CREATION AND TRANSFER OF KNOWLEDGE MANAGEMENT IN SPORTS INSTITUTIONS AND ORGANIZATIONS

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ABSTRACT

Identification of available and required knowledge, generation and creation of new capital of knowledge and its maximum usage are the key elements in the knowledge management which is emerging as a new school of management in the world. Standardization, transfer and timely application of knowledge in modern sports have become a major component in monitoring and achievements of the world's top results. For the specificity of sport organizations and the rapid changes that occur in order to follow the successful process it is necessary to know to which extent is the capital of knowledge available, how to create and store new knowledge, how to manage knowledge and how to apply it.

The research is aimed at discovering new scientific information that will find suitable application in improving achievements and competitive advantages in sports institutions and organizations. Sports educational scientific institutions and sport organizations in the area of Republic of Macedonia have been included, in order to identify the ways of creating knowledge management and its relation to the sharing and transfer of knowledge.

Keywords: management, knowledge, creation, transfer, information.

Introduction:

The beginning of the 21st century marks, in practical and theoretical frameworks, the development of knowledge management which appears as a separate subject in some of the educational and scientific institutions and universities worldwide. The development and perspective of this concept can be recognized in the strong current led by the information technology and the creative and innovative capacities of man. The knowledge management is an occurrence incorporated based on three main interconnected components: processes, human resources and information technology, an occurrence which promises the development and survival of the future.

From a conceptual viewpoint, the place of knowledge management should be sought in the organizational learning and innovation, where practice is integrated and joined with the latest innovative trends and the creativity of human potential. Effectiveness and efficiency of knowledge management can be expected only if knowledge is understood, kept, developed and promoted as an invaluable capital and is shared with others in the organization. The development of management in sports an organization which strives to find new knowledge promotesa special specific capital which presents its power through the best achievements in certain sports disciplines and activities. The ability of an organization to learn and change, to learn faster than the others and to quickly convert that into action is the biggest advantage that can be possessed[1].

The subject of the research was the knowledge management in sports educaional scientific institutions (primarily higher education institutions in the country) and other sports organizations where one

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[1] Lončarević, R., Mašić, B. i Đorđević – Bojanović, J. (2007). *Menađment, principi, koncepti i procesi*. Beograd: Univerzitet Singidunum. Str. 497.

can see and feel the practical application of knowledge management. The purpose and intent was to determine the acquisition and relationship between the creation and transfer of knowledge.

Methods:

The scientific justification of the research is aimed at generating new scientific knowledge that will find adequate theoretical and practical application in improving the performance and competitive advantages in sports institutions and organizations. Our intention is to explore two important components:
- The methods and procedures for the acquisition and defining the transfer of knowledge
- Sharing the created knowledge in practice in sports institutions and organizations.

Knowledge Management:

Knowledge management is an interdisciplinary working concept which has its focus on organizational learning. The roots of the concept should be sought in many areas and disciplines but primarily in economics, business, psychology and management of information systems. It can be defined as an integrated functional unit in which there is a connection between people (human resources), technology and processes. Human resource management in sports is a broad area, because despite the basic part with many aspects, which is applicable in almost all human activities, in the field of sports it has its own specificities within certain sport or sports disciplines. Human resources, on one hand refers to the management of athletes by sports coaches, teams of specialists and sports scientists, with the aim of achieving better sports scores, on the other hand, the effective management of the entire organization by sport managers[2].

Accurate and precise definition of knowledge management does not exist, as there is no unity about the attitude **"what"** specifically it contains, causing the need for it to be considered in a broader sense. In the texts of many authors who have tried to define knowledge management, although there is no unity, one can notice similar integral parts or elements: creation and development of knowledge from external sources; storage of knowledge; establishment of databases and documentation of knowledge; transfer and dissemination of knowledge in the organization and outside of it (if needed) and so on. In the formation of its life cycle the process of this kind of management passes through several phases: creating knowledge (Creation); capturing knowledge (Capture);storing of knowledge (Storing); sharing of knowledge (Sharing) and application of knowledge (Application).

It would be wrong to think that this management is viewed as a new management strategy which should take the place of the existing management paradigms[3]. The concept of it should be accepted as an ability which enabled in a very short period of time the access to information that will allow the bringing and selection of the most adequate decision or solution which will contribute to the achievements and success of the organization. The main goal of knowledge management in the sports institutions and organizations is for all working processes to be considered as an integrated whole in the process of knowledge, involving the creation, development, upgrade and its application and transfer of knowledge[4]. The application and use of knowledge has an additional task to create new values and profiles, which appear as a result of science, skill and talent.

The importance of knowledge management for institutions and sports organizations:

The tendency and direction of any organization should be towards the processes, and all work processes to be observed as knowledge process. The organization of the learning organization entails the creation and cultivation of knowledge across all levels of the organization[5].

Knowledge and continuous learning represent key elements for the success of an organization. The ability of a sports organization to answer the upcoming changes in the competitive environment and at the same time to succeed to achieve and maintain its competitive advantage, is forced to learn faster and better than the others, but also to manage more efficiently with its knowledge. These properties and performances are the hallmark of a modern, advanced and successful organization based on knowledge. The knowledge that today is a key resource which provides a competitive advantage should be managed most adequately and most successfully. Creation and transfer of knowledge in modern sports institutions and organizations are increasingly emerging as a decisive factor in terms of achievements. Advantages that occur, often resulting from what the institution or organization has and knows, how effectively it can use what it knows and how quickly it acquires and uses new knowledge[6].

The business policy of each sports organization is oriented towards scanning environment and competitors, with a tendency to identify priorities and focus on monitoring trends and desires. A

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[2] Malacko, L. i Rađo, I. (2006). *Menadment ljudskih resursa u sportu*. Univerzitet u Sarajevu-Fakultet sporta i tjelesnog odgoja. Fojnica: Svetlost. str. 20.

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contemporary organization in the era of knowledge is one which learns, remembers and acts based on the information and knowledge available in the best possible way[7].

Sample of respondents:

The survey was conducted in the first half of 2014 in the area of R. Macedonia. It featured four higher education institutions in the country dealing with sports science and management (two state universities in Skopje and Tetovo, FON –Private Faculty in Skopje and Business Academy Smilevski in Bitola) and 16 sports organizations and associations (collective and individual sports clubs, sports associations and companies) throughout the state. A total of 148 respondents were surveyed, of which the first sub sample consisted of 48 subjects (respondents from higher education institutions) and the second sub sample of 100 respondents (respondents from sports organizations). The research of the respondents included all possible structures in sport (athletes, sports professionals, students, teachers, assistants and managers at all levels).

Research methods and instruments:

A questionnaire was used in order to ensure the relevant indicators and data. A set of 15 survey questions was made; 10 survey questions which defined the field of knowledge transfer and 5 survey questions to define the field of management of knowledge creation. For gathering the views and opinions from the survey questions a four step scale was used to assess the statements. During the preparation of the questionnaire we paid attention to the research requirements: reliability, objectiveness, expediency, economy and practicality and applicability. The sets of survey questions are noted below:

a). Creating knowledge management:

- (VAR01) We renew the knowledge in the org. / Inst.
- (VAR02) For us knowledge means increasing the competitive advantage.
- (VAR03) After returning from participation in training and improving, I share new knowledge with peers.
- (VAR04) After each training it is required of me to apply the knowledge
- (VAR05) When asking for help and opinions from colleagues and employees I always receive it.

b) Transfer knowledge:

- (VAR01) in the org. there is supervision for transferring knowledge and advantages.

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[7] Mašić, B. i Đorđevič-Bojanović, J. (2009). *Organizacija zasnovana na znanju*. Organizacioni menadžment i glabalna kriza: Zbornik radova VII skup privrednika i naučnika-SPIN 09, Beograd. str. 92-99.

- (VAR02) in the org. / Inst. there are research teams.
- (VAR03) I share my experience with my colleagues.
- (VAR04) our org. / Inst. has developed a system for transferring knowledge.
- (VAR05) In the org. / Inst. there are communication networks.
- (VAR06) I contribute with my own ideas for the development priorities of the org. / Inst.
- (VAR07) for my personal development I provide information from all relevant sources in the org. / Inst.
- (VAR08) I participate in working groups and teams for organizational improvements.
- (VAR09) I participate in defining the organizational policy.
- (VAR10) I participate in teams for development of the org. / Inst.

The defining of the latent dimensions of knowledge transfer from the applied system of survey questions has been conducted by using components factor analysis. The determination of the relationship and impact of creating knowledge as predictors over the defined latent dimensions of knowledge transfer as a criterion is performed by applying the multi variant analysis of variance. For data processing we used the applicative program Microsoft Office Excel and SPSS.

Results:

According to the obtained results presented in Table. 1 and 2, to assess the transfer of knowledge management among respondents in educational and scientific sports institutions, we present the factor matrix of ten indicators (variables) where values are obtained on: communalities, important characteristic roots, percentage of the total explained variance and orthogonal VARIMAX rotation. In the applied system of variables, according to the Kaiser-Guttman criterion for retention of significant principal components with characteristic root above 1, four significant principal components which explain the observed space with 80,29%. (Cumulative %) have been defined. Among the four principal components, the largest contribution to the explanation of space is done by the first component which by the total variability it explains 29.94%. Great contribution in the explaining of space is also done by the second component which accounts for 22.08% in the total variability (Analysis in Table 1).

By inspecting the non-rotated factor matrix (Table. 2), based on existing significant principal components one can observe that four groups of saturation have been defined.

The largest significant projections on the first component (C1), are by the vectors of the indicators: VAR008 (I participate in working groups and teams for organizational improvements); VAR010 (I participate in teams for development of the org. / Inst)

and VAR005 (In the org./Inst. There are communication networks).

The most significant projections on the second component (C2) are by the vectors of the indicators: VAR002 (In the org. / Inst. There are research teams) and VAR004 (Our org. / Inst. Has developed a system for transferring knowledge).

The most significant projections on the third component (C3), are by the vectors of the indicators: VAR007 (For my personal development I provide information from all relevant sources in org. / Inst); VAR003 (I share my experience with my colleagues) and VAR009 (I participate in defining the organizational policy).

The most significant projections on the fourth component (C4), are by the vectors of the indicators: VAR001 (We renew knowledge in the org. / Inst); VAR006 (I contribute with my own ideas for the development priorities of the org. / Inst.) and VAR005 (In the org. / Inst. there are communication networks).

The rest of the procedure of the performed rotation of the initial coordinate system of manifest variables a common latent dimension has been obtained defined as a **common factor of knowledge transfer (F1).**

As for the degree of explicability of the total variance of the common dimension with the defined significant principal components one can conclude that the most significant projections with high saturation are marked at the variables: VAR007 (For my personal development I provide information from all relevant sources in the org. / Inst.); VAR009 (I participate in defining the organizational policy); VAR0010 (I participate in teams for development of the org. / Inst) and VAR008 (I participate in working groups and teams for organizational improvements). From the analysis of the size of the communalities which define the common dimension the highest values have been marked by the variableVAR007 (For my personal development I provide information from all relevant sources in the org. / Inst), h =, 648).

In the formation of the factor matrix of respondents in sports organizations, table. 3 and 4, as previously the following values have been obtained: communalities, significant characteristic roots, the percentage of total explained variance and orthogonal VARIMAX rotation. The applied system of variables, according to the Kaiser-Guttman criterion for retention of significant principal components defines three significant principal components that explain the analysed space with 69.99%. (Cumulative %). Among the three main components, the largest contribution in explaining the space is done by the first component which explains 42.98% of the total variability (Analysis in Table 3).

By investigating the non-rotated factor matrix (Table. 4), based on the existing significant principal components one can note that three groups of saturation have been defined.

The largest significant projections on the first component (C1), are vectors of indicators VAR006 (I contribute with my own ideas for the development priorities of the org. / Inst); VAR007 (For my personal development I obtain information from all relevant sources in the Org. / Inst); VAR008 (I participate in working groups and teams for organizational improvements); VAR009 (I participate in defining the organizational policy) and VAR010 (I participate in teams for development of the org. / Inst.).

The most significant projections on the second component (C2), are by the vectors of the indicators: VAR004 (Our Org. / Inst. has developed a system for transferring knowledge) and VAR005 (In the Org. / Inst. there are communication networks).

The most significant projections on the third component (C3), are by the vectors of the indicators: VAR001 (In the org. there is supervision for transferring knowledge and advantages.); VAR002 (In the Org. / Inst. there are research teams) and VAR003 (I share my experience with my colleagues).

In the following procedure performed by rotating the initial coordinate system of manifest variables we obtained a common latent dimension defined as **a common factor of knowledge transfer (F2).**

As to the extent of explicability of total variance of the common dimension with the defined significant principal components, one can conclude that the projections contain high saturation of most variables. In the analysis of the size of communalities which define the common dimension, the highest values have been marked by the variable VAR008 (I participate in working groups and teams for organizational improvements), h =, 684).

Table 1: Initial eigenvalues and extraction sum of squared loadings

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,994	29,937	29,937	2,994	29,937	29,937
2	2,208	22,084	52,021			
3	1,504	15,036	67,057			
4	1,324	13,236	80,293			
5	,955	9,553	89,846			
6	,400	4,001	93,847			
7	,324	3,245	97,092			
8	,238	2,376	99,468			
9	,036	,355	99,823			
10	,018	,177	100,000			

Table 2: Result of Component analysis

Structure Matrix					Communalities	Component Matrixa
SL	Component					Component
	C1	C2	C3	C4	Extraction	F1
VAR008	**0,924**				0,421	0,649
VAR010	**0,763**		0,315		0,462	0,68
VAR002		**0,963**			0,094	-0,306
VAR004		**0,931**			0,151	-0,388
VAR007	0,333		**0,905**		**0,648**	0,805
VAR003			**0,818**		0,198	0,445
VAR009	0,322		**0,784**	-0,314	0,588	0,767
VAR001				-0,876	0,076	
VAR006	0,38	-0,37		-0,717	0,354	0,595
VAR005	-0,509			0,582	0,002	

Table 3: Initial eigenvalues and extraction sum of squared loadings

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4,298	42,981	42,981	4,298	42,981	42,981
2	1,405	14,048	57,03			
3	1,296	12,962	69,992			
4	0,848	8,485	78,477			
5	0,641	6,415	84,891			
6	0,465	4,645	89,536			
7	0,402	4,019	93,555			
8	0,287	2,871	96,426			
9	0,208	2,079	98,505			
10	0,149	1,495	100			

Table 4: Results of component analysis

Structure Matrix				Communalities	Component Matrixa
	Component				Component
	1	2	3	Extraction	F1
VAR008	**0,875**		0,454	**0,684**	0,827
VAR007	**0,864**		0,399	0,622	0,789
VAR006	**0,803**			0,458	0,677
VAR009	**0,762**		0,432	0,561	0,749
VAR010	**0,72**	0,45	0,404	0,55	0,741
VAR005		**0,854**		0,001	
VAR004	0,346	**0,795**	0,365	0,251	0,501
VAR002	0,436		**0,83**	0,445	0,674
VAR003			**0,818**	0,273	0,523
VAR001	0,438		**0,816**	0,443	0,666

By the multiple regression analysis carried out, on the system of indicators for creating knowledge with the transfer of knowledge the following results have been obtained:

1. The analysis on table.5, where we present the obtained results from the survey of respondents of sports educational and scientific institutions indicates that the coefficient of multiple correlation, i.e. the correlation of the system of predictor variables (VAR01, VAR02, VAR03, VAR04 and VAR05) which define the creation of knowledge, with the criterion, the common factor

for knowledge transfer (F1) equals R = .754, and the prediction coefficient R^2 = .52, which means it explains the joint variability with approximately 52%. Such a relationship indicates the statistical significance at a level of p = .000 (Sig. = 0,000). The remaining 48% in the explanation of the total variability remain to other factors and indicators which are not the subject of this research. Apart from the common connection of the system individually statistically significant effect was marked by the indicators: VAR01 with positive low effect (BETA = 0,352), which is significant at the p-level = .005; VAR02 with negative average effect (BETA = - 0,436), which is significant at the p-level = .001; VAR003 with positive low effect (BETA = 0,319 which is significant at the p-level = .012 and VAR005 with negative average effect (BETA = - 0,456), which is significant at the p-level = .000.

The analysis on table.6, where we present the obtained results from the survey of respondents of sports organizations and associations indicates that the coefficient of multiple correlation, i.e. the correlation of the system of predictor variables(VAR01, VAR02, VAR03, VAR04 and VAR05) which define the creation of knowledge, with the criterion, the common factor for knowledge transfer (F2) equals R = .656, and the prediction coefficient R^2 = .43, which means it explains the joint variability with approximately 43%. Such a relationship indicates the statistical significance at the level of p = .000 (Sig. = 0,000). The remaining 57% in the explanation of the total variability remain to other factors and indicators which are not the subject of this research. Apart from the common connection of the system individually statistically significant positive effect at a low level was noted by the indicators: VAR01 (BETA = 0,381), which is significant at the p-level = .000 and VAR003 (BETA = 0,368 which are significant at the level of p-level = .001.

Table 5: Results of Regression analysis and Significant level

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1,668	,543		3,069	,004
	VAR00001	,162	,055	,352	2,966	,005
	VAR00002	-,412	,117	-,436	-3,515	,001
	VAR00003	,266	,101	,319	2,642	,012
	VAR00004	,011	,060	,020	,190	,850
	VAR00005	-,314	,072	-,456	-4,357	,000
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		Sig.
1	,754a	,568	,517	,29233		**,000**

Table 6: Results of Regression analysis and significant level

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1,089	,247		-4,418	,000
	VAR00001	,222	,056	,381	3,958	,000
	VAR00002	,005	,085	,006	,059	,953
	VAR00003	,231	,069	,368	3,326	,001
	VAR00004	-,087	,063	-,144	-1,382	,170
	VAR00005	,110	,059	,171	1,848	,068
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		Sig.
1	,656[a]	,430	,399	,41887		**,000**

Discussion:

Knowledge management is a dynamic process in which human resources, technology and processes will continue to develop building an integrated functional unit. The basic question that remains open is: Which values are available and is there enough power and ability to conduct the knowledge transfer to the desired goals?

From the research we can conclude the following:

- With the application of factor analysis we identified the common components which in the following procedure at the two sub instances defined a latent dimension of knowledge transfer (F1 - common factor of knowledge transfer among the respondents of the educational - scientific institutions and F2 - common factor transfer knowledge among participants of sports organizations)

- According to the obtained results of the applied multiple regression analysis at both sub instances of respondents, it can be concluded that there is a statistically significant connection between the defined latent dimensions of knowledge transfer with the creation of knowledge management. At the same time it can be noted that the relationship between the knowledge transfer with the applied system of indicators which define the creation of knowledge management of the respondents of educational and scientific institutions compared to the others is higher, as suggested by the explanation of the common (total) variability. If one observes the individual impact of the indicators, it can be noted that four out of five indicators at the respondents of educational and scientific institutions have a significant impact on the criterion (knowledge transfer), compared to respondents from sports organizations where such effect was observed only at two indicators.

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