypothesis. The respondents evaluated each hypothesis by Confirm of Reject. The first four hypotheses represented the arguments that we wanted to test. The fifth and final hypothesis was a test and a partial indicator of the sincerity of the answers. In two cases the respondents confirmed the first four hypotheses, but not the last one. This clearly indicates that we may reasonably doubt in the accuracy of the results, so we eliminated the two questionnaires. None of the

Table 5: Position in the company and the educational level of respondents
** The person who carries out the tasks but has the possibility of influencing on the decisions regarding the tasks.*

Job position/ education	PhD	Master's degree	Specialization	High school	Higher education	College	No response	Total
Manager*	2	3	2	5	8	6	2	28
Expert		2	1	2	5	3	2	15
Head of department	3	3	2	1	5	6	1	21
(no response)					1		2	3
Total of	**5**	**8**	**5**	**8**	**19**	**15**	**7**	**67**

Table 6: Industry branch in which the company operates

Activity of the company	Other	Finance	Informatics	Human Resources Department	Management	Manufacturig	Marketing	No response	Total
Count	7	10	6	10	8	10	10	6	67

Table 7: Workplace of the respondens

Industry branch of the company	Count
Commerce	13
Other service companies	10
Other industries	7
Food industry	9
Energetics	6
Telecommunications and media	5
Metal industry	5
Automotive industry	3
Tourism	2
Construction	2
Transporting people and goods	2
Pharmaceutical industry	1
Insurance	1
Chemical industry	1
Total	**67**

respondents confirmed the final hypothesis, but not the first four.

2. Each of the hypotheses, as we have already explained, is based on the influential factors (Table 4). To confirm the hypotheses, we determined the following rule: The arithmetic mean of all the sub-questions (on a scale from 1 to 6) must be at least 3.5 ($x \geq 3.5$) with the distribution within + - 1.3 of the standard deviation. We assumed that the Likert scale has the same spacing between the ordinal classes (e.g. responses 1 and 2 have the same interval distance).
3. For each hypothesis, we have tried to establish (by means of the factor analysis - PCA method) the existence of latent (hidden) variables, which could explain the greater part of the variability of the hypotheses, and whether the observed latent variables (factors) can be usefully applied to the hypotheses.

We calculated the descriptive statistics indicators, such as arithmetic mean, standard deviation, asymmetry and kur-

tosis. The calculation was based on the results of descriptive statistics directly from the questionnaire responses, using values of the Likert scale (1 to 6).

The last, fifth hypothesis deviates due to an increased standard deviation. In this stage of the analysis, we rejected hypothesis 5. All responses are within one standard deviation. Also, the values of the standard error for all hypotheses were quite the same, confirming the homogenity of the average of the responses per the hypothesis. The hypotheses were tested according to the assumed normal distribution of average responses obtained. We used the non-parametric Shapiro-Wilk test. We found out that in most calculated averages of responses for each hypothesis, a normal distribution can be assumed (statistical significance < 0.05).

5.2 Factor analysis

We used the factor analysis to determine whether there are hidden components that can explain the greater part of the hypotheses' variability. We used the method of Principal Component Analysis (PCA). Before performing PCA analysis, we further tested the answers of the respondents with D`Agostino test. This test was chosen because of the structure of the responses: namely, the answers were given in a Likert scale of 1 to 6. The test is particularly suitable for determining the normality of the distribution of variables which contain multiple identical responses, in our case from 1 to 6. The test was checking whether the answers received are distributed normally. The objective of the PCA analysis was to identify whether there are other - hidden factors of knowledge which had not been detected in the literature studies and research. The results of our analysis (Table 10) were similar to the studied literature and research by Valmohammadi (2010, 919).

Table 10 shows the synthesis of the main findings of the PCA analysis. According to the test results, it can be concluded that the respondents are aware of knowledge accumulated in the company and they agree with the the statements that KM provides not only progress but also the basic existence of the company. One of the objectives of the study was to identify knowledge factors. The factor analysis confirmed that the established new factors, e.g.

Table 8: Descriptive statistics of the hypotheses
** The arithmetic mean of all responses in relation to the hypothesis.*

Hypotheses	Test value arith. mean* = 3.5				
	t	Sig. (2 - tail)	Diff. arith. Mean	95% Interval	
				Lower	Upper
H 1 - Knowledge management creates innovation processes.	5,237	,000	,44577	,2759	,6156
H 2 - Knowledge management realizes the company's strategies.	6,918	,000	,48839	,3475	,6293
H 3 - Knowledge management creates conditions for the competitiveness of the organization.	5,262	,000	,46915	,2912	,6471
H 4 - Knowledge management provides the foundations to new knowledge.	5,992	,000	,50940	,3398	,6790
H 5 - Knowledge management helps to the success of the organization.	5,806	,000	,47484	,3116	,6380

Table 9: Shapiro-Wilk normality test

	Shapiro-Wilk normality test	
	Statistic	Sig.
H 1 - Knowledge management creates innovation processes.	,317	,000
H 2 - Knowledge management realizes the company's strategies.	,559	,000
H 3 - Knowledge management creates conditions for the competitiveness of the organization.	,508	,000
H 4 - Knowledge management provides the foundations to new knowledge.	,397	,000
H 5 - Knowledge management helps to the success of the organization.	,346	,000

Table 10: Summary of PCA analysis - Hypotheses 1 to 5

Hypotheses	KMO test	Bartlett's test	Identified latent components		Rotat.	% rot. comp.	Cum. %
H 1 - Knowledge management creates innovation processes.	0,752	0,001	1.	Technical approach to knowledge in the company (storage, editing, sorting)	Direct Oblimin	30,60%	
			2.	The protection and transmission of accumulated knowledge (protection, intervention, learning, motivation in the application of new knowledge)		11,15%	41,75%
H 2 - Knowledge management realizes the the company's strategies.	0,643	0,009	1.	The economic aspect of knowledge management (KM investment assets, measurement of KM yield, KM consistency with company's strategy)	Varimax	17,67%	
			2.	Strength of intellectual capital (KM development, updating of indicators measuring KM and measuring the value of intellectual capital)		16,71%	34,38%
			3.	Financial effects of KM per unit of time (the time to perform the KM tasks and effects on financial performance)		13,15%	47,53%
H 3 - Knowledge management creates conditions for the competitiveness of the organization.	0,729		1.	Motivation and teamwork (providing resources for research, knowledge administrators, promoting teamwork, confidence in the exchange of knowledge)	Varimax	23,59%	
		0,001	2.	Constructive approach in resolving errors (frank exchange of errors without fear of punishment, promoting questions, clearly defined responsibilities)		23,32%	46,91%
H 4 - Knowledge management provides the foundations to new knowledge.	0,747	0,007	1.	Use of information technology (provision of simplification and clarity of systems, use of technology systems)	Varimax	21,98%	
			2.	Employment due to skills needs (priority in employment of those who accept and pass on knowledge, new employments to fill the gaps of knowledge)		15,64%	37,62%
			3.	The adequacy of the current KM system (training of individuals to assume the roles associated with KM, training for skills development)		13,80%	51,42%
H 5 - Knowledge management helps to the success of the organization.	0,738	0,002	1.	Management support of KM (managers are acting as an example, as catalysts for KM, they recognize KM as an important factor)	Direct Oblimin	31,90%	
			2.	Comparative analysis (measurement of the usefulness of KM initiatives in relation to the financial or non-financial indicators of the company)		14,07%	45,97%

the area of human resources management, the importance of warehousing and distribution of knowledge and organizational culture largely coincide with the reference survey (Valmohammadi 2010, 915-924). In their study, authors Wong and Aspinwall (Wong & Aspinwall, 2005, 74-75) confirmed the importance of positive motivation of employees in the company. Our research confirmed this finding. We have learned that the motivation by superiors is a very important factor. We concluded that we can in average explain 46.7% of the variabilities of all five hypotheses with identified new latent components - factors.

6 Developing a model of knowledge management factors

The studied literature showed that there are several methods of measuring human capital, but, as we noted, there are many similarities between them. We searched for the theoretical foundations on which index to use for measuring knowledge as a predictor - predictive variable of value added per employee. Considering the required amount of data collection, the most understandable and therefore most affordable method of measuring intellectual capital is the calculation based on the formula published by Pulić (2004, 64), using the index VAIC. This method is based on the difference between the market value and the bookkeeping[2] value of the company. The difference between both categories is human capital. Intellectual capital or intellectual property of the organization (patents, stored knowledge in the form of products, etc.) is understood as a form of KM, therefore, it is necessary to increase the cumulation of human capital in companies with the purpose of identifying market opportunities (Manuel, 2016, 62). The index VAIC (Value Added Intellectual Coefficient) can be used for comparison among companies. The main idea of VAIC coefficient is a measure of productivity "knowledge" and not intellectual capital. The calculation is based on the coefficient proposed by the author Pulić (2004, 64). To understand the importance of intellectual capital, it is necessary to measure and compare it with other organizations. The coefficient is composed of the following sum: VAIC = (Value added) / (Human capital) + (Value added) / (Financial capital) + (Value added) / (Structural capital). Value added can be calculated by means of subtracting the cost of materials and services from all of the company's income (Pulić 2004, 65). Value added is, according to Pulić, the real indicator, because it shows that organizations create value and not the products. In this case, the value added replaces the financial indicators such as ROI and ROE. Value added can be a "measure" of company's intellectual capital.

When compared with the index ROA (which is an indicator for assets), value added can indicate quite the opposite; the same also applies to the index ROI (profitability of investments). The value added is not correlated with financial indicators and, as such, may well represent the "value" of human capital in the company (Iazzolino & Lais, 2013, 561). Therefore, we chose the value added per employee as a variable, because it is based on the knowledge of the employees.

6.1 The link between the company and the respondent

For the construction of the statistical model of the factors of knowledge, it was necessary to link the company and the responses to our survey. We used the data collected via questionnaires to identify the company to which a respondent was affiliated.

6.2 Designing the statistical model of knowledge factors

First, we identified three relatively homogeneous groups (Table 11) based on published data (data was checked with a web application Gvin) on value added per employee. We used the method of two-step cluster analysis. For the differentiation between the three newly formed groups, we used a categorical variable: »Which industry (economic branch) the company deals with« and the continuous variable: »Value added per employee«.

The model of knowledge factors in connection to the value added is built out of two independent sections (explained in the next chapter). Figure 1 shows the design of the statistical model of knowledge factors.

6.3 Multiple discriminant analysis

In the first section of the model, we analyzed where, on the basis of questions presented in Table 11, the respondent – company belongs. This method, based on linear discrimination functions, is placing the respondent's company in one of the three groups (Table 11), according to the value added per employee. For discrimination, we used those variables that largely contributed to clarify the variance between the groups (Table 12).

From the findings, we concluded that if the answers to those questions explain the largest proportion of the variance of the latent components, then the listed variable can discriminate between groups of companies in terms of value added per employee. In discriminant analysis, we considered the fact that there is no multicolinearity be-

2 Under the term bookkeeping value we understand the sum of company's funds and physical capital (buildings, land, etc.), whereas the market value represents the product of the number and value of shares

Table 11: Descriptive statistics of value added per employee formed in three groups

Group	N	Arith. mean in EUR	Std. deviation	Std. error	95% Confidence interval of arith. mean change	
					Lower	Upper
1	17	41.876,5	22.985,5	5.574,8	30.058,5	53.694,6
2	26	53.334,8	39.228,2	7.693,3	37.490,2	69.179,5
3	25	62.200,5	45.144,7	9.028,9	43.565,7	80.835,3
Total	68	53.729,7	38.638,0	4.685,5	44.377,3	63.082,1

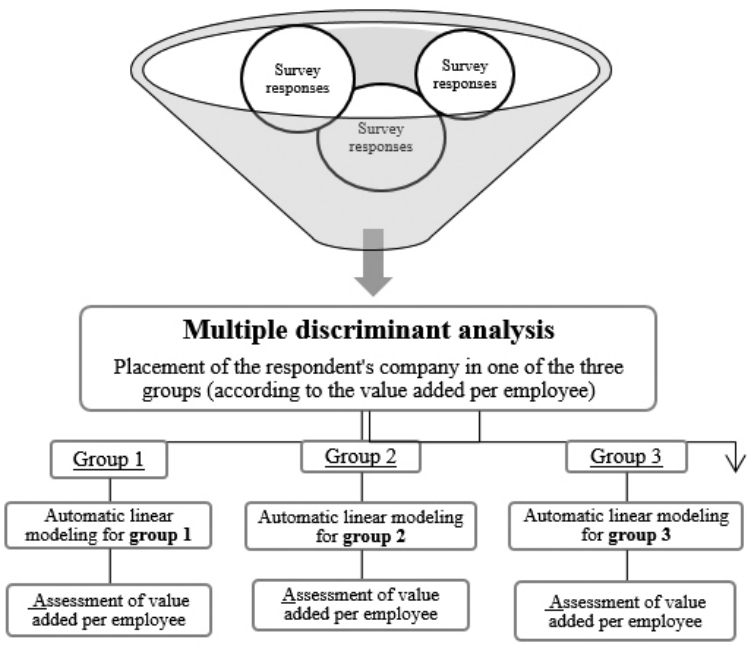

Figure 1: The model of knowledge factors - three independent sections

tween the independent variables, the variances are homogeneous within the independent variables and that they are distributing "normally". Using the classification function coeficients presented below (and in Table 11), we calculated which group (from 1 to 3) the respondent (company) belongs to:

1. Classification linear function for group 1 = Q35 * 4,193 + Q41 * 2,417 + Q42 * 1,719 + Q25 * 2,611 + Q48 * 1,011 + Q50 * 0,331 + Q9: * 1,425 + Q12 * 2,586 + Q13 * 2,696 + Q15 * 3,932 + Q18 * 6,192 + Q53 * 5,119 + Q62 * 2,42 + Q3 * -0,221 -56,938

2. Classification linear function for group 2 = Q35 * 5,409 + Q41 * 3,743 + Q42 * 2,514 + Q25 * 3,321 + Q48 * 1,669 + Q50 * 0,356 + Q9: * 2,135 + Q12 * 2,757 + Q13 * 3,301 + Q15 * 5,543 + Q18 * 8,521 + Q53 * 4,998 + Q62 * 4,685 + Q3 * -0,019 -98,984

3. Classification linear function for group 3 = Q35 * 6,966 + Q41 * 5,051 + Q42 * 2,943 + Q25 * 3,364 + Q48 * 1,736 + Q50 * 0,09 + Q9: * 2,814 + Q12 * 2,851 + Q13 * 2,957 + Q15 * 5,551 + Q18 * 10,584 + Q53 * 6,841 + Q62 * 6,15 + Q3 * -0,918 -134,662

We substantiated the regularity of the new results with a table of cross-verifiability of classification into groups (Table 3). All replies received were re-tested with discriminant analysis. A total of 95.2% of cases were successfully classified according to the actual - a priori and planned clasification. Cross-checking of classification cathegory also showed a high percentage of 85.7%. With linear classification functions (discriminant analysis), we correctly predicted 95.2% of the existing cases according to their a priori values.

Table 12: Discriminant analysis - the classification function coefficients; questions were rated on a scale from 1 to 6.

	Groups		
	1	2	3
Q. 35: To what extent is efficient sorting and storing of knowledge important?	4,193	5,409	6,966
Q. 41: To what extent do you agree with the statement that it is important to protect knowledge assets against unauthorized exposure or theft?	2,417	3,743	5,051
Q. 42: To what extent do you agree with the statement that your company has enough proper motivators to encourage the production of new knowledge?	1,719	2,514	2,943
Q. 25: How often do you carry out the monitoring of the progress of KM development?	2,611	3,321	3,364
Q. 48: To what extent do you agree with the statement that your company has adequate financial investment in the construction of the KM technological system?	1,011	1,669	1,736
Q. 50: To what extent do you agree with the statement that enough time to perform knowledge-related activities is provided for the employees?	,331	,356	,090
Q. 9: To what extent does the following statement apply: *There is a frank recognition of mistakes without fear of punishment*?	1,425	2,135	2,814
Q. 12: To what extent does the following statement apply: *There is enough stimulation and resources for the employees to explore new possibilities*?	2,586	2,757	2,851
Q. 13: To what extent does he following statement apply*: Inividuals are encouraged to ask questions*?	2,696	3,301	2,957
Q. 15: To what extent does the following statement apply: *We use an appropriate KM system*?	3,932	5,543	5,551
Q. 18: To what extent does the following statement apply: *Our company provides a simple use of information technology*?	6,192	8,521	10,584
Q. 53: To what extent do you agree with the statement that company provides adequate training for taking the KM related roles?	5,119	4,998	6,841
Q. 62: To what extent does the following statement apply: *The company has an established system of internal mechanism with a view to coordination strategy, budget and managing the human resources of the company*?	2,420	4,685	6,150
Q. 3: To what extent does the following statement apply: *The managers act as an example to show the desired behavior*?	-,221	-,019	-,918
Constant	-56,938	-98,98	-134,66

Table 13: Discriminant analysis - Classification table groups and value added per employee

		Groups	**Estimated classification into groups**			**Total**
			1	2	3	
Actual classification into groups	**N**	1	17	0	0	17
		2	0	22	2	24
		3	0	1	21	22
	%	1	100,0	,0	,0	100,0
		2	,0	91,7	8,3	100,0
		3	,0	4,5	95,5	100,0
Cross-check of classifying groups	**N**	1	14	3	0	17
		2	0	22	2	24
		3	0	4	18	22
	%	1	82,4	17,6	,0	100,0
		2	,0	91,7	8,3	100,0
		3	,0	18,2	81,8	100,0

Automatic linear modeling

The second section includes the calculation of the estimated value added per employee by using the linear regression coefficients. We used an automatic linear modeling method (Yang, 2013). Typically, the variables with the ordinal measurement scale are unsuitable for linear regression function, so we used a special method of linear modelling, namely the automatic linear modeling (part of the SPSS statistical program package). For the dependent variable, we chose value added per employee, the independent variables depend on the cathegory determined by multiple discriminant function. For each group of values added per employee, we set variables which contribute the most to clarification and regression of value added per employee, by means of automatic linear modeling. Independent variables data is drawn only from the corresponding group, this means that if the discriminant analysis selects Group 1, the regression coefficients are calculated only from independent variables (described below) which belong to Group 1. Below, we present a linear model for each group according to value added per employee.

Group 1 with regards to the value added

In the case of the linear regression model of Group 1, five independent variables, which are presented in Table 14, were selected. The selected variables for the linear regression model of Group 1 are: **(Table 14)**.

The table of regression coefficients of Group 1 explicitly and clearly shows the relative magnitude and direction of the coefficients. It was possible to answer each independent variable (survey question) only with the predetermined values, e.g. *To what extent (1 to 4) do you agree with the statement that the work performance is motivated by a grading system?* - the possible answers are 1, 2, 3 and 4. According to the reply of the respondent, the regression coefficient which is set for a specific response is used for the calculation value.

Group 2 with regards to the value added

In the case of the linear regression model of Group 2, six independent variables, which are presented in Table 15, were selected. Below are the selected variables with the corresponding coefficients: **(Table 15)**

We eliminated two answers from the analysis, because they were perceived as surplus values, which could distort the model. Further, we added a diagram and tables of coefficients. Additional explanations and descriptions of the results are not given because of a similar interpretation as in the previous section, with the difference of changed calculated values of coefficients.

Group 3 with regards to the value added

In the case of the linear regression model of Group 3, six independent variables, which are presented in Table 16, were selected: **(Table 16)**

To use the model for assessment of the value added per employee, we need new answers (e.g. from a person who is a manager or deals with knowledge related tasks in the company). For the classification into one of the three groups, the respondent must first answer the questions presented in Table 12. Then, for the prediction of value added per employee (it applies to the respondent's company), we place the new questions depending on the before ranked group (e.g. if the company is classified in Group 1, then we place questions from Table 14). With automatic modeling, we calculate the new "possible answers", namely 1 to 4 or 1 to 5. Previously, it was possible to submit the answers

Table 14: The table of regression coefficients of Group 1

Selected variables for linear regression - Group 1	Possible answers	Regression coefficients
Q. 46: The work performance is motivated by a system of evaluation (1 to 4).	1	2.738,11
	2	57.173,90
	3,4	0
Q. 49: The company sufficiently provides resources to create new knowledge (1 to 5).	2,3,5	-7084,648
	1,4	0
Q. 51: The company provides sufficient education for KM (1 to 5).	2	23844,307
	1,3,4,5	0
Q. 58: We are rewarding for the purpose of retaining employees (1 to 4).	1,3	-12468,932
	2,4	0
Q. 7: There is a high organizational culture that values knowledge (1 to 4).	2,3	10823,943
	1,4	0
Intercept		40322,159

from 1 to 6 (multiply each answer with the corresponding regression coefficients and then sum it all together).

7 Discussion and conclusion

It is important for the company's management to know, primarily, which of the knowledge factors mostly affect other factors within the organization, and, secondary, how much they contribute to the overall result of the company. Knowledge can also be expressed in other ways, not only as a "know-how" notion, but collective forms of knowledge, such as organizational culture and climate in the organization, can also be perceived. The empirical analysis was made to determine in what way the respondents understand the stated hypotheses. We tested the hypotheses

Table 15: The table of regression coefficients of Group 2

Selected variables for linear regression	Possible answers	Regression coefficients
Q. 10: It is considered that the cooperation between employees is important (1 to 3).	1	-21616,482
	2,3	0
Q. 25: We are regularly monitoring the progress of KM development (1 to 3).	3	-23677,136
	1,2	0
Q. 31: The company has a clearly defined ownership of the initiatives arising from the KM group (1 to 3).	1	21259,937
	2,3	0
Q. 36: It is important to improve procedures for finding the necessary knowledge (1 to 4).	3,4	-24194,388
	1,2	0
Q. 53: The company provides adequate training for taking the KM related roles (1 to 4).	4	34867,215
	1,2,3	0
Q. 66: What is the industry (economic branch) of your company?	10	33965,614
	1,2,3,7	0
Intercept		51994,262

Table 16: The table of regression coefficients of Group 3

Selected variables for linear regression	Possible answers	Regression coefficients
Q. 14: The knowledge is accepted and shared among employees (1 to 4).	3	-16391,569
	1,2,4	0
Q. 16: We use technological tools (tools for collaboration, knowledge base, search engines, document management systems, intelligent systems, etc.) in the company (1 to 4).	2	-33275,606
	1,3,4	0
Q. 21: It is necessary to develop a KM strategy at any cost (1 to 4).	4	29738,143
	1,2,3	0
Q. 37: Knowledge exchange through usage of electronic media or personal contact is important (1 to 4).	2	26742,352
	1,3,4	0
Q. 52: Company provides sufficient education for the use of KM systems and tools (1 to 4).	2,4	26414,401
	1,3	0
Q. 66: What is the industry (economic branch) of your company?	10	51293,661
	1,2,3,7	23347,973
	6,8,9,11,12,14	0
Intercept		33716,551

and successfully verified four out of five. The last, fifth, rejected hypothesis – *'Knowledge management helps to the success of the organization'* did not meet the requirements for approval with the calculated criteria. This was due mainly to dispersed answers and the fact that standard deviation was unexpectedly large. Knowledge management can positively contribute to the success of the organization, if well managed. Respondents were selected from different sized companies and from different industry branches, so large deviations in answers are not surprising.

Compared to the previous research by other authors (Akhavan, Hosnavi, & Sanjaghi, 2009), (Valmohammadi, 2010), (Davenport & Prusak, 1998), (Brahma & Mishra, 2015) and (Bharadwaj, Chauhan, & Raman, 2015), our findings are in certain parts confirming and in others deviating. Deviations were detected in the area of motivation. As a restriction of the research, we especially considered the definition of knowledge as a research matter. Knowledge can also be expressed in other ways, e.g. in a collective form, such as organizational culture and climate in the organization. Although knowledge contributes an important part in realizing the company's performance, there are also other elements, which we did not cover in this research, and also have a strong impact on the company result, e.g. economic development of the area in which the company operates, the role of government, market discipline, etc.

As a guideline for future research, we suggest periodic repetitions of the research and inclusion of coefficients that reflect the economic and market situation in the observation period (e.g. economic growth, employment rate, interest rates - the price of money, etc.). By comparing the results of the periodic analysis, we can measure the deviations of value-added companies in conjunction with the factors of knowledge, as well as the impact of the economic situation on the generation of new knowledge, etc.

8 The practical value of the study

We see the applicable value of the study in the identification of the most important factors of knowledge with the connection to the company's success measured in euros per employee. Primarily, we found out that industry branch in which the company operates strongly impacts the value added per employee. In addition, we confirmed that the motivation by assessing work performance is in a strong positive correlation with the value added per employee. This means that a fair assessment (evaluation only, with no money reward, etc.) of the employee by the employer has a major impact on the value added. Besides the industry branch in which the company is engaged, it turned out that commendation for a job well done in the long-term affects the company's success. What follows is a factor that is positively associated with value added, namely the ongoing monitoring and evaluation of the company's progress. On the other hand, training for performing tasks related to knowledge management and the use of technological tools (knowledge base, search engines, document management systems, intelligent systems, etc.) also have a positive impact on the value added. The survey also showed that employees appreciate the positive organizational culture; it was recognized as a factor of knowledge that positively affects the value added, but to a lesser extent. The same applies to a clearly designed business strategy, cooperation between employees as well as the access and sharing of knowledge within the company. Other factors of knowledge identified in the literature were also recognized as influential in regard to the value added per employee. Among the activities in which the company operates are large differences in the average value added per employee.

The highest value added was observed in companies engaged in the telecommunications and media sector, pharmaceutical companies and the energy sector. We also found that there is a positive correlation between the amount of value added and the answers that are associated with motivation and rewarding of the employees. Rewarding and employee's motivation are reflected in increased value added. Positive correlation was also found between value added per employee and the opinion that it is necessary to develop strategies related to KM. The factor that defines the coordination of human resources was also placed high on the scale of importance. On the other hand, we discovered that inciting for comparing with other similar organizations has a negative impact on the value added. The common characteristic of companies with high value added per employee is shown in the fact that the majority of all the received replies concerning motivation, rewarding, training and education of employees were rated as very important.

We have detected the lowest value added per employee in companies engaged in the construction, chemical and tourism sector. For these companies, the opposite applies as for companies with high value added. The biggest disadvantage which we detected in these companies is weak organizational culture, insufficient investment in education of the employees and inadequate update of the IT infrastructure. What is more, the statement »*Leaders do not give proper respect to employees*« was described as "agree". We concluded that this is the result of the poor management of the companies and not of the employees' work.

The applicability of the study can also be seen in the construction of a statistical model, with which the value added can be "assessed". We built a model of the factors of knowledge which allows us to estimate the value added per employee. The assessment of value added is based on business results from 2010 and therefore has no real predictive power, so if we form the model today, the result – estimation of value added per employee would not be entirely the same. To start up the model, we need to as-

semble new answers to the questions (among others, there would also be issues which are not directly linked to the knowledge as such, e.g. the year the company was founded in, the ownership structure, whether the company is in bankruptcy or expects bankruptcy, etc.) from the person who is the administrator of knowledge or is well familiar with the internal structure and operation of the company. In chapter 6, titled *Developing a model of knowledge factors*, we have described the process in detail. Based on the responses received, we would place the company into one of the three groups by calculating the coefficients of multiple discriminants analysis. Additional questions tailored to each company's group would follow, depending on the group to which the company is placed. This time, using the coefficients of the linear model, we would "predict" the expected value added per employee. The most important practical value of this model is seen in the fact that managers can identify to which knowledge factors should they give priority to, and consequently, provide additional training, or improve communication between employees as well as renovate information technology. This would enable managers to enhance better performance of the company, with the right approach and minimal inputs.

Literature

Akhavan, P., Hosnavi, R., & Sanjaghi, M. (2009). Identification of knowledge management critical success factors in Iranian academic research centers. Education, business and society: *Contemporary Middle Eastern Issues*, 2(4), 276-288, http://dx.doi.org/10.1108/17537980911001107

Akhavan, P., Jafari, M., & Fathian, M. (2006). Critical success factors of knowledge management systems: a multicase analysis. *European Business Review*, 18(2), 97-113, http://dx.doi.org/10.1108/09555340610651820

Bertoncelj Popit, V. (June 2011). 300 največjih in najboljših slovenskih podjetij v letu 2010 [300 biggest and best Slovenian companies in terms of turnover in 2010]. Retrieved 2012, from Delo: http://www.delo.si/gospodarstvo/posel-in-denar/300-najvecjih-in-najboljsih-slovenskih-podjetij-v-letu-2010.html

Bharadwaj, S. S., Chauhan, S., & Raman, A. (2015). Impact of knowledge management capabilities on knowledge management effectiveness. *The Journal for Decision Makers*, 40(4), 421-434, http://dx.doi.org/10.1177/0256090915613572

Bhatt, G. (2001). Knowledge management in organizations: Examining the interaction between technologies, techniques and people. Journal of Knowledge Management, 5(1), 68-75, http://dx.doi.org/10.1108/13673270110384419

Bollen, L., Vergauwe, P., & Schnieders, S. (2005). Linking intellectual capital and intellectual property to company performance. *Management Decision*, 43(9), 1161-1185, http://dx.doi.org/10.1108/00251740510626254

Brahma, S., & Mishra, S. (2015). Understanding Researchable Issues in Knowledge Management: A Literature Review. *Journal of Knowledge Management*, 13(4), 43.

Bukovec, B. (2006). Management človeških virov in obvladovanje organizacijskih sprememb [Management of human resources and managing organizational changes]. *Organizacija*, 39 (2), 117-123.

Bukovec, B. (2009). Human Resources Management (HRM) kot ključni proces pri obvladovanju organizacijskih sprememb [Human Resources Management (HRM) as a key process for managing organizational changes]. *Raziskave in razprave*, 2(2), 3-25. Retrieved: January 9, 2013, from: http://www.dlib.si/?URN=URN:NBN:SI:DOC-N6MY4Z7U

Coulson - Thomas, C. (2007). Winning companies; winning people: Enabling average people to emulate the approaches of high performers. *Industrial and commercial training*, 39(2), 108-112, http://dx.doi.org/10.1108/00197850710732442

Cronbach, J. L. (1951). Psychometrika: Coefficient alpha and the internal structure of tests. Retrieved: March 2013, from: http://psych.colorado.edu/~carey/Courses/PSYC5112/Readings/alpha_Cronbach.pdf

Davenport, E. (2001). Knowledge management issues for online organizations: Communities of practice as an exploratory framework. *Journal of Documentation*, 57(1), 61-75.

Davenport, T. H., & Prusak, L. (1998). Working Knowledge: How Organizations Manage What They Know. Harvard Business School Press. Retrieved: January 12, 2013, from: http://www.acm.org/ubiquity/book/t_davenport_1.html

Davenport, T. H., & Volpel, S. C. (2001). The rise of knowledge towards attenton management. *Journal of Knowledge Management*, 5(3), 212-221.

Drucker, P. F. (2001). Managerski izivi v 21. stoletju [Managerial Challenges in the 21st Century]. (S. Trajkovski, Trans.) Ljubljana: GV založba.

Egbu, C. O. (2004). Managing knowledge and intellectual capital for improved organizational innovations in the construction industry: an examination of critical success factors. *Engineering, Construction and Architectural Management*, 11(5), 301-315, http://dx.doi.org/10.1108/09699980410558494

Frost, A. (2014). A synthesis of knowledge management failure factors. Retrieved 2016, from an educational KM site: http://www.knowledge-management-tools.net/failure.html

Garrick, J., Chan, A., & Lai, J. (2004). University-industry partnerships. Implications for industrial training, opportunities for new knowledge. *Journal of European Industrial Training*, 28(2/3/4), 329-338.

Google Inc. (2013). Naredite več v sodelovanju z drugimi s

pisarniškimi aplikacijami v storitvi Google Drive. Retrieved from GoogleInc, http://www.google.com/intl/sl/drive/start/apps.html#product=sheets

Gupta, B., Iyer, L., & Aronson, J. (2000). Knowledge management: practices and challenges. *Industrial management & data systems*, 100 (1), 17-21, http://dx.doi.org/10.1108/02635570010273018

Hsu, S. H., & Shen, H. P. (May 2005). Knowledge Management and its Relationship with TQM. *Total Quality Management & Business Excellence*, 16(3), 351-361, http://dx.doi.org/10.1080=14783360500054111

Iazzolino, G., & Laise, D. (2013). Value added intellectual coefficient (VAIC): A methodological and critical review. 4, 547 – 563, http://dx.doi.org/10.1108/JIC-12-2012-0107

IBM Knowledge Center. (2012). Two Step Cluster Analysis. Retrieved July 25, 2016, from IBM Knowledge Center: https://www.ibm.com/support/knowledgecenter/SSLVMB_21.0.0/com.ibm.spss.statistics.help/idh_twostep_main.htm

Jafari, S. (2015). The effect of knowledge management practices on employees' innovative performance. *The International Journal of Management Science and Information Technology (IJMSIT)*, 82-93.

Joia, L. A. (2000). Measuring intangible corporate assets. (M. U. press, Ed.) Linking business strategy with intellectual capital. *Journal of Intellectual Capital,* 1(1), 68-84.

Kim, S., Mukhopadhyay, T., & Kraut, R. (2016). When does repository kms use lift performance? The role of alternative knowledge sources and task environments. *MIS Quarterly*, 40(1), 133-156.

LS, Y., Tasmin, R., Rusuli, M. S., & Hashim, N. (2010). Factors Influencing Knowledge Management Practices Among Multimedia Super Corridor (MSC) Organizations. Retrieved 2012, from IBIMA Publishing: http://www.ibimapublishing.com/journals/CIBIMA/2010/834296/834296.pdf

Luo, S.-H., & Lee, G.-G. (2015). Applying failure mode and effects analysis for successful knowledge management. *Total Quality Management*, 26(1), 62-75, http://dx.doi.org/10.1080/14783363.2012.733263

Manuel, E. G. (2016). Knowledge management and intelectul property. *The IUP Journal of Knowledge Management*, 14(1), 45-67.

Mciver, D., Lengnick - Hall, C., Lengnick - Hall, M., & Ramachandran, I. (2013). Understanding work and knowledge management from a knowledge in - practice perspective. *Academy of Management Review*, 597-620, http://dx.doi.org/10.5465/amr.2011.0266

Miklavčič Šumanski, M., Kolenc, I., & Markič, M. (2007). Teamwork and defining group structures. *Team Performance and Management: An International Journal*, 13 (3/4), 102 – 116, http://dx.doi.org/10.1108/13527590710759856

Moffett, S., & McAdam, R. (2009). Knowledge management: A factor analysis of sector effects. *Journal of Knowledge Management*, 13(3), 44-59, http://dx.doi.org/10.1108/13673270910962860

Mustafa, M., Lundmark, E., & Ramos, H. M. (2016). Untangling the relationship between human resource management and corporate entrepreneurship: The mediating effect of middle managers' knowledge sharing. *De Gruyter*, 6(3), 273-295, http://dx.doi.org/10.1515/erj-2015-0004

Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. *Organization science*, 5(1), 14-37, http://dx.doi.org/10.1287/orsc.5.1.14

Ovsenik, M. (1999). Neprofitni avtopoetični sistemi [Nonprofit autopoietic systems]. Škofja Loka: Inštitut za samorazvoj.

Ovsenik, M., & Ambrož, M. (2006). Upravljanje sprememb poslovnih procesov [Managing change of business processes]. Portorož: Turistica, Visoka šola za turizem.

Ovsenik, M., & Ambrož, M. (2010). Celovitost in neznatnost organizacije [Integrity and minor nature of the organization]. Ljubljana: Institut za management.

Ovsenik R. & Ovsenik M. (2015). Creativity – life imperative of individuals and organizations. *Innovative Issues and Approaches in Social Sciences*, 9(2), 150-164, http://dx.doi.org/10.12959/issn.1855-0541.IIASS-2015-no2-art09

Pulić, A. (2004). Intellectual capital – does it create or destroy value?, *Measuring Business Excellence*, 8(1), 62-68, http://dx.doi.org/10.1108/13683040410524

Skyrme, D., & Amidon, D. (1997). The Knowledge Agenda. J*ournal of Knowledge Management*, 1(1), 27-37, http://dx.doi.org/10.1108/13673279710800709

Smith, E. (2001). The role of tacit and explicit knowledge in the workplace. *Journal of Knowledge Management*, 5(1), 311-321, http://dx.doi.org/10.1108/13673270110411733

Valmohammadi, C. (2010). Identification and prioritization of critical success factors of knowledge management in Iranian SMEs: An experts' view. *African Journal of Business Management*, 915-924.

Wong, K. Y., & Aspinwall, E. (2005). An empirical study of the important factors for knowledge-management adoption in the SME sector. *Journal of knowledge management*, 9 (3), 64-82.

Yang, H. (2013). The Case for Being Automatic: Introducing the Automatic Linear Modeling (LINEAR) Procedure in SPSS Statistics. *Multiple Linear Regression Viewpoints*, 39(2), 27-37.

Zarraga-Oberty, C., & De Saa-Perez, P. (2006). Work teams to favor knowledge management: towards communities of practice. *European Business Review*, 18(1), 60-76. http://dx.doi.org/10.1108/09555340610639851

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