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INTRODUCTION

Department of Management and Technical faculty “Mihajlo Pupin” from Zrenjanin have started the organization of International Symposium Engineering Management and Competitiveness (EMC) in 2011. Since 2013 the organization EMC symposium has been supported by the following foreign partners: Szent István University, Faculty of Economics and Social Sciences, Gödöllő, Hungary and Voronezh State University, Faculty of Economics, Voronezh, Russia.

The objectives of the Symposium EMC are: presentation of current knowledge and the exchange of experiences from the field of Engineering management, consideration of development tendencies and trends in Serbia and the world as well, gathering researchers from this field with the aim of expanding regional and international cooperation, raising the level of professional and scientific work at Technical faculty “Mihajlo Pupin” from Zrenjanin, expanding cooperation with economic and educational institutions and encouraging young researchers within this field. Taking into account that this Symposium is international, the importance of this event is obvious for the town of Zrenjanin, Banat region, Vojvodina and Serbia. Organization of EMC by Technical faculty “Mihajlo Pupin” from Zrenjanin represents this scientific-educational institution as one of the major representatives of economic and social development in Banat.

Within this Proceedings are presented all accepted papers received for V International Symposium Engineering Management and Competitiveness (EMC 2015). This year at the symposium we have 65 papers, of which 15 papers from abroad. The authors come from 12 countries: Bosnia and Herzegovina, Croatia, Hungary, Iran, Lithuania, Macedonia, Montenegro, Romania, Russia, Slovenia, USA and Serbia. The papers are divided into seven sessions: Plenary session, Session A: Management and operation management, Session B: Human resource management, Session C: Marketing and marketing management, Session D: Economy, Session E: IT management, Session F: Environmental and safety management systems.

We wish to thank Provincial Secretariat for Science and Technological Development, Autonomous Province of Vojvodina, Republic of Serbia for supporting the organization of V International Symposium Engineering Management and Competitiveness (EMC 2015) as well as to Technical faculty “Mihajlo Pupin” from Zrenjanin and the dean Prof. Ph.D Milan Pavlović for their active role concerning the organization of the Symposium. We are also expressing our gratitude to all authors who have contributed with their papers to the organization of our fourth Symposium EMC.

Symposium EMC become a traditional meeting of researchers in June, every year. We are open and thankful for all useful suggestions which could contribute that the next, VI International Symposium Engineering Management and Competitiveness (EMC 2016) become better in organizational and program sense.

President of the Programming Committee
Professor Milan Nikolić, Ph.D.

Zrenjanin, June 2015.

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GROUP FUZZY LINGUISTIC MCDM MODEL IN THE PROJECT MANAGER SELECTION

UDC: 005.953.2:510.644

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ABSTRACT

At the present time, project based organization success depends on many different factors. One of those factors is qualified project manager selection. According to fact that the selecting qualified project managers is among those complex issues, this process of selection requests for having analytical methods to handle those kinds of issues. There are varieties of different methods presented in the literature. The main objective of this paper is development of a model based on linguistic variables due to assessing the candidate ratings in one hand, and determining criteria importance in the other. The evaluation process is based on new group fuzzy linguistic modeling and fuzzy aggregating. By using fuzzy linguistic variables with multi criteria decision making (MCDM), a new project manager selection model is offered.

Key words: Personnel selection, Linguistic variables, Project Management, Fuzzy linguistic modeling, Fuzzy aggregating.

INTRODUCTION

Experimental and statistical techniques are the most famous approaches that are implemented by traditional personnel selection procedure. In the first approach (experimental) selection of qualified persons is done based on the experiences and knowledge of decision makers. While, in second approach (statistical), decisions are made after interpretation of test scores and also measurement of accomplishment for each candidate. As Robertson and Smith (2001) proposed, one of the well-known techniques concerning the personnel selection is interview. There are myriad of ability and availability of interviews for anticipating the performance of the personnel in the job. Considering a number of studies that are based on techniques such as interviews, work sample tests, assessment centers, resumes, job knowledge tests, and personality tests in human resource management (Chien & Chen, 2008), just a few of them have implemented the multi criteria (MCDM) techniques in their studies.

MCDM deals with decision problems with a number of decision criteria and it is a branch of operations research models and divided into multi attribute decision making (MADM) and multi objective decision making (MODM). Each of the above categories consists of several methods. Each method can also be classified as deterministic, stochastic and fuzzy methods with its own characteristics. Sometimes researchers may use a combination of the methods. The methods can be classified as a single or group decision making methods based on the number of decision makers (Pohekar & Ramachandran, 2004). Some of the contributors applied AHP (Gibney & Shang, 2007; Shih, Huang, & Shyur, 2005; Tavana, Kennedy, & Joglekar, 1996; Taylor, Ketcham, & Hoffman, 1998), ANP (Liao & Chang, 2009a, 2009b), TOPSIS (Shih, Shyur, & Lee, 2007; Yeh, 2003) and Expert Systems (Chien & Chen, 2008; Cho & Ngai, 2003; Hooper, Galvin, Kilmer, & Liebowitz,

1998; Jereb, Rajkovic, & Rajkovic, 2005; Jessop, 2004; Saidi Mehrabad & Fathian Brojeny, 2007; Suh, Byun, & An, 1993) in personnel selection.

Many researchers have used MCDM in selecting project manager. For example, a fuzzy MCDM method for information system project manager selection was developed by Chen and Cheng (2005). Bi and Zhang (2007) analyzed the meaning of selecting an eligible undertaking manager in their study. They endeavored to quantitatively assess the skill and quality of undertaking manager by requesting fuzzy analytical hierarchy process that was established on triangular fuzzy numbers. Whatever they did is believed as a reliable and logical method in words of selecting the right person for undertaking manager. Hui et al. (2008) endeavored to clarify a suitable competency established framework. The rationality of this paper is examined in methodology section which was constructed principle component analysis. This study has been made prominently priceless and referential in project manager selection by all these efforts. Liqin et al. (2009) has established an extensive assessment model of project manager candidates by implementing principles of fuzzy mathematics. Based on grey criteria, a multi criteria methodology for project manager selection has been bolster by Zavadskas et al., (2008). In the selection of a project manager a fuzzy comprehensive evaluation methods has been adopted by Zhao et al. (2009). Rashidi et al. (2011) for choosing a qualified project manager, amalgamated fuzzy systems, ANNs, and Genetic algorithm. Mitigating the errors in utility values is the result of enhancing the efficiency of decision making that can be achieved by conducting the fuzzy linguistic variables. The main goal of this study is to bolster and establish a group multi criteria decision making (GMCDM) model based on fuzzy set theory in order to candidate assessment in project manager selection.

Fuzziness is the main attribute of personnel selection issue. The fuzzy linguistic approach represents qualitative aspects as linguistic values by means of linguistic variables (Herrera-Viedma & Peis, 2003; Zadeh, 1975); while, regular crisp set method does not follow the same rule. Since linguistic reasoning needs fewer assessments information, it needs few postulations to be fulfilled. Moreover, regarding to the importance of this tool, it is considered as a realistic tool for decision makers. In the past, group discussion was used for selecting personnel in the company. If there was no consensus among decision makers, then there was no way to decide. Finally, personnel selection problem was solved with senior manager intercession. In this study, the new Group fuzzy linguistic MCDM model developed and validated by results. This model has simple principles, and its implementation is easy. Furthermore, it is effective in aggregating decision maker's opinion. This model based on the fuzzy logic theory and the use of linguistic terms by the decision makers, facilitates the evaluation stage. Linguistic terms are used by decision makers in this study, since they could easily be used to describe the subjective measurement of the ratings of candidates and the criteria importance. Linguistic terms can bring closer the gap between decision maker's brain mechanisms and the crisp logic for solving the personnel selection problem (Herrera, Alonso, Chiclana, & Herrera-Viedma, 2009). In this case study, discussion with the decision makers that used linguistic terms for candidate evaluation indicated that they found linguistic terms very helpful. With linguistic terms, they reached to a smooth agreement among candidates and there is no need to directly decide on the weights for criteria and rates for candidates, and only they expressed their preference by using linguistic variables.

METHODOLOGY

Model inputs, processes and output (selection of personnel) are systematically outlined in this section. In following paragraphs, different phases are elucidated based on the algorithm of modeling process in terms of project manager selection:

Selecting relevant criteria: The criteria are formed for project manager selection based on expert panel opinions and data and information of an organization. Those who have significant information about human resources in one side and strategic direction of an organization in the other side are selected as the members of experts' panel. Delphi or Nominal Group Technique (NGT) are among the several methods that can be implemented for identifying personnel based upon the opinions of experts.

Calculating the importance weight of criteria and sub criteria: In two continuous operations the importance weight of criteria is calculated. In first step, the importance weights of sub-criteria are

calculated based on the experts' opinions. Afterward, regarding to the equation 1 the importance weights of criteria are computed. For this process, the study has to determine the weights of criteria and sub criteria using expert opinions. The final weights of criteria were determined by using the geometric average method. The method for calculation is shown as follows:

$$TW_{Cij} = \sqrt{W_{Ci} \cdot W_{Cij}}$$

where:

TW_{Cij} : Final weight of each criterion

W_{Ci} : Weight of criterion

W_{Cij} : Weights of sub criterion (J. Dodangeh, 2006).

Modelling of FMCDM: The first step to construct a FMCDM is defining linguistic variables, then membership function for each criteria and alternatives is selected. A "membership function" is a curve that defines how the value of fuzzy linguistic variable is mapped to a degree of membership between 0-1. Membership functions are used to calculate the degree of FMCDM in different values expressed by linguistic term. The verbal values defined with regards to Table 1.

Table 1: Definition of linguistic values

Verbal Values	Definition	Degree
EL	Extremely Low	1
VL	Very Low	2
L	Low	3
M	Medium	4
H	High	5
VH	Very High	6
EH	Extremely High	7

Forming the decision matrix: With considering bell shape membership function, the decision matrix (fuzzy sets of criteria and alternatives) is formed regarding Table 1 and equation:

$$\mu_A(x) = \frac{1}{1 + d(x - c)^2}$$

Where $X \in [0, 1]$ is the element of universe $U = \{1, 2, 3, 4, 5, 6, 7\}$, c indicates the standard score for determining linguistic value of the criteria and personnel and d determines the shape of the membership function (here $d = 0.2$).

Finding utility values: With applying subsequent formula, the utility of decisions (personnel) is calculated using next equation:

$$A_i = \{(\overline{C1} \cup ai1) \cap (\overline{C2} \cup ai2) \cap \dots (\overline{Cm} \cup aim)\}$$

$$A_i = \bigcap_{j=1}^n (\overline{Cj} \cup aim)$$

Selecting best personnel: With employing centre of gravity method, fuzzy outputs of personnel transform to crisp utility with regards to equation 4 (Javad. Dodangeh 2006; J. Dodangeh, Jassbi, Mousakhani, Anisseh, & Bt. Mohd. Yusuff, 2008; J. Dodangeh, Mojahed, & Nasehifar, 2010; J. Dodangeh, Yusuff, & Jassbi, 2010). Ultimately, with regards to last step which determined crisp utility of personnel subsequently, the personnel are ranked.

$$Z^* = \frac{\sum_{j=1}^n \mu_A(x_j) \cdot x_j}{\sum_{j=1}^n \mu_A(x_j)}$$

RESULTS

In order to enhance the authenticity of the linguistic model, an Iranian company, MAPNA, which is a project based organization, was used as a case study. Engaging in development and implementation of power, oil and gas, railway transportation and other industrial projects, MAPNA has 371 employees and located in Tehran. Since 1992, MAPNA has been involved in more than 85 projects with a total value of greater than 17 billion euro. Among its employees 14 persons have been able to obtain international certificate in Professional Project Management (PMP). As the process of selecting the right project managers have always been a critical consideration in MAPNA, this procedure have been done through conducting a group of experts. The group of decision makers consists of decision makers from different organizational departments and high level managers (Javad Dodangeh, Sorooshian, & Afshari, 2014). Considering consensus of expert panels, fuzzy weighting of criteria has been illustrated in Table 2.

Table 2: Fuzzy weighting of criteria

Criteria	Fuzzy weighting
C ₁	Very High
C ₂	Medium
C ₃	Extremely High
C ₄	High

Based on step 2.3 experts have consensus for forming decision making matrix with regards to Table 1. The FMCDM matrix is illustrated in Table 4.

Table 4: Fuzzy Multi Criteria Decision Making Matrix

Personnel	C ₁	C ₂	C ₃	C ₄
P ₁	Very High	High	Low	Extremely Low
P ₂	Extremely High	Medium	Very High	High
P ₃	Extremely Low	Low	High	Medium
P ₄	High	Medium	Low	Extremely Low
P ₅	Medium	Extremely High	Extremely Low	Low
P ₆	Medium	Medium	High	Extremely High
P ₇	Low	Extremely Low	High	Low
P ₈	Very Low	Medium	Low	High

The fuzzy utility value of each candidate is calculated by steps 2.4 and 2.5 and equations 1, 2, 3 and 4. Then by employing centre of gravity method, fuzzy outputs of candidate are converted to crisp utility as it exhibited in Table 5.

Table 5: The fuzzy utility value of each candidate

Personnel	Utility value
P ₁	0.4005
P ₂	0.4607
P ₃	0.3910
P ₄	0.4563
P ₅	0.3868
P ₆	0.4567
P ₇	0.3880
P ₈	0.4562

Ultimately, concerning previous step, which determined crisp utility of candidates subsequently, the personnel are ranked as illustrated in Table 6.

Table 6: Personnel ranking

Personnel	Utility value	Rank
P ₁	0.4005	5
P ₂	0.4607	1
P ₃	0.3910	6
P ₄	0.4563	3
P ₅	0.3868	8
P ₆	0.4567	2
P ₇	0.3880	7
P ₈	0.4562	4

CONCLUSION

The main objective of this research was to contribute the concept of project manager selection. This goal was achieved by establishing an integrated group decision making and fuzzy linguistic assessment, which entirely gained through a developed decision methodology. It is unveiled that by implementing fuzzy MCDM model, which is elaborated in this research, project manager selection can be improved in so many ways. Evaluating of candidates based on the verbal terms is the first advantage of implementing fuzzy MCDM for decision makers in the process of project manager selection. Less emphasis on detailed data collection, which is achieved by applying linguistic variables, is the second privilege of implementing fuzzy MCDM. For evaluating project manager, fuzzy linguistic had a key role in the methodology of this research.

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A FUZZY EXTENSION OF BORDA METHOD FOR GROUP DECISION MAKING

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ABSTRACT

Multi criteria group decision making (MCGDM) methods are broadly used in the real-world decision circumstances for homogeneous groups. Some decision-makers' viewpoints at times are more important or reliable than others, or they may differ in terms of the decision-maker experience, education, expertise and other aspects. This paper propose integrated fuzzy group decision making methods based on Borda method, which allocates different weightings for decision maker group members to use linguistic terms in order to express their fuzzy preferences for alternative solutions and for individual judgments. The method then aggregate these elements into a compromised group decision which seems more acceptable for the group decision making. Finally, a numerical example is used to illustrate the procedure of the methods and is compared with other extent methods.

Key words: BORDA, fuzzy numbers, group decision making, MCGDM

INTRODUCTION

Decisions in the public and private sector decision-making often involve the assessment and ranking of available alternatives or decision options based on multi-criteria (Hwang et al., 1995). MCDM in the field is one of the most widely used methods (Yeh et al., 2008). The MCDM goal is to choose the best alternative from some mutually exclusive options regarding different criteria decided by the decision maker. A matrix format of MCDM problem can be simplified and expressed as following:

$$D = \begin{matrix} & \begin{matrix} C_1 & C_2 & \cdots & C_n \end{matrix} \\ \begin{matrix} A_1 \\ A_2 \\ \vdots \\ A_m \end{matrix} & \begin{bmatrix} x_{11} & x_{12} & \cdots & x_{1n} \\ x_{21} & x_{22} & \cdots & x_{2n} \\ \vdots & \vdots & \vdots & \vdots \\ x_{m1} & x_{m2} & \cdots & x_{mn} \end{bmatrix} \end{matrix} \quad (1)$$

As $W = [w_1, w_2, \dots, w_n]$; where A_1, A_2, \dots, A_m are potential alternatives among which decision makers have to select and C_1, C_2, \dots, C_n are criteria with which alternative performance are measured, x_{ij} is the rating of alternative A_i with respect to criterion C_j while w_j is the weight of criterion C_j (C. T. Chen, 2000).

Decision making methods

People generally use one of two following methods for making decision (Ghodsypour, 2003):

1. Trial & error method: Decision maker face the reality so he chooses one of the alternatives and witness the results. If decision error is great and causes some problems, he changes the decision and selects other alternative.
2. Modeling method: Decision maker simulates the real problem and specifies elements and their effect on each other and gets through model analysis and prediction of the real problem.

Group decision making

Group decision making is the procedure of reaching at a decision on the basis of input and feedback of more than one person, which is beyond the capacity of a single decision maker. Generally, in working group cooperation, the group achievement could possibly reach a higher satisfactory solution. It is, therefore, very important to identify what makes a group decision-making efficiency and increases the ultimate possibility for the entire group's overall satisfaction (Lu et al., 2008). Group decision making (GDM) in the process of decision can be defined as a situation in which (F. Herrera et al., 1996):

- (a) Two or more people have different preferences, but have the same access to the same information and subject matter by their own viewpoints, attitudes, motivation and personality characteristics.
- (b) Decision makers recognize the existence of a common problem.
- (c) And all endeavours to arrive at an aggregate decision.

GDM problems are divided into two categories namely heterogeneous and homogeneous. GDM is a heterogeneous problem when precise importance degrees of the decision makers are provided (Chiclana et al., 2007). Kanazawa (1998) emphasized that the heterogeneous group provides the better solution and higher average level of competitiveness than any homogeneous group.

Fuzzy set theory

Decision makers (DMs) judgments are uncertain and cannot be estimated by exact numerical values. Under many conditions, crisp data are inadequate to model real-life situations; human judgments, including preferences, are often vague and preferences cannot be estimated in exact numerical values (Zhang et al., 2008). Zadeh (1965) presented fuzzy set theory to cope with the ambiguity of human thought. Unlike the classical set fuzzy set allows partial membership. Classical set theory concepts are made based on the member or non-member. There a clear, sharp, and crisp boundary exists between a member and non-member in this set, so the classical set theory cannot describe many real-world applications (Ertugrul et al., 2009). Zadeh (1965) recommended the setting displayed in fuzzy membership values ranging from 0 to 1. The non-membership is 0 and the full membership is 1. On behalf of membership position in the intermediate represent a value between 0 and 1. When a member stands on “probably”, “Not very clear” is likely to express these terms that can often be heard in daily life, what they have in common is that they are more or less uncertain pollution. In daily decision-making due to the different problems of different intensity, the result may be misleading, if the ambiguity of human decision making is not considered (Tsaur et al., 2002). Fuzzy set theory provides a broader framework than the crisp set has always been a reflection of the real world (Ertugrul et al., 2007). Fuzzy systems are suitable for mathematical modelling, approximate reasoning, and uncertain environment. Decision making with approximate values under incomplete or uncertain information is allowed in the fuzzy logic systems (Kahraman et al., 2007).

Definition 1.

Let U be the universe of discourse and u a generic element of U , then $U = \{u\}$. A fuzzy subset \tilde{A} , defined in U , is:

$$\tilde{A} = \{(u, \mu_{\tilde{A}}(u)) \mid u \in U\} \quad (2)$$

where $\mu_{\tilde{A}}(u)$ is designated as membership function or membership grade (also designated as degree of compatibility or degree of truth) of u in \tilde{A} . The membership function associates with each element u , of U , a real number $\mu_{\tilde{A}}(u)$, in the interval $[0, 1]$ (Mario, 2000).

Definition 2.

Dubois and Prade (1978) proposed the triangular fuzzy number and defined it as follows: A is a fuzzy number, if A is normal and convex (Liu et al., 2007). A triangular fuzzy numbers can be expressed as $M = (l, m, u)$, where $l \leq m \leq u$, in which $l \leq m \leq u$. In the fuzzy event, parameters (l, m, u) are the smallest, promising, and the largest possible value, correspondingly. Equation (3) describes the triangular fuzzy number membership function M, when $l=m=u$, it is a non-fuzzy number by agreement as shown in Figure 1 (Onut et al., 2008).

$$\mu_m(x) = \begin{cases} 0 & x < l \\ \frac{(x-l)}{(m-l)} & l \leq x \leq m \\ \frac{(u-x)}{(u-m)} & m \leq x \leq u \\ 0 & x > u \end{cases} \quad (3)$$

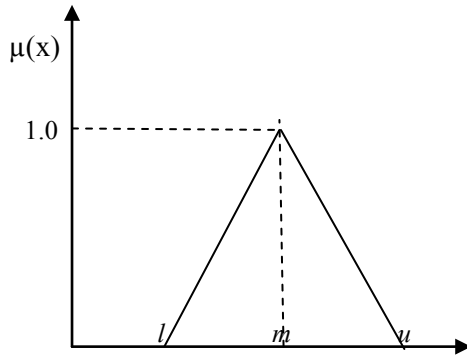


Figure 1: The triangular fuzzy membership function

Definition 3.

A variable with values of word or sentences in an artificial language is defined a linguistic variable (Wang et al., 2009). After the cardinality of the linguistic terms set are recognized, linguistic terms and semantics that must be arranged. There are various possibilities to fulfil this work. Considering all the terms distributed on a scale involves directly supplying the term set where the total order is defined (Francisco Herrera et al., 2001). For instance, a set of seven terms can be shown in Tables 1 and 2.

Table 1: Linguistic variables for the ratings

Very Poor	VP	(0, 0, 1)
Poor	P	(0, 1, 3)
Medium Poor	MP	(1, 3, 5)

Table 2: Linguistic variables for the importance weight of each criterion

Very Low	VL	(0, 0, 0.1)
Low	L	(0, 0.1, 0.3)
Medium Low	ML	(0.1, 0.3, 0.5)

THE PROPOSED METHODS

The purpose of this method is to enhance group consensus on the group decision making outcome based on the following.

Let $A = \{A_1, A_2, \dots, A_m\}$ be a discrete set of alternatives, $P = \{P_1, P_2, \dots, P_t\}$ be the set of decision makers, and

$\lambda = \{\lambda_1, \lambda_2, \dots, \lambda_t\}$ be the weight vector of decision makers, where $\lambda_k \geq 0$, $k = 1, 2, \dots, t$ and $\sum_{k=1}^t \lambda_k = 1$.

Let $C = \{C_1, C_2, \dots, C_n\}$ be the set of attributes, and $w = \{w_1, w_2, \dots, w_n\}$ be the weight vector of attributes,

where $w_n \geq 0, n = 1, 2, \dots, j, \sum_{n=1}^j w_n = 1$. The fuzzy group decision problem can be concisely expressed as matrix format:

$$\tilde{P}_t = \begin{matrix} & C_1 & C_2 & \dots & C_n \\ \begin{matrix} A_1 \\ A_2 \\ \vdots \\ A_m \end{matrix} & \begin{bmatrix} \tilde{x}_{11} & \tilde{x}_{12} & \dots & \tilde{x}_{1n} \\ \tilde{x}_{21} & \tilde{x}_{22} & \dots & \tilde{x}_{2n} \\ \vdots & \vdots & \vdots & \vdots \\ \tilde{x}_{m1} & \tilde{x}_{m2} & \dots & \tilde{x}_{mn} \end{bmatrix} \end{matrix} \quad (4)$$

$\tilde{W} = [\tilde{w}_1, \tilde{w}_2, \dots, \tilde{w}_n]$ where \tilde{x}_{ij}^k and \tilde{w}_j^k are linguistic variables that can be shown by fuzzy numbers (Mahdavi et al., 2008). The proposed models are linearly described in the following steps:

1. Identifying evaluation criteria.
2. Generating alternatives.
3. Identifying weights of criteria and weights of decision makers (the values of the weights can be crisp or fuzzy).
4. Presenting preferences on the part of each decision maker (every decision maker gives preferences to per alternative based on every attribute according to linguistic terms such as: Very Poor, Poor, Medium Poor, Fair, Medium Good, Good, and Very Good).
5. Construction of fuzzy decision matrix. In fuzzy decision matrix, we suppose that, each \tilde{x}_{ij}^k is fuzzy number.

6. Construction of normalized fuzzy decision matrix based on: $\tilde{R} = [\tilde{r}_{ij}]_{m \times n}$ Constructio

7. Construction of defuzzification decision matrix:

$$BNP_{ij} = [(UE_{ij} - LE_{ij}) + (ME_{ij} - LE_{ij})] / 3 + LE_{ij} \quad \forall i, j \quad (6)$$

8. Considering proper value (DM weights) of every decision making group member idea:

$$N_{ijw} = N_{ij} \times \lambda_k \quad (7)$$

N_{ij} is an element of defuzzification decision matrix for every DM, and λ_k is the weight of per DM idea.

9. Formation of R_j matrixes:

$$R_j = \begin{matrix} A_1 \\ \vdots \\ A_i \\ A_j \\ \vdots \\ A_m \end{matrix} \begin{bmatrix} r_{11}^1 & \dots & r_{1j}^p & \dots & r_{1n}^k \\ \vdots & \vdots & \vdots & \vdots & \vdots \\ r_{i1}^1 & \dots & r_{ij}^p & \dots & r_{in}^k \\ \vdots & \vdots & \vdots & \vdots & \vdots \\ r_{m1}^1 & \dots & r_{mj}^p & \dots & r_{mn}^k \end{bmatrix} \quad \begin{matrix} , i = 1, 2, \dots, m \\ , j = 1, 2, \dots, n \end{matrix} \quad (8)$$

while the rows of the matrix are alternatives and its columns are DMs opinions based on j criterion. So n matrixes lieu of j attributes were established, (R_j).

10. Computing linear sum in lieu of P decision makers $\sum_{p=1}^k r_{i,j}^p$ and final grade of every alternative in lieu of j attributes would be calculated. In this matrix the line with the highest mark is the first rank and the line with the lowest mark is m rank.

$$R_G = \begin{matrix} A_1 \\ \vdots \\ A_i \\ \vdots \\ A_m \end{matrix} \begin{bmatrix} C_1 & \dots & C_j & \dots & C_n \\ r'_{1,1} & \dots & r'_{1,j} & \dots & r'_{1,n} \\ \vdots & & \vdots & & \vdots \\ r'_{i,1} & \dots & r'_{i,j} & \dots & r'_{i,n} \\ \vdots & & \vdots & & \vdots \\ r'_{m,1} & \dots & r'_{m,j} & \dots & r'_{m,n} \end{bmatrix} \quad (9)$$

11. Q_G matrix will be worked out based on supposed w vector (attributes weights), the rows of the matrix show alternatives and the columns represent order, and elements of the matrix are the sum of the weights of each alternative calculated based on its rank attained in the attribute sets.

$$Q_G = \begin{matrix} A_1 \\ \vdots \\ A_i \\ \vdots \\ A_m \end{matrix} \begin{matrix} 1\dots & t\dots & m \\ \begin{bmatrix} q_{1,1} & \dots & q_{1,t} & \dots & q_{1,m} \\ \vdots & & \vdots & & \vdots \\ q_{i,1} & \dots & q_{i,t} & \dots & q_{i,m} \\ \vdots & & \vdots & & \vdots \\ q_{m,1} & \dots & q_{m,t} & \dots & q_{m,m} \end{bmatrix} \end{matrix} \quad (10)$$

12. Alternatives will be classified based on resulting Q_G matrix and each assignment problem of linear programming or Zero-One Programming methods.

$$\begin{aligned} \text{Max} & : \sum_{i=1}^m \sum_{t=1}^m q_{it} Y_{it} \\ \text{S.T} & : \sum_{i=1}^m Y_{it} = 1 \quad ; \quad t = 1, \dots, m \\ & \sum_{t=1}^m Y_{it} = 1 \quad ; \quad i = 1, \dots, m \\ & Y_{it} = \begin{cases} 1 \\ 0 \end{cases} \end{aligned} \quad (11)$$

NUMERICAL EXAMPLE

In this section, we work out a numerical example, taken from (C.-T. Chen, 2000), to illustrate the proposed method for decision making problems with fuzzy data. Suppose that a software company desires to hire a system analysis engineer. After preliminary screening, three candidates (alternatives) $A = \{A_1, A_2, A_3\}$ remain for further evaluation. A committee of three decision-makers $P = \{P_1, P_2, \dots, P_t\}$ has been formed with weight vector of $\lambda = (\frac{1}{3}, \frac{1}{3}, \frac{1}{3})$ to conduct interview and select the most suitable candidate. Five benefit criteria are considered: C_1 : Emotional steadiness, C_2 : Oral communication skill, C_3 : Personality, C_4 : Past experience, and C_5 : Self-confidence. The hierarchical structure of this decision problem is shown as Figure 2. The proposed method is currently applied to solve this problem and the computational procedure is summarized as follows:

- Step 2: Decision-makers use the linguistic weighting variables (shown in Table 2) to assess the importance of the criteria presented in Table 3.
- Step 3: Decision makers use the linguistic rating variables (shown in Table 1) to evaluate the rating of alternatives with respect to each criterion presented in Table 4.
- Step 4: Converting linguistic evaluation (Tables 3 and 4) into triangular fuzzy numbers to construct the fuzzy decision matrix and determining the weight of each criterion based on Eq. 6 as Table 5.
- Step 5: Construction of normalized fuzzy decision matrix as Table 6.
- Step 6: Conversion of normalized fuzzy decision matrix to the defuzzification decision matrix by Eq. 6 as Table 7.

- Step 7 and 8: Considering proper value (DM weights) of every decision making group member idea by Eq. 7 and establishing n matrixes lieu of j attribute as Table 8.
- Step 9: Linear sum would be reached in lieu of P decision makers and final grade of every alternative in lieu of j attribute would be calculated. In these matrixes the line with the highest mark is the first rank and the line with the lowest mark is m rank.
- Step 10: Q_G matrix will be worked out based on supposed w vector (attributes weights), the rows of the matrix show alternatives and the columns represent order. Elements of the matrix are the sum of the weights of each alternative calculated based on its rank attained by the attribute sets. Alternatives will be classified based on resulting Q_G matrix by resolving Eq. 11 with Lingo or Lindo software.

Table 3: Weight importance of the criteria

	P1	P2	P3
C1	H	VH	MH
C2	VH	VH	VH
C3	VH	H	H
C4	VH	VH	VH
C5	M	MH	MH

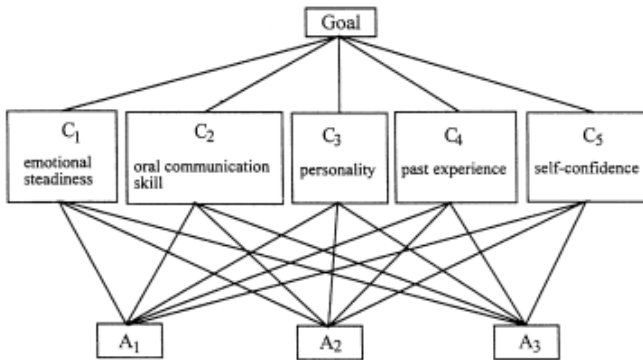


Figure 2: Hierarchical structure of this decision problem

Table 4: Ratings of three candidates by decision makers under all criteria

	C ₁			C ₂			C ₃			C ₄			C ₅		
	A1	A2	A3	A1	A2	A3	A1	A2	A3	A1	A2	A3	A1	A2	A3
P1	MG	G	VG	G	VG	MG	F	VG	G	VG	VG	G	F	VG	G
P2	G	G	G	MG	VG	G	G	VG	MG	G	VG	VG	F	MG	G
P3	MG	MG	F	F	VG	VG	G	G	VG	VG	VG	MG	F	G	MG

Table 5: The fuzzy decision matrix and criteria weights

	C ₁	C ₂	C ₃	C ₄	C ₅
A1	(5, 7, 9)	(7, 9, 10)	(3, 5, 7)	(9, 10, 10)	(3, 5, 7)
A2	(7, 9, 10)	(9, 10, 10)	(9, 10, 10)	(9, 10, 10)	(9, 10, 10)
A3	(9, 10, 10)	(5, 7, 9)	(7, 9, 10)	(7, 9, 10)	(7, 9, 10)
A1	(7, 9, 10)	(5, 7, 9)	(7, 9, 10)	(7, 9, 10)	(3, 5, 7)
A2	(7, 9, 10)	(9, 10, 10)	(9, 10, 10)	(9, 10, 10)	(5, 7, 9)
A3	(7, 9, 10)	(7, 9, 10)	(5, 7, 9)	(9, 10, 10)	(7, 9, 10)
A1	(5, 7, 9)	(3, 5, 7)	(7, 9, 10)	(9, 10, 10)	(3, 5, 7)
A2	(5, 7, 9)	(9, 10, 10)	(7, 9, 10)	(9, 10, 10)	(7, 9, 10)
A3	(3, 5, 7)	(9, 10, 10)	(9, 10, 10)	(5, 7, 9)	(5, 7, 9)
Weights	(0.7, 0.87, 0.97)	(0.9, 1, 1)	(0.77, 0.93, 1)	(0.9, 1, 1)	(0.43, 0.63, 0.83)
Weights	0.2	0.22	0.21	0.22	0.15

Table 6: The fuzzy normalized decision matrix

	C ₁	C ₂	C ₃	C ₄	C ₅
A1	(0.5, 0.7, 0.9)	(0.7, 0.9, 1)	(0.3, 0.5, 0.7)	(0.9, 1, 1)	(0.3, 0.5, 0.7)
A2	(0.7, 0.9, 1)	(0.9, 1, 1)	(0.9, 1, 1)	(0.9, 1, 1)	(0.9, 1, 1)
A3	(0.9, 1, 1)	(0.5, 0.7, 0.9)	(0.7, 0.9, 1)	(0.7, 0.9, 1)	(0.7, 0.9, 1)
A1	(0.7, 0.9, 1)	(0.5, 0.7, 0.9)	(0.7, 0.9, 1)	(0.7, 0.9, 1)	(0.3, 0.5, 0.7)
A2	(0.7, 0.9, 1)	(0.9, 1, 1)	(0.9, 1, 1)	(0.9, 1, 1)	(0.5, 0.7, 0.9)
A3	(0.7, 0.9, 1)	(0.7, 0.9, 1)	(0.5, 0.7, 0.9)	(0.9, 1, 1)	(0.7, 0.9, 1)
A1	(0.56, 0.78, 1)	(0.3, 0.5, 0.7)	(0.7, 0.9, 1)	(0.9, 1, 1)	(0.3, 0.5, 0.7)
A2	(0.56, 0.78, 1)	(0.9, 1, 1)	(0.7, 0.9, 1)	(0.9, 1, 1)	(0.7, 0.9, 1)
A3	(0.33, 0.56, 0.78)	(0.9, 1, 1)	(0.9, 1, 1)	(0.5, 0.7, 0.9)	(0.5, 0.7, 0.9)

Table 7: The defuzzification decision matrix

	C ₁	C ₂	C ₃	C ₄	C ₅
A1	0.7	0.87	0.5	0.97	0.5
A2	0.87	0.97	0.97	0.97	0.97
A3	0.97	0.7	0.87	0.87	0.87
A1	0.87	0.7	0.87	0.87	0.5
A2	0.87	0.97	0.97	0.97	0.7
A3	0.87	0.87	0.7	0.97	0.87
A1	0.78	0.5	0.87	0.97	0.5
A2	0.78	0.97	0.87	0.97	0.87
A3	0.56	0.97	0.97	0.7	0.7

Table 8: R_j matrix

C ₁	P1	P2	P3	Σ	Rank
A1	0.23	0.29	0.26	0.78	3
A2	0.29	0.29	0.26	0.84	1
A3	0.32	0.29	0.19	0.8	2
C ₂	P1	P2	P3	Σ	Rank
A1	0.29	0.23	0.17	0.69	3
A2	0.32	0.32	0.32	0.96	1
A3	0.23	0.29	0.32	0.84	2
C ₃	P1	P2	P3	Σ	Rank
A1	0.17	0.29	0.29	0.75	3
A2	0.32	0.32	0.29	0.93	1
A3	0.29	0.23	0.32	0.84	2
C ₄	P1	P2	P3	Σ	Rank
A1	0.32	0.29	0.32	0.93	2
A2	0.32	0.32	0.32	0.96	1
A3	0.29	0.32	0.23	0.84	3
C ₅	P1	P2	P3	Σ	Rank
A1	0.17	0.17	0.17	0.51	3
A2	0.32	0.23	0.29	0.84	1
A3	0.29	0.29	0.23	0.81	2

We get the order of three alternatives as follows: A₂ >> A₃ >> A₁. Therefore, A₂ is the optimal candidate.

$$Max : 0.22Y_{12} + 0.78Y_{13} + Y_{21} + 0.78Y_{32} + 0.22Y_{33}$$

$$S.T : \sum_{i=1}^3 \sum_{t=1}^3 Y_{it} = 1 \quad ; \quad t = 1, \dots, 3$$

$$\sum_{t=1}^3 \sum_{i=1}^3 Y_{it} = 1 \quad ; \quad i = 1, \dots, 3$$

	First	Second	Third
A1	-	0.22	0.78
A2	1	-	-
A3	-	0.78	0.22

CONCLUSION

The proposed method is compared with the other methods, with Table 9 listing the results of the comparison. As it could be observed in the following table, the best selections made by the proposed methods are comparable with the five already established methods which is expressive in itself and possibly approves of the reliability and validity of the proposed methods. In multi criteria group decision making with linguistic variables, the DMs may have vague information, limited attention and different information processing capabilities. This paper propose fuzzy Borda method which allow group members to express their fuzzy preferences in linguistic terms for alternative selection and for individual judgments. The methods then aggregate these elements into compromised group decisions which seem to be more acceptable. In view of the fact that in Borda method, decision makers rank alternatives on the basis of each attribute, increase in the alternatives and attributes, leads to difficulty in ranking of the alternatives on the basis of a single attribute. The presented fuzzy Borda method

resolve this problem. Noting that the relative importance of DMs weights is not mentioned in Borda method, the said method resolve this problem by considering the relative importance of DMs weights that could possibly result in a more valid and efficient group decision. Moreover, the proposed method seem more reasonable than other methods in that they are more flexible and suitable for various decision making situations. Their ease of solution in various group decision making circumstances is considered as a strong merit.

Table 9: Comparison with other methods

Methods	Ordering	Proposed Method Ordering
(C.-T. Chen, 2000)	$A_2 > A_3 > A_1$	$A_2 > A_3 > A_1$
(Mahdavi et al., 2008)	$A_2 > A_3 > A_1$	$A_2 > A_3 > A_1$
(Xu, 2004)	$A_3 > A_1 > A_2 > A_4$	$A_3 > A_1 > A_2 > A_4$
(Zhang et al., 2008)	$A_1 > A_2 > A_3 > A_6 > A_5 > A_4$	$A_1 > A_6 > A_2 > A_3 > A_5 > A_4$
(Wu et al., 2007)	$A_3 > A_1 > A_2 > A_4$	$A_1 > A_3 > A_2 > A_4$

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THE CONNECTION BETWEEN CORPORATE SOCIAL RESPONSIBILITY AND QUALITY MANAGEMENT

UDC: 005.35:005.6

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ABSTRACT

Today, more and more can be heard about Sustainable Development and Corporate Social Responsibility (CSR). Sustainable development must be based on ecological principles, the honor and morality between generations and the various social interest groups. Quality management serves a great tool in order to fulfill stakeholders requirements. There are different quality standards to control, assess and develop corporate operation. We have started a regional research among manufacturers in order to find out whether they apply or know ISO 14001 and ISO 26000 quality standards. Furthermore we wanted to investigate their motivation in selecting a certain quality assurance process. In this study we would like to present the connection between CSR and Environmental Management System and the related quality standards.

Key words: corporate social responsibility, quality management, quality standards, ISO 14001, ISO 26000

INTRODUCTION

In order to achieve sustainability it is not enough to operate profitably while reducing environmental impacts, much more is needed: commitment, long-term and responsible thinking which monitors the effects on society as well. Corporate social responsibility is an important means of achieving sustainability. The common pillars between CSR and Sustainable development are the issues of social and environmental performance. The environmental management system (EMS) aims to help companies to reduce environmental impacts. The ISO 14001:2005 quality standard certifies that the company operates the Environmental Management System and voluntarily undertakes to monitor, evaluate, improve and document the environmental achievements continuously. Proper planning and careful selection of technology can significantly reduce emissions. Environmental protection, rational waste management and sustainable development are determining regarding our future as a company or as an individual.

CORPORATE SOCIAL RESPONSIBILITY

According to World Business Council for Sustainable Development, the definition of CSR is the following: commitment of business to contribute to sustainable economic development, with the employees, their families, local community and society cooperating in order to improve the quality of life. (Holliday, 2002) Many companies are focusing on corporate social responsibility issues but unfortunately, most companies are still based on self-interest and make CSR the part of their economic calculation, which is the opposite of altruistic ethical behavior. The main points of Corporate Social Responsibility (CSR) concepts are; that after mapping who their stakeholders are, the company has to incorporate these CSR values and interests into their business operation while maintaining their profitability. Socially responsible behavior radiates confidence towards both employees and

consumers. (Frank, 2004) Many companies, however, see that a few donations and environmental measures are enough for responsible behavior. However, for the sustainable development a long-term strategy is needed. CSR means the activities of a company that support the society while relating to legal standards and the direct interests of the company. Sustainable development meets the needs and expectations of humanity without threatening the future generation. The responsible operation has a number of results (see also in Table 1) that supports sustainability and thereby the long-term competitiveness as well. (Szlávik, 2013)

Table 1: The results of the responsible operation

–	the company profit will grow, it will be easier to get corporate resources as the company will be more attractive to investors
–	it improves the company's reputation and image
–	the loyalty and motivation will rise among the stakeholders, especially the consumers and staff- which reduces the internal monitoring and coordination costs
–	improves the competitive position of the company, increases the market share - niche markets can be also reached
–	cost savings can be achieved (environmental investments), the company will be attacked less by the NGOs, the media and other stakeholders- risk management
–	reduces the risk of tightening legislation
–	transaction costs will be reduced because of the relationship and trust
–	as the governments and international organizations consider CSR as a more important question, the company can get subsidy easier through its responsible behavior
–	CSR can be the tool of stakeholder relationship management
–	it develops proactivity
–	it provides opportunities for innovation (eg SRI - responsible investment products, or environmentally friendly products)

Source: Authors research data (2014)

While a large number of companies report commitment to CSR goals, much smaller number of them provide details of specific initiatives undertaken to contribute to these goals and even less of them report actual performance achieved. There are various non-financial reports, which can give an overall evaluation about the sustainable operation of the company as well as to inform its stakeholders.

ISO 26000

ISO 26000:2010 provides guidance rather than requirements (see also Figure 1), so it cannot be certified to unlike some other well-known ISO standards. Instead, it clarifies what social responsibility is and helps businesses and organizations to translate principles into effective actions and share best practices relating to social responsibility, globally. It is aimed at all types of organizations regardless of their activity, size or location.

ENVIRONMENTAL MANAGEMENT SYSTEM

The effort of organizations for the certification of their environmentally friendly operation in the area of products, services and activities is continuously rising in Hungary from 1998. To get the organization establish its own environmental management system as a management tool, the system must be integrated into the overall management activities, strategy and vision already during the establishment and installation. The structure of the ISO 9001 standard was used when designing the environmental management systems. The PDCA- circle (Plan-Do-Check-Act), thus playing an important role in the EMSs that are used today.

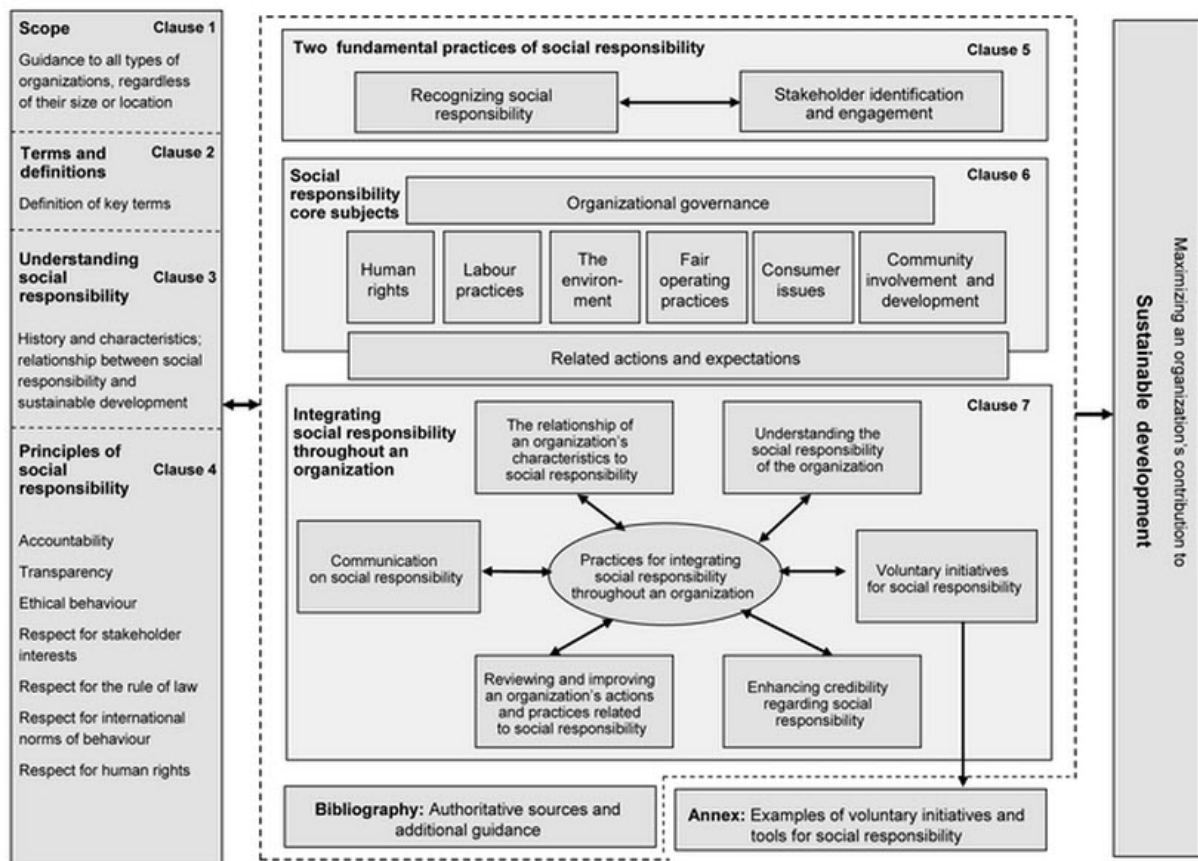


Figure 1: Schematic overviews of ISO 26000

With the introduction of the EMS the company can demonstrate that it is able to supply the product adequate to the customer requirements and the applicable laws. Furthermore, it aims to enhance customer satisfaction.

- Tangible benefits are:
- The activities are more transparent
- The information flow is more accurate
- The efficiency of design increases
- The powers and responsibilities will be clarified
- Employees are more motivated
- Cost savings, less waste, more precise performance, the reduction of complaints due to the improved cost structure.

Presentation of ISO 14001 standards

ISO 14001:2004 sets out the criteria for an environmental management system and can be certified to. It maps out a framework that a company or organization can follow to set up an effective environmental management system. It can be used by any organization regardless of its activity or sector. Using ISO 14001:2004 can provide assurance to company management and employees as well as external stakeholders that environmental impact is being measured and improved. The standard proven benefits are the following:

- Meets legal requirements and improves the organization's environmental performance
- Achieves management committment and employee engagement
- Meets stakeholder requirements and improves public image
- Gives companies a competitive advantage and gains financial benefit

The requirements of the standard include the following topics: general requirements, environmental policy, planning, implementation and operation and verification.

The introduction of the EMS opportunities

The development of an environmental management system is a complex activity, the successful implementation and use of the EMS must be integrated into the company's existing structure and processes. (Vranesics, 2004) The management of the company decides voluntarily about the quantity, quality and extent of the commitments made with the introduction of EMS. The commitments are taken into account when choosing the environmental status and potential of the company to be able to set realistic goals for themselves. The steel-production workflow is selected on the basis of a number of complicated technological decisions and customer specifications. The expertise of the environmental factors are very important, because without them the setting of realistic goals is impossible. The most important key for EMS success is the executives' dedication and consistency. The allocation of resources (suitable staff, competence and costs) will also depend on the management, its amount and type will send a message toward the employees about the seriousness of intent.

The studied company demonstrated in case of the TÜV CERT procedures in 1994 that in the field of machined and welded steel construction engineering they implemented a quality management system according to MSZ EN ISO 9001. The quality requirements in accordance with welding are fulfilled on the basis of DIN EN ISO 3834-2 and has the operating aptitude test DIN EN 15085-2 from SLV Hannover according to the class DIN 18800-7 E (DIN 15018).

The major environmental factors are determined based on the volume and hazardous nature of the used materials and energy:

- Raw material consumption
- Chips and shavings generation
- Welding
- Electricity consumption
- Adaptation of BAT technologies
- Grey water recycling
- Emulsions
- Non-hazardous waste emissions
- Emissions of hazardous waste
- Offices
- Sub-contracting processes

Of course, there are also cost implications. Based on the experience of the introduction of EMS, the following potential costs can be expected:

Internal costs:

- Time allocation (management);
- Time allocation (other staff);

(In case of most organizations the internal labor costs of EMS implementation are accounted for almost the total cost of goods.)

External costs:

- Any consultation fee;
- External training for personnel.

The environmental costs are not built into company's budget with the EMS introduction, but they were always present. However, their structure somewhat changes with the introduction of the EMS. The

main objective is the exclusion of pollution, the tolerance of environmental law determining the operational framework on environmental load and pollution. (Nagy et al, 2002)

CONCLUSION

The major consumption of raw material and energy in steel-making is an important area regarding environmental protection. Emissions can be significantly reduced by careful planning and choosing the right technology. The realization of EMS implementation depends on the thoroughness of introduction and the management and staff's commitment and knowledge. The benefits of EMS implementation can occur in several areas in addition to the favorable environmental performance. The economic benefits may occur for example in the material and energy efficiency growth and through market expansion. Social benefits are also available from the introduction through the company's favorable image, the increasing employees' environmental awareness, environmental assessment and classification. The case studies, which we have carried out in manufacturing firms revealed that the majority of firms want to meet the partners' requirements with the application of a given standard. Those who have already applied the ISO 14001 standard are familiar with the ISO 26000 standard or they conduct a number of socially responsible activities even if they do not know the CSR concept. All companies that were surveyed replied that as long as there are no external expectations for introducing the certain quality standard, they do not intend to apply that. In the near future we plan to extend the research further in the region and beyond borders.

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SIMILARITY SEARCHING MODEL WITH EXCEL

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ABSTRACT

The here presented hybrid model is based on the available form of similarity searching in Excel. The baselines of the new method are to create sequences of mutually exclusive and non-overlapping categories, which generate different category-sequences, and by the logic of VLOOKUP the next of most similar pattern can be identified as the first element of a sufficiently accurate forecast. The estimations were evaluated by hit ratio and directional stability. In particular, testing the model on stock market time series, the results, achieved on the disaggregated minutes of open values of NASDAQ, with 290 minutes used to forecast the next 194 achieved 73.2% of directional stability, with 7 categories took into account, 55 cases were direct hit (28,35%), 86 cases were +/-1 category difference (44,33%), and 36 cases +/-2 category differences (18,46%). The step between the categories was 0,0000982 point. Testing it on sales time series of an industrial company's product, the results achieved on the disaggregated weeks, with 100 weeks used to forecast the next 50 achieved 74% of directional stability, with 7 categories took into account, 24 cases were direct hit (48%), 17 cases were +/-1 category difference (34%), and 4 cases +/-2 category differences (8%). The step between the categories was 0,8276 point.

Key words: similarity, VLOOKUP, stock market, demand, forecast

INTRODUCTION

Following the Symposium of EMC 2014 new datasets were tested on a previous forecast model developed to solve sales and inventory problems in MS Excel. The basic illustration of the classical model is shown below on Figure 1.

The estimation was carried out by the FORECAST function, which was not designed to deal with such datasets. Originally it had to have a dependent and independent range of data. In this particular case, it uses the values given after the exponential cleaning as an independent, and the values from the periodical simple average as dependent ones. This function also uses an X value, as a starting point, so it was determined as the last known data.

This model was tested on stock market datasets of Crude Futures weeks on the four main categories (Open, High, Low, Close). It was aiming to answer how universal this model is. The accuracy results of forecasting Crude Futures are shown below on Table 1.

Not only accuracy, but directional stability is an important metrics. The related results are shown on Table 2.

The results of directional stability around 50% - as no real value addition - indicated the model is not as universal as it was hoped. Conclusion: other or new approach was needed to pass the stock market test.

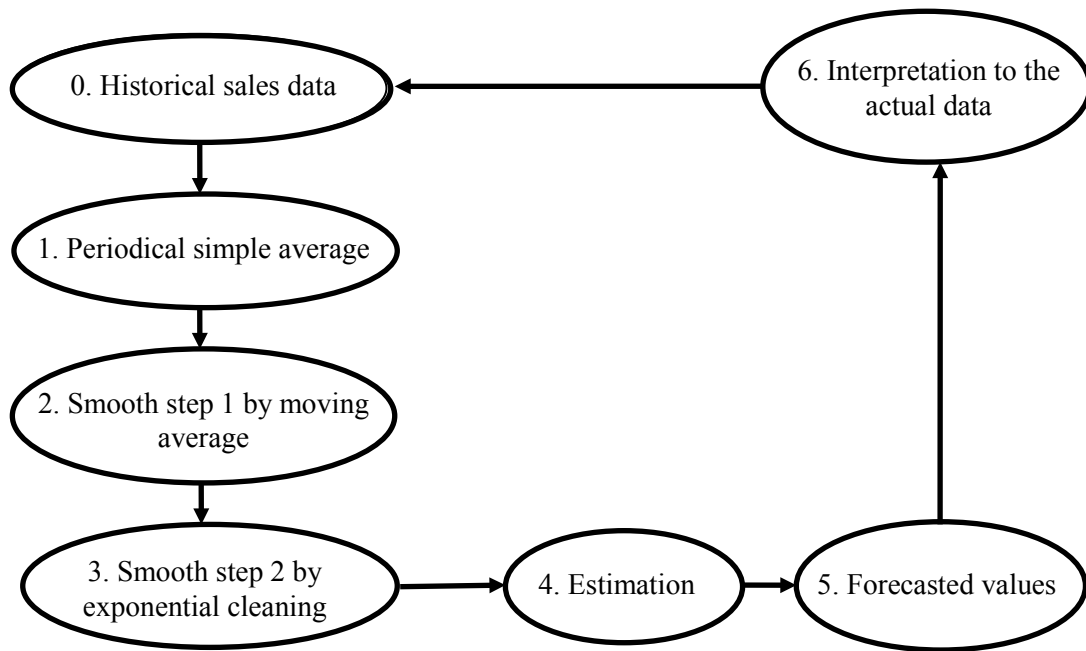


Figure 1: Classical forecasting model illustration

Table 1: Accuracy results on Crude Futures forecast

Time (weeks)	Open	High	Low	Close
2014/1	91,39%	91,66%	93,16%	94,49%
2014/2	94,17%	94,07%	90,35%	89,68%
2014/3	90,25%	88,52%	88,57%	87,54%
2014/4	88,03%	89,21%	89,18%	90,67%
2014/5	90,81%	92,24%	91,48%	93,51%
2014/6	93,88%	94,46%	97,93%	97,99%
2014/7	97,85%	100,81%	100,72%	105,59%
2014/8	105,77%	103,62%	103,88%	102,67%
2014/9	103,01%	106,32%	107,06%	107,10%
2014/10	108,04%	107,61%	108,34%	108,03%
2014/11	109,36%	111,18%	109,24%	110,88%
2014/12	111,08%	104,76%	105,27%	100,78%
2014/13	101,32%	101,96%	100,96%	103,66%
2014/14	103,76%	103,85%	103,54%	103,54%
2014/15	103,77%	102,34%	101,49%	101,92%
2014/16	101,83%	105,33%	108,17%	112,38%
2014/17	112,01%	112,91%	114,36%	113,67%
2014/18	114,52%	111,66%	113,25%	109,12%
2014/19	109,62%	107,19%	108,55%	106,07%
2014/20	106,16%	105,08%	107,42%	105,43%
2014/21	105,84%	105,20%	107,67%	105,16%
2014/22	105,27%	106,64%	107,42%	108,24%
2014/23	108,43%	104,33%	107,50%	103,80%
2014/24	104,18%	103,08%	104,98%	103,35%
2014/25	103,39%	106,73%	107,74%	108,52%

Table 2: Directional stability and correlation of Crude Futures forecast

	Open	High	Low	Close
Directional stability	41,67%	50,00%	54,17%	45,83%
Correlation	0,83	0,85	0,90	0,85

THEORY

Similarity analysis is used by My-X Research Team and had proved its universality and multidimensional aspects several times. The long term goal is to create a forecast model that can compete with it. For the first step a single dimensional model was created that uses similarity searching tool available in MS Excel.

Similarity search is also called as proximity search or nearest neighbor search (NNS). The very baseline of this methodology is to identify a starting point and measure the distances of its surroundings. The shorter the distance, the greater the similarity between the two points.

When time series are forecasted it is better to forecast more than one period. Thus similarity search should be continuous. Yufei et al. drew up the same problem as “A continuous nearest neighbor query retrieves the nearest neighbor (NN) of every point on a line segment (e.g., ‘find all my nearest gas stations during my route from point s to point e’).” During time series forecast this route is basically unknown, but it can be estimated in a linear approach. The next problem is the length of this line. To solve the length problem the similarity search model uses points from the time series, limited up to five to determine the direction of them.

METHOD

The first step in similarity search model is to measure the distances of the points of the time series by dividing them as chain ratios. The distance between the minimal and the maximal ratios is divided to k equal parts. Where k is an integer and cannot be more than a single digit. (Later this limitation was removed.)

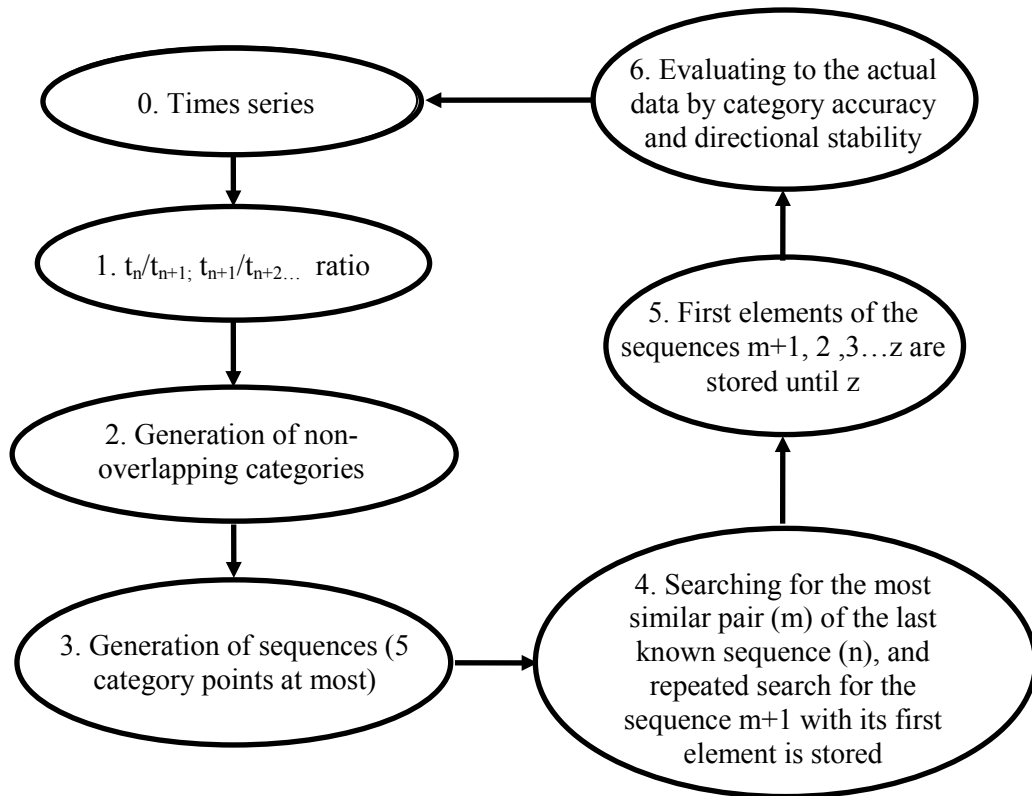
Using the function CONCATENATE the previously created category numbers (e.g. 1, 2, 3, 4, 5, 6, 7, 8, 9) are merged together like a four digit number (e.g. 1234). This gives a pattern that could be searched for and on. Starting the similarity searching – according to VLOOKUP logic - with the last known pattern (n) and looking for its most similar pair (m). As it was mentioned before the nearest neighbor method will result the other closest point of the origin. So in that case, if 1234 is searched for than e.g. 1235 can be the closest match. The VLOOKUP sense them as four digit numbers and works like it was described previously.

For the end of this section the present – the last known sequence – is identified similarly to one of the past sequences. Because the goal of the model is to predict future categories, if a similar past is identified then it is easy to determine possible next category, which is given as the first element of the next sequence (m+1). This will be the first forecasted category number. The next search starts with sequence m+1, as we predicted it as the following of n. It goes repeatedly until the last forecast needed period.

When the forecast is completed and the relevant new data are given, according to the category accuracy and directional stability the forecasted values are evaluated. The schematic structure of the similarity searching model is shown on Figure 2.

FINDINGS

On the very same stock market dataset focused only on the OPEN values, the similarity search model with 184 weeks used to forecast the next 25 achieved 72% of directional stability, with 7 categories took into account, 11 cases were direct hit (44%), 11 cases were +/-1 category difference (44%), and 1 case +/-2 category differences (4%). The step between the categories was 0,0312 point. According to these achievements it seemed more successful as the classical forecast model was.



1. Figure: Illustration of the similarity search model

Table 3: Similarity searching model results on Crude Futures

Category difference	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>
25 cases	11	11	1	1	1	0	0
100,00%	44,00%	44,00%	4,00%	4,00%	4,00%	0,00%	0,00%
Directional accuracy:	18						
Directional stability:	72,00%						

A special case emerged during testing. What if there is no similar pair of the last known sequence? This could mean there is a new pattern developing in the present without any previous indication. To bypass this case a new function was implemented in the model. Using 'IFERROR then equal to a given value' with VLOOKUP will result to let solution of the VLOOKUP go on, but if it comes up with an error (e.g. #MISSING), then it will result to preliminary value, which is the first sequence. By that way the model can calculate forward, but the bypass itself most likely will be a missed value.

Further tests were made using the similarity searching model to identify its performance characteristics. The next test was very similar to the Crude Futures one. Testing it on Apple share list (AAPL) with 184 weeks used to forecast the next 25 achieved 72% of directional stability, with 7 categories took into account, 7 cases were direct hit (28%), 11 cases were +/-1 category difference (44%), and 5 cases +/-2 category differences (20%). The step between the categories was 0,0349 point.

Table 4: Similarity searching model results on AAPL

Category difference	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>
25 cases	7	11	5	2	0	0	0
100,00%	28,00%	44,00%	20,00%	8,00%	0,00%	0,00%	0,00%
Directional accuracy:	18						
Directional stability:	72,00%						

The Crude Futures and AAPL showed as it was expected close results. The same performance of directional stability (72%), but the AAPL was not as accurate as the Crude Futures. The next examination was different in the way of time unit. Previously the time series were in week units, during the NASDAQ test the time unit was in days. With 290 minutes used to forecast the next 194 achieved 73.2% of directional stability, with 7 categories took into account, 55 cases were direct hit (28,35%), 86 cases were +/-1 category difference (44,33%), and 36 cases +/-2 category differences (18,46%). The step between the categories was 0,0000982 point.

Table 5: Similarity searching model results on NASDAQ

Category difference	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>
194 cases	55	86	36	15	2	0	0
100,00%	28,35%	44,33%	18,46%	7,73%	1,03%	0,00%	0,00%
Directional accuracy:	142						
Directional stability:	73,00%						

Comparing the newest results to last ones, it appears the model has stability. Both the directional stabilities and overall category accuracies are close to each other. For the next test phase of the model it should work in a different environment. From stock market to product sales time series of an industrial company, but with time units of weeks. It is the same dataset the classical forecasting model was represented. The similarity searching model with 100 weeks used to forecast the next 50 achieved 74% of directional stability, with 7 categories took into account, 24 cases were direct hit (48%), 17 cases were +/-1 category difference (34%), and 4 cases +/-2 category differences (8%). The step between the categories was 0,8276 point.

Table 6: Similarity searching model results on sakes time series of one product

Category difference	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>
50 cases	24	17	4	2	1	2	0
100,00%	48,00%	34,00%	8,00%	4,00%	2,00%	4,00%	0,00%
Directional accuracy:	37						
Directional stability:	74,00%						

According to these results the model shows stability in a different environment from its original one. The final phase of this testing procedure is the test with random numbers. They were generated by the RANDBETWEEN function of MS Excel. After 1500 model ran, the average results are with 100 random numbers used to forecast the next 50 achieved 65,61% of directional stability, with 7 categories took into account, 14,19% of the cases had direct hit, 22,92% of the cases had +/-1 category difference, and 19,34% of the cases had +/-2 category differences. Taking into account during the random number test there is no linear approach or trend line which exists long enough the model can rely on.

Table 7: Similarity searching model results on random test

Category difference	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>
100,00%	14,18%	22,92%	19,34%	15,76%	12,79%	9,30%	5,36%
Directional stability:	65,61%						

Pattern recognition was also found with the model. It means, according to the serial numbers which were attached to every four digit sequence, the similarity searching model is able to recognize and follow patterns which are similar to the starting sequence, and able to switch on to another pattern without any manual interference. This kind of pattern recognition was unavailable under the random number testing due to its nature.

According to mathematical probability in a range of 1-7 numbers (where all are integers), the chance to hit that the directly upcoming – short term – random number will be greater or less than the present

one is 67,34%. On the long term, this chance decreases to 36,73%. As it was presented previously the average directional stability of the similarity searching model on random numbers are 1,73% less accurate as the mathematical maximum of short term. But significantly higher as the long term one and the model did it 50 periods long.

CONCLUSIONS

The similarity searching model proved itself as a more universal forecasting model as the classical one. Its results showed operational stability and notable directional stability on every test so far achieved. Especially the random testing raised an interesting question, what would happen if a forecasting model can reach and later on exceed the maximum of mathematical probability on random numbers?

The next main phase of the model is to form it multidimensional. For this task, independent and depended datasets are need (e.g. classical production function). The Euclidean algorithm might be a possible solution, as it compares its points to each other. Andoni (2009) mentions it as an existing solution of nearest neighbor problems. The hybridization of the VLOOKUP logic and Euclidean algorithm could have mutually reinforcing effect.

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CORPORATE SOCIAL RESPONSIBILITY AND COMPETITIVENESS OF SERBIAN ECONOMY - THE ANALYSIS OF FIVE-YEAR RESEARCH RESULTS

UDC: 005.35:339.137.2

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ABSTRACT:

This paper presents the findings of the research dealing with the importance of corporate social responsibility (CSR) and its connections with competitiveness. The authors deal with competitiveness of enterprises, as well as activities that promote socially responsible business in Serbia. Special attention is given to the review and analysis of research results of Serbian undergraduate business students' attitudes on CSR and competitiveness. In a five-year period the research included over 3,300 examinees. The population was built on students from universities and business schools located in 22 cities and municipalities in Serbia. The research was conducted using questionnaire. Among other, the research has shown that a number of examinees were not informed of the CSR. Students experience the Serbian economy as uncompetitive and have identified several factors that are lacking in the development of competitiveness.

Key words: Corporate Social Responsibility, Competitiveness, Education, Students, Serbia.

INTRODUCTION

Corporate Social Responsibility (CSR) was introduced in the 1970's, but different forms of this concept date back to the end of 19th century. At the beginning the focus of the company in the field of CSR involved only certain philanthropic activities, i.e., donating charity funds. Recently, CSR initiatives have used different nomenclatures, classifications and definitions which can be grouped in several dimensions (Čočkaló et al. 2014, p.143): (1) Vision, including the organizational conceptual development, governance, ethical codes, values and reputation; (2) Company's relations with the community – collaborations and partnerships with stakeholders, philanthropy and action; (3) Workplace, labor practices and human rights; (4) Corporate transparency, reporting and communication and (5) Marketplace – research and development, pricing, fair competition, marketing and investment.

It is important for the organizations to deal with social responsibility, regardless of social or economic circumstances. Instruments such as the Declaration on Environment and Development in Rio, Declaration on Sustainable Development in Johannesburg Summit, the Millennium Declaration and the ILO fundamental principles and rights related to labor, emphasize this need. The European Commission, in 2010, defined CSR as "a concept, which integrates into the

enterprise the concern for society and the environment in their business activities and their interaction with their stakeholders on a voluntary basis", (Milosavljević, 2012).

Almost the main management question in this matter is: whether implementing CSR affects firm competitiveness. Many authors (Porter and Van Der Linde, 1995; Bansal and Roth, 2000; Hess et al., 2002; Haigh and Jones, 2006) have suggested that competitiveness is one of the primary drivers for adopting a CSR concept, though the nature of relationship between CSR and competitiveness continues to be unclear. In this way, according to Vilanova, Lozano and Arenas (2008), the CSR – competitiveness connection is made of three management processes: "(a) strategy, (b) stakeholder management and (3) accountability". Further, according to these authors, adoption of a CSR strategy effects on "identity and branding, which has a direct impact on competitiveness as it forces sustainable development in corporate vision through corporate strategy, improves the understanding of the complexity of the competitive environment and strengthens relationships with key stakeholders through stakeholder management, and improves the transparency of the organization through accountability management processes."

Success of CSR in the future depends on the attitudes of the next generations. They will create the relations between business and the society, no matter whether he is a common citizen, a consumer or a manager. It seems that the young generations are considered to be more open to social and environmental issues, promising thus a more optimistic future for CSR. Position of institutions of higher education in the society is unique – they are important places of knowledge production, perpetuation and dissemination. In addition to these conventional associations of universities and knowledge, higher education institutions have unique potential to encourage synthesis and integration of different types of knowledge and to enhance the application of knowledge to social change. The number of study programs in business schools that have integrated optional courses in CSR or specialized programs is increasing, (Matten and Moon, 2004).

CSR AND COMPETITIVENESS ON NATIONAL LEVEL

In order to better promote the concept of CSR, the Fund for an Open Society, SMart Kolektiv and Chamber of Commerce and Industry of Serbia launched, nearly ten years ago, a project called "SMART: Responsible Business Initiative – RBI", with purpose to promote and institutionalize the concept of social responsibility in Serbia. From that time to the present, a lot has been done in this area, and on its further promotion on the Serbian market. Since then, the main promoters of CSR on the Serbian market are the Balkan Community Initiatives Fund (BCIF), SMart Collective and Chamber of Commerce and Industry of Serbia. The Balkan Community Initiatives Fund (BCIF), in cooperation with USAID and several other national and international organizations launched in 2007 Virtus award with the aim of further popularization of CSR in the Serbian market. Virtus Award is conferred to the present eight times in a row, where winners were foreign companies, public and state-owned enterprises, small and medium enterprises, media companies, corporate funds and foundations. If analyze the structure of the business award winners for period of 2007-2014., the conclusion is that most awards went to the financial sector and banks (15 in total). Serbian financial institutions which conduct concept of CSR in its operations are: the National Bank of Serbia, Erste Bank, Societe Generale, Banca Intesa, EFG Eurobank. After banking, the most first prizes were given to media, especially e-media: B92 and RTS. The organizations, winners of Virtus award for 2014 (Virtus Award Winners) are: Hemofarm a.d., Vršac (nominated for company contribution on the national level), Concern Bambi d.o.o., Požarevac (nominated for their contribution to local community in which they perform business), Spa Komerc Bekament d.o.o., Arandelovac (SME nominated for their support to sports associations, cultural institutions, charity organizations and municipalities endangered by floods), Phillip Morris Operations a.d. (nominated for long-lasting partnership of business and non-profit sector), Kotlenik d.o.o, Coca Cola HBC Serbia and Delta Holding.

Chamber of Commerce and Industry of Serbia in 2007 for the first time began to award prizes for CSR, and since 2008, the prize has been awarded every two years. Unlike other awards in this

field, its role is to try to treat equally various business segments. The questionnaire, which is the basis for the methodology covers five areas of CSR including: employees, environment, market, property and communities. Companies that want to compete for the prize as Chamber of Commerce and Industry of Serbia CSR can be nominated in two categories: large enterprises and SMEs. The winners of the first prize were: Tigar from Pirot (large enterprises category) and a company Biovoda from Bujanovac (SME category) were declared as the most responsible companies in Serbia in 2007. In the category of large companies, the reward in the next three years was given to Metalac Gornji Milanovac, Eurobank EFG and Hemofarm a.d. Vršac, while in the SME category the award went to the Footwear Pavle, Sunce Marinkovic and S.C.S. Plus Knjaževac. However, despite national strategy and translated standards ISO 26000:2011, the concept of CSR has not yet been adequately developed as one would wish. Serbian companies still do not understand the wide range of activities offered by the concept of CSR, and are concerned mostly about casual philanthropy and volunteering activities, (Ivanović-Đukić, 2011). Serbian managers, unfortunately, as part of its business philosophy, insufficiently implemented principles of CSR, which significantly affects the competitiveness of Serbian firms, in the domestic and international markets, (Bogetić et al., 2013). The reason for this attitude towards CSR lies in the fact that the market has insufficiently developed consciousness and strength to punish any company that does not want to be socially responsible, (Milosavljević, 2012). This penalty represents a loss for the company as end user, and thus for the market.

According to the list of World Economic Forum for 2014-15, Serbia took 94th place out of 144 analyzed countries. Since Serbia took 101st place in 2013-14 there is some progress in competitiveness. It is interesting that Serbia found itself between Lao PDR (93rd place) and Cambodia (95th place). Table 1 shows the ranking of ex-Yugoslav countries in the last five years, according to WEF. Considering the countries from near surroundings, Hungary takes 60th place, Bulgaria 54th, Romania 59th, Albania 97th place. All countries from the West Balkans, except Serbia and Macedonia, fell in comparison to their previous position, according to their competitiveness. Monte Negro kept its previous position, Macedonia considerably improved its competitive position for 17 places and Bosnia and Herzegovina was not included in the Report for 2014-15. Serbian economy is still the most uncompetitive in the region of West Balkans as well as in South East Europe. Table 2 shows the ranking of West Balkan countries according to indices of competitiveness. As we can notice, Serbia has a slightly better position considering business efficiency than innovativeness.

Table 1: Ranking of West Balkan countries according to competitiveness in the period 2008-2014

Country	Place in 2010.	Place in 2011.	Place in 2012	Place in 2013	Place in 2014
Slovenia	45	57	56	62	70
Montenegro	48	60	72	67	67
Croatia	77	76	81	75	77
Macedonia	79	79	80	80	63
Serbia	96	95	95	101	94
B and H	102	100	88	87	-

Source: The Global Competitiveness Report 2008-2014

Table 2: Ranking of West Balkan countries according to competitiveness indices in 2014 (2013)

Country	Position in 2014 (2013) total	Position according to basic requirements	Ranking according to business efficiency	Ranking According to innovativeness
Slovenia	70 (62)	49 (37)	64 (62)	50 (49)
Montenegro	67 (67)	61 (68)	73 (72)	77 (70)
Croatia	77 (75)	63 (61)	68 (68)	87 (80)
Macedonia	63 (74)	64 (70)	69 (76)	76 (94)
Serbia	94 (101)	101 (106)	80 (92)	121 (125)
BandH	- (87)	- (87)	- (89)	- (89)

Source: The Global Competitiveness Report 2008-2014

METHODOLOGY

A part of the research which dealt with the analysis of attitudes of students related to their involvement in entrepreneurial process as well as with their comprehension about success of business practice in Serbian companies was related to CSR towards competitiveness of national economy. The survey was carried out by questionnaire. The population was built of students from four universities and business schools. It included totally 3.354 students directed towards business and management. The average age of examinees was about 22 years. About 40% men and 60% women participated in the sample. The research from 2013 was the most extensive and it involved 806 students. The research from 2014, although smaller in size (559 students), realized the biggest territory dispersion by its sample and the data from 22 Serbian towns or municipalities were collected. Since the CSR is not particularly part of the curricula in Serbia, here we were interested to find out, first of all, whether the students theoretically and practically (through positive examples of business practices) were familiar with the concept of CSR and how they came to these findings. Next, we wanted to see how respondents perceived competitiveness - whether they perceive "the link" between CSR and competitiveness of enterprises. Based on the model which Vilanova et al. (2008) give we have selected certain elements that could affect development of competitiveness of enterprises in Serbia; CSR was one of them. This was supposed to be another "check point" of the original idea.

Specific hypothesis referring to this study were set up as it follows here:

H1: There is a significant difference among the number of examinees who have got acquainted with the term CSR comparing to the year in which the research was carried out.

H2: There is a significant connection among the source of information about CSR and the year in which the research was carried out.

H3: There is a connection between the year in which the research was carried out and the number of young people who can number socially responsible companies on domestic market.

H4: There is a connection between the year in which the research was carried out and the number of young people who can find the connection between competitive ability and social responsibility.

Percentage review and frequencies were used for description and category data presentation. For testing the differences among the categories we used hi – square tests as well as the difference tests among proportions with Bonferroni correction used for multiple comparisons. For all examined differences among interval variables we presented arithmetic mean of each group in order to observe the value of the difference. As a significance level we took into consideration $p < 0.05$ both for category and interval variables and it was also stressed if the hypothesis was significant at a stricter significance level ($p < 0.01$ or $p < 0.001$).

RESULTS ANALYSIS

Hi-square data test obtained from the asked question "Have you ever heard about CSR?" - shows that there are differences in the number of young people who have been acquainted with the notion of CSR depending on the year in which the research was carried out ($\chi^2 = 135.403$, $df = 4$, $p < 0.001$). The results presented in the figure1 show that every year the percentage of examinees who were acquainted with CSR was growing, in other words, from only 25% in 2010 the percentage grew to more than 50% of the examinees during the previous year. The hypothesis H1 is proved in this way.

Hi-square test shows that there is a significant connection ($\chi^2 = 88.985$, $df = 20$, $p < 0.001$) between the source from which the examinees obtain information about CSR and the year in which the research was carried out, by which the hypothesis H2 is proved. It is noticeable that a considerable number of young people were informed about CSR via the Internet in 2012 – table 3.

The biggest number of examinees think that the most used activity from CSR domain in domestic companies is social objectives promotion (52%) – the results are presented in Figure 2. Promotion of social objectives is, according to examinees, the most used activity in every year in which the research was carried out.

Although there is a high percentage of examinees who are not able to name the company operating on domestic market which is socially responsible organization (Figure 3.), hi square test shows that there are differences among the years ($\chi^2 = 80.743$, $df=4$, $p < 0.001$). Proportion tests show that, last year, there was a considerable number of young people who could name the socially responsible company operating on domestic market.

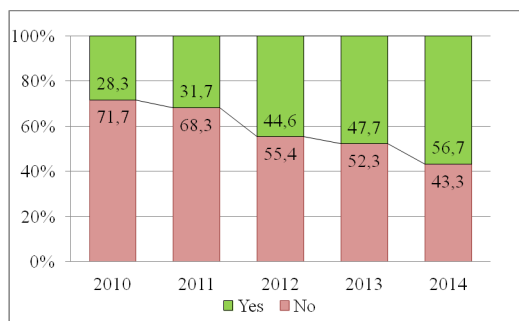


Figure 1. Understanding of the term CSR
Source: Author's results

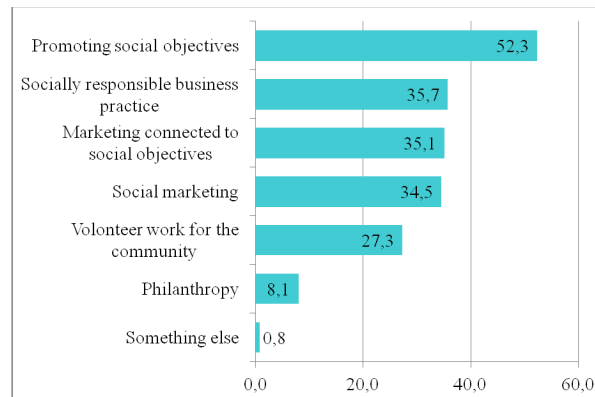


Figure 2: Most used activity from CSR domain in domestic companies (in %)
Source: Author's results

Table 3: Introducing ways with CSR term (in %)

	2010	2011	2012	2013	2014
Media	41.86	32.05	34.42	36.71	38.94
Textbooks	20.60	33.65	22.22	28.26	28.35
Internet	22.23	23.40	36.59	27.78	23.99

Source: Author's results

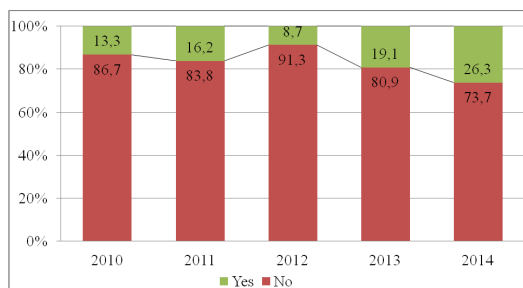


Figure 3: Recognizability of a company characterized as socially responsible one
Source: Author's results

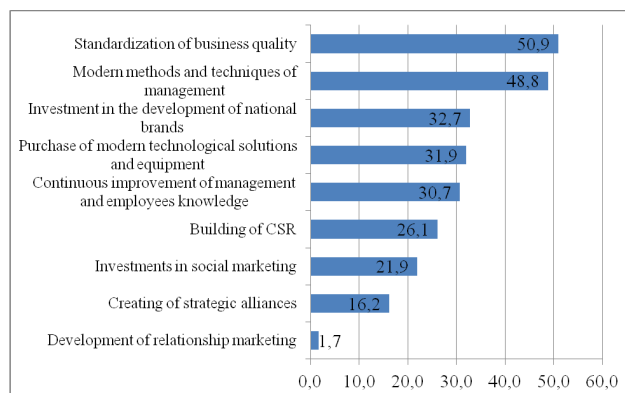


Figure 4: Necessary elements for development of competitiveness (in %)
Source: Author's results

Although, in every year, there is a low percentage of examinees who think that there is a connection between competitive ability and social responsibility, hi square test shows that there are differences between the years ($\chi^2 = 69,758$, $df = 4$, $p < 0.001$). We can see from proportion tests that in the last research year a considerably higher percentage of young people think that there is a

connection between competitive ability and social responsibility, inspite of the fact that it is still only 37%.

The elements which are recognized by the biggest number of young people as the responsible ones for development of competitive ability of domestic companies are implementation of modern methods and techniques of management and standardization of business quality (about 50% of the examinees cite each of these elements) - Figure 4. Difference tests among proportions and hi square test ($\chi^2 = 562.373$, $df = 40$, $p < 0.001$) point at the fact that in the last two years more and more young people find that the necessary elements for the development of competitive ability are the creation of CSR, implementation of modern management methods and techniques and standardization of business quality. Somewhat smaller number of them mention investments in national brand development as well as the creation of strategic alliances.

Assessment of competitiveness related to domestic companies made by young people is relatively stable and negative during the previous five years – namely, the additional decrease can be found only in 2011, but the majority of young examinees negatively assesses competitiveness of domestic companies - about 90%. The assessment of innovativeness has also been at similar level during the years and it has been negativ in total. A slight deviation can be seen only in 2012 when there was a small increase of the average mark, but it is still predomonantly negative. Innovativeness was also assessed negatively by the majority of the examinees.

CONCLUSION

Corporate Social Responsibility as a concept enables the company to be competitive in the market. Imperative for any business enterprise is to achieve business excellence and its three pillars are: meeting the demands of users, improving business productivity and corporate social responsibility. The first two steps result in a profit, but without social responsibility of business there is no excellence of the companies.

The main problem of domestic companies is non - competitiveness which is the result of poor productivity and lack of implementation of new technologies and knowledge as well as inadequate implementation of Management quality concept. Poor productivity as a rule results in poor competitive capacity. Competitiveness cannot be increased, in the long run, by subventions in industry but by improving productivity.

However, the student population is not uninformed, and they are experiencing Serbian economy as completely uncompetitive in the international environment. Taking all this into account and considering that the relationship of CSR and competitiveness is still unclear, although there are clear facts that indicate the direction for the researches in this field, it is not surprising, that there is relatively small, but statistically significant increase in the ability of students to recognize the relationship of CSR and competitiveness, as well as other elements that may affect the competitiveness.

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A CONCEPT OF CREATING SHARED VALUE: OPPORTUNITIES AND THREATS OF REALIZATION

UDC: 005.35

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ABSTRACT

The problem of business participation in solving social and environmental problems is a wide field that include various theories and approaches. Among the best known are corporate social responsibility (CSR), stakeholder theory, sustainable development and corporate citizenship. Recently the theory of creating shared value (CSV) is widespread in academic research and practitioner communities. This paper defines the CSV as a new approach to identifying and strengthening of the links between social and economic progress. The authors examine this theory in the context of actual research in the field of CSR and sustainable development. The main advantages and disadvantages of the CSV concept were analyzed by using the method of SWOT. This also allowed to point potential opportunities and threats of its practical implementation. Based on the carried research, the authors make conclusion about the place and role of value creation in the further development of a socially responsible business strategy.

Key words: Creating shared value, Corporate social responsibility, Sustainable development, Stakeholder

INTRODUCTION

Traditionally, company and public interests are defined as opposite to each other. The companies either stay on the sidelines of social and ecological problems, concentrated on making a greater profit for shareholders (corporate self-interest theory), or contribute as high as possible to the solution of social problems, improvement of the people's quality of living and environment protection (corporate altruism theory). At the best, business key function is considered to be socially neutral (enlightened self-interest theory), that is making a fortune that can be used as a payment for social well-being.

Recent researches pay the prior attention to determination of the connection between responsible corporate operations and competitive strengths development. There appeared a number of theories, which are trying to set a common guideline of action both for business and society. Among others these are corporate social responsibility (CSR), stakeholder theory, sustainable development, etc. Creating shared value theory (CSV), having emerged out of M. Porter's and M. Kramer's series of papers, can be regarded as a kind of quintessence of this line.

Nowadays the above-mentioned approach is getting popular. It is already being practically implemented by such companies as Intel, Inter Continental Hotels Group, The Coca-Cola Company, Nestle, Medtronic, Novartis, Western Union and many others. Furthermore, CSV is gaining currency in academic researches. As we consider in this context, there are currently important both the analysis of this theory in view of the present researches in the field of social responsibility and sustained development, and specification of the potential capabilities and threat to CSV implementation.

MEANING AND KEY AREAS OF SHARED VALUE CREATION

For the first time M. Porter and M. Kramer used the term “shared value” in 2006 research, dedicated to the process of CSR integration into the basic business strategy. After a few years, the authors issued an article named “Creating shared value”, in which they suggested more essential conceptualization of this idea. By “shared value” Porter and Kramer (2011) mean the whole of principles and methods “that enhance the competitiveness of a company while simultaneously advancing the economic and social conditions in the communities in which it operates.” The theory’s authors claim that “the capitalist system is under siege”, that is why “learning how to create shared value is our best chance to legitimate business again.” In their opinion, CSV “can give rise to the next major transformation of business thinking”, which will “drive the next wave of innovation and productivity growth in the global economy” (Porter and Kramer, 2011).

Porter and Kramer (2011) stated three ways to create shared value:

1. Reconceiving products and markets by seeking out social problems where serving consumers and contributing to the common good might be achieved in parallel. There are some examples of practical implementation of this strategy. Hewlett-Packard is developing a series of technological solutions in the field of safety marking in order to struggle against infringing pharmaceutical products. General Electric is implementing a project called Ecomagination, which aims at the development and manufacturing of modern energy-saving and environmentally-friendly technologies and products. In 2010 the company set an ambitious goal to increase the Ecomagination products’ fraction of income in total revenue. The company did achieve this goal in two years, and product sales had brought 25 milliard dollars income. In 2012 greenhouse gas emissions decreased by 32% in comparison with 2004.
2. Redefining productivity in the value chain by simultaneously enhancing the social, environmental and economic capabilities of supply chain members. Among successful examples there can be marked off Wal-Mart’s and Novartis’ actions. In 2009 an American retailer Wal-Mart started to spare the package and changed the route of its trucks, thus reducing the way by 150 km. This had brought it an income in 200 million dollars more. Due to the new method of polyethylene bag utilization Wal-Mart managed to reduce waste transport costs. Having determined a critical need for treatment of diseases widespread among low-income citizens, Novartis launched the division called Arogya Parivar. It started up the drug-store chain in agricultural Indian regions, offering the most in-demand medicine at acceptable prices. The activity of the division exceeded all expectations, and the new practice is being implemented in Kenya, Indonesia and Vietnam.
3. Enabling local cluster development where various developmental goals might be achieved in cooperation with suppliers and local institutions. Nestle had been launching agricultural, industrial, financial and logistic enterprises in coffee cultivating regions. It invested to farmer cooperatives in order to reinforce them, and supported an advanced professional training program, which had aided to improve productivity of the company itself. Mars took the lead of the public-private partnership within the territory of the Republic of Cote d’Ivoire, which helped to improve yields and income of 150 000 small farming businesses. The company got a benefit in the form of steady supply chain and high-quality production material.

As a result, a sort of shared value “circulation” appears: improving value in one area gives rise to opportunities in others. It is notable that CSV capabilities will differ in dependence to sector profile, geographical location, and connection of the precise business lines with social problems. This makes it possible for the company to stand out of the competitors, but at the same time this limits its possibility to unify the process of design and implementation of CSV strategy.

CREATING SHARED VALUE IN THE CONTEXT OF CORPORATE SOCIAL RESPONSIBILITY AND SUSTAINABLE DEVELOPMENT

Porter and Kramer (2011) state that “shared value is not social responsibility, philanthropy, or even sustainability”, and in future years “CSV should supersede corporate social responsibility”. In their opinion, CSR programs are primarily necessary for the companies to keep their reputation protected; they are not connected with its competitive opportunities, they are localized and are not focused on long-term prospects (Table 1).

Table 1: Comparative analysis of CSR and CSV

Corporate social responsibility	Creating shared value
Value: doing good	Value: economic and societal benefits relative to cost
Citizenship, philanthropy, sustainability	Joint company and community value creation
Discretionary or in response to external pressure	Integral to competing
Separate from profit maximization	Integral to profit maximization
Agenda is determined by external reporting and personal preferences	Agenda is company specific and internally generated
Impact limited by corporate footprint and CSR budget	Realigns the entire company budget

Source: Porter and Kramer (2011)

On the basis of CSV theory studying, we have come to the following main conclusions. Firstly, in comparison with shared value, the authors describe social responsibility mainly as actions that are detached from the company’s principal activity, which we find quite a narrow definition, that doesn’t take into account CSR development within strategic management theory during last several decades. For example, L. Burke and J.M. Logsdon (1996) defined five dimensions of strategic CSR, in which company both satisfies its own and its stakeholders’ needs. Among them there are priority (degree of conformity to company mission and aims), peculiarity (ability to internationalize CSR benefits), proactiveness, voluntariness and demonstrativeness. Moreover, in Porter’s and Kramer’s (2006) earlier researches it is claimed that CSR can be something greater than expenses or charity. The authors defined two models for CSR connection with corporate strategy: a “responsive” model and a “strategic” one. According to the authors, the latter involves integration of CSR idea into company strategy and it is aimed together at accommodation of the general public interests and at competitiveness improvement in the long-term.

It should be noted that emphasis on the strategic nature can be found among many recent definitions of CSR (for example, in the ISO 26000). Besides, some companies had been putting an aim of economical and social impact harmonization as a basis of their business before CSV theory appeared. Thus, after the Second World War IKEA set oneself a task to improve quality of people living and aimed its processes at manufacturing of functional and inexpensive products. The IKEA concept is described by the idea that customers assemble most of the furniture by themselves at home, the goods are carried in flat boxes, which leads to reduction in expenses for logistics and services, and makes it possible to decrease CO₂ emissions in the atmosphere. Until today this idea has been providing company’s stability and decent competitive strengths even in the most uncertain days.

Secondly, having defined CSR as isolated from profit maximization, the CSV authors ignore researches on economical justification of responsible activity. Since 1970s, there have been undertaken about 200 studies of that kind. Analysis of 127 related empirical studies’ results revealed that in 22 of them CSR stood as dependent reliable, determined by financial indicators. In 109 studies CSR stood as independent reliable: 54 studies revealed positive dependence, 7 studies – negative one, 28 studies – neutral one, and 20 studies revealed confounded results. Four studies proved mutual dependence (Margolis and Walsh, 2003). Among resent studies which proved positive relation between CSR implementation and financial indicators, there can be specified a global study of 675

companies over a period 1993-2010, which was undertaken by Harvard Business School. According to the obtained results, the companies that are strongly practicing CSR principles anticipate their responsible colleagues in gross revenue, ROA and ROE (Eccles et al., 2012).

Thirdly, CSV has meeting points with stakeholder theory and sustainable development theory. They are often considered as the alternative themes, occurrence of which is connected with need to specify a company's responsibility content, as well as methods, with help of which CSR can be implemented practically. Under some degree of conditionality, it can be decided that in XX century CSR is being implemented mainly in terms of stakeholder approach. Its nature is about occurrence of new company interests' balance, where the leading part is played by interests of different social groups. The language of value engineering creation was the main feature of R.E. Freeman's researches. Freeman, one of this theory founders, considered as the key pillar the idea that "creating value for stakeholders creates value for shareholders" (Freeman et al., 2004). Moreover, A. McWilliams and D. Siegel (2001) suggested "CSR demand and supply model". The results of analysis carried out by the authors revealed that there exists some kind of "ideal CSR level". In order to maximize profits, the company should reach such CSR level, at which the increased earnings (from the increased demand) are equal to higher expenses (on relevant resources use). So that to reach this level, the authors suggest attaching social responsible attributes to the products, which allows increasing the possibility of their differentiation.

According to the UN report called "Our Common Future", the aim of the sustainable development is satisfaction of current generation's needs without prejudice to future generations' possibility of their own needs' satisfaction. One of the theory founders at corporate level is J. Elkington. The author argued that sustainability should not be consigned to history by shared value. Elkington (2012) recognized that Porter and Kramer's shared value proposition is undeniably a key step forward in corporate strategy. Yet he maintained that shared value can play a key role in destroying key resources, reducing the planet's biodiversity and destabilizing the climate. Elkington assumed that, "if properly addressed, sustainability could be the ultimate form of shared value".

On the basis of analysis of the connection between CSV theory and existing ideas in the field of CSR strategic form, sustained development and stakeholders management, it may be concluded that, unlike the last mentioned theories, M. Porter's and M. Kramer's one is mostly practically-oriented; it is based on companies' first-hand experience and offers some summarized "technologies" for synergetic effect achievement.

POTENTIAL OPPORTUNITIES AND THREATS OF CREATING SHARED VALUE

We used SWOT analysis method for results classification. The results are presented in Table 2. Many of the analysis' points are also relevant to CSR, particularly to its strategic form (for example, connection with company's principal activity, consideration as a "shield" strategy, need for more time and resources, etc.). We will consider in detail threats to CSV implementation, which were not touched upon earlier.

In order to work out a strategy that provides CSV, the company management should have clear understanding of the problems which are relevant for business and society in the long-term. However, relevance estimation is quite a difficult process and requires a thoughtful analysis of a wide range of stakeholders' interests, expectations and concerns. Thus far, certain technical notes regarding relevance estimation are all based on non-financial reporting manuals (for example, GRI, AA 1000). There is no such estimation procedure within CSV. Porter and Kramer (2006) only recommend dividing socially relevant problems into three categories, so that to narrow the range: the generic social issues problems (relevant for society, but having little to do with company's activity), value chain social impacts, social dimension of competitive context (external environment's elements which directly affect the competitiveness).

Table 2: SWOT analysis of the concept of creating shared value

Strengths	Weaknesses
<ul style="list-style-type: none"> – Increasing social goals to the strategic level, consideration of social and environmental issues as business opportunities; – Focus on maximizing profits; – Connection with the main activity of the company, embedding into all its business processes; – Opens opportunities for innovation, new technologies; – Provides investors with evidence of a direct correlation between social and business performance; – Opportunities and approaches to value creation are unique and tailored to each company (competitive advantage). 	<ul style="list-style-type: none"> – Perceptions of potential and implementation tools still being formed, the number of companies successfully implement CSV is low, and it is only a big business; – Theoretical intersection with existing concepts (CSR, sustainable development, stakeholder theory); – Complexity of the unification process of CSV; – Does not solve the question of producing goods with questionable social utility (alcohol and tobacco products, weapons, etc.) – Provides a limited awareness of the economic performance of the value creation.
Opportunities	Threats
<ul style="list-style-type: none"> – Relegitimization, increase of trust rendered to the business; – Development of a culture of innovation; – Strengthening the commitment of business to fair practice and participation in the development of society; – Global economic growth, development of alternative energy sources, unique approaches to the problem of poverty, etc.; – Increasing the amount of debates about the interaction between business and society, contributing to the development of the concept of CSV and other socially useful business practices. 	<ul style="list-style-type: none"> – Underestimating the importance and materiality of the social issues identified in the formation of the CSV strategy; – Ethical dilemmas, when social and economic results cannot be agreed; – Minimize or reduction of regional initiatives to align with a global strategy, or in the absence of a business effect; – Accusations of hypocrisy, CSV can be considered as a more complex strategy of "camouflage"; – Implementation of CSV may require a large amount of time and resources for a radical change in the work process, including the development of new competencies.

In our opinion, search of mutual capabilities, anyway, is conjugated with a range of potential dilemmas in view of baffling complexity of social and economical purposes' and results' coordination. In practical terms it can lead to investment in less serious social and ecological problems, redeployment of resources to more financially successful programs, realization of certain value creation efforts (for example, for some stock keeping unit). Besides, CSV progress reporting can be limited by social results, since economical efficiency data is strategically crucial for business, therefore, shall not be presented for external use.

CONCLUSION

Hence, creating shared value is a new strategic approach to the role of business in society, which accumulates scientific discoveries in CSR field, stakeholder theory and sustained development theory. It should be understood that CSV cannot lead to comprehensive solution to all actual social and ecological problems. This conception is just a one among many schemes which are based on different stakeholders' cooperation. The vision of responsibility in business will always be evolving and changing along with further development of mankind. Therefore, shared value conception is not the final point in this important discussion. However, it is conceivable that in future CSV will facilitate highlighting the business social role and enhance companies' pursuit of fair practice.

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Session A: MANAGEMENT AND OPERATION MANAGEMENT

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FOOD INDUSTRY WORKERS' ATTITUDES ON THE IMPORTANCE OF FACTORS AFFECTING FOODSTUFF QUALITY MANAGMENT

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ABSTRACT

The food industry is faced with several challenges at the same time: to supply safe and affordable foodstuff in sufficient quantity; to provide products in conditions where demand surpasses the human population growth; to operate in circumstances of ever-increasing competition; to protect the environment and respond to the population's public health concerns. An organization's success depends on the knowledge, skills, creativity and motivation of the company's workers and partners. Focus on its employees enables a company's development and improvement, whereas business ethics ensures public health and safety protection, environmental protection and life quality improvement. The company management's responsibility lies foremost in education, worker training and development, thus enabling a direct and indirect influence on the foodstuff quality and satisfying consumer requests in terms of foodstuff quality characteristics.

Keywords: foodstuff, quality, food industry, workers, improvement

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ORGANIZATION MODEL OF THE MEDIA MONITORING COMPANY IN THE CASE OF PARTIAL PRINT MEDIA DIGITALISATION

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ABSTRACT:

In this paper the model of media monitoring organisation in the case of partial digitization of printed media has been analyzed. The organizational structure and functioning of the media monitoring company depends on the level of digitization of printed media. Consequently, the organization model for media monitoring companies, based on the traditional press clipping, that is print media as the main source of news, differs from the model of such an organization based solely on online news. The paper presents the structure of a typical media monitoring organization on the basis of comparison of several media monitoring organisations in the countries of the supremacy of press media in contrast to the digital editions.

Key words: media monitoring, press clipping, company organisation model, print media digitalisation, public relations.

INTRODUCTION

Media monitoring has become an indispensable activity of corporate public relations. PR professionals in the public relations services, but also in public relations agencies, buy different tools for media content analysis, such as digitized databases. However, they usually buy the services from specialized media monitoring companies. Most frequently purchased media monitoring services by different organizations (Haus, 1993) are: press clips from daily and weekly newspapers, TV monitoring, and, more recently, social media monitoring. Media Monitoring is the systematic monitoring, identifying, storing and analyzing various clips in print and / or electronic media based on the given keywords from the clients (Ratković Njegovan, Bengin, 2014). Monitoring media represents a significant return on investment in corporate communications, demonstrates the organization's success in public relations and presents a systematic way of permanent grouping of media reports, based on which the media content analysis can be realized.

ORGANIZATIONAL STRUCTURE AND FUNCTION OF THE MEDIA MONITORING ORGANIZATION

The transition to digitized editions of the print media has been globally intensifying, though complete digitalisation in some countries has been anticipated in a broad range of two decades (Dawson, 2010). Already, in more developed countries the entire content of the print media has been published in digital form which accelerates the media monitoring process and makes it more precise.

On the other hand, most countries still had not entirely "transferred" newspapers in digital form identical in the content to their print editions, which is the case with the print media in Serbia. Printed editions continue to have primacy over their online editions, so one can speak of partial digitization of

print media. The print media, in such cases, represent the main source of news and the main media for monitoring. Therefore, the media monitoring process is different and it is based on the traditional press clipping, which involves teams of trained readers who read, record and separate texts with key words for clients.

Consequently, the organization model of media monitoring companies, based on the traditional press clipping, that is monitoring of the print media as the main source of news, differs from the model of such an organization based solely on online news, and includes the following departments:

- Pres Clipping Department;
- TV Monitoring Department (TV Clipping);
- Internet Monitoring Department – online news and social media monitoring (if there is a need)¹ and Radio Monitoring Department (if there is a need);²
- Analytics Department;
- Sales Department;
- Translation Department.

For insight into the functioning of the various departments the structure of a typical media monitoring organization based on the comparison of several media monitoring organizations in the countries with print media supremacy in relation to their digital editions is presented (Figure 1).

Pres Clipping Department

Realization of press clipping service is the most demanding, because the print media in most countries continue to have priority over other media, including the Internet. Their online editions are not representative, or does not fully follow the content of their printed form. Therefore department for press clipping requires the largest number of employees.

Press clipping department includes two press clippings team - night and morning. Both teams are necessary because of the rhythm of newspapers publishing (day and night) and clients need to have all news from that day available until 9 AM. Given that the largest volume of work is based on daily newspaper monitoring. It is necessary that the night shift to monitors regional daily newspapers, which are already available at 10 PM previous day, while the national daily newspapers are available only in the morning at 6 AM. The regional and national daily newspapers overlap with about 90% of the same content, so the biggest part of monitoring, reading and selecting releases for clients, is realized during the night from 10 PM to 6 AM. In the morning, from 6AM to 9AM (which is the time of clipping delivery to clients), employees compare this two editions to add articles released in the morning, in national daily newspapers. Each of these teams consists of six employees with different responsibilities. In every team there is one "team leader" and five "reader". The entire clipping is delivered to clients every working day until 9 AM. At weekends there are working two "readers" who are preparing clipping for Monday morning. "Reader" are responsible for: reading newspapers and marking key words for clients. "Team leader" is responsible for: maintaining records on incoming press; records of key words and email clients list, new requests for monitoring, scanning of selected and marked texts, uploading of scanned texts on the web clipping application and authorization – approval of uploaded texts within the clipping web applications, which thus became available to clients.

¹Although the Internet is becoming increasingly popular media, monitoring of online news and /or social media still did not take such a significant part in the countries where the most relevant information are published in the printed editions of newspapers and magazines.

² Most wanted customer service of media monitoring organizations, based on the traditional clipping, is press clipping – monitoring of printed media, while much less clients are interested in radio program monitoring service – such cases are mainly based on pre-agreed radio program monitoring.

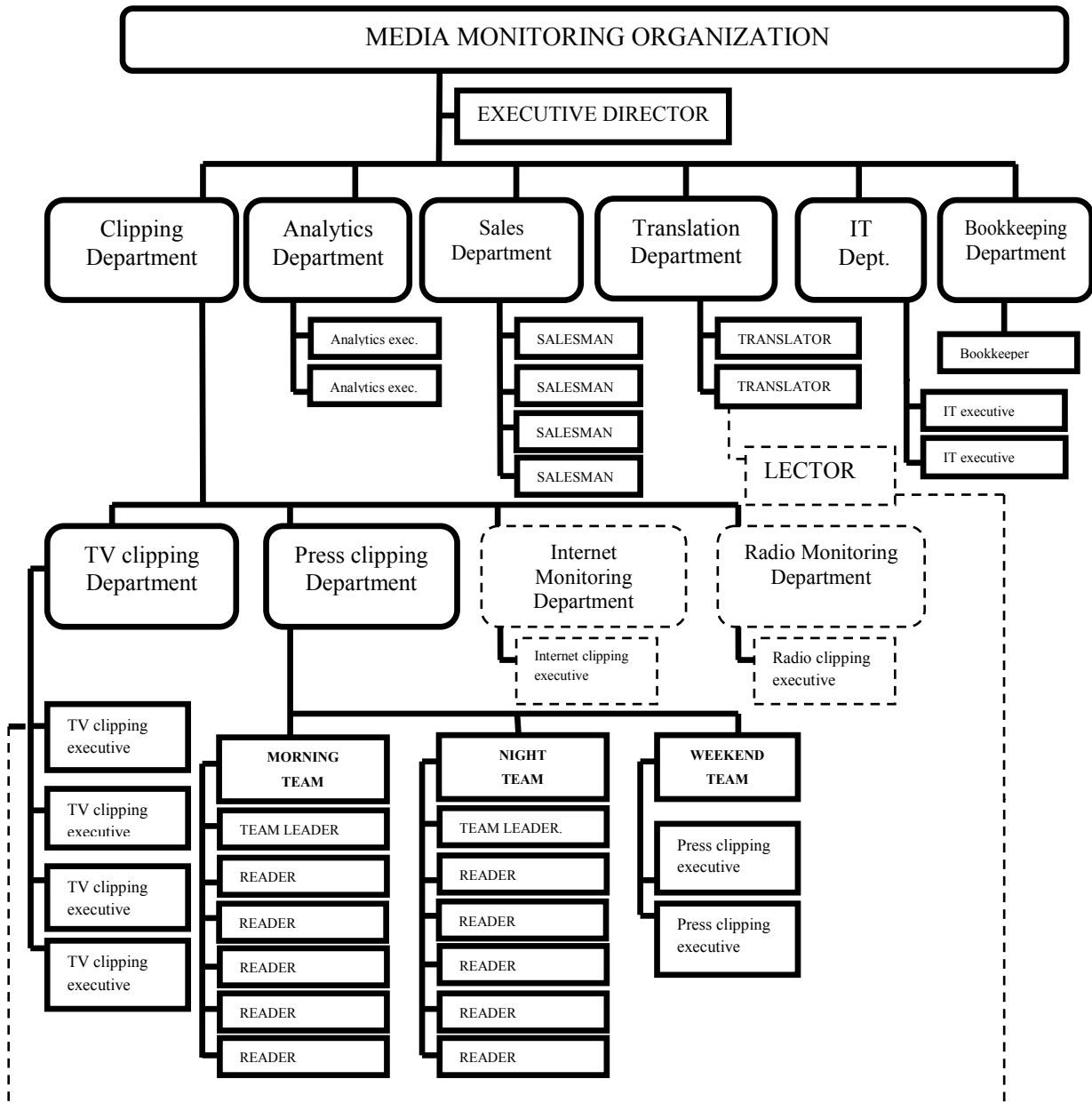


Figure 1: Model of the media monitoring organization in the countries with supremacy of print media in relation to their digital editions

Press Clipping Department consists of two groups of employees who work in two shifts that rotate on a weekly basis: evening and morning shifts. They read the press and mark keywords for clients and deliver clipping to clients. Working hours of the evening group begins from the moment when regional daily newspapers are available (10 PM) and the morning group working hours are from the moment when national daily newspapers are available (6 AM). The entire clipping is delivered to clients until 9 AM, and until 11 AM for clients who require press clips translation into English. Night shift monitors all regional daily newspapers, as well as weekly, monthly and periodical press. The morning shift compares already monitored daily regional editions to national morning editions of daily newspapers and select additional texts for clients. All relevant national and regional print media are monitored.

TV Clipping Department

TV clipping department (Figure 1) consists of four employees³. TV clipping teams work at night and view television programs, seeking for keywords mentioning the clients. The entire TV program is recorded and then monitored. TV clips are available to the clients before 9AM the next day. Originally TV clipping was sent to clients by email in the form of transcripts of the program parts in which the required keywords were mentioned or in the form of recorded TV reports on CDs. In pursuit of a more efficient implementation process and delivery of TV clips, the web clipping applications are introduced which enable TV clipping material placement in audio form on the website, which has successfully reduced the time of TV clipping process and realized greater speed of clipping delivery.

Departments for Internet and Radio Monitoring

Media monitoring organizations offer monitoring of major online editions of the print media to the clients. Online news monitoring is realized with the free search engines (such as, for example, *Google News*). The overall work, generally, can be realized with one employee. The situation with social media monitoring is somewhat different. Social media, especially social networks, are becoming increasingly influential, especially in customers decision making. However, for social media monitoring service are mainly interested larger companies, especially those that develop high corporate responsibility and which can afford to pay these sophisticated and expensive services. Generally, one employee is needed for Internet monitoring in media monitoring organizations.

Less often clients are looking for radio program monitoring. Such cases are mainly based on pre-agreed monitoring –radio programs important to the clients. Therefore, the TV clipping department is mainly engaged for occasional radio monitoring

Analytics Department

Media content analysis department develops peculiar content analysis methodology of media reports. Media content analyses, especially those somewhat more complex, are mainly realized for larger organizations that are able to pay for these additional services. This department is mainly consists of three employees, but this number is depends on the workload. Analysis methodology is based on: articles counting, attitude indicators determining (positive, negative, neutral) and content analysis. In fact, the basic methodology involves: articles counting and establishing of IMPP, that is the Index of Media Presence and Coverage. Index of Media Presence and Coverage consists of the following components: attitude indicator that determines how the organization is presented in the media (positive, negative, neutral), impact (indicator of significance) which measures the degree of presence in the media through indicators (report size, remembrance type, place in the text / report, title size, author, illustration) and range that refers to the number of viewers / readers in the media audience. The Index of Media Presence and Coverage can include the following components: the presence of the key messages in the report, the target public which determines whether a report is published in certain (or desired) media, content analysis and media value that refers to the space (or time) measurement that the report received in the media, and the value is calculated based on the price of advertising space. The applied methodology in the media analyzes is based on the Index of Media Presence and Coverage (IMPP). For the IMPP index calculation, for any organization that is mentioned in the media report, the different indicators are measured. The value of this index can be positive, negative or near zero. IMPP index can show the characteristics of the organization in a given period, medium or in connection with certain events.

Sales Department

Sales department plays an important role in media monitoring organization. Usually it is consists of five employees (number of employees may vary depending on the size of the market and potential

³ Number of employees is directly related to the volume of TV programs for monitoring.

clients within that market) who are constantly looking for new clients, but are also in regular communication with existing clients. "Business to Business" model ("B2B") is applied, which implies contacting organizations as a potential new clients.

Clipping delivery

Clipping generally used to be delivered to the clients by mail, but on a special client's request it was also delivered in the form of "paper clipping" – the form of the original printed texts – as well as printed transcripts of TV reports. To make their services more efficient, media monitoring organizations have introduced web clipping apps – tools by which the client may access the press and electronic clipping online. These services provide:

- Quick and efficient search not only of the current, daily clipping, but also the entire clipping archive up to that moment. The search options offer several parameters: search by word, time frame, media type, subject, author of articles or reports;
- Storing PDF files of TV or Radio transcripts and scanned articles from the printed press;
- Making a separate collection of articles or reports of special interest for a client;
- It may also include the daily analysis, apart from the basic clipping services, if the client is subscribed for that service

Each clip, in the web clipping application, is presented by following parameters: date of publishing, title of the article or report, name of the printed or online publication, TV or Radio channel or name of the social media where it was published; name of press or online column; name of text or report author and identified key word in clips. Each printed clip, next to the title, contains the original scanned article from the newspaper in the IMG or PDF format. Every electronic clip contains the image in PDF which transcript of a TV or radio report. Video or audio recordings of TV or radio program reports are often attached with or without PDF transcripts. The list of displayed clips can be sorted in increasing or decreasing alphabetical order.

Also, web clipping service provides the following information – in the case of printed clips: the size of the article on the page; article position on the page; type of the key word mentioning (singly mentioning, partially mentioning or mentioning in the whole text) and tone of mentioning (positive, negative or neutral mentioning). In the case of electronic clips, web clipping service provides: information about the time of key word mentioning in the program and tone of mentioning (positive, negative or neutral mentioning). Web clipping service allows the clients to have access to clipping at any time from any place by entry to the home page and entering the pre-defined password and user name. This allows more efficient and functional services.

CONCLUSION

The media monitoring concept depends on the level of digitization of print media. In more developed countries the entire content of the print media is placed in digital form which accelerates the process of media monitoring and makes it more precise. On the other hand, most countries still had not entirely "transferred" newspapers in digital form identical in the content to their print editions. The print media, in such cases, represent the main source of news and the main media for monitoring. Therefore, the media monitoring process is different and it is based on the traditional press clipping, which involves teams of trained readers who read, record and separate texts with key words for clients. The department for press clipping requires the largest number of employees in relation to other departments within the media monitoring organization. Knowledge systematization of the functioning of the media monitoring company in the case of partial digitization, represents the knowledge about media monitoring that can serve to advertising and PR agency professionals; professionals working in the information and public relations services of institutions and organizations; researchers of public opinion; employees in the media monitoring services, as well as those who want to become professional communicators. Knowledge of media monitoring is necessary for a more complete

understanding of public relations and represents a secondary, but still important link in our understanding of this discipline.

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IMPROVING THE QUALITY OF TRAFFIC COMPANIES AIMED AT COMPETITIVENESS DEVELOPMENT

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ABSTRACT

In this paper, the authors point to the key parameters affecting the quality of traffic companies aimed at raising their competitiveness level. As an example of a traffic company, this paper uses airline and airports that have undergone significant positive changes in their operations in the past several years. The emergence of new economies and countries has led to the fact that traffic companies devote much more attention to the enhancement of their performances so as to have a ready answer to the requirements of both customers and the market. The quality of services, travelling comfort, a good infrastructure, all represent factors that may significantly affect the quality of a traffic company, as well as the attitude of the service user towards the traffic company.

Key words: traffic service quality, competitiveness, traffic infrastructure, traffic quality, customer satisfaction

INTRODUCTION

Competitiveness is imperative in modern business practices of companies. Nowadays, businesses face two challenges in the global market, namely: strengthening the competitive position and its retention on the market. This is an ongoing issue for the different companies since they share the same goal of achieving customer satisfaction. Traffic is the cornerstone of the European integration process firmly connected with the creation and completion of the internal market which promotes the employment and economic growth. Traffic, as one of the primary areas of common policies of contemporary European Union, is considered to have the key role for accomplishing three of the four freedoms of the common market, which were laid down in the Treaty of Rome in 1957: freedom of movement of labour, goods and services (European Commission Directorate-General for Communication, 2013).

All these factors, each in its own way, have contributed to the continual improvement of the quality services of transport companies. This is especially true when regional or global joining of companies occurs, as for example on the auto or air traffic industry market. In this way, associated companies have greater market share, but also higher bid for the existing but potential needs of users. The issue of quality of traffic companies operating in the new global conditions is very complex and in order for the quality to be achieved the following elements should be taken into account: good transport infrastructure; quality of service; flexibility to market demands; application of new technologies in business.

When we talk about the factors of regional competitiveness, we can say that some of these factors are strictly local and some strictly national, however, for most of them the infrastructure determines the relevant spatial extent. According to Kiel (Kiel et al, 2014), infrastructure is therefore not a source in itself, but rather a sine qua non for other factors. This is the case, for example, in the exchange of goods, services and ideas, and the

shaping of labor markets, of supply relationships, and even Friday of knowledge exchange. Transport infrastructure thus plays a key role in promoting the competitiveness of regions.

As far as Serbia is concerned, experience of (more developed) Central European countries in transition is indicative. The key to their economic success was to attract strategic investors to the industry of electrical appliances, chemical and automotive industries (Volkswagen, Peugeot, Kia Motors, Samsung, Sony, General Motors, Suzuki, Mercedes-Benz, and Audi). In Hungary, ninety thousand people are employed in 350 companies in the automotive industry. The aforementioned export-oriented industries have prompted the opening of a large number of jobs (for example, the opening of the plant for component producers). For objective reasons, neither Serbia nor Croatia or Bulgaria could repeat the experience of Central European countries and partly of Romania, which had a significant increase in auto-industry and electronic industry in the last decade and a half. By all accounts, it was too late to attract strategic investors in these two industries that would incite export in the related sectors (Nikolic, 2014).

ANALYSES OF FACTORS INFLUENCING THE COMPETITIVENESS OF THE TRAFFIC COMPANIES

Analysis of the project FUTRE made by the support of several institutes of the European Union (EU) shows that the traffic industry is facing changes. In most transport modes the European industry has a global competitive position to defend and there is a clear sense that the best way to do so is by investing in research and innovation. The challenge for European Transport Policy is twofold: to ensure competitiveness of the European industry while reducing the societal impacts (especially environmental) of that mode of transport. These two objectives are not contradictory in nature: if legislation or regulation is properly designed at European and international level, addressing societal challenges would pay-off in terms of competitiveness (FUTRE, 2013).

Research conducted for "Quality of Transport", which was done by "Directorate-General for Mobility and Transport" in cooperation together with the "Directorate -General for Communication" and the "Gallup" organization, shows that the participants of the study displayed divided standpoints on the quality of road traffic in their country in the last five years. 38% of respondents claim it has improved while 36% think it has deteriorated. Respondents had more positive opinion related to air and rail traffic. In the case of air traffic, 36% of respondents state that it has improved compared to 13% who believe that it has deteriorated. Concerning the rail traffic, standpoints differed to a lesser degree as 34% of respondents believe it has improved and 27% that it hasn't (The Gallup Organization, 2014).

These data indicate that three abovementioned modes of transport: road, air and rail have improved their quality and attitude towards the customers. In comparison to other modes of transport, this particularly relates to air traffic where there is considerable difference in the attitude of the respondents concerning the quality of air traffic being upgraded or not (36% -13%). This attitude is comprised in the fact that the air traffic companies had to adapt to the market and customer requirements due to the increasing competition in the air traffic market.

Most respondents (55%) believe that the quality of air traffic in their country has improved or has remained at the same level in the last five years. Respondents mostly claim that the quality of air traffic in their country has improved in the past five years (36%), although this proportion is only slightly higher from those who don't know (32%). Almost every fifth respondent states that the quality has remained the same (19%), while 13% point out that the quality of air traffic in their country has worsened over the last five years (The Gallup Organization, 2014). Of all the members EU that participated in the survey "Quality of Transport", only Ireland (65%), Greece (61%), Cyprus, Malta (59%) and Croatia (51%) believe that the quality of air traffic has improved in the last five years. One of the important questions that were answered by respondents was related to opinions on the most important problem that affects the quality of air traffic in their country. They were able to specify a maximum three out of ten issues that affect the quality of this mode of traffic and 37% of respondents pointed to the ticket price.

Air pollution, lack of destinations from the nearest airport, the availability of public transport to and from the airport are mentioned as the additional major problems (total 16%). In contrast to these responses, the small number of respondents indicated airport services (3%), or the availability of facilities at the airports (6%) as the

most significant problems (The Gallup Organization, 2014). These results only confirm increasing trend of passengers choosing the services of low cost companies which has resulted in growing market share of the low cost companies on the airline market. This fact should not come as a surprise, because these airline companies are more flexible and are able to respond faster to customer demands and market changes. At the same time, one should not ignore the fact that they usually land at secondary airports that directly affects their accuracy that will also be addressed in this paper.

Research on "Passenger Rights" which was carried out in collaboration with Passenger Rights, Directorate-General for Communication and the Gallup organization initially considered the use of different transport services in the EU. Respondents were asked to choose from a list of various transport services they use, if any, in the last 12 months. Throughout the Member States, 78% of respondents have used at least one of the transport services in the last 12 months. The following answers prevailed: local public transportation with 59% of respondents (tram, bus, metro, train), while the national railway traffic (34%) and air traffic (28%) were selected to be widely used, although on a smaller scale (The Gallup Organization, 2014). When we compare these data with previous research we can see that the issue of public transportation is of great importance for efficient traffic in urban areas. The reason for this lies in the fact that the urban areas with efficient public transportation have the following benefits: reduction of environmental pollution and of traffic congestion in urban areas as well as the increase of the efficiency of transporting people from one place to another.

On the other hand, when we talk about competitiveness and quality of air traffic services, it is necessary to mention the world airline award. This award is based on the report of the world air companies that was made by the British company Skytrax, which is engaged in research and consulting in the field of airline industry. More than 18.85 million passengers and over 105 different nationalities took part in the study that lasted for 9 months from August 2013 to May 2014. The award was received and recognized throughout the world as the only truly global, independent report of passengers on flight standards which is known as Passenger's Choice Awards. The report was assessed by approximately 45 different aspects of passenger satisfaction regarding individual airline products and service standards showing evaluation of typical passenger experience in both airport and aircraft environments. Particular attention should be drawn by aircraft environment where the interior of the aircraft is purposefully analyzed as a product (ticket control, comfortable seats, cabin cleanliness, food, luggage, staff service etc (worldairlineawards, 2014).

For the first time, Airline Company Cathay Pacific is declared as the best in the field which shows the continuity in business quality. Evidently, in the top ten airline companies only two are from Europe, while the remaining eight are from Asia. These data show the trend of development of air traffic market, as well of other industries that accompany it, such as tourism, trade and the like. World Skytrax award was also introduced as a category for airline companies with the highest progress in the previous year. The desire was to reward the companies that have the goal to constantly improve their business. Spanish airline company Iberia is the only European airline company of the world top five companies.

As in the previous category, in this case the intention of Skytrax awards is to encourage airline companies to constantly improve their services. It can also be observed here that the airline companies from Asia are becoming global leaders in the field of air traffic. Issues such as: care for passengers, environmental protection, social responsibility, the safety of passengers, etc. are only a part of the areas the companies from Asia are constantly improving. With growing competition in the market, airline companies must take into account another factor that influences their competitiveness which is the accuracy of flight status data. According to the report, "On-time performance results for airlines and airports" made by the world leader in aviation sector information, the company OAG, the Latvian national airline air Baltic is the most successful company in the world. The report was prepared by the OAG flight status data analysis for the entire year of 2014 on a sample of 43.5 million flights.

The leader on the punctuality list comprised of 20 airline companies is the air Baltic alongside Hawaiian Airlines, Austrian Airlines, Spanish Iberia and Norwegian Air Shuttle. According to the OAG management, Air Baltic's punctuality of 94.9% means that 9 of 10 flights arrive on time, which is an excellent result and far ahead the competition (OAG, 2015). Air Baltic was the first airline in Europe to introduce on-time arrival guarantee in early 2009. This insurance allows air Baltic passengers to make the rare delays less inconvenient (air Baltic,

2015). This airline company pays special attention to their customers in case of delay by giving the passengers additional bonuses.

The abovementioned research and analysis we have given point to the fact that the issue of service quality in traffic companies is quite complex and influenced by various factors. When you observe Skytrax and OAG analysis you can see that only Iberia is on the both lists as a company which advanced the most in 2014 and as one among the 20 companies on the punctuality list. However, taking care of end-users is a category identical to previous researches and awards together with creating new mechanisms for continuous improvement of service quality in order to increase competitiveness.

CURRENT POSITION OF DOMESTIC TRAFFIC COMPANIES

Most domestic traffic companies were in the period of transformation throughout the long period of time and as a result their competitiveness on the market has decreased. Questions of quality of traffic services and customer satisfaction still continue to present an issue that the majority of traffic companies inadequately administer. The question of customer satisfaction is still not adequately addressed by the domestic traffic companies. The reason lies in the fact that many of them still hold the monopoly position on the market thus still having no need to consider the customer satisfaction. Also, inadequate and insufficient investing in certain domestic companies, such as Serbian railways, has resulted in establishing large, dysfunctional and uncompetitive systems which now cannot be managed by the state. However, in areas of market liberalization, domestic companies have demonstrated a high degree of interest for the users. As a result, these companies, such as Telekom Serbia AD and PTT Serbia, became competitive both on the domestic and regional market and ready for new investments and development of new services (Bogetić et al, 2013).

Telecommunications sector has constant growth which further affects the companies that are working to improve their comparative advantages. As a result, Telekom Serbia AD in order to be competitive on the market has to think about the constant introduction of new services to its customers. Telekom Serbia AD, has realized the importance of customer satisfaction on time and has successfully prepared for the period of market liberalization in the telecommunications sector. Next to the dominant position they accomplished in the fixed telephony in the past, the company has also decided to make the customers and their satisfaction a key element of their future business policy (Bogetić et al, 2014).

As we previously stated, only a few traffic companies managed to get out of the crisis that has been going on for the last 20 years. Air Serbia and airport Nikola Tesla are regarded to be good examples of this thus demonstrating the airline traffic market potential on the domestic market. Also, the arrival of low cost companies should not be ignored as they have improved the level of service for the domestic users thus forcing the big companies to improve their offers. As a research leader in the field of air traffic, Skytrax has been publishing researches related to airline companies, airline alliances, airports and air traffic suppliers worldwide for years (worldairportawards, 2014).

The award for the best airport in the world represents the most prestigious award in the airport industry and is chosen by buyers in the biggest annual global airport satisfaction report. Research and award process are independent and confirmed to be without any interference from the airports. This award (granted in 20 categories) is the global benchmark of airport excellence and is widely known as the Passengers Choice Award. Our biggest airport, Nikola Tesla, is the 6th airport on the Skytrax list for Eastern Europe. This is a good indicator that our company is on the right track. Nevertheless, it is essential that the airport Nikola Tesla continues to develop existing and to create new services in regard to greater customer satisfaction and business excellence.

When we talk about other traffic companies, we must give emphasis to Fiat Automobiles Serbia (FAS), which currently represents the largest domestic exporters. In fact, in January 2015, according to the Ministry of Finance of the Republic of Serbia, this company had the largest export of 81.7 million euros, whereas in 2014 exported cars were sold for 1.36 billion euros. Nevertheless, it should be noted that in addition to high export this company provides another benefit for the domestic economy by networking with a chain of domestic and foreign companies working on the Serbian market. Following the example of Fiat coming to Kragujevac other foreign investors have set up their production facilities in Serbia. Also, this has motivated small and medium size companies in the field of automotive industry to join the cluster (cluster AS) thus meeting the requested requirements (Implementation of ISO / TS 16949).

INFRASTRUCTURE AS A PREREQUISITE FOR IMPROVEMENT OF COMPETITIVENESS OF TRAFFIC COMPANIES IN THE REPUBLIC OF SERBIA

In order to use its existing economic potential, the Republic of Serbia needs to improve traffic infrastructure. The Government of the Republic of Serbia tried to point out the importance of improving infrastructure, not only for the traffic system, but also for the local economy through the *"Strategy of railway, road, water, air and intermodal transport from 2008 to 2015"* and *"General Transport Master Plan in Serbia"*. The aim of the General Transport Master Plan in Serbia (RS GMPS) is to contribute the expanded, improved and safer traffic networks, which will attract new investments in the poorer regions, improve the quality of life in Serbia, promote the trade and contribute to the improvement of relations with neighboring countries (Ministry of Infrastructure).

The importance of the Master Plan for Transport in Serbia lies in the fact that it is the basis for projects that will be funded by the pre-accession funds of the European Union (EU) as well as from the other sources of funding in future. Furthermore, the master plan has the ability to obtain the users with comprehensive GMPS in line with the traffic strategy and official agreements in the field of infrastructure.

A lot of projects for all types of traffic (road, air, intermodal, maritime) were created thanks to the GMP RS but unfortunately the implementation remains very poor that additionally affects the competitiveness of domestic traffic companies. The poor position of the Republic of Serbia in the field of infrastructure can be seen in the annual report of the Global Economic Forum for 2014-2015 year, being 77th position on the list, which is among the countries in the region (Western Balkan countries) only better than Macedonia and Bulgaria. The first three positions in infrastructure development in the region are held by: Slovenia (35), Croatia (44) and Hungary (50). The consequences of unfinished infrastructure projects, such as Corridor X, are still apparent in the domestic economy. The additional problem is the fact that neighboring countries, such as Bulgaria, are working on the development of a network of highways thus creating higher traffic frequency through its territory as well as significant foreign currency inflow.

The issue of low cost airline companies and their engagement in the Serbian market is rather variable. In addition to the initial competitiveness growth of low cost airline companies (according to some sources eight companies were engaged), at first, the arrival of Air Serbia initiated withdrawal of certain low cost airlines that eventually resulted in total withdrawal of the low cost airline companies from Serbian market. According to statements of their representatives, the reason for this was unequal distribution of resources of airport Nikola Tesla in comparison to the benefits of Air Serbia and low cost companies. The solution could have been found by establishing the Batajnica airport as a secondary airport, which was one of GMP RS projects. Moreover, investments in the traffic infrastructure would be essential if this airport was established as a secondary airport. One of the main obstacles concerning this airport is the fact that it is inadequately connected through other modes of transport with the city of Belgrade, or other destinations. It is essential that an airport is connected to the public transportation, taxi service, railways, because only in this way it can achieve the competitiveness and attract the passengers.

CONCLUSION

Competitiveness of traffic companies in the current market conditions poses a serious challenge for business owners as well as for the national economy. Under the influence of globalization, service users are becoming more selective, thus affecting the transport companies to continuously work on improvement of transport services. The traditional function of traffic companies which exclusively includes the transport of passengers from one destination to another is becoming unsustainable on the market. As a result of the new economic developments in the world, new markets and regions that have been investing considerably in development of various modes of traffic and infrastructure (usually air traffic and airports) have appeared, thus trying to change the way of doing business in this area.

Traffic companies nowadays have to offer to their existing and potential passengers more than just transportation, but also services such as traveling comfort, good ticket price, good connections with other modes of transport, accurate data of the flight status, as well as good infrastructure. In the recently created market conditions, airports and railway stations, as well as other similar infrastructure facilities hold much greater role than to transport users. Airports offer additional services in order to meet the requirements of

passengers. The management of Amsterdam Schiphol Airport has realized in time that they can earn significant revenue from transit passengers who spend a certain period of time to at the airport.

The studies given in this paper indicate that the traffic companies are ready for the challenges of the traffic market. Successful airline companies are constantly working to improve the quality of their business through better communication with service users, as well as by implementation of new management concepts such as quality management system (QMS), environment management system (EMS), occupational health and safety management Systems (OHSAS), integrated management systems (IMS), and socially responsible business. By doing this, traffic companies are able to respond to the new market demands in connection to the following issues: road safety, customer satisfaction, concerns about the environment and pollution reduction (noise reduction, decrease of carbon dioxide emissions at airports and cargo hubs, waste and recycling, energy efficiency, etc.), accountability towards the working environment (various humanitarian actions and support the youth and children).

The competitiveness of local traffic companies is still at the suitable level, which is a serious problem for the further development of this sector. However, the companies such as Telekom Serbia AD, JP Post of Serbia, Fiat Automobiles Serbia, Serbian Air, airport Nikola Tesla represent good examples of improving the operations quality.

The reason for the insufficient development of traffic services in local traffic companies lies in the fact that most of them have not yet undergone the ownership and organizational transformation, as well as in the fact that HR and technological structure are unfit to answer the needs of modern market. This is especially true of Serbian Railways which have been a major problem in the traffic sector of the Republic of Serbia. Since the traffic infrastructure is in a very poor condition neither can certain modes of transport be fully functional nor does the procurement of modern traffic means make sense. (eg Serbian Railways). Thus, it is necessary to devise models for financing of traffic infrastructure in order to speed up this process. One of the ways is a public-private partnership (PPP). Furthermore, use of modern management concepts that can improve the business, make it more efficient and productive as well as establish a better relationship between the customers and companies are hardly used by local traffic companies.

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KEY FACTORS OF IMPROVING BUSINESS AND COMPETITIVENESS OF DOMESTIC ENTERPRISES

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ABSTRACT

This paper deals with analysis of factors of improving business and competitiveness of domestic enterprises and measures for their improvement. On the basis of an analysis of the competitiveness of the Serbian economy and the research conducted among managers of Serbian companies were found to be the key factors that need to be reviewed and improved in order to achieve a higher level of competitiveness of the business. Particular emphasis in the analysis of domestic companies is placed on knowledge and quality as key factors of modern business. The implementation of quality systems is the road to the global market, and improving the knowledge of firm support for its implementation. The research results indicate how many companies recognize the importance of knowledge and how they prepared for the training of their employees and whether their businesses based on the implementation of international quality system.

Keywords: knowledge, quality, improving business, competitiveness.

INTRODUCTION

In the paper is presented the research that deals with the analysis of the impact of knowledge and quality aspects on the promotion of business operations and competitiveness of the companies in Serbia and their mutual relations. Knowledge was always at the heart of the economic growth (Kahin, Foray, 2006). The importance of knowledge, as the key factor of competitiveness grows more and more. The new paradigm of the management of the human resources is turned to the creation of the corporative, productive, flexible and innovative working environment which acknowledges the human resources value in the weighing of the buyers' needs and realization of the strategic business goals (Bhat, Shridhara, 2010). The research is directed to ascertain how much companies comprehend the importance of this resource, how much they care for the development of their employees and promotion of their competences. The education for quality and its promotion are without any doubt necessary, to be parallely observed. The implementation of the quality standard in a company does not enable the improvement of the business performances and does not bring significant effects, if one does not work at the same time on the training and education of the employees, and the consciousness development of the quality accomplishment as the common goal. To improve the quality of business enterprises, the state plays a crucial role, creating a stimulating business environment and providing quality educational structure of the nation.

COMPETITIVENESS OF SERBIAN ECONOMY

The Serbian economy was faced during previous years to the numerical difficulties. It entered the transition process with delay, so the execution of reforms was evident only after 2000. year. All that caused many problems in foreign trade operations and economy of Serbia, and those consequences are present as well nowadays. The obsolete machines and technological processes, knowledge absence and inadequate use of modern methods and techniques of management, resulted with low quality of business operations. It endangered companies' competitiveness at the international market. The problems of business operations of the companies, together with long - standing sanctions, war events and political fluxes and refluxes caused the low competitiveness of the Serbian economy. According to the report of the World Economic Forum on global competitiveness (WEF) for 2014-2015. years (Schwab, Sala-i-Martin, 2014), Serbia occupies 94th place of 144 countries that entered this year analysis. This result demonstrates the growth for seven positions in relation to the previous years, and presents the level of historical maximum from 2008, which Serbia realized on the eve of the first wave of crisis (Schwab, Porter, 2008). After a difficult period for the country, reforms and integration into the international flows business have led to improvements that were evident 2008. The highest value of 3.90 IGK Serbia has made on the eve of the first wave of the crisis in 2008, and already the next, in 2009, due to the negative effects of the global financial crisis, the value of IGK noticeably dropped to 3.77. After this period, followed by a gradual recovery to the 2013 value IGK again descended to the level from 2009 in order to 2014, returned to the level of the historic high in 2008. The value Serbia noted presents the result of the actual perception of the business world on the country capacities to provide the stable growth and development of economy.

THE RESEARCH QUESTIONS AND OBJECTIVES

In order to recognize the business environment in Serbia and the relations which the companies have to their employees, it is necessary to check the attitudes and opinions of the managers in the Serbian companies on the influence of knowledge and quality on the enhancement of business operations and competitiveness. In that point was conducted a research. The research was organized in the period from the 1st of December 2013 year. to the 1st. of May 2014 year, in the Republic of Serbia. The data were collected by the electronic way with the help of e-mail survey and by surveying in the field. For the research point was created the methodologically adapted questionnaire. Besides general data it contains the questions connected for the level evaluation of the business operations of the company, the readiness of the company to invest into knowledge, the training importance and employees' development and the rating of the considered quality aspects. The targeted group in the research were the companies of the production or service function, which do their business on the territory of the republic of Serbia, whose business operations are based on the application of the quality standard (in the first place ISO 9001, and then as well ISO 14001, OHSAS 18001, HACCP and others). The research objective is to establish the relations among the quality aspects on the business operations level and competitiveness, and the relations among the readiness of the company to invest into knowledge, training and development of employees on the improvement of the quality aspects.

THE RESULTS OF RESEARCH

Based on the results of research conducted in enterprises in Serbia, comparing with previous research conducted in this country and the region, as well as the experiences of developed countries, we would like to examine the role of knowledge and quality in performance improvement and competitiveness. Developing countries and small economies, such as Serbia, they must fight for their economic growth through investment in education. In today's knowledge economy of each country must be prepared to educate and train at least a third of the working population, that would have the potential for competitiveness. Investing in people is a key factor in growing and instrument for ensuring economic development. The quality of the education system is one of the most effective levers that the state has in its power to promote growth and development.

The strong link between the education system and economic development is confirmed by the fact that the countries which in the assessment of the World Economic Forum are at the top of the list competitiveness of its success signed on knowledge. Countries such as Germany and the United States, were first raised the level of education of the population, followed by a strong economic growth at the end of the nineteenth century. These countries today are investing heavily in education. Higher education is the best American industry, where he established the best cooperation between industry and educational institutions. America spends more on research and development activities of Europe and is among the countries with the highest spending on education as a percentage of GDP. Creating a quality education system is a key factor in improving the quality of business. In developing countries, such as Serbia, achieved growth and economic development necessary separation greater percentage of gross domestic product on education. The state has a crucial role to play in this and must take a series of measures that would improve the current situation in its educational system.

Results of research conducted in neighboring countries indicate that those facing similar problems. Namely, research (Union of employers of Montenegro, 2013) shows that companies in Montenegro are considered formal and informal relationships with local schools and private providers underdeveloped, while the companies in Slovenia (Alič, Rusjan, 2009) cooperation with professional companies, institutes and universities in the transfer of knowledge and best practices in the use of only 36.91%. The situation is better in Macedonian companies (Prodanovska, Mitreva, 2010), who believe that the quality of employees owe educational systems which have a tradition and quality, and recognized experience in companies. Surveys conducted among Croatian enterprises (Marijanović et al, 2010) show that 55% of them have an annual program of education of employees. In addition to the quality of the educational structure, which aims to provide professional and skilled workforce, companies must provide ongoing training and development of employees. Knowledge is a key factor in modern business. We are the witnesses of the quick changes, new technological solutions and knowledges that every day more and more quickly become obsolete. Only by improving and creating knowledge as a resource, it is possible to establish up with the competition and keep track of them.

The importance of knowledge as a key factor of business improvement and competitiveness, has been recognized by managers in the Serbian companies, as confirmed by the results of the research. As the basic factors of business improvement respondents as the most important stated the following: training of employees 23.2%, improving productivity by 18.2%, the implementation of quality management systems 15.9%. As the most important elements of the development of competitiveness of the company are allocated as follows: permanent training of employees and managers 24.1%, standardisation of business quality based on international standards at 19.6%, buying new equipment and modern technologies 18.3%.

Compared with the results of research (Bešić, Đorđević, 2009) that have been engaged in this issue, as well as limiting factors of development of competitiveness were found to be: lack of knowledge and obsolete equipment and technology. In addition to these factors, which are also allocated to these research, respondents are greatest importance gave the following factors: the lack of financial capital is 19.4%, the impact of the global economic crisis on the domestic enterprises 19.1%, the business environment that is not conducive to the development of entrepreneurship and investment 16.1%. A similar studies conducted earlier in enterprises in Serbia show that these are the same factors improving business competitiveness and, where appropriate: the advancement of knowledge, quality and productivity of the business, the application of modern methods and techniques of management and marketing concepts. This points to the fact that the company has for many years faced the same problems, and that it is essential that a company working to improve these factors in order to ensure better competitiveness on the market.

The competitiveness of enterprises depends on the business environment in which they operate, and the above factors indicate that companies in Serbia do not have enough supportive environment. Also, during last few years, Serbian enterprises have been, in unenviable position on international market, while the effects of global economic crisis have further contributed to the weakening of their

capabilities. Serbian products are lagging behind in competitive struggle due to lack in quality, high price, unattractive packaging as well as obsolete technology.

To enable the promotion of the quality of business operations and competitiveness of its companies, Serbia has to establish the market environment that would enable to those companies to do successfully their business. The markets of the countries in transition, as Serbia is as well, become more and more the important factor in the creation of the world economic system. The attractiveness of the Serbian market does not originate so much from its potential, but from its geopolitical position and the role it has in connecting the other markets of the countries of the Central and Southeast Europe. By investing in Serbia through the strategic partnerships and by attracting of the direct foreign investments, Serbia would strengthen its competitive position in relation to the countries in environment. It would be reflected as well on the quality of business operations and competitive position of its companies.

In addition to knowledge as a factor of business improvement and competitiveness, respondents gave great importance to the quality management system. To be a company involved in international flows of business it is necessary standardization in quality of operations based on the application of international standards. Integrated management systems are the next step towards improving the business through quality, while the application of TQM concepts and achieving business excellence as a goal to strive. The implementation effects of the quality system on the business operations are confirmed in many researches. They show the strong impact on the improvement of the business performances, production quality and total competitiveness (Ruzevicius et al, 2004) while according to the other researches (Saizarbitoria et al, 2006), there is observed greater participation of the employees and their motivation, as well greater clients' pleasure. By improving business performances, the company becomes more competitive through the improvement of quality, delivery, flexibility and reducing expenses (Bruce, Chen, 2007). Of all the questioned enterprises 45,7% owns one certificate, 25% of them own two certificates, 22,1% owns three certificates, while 7,1% owns more than three certificates. All companies have ISO 9001 standard. Integrated management system also own ISO 14001, OHSAS 18001 and HACCP, as well as many others depending on their field of work (ISO 22000, ISO 27001, ISO 17000, ISO 17025, etc.). Although most respondents companies has only one standard, respondents to the question whether it is necessary the existing system in the company upgraded yet some other standard, a large percentage of 67.1% pleaded negative. When it comes to the elements and architecture of TQM concepts, research has shown that 40.7% of respondents familiar with this concept, while 59.3% responded negatively. Respondents were largely self-trained about the elements and structure of TQM concept, through magazines, books, the internet and other sources, while a very small percentage attend training of TQM.

The direct link between knowledge and improving the quality and impact of their work on improving the competitive position of enterprises in Serbia, was confirmed by the responses indicate that the effects are achieved by introducing quality systems in the enterprise and what is necessary to change the business Serbian enterprises to improve competitive position in the international market. As the most important effect of the introduction of quality systems, respondents cited improving competitive position. As the key factors is necessary to change the business Serbian enterprises to improve their position in the international market, singled were: development of awareness and involvement of all employees in the creation of quality, continuous training and development of employees and changes in philosophy and way of doing business.

CONCLUSION

The cited research results indicate that with the improvement of quality aspects in company comes as well the improvement of business operations and competitiveness. If one wants that the management system in company achieves the real effect, one needs the adequate role of human resources. Training and informing the employees with the demand of quality standards in companies in Serbia is being conducted, but not enough and in proper way. Although the great per cent of companies declared that

they execute the training programs and develop with the employees the consciousness of quality reaching, the very essence and philosophy of quality is not fully accepted in Serbian companies. Quality must become personal responsibility of all the employees. Managers in companies have to motivate workers to tend through team work towards quality and to carry out constant enhancements. The very implementation of the quality system into company will not conduce the improvement of business performances if there are no substantial changes in philosophy and method of business operations. The development of conscience of attaining quality in Serbian companies and changes in the method and philosophy of business operations represent the connection between knowledge and quality as two substantial sources of competitive advantage and enhancement of business operations. Only with the adequate training and education on quality, by changing change of former way of business operations and by acceptance of team work as the basis for quality achieving, Serbian companies will accomplish the proper effect of implementation of the quality system, and in this way to provide higher level of business operations and competitiveness. By improving these factors and establishing appropriate links between them, with the support of the state and creating an enabling business environment, Serbian companies will become a knowledge-based enterprises, high-performance business, which will enhance their competitiveness in the global market.

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BUSINESS QUALITY IMPROVEMENT AS KEY FACTOR OF COMPETITIVENESS OF SERBIAN COMPANIES

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ABSTRACT

The basic imperative of modern economy and crucial global competitive factor lay in continuous improvement of knowledge and work productivity. The application of quality management system is an essential precondition for the success of business in general. Standards and the best practices are the way to excellence, but in the long term. Serbia companies have had a problem with the competitive ability in international level for many years. Insufficient investment in quality has resulted in extremely poor competitive position of the domestic economy. To make local companies become competitive at the international level, it is necessary to alter the ways of thinking and adopt modern world achievements in the field of quality, as integrated management systems.

Key words: quality, competitiveness, management, productivity, knowledge.

INTRODUCTION

Competitive conditions have changed, and in terms of elements that enable companies to successfully fight on the market. Global competitiveness is becoming increasingly intensive, noticeable and offensive. The current moment of global economy can be marked by slow but sure rise of enterprises from newly industrialized countries, such as China, India, Brazil, South Africa, Turkey, etc. Enterprises from these countries are becoming global competitors. Their competitive ability is based on lower business costs, first of all because of lower labour costs, but also for their readiness to accept foreign investments and the most modern methods and management techniques.

The world economic crisis and its long lasting effects emphasize the need for permanent improvement of knowledge – in recent years only the best, no matter where they come from, can win. The winners are usually the companies which have performed optimization between the price and the quality on the grounds of reducing costs and permanent productivity increase by applying standardized quality management concept and intensive innovativeness. Quality, product differentiation and integrated marketing communication represent a key element for making a successful trade mark with stable market position. Quality is becoming a primary development aim materialized through achieving business excellence and top class of products and services. Quality is imperative, and it is based on the continuous improvement of business productivity. Quality is given by the management of the organization as a market concept, which creates conditions for achieving business excellence. Improving the quality of business operations is the basis for the improvement of other factors that affect the competitiveness of companies internationally. In addition to working on the implementation and development of the concept of quality, the company that wants to achieve business results based on the actions in the international arena, has to improve the knowledge of their employees, particularly

executive management, as well as to apply modern management techniques. Chinese and Indian companies are such examples. This implies the necessity for developing new business models aimed at establishing competitiveness on the global market.

The main problems that arise in the process of organizational management in the countries in transition are as follows: failure to adopt modern management logic, lack of understanding of the process of an integrated approach to organizational management, marketing misconception, inadequate treatment of investment in marketing, organizational structure problems, insufficient speed of adoption of new trends, methods and techniques in management. Domestic companies are still in the initial stage of implementation of modern management techniques and principles, not all of them, but only those who have successfully completed the process of transformation. When it comes to the competitiveness of domestic enterprises we have to say that it is at a very low level. Insufficient applications of knowledge, low technological level of enterprises, unproductivity and inefficiency are just part of the problem that domestic companies face.

COMPETITIVENESS AND GLOBAL MARKET CONDITIONS

The competitive ability of a company in the modern business conditions is hard to achieve and easy to lose. The reason for this attitude is the fact that the rapid technological advances enabled the technology to become available to everyone in the world under reasonable terms. The problem of competition and the establishment of a new model of competitive advantage is essentially a problem that is only further demonstrated during the global economic crisis. New realities require new organizational and management skills. In addition, the global economic crisis has highlighted the fact that it is necessary to create new business models. The challenges which follow establishing, keeping and developing competitive abilities on the global market are much greater today than 20 years ago. The following reasons are considered to be crucial:

- New companies are mostly based on services,
- New companies are mostly from the field of knowledge economy,
- The change of techno-economic paradigm causes considerable changes,
- The number of allowed mistakes is far smaller than before,
- The new paradigm is, in great extent, in the phase of pre-standardization, which makes choosing the winners impossible, (Reinert 2010).

In modern business conditions the following business functions with the strategic role are particularly emphasized in organizational management because of their market orientation: marketing, quality, research and development, (Đorđević and Čočalo, 2007). The company's growth, development and success are determined by tight interdependence of these three functions and their synergistic effect. Business excellence implies that businesses constantly work on the implementation of quality of business organizations based on the increase in productivity and skills of each employee. Business excellence is the development of market economy, with the user in focus of the organization, permanent improvement operations based on knowledge and productivity of labor and business in line with the requirements of the various interest groups in the region.

Modern understanding of management is influenced by the global economic crisis in 2008. Years of appropriation of management techniques at the moment global crisis could not provide practical answers to the question of market survival. The problem lies in the fact that large corporations were unwieldy bureaucratic, burdened with unnecessary administration and turned only its own profits. This situation might not take long, and that did not happen to the global economic crisis, it would become a problem expressed in terms of the lack of competitiveness of companies from developed countries to the industrialized countries of the competition - only companies from industrialized countries during this crisis showed that the vitality. Corporations are doing business in the global economic crisis. In times of crisis, maintaining stable financial flow is important. Cash is the most important - so it is well to keep cash and reduce costs. In the long term, it is necessary to preserve human resources in order to overcome the crisis. Countries that are competitive are also the countries where the awareness of the

need for continuous quality improvement of business has been developed for many years. Industrialized countries of the world such as China, India and Brazil are putting great efforts in spreading the concept of sacrificing business practices in order to create conditions for improving the competitiveness of its economy.

Table 1: Ranking of the top 10 countries in the world according to the WEF Report 2014.

Country	Rank in 2014-2015	Rank in 2013-2014
Switzerland	1	1
Singapore	2	2
USA	3	5
Finland	4	3
Germany	5	5
Japan	6	9
Hong Kong	7	7
Netherlands	8	8
Great Britain	9	10
Sweden	10	6

The Global Competitiveness Report 2014-2015, (2014,) World Economic Forum, 2014, pp. 13.
http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2014-15.pdf

THE ANALYSIS OF THE ASPECTS OF COMPETITIVENESS OF SERBIAN COMPANIES

Most domestic companies are insufficiently competitive on the global market. Only a few local companies can successfully perform in the regional business environment. Global analysis of innovation and competitiveness points the embarrassing facts when it comes to companies from Serbia. The lack of business productivity and innovation of local companies comes not from technological aspects of the business, as much from a lack of productivity knowledge of local executives. Since the early 1980s domestic economy has had problems with improving quality and productivity. The productivity problem did not appear in domestic economy only in the time of transition but it was present before, as well, (Đorđević at all, 2012). These problems were the result of inappropriate business performance which was not based on market principles. Certain products had unjustifiably high prices which were not competitive on the world market. Therefore, Serbian companies reduced export prices in order to gain competitiveness on the world market, while domestic customers had to pay this cost of unproductiveness through high prices. Old technology, poor quality, unattractive packaging and high prices are thus the main reasons for uncompetitive appearance of Serbian products on international market.

Technological equipment also represents a significant element of productivity rising. The average machine age in Serbia is about 30 years. Compared to the situation in the region, this represents the approximate 12-year obsolescence. Serbian economy is, technologically, 29.5 years behind European Union, which was confirmed on the representative sample of 154 small, medium and big companies within six economical branches with similar production programs. The comparison was carried out in textile, food-processing, pharmaceutical, machinery, chemical and building material industries. Austria was taken as a criterion because of its similar natural, social and demographical characteristics in relation to Serbia (Serbian chamber of commerce, 2012). The greatest obsolescence was noticed in textile companies (35 years), then in machine industry (34.5 years). Pharmaceutical companies were best ranked with 21 years' delay. Considering the regions, the equipment, tools and other production means are most obsolete in south Serbia (41 years) and the least in Backa (18.5 years' delay). In Belgrade the delay is 20.5 years. The most productive companies are those with the equipment and machines of the highest quality. These are pharmaceutical companies, some companies from the field of food processing and companies with foreign capital, which is totally 8.5 to 9% of the whole Serbian industry. Metal industry is in the worst situation, with 35 year- old- machines in average, and reject of 36%, which is more than double compared to the average in EU countries.

According to the list of the World Economic Forum for 2014, Serbia ranked 94th place out of 144 countries that were analyzed. Serbia was on the 95th place on the list in 2011 and in 2012, and on the 101st place in 2013. An interesting fact is that this year, Serbia found itself in the company of NDR Lao (93th place) and Kambodia (95th place), Zambia (96th place), and Albania (97th place). Table 4 provides a ranking of the countries of the Western Balkans in 2010-2014.

Table 2: Ranking of the country of the Western Balkans towards competitiveness in 2010-2014.

Country	Rank in 2010.	Rank in 2011.	Rank in 2012.	Rank in 2013.	Rank in 2014.
Slovenia	45	57	56	62	70
Montenegro	48	60	72	67	67
Croatia	77	76	81	75	77
Macedonia	79	79	80	74	63
Serbia	96	95	95	101	94
BiH	102	100	88	87	-
BiH	102	100	88	87	-

The Global Competitiveness Report 2014-2015, The Global Competitiveness Report 2013-2014, The Global Competitiveness Report 2012-2013, The Global Competitiveness Report 2011-2012, The Global Competitiveness Report 2010-2011, The Global, World Economic Forum, 2014.

Among the countries in the close environment, Hungary is on the 60th place, Bulgaria is located on 54th place, Romania is located on the 59th place, Greece, as already mentioned, is located on the 91st place and Albania is on the 97th place. As can be seen from Table 4, Serbia has had a problem with global competitiveness in the last five years.

Table 3 provides a ranking of the countries of the Western Balkans towards competitiveness indicators. The basic requirements of competitiveness of the country consists of the following indicators - institutions, infrastructure, macroeconomic environment, health and primary education, higher education and training, goods market efficiency, labor market efficiency, the efficiency of capital markets, technological capacity and market size. As can be seen, Serbia is slightly better when it comes to business efficiency, than when it comes to innovation.

Table 3: Ranking of the Western Balkan countries to indicators of competitiveness in 2014.

Country	Rank in 2014. In sum	Rank to primary requirements	Ranking by business efficiency	Ranking by innovation
Slovenia	70	49	64	50
Montenegro	67	61	73	77
Croatia	77	63	68	87
Macedonia	63	64	69	76
Serbia	94	101	80	121
BiH	-	-	-	-

The Global Competitiveness Report 2014-2015, (2014,) World Economic Forum, 2014.

According to the World Economic Forum, all countries in the world are divided into five groups. The first group consists of countries with its economy based on resources and it consists of 37 countries. The third group comprises countries whose economies are based on the development of business efficiency (this group consists of 30 countries) and the fifth group consists of countries whose economies are based on the application and development of innovative activities (this group consists of 37 countries). Second group consists of countries in transition from the first to the third group (this group has 16 countries) and the fourth group consists of countries in transition countries from the third to the fifth group of countries (in this group consists of 24 countries). Serbia is located in the third group of countries (the economy keeping efficiency), together with Montenegro, Romania, Bulgaria, Macedonia, Bosnia, Albania, Indonesia, South Africa, and so on. Croatia is in the fourth group (transition from efficiency to innovation), while Slovenia is located beside the fifth group countries

that stem (economy driving innovation and sophistication). The fifth group consists of mainly the most developed countries of the world.

The World Economic Forum provides an analysis in the field of sustainable development, from the aspect of social sustainability and viability of protection of environment (Table 4 for the Western Balkan countries). The main pillars of the social indices of sustainable development are: income, youth unemployment, access to sanitation, access to potable water, approach to health services, social welfare, participation of underground economy in the economy, social mobility, the overall unemployment rate. The main pillars of the index in Accounting for just protecting the environment includes: the power of legislation, the protection of land, the number of ratified international protocols and agreements, the availability of water for agriculture, emission exposure to carbon dioxide ratio for fishing, the concentration of particles in the air quality of the environment.

Table 4: Ranking the Western Balkan countries by factor analysis of sustainable development in 2014.

Country	Ranking by social sustainability	Ranking by sustainability in the field of environment	Change in relation to previous period
Slovenia	4,52	4,78	Slight increase
Montenegro	4,08	4,38	Stagnation
Croatia	4,06	4,21	Stagnation
Macedonia	4,13	3,66	Stagnation, Slight decrease
Serbia	3,68	3,86	Slight decrease, Stagnation
BiH	-	-	-

The Global Competitiveness Report 2014-2015, (2014,) World Economic Forum, 2014.

The success of the company is significantly associated with incorporating the concept of quality which enables competitive advantage. The three pillars of business excellence are meeting customer needs, improving business productivity and corporate social responsibility (Đorđević and Bogrečić., 2008). Application of IMS concept can be very important for companies from countries in transition. For a company that wishes to achieve business excellence goals at the current development level, it is completely justified that it determines to integrate certain management systems defined by individual standards.

Tabela 5: Number of certificates of standards standarda ISO 9001 and ISO 14001 in region in 2013.

Copuntry	ISO 9001	ISO 14001
BiH	794	141
Crna Gora	118	24
Hrvatska	2.636	828
Makedonija	399	131
Slovenija	1.933	468
Srbija	2.366	762

ISO Survey of certification 2013 – Industrial sector, ISO, 2014., www.iso.org

The majority of companies which introduced quality management system belong to the group of large companies. The number of certificated organizations in Serbia is not satisfied in comparison with number of certificated organizations in South-east European contries, as Hungary (7.266 ISO 9001 certificates), Bulgaria (6.090 ISO 9001 certificates), Romania (18.399 ISO 9001 certificates) and Greece (4.874 ISO 9001 certificates).

CONCLUSION

Innovations, flexibility and productivity are guidelines for the future development in the field of competitiveness and organizational management. Knowledge is the main driving force of permanent

productivity growth in the companies from these countries. Companies from transitional countries are faced with numerous problems – among them the most important are those related to improving knowledge and organization. To achieve commercial success of the company it needs to have a competitive advantage in the form of lower costs and/or product differentiation, with a long-term strategy of providing products and services of high quality and continuous innovation. The main problem is the lack of competitiveness of domestic enterprises, which occurs as a result of poor productivity performance and the lack of implementation of new technologies and knowledge and inadequate application of the concept of quality management. Domestic companies have to base the internationalization of business on the application of international experience, international standards and internationally accepted business practices. Therefore, it is necessary to apply those management techniques that emphasize long-term commitment to competitiveness, as well as quality management system and integrated management systems.

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THE ADOPTION OF QUALITY ASSURANCE SYSTEMS IN SERBIAN AGRO-FOOD INDUSTRY

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ABSTRACT

Market requirements in the field of agro-food industry which have become as a result of intensified competition, have contributed to the change in business philosophy of food companies. Questions of food safety, standardization and quality of food, provide challenges for each food company. Companies need to respond to these challenges if they want to survive in the market. The purpose of this paper is to analyze the current situation in the implementation of quality assurance systems in the agro-food industry, where ISO 22000 and GLOBALG.A.P are recognized as promising ones. Special attention is addressed in two ways: (1) Comparison of the application of quality assurance systems, and (2) Overview and opportunities for the Balkan countries and, among them, particularly Serbia, in relation to its EU food safety schemes certification harmonization efforts.

Keywords: quality assurance, agro-food industry, competitiveness, Serbia.

INTRODUCTION

In recent years in developed countries a trend related to production of healthy food has been developed. European Union (EU) pays a great attention to safe food which can be illustrated by EU Council and Parliament Directives. In Introduction part it is written that (Varga et al., 2006, p. 12) free flux of safe and healthy food is a crucial element of interior market (EU) which significantly contributes to health and welfare of the citizens as well as to social and economic interests.

Food production, distribution and consumption have a significant influence on the environment (e.g. great energy and material demand, emission of CO₂, increased needs for agricultural areas), but they also have a serious social, economic and medical consequences (e.g. health risks, increased obesity, hunger). From the aspect of sustainability, there have been many changes in behavior of people in developed countries which results in increased energy consumption, agricultural areas and other resources. Therefore, the trend is being developed in those countries in relation to food consumption which can be observed through two elements: its influence on the environment and health.

However, beside consumers, food industry as well has begun changing its relationship towards food production. The reasons for such relations can be found in the following trends:

- Changes on food markets which are more and more oriented towards safe and healthy food;
- Greater role of primary food production in the process of safe food production;
- Increased care of the society related to environmental protection through reduction of pollution, energy efficiency increase and usage of alternative energy sources;

- Technological changes in food production which enable better food processing, as well as more secure and safer delivery through logistic chain;
- New legal regulations demanding production of safe and healthy food without using chemical supplements;
- Enlarging wholesale chains which results in increased competitiveness.

In Rural Development Programme from 2014 to 2020 European Union obliged all countries members to finance directly farmers with 30% of incentive funds which would be invested in implementation of sustainable agricultural methods (ecologically acceptable). It means that if you deal with environmentally friendly farming you will not have to change the way of work in order to adjust your methods to environmentally friendly ones. There is also a new support programme for the current farmers who want to move on to ecological farming (within Common Agricultural Policy - CAP). All countries members can offer incentives to environmentally friendly farmers via various types of flexible financial options which will support, for example, cooperation in food production chain for the sake of supporting innovations, development of plans related to quality of agricultural products, making groups or producers' organizations, etc. (Paradić, 2015).

IMPLEMENTATION OF QUALITY ASSURANCE SYSTEMS AND COMPETITIVENESS OF FOOD INDUSTRY

Thanks to globalization and market changes that are consequences of this process, production, processing and trade of agricultural products have undergone certain changes mostly in the sense of enlargement. Thus, for instance, almost the whole market of agricultural products in the USA is controlled by 6 big purchase chains (Wal-Mart, Kroger, Costco etc.), while in EU 15 biggest supermarkets made EUREP group. Five retail chains (known as the "C5") have the key role on the markets of EU countries members (EU, 2009) although the food retail market varies significantly between countries:

- Germany and the UK are the most concentrated markets with over 70% of the market controlled by the C5.
- The French market is also comparatively concentrated, with a C5 of around 60%.
- In Italy, Spain and the Czech Republic, the C5 is between 30% and 45%.
- It has come to significant increase of concentration on the markets of Great Britain, Czech Republic, Romania and Spain during the last three years.

Repurchase chain needs of agricultural products are not easy to satisfy neither according to quality nor to dynamics of distribution. As an answer to enlargement of repurchase market a great number of production and processing systems is appearing as well as numerous associations of consumers. They are working on modernization of cultivation technology in order to satisfy numerous market requirements with the aim of realization of production for the known buyer. Only this type of production is secure and cost effective (Jovičić, 2015).

Parallel to enlargement of repurchase market of agricultural products goes the process of standardization of production, processing and distribution. EUREP group has its EUREPG.A.P. (Good Agricultural Practice) programme. GLOBAL G.A.P. standard was created on the basis of this programme. In the USA there are even 35 G.A.P. programmes. Three market trends have conditioned an initiative for adoption of this standard: increasing complexity of retailer supply chains, increasing the influence of business surroundings and general complexity and enlargement of market requirements, in other words, consumers and NGOs, (Djordjevic et al., 2011). The requirements are mainly related to the following elements: food safety (it must be verifiable), environmental protection, standardized production procedures and quality standards, secured good and safe work condition, etc.

Standards are often narrow and inflexible, they are specific for one group or a group of retailers, they often include a certain level of IT usage, repeated investments, on one side, while on the other side, business of primary producers of food products in conditions of reduced repurchased prices becomes a reality. Making profit

in these conditions can only be compensated through increase in yield, in other words, reduction of production costs per unit. All these facts are directing a production towards enlargement, increase in planting and production units, modernization of production as well as maximum possible reduction of risks from bad weather (frost, hail, drought, etc.) or illnesses and parasites, etc. (Jovičić, 2015) Speaking about quality assurance systems and its standards we must make a distinction between private and public standards. Public standards are prescribed by national or regional governments or, for example, European Union. Private standards can be prescribed by: buyers (BRC Global Standard, International Food Standard), suppliers (Assured Farm Standards in the UK), normative institutions (ISO 9001, ISO 22000), inspection or certified institutions (Food TUEV Tested; Fresenius Quality Seal), non-government organizations (NGOs). Their aims can be free trade (TransFair), origin, environmental influence, animal welfare, etc. In relation to food safety, one of the crucial characteristics of private standards is an increasing attention paid to production processes, (Henson and Humphrey, 2009). Combinations are possible like in the case of German QS scheme, in which industrial associations represented in different stages in the supply chain participate in standards establishment, (Gawron and Theuvsen, 2009).

Private standards have been developed as a response to consumer concerns, primarily as a means of competitive placement for agro-food products of high value on markets, (Henson and Reardon, 2005). As a result of this, private rather than public standards are becoming dominant initiators of agro-food systems (Henson and Hooker, 2001). Moreover, private standards which have been well-established in industrial countries so far, are rapidly becoming a worldwide phenomenon on agro-food markets in developing countries (Reardon et al., 1999; Reardon and Berdegué, 2002). In the developing countries retailers require firm standardization so the dynamics of such policy is transferred to the growers from developing countries through the supply chain. Nevertheless, all countries differ from one another in relation to their institutional structures, level of economic development and the structure of different economic sectors as well as their geographic conditions. As a result, countries vary in their tempo of adoption to these standards. Schemes such as GLOBAL G.A.P. certification are treated as organizational innovation by various written works on mechanisms of innovation distribution, (Herzfeld et al., 2011). As for organization innovation, for example ISO certification, there are numerous explanations of diffusing process in literature, in particular at firm level (from Corbett and Kirsch, 2001 to Perkins and Neumayer, 2010). However, unavailability of reliable data worldwide related to voluntary food standards is a crucial reason for restricted research in the field. There are several national certification schemes for good agricultural practices such as Kenya-G.A.P., Chile G.A.P. and Thai G.A.P.; at a global level there are two most remarkable schemes: GLOBAL G.A.P. and British Retail Consortium (BRC), (Masood, 2013). Many different retailer control schemes were designed to meet this new legal obligation. Some liability schemes in Europe include the British Retail Consortium (BRC) standard and the International Food Standard (IFS), but Safe Quality Food Institute (SQF) standard, HACCP and ISO 22000 also operate in the EU market.

The Global Food Safety Initiative (GFSI) has introduced a benchmarking process for food safety management schemes. Some retailers, like Carrefour, Tesco, Ahold, WalMart, Metro, Migros and Delhaize, advertised their acknowledgment of all the GFSI standards (BRC, IFS, SQF, HACCP), unlike the majority of other retailers. As a result, suppliers to more than one retailer are forced to conform to largely overlapping schemes (table 1), which require their own certification and audit mechanism with the corresponding costs. There is still a question to what extent this situation influences farmers and primary producers. The answer will be given by some future researches. Although a certain degree of consolidation at scheme level has already been achieved, there is still enough room for more harmonisation due to overlapping. Since some certification bodies have recognised this problem they are now offering audit packs with several standards combined and covered by a single audit. Certificates are issued for each desired standard separately.

Table 1: Overlap between the schemes

	BRC	IFS	ISO 22000	HACCP
BRC	X	90%	60%	100%
IFS	90%	X	60%	100%
ISO 22000	60%	60%	X	100%
HACCP	100%	100%	100%	X

The main possible competition concerns would be related to potential foreclosure of competing buyers (i.e. such schemes would be capable of preventing access of competing/alternative retailers to agricultural supplies). A particular certification scheme applied by one or more companies with remarkable market power may limit the access of competing retailers to certain categories of products and/or limit those retailers possibility to differentiate their product range and procurement policies, and, in this way, lose competitive advantage of their more powerful rivals.

IMPLEMENTATION OF QUALITY ASSURANCE SYSTEMS IN SERBIAN AND WESTERN BALKANS AGRO-FOOD INDUSTRY

The implementation of agro-food industry quality assurance systems in Serbia still isn't adequate to the potentials of this field. Ministry of Agriculture, Forestry and Waterpower Engineering of the Republic of Serbia by its Regulation on using incentive funds for introduction and certification of safety system in the period from 2005 to 2008 influenced the increase of certified companies. By organizing the promotional action "Think in time" they wanted to raise consciousness on consumers' rights to this kind of protection and the importance of having a documented quality system for food consumers. In November, 2009 Governments of Switzerland and Serbia signed the agreement on realization of the project "Aid in the field of GLOBAL G.A.P. standard".

According to the data of Ministry of Agriculture, Forestry and Waterpower Engineering of the Republic of Serbia, from 2005 until the end of 2008, there were 781 certified users. In the same time, 112 of them suspended and terminated certification procedure. The greatest number of certifications but suspensions as well was in 2006 – 359 certifications and 61 suspensions. The number of certified companies is significant considering the fact that in 2004, 85% of the companies from this industry never heard of HACCP. Connectivity of standards ISO 14001 and HACCP is highly significant for food companies. In other words, a company which implements the standard ISO 14001 affects the protection of global environment (water, air, ground, natural resources, flora and fauna, people and their relations) and development of environmental quality. The standard ISO 14001 has a significant activity in environmental protection, particularly in risk management. Risk management includes a decision – making in relation to the way of environmental protection activity procedure which relies on the result of risk estimation. The standard HACCP represents a management system in which safety of food products is considered through the analysis and control of biological, chemical and physical risks in complete production chain. That is the reason why HACCP represents a logical continuation of ISO 14001 in companies business.

Table 2 presents a comparative example of quality assurance standards implementation in agro-food industry and their use in Serbia and neighboring countries. Regarding West Balkan countries (WBC), Serbia is a leader in relation to implementation of all schemes of standards. However, as regards to other neighboring countries Serbia lags behind significantly. Apart from GLOBAL G.A.P. implementation of other (non-ISO) standards in Serbia is low. Comparing to Greece (10,764 certificates), for example, which is globally one of the leading counties in implementation of GLOBAL G.A.P. standard or Austria (2,516 certificates) which is often used for a country with which the WBC countries are compared, Serbia lags behind considerably in implementation. This additionally contributes to uncompetitiveness of Serbian companies. Some neighboring countries, such as Romania and Bulgaria, are more oriented towards ISO certification schemes (generally) than towards GLOBAL G.A.P. or BRC scheme, while for Serbia (strictly for food safety) the opposite is true.

There are several reasons for insufficient use of the standards in Serbian agro-food industry and they can be found in the following fact – a company which implements GLOBAL G.A.P. standard has an obligation to perform re-certification every year, which represents a significant financial effort for the company. Moreover, Ministry of Agriculture, Forestry and Water Engineering of the Republic of Serbia terminated co-financing during implementation process of international standards.

Table 2: Implementation of standards in Serbia and neighboring countries

	ISO 9001	ISO 14001	ISO 22000	GLOBAL G.A.P.	BRC	PDO/ PGI/TSG	Demeter
Albania	167	34	7	0	1	0	0
Bosnia and Hercegovina	794	141	17	269	2	0	0
Croatia	2,636	828	97	141	14	13	1
Macedonia	399	131	25	14	1	0	0
Montenegro	118	24	7	0	0	0	0
<i>Serbia</i>	<i>2,366</i>	<i>762</i>	<i>193</i>	<i>281</i>	<i>37</i>	<i>0</i>	<i>0</i>
Slovenia	1,993	468	19	22	9	25	27
WBC Total	8,473	2,388	365	727	64	38	28
Austria	4,637	1,069	72	2,516	59	18	217

In some Western Balkans countries (e.g. Serbia, Bosnia and Herzegovina and Macedonia) implementation of different quality and food safety assurance schemes is either required by law or large multinationals (both producers and retailers) which establish their own schemes and requirements (such as HACCP). However, other private and food quality standards are applied periodically although their implementation and certification is promoted by the governments of these countries. Except HACCP, food safety standard ISO 22000 and ISO 9001 are most commonly implemented in West Balkan countries. It should be mentioned that food producers in these countries received financial support from different governmental and nongovernmental organizations (USAid, SIEPA and EU funds). Besides HACCP, the most common certifications in the Western Balkan food industry cover food safety (ISO 22000) and quality management systems (ISO 9001).

Implementation of GLOBAL G.A.P. and other quality assurance standards which are used by Serbian agro-food producers implies a support of the Government which has to create a stimulative ambience for producers. The Government has already stimulated and supported the implementation of HACCP which is nowadays compulsory but it is also necessary to do the same with other standards in this field. At this point it should be emphasized that food safety system in Serbia needs certain improvements related to food safety control, inspection, knowledge and expertise. In other words, there is room for improving professionals, such as inspectors, governmental officials, consultants and auditors. In addition, a lot of work and efforts should be invested in improving transparency and communication between legal authorities, on one side and customers, consumers and food business operators on other side. Moreover, it is necessary to re-establish supporting mechanisms to Serbian agro-food producers through the support in the following fields: finances, education, applying practical experiences, information on other standards close to this field, information on new trends in agricultural industry, taking part in competitions such as G.A.P. Awards.

CONCLUSION

The implementation of quality assurance standards in agro-food industry is of great importance both for the company which has implemented it and for other factors on the market, for example, consumers of its products, the environment in which it operates, business partners who must have the same standards as a precondition for cooperation. This is how a chain of good practice is made which motivates other companies to start the implementation of standards in order to assure consumers in safety of agricultural products which they buy in retail shops. Unfortunately, food companies in Serbia are not sufficiently supported by the state to implement quality assurance standards in agro-food industry. We have noticed only the examples for GLOBAL G.A.P. standard of individual support by international organizations (USAid, SIEPA, EU funds, SECO) and NGO sector so far, which is not enough if we want to make a step forward in this field. Very implementation of quality assurance systems has considerable advantages of which the following are identified: easier access to customers on international markets, higher market price of products (perhaps, not in the beginning but in the future it is expected), etc. However, whether standards like GLOBAL G.A.P. will be implemented

depends only on agro-food producers and manufacturers, on their estimation and plans in relation to their company in the future.

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MANAGEMENT EXPERIMENTS WITH SIMULATED – ARTIFICIAL BUSINESS ENVIRONMENT

UDC: 338.2:519.245

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ABSTRACT

The business environment is becoming complex and unpredictable and in some branches even turbulent. The purpose of the study is to offer innovative approach to learn the right management actions on challenges from the environment of organizations. The presented simplified approach of creating artificial environment provides possibilities of experimentation aimed at discovering the needed set of right organizational properties and structural settings under different risky conditions. In this paper the basic business environmental dimensions such as; complexity, uncertainty, equivocality and hostility were simulated as building blocks of business ambient. The experimental conditions showed strong need for change in organizational properties such as complexity of organizations, centralization, coordination, etc. The method included Monte Carlo simulation for creating dimensions and measures of environment while the analyses and recommendations were based on contingency approach. As a result of experiments different solutions were offered for future organizational design aspects with the concern on achieving contingency fit. The originality value of the paper is given by possibility of practical implication of recommendations according to the simulated business environmental circumstances and their interpretation. It is very important for managers to understand that the external change of business environment requires adequate and fast internal organizational design changes.

Key words: business environment modeling and simulation, contingency theory, Monte Carlo simulation, organization design

INTRODUCTION

Contemporary business environment for most organizations is becoming more dynamic, complex, and in some branches turbulent. Intensive changes in such business environment causes inevitable requirements for changes in business objectives and strategy, increases need for various transformations and technological development. Meantime it requires constant review of the adequacy of organizational structures and characteristics. The phenomenon of insecurity becomes reality to top - managers with all the realized dangers (risks) and challenges. Consequences such as sudden drops or changes in demand, ongoing technological development, and growing need for cheaper but sophisticated information - significantly hamper business forecasting and decision making. The aim to make the organizational design more adequate to the environmental circumstances can be supported with the following simplified experimental method of simulation and analysis.

Out of various measures, as one of the most important factors for business organizations, the factors of business environment were generated by simulation. The experiments were carried out by using the model to simulate four dimensions of environment (usually analyzed by contingency theory) (Burns, Obel, 1998). It is conducted according to the present real business conditions in which the complexity and the uncertainty is growing, the equivocality is ever higher and as well as the hostility. The conceptual model of simulations of environmental conditions was based on characteristics of real

business environment. By adjusting the input parameters, different situations can be simulated and as a response, the recommendations (according to the contingency theory) can be given. That means, on the basis of the simulated experimental cases the real conclusions can be drawn. It offers the way to gain insight how and when will the environment reach the maximum "load" hazard or risk synergies as an adverse impact to the organization.

THE VARIABLES FOR THE SIMULATION – DESCRIPTION OF THE ENVIRONMENTAL FACTORS

“The environment of the organization can be defined as anything that is outside of the organization” (set of possible units of observation) (www.ecomerc.com). The objective in the description of environment is to define the effects of environmental influences on the organizational structure and design properties. The environment of an organization consists of many different factors. These are: industry branch, size, competitors, customers, suppliers and sources, (raw materials, services, labor market, and any other item important for the organization), financial resources, development of technology, and so many other factors.

Changes in environmental factors increase the need for information and to be able to process information. In order to examine the ability of organizations to answer the environmental changes and to adjust or manipulate the environment the next variables were selected (Butron, Obel, 1998):

- the complexity, - the uncertainty, - the equivocality, - the hostility

The complexity is a number of variables in the environment and their interdependence. It refers to the factors that affect the operation and results of the organization. Examples of external conditions are the conditions in the market of inputs and outputs, prices, quality requirements, financial conditions, relations with the government, and so on. The environment is complex if there are many factors that need to be monitored. In measuring the complexity of environments the number of influential environmental factors are used. That means if it is so called- easy or simple, the number of factors are between 1-5, - in middle complex environment between 6-10, and in highly complex environment it is more than 10 factors that needs observation.

The issue of environmental uncertainty measures the degree of three options that responses to this variable. Low (- uncertainty is low) if it is possible to be planned, so the future environmental circumstances are known - predictable. The next stage is the middle uncertainty. But, when the uncertainty is high the prediction is difficult. Uncertainty refers to the insufficiency of knowledge about the values of certain variables or level of short-term risk of danger and threats to the business that has been recently identified. If the environment is more uncertain, it is more difficult to predict future states of it. For example, in some conditions, the transport company will not be able to predict the cost of freight because of the unknown future fuel prices. Respond to this question is somewhat easier if the dangers, (risks) have been identified, or if they have already occurred, or if they have been analyzed previously in the industry. For example the possible reasons of fluctuations, would require repeating the successful measures from the past.

Equivocality is the issue related to the ambiguity of surrounding. Vagueness or incomprehensibility of the environment could be described by the stage of high, medium or low. Equivocality of environment means confusion and lack of knowledge about the environment. Usually it is present when unknown forms and sources of the threats or problems arise. Equivocality is related to something that the organization has not yet experienced. When something new happens, new regulations or technology, and so on, it relates to equivocality. There is lack of knowledge about future business and risks. Equivocality is related to something the organization has not experienced before.

Some situations in the industry could mean and carry more confusion than others. In dynamic environments the equivocality may be higher. These are the environments where little directions can be recognized and predicted. Such high equivocality may come from technology and application of

research and development (scientific) results that exceed the applied achievements resulting with a lot of unknown changes

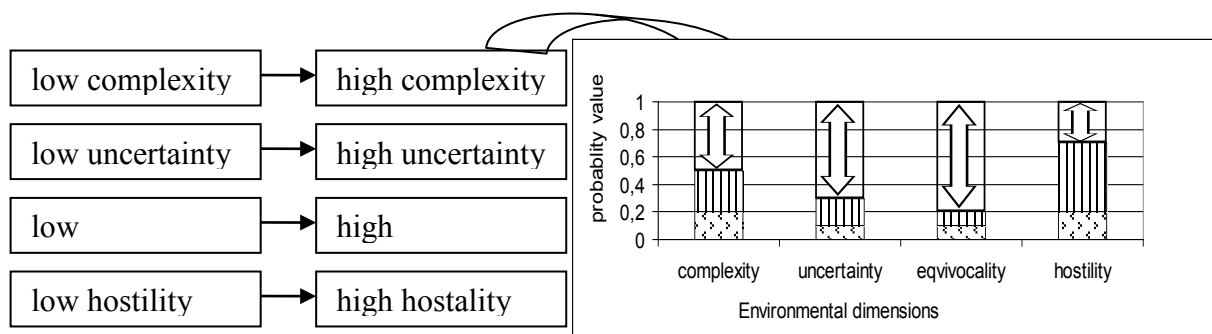
The issue related to hostility in environment is the measure for repulsive - harsh competitiveness and struggle. There are four optional answers: low, medium, high, very high - extreme. A hostile environment is a measure how it behaves towards the organization. A hostile environment can be characterized by various self-defense mechanisms, severe competition, and relatively few possibilities of utilization of opportunities and chances. In the hostile environment someone or something threatens the existence of the organization. The environment can behave from supportive or (friendly) to bestial. Forces of nature can also create an environment hostile, for example, droughts, floods. The hostility in social dimension could be the threatening war.

- If the hostility of environment is low, the competition takes low efforts. If moderate then the organization is surrounded by average competitive struggle. In the case of high there is a great competitive struggle. Extremely high hostility means the most intense struggle to survive.

CREATING MODEL FOR EXPERIMENTATION

The approach for simulation is based on the analogy with nuclear plants. The thickness of the protective wall of the reactor is determined on the basis of simulation of the Monte Carlo method (Piotrowski et al, 2012). Since the function can not be determined to predict the exact "offensive" power of neutrons on the walls, simulating the calculated thickness of the wall of protection is based on submitting random synergetic effects (impact) of radiation. In the case of business organizations it could mean the need to be prepared for possible "attacks from the environment," (ie. to be prepared for the case when the possible combination of environmental variables, are the least favorable for the organization).

For setting models the analyst should be familiar with the laws of inputs and outputs, to clarify objectives, for example. if we want to discover successful strategies, optimal cost or define the optimal profits, etc. In the process of transformation of input to output numerous random factors and effects can be found. Scheduling probability of these factors is implemented based on observations and experiences that can be processed using quantitative statistical methods. (see picture 1)



Picture 1: Setting probability value for environmental dimensions

The global objective of the application of simulation models is experimenting with models, but not with real systems. Models provide lower costs to perform observation even then when the real system is not available (in this case, the business environment). Simulated environmental conditions or any other (external) variables that are more or less beyond the control of the organization, can be estimated by the probability of unwanted added as an extra "load" or external threats.

The results of the experiments may be evaluating alternative managerial, organizational solutions, such as structural forms, organizational complexity, span of control, etc. Detected changes influence on various parameters, and of course on validity of various legality of the decision-making. In fact, the results of experiments can be object to the formal statistical analysis, but conclusions can be formed

also without that, on the basis of economic and logical analysis of researchers on the basis of "common sense" (R.C. Meier, W.T. Newel, Harold L. Pazera, 1973).

In this paper, the evaluation of the results of the experiments was conducted by relying on logical verification, using a approach called the "Reasonable sense". (Since constructed model has a relatively simple structure and easy to estimate. On the other hand, when it is used as a tool of support decision-making, and to determine adequate strategy, policy, and questions of organizational design, it has to be appropriate and understandable to other personnel of different profiles. Of course the possibility of further statistical analysis of the data is not excluded but for now, it is not object of the study.

Each of the influencing contingency factors may be subject of simulation. In this paper, it was assumed that the characteristics (dimensions) of business environment are under the most dynamic changes. These variations can be followed according to previous real statistical data or results of previous experiences. Forecasting may be based on in advance defined intervals of probability of events (change of contingency situation).

Monte Carlo simulation method was baed on MS Excel table crated to perform "artificial environment" – simulated measures of business environment. It made possible to observe when and how the negative effects appears – when the risks for the organization come and impact. Simulaton model for creating environmental variables can in multiple iterations, provoke astonishing circumstances. In some trivial cases all the variables on which the organization is sensitive, or their combination can be unfavorable. Based on the frequency of events, layed by estimation, it is possible to predict the risk, and the necessary changes to the organizational properties, such as, for example, the needed strucutral form and complexity. By entering a given combination of simulated environmental factors into the consideration the necessary management actions can be recommended. It is particularly interesting to monitor cases where factors perform all, the most difficult conditions. It is possible when the synergic effects of any such variables cause very severe business conditions, or generates changes to organizational characteristics. These means urgent need for adjustments of organizational properties to the new situation. For example, increase or decrease of the complexity of the organization, decentralization, span of control, determination of integrative measures, ccordination, formalization, etc.

After created "artificial environment" based on the formation of the tables in Excel (2003), the input data were provided for further analyses (E.g. The contingency theory based program OrgCon 7.0 educational version), (Burton, Obel 1998), as an expert system, it can offer analyses for any combination of factors – situation and empirically proved recommendations. (Burton, obel, 2004.) .

DETERMINATION OF ASSUMPTIONS TO MEASURE EXTRNAL ENVIRONMENT

There are an infinite number of combinations of possible assumptions. If very little is known about the potential outcome of certain dimensions of the environment, for example, having no sense of ambiguity of environment measures, as the starting value of certainty, the same size interval can be putted on. In this way a high probablity will be divided equally to any outcomes. However, this way of starting the model should be avoided, because it ignores the possibility of evolving the experience on the behavior of the system (environment) or mounting expectations, on the other hand. There is the problem in the case of turbulent phenomena in the real system. As a matter of fact it is impossible to describe that kind of environment. Howerver the ignorance of data, or any ineability to predict future ("the darkness for forecasting") is relatively easy to simulate by using the equalization values of the relative frequency at intervals of assumptions of each dimension, but such a model loses its meaning. Increasing the number of variables in the model makes it difficult to examine the results.

RESULTS

By using the prepared table, there is the possibility of simulating myriad variations of conditions (e.g low, medium, high level of complexity) and their combinations with other dimensions. By simulation of interval of assumed events probability (according

to the the width of the starting interval), three basic business environmental condition was created. These performed experimental circumstances, the three groups of possible state of environment. First, so called, the stable environment with, low complexity, with some known (low ambiguity), with low competitive struggle. The second simulated environment was the transient (middle type between trivial first and third) It has medium complexity, uncertainty, equivocality and medium competitive struggle. The third environment was defined with high complexity, high uncertainty, high equivocality and with a strong (high) competitive struggle as a high ambient (or extreme) hostility. Looking at this group factors it is easy to perceive that today's business environment mostly in many branches shows the characteristics of third trivial combination of measures. This type of business environment needs the most intensive managerial attention and fast actions. According to the theory of contingency some very useful recommendations can be given to those organizations struggling in such environment.

The results of simulation for environmental circumstances

The first type of simulated environment can be defined as a stable. The base probability intervals for dimension were set on low. This type of business environment rarely can be found in real world. The circumstances are changing, getting harder, so the established old rigid organizational structures and their other organizational properties are adequate only under such stable conditions

If we take into account other possible combinations of outcomes up to medium level of tyeach dimension, it becomes almost all in position where as situation, with at least one achieved the stage of unfavorable circumstance. It is the situation when the environment becomes increasingly complex, uncertain and unclear, and when the competitive battle intensifies. Increasing the interval for the probability of high value the experimental environment showed more cases when all four factors simultaneously appeared high, as expected. But, in some random situations, the model provided growing number of cases when the environment overcome situations of mean values of observed dimensions. It can be interpreted as a growing risk for management. The business circumstances are getting harder. As a rule, we can rarely find such an "ideal" unambiguously state, when all dimensions are presented with quite the same intervals.

Based on the observation, after set of repeated simulations, it is possible to conclude that it is not likely that under such conditions, the set of observed dimensions would stay unchanged. On the contrary, it is likely to change toward unexpectedly high, ie. that the environment would have many factors (high complexity), that the values of these factors will be unpredictable (high uncertainty), there will appear many factor of influence about which nothing would be known (high equivocality), and the competition will be strong (high or extreme hostility). In this case, according to the theory of contingency radical organizational changes are needed compared to the existing organizational settings. The recommended structural form must be flexible. The old functional structures are no longer adequate with unstable ever changing environment. Flexible structural forms such as project matrix, divisional, or modular and even virtual structures are needed. The level of complexity (especially vertical hierarchy) should be reduced of course with other properties that still require an adjustment in the appropriate level of complexity of the organization.

Discussion - The needed Management efforts

In the third group of simulations the included baseline data caused suddenly deteriorated business conditions. In many situations all dimensions were observed at a high level, which is very unfavorable condition, generally, unfavorable business environment. Because of the uncertainty, and ambiguity is very significant doing business is very riskful. According to starting assumptions it is easy to perceive that the ambiguity dominated simulated environment. According to this phenomenon the strategic and organizational adjustments should be setted towards so-called the "fit" situation.

As a rule, in these cases, the successful organizations are trying to be more flexible and faster in responding. They are shortening the chain of command, decentralizing units and setting loose links. So, in the case of sudden negative (destructive) impacts, those will be limited on certain isolated parts of the organization (elg. divisional stuctures). Usually, this is the situation also when the reduced vertical differentiation, ie. the smaller number of hierarchical levels appears. Meantime the horizontal differentiation show narrowing towards the basic core functions. (The other secondary functions or processes may be outsourced or devided into modular sections). However this example can be considered trivial, but lately, it becomes general phenomenon of strategy. It is interesting to note that in order to maintain market position organizations often try to reduce the competitive fight, and

together with it the uncertainty and ambiguity too. They usually form strategic alliances. Specialization becomes part of strategy offering certain parts of complex products or services (the machine industry has many examples of this). This is a way ie. to appear on the market with more complex products, but manufactured by a number of related (in alliance) less complex organizations.

CONCLUSION

The results of simulations are the generated cases of environmental circumstances for analyses. Monte Carlo method can be applied for the simulation of environmental dimensions and their measures, ie, experimenting with complex business environment. Of course it can simulate all other influencing factors (contingency) on the business and may provide sample conditions that will, on the basis of assumptions, show future trends too. Achieving organization fit means aligning organizational features to contingency factors. The global tendencies in environmental dimensions have shown that the plurality of possible combinations of factors need to be adapted to those combinations which mostly can occur. (ie. have the highest probability interval in setting assumptions, they will dominate with their influence.)

Contemporary business environment is generally characterized by high complexity, uncertainty, ambiguity so the organizations need to adapt to (achieve situational fit). (Installation of harmonized parameters and factors in a structure is, in essence, is the approach to design of organization according to the contingency theory. (Burton, . DeSanctis, Obel, 2006). "The basic task for organization design, therefore, is on identifying risky misfits and changing them into fits".

The organizational design properties primary should be adapted to the aspect that has the most recognizable frequency interval, and thus it will dominate in the given situation. Based on the performed experiments, it is advisable to watch which dimension is present with prevalent (most wide) interval. It will influence mostly on business policy and direct for identifying basic priority of eliminating misfits in organizational design (e.g. structure and other design properties).

After taking into account many combinations, and current world trends prevailing in business environments, it is revealed that the dominant dimensions require less complex organizational configurations. It is possible to interpret some of the modern organizational techniques. Eg. simulated characteristics confirm that the adequate response to the challenges of the environment (according to the theory of contingency) is the reduced vertical differentiation. reduced horizontal differentiation with retaining only basic - core functions, while other is to be relocated (outsourced) entrusted to other organizations They should become less complex because the business environment requires to be flexible, to be structured for easy and efficient management, but that the creativity of independent units is not lost. The basic misfit is the fact that dynamic changes of business environment needs changes in organizational properties oo. Majority of Serbian enterprises suffer of misfitst because of the lack of adequate organizational design properties adapting typical trends of change in environment.

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SIMULATION MODEL FOR IMPROVED PRODUCTION PLANNING AND CONTROL THROUGH QUALITY, CYCLE TIME AND BATCH SIZE MANAGEMENT

UDC: 658.5:519.876.5

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ABSTRACT

Production planning and control (PPC) systems are the base of all production facilities. In today's surroundings, having a good PPC system generates lots of benefits for the companies. But, having an excellent PPC system provides great competitive advantage and serious reduction of cost in many fields. In order to get to a point of having excellent PPC, the companies turn more and more to the newest software tools, for simulations as an example. Considering today's advanced computer technology, by using the simulations in this area, companies will have strong asset when dealing with different kinds of wastes, delays, overstock, bottlenecks and generally loss of time. This model is applicable in almost all production facilities. Taking into account the different scrap percentages for the pieces that form the end product, a detailed model and analysis were made in order to determine the optimal starting parameters. At first all the conditions of the company were determined, conceptual model was created along with all assumptions. Then the model was verified and validated and at the end a cost benefit analysis was conducted in order to have clear results.

Key words: PPC, simulation, production, benefit, improvement.

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A RESEARCH ON THE EFFECT OF THE PARALLEL TYPE OF PRODUCTION OF THE SERIES ON THE LENGTH OF THE PRODUCTION CYCLE AND ON THE UTILIZATION OF THE MACHINES CAPACITY

UDC: 658.5

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ABSTRACT

The paper presents the effect of a parallel flow type of sequence of technological operations on the production cycle, and the degree of utilization of production capacity during the production of complex products. Having in mind that the production process of this type of products is complex, that is it is comprised of a large number of positions, the paper especially analyzes the position laboration projectile of the complex product, which has the highest duration time and therefore has the greatest influence on the length of the production cycle of the product. We have displayed the possibilities for the improvement of the performances of companies by taking appropriate organizational and technical measures to reduce the time of the production cycle.

Keywords: production cycle time reduction, production capacities, machine capacity utilization

INTRODUCTION

The coordination of various activities during the production process and the creation of conditions for their functioning as a rational environment, in an efficient way presents an important and permanent task of the organizers of production. The justifiability of the content, structure and length of duration of certain production activities, among other implications, is an integral element of a temporal dimensions which is understood in a complex way.

The possibilities of a certain production corporation to produce a certain amount of products, depends on the production capacity, to a large extent. The notion of capacity, from the point of view of the production, represents the ability of a production company to produce a certain amount of material goods for a certain period of time. It is primarily related to the ability of people, then to the means of production and work organization, that is, on the combination of human resources and of the property of a company (Bozin and Radojicic 1996).

Theoretical and practical studies have shown an increasing interest in the application of different methods and techniques for solving the problem of reducing the length of the production cycle and optimizing the utilization of the capacities of a production (Radojicic et al, 2012a; Klarin et al, 2010; Cala et al, 2011; Agrawal et al 2000; Radojicic et al, 2012b; Bhat, 2008, Wang et al. 2010, Radojicic et al, 2012c). The major findings in a review of discrete-time optimization models for tactical

production planning (Díaz-Madroñero, Mula, and Peidro 2014) indicate that: the most popular production-planning area is master production scheduling with a big-bucket time-type period; most of the considered limited resources correspond to productive resources and, to a lesser extent, to inventory capacities; the consideration of backlogs, set-up times, parallel machines, overtime capacities and network-type multisite configuration stand out in terms of extensions. The authors (Aouam and Uzsoy 2015) present three different formulations of a simple production planning problem that treat workload-dependent lead times, limited capacity and stochastic demand in an integrated fashion. The paper (Radojicic et. al., 2011) presents an approach to determining the degree of capacity utilization, using a modified method of the present observations.

Discussed efforts are primarily related to the rationalization of internal reserves in fixed assets, working capital, working hours of staff and general reserves in exploitation of resources (Greasley A., 2009). The paper (Jodlbauer and Reitner 2012) develops an approach (material and capacity requirements planning; MCRP) to integrate capacity planning into MRP. An additional procedure, capacitating, was inserted between the lot sizing steps and offsetting to guarantee capacity feasible production plans. The relation between capacity and output is shown in the figure 1.

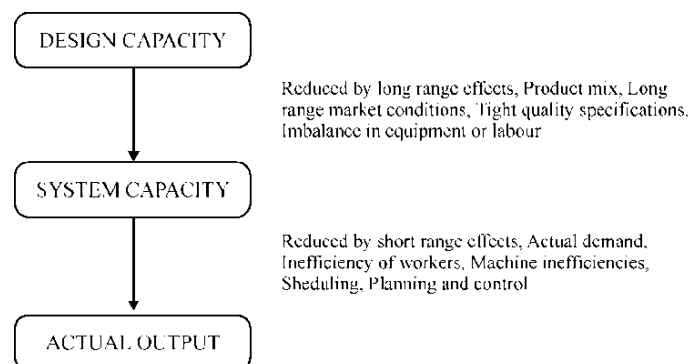


Figure 1: Capacity and output relationship, Source (Anil Kumar and Suresh 2008, 122)

The duration of production cycle determines possible delivery time of the final product. Optimization of the production cycle, in the context of shortening terms of production, getting an important role in improving the competitiveness of a company. An important task of organizers of production is a continuous work in creating the conditions and undertaking activities on shortening the time duration of the production cycle.

The paper will analyze the production cycle of a complex product that is being produced in the company "Sloboda" a.d. Cacak. The product is complex and its production cycle consists of 9 positions and 30 sub-position. The paper presents calculations of the positions laboration projectile whose production length is the longest and which consists of the highest number of sub-position, and therefore has the greatest impact on the length of the production cycle of the product.

EVALUATION OF THE DURATION TIME OF THE PRODUCTION CYCLE

Production cycle is the period from the beginning to the end of the fabrication of products, regardless of the size of series. In developing series of products, time of operations and waiting time alternate with various durations. Time of production operations depends on many factors, and influences of the following characteristics can be particularly emphasized: the product itself, work resources, realized operating mode and organization of work, etc... Depending on the movement of items, i.e. series through direct production, there are following different ways for organizing sequences of manufacturing operations: successive, parallel and combined type.

The required surveys were carried out in the company "Sloboda" a.d. Cacak, in the period of time of one month, during which the following data were obtained: the name of machines, number of the

employees, number of shifts, number of machines, available capacities to work in one shift and time of the production of one piece of product. The data which was obtained on the basis of the completed surveys were inserted in the corresponding tables that are specially created for each position and sub-position of a complex product. Table 1 shows data for each operation of a sub-position of a grenade filling, which takes place within the position of a laboration projectile, as well as the total duration of the production of this sub-position, expressed in days.

Table 1: Sub-position of a grenade filling

NO.	OPERATION NAME	Machine (device)	Required number of workers	Capacity for a shift (7,5h)	Number of shifts	Daily capacity	Number of machines	Duration of prod. p. piece (cmh)	Total capacity	Necessary quantity of products	Monthly capacity of machine	Number of working days (monthly)	Utilization of production capacity of machine [%]
1	Transport between workshops	Freight electric vehicle	1	10000	2	20000	1	75	20000	80000	400000	20	500%
2	Weighing explosively flammable mixtures	Technical scales	2	800	2	1600	1	937	1600	80000	32000	20	40%
3	Assembly, removal tools and filling mixture	Worktable - HP "Manurhin" 30t	1	800	2	1600	1	937	1600	80000	32000	20	40%
4	1st i 2nd pressing explosively combustible mixture in the jacket shell	Hydraulic presses "Manurhin" 30t	1	800	2	1600	1	937	1600	80000	32000	20	40%
5	Clean the coils on the tee and depth control	Working table - manually	1	800	2	1600	1	937	1600	80000	32000	20	40%
6	Preventive control	Manual - visually - technical scales	OVERHEAD OPERATIONS										
7	Transport between operation	Manual - wheelbarrow	0,5	1500	2	3000	1	500	3000	80000	60000	20	75%
8	Application pressurizers the thread lighter and partially winding	Working table - manually	2	1500	2	3000	1	500	3000	80000	60000	20	75%
9	Finally winding lighter	Working table - manually	1	1500	2	3000	1	500	3000	80000	60000	20	75%
10	Clean excess pressurizers and workshop control	Working table - manually	1	1500	2	3000	1	500	3000	80000	60000	20	75%
11	Degreasing of lighter and shell granate	Working table - manually	1	1500	2	3000	1	500	3000	80000	60000	20	75%
12	Lacquir the lighter	Turning pneumatic	2	1500	2	3000	1	500	3000	80000	60000	20	75%
13	Repair lacquir peak lighter - manually	Working table - manually	1	1500	2	3000	1	500	3000	80000	60000	20	75%
14	Workshop control	Working table - manually	1	1500	2	3000	1	500	3000	80000	60000	20	75%
15	Technical control	Working table - manual - visually	OVERHEAD OPERATIONS										
16	Transport between operation	Manual - wheelbarrow	1	3000	2	6000	1	250	6000	80000	120000	20	150%

The process of mass production of this product is performed by a parallel-type of order of operations, where each piece of the product passes to the next operation after completion of the production on the previous operation. From Table 1, based on completed surveys, data were obtained on the required number of shifts (two shifts), capacity for one shift (one shift lasts 7.5 hours), as well as on the number of machines required to carry out certain operations (for the required number of machines, for each operation, one machine is taken). The calculation is done for a series of 80,000 pieces of this product, which is necessary to produce on a monthly basis. The duration of the production process for each position are calculated using the parallel type of organization of manufacturing operations, using the following expression (Radojicic 2007):

$$T_{cp} = \sum_{i=1}^m t_i + (q - 1)t_{i,max}$$

where:

t_i – the duration of the i -th technological operation

q - number of pieces that are released into production in one series

$t_{i,max}$ – technological operation with the longest duration

By using the parallel type of the series production, it has been calculated that the total duration of the production cycle of the laboration projectile position is 146 days. We obtained the time of the duration of the production cycle for the first two sets; for a production of a lighter 94 days and for the production of the grenade 146 days, while the third composition is being purchased. Both sets are being produced simultaneously, the production of the grenade lasts longer than the production if the lighter, and the final time for the production of the grenade is, at the same time, a final time for making the positions laboration projectile. Figure 2 shows a graphical representation of a parallel-type organizations order of production operations, the time duration for each operation, start and end time, where the days are used as the unit of measurement.

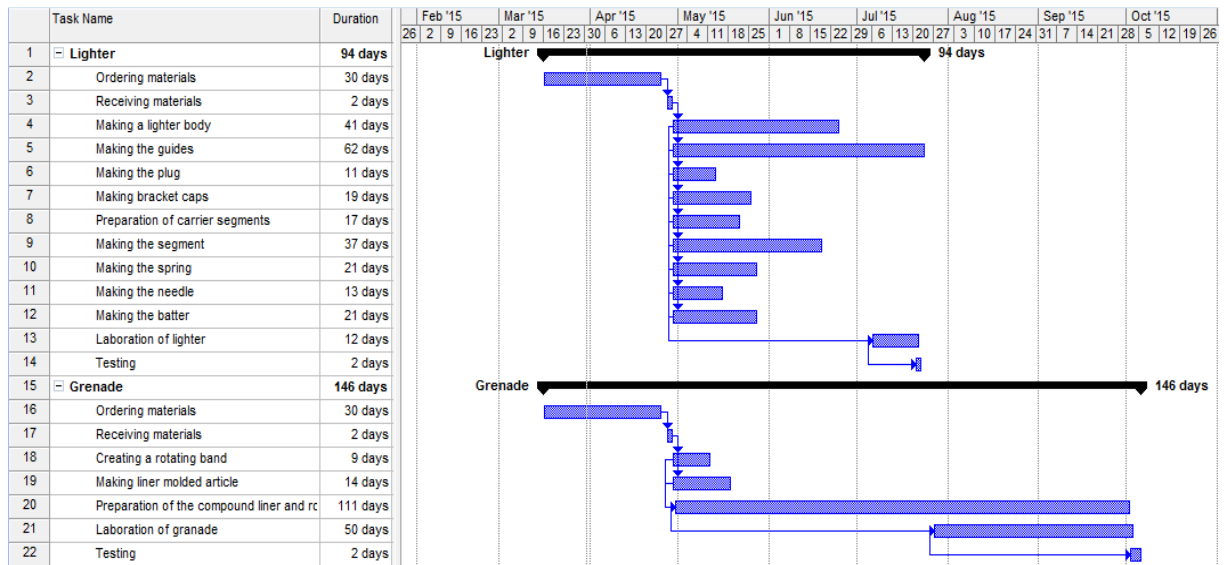


Figure 2: Parallel type of performing organization of manufacturing operations

By using the considered approach, it can be concluded that the duration of the production cycle depends not only on the duration of the operation, but also on the ways in which these operations are done, that is on the organization of the order of performance of production operations. By using the parallel type of performance of the order of production operations, with the sub position of production of the lighter, operations numbered by 4, 5, 6, 7, 8, 9, 10, 11 and 12, as well as in sub-positions making grenades, operations 18 and 19, can start simultaneously, which may lead to reduction of the duration of the production cycle. If the duration of the operation is more rational, that is if there are minor differences in the duration of these operations, then the duration of the entire production cycle is shorter. Operation number 20, when creating a grenade lasts 111 days, the longest of all other operations, which greatly extends the cycle time of this complex product.

COMPUTATION OF THE DEGREE OF UTILIZATION OF MACHINE CAPACITIES

Calculating production capacity is the first step in capacity planning. Production capacity is the measurement of manufacturing output over a given period of time. In this paper analysis was performed with technical aspects of production machines. Machine capacity represents the working ability of a machine to perform certain number of operations in a specific period of time. Working ability of a machine, which determines the production possibility, is actually the capacity of the machine. The production process at the position laboration projectile, includes a set of operations which are performed on the total number of 43 machines. Based on the data of the machine capacity in one shift (7.5 hours), a daily and a total capacity of each machine is calculated, for all the operations that are being performed in the process (Figure3).

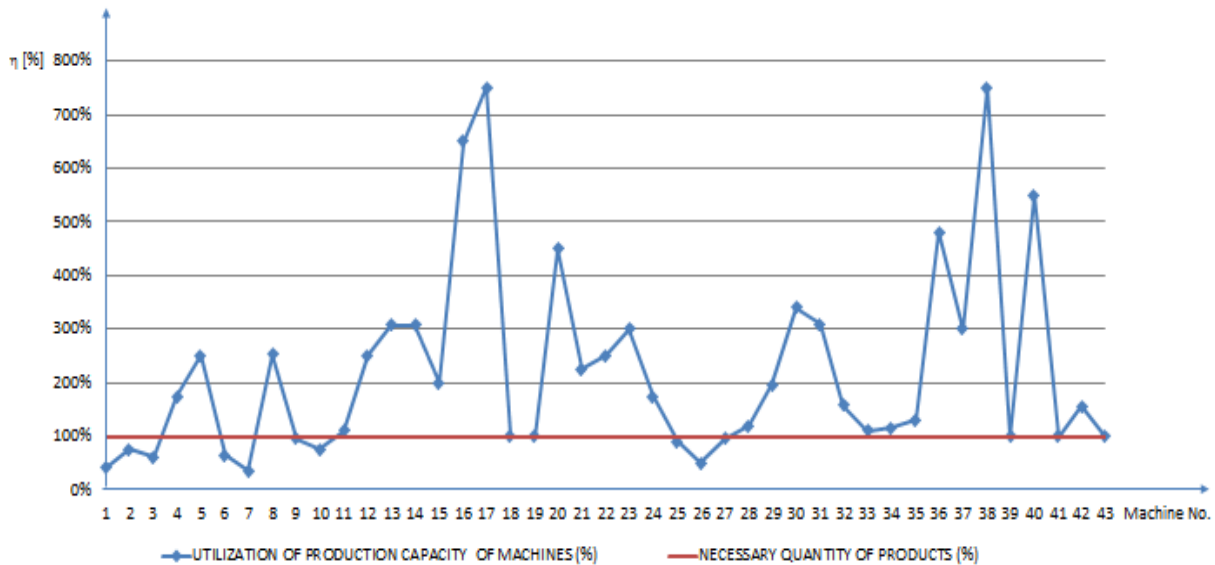


Figure 3: The degree of utilization of machine capacities

Figure 3 shows the degree of utilization of production capacity, which are used for creating the position laboration projectile, depending on the quantity which is required, which is actually 80,000 pieces. The degree of utilization of machine capacities represented by the numbers 1, 3, 6, 7 and 36 is significantly lower than 100%, or more precisely, ranging from 35% to 65%. In order to increase the degree of utilization, that is to avoid possible interference or delays during the production cycle, which may occur as a consequence of this condition, we can increase the number of these machines, or introduce more lines. The implementation of this option is possible, because these machines are finishing turning lathes on which the final processing of the product is done.

CONCLUSION

Every production organization seeks to establish an efficient production process, which requires the cycle time as short as possible. Reducing the time of the production cycle is of particular importance for a production company because: it reduces the amount of required working capital involved; enables better utilization of production capacity; reduces production costs and allows the company to lower the cost price of the final product, improving the competitiveness; increasing the productivity and so on.

The paper presents the effect of the type of the sequence of operations on the total duration of the production cycle and it was pointed out that the implementation of a parallel-type sequence of operations enables the shortest time of the duration of the production cycle. At the same time, the maximum of utilization of machinery and other facilities is achieved, thereby avoiding possible interference and possible delays in production, which leads to more efficient production in the end.

We pointed out the possibilities that by the choice of an adequate method of organization and management of production processes, significant improvements in shortening the production cycle are achieved, and thus the delivery deadlines are also shorter. These activities result in improving the business performance of manufacturing companies, as well as in better economic and production results in the company.

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ONE APPROACH TO THE ANALYSIS OF IMPACT OF SHIFT-WORK INTRODUCTION ON UNIT COSTS IN SERIAL PRODUCTION

UDC: 658.524:331.312.64

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ABSTRACT

This paper is an approach to the impact of shift work on economic performance and size of the production series. The presented methodology has a significant impact on improving the quality of economic performance in terms of reducing the cost per unit of output in serial production. The paper is illustrated with a concrete example of the analysis and application of the methodology discussed with the software support.

Key words: optimal batch size, shift-work, cost reduction, serial production

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STRATEGIC IMPORTANCE OF COMMUNICATION IN THE E-BUSINESS PROCESS

UDC: 004.738.5:658

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ABSTRACT

In this paper, the focus is placed on speed, innovation and brevity of information through online communications. In the conditions of today's business, which are characterized by more dynamic changes and the development of technologies, the flow of information was moving at an unstoppable speed. Using the right information in the right way, provides building long-term relationships with clients, which is the main factor of successful business. Building long-term relationships with clients involves continuous marketing communication, and for the purposes of diagnosing needs of customers, treating customers as equal partners in trade, and encourage building of customer loyalty. As a key segment of modern business, building a long-term relationships with individual clients stands out the application online marketing techniques of communication.

Key words: e-commerce, online communication, marketing, provides long-term relationships, provides information.

INTRODUCTION

With the increased use of the internet in global business, there is question of its use in international communication. Communication happens constantly, at all levels and in all forms of business. No matter how much communication is a basic and universal phenomenon, as we need certain skills and knowledge for certain jobs, as well as communication needs to adapt to specific business situations to be more successful. Negotiation is an interactive process of communication that can happen when we want something from the other or others want something from us (Shell., 2006). Using only our innate communication skills is often not enough for a successful business communication. Although the language is an important component of communication, it is not reduced only to understanding and using language. Communication is a much wider term than language - involves the transfer of ideas and understand the ideas of another person, and research shows that less than 20% of communication transmitted verbally (Dobrijević., 2008). In the process of communication it is important to create trust between the sides.

ONLINE COMMUNICATION – ELECTRONIC NEGOTIATION

Communication, one of the main elements of any negotiation is implemented using one or more communication media. Electronic negotiation is a process that uses electronic media, ie. Media that use digital channels to transport data so allow negotiators to communicate and coordinate their activities. In an e-negotiation gains in importance the design of media and its relationship with the

other components that participating in negotiations (Dobrijević., 2007). Negotiation is a social process, but electronic negotiation, although retains the social aspect, also includes significant electronic component (Kersten., 2003). This means allows overcoming the problems of distance and social barriers (age issue, gender and status). Users define their preferences and evaluate bids (Deresky., 2003). How much is really important role of the consumer in market communication and sales business, shows an example of a communication as far back as 1850, issued Burnley Building Society (Egan., 2004): "The obsession with customers should be the most vital factor of business success of enterprise. The conquest and retention of consumers must be a priority for any business, while the failure of these activities resulted in a loss of profits, lack of business growth, lack of jobs, and therefore the termination of the entire business."

MARKETING COMMUNICATION STRATEGY BASED ON CONSUMER

The concept of management by exchanging information with the user's (West, 2000), enables the online effectively building good business relations and better serve for customers. In this regard, so-called. information-intensive strategies (information-intensive or smart strategies) play an important role, because they contain information on: characteristics of consumers (demographic data, or information about who their users, regardless of the relationships that are built with these users) and customers' reactions to decisions (information about preferences, consumer behavior and response to activities that occur) (Glazer, 2004). In order to achieve the effectiveness of online marketing techniques of communication, it is necessary that, when designing a communication strategy, bearing in mind the differences in user behavior in the processes of traditional and electronic exchanges.

Visitors of electronic markets, are the people who love searching and challenges that an electronic communication and business are bring. Visitors to electronic markets, the people who love searching and challenges that an electronic communication and business This is a very impatient segment of people willing to move to the next search, if they are the one who searched so uninteresting and complicated. Laurie Windham is described in the following way consumers and its retention in the online market: "This is what makes customer retention in the online space so daunting. We have created this powerful, impatient customer, which is characterized by a low level of attention and tolerance, he has lots of choices, and low barriers to change in cooperation"(Chaffey., 2002). Figure 1 presents the phase of implementation of marketing communication strategies with consumers, which would lead to additional value for the company and create a competitive advantage in the online business.

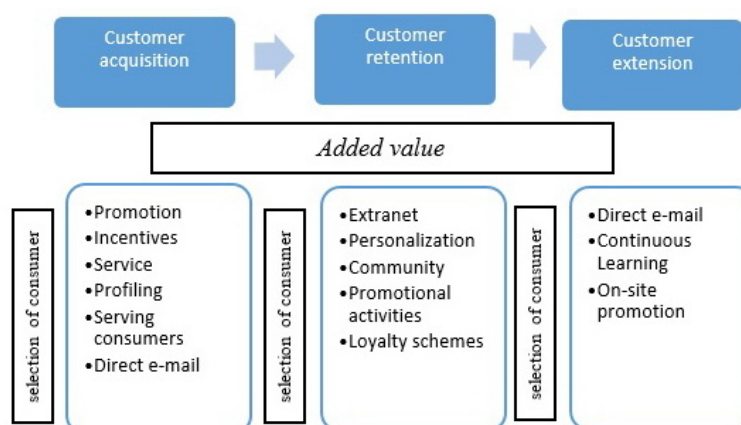


Figure 1: Stages of implementation of marketing communication strategies with consumers (Chaffey, 2002)

The strategy of attracting coverage (Stankovic): 1) consumer profiling - their interests with regard to the product; 2) selection of consumers – choosing consumers at all stages of marketing communication strategies. It is necessary to recognize the differences that exist in the process of segmentation; 3) the

choice of appropriate online communication strategy. Online activities include (Chaffey., 2002): The use of web site, blog, Google +, etc.. for the purpose of attracting the attention of potential consumers, in order to carry out their conversation and encouraging existing customers to engage in online exchanges and communication. The strategy of deepening customer relationships means establishing deeper and better communication and business relationships with the most profitable segments of the consumers. . It aims to increase the long-term, so-called. Living values of consumers. Customer retention strategy implies the implementation of a suite of business communication activities and techniques with the purpose of maintaining business relationships with customers. Among the activities and techniques include: personalization, mass customization, then organizing promotional activities, creating and activating an extranet, as well as organizing C2C (customer-to-customer) interaction via e-mail groups, forums, blog and chat. It is believed that it is far more difficult to maintain established business relationships with customers online than the offline market.

KEY CONCEPTS OF MARKETING COMMUNICATIONS WITH CONSUMERS

The growth of the active role of users, has been influenced by modifying the concept of the marketing mix, and thus the structure of the marketing mix. Kotler and group of authors have long ago pointed out that the traditional structure of the marketing mix represents the views of the seller, and it is essential that marketers adopt oriented perspective to the user. The new marketing approach, based on the user and their needs and requirements, requires management of the entire service process. One of the fundamental elements of the control process is clear, continuous communication with customers, providing a constant exchange of information and constant reminder to consumers that they are really important and to "think" on them, and to appreciate and respect their needs and habits (Stankovic. , 2009) which is indicated in Figure 2.

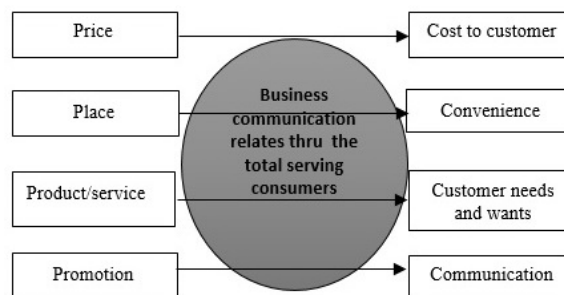


Figure 2: The transformation of the marketing mix (Stankovic., 2009)

A key element of the transformation of the marketing mix concept makes the establishment of modern enterprise business communication relationship based on total service consumers. The purpose of establishing long-term business relationships and communication is to:

- treating consumers as equal partners in the trade - worth every attention and every business and communication efforts;
- defining the needs and demands of consumers - their continued identification and diagnosis, in order to meet there needs in faster and better way;
- developing customer loyalty - through the creation of high-quality range of services, but also through the continuous development of high-quality way of communicating with them.

Conducting business concepts in business, primarily the concept of Customer Relationship Management - CRM, need to be accompanied by the adoption of key communication concepts, namely (Drucker): Permission, and Involment Interruption Marketing.

Permission Marketing allows the seller to exercise their right to communicate with the consumer. The consumer can, but does not necessarily accept the inclusion in the communication activity with the seller. This has particular importance in the process of electronic retail stores. In this area the exchange takes place without the possibility of physical contact between sellers and consumers, and any

unwanted messages has far more impact on consumers than when it comes to physical sales. Seth Godin (Chaffey., 2002), an author who introduced the term Permission and Interruption Marketing, warns that the average consumer is everyday "bombarded" with over 3000 spam messages, both those that arrive via traditional, and those through electronic media. Permission Marketing enables obtaining permission from consumers to be involved in the marketing activities of companies, where they in turn provide certain incentives and stimulants.

In contrast to the previous concept, Interruption Marketing is the concept of communicating with consumers, which is now largely obsolete. It involves sellers communication that interferes and interrupts consumers in its activities. This concept is seen as a marketing approach that no longer corresponds to modern business. In the case of Interruption Marketing sellers intention is to draw attention of consumers by disrupting the activities which they are currently dealing with.

For reasons of necessity of active involvement of consumers in the decision-making process of communication with the seller, is now a lot of attention paid to the concept Involvement Marketing. Theory engaging consumers (Consumer Involvement Theory-CIT) means understanding the psychology and behavior of targeted consumer segments. Consumer behavior provides the information necessary for the seller to create new ideas, approaches and strategies of marketing communication. In this regard, it is necessary to bear in mind the two dimensions of this concept:

- Involvement - refers to the time, energy, the process of thinking, money and other resources that people spend in the procurement process;
- Rational / Emotional in decision-making - is a scale that measures; Rationality vs. impulsiveness, desire vs. logic, passion vs. the wisdom of the purchase. (www.adcracker.net)

By combining the aforementioned dimensions are obtained the following four situations of consumer behavior:

- High level of involvement / rational decision-making is linked to the purchase of high risk and high cost.
- High level of involvement / emotionality in decision-making is linked to the purchase of high-cost, or that have emotional value and a "message" to the customer.
- The low level of involvement / rationality refers to purchases by habit, about which we know enough and do not involve high costs.
- The low level of involvement / emotionality refers to purchase of low cost, but which are harmonized with feelings of customers. (www.adcracker.net)

PAST PRACTICE CONNECTING WITH CONSUMERS

Connecting with consumers is realized in the triangle of interactivity, technical and technological infrastructure and the value of services provided. The level of compliance between these elements determines the intensity of the connection between community members. The functioning of social networks based on the potential of new technologies for quick and simple exchange of messages between people. According to a study by Forrester Research (Ramsey. 2006) which was conducted in Europe in 2007 identified the following activities that are taking place across social networks: publishing content (9%), posting comments (18%), networking ie. connection (1%), generating information (12%), passively listening and observing interactions of other people (49%). A high percentage of respondents (41%) ignores all this activities. The same research showed that in the Netherlands and France prefers to communicate through blogs, in Spain and the UK leaving comments, and in Italy generating information. Given the number of people who communicate via social networks and the size of the content that each share (one person communicates with hundreds or even thousands of people), there was expansion of communication messages in the virtual space. Because of the way of creating, developing and managing the content that is exchanged, these new media are called as social media or media that are profiled consumers (Singh et al., 2008; Mangold et al., 2009). Their influence on consumer behavior in the purchasing process, including the

identification of needs and desires, defining and assessment of possible choices, to exchange opinions and attitudes in the process of evaluating the performance brand after purchase is increasing in comparison to other forms of communication. Activating the role of consumers with a high degree of involvement in the resolution of problems provides the greatest opportunities to build long-term relationships in the channels of trade (Varki et al., 2003). Research conducted on the retail market in Serbia has shown that consumers do not feel that the vendors are really interested in them and their needs, and that there are sufficient grounds to claim that the retailers enough to care of individual needs and requirements of consumers (Stankovic., 2009). Social media is often defined as a set of new online media that are created and used by consumers to mutually exchange information on products, services, brands, experiences from the purchase and consumption (Kaplan et al., 2010), respectively, Internet-based applications allow the creation and sharing of content that is generated by users (Fill., 2009). Include numerous and very diverse media, such as blogs, by the company sponsored discussion forums, chat rooms (chat rooms), e-mail, Internet forums and discussion groups, sharing sites with different content (music, pictures, movies or photos), social networking Web sites.

CONCLUSION

The intensity of the role of the consumer in communicating with the company, as well as the ways in which communication takes place among them is the most important link to the survival of an enterprise in the market. Therefore, special attention should be given to choosing adequate communication strategies with consumers. Online businesses communicate with their customers through a series of communications and business activities, and should endeavor to approach their offer and to build good relationships with customers. A variety of marketing communications strategies that are being implemented in various stages of construction of long-term relationships with consumers aim to create a positive attitude itself, which should lead to his favoritism in the exchange market, to building satisfaction and consumer confidence. Effective communication strategy involves continuous marketing communication, and for the purposes of diagnosing the needs of consumers, treating customers as equal partners in trade, and encouraging the building consumer loyalty. Emphasis should be placed on improving communication strategies and in greater intensity dedicate the consumer, and given his role of creator offers enterprises.

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THE CHANGES OF HRM IN MNCs' SUBSIDIARIES IN SERBIA: A COMPARATIVE ANALYSIS BASED ON TWO SUCCESSIVE CEEIRT RESEARCHES

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ABSTRACT

Fostered by new external challenges, many companies are struggling to determine how to develop their human resource management (HRM) practices to meet new and changing organizational needs. Multinational companies (MNCs) take very important place especially regarding their influence on HRM practice in their local subsidiaries placed in other countries, and that way change the HRM practice of other countries, as well. For the researchers and HR managers it is important to know how the HRM practice of MNCs has changed. The purpose of this paper is to present the changes of HRM practice in MNC subsidiaries that operate in Serbia between 2009 and 2013. For the purpose of this study, the authors used data of the Central and Eastern European International Research Team (CEEIRT). CEEIRT carries out a three-year region-wide HR research program to understand the recent and future challenges inherent in human resource management, especially in the area of business of MNCs' subsidiaries that operate in Central and Eastern Europe (CEE). As a member of CEEIRT, Serbia has participated in two successive researches carried out in 2009/2010 and in 2012/2013 period. The findings showed that Serbian subsidiaries in 2012 and 2013 changed their HRM practice compared to the previous period.

Key words: human resource management, MNCs' subsidiaries, CEEIRT, Serbia

INTRODUCTION

Over the past several years, the economy of Serbia has experienced growth due to the strong foreign investments and continuous improvement of its business environment, even during the crisis and recession in 2009. Main characteristics of Serbian business environment which speak in favor of FDI are: unlimited trade, human resources, favorable geographic position, low operating costs and several financial incentives (SIEPA, 2013, *Doing Business in Serbia*, p. 12). Since year 2000, a starting year of economic and political transition, Serbia has attracted more than €22.4 billion of inward foreign direct investment. FDI flowing into the country by the end of 2010 exceeded EUR 14.5 billion, which means that Serbia has attracted nearly EUR 8 billion of FDI in last four years. According to data published in 2013 the volume of FDI that flowed into Serbia was 1.087 million Euros. Since the onset of economic reforms, Serbia has grown into one of the premier investment locations in the CEE Eastern Europe.

The entrance of MNCs on Serbian business market had contributed to several changes in domestic economy. For the purpose of this paper the authors decided to explore the influence of MNCs practice on human resource management in their subsidiaries in Serbia. The main goal of this research paper was to present the changes that occurred in the development of HRM activities in the subsidiaries of MNCs that operate in Serbia in the two observed periods. The subject of the paper was the analysis of

HRM practice in MNCs' subsidiaries in Serbia and researchers used comparative analysis to compare data gathered in two research periods, 2009-2011 and 2012-2013, through the CEEIRT project.

THEORETICAL BACKGROUND

Human resources are the key resource for the sustainable competitiveness of contemporary organizations (Wright, McMahan, & McWilliams, 1994; Collins & Clark, 2003; Zikic, 2015) because only highly educated and motivated employees, enrolled in the process of lifelong learning, can handle all the challenges and problems derived from risky and uncertain business environment. HRM includes the following functions: HR planning, recruitment and selection, performance evaluation, training and development, talent management, compensation and benefits, industrial and labor relations, employee communication, HRMS/IT and other HR related areas (Barišić & Poór, 2012).

A very interesting area of HR researches is the exploration of the role of MNCs in the development of the HRM practice at their subsidiaries. When the global market and multinational companies are in question, an increasing complexity of the HRM process can be noted. In the domestic HRM the situation is simpler and easier for managers because all the business is made in one specific area, one national culture and business environment. By entering in the global business environment, organizations come into a contact with a number of challenges such as introduction of different national cultures, uncertainty due to the entry into new and unfamiliar markets, meeting other legal regulations related to the labor relations, new and different knowledge, technologies and methods of work, and the like. Therefore, human resource management has to become increasingly important in the functioning of domestic and foreign organizations (Poor et al., 2012, p. 42) since it is seen as a one of the key drivers of success.

When establishing their subsidiaries in different countries, MNCs usually bring their work methods and technologies, their business knowledge, management styles, and organizational designs with themselves. MNCs employ people from countries where the new subsidiaries are established, so they influence the employment in those countries. There are several characteristics that predominantly characterized MNCs: the control of all phases of the business process, the structure based on the organization from the parent country and subsidiary branches in other countries, the impact on the creation of value chain in the branches, the initiation of foreign direct investment (FDI) - startup capital, the capital investment in other countries - human, technological, financial, knowledge capital, the organization of business primarily in areas where high capital return, and the usage of a global strategy for the international market (Berber & Čuić, 2009, p. 296-297).

For the purpose of this research the authors decided to explore the HRM development in MNCs' subsidiaries in Serbia, a country of Central and Eastern Europe. In the theoretical part the authors presented the actual HRM practice in Serbian subsidiaries of MNCs.

HRM in Serbia

It is important to note that transition economies are often complex, relative to their developed counterparts in other parts in Europe, when it comes to the establishment of socially legitimate management policies and practices. The transition dynamics are seen to influence human resource management practices in a multiplicity of ways as a result of new ownership structures, specific labor market dynamics, changing employment systems, new management practices and as altered industrial relations dynamics and shifts in the balance of power between new and different stakeholders. As a result of these dynamics it has been argued that the HRM remains underexplored in the CEE region (Zupan & Kaše, 2005; Bogičević Milikić et al., 2008; Morley et al., 2012).

As for the rest of the CEE region, HRM in Serbia is still underexplored management area. Researchers from Serbia found that transition towards a free-market economy has encouraged Serbian companies to introduce management systems and to apply tools generally recognized and accepted in developed market economies and successful companies world-wide. Personnel function was predominant form of department that took a role in managing human resources, usually related to the activities of maintaining personnel records, administering the employment and placements, keeping

records on compensation and benefits, maternity leave and other issues required by the Labor Law of Serbia. Also, this function was usually a part of legal unit and support operations unit within the same department, and employed often only one person with a university degree (in law) and many clerical staff lacking appropriate HRM competencies (Bogićević Milikić et al., 2008). HR manager or personnel manager was not present in top management board, there were no strategic approach to the HRM, HR activities were related only to administrative ones, while more strategic and important ones like staffing, performance management, compensation and benefits, training, career development and expatriation were neglected.

In past years many changes occurred in Serbian business environment. Twenty years of post-socialism in Serbia provided a ground for certain changes in the field of HRM, too. According to Bogićević Milikić et al. (2012) it seems that two groups of factors influence the changes in the field of HRM. The first group of forces includes two main facilitators of HRM's changes: the transition process and the globalization process. The second group of forces pushing HRM in Serbia in keeping the status quo is the following: the institutional context and the national culture (2012, p. 458).

Since the globalization process is seen as a generator of the changes in HRM in Serbia, in the continuation of the research the authors explored empirical data with the aim to emphasize the changes in the development of HRM in MNCs' subsidiaries in Serbian market.

METHODOLOGY AND DATA

The CEEIRT (Central and Eastern European International Research Team) research model has developed over the past few years (Poór & Farkas, 2012) and now we take into consideration additional internal factors (company characteristics, phases in company development, mandates, etc.).

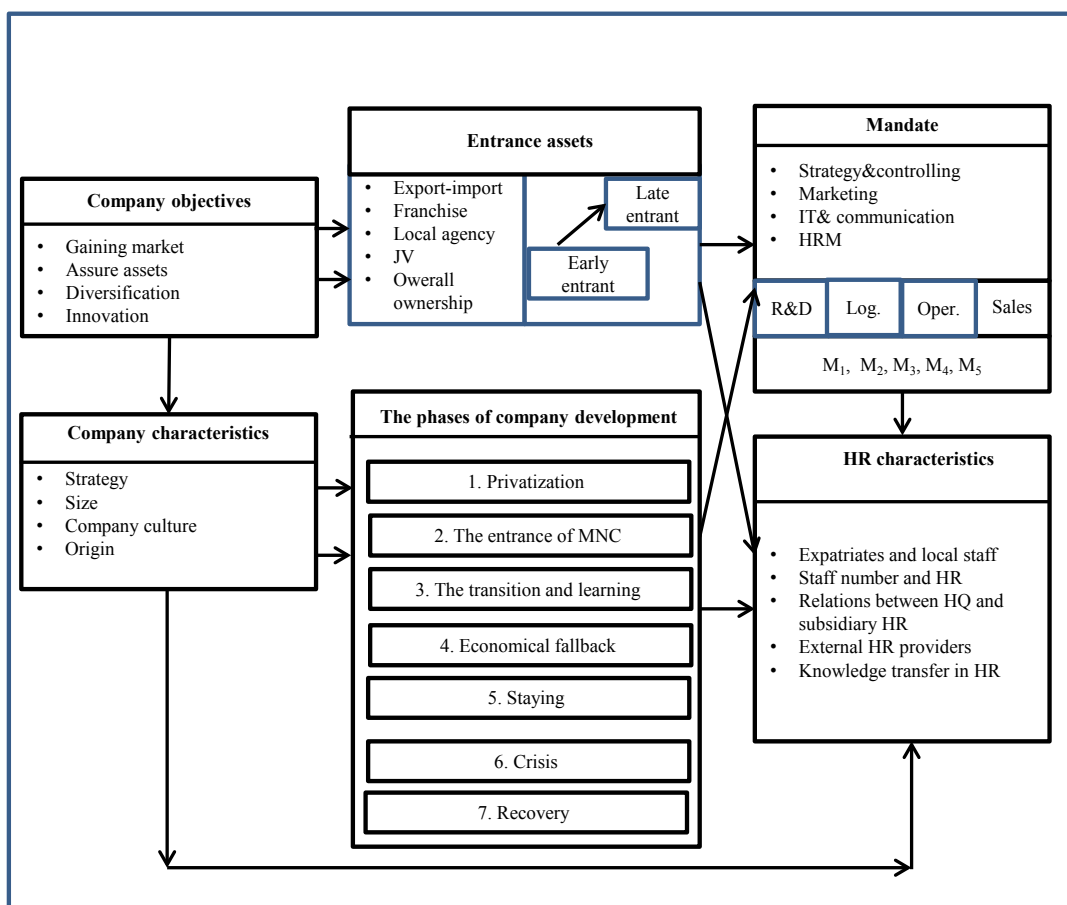


Figure 1: Research model
Source: Based on research of the CEEIRT team

To obtain data on the MNC subsidiaries' HRM practice in the CEE region standardized questionnaires (translated to the official languages of examined countries) were used. The on-line questionnaire was filled out by the person responsible for HR practice in each MNC subsidiary (HR director, HR expert, CEO, etc.). The data analysis was done by SPSS Version 21, using descriptive statistics. The current analysis was made on the sample of Serbian subsidiaries of large MNCs. Table 1 present the number of organizations that took part in the research cycles.

According to table 1, in 2009, 20 subsidiaries participating in CEEIRT research in Serbia employed 23389 persons. Some 60% of the examined Serbian companies employed 250 persons or less, one quarter had employees between 250 and 1000 employees. The remaining 15% belong to the typical large enterprises with more than 1000 employees.

Table 1: Number of valid responses by participating countries in the two CEEIRT research phases

Country	Number of valid responses	
	2009-2010	2012-2013
Serbia	20	19

Source: *Primary research by the authors based on CEEIRT database*

On the other side, in 2013 there were 19 MNCs' subsidiaries participating in the CEEIRT research in Serbia with 9605 employees. 52.9 % of the examined Serbian companies employed 250 persons or less, 11.8% had employees between 250 and 1000. The remaining 35.3% belonged to the typical large enterprises with more than 1000 employees. The majority of the companies belonged to the small and medium sized companies. Despite of the fact that the local subsidiary may be considered a small firm, dominantly these firms were subsidiaries of large international companies.

In 2010 one quarter of the examined companies were engaged in the light industry and another quarter of them in financial institutions and banks. Some 15% of the respondents operated in trade while another 15% produced consumer goods. The remaining companies belonged to heavy industry, engineering, services and other fields of operation at 5% levels for these fields. In 2013 36.8% of the examined companies were engaged in industry and another 36.8% of them in financial institutions and banks. Only 5.3% of the respondents operated in trade while another 21.1% of companies presented some other sector of business.

RESULTS AND DISCUSSION

For the purpose of this research the authors have decided to explore several indicators of HR function:

- Number and workload of the HR staff;
- The main indicators representing the importance, results, and efficiency characteristics of the HR activity (labor cost – total cost ratio and relative size of the training budget);
- The operations of the HR function in subsidiaries in Serbia.

Table 2: Number of employees and HR staff in the participating companies

Year	Number of employees	Total number of HR staff	Employees per HR position
2009/2010	23389	265	88
2012/2013	9605	148	65

Source: *Primary research by the authors based on CEEIRT database*

According to table 2 **the average number of employees** served by one HR professional decreased from 88 in 2009/2010 to 65 in 2012/2013. This can be explained in the sense that one HR employee is engaged for smaller number of employees, which can lead to the conclusion of the higher importance of HR activities in these organizations. In 2009/2010 half of the HR departments of the companies examined employed one to four persons. Some 20% of the respondents employed five to ten employees while 20% of the HR departments examined in the survey had more than 20 employees. Five percent of the firms employed either 11-15 or 15-20 HR staff. All the subsidiaries in the survey had a HR department. In 2012/2013 41% of the HR departments of the companies examined employed one to four persons. Some 29% of the respondents employed five to ten persons while 12% of the HR departments examined in the survey had more than 20 employees. 6 percent of the firms employed either 11-15 or 15-20 HR staff. Only one subsidiary in the survey did not have a HR department.

The labor cost – operating cost ratio is one of the most frequently analyzed indicators on the importance of the HR function in the company. The effects of HRM have a stronger and more direct influence on the company's performance if this ratio is higher. In Serbian subsidiaries in 2009 the average labor cost reached 29% of total operational cost of organization, while in 2012-2013 that percentage was 26. It is obvious that there was a decrease of labor costs-operating costs ratio.

The relative size of the **training budget** (compared to the entire annual labor costs) is an important indicator of modern and effective HR activity. In 2009/2010 in more than 60% of the companies examined the relative size of the training budget was under 3% and only about one third of the companies examined spent 7-20% of the annual labor budget on training employees. On the other hand, in 2012/2013, in more than 64% of the companies examined the relative size of the training budget was under 3% and only about 29% of the companies examined spent 3-5% of the annual labor budget on training employees. Only one subsidiary pointed at the annual training budget of 5-10% of the entire annual labor cost.

The authors also explored the **function sharing practices** among the companies examined. The typical solution in 2009/2010, implemented by almost three quarters (74%) of the respondents, was that the HR department of the company's headquarters, besides carrying out the auditing function, lays down general guidelines, provided a standard framework for the work of HR departments of the subsidiaries. In almost two thirds (63%) of the companies the typical function of the HR department was providing sources and requested advice. In almost the half (42.1%) of the companies it also had an auditing function. A strong third (37%) of the respondents reported that the local HR department had complete freedom. Decentralized work was characteristic in 32% of the subsidiaries. In one quarter (26%) of the companies the headquarters was responsible for developing the detailed HR model and not only personnel guidelines but also the rules of procedures. Almost 10% of the respondents marked the practically absolute centralization. 5% of the HR departments of the subsidiaries participating in the survey were involved in strategic issues. In contrast, the typical solution in 2012/2013 that was implemented by 44% of the respondents was that the HR department of the company's headquarters, besides carrying out the auditing function, lays down general guidelines, provides a standard framework for the work of HR departments of the subsidiaries, and requires information and reporting from them. Only one of the respondents reported that the local HR department has complete freedom. Decentralized work is characteristic in only one of the subsidiaries. In 44% of the companies the headquarters was responsible for developing the detailed HR model and not only personnel guidelines but also the rules of procedures, processes were developed centrally.

Table 3 presents the level of responsibility in **decision making process** in key HR functions.

Table 3: Responsibility of decision making in key functions of HR (%)

Key functions of HR	Local line management (mgt.)		Primarily local line mgt. in consultation with the HR department		Primarily local HR department in consultation with local line mgt.		Local HR department	
	2009/2010	2012/2013	2009/2010	2012/2013	2009/2010	2012/2013	2009/2010	2012/2013
HR Planning	25	12	45	47	15	30	15	12
Recruitment	25	19	15	19	45	56	15	6
Selection	15	25	20	25	50	50	15	0
Performance Evaluation	20	31	30	25	25	31	25	13
T&D	20	13	30	13	40	38	10	38
Compensation and Benefits	32	25	32	38	26	21	11	13
Industrial-Labor Relations	25	18	25	24	25	35	25	24
Communication	25	19	30	25	40	38	5	19
HRMS/IT	10	18	25	12	25	18	40	53
Other HR fields	5	33	5	33	45	0	45	33

Source: *Primary research by the authors based on CEEIRT database*

As the data in table 4 shows, the majority of the respondents regard most of the interventions in the key functions of HR as the result of a joint decision in which the final decision is made rather by the local HR management based usually on consultation with the line management. Compared to previous period, in 2012/2013 local line managers and HR departments alone were less engaged in

decision making than in 2009/2010. On the other hand, joint efforts of local line and HR managers were used mostly to make decisions about staffing, performance management, compensation, labor relations, etc.

CONCLUSION

The results of the research presented in this paper pointed to the changes in the functioning of the HRM in MNCs' subsidiaries in Serbia. The decrease of labor costs and training costs pointed to the worse conditions in MNCs' subsidiaries in Serbia, but the reasons for these changes can be seen in worse economic conditions on the market, in general. On the other hand, smaller number of employees per HR staff can be a sign of more qualitative engagement of HR staff for different HR functions since the joint efforts of local line and HR managers were used mostly to make decisions about staffing, performance management, compensation, labor relations, etc. The process of decision making has been delegated to the line and HR managers in local subsidiaries more than only for line managers. The typical solution for HR operations that was implemented was that the HR department of the company's headquarters, besides carrying out the auditing function, lays down general guidelines, provides a standard framework for the work of HR departments in the subsidiaries, requires information and reporting from them, and develops the detailed HR model and rules of procedures.

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THE ROLE OF LEADERSHIP BEHAVIOUR IN ACCOMPLISHING BUSINESS EXCELLENCE OF DOMESTIC BUSINESSES

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ABSTRACT

In this paper the author analyses the necessity of training local entrepreneurs and managers in the function of more effective business in the conditions of market economy and achieving the goals of business excellence. Leadership is a basic principle of modern management of an organization. Modern business requires that teams are made up of leaders whose power stems from advancing knowledge. Leadership and business excellence are interconnected. The lack of competitiveness of local businesses is connected to the mistreatment of knowledge management process, the lack of leadership behaviour of domestic managers and inadequate application of modern management methods and techniques.

Key words: leadership, quality, competitiveness, business excellence, knowledge

INTRODUCTION

Leadership involves management approach to people within an organization, based on the impact of one person to another independently from the formal right to perform this influence. It is the ability to create a vision, inspire and create enthusiasm and voluntary participation in achieving objectives. Effective leadership is a combination of the very leaders, their followers and the specific situation with regard to management. It is understood that both the leaders themselves are under the influence of those being led because that is the only way to formulate the objective and strategy of action that will unquestioningly be followed. Leaders may, but need not, have a formal right to lead - they are simply being followed by people. When they are aware of their roles and use it to achieve the organization's goals, then we talk about leadership management. Basic characteristics of leaders are: communication, innovation, initiative, creativity, vision, flexibility, encouraging change, determination, leadership set by an example and etc., (Sajfert at all, 2006). All managers are not always the leaders. Leaders have an active and personal attitude towards the goals as well as a characteristic attitude towards problem solving.

Leadership is one of the most important principles on which quality management is based. Leadership as a criterion is included in the definition of TQM models, primarily in the American and European models. On the other hand, leadership is one of the eight management principles on which the quality management system is established. Leadership is the most responsible aspect of the realization of the goals that lead to business excellence and world class service. Executive management has to be organized in managing teams. The time of powerful individuals who operate with a multitude of activities is the past. Their places were taken by senior management teams - teams of managers. The personality of the individual, as a source of power, even in the early 1970s was replaced by the organization as a source of power. Modern organizations are based on the formation of teams within the classical organizational structure through which the dynamics of the organization is introduced. Modern business requires that teams are made up of leaders. One leader is not enough. According to

Riderstrale and Nordstrom (2004), what is crucial for modern company, are not its main capabilities, but its smarts. According to Nathan Mirvorda from Microsoft, in the knowledge-based society relationship between the average and really good is no longer 1: 2, as it used to be, but 1 to 100 or even 1 in 1,000.

THE ANALYSIS OF THE ASPECTS OF LEADERSHIP AND POWER

Leadership involves management approach to people within an organization, based on the impact of one person to another independently from the formal right to perform this influence. It is the ability to create a vision, inspire and create enthusiasm and voluntarily participate in achieving the objectives. Effective leadership is a combination of the leaders, their followers and the specific situation with regard to management. According to Sajfert et al (2006), the basic characteristics of leaders are: communication, innovation, initiative, creativity, vision, flexibility, encouraging change, determination, leadership set by an example etc. All managers are not always the leaders. Leaders have an active and personal relationship to the objectives, they generate ideas. Also they have a distinctive new approach to solving the problem. There are several types of power that leaders can use. Each of the types of power leaders may possess in varying degrees. Using one can affect the other. The tendency to use the power may result in greater effectiveness, if the power is successfully used by leaders while failure in the use of power can have the opposite effect.

For the first time in a systematic way on the grounds or types of power speaks in the study institute University of Michigan at the end of the fifties. The study identified six power base: 1. The power of reward, coercive power of 2, 3 legitimate power, referent power of 4th, 5th and 6th power experts informational power (Seifert at all, 2007). The power of remuneration is based on the authority or ability to determine who will get a valuable prize. The power of the award is "carrots" and the power of coercion "stick". The award is something that employees of the organization they want. You must go to those awards that people really want, and not to those who are presumed to want. The essential motivational rewards are those that affect employees in the organization. Sometimes prizes encounter resistance when used in a manipulative way. The power of coercion is based on the authority or ability to punish others if they do not engage and behave appropriately. In this way, induces fear in others. The leader must be very careful in the application of coercive power. Machiavelli is a few hundred years ago argued that leaders who have the formal power to stay longer in a position of authority, but those who rely on informal power. Legitimate power speaks of authority as the right to change and direct others. The authority includes a sense of legitimacy. It is defined as a right to influence others to achieve common goals on which the various participants agree. Power is not always used to achieve common goals and for a while it can be used to achieve the target individual. Legitimate power is based on the willingness of others to accept it. It can be effective only if it is accepted by people intended to be controlled. Legitimate power is derived from managerial positions in the hierarchy and authority based on that position. The reference power is when personality traits or some other quality have a special form of power. This ability to influence the behaviour of others is called the reference power. The appearance, posture, intellectual style or value inspires appreciation and leads others to identify with it. The reference power results from the appreciation of personal identification with or loving others. The power of experts is based on knowledge and talent to influence others. The individual with the power of an expert is in a position to influence other, because it shows that he or she has the skills and talent in a given area. Many employees believe that their superiors have the power to understand the job in the organizational unit. The power of experts is based on the expertise that is not owned by others. Information power is based on access to and control over the distribution of important information about the company and its business plans. The emphasis in the modern enterprise is on the control of vital information because the power goes along with those who control important information.

THE APPROACH OF DOMESTIC MANAGERS TO THE PROCESS OF QUALITY IMPROVEMENT OF A BUSINESS

The transition process should enable economic operators in the country in transition to enable independent market performance, a healthy competitive fight for business at an international level. This implies significant changes within the organizational structure of the business entity, and in the mind-set of management and employees in organizations. The key role in this process is the executive leadership and domestic owners of capital, which should establish solid market fundamentals of business. According to Djordjevic and et all (2004), the market is becoming a key mechanism for the determination of all economic flows at the level of the national economy. Operation according to market principles, in compliance with all the economic criteria that determine the quality of the business (profit as the main motive, increasing productivity of production and productivity of knowledge, as well as maintaining a stable market position for a company), requires rational approach to all those business resources whose use does not bring business results.

Productivity is the most important factor in modern business competitiveness (Besic and Djordjevic, 2014). Fight for consumers and a stable market share is essentially a struggle to increase business productivity. Improving the competitiveness of the national economy in the global economy is closely linked to economic development, employment increase and efficient economy that are based on the imperative of increasing productivity. Productivity in Serbia is still 42% of the European average. According to Nikolic (2014), the reason for poor productivity in the domestic business enterprises is based on the lack of good organization of work, technology, underdevelopment and the lack of knowledge. Improving the labour productivity and business, as a result of the improvement in productivity of knowledge, is the main task of the transition process, as seen from the level of the business entity. This is achieved in two ways:

- On the basis of rationalizing all business resources that burden business enterprises, i.e. unproductive ones,
- Improving productivity of knowledge of employees, primarily executive managers.

A special role in achieving the transition process must have a comprehensive and meaningful privatization, with stronger stimulation of the private sector - further development of small and medium-sized enterprises (SMEs) and private entrepreneurship. The developments of small and medium-sized enterprises is very important for the process of transition as it enables the acceleration of privatization - SMEs are an indigenous private sector, and thus enable the development of the domestic private capital. The private sector is more efficient in use of resources - entrepreneurs take a risk of investment, which prevents business losses from being transferred to the wider community.

Development of transition involves the transition in single businesses or transformation - ownership, market, organizational and technical. In transformations of companies from countries in transition, a key role is owned by executives who need to alter the existing state of mind and way of working - as said by Taylor, the domestic economy needs mental revolution, both of employees and the management. This implies acceptance of the fact that knowledge is a key business resources and that management of the organization comes down to knowledge management. Leadership in the domestic economy is still tied to proprietary tissue or power arising from ownership. The problem lies in the fact that the accumulation of capital in the transition process does not mean that the capital owner is a leader as well- usually the capital in the early stages of the transition process accumulates on the basis of a monopolistic position or familiarity with the political structures. Also, in the domestic market leadership is believed to be an innate characteristic. Taking into account the above mentioned facts, it becomes clear why domestic enterprises lack competitive aspect in the international level - local businessmen and entrepreneurs think in terms of local market and the first steps of transition, rather than turning to improvement of their own knowledge and application of modern management methods and techniques.

The main lines of action in the field of education of local managers should be:

- Education for a new economic conditions, which are based on market mechanisms, private ownership and productivity as a factor of competitiveness,
- Promoting a new concept - the necessity of the struggle for productivity, as basis of the market survival, market development and the development of specific companies,

- Permanent learning from others' experiences - regular use of benchmarking in order to achieve business excellence (Besic and Djordjevic, 2007).

CONCLUSION

Draker says: “Everyone knows that the second law of thermodynamics is that all work degenerates into heat and friction. Draker’s first law is that everything degenerates in the work, otherwise, nothing is done. Much of the work itself becomes heat and friction, but in the first place is the work” (Drucker, 1995). Given this definition of success to the organization, it is understood that domestic companies have to think of carefully their own development strategy, particularly in line with European and global integration trends. Still, designing a strategy cannot succeed without the hard work invested in the advancement of knowledge and productivity knowledge of the employees themselves and the organisation. The most important fact in relation to the process of management of the organization is that it consists of certain procedures, and therefore can be learned and further developed - effectiveness is a habit, i.e. a set of established procedures and processes can always be learned and improved.

Leadership, knowledge improvement and business excellence are interconnected. The main problem is the lack of competitiveness of domestic enterprises, which occurs as a result of poor business productivity and lack of application of new technologies and knowledge as well as inadequate application of the concept of quality management. There has not yet been developed the awareness about the importance of business excellence model within domestic enterprises regarding their business. The first step in this process is the implementation of quality management system according to ISO 9001 and the development of integrated management systems.

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MANAGERIAL DECISION-MAKING IN THE FUNCTION OF EFFICIENT SCHOOL MANAGEMENT

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ABSTRACT

The aim of research presented in this paper is the investigation of administrative and professional-educational function of the school principals with the purpose of accomplishing a more efficient decision-making process, organization and school management. Research is related to the decision-making process and management performed by the primary school principals in Šumadija, Pomoravlje and Raška Districts. The research results point out the key role of the school principal in the decision-making process, as well as in coordination of activities and guidance of colleagues towards accomplishment of goals and efficient realization of plans in accordance with the adopted school development strategy. A school principal has a dual role - a manager in charge of purposeful and rational operating of school as a professional organization on one hand and professional-educational leader responsible for professional and educational work in the function of realization of the desired quality of work process and school accomplishments on the other hand.

Key words: decision-making at school, school management team, management in education

INTRODUCTION

At times of global changes in all fields of society, the change which has been the most discussed and focused on, is the change in the education system. Our society has, in the process of establishing a democratic arrangement, accepted the concept of the open market economy. This decision primarily involves influence of economic and market laws and adoption of the world's standards, criteria and norms, when it comes to both education and training (Slatina, 2002.). That means that it is necessary to transform a traditional school into a conscious and goal focused social and scientific activity through the process of educational management (Slatina, 2002.). However, educational management cannot be formed by simple transfer of principles, methods and management instruments from economic spheres, whose goal is to increase the work efficiency and which results in the increase of knowledge as the component of a developed free and creative personality, as its consequence. (Agatanović, 2002.)

Educational institutions are organizing themselves to take the form of a professional organization which is unique in terms of strict separation of its basic business process and support activities (Šunje, 2002). According to this author, management of educational institutions is a specific type of business whose ultimate aim, unlike that of conventional business, is intangible – in the form of an individual

(individuals) who possesses amount of knowledge and skills required after the completion of certain educational process. The author points out the educational process which takes place within certain organization and within which managers engage necessary resources. In that way we find out that, when it comes to educational institutions, the dimension of intangible resources is manifested through professionalism, inventiveness, and primarily through teachers as holders of educational process. (Šunje, 2002.)

The increasing emergence of participation in decision- making (PDM) in schools reflects the widely shared belief that flatter management and decentralized authority structures carry the potential for promoting school effectiveness. The purpose of the paper (Somech, 2010) is to develop a comprehensive model for understanding the distinct impacts of PDM on school and teachers' outcomes.

CHARACTERISTICS OF MANAGERIAL DECISION-MAKING

Making business decisions presents complex activity based on the combination of knowledge and skills. Decision- making can be understood as the decision between multiple alternative possibilities and usually it presents response to a certain need or reaction to something. The final decision in the process of decision- making is up to a decision maker, the manager. Problematic nature of the situation sets relatively high demands when it comes to engaging intellectual resources in generating and evaluating possible alternatives, which consequently affects the quality of decisions made. The success, or failure of implementation, depends directly on the quality of the decisions made, as well as the success and failure of organization, which also directly affects a decision implementation.

Prerequisites for complex business decision-making are quality, available, and timely information on the one side, and a decision maker's knowledge and experience in theory of decision making, optimization, as well as business technology, on the other. Only with the knowledge of the essence of the actual problem being solved, and decision making models and adequate decision making models and techniques when it comes to complex managerial decision- making, collection of information required for comprehensive and objective decision-making can be determined. The nature of organizational problems is that it offers several alternatives to manager, as a person in charge of decision-making. Before finding solutions managers must be aware of the limitation on the number of possible alternatives for solving problems. Factors that limit alternative solutions (Figure 1) are primarily of normative nature: legal, moral and social, as well as formal policies and rules. Manager, using his knowledge and intuition, his experience and knowing the opportunities in the immediate and wider environment, taking into account the objectives and established business policy, strategy and business development of the company, makes the selection of the offered possible solutions and formulates that solutions as a decision.

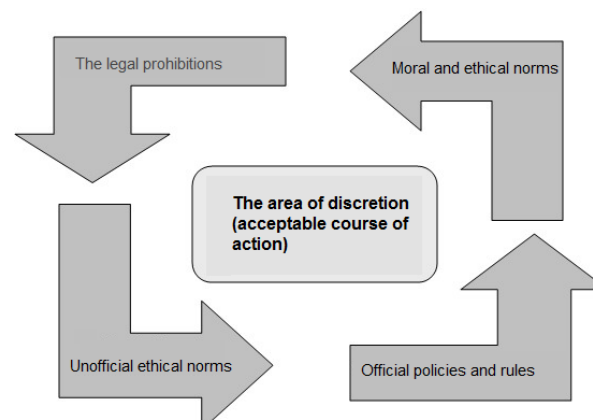


Figure 1: The factors that limit the number of eligible solutions for managers
(Source: Certo, 2008. str.162)

Rationality in decision-making is required from a decision-maker. However, it should be noted that the objectives can be achieved in accordance with existing conditions and limitations, that decisions are made for future conditions which are often related to uncertainty, that in many circumstances it is not possible to include and analyze all the alternatives so that the managers cannot be always absolutely rational in practice, but must be satisfied with limited rationality.

In the thesis, the results of research related to the examination of the attitudes of directors about the decision making process in organizing and managing the school, are presented. The research sample included 69 primary school principals in Šumadija, Pomoravlje and Raška Districts in Serbia – 34 school principals from Šumadija District ((Municipality of Kragujevac, Arandelovac, Topola, Knić, Lapovo, Rača and Batočina), 27 school principals from Pomoravlje District (Municipality of Svilajnac, Jagodina, Despotovac and Paraćin) and 8 school principals from Raška District (Municipality Novi Pazar and Raška). The results show that only one school principal had 20 years of service, being in the fifth term of office, so the largest part of the sample – 34.9% – mainly consisted of school principals who were in the first term of office (from 1 to 4 years). 26.9% of the school principals were in the second term of office (from 4 to 8 years). 15 school principals – 23.8% – were in the third term of office, having been in the position of a school principal for 8 to 12 years. 12.7% of school principals were in the fourth term of office, from 16 to 20 years. More than half of the sample included the school principals aged 41 - 50 years, all females (Table 1).

Table 1: The structure of the sample

Years of work as a school	%	Age	%	Gender	%
1-4	35	20 – 30	0	Female	53.6
4 - 8	26.9	31 – 40	20.3	Male	46.4
8- 12	23.8	41 – 50	56.5		
12 - 16	12.7	51 – 60	20.3		
More than 16	1.6	Over sixty	2.9		

THE ROLE OF THE SCHOOL MANAGEMENT TEAM

In an elementary school management body is the school board, which consists of representatives of the teachers' council, parents and representatives of local government. The director manages the work of the institution. Professional school bodies are: the teaching council, class council, professional council for class teaching, professional council consisted of class teachers, professional council consisted of special subject teachers, professional boards for development planning and the development of school programs and teams. Pedagogical collegium consists of representatives of professional councils and professional boards, and a representative of the professional associates. (The Law on the Foundations of Education System (Official Gazette RS, No. 72/2009, 52/2011, and 55/2013.)). Their scope of work is determined by the Law, and normative acts arising from the Law, and which determine more precisely a certain area. Acts that are of professionally - pedagogical nature are adopted by school workers by consensus.

At the level of educational institutions, administrative and professional pedagogical functions are exercised. Such a structure of functions has also caused an organization of management. In the schools surveyed, the percentage of staff who perform administrative tasks such as: secretary, chief accountant, administrative officer and treasurer, is 4.80%. Technical and general jobs are performed by 21.7% of a staff. The number and quality of administrative - technical tasks and activities are much different from those of a few decades ago, and the insight and participation in them is much more demanding for a contemporary director. The legislation is more complex, procedures are more complex, employee care is more subtle, working with finances carries more responsibilities, and physical resources and equipment include permanent adjustment to the demands of the pedagogical process.

Professional pedagogical function is performed by 73.50% of the employees and they are: teachers – special subject and class teachers, teaching staff who give support to teachers regarding teaching, librarians, psychologists, pedagogues. It can be seen that educational work is the most dominant in scope and activities of human resources, and it includes maintenance of regular, elective and additional classes, additional work with students and the like.

There is an increasing number of extracurricular activities in modern school, social and cultural activity of the school, direct and other socially productive labour with students, the class teacher work. Teachers, as team members at the school level, have the active role in making decisions. Teachers have the significant responsibility in making decisions in school self-evaluation team and school development planning team in primary schools in Šumadija, Pomoravlje, and Raška Districts, and they make decisions in 90% of cases.

School is characterised as a specific organisation by pedagogical work, which is more complex than administrative and technical work. School principal's involvement is more distinct in that field of school work. It includes development and pedagogical work which relates to: planning and programming, organizing, introducing innovations, monitoring and improving teaching, working with children with developmental disabilities, professional orientation, professional development, analysis of realized educational school results, and using resources. The question that we have asked the school principals related to whether they had a team for managing the school, that is, whether they do development and pedagogical work in a team and who are the team members. 71% of school principals have a team for managing the school and 29% do not have a team. When we talk about school principals who have a team, the team members are: deputy principals (60%), heads of class teaching and subject teaching departments (98%), team leaders (89,4%), teachers that are not heads of departments or team leaders (68,1%), expert associates (66,7%), chief accountant (67,4%), pupil accounting secretary (83,7%), school council representatives (87,2%), students (66 %) and parents or legal guardians(78%).

Complexity of development and pedagogical process demands that school principal has a team in making decisions, to give a great attention to the team, and to put great effort in it, showing expertise in leadership. School principal knows that he must use expert potential of each team member in such demanding work. In addition, making decisions assumes expert approach, which means knowing appropriate methodological procedures, the application of quantitative and qualitative analysis, and drawing conclusions on further actions in the pedagogical management of schools. "First of all, a good manager must have a well-organized expert associates that will collect and process relevant information, and determine several possible solutions by using research approach, and rank them, with appropriate commentary and explanations and give them to the manager." (Radojičić, M., Vesić Vasović J. 2011.)

SCHOOL PRINCIPAL – A MANAGER AND PEDAGOGICAL MANAGER

What is specific about school principal's role is taking part in most of school work. Whether he does it by himself or in a team, or he does not do it at all, legally determined responsibility for all that work assumes great involvement in realising it. "School principal is defined as a business (administrative) and expert (pedagogical) manager. On one hand he is a manager, and on the other hand he is a pedagogical leader". (Dubs, R. 1994. str.219). The research shows that school principals spend much more time to perform various administrative tasks (80%) than are dedicated to professional - pedagogical work (20%). This kind of relation between characteristic groups of tasks is inappropriate, equal involvement in the two groups of tasks would ensure the most efficient school management. In this sense the author (Dalin, 1998) states that the activities of school principals are aimed at ensuring the material conditions necessary for continuous improvement of the teaching process through administrative and organisational tasks (chief professional leading role) and expert and pedagogical running of the school (chief executive role).

School principal in the role of manager is recognized by not directing himself predominantly to the expert pedagogical work, but to those activities that will ensure that the expert pedagogical work is achieved in the best possible way. At first he will dedicate himself to creating material and human resources basis for expert pedagogical work. Such school principal will especially take care of school premises, getting modern equipment, staff quality, conditions for professional development and lifelong learning, and connecting with sponsors.

The research results confirm significant responsibility of school principals in making decisions about hiring teaching and non-teaching staff. It is legally determined that the active role in hiring belongs exclusively to school principal. 85 % of examinees use this right and 15 % make decisions together with the school council. The question is being raised whether school principals bring quality staff to school when hiring, which is one of the characteristics of school principal managers. School principal manager usually does not wait to see what announced vacancies will bring, but he will contact higher education institutions and try to find the expert he needs through all the relevant institutions and individuals.

The research has showed that the examined school principals are extremely skilled in cooperating with other schools and organizations, 73% of school principals make informal friendly relationships, which will benefit not only the students and the teachers but the local community as well. Tendency of school principals is to connect their school with as many schools in the country and abroad as they can and at the same time they do not forget their best students to whom they strive to obtain scholarships (by connecting with sponsors and donors) and other forms of assistance for recognition of their skills and further education.

By analyzing two typical role of the school principal, it is possible to notice that the school principal is a - pedagogical leader, a good pedagogical expert who pays the greatest attention to the upbringing and educational process in his work. School principal – manager is, however, a good business man who aspires to have a team of management in his school, not to make decisions on his own, who tends to create better working conditions in his school, who cares that his premises, equipment and staff are as quality as they can be, so he can make better educational results. School definitely needs a school principal who has both characteristics. However, there are few such school principals. School principals who are at the same time good pedagogical experts and good managers are rare, and this was shown in this research. As any other employee school principal has his working potential as well. If he spends his time and energy in one field (80% on administrative work) there is nothing left for the second one (20% on expert pedagogical work). And if he does not have affinity for it, or abilities for one of those fields, he will not be satisfied nor successful in his work.

One possible solution to this situation is that the school principal is allowed the freedom to work in their preferred area in which he has more knowledge and in which he has more success. This freedom should be allowed provided that he ensures quality realization of all the tasks which are specified in the plan and program of the school and that he determines compensation carriers in his staff, who will instead, or better yet, in cooperation with him do all those tasks which are his less favourite. School principals in our research did do that, 71% of school principals made a team for managing school which is, in most cases, consisted of teaching staff involved in pedagogical work, and that is the field which school principal dedicates only 20% of his time to.

CONCLUSION

School is traditionally recognized as a hierarchically structured organization (students – teachers – parents – director), same as all other numerous and complex organizations and is one of necessary prerequisites of a successful management. This hierarchy also contributes to culture, but the management style determines the final outcome to a great extent – will the hierarchical structure be strict or will it allow desired flexibility, despite of clear hierarchy? Flexibility of such a structure can be achieved by efficient decision-making, but also by constant preservation of team work culture in

the collective. Managerial decision-making represents a complex topic that cannot be identified with quantitative mathematical models, but with a complex qualitative-quantitative approach, and this qualitative component is untouchable in the hands of the decision-makers – principals with knowledge and experience. Stratification, complexity and diversity of the process of managerial decision-making indicate the need for evaluation based on combination of relevant quality and quantity criterion estimates, which all together can improve quality of decisions. Decision quality is reflected in its compatibility with given conditions, time limitations and inclusion of an optimal amount of information. Some environment factors that are beyond control can also influence the decision quality, so the efficiency of a decision can be evaluated by the function which depends on its quality and realization results.

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THE IMPORTANCE OF NONVERBAL COMMUNICATION IN BUSINESS ENVIRONMENT

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ABSTRACT

The aim of this paper is to highlight the importance of nonverbal communication in the workplace as an efficient tool for increasing the opportunity to interact with all stakeholders (employees, colleagues, competitors, current and potential clients) through avenues outside of explicit word choice. Special attention is paid to nonverbal channels and their accurate expression and perception in order to convey confidence and credibility in business settings. Also, the paper provide a theoretical framework of the role of nonverbal communication in various professions, especially those that require high levels of face-to-face interaction such as management. Therefore, increasing managers' awareness of nonverbal communication may be a key factor in improving their communication skills and ultimately helping them to become more successful in their job.

Key words: nonverbal communication, nonverbal channels, workplace, managers.

INTRODUCTION

Nonverbal communication is the way in which people intentionally or unintentionally communicate without words through various nonverbal cues which send powerful messages – people's gestures, the way they sit, how rapidly or loudly they talk, how closely they stand, how much eye contact they make, whether they smile or frown, widen their eyes, move closer, touch someone, or even say nothing at all (Duncan & Moriarty, 1998; Sharma & Patterson, 1999). Nonverbal communication or "messages without words" or "silent messages" (Manning & Reece, 1992) provides a variety of information about others such as status, dominance, deception, intimacy, attitudes and emotions. When a person interact with others, he/she continually gives and receives nonverbal signals (Knapp & Hall, 2009). Our ability to understand and use those signals is a powerful and effective tool for expressing our feelings, managing impressions, influencing others, forming and defining relationships, and conveying thoughts, attitudes, perceptions, and meaning.

Approximately 55% of interpersonal messages are conveyed through this source (Lavan, 2002), which is quite logical since most human beings are visually dominant and live in a society dominated by visual images and so are more inclined to believe the evidence of the eyes more than that of the other senses (Sampson, 1995). Most scholars believe that communication is optimized when verbal and non-verbal elements operate in an integrated fashion, producing a coordinated and synchronized effect (Jones & LeBaron, 2002; Laplante & Ambady, 2003). At the opposite extreme, where verbal communication carries one message and body language a conflicting message, the result is likely to be communication failure. According to Price (2012), when a person sends a mismatched message - where nonverbal and verbal messages are incongruent - recipients almost always believe the predominant nonverbal message over the verbal one. The author explains that *how* somebody says something is more impactful than *what* he/she says. Nonverbal cues may even communicate something different from or opposite to the actual words somebody is saying, thereby lessening his/her integrity and authority as well as recipient's confidence, faith, and trust in person being listening to. It also should be considered that a number of the nonverbal

behaviours are culturally specific - that is, they may convey one meaning in one culture and a different meaning in another.

Within organizations, the expression and perception of non-verbal cues play an important role in providing information, sense-making, forming relationships and forging group identity. One of the basic assumptions of successful business communication is the ability to understand what is not explicitly said. To be able to do so, it is necessary that nonverbal cues received from business interlocutor are correctly interpreted and perceived. They are critically important at work and in business because perception is reality (Price, 2012).

CHANNELS OF NONVERBAL COMMUNICATION

Facial expressions (a smile, a frown, a grimace to raising the eyebrows, blinking, eye contact, relaxed or tightened lips, etc.) are one of the most important nonverbal cues to be aware of in interactions with others and can communicate a great deal. Numerous studies have proved that facial expressions are more influential and give more information than other nonverbal channels. Nowicki and Duke (1992) have specified the importance to effective social functioning and adjustment of accurately reading and appropriately displaying facial expressions in different circumstances in the workplace. In terms of facial expression, eye contact is the primary tool for establishing nonverbal connections with others. It communicates the level of involvement, interest and warmth (Price, 2012) and is perceived as a signal of sincerity, honesty and confidence (Dale & Wolf 2000). The frequency and intensity of eye contact vary according to the people involved, the purpose and context of the meeting, the topic under discussion, individual and cultural characteristics of the person, and a host of other factors. According to Price (2012), when speaking to others, it is ideally to look directly into their eyes at least two to three seconds before looking away or moving to the next person, while merely glancing at someone for one second or less (eye dart) should be avoided because it conveys insecurity, anxiety or evasion.

Gestures are any physical movements that help express an idea, opinion or emotion. Whether they are descriptive, emphatic, suggestive or prompting, in an organizational setting, gestures may be used to give directions or add emphasis to the words one is saying, therefore they have to naturally, purposefully and spontaneously match with speaker's message and mirror his or her feeling. If the speaker's platform behaviour contains distracting mannerisms such as finger-pointing, fidgeting, scratching, tapping, playing with hair, wringing hands or twisting a ring that are not related to the spoken message, they will call attention to themselves and away from the speech. **Postures** involve most of the body, including hands, arms, feet, and head. Although making gestures can be avoided, having a posture certainly cannot. Good posture creates a dynamic commanding presence and an attitude of leadership. Standing up tall, straight and erect may communicate self-assurance, authority, energy, excitement, enthusiasm, confidence, and interest. Leaning toward a person one is talking with communicates interest in what the person is saying or gives the importance to it. Conversely, bad posture signals the lack of confidence, low self-esteem or low energy levels. For instance, slouching may convey tiredness or disinterest, putting hands in pockets – boredom, while crossing arms and legs may indicate defensiveness.

Every individual is very territorial having his/her own **interpersonal space** which grows or shrinks depending on the situation. In terms of nonverbal communication, when someone "invades" or comes too close to that space, one may become more attentive or more tense, uncomfortable, perturbed, or angry. According to Pease and Pease (2005) there are four different zones, each one deemed appropriate for certain kinds of communication with others. They are *intimate zone* (15cm - 45cm), reserved for close friends and family and discussing personal issues and feelings, *personal zone* (46cm – 1.22m) for comfortable conversing with friends, acquaintances, and co-workers, *social zone* (1.23m – 3.6m) for comfortable talking about nonspecific or nonpersonal issues to people who have just met and *public zone* (3.6m and beyond) for unknown people where communication is only by gestures. In the work setting, not paying attention to these zones may cause problems: standing too close to someone may irritate or even frighten, whereas keeping large distance while discussing personal, confidential matters may cause uneasiness or embarrassment.

Occurring in the intimate zone of interpersonal space, **touch**, especially in the workplace, carries extreme meanings, and should be used cautiously. Inappropriate touching has become a major issue in the workplace and often leads to allegations of sexual harassment. According to Price (2012), in business, the

handshake is often the only appropriate expression of touch so it is critical to have a good one (consisting of full and firm handclasp with palms embraced web to web, firm enough to convey confidence yet matched to the strength of the other person and coupled with a sincere smile and eye contact). The extremes such as a weak limp handshake or an aggressive bone-crushing one should be strongly avoided. Also, the way one touches can send different messages. Patting, squeezing, or brushing can communicate positive messages, whereas poking tends to send a negative message.

Paralanguage includes all the aspects of sound that accompany words, including voice tone, loudness, speed, intensity, sounds such as humming and whistling, the *uhs* and *ums* used when speaking, pacing, pausing, and even silence. Paralanguage is very important in terms of communicating because it conveys emotional meaning, attitude and impact when conversing with others. For instance, an *mmm* may communicate interest or liking, whereas a hissing sound may signal averseness. Too many *uhs* and *ums* may convey confusion, or the lack of knowledge about the topic at hand. Talking fast may convey that the speaker is in a hurry or do not give much importance to his/her words. Talking slowly, especially in meetings or presentations, may communicate insecurity or unpreparedness. Changing the emphasis or stress given to the different words in a sentence may totally change the meaning or emphasis of the sentence. The tone of voice is also an important part of paralanguage because what is said can very often be overshadowed by how it is said. Talking loudly may communicate excitement or anger while a soft or gentle tone brings calm.

Objectics such as clothes, hair, jewellery, cosmetics, and fragrance are signals that also communicate messages to others. Many organizations have dress codes, governing what employees can and cannot wear to work. According to Price (2012), for men and women, clothing speaks volumes in the workplace so they have to dress for the job they want, not the job they have. Coming to work in an unwrinkled shirt, pressed pants, polished shoes, and well-groomed hair conveys organizability, neatness, efficiency, confidence and polished professional presence in the workplace. On the other hand, messed-up hair, torn, dirty, frayed or wrinkled clothes, showy accessories, busy patterns, tight garments, revealing necklines, heavy make-up, strong cologne or perfume are unacceptable in business settings.

Rhythm plays a role in social situations. Being out of sync with others may cause confusion, anxiety, or discomfort. Some people always seem to be in a hurry, hastening through meetings or meals and almost running from one place to the next. Other people take their time to get settled, move slower, and never feel rushed. Closely linked to rhythm is **use of time**. How a person organizes time and commitments says much more about that person than his/her words. Being constantly late to meetings gives the impression that one is self-centred, uncaring, irresponsible, and does not care for the attendees, their time, and their work. Being consistently punctual, however, conveys responsibility and consideration of others feelings and work. **Space** can be used for confirming authority. Some people show their status and power by occupying the most prestigious offices in a building. Moreover, carefully and tastefully decorated space of commercial buildings not only indicates the importance and credibility of the company, but also, a relationship that the company has with its employees, customers and business partners.

NONVERBAL COMMUNICATION IN DIFFERENT PROFESSIONS

Organizational researchers have increasingly explored the role of nonverbal communication in the workplace. Some of them have focused on the expression of nonverbal behaviour (Tan, Foo & Kwek, 2004), while others highlight the importance of examining the role of nonverbal cues perception in the workplace (Elfenbein & Ambady, 2002; Jordan, Ashkanasy & Hartel, 2002).

Also, there are studies that support a positive link between nonverbal communication and job performance, particularly for jobs that require high levels of face-to-face interaction, such as those in the medical, psychological, educational and social service fields. In a study of counsellors, patients gave higher ratings of effectiveness to clinicians who were better at reading nonverbal emotional expressions (Campbell, Kagan & Krathwohl, 1971). Similarly, physicians who more accurately perceived emotions were rated by their patients as being more sensitive and caring and as having better listening and communication skills (DiMatteo, Friedman, & Taranta, 1979). In a study among nurses, non-verbal behaviours such as patient-directed eye gaze, affirmative head nodding, smiling, forward leaning, affective touch and instrumental touch are important in establishing a good relationship with the patient (Caris-Verhallen, Kerkstra &

Bensing, 1999). Teachers who more accurately recognized nonverbal emotional expressions received higher performance ratings from their supervisors (Rosenthal et al., 1979). The results of a study by Noreen and Manzoor (2012) indicate strong positive relationship between nonverbal behaviour scores of teachers and academic achievement of students. According to the study (Barmaki, 2014), there is a positive correlation between proximity, open body posture and total open posture time with teaching performance rating. Also, several studies in the courtroom context show that perceptions of attorneys and judgments of guilt or innocence can be influenced by the attorney's nonverbal communication. Rieke & Stutman (1990) found that "aggressive" prosecuting attorneys (fast rate of speech, a lot of eye contact, emotional gestures, hostile vocal inflections, and high volume) were rated by jurors as more effective than either passive or assertive attorneys. Nonverbal channels such as a moderately fast speech rate, fluent speech, strong eye contact, channel consistency, confident and varied tones, a direct and conversational style, natural gestures, the avoidance of body adaptors (self-touch), and purposeful movement can be very helpful for attorney performance (Burgoon, Buller & Woodall, 1989). Nonverbal communication skills are very important for police officers who use them and rely on them on daily basis to keep themselves and citizens out of danger. According to Pinizzotto and Davis (1999), the police officers' safety is dependent on their ability to nonverbally establish authority and dominance (through physical body language, hand signals, direct eye contact, the uniform they wear) when working with the public in instances such as routine traffic stops. Scholars of political sciences perceive nonverbal communication as a means through which politicians can consciously exert influence on the listeners and convince them to support their political ideas (Kopacz, 2006). The results of the study by Rominoecka (2008) indicate that nonverbal behaviours do influence the way politicians are perceived. Mentioned study has shown that "positive" gestures, such as "boss's posture", contribute to the image of public speakers and strengthen the verbal message, whereas negative behaviours, e.g. "mouth guard", spoil the impression and make the speakers look untrustworthy. In restaurants, eye contact, facial expression, body position, and posture of the staff, including servers and cashiers, have an impact on how customers rate the value of the service (Martin 1986). The ability of salespeople to perceive nonverbal emotion in consumers was found to moderate the impact of adaptive selling and customer orientation on sales performance; salespeople who could better recognize various emotions in customer interactions could more skilfully adapt their sales approach and make customers feel that their needs were being met, which translated to increased sales (Kidwell, McFarland, & Avila, 2007).

MANAGEMENT AND NONVERBAL COMMUNICATION

Of the many business challenges managers face, communicating effectively with their employees is one of the most important. Effective communication is important to managers in business organizations because their communication with employees affects how employees perform their duties and is the foundation for several leadership competencies, such as building relationships, managing conflict, and developing other people. Managers are always communicating. Their attitude, which is mostly expressed by nonverbal messages, can produce either positive or negative attitudes by the employees. This can affect their attitude and emotions when performing job duties and either raise or lower employee morale. As a result, increasing managers' awareness of nonverbal communication may be a key factor in improving their communication skills and ultimately helping them to become more successful, simultaneously increasing employees' working zeal and job satisfaction. Superiors need to know how to make their subordinates comfortable while communicating their desires in order to get results. Subordinates need to know how to read the boss's subtle signals to discern the best way to approach professional situations (Wood, 2012).

Further, in the workplace, nonverbal cues express status (Baskin & Aronoff, 1980), influence interviewee behaviour (Word, Zanna & Cooper, 1974), distinguish hierarchical communication across cultures and gender (Ambady, Koo, Lee & Rosenthal, 1996; Steckler & Rosenthal, 1985), affect subordinate motivation (Kay & Christophel, 1995) and evaluators' perceptions of both subordinates and supervisors (DeMeuse, 1987). Managers in both business and not for-profit organizations can more effectively convey ideas to their employees through correct use of nonverbal communication—that which is compatible with verbal expression (Hancock, 1999; McCaskey, 1979). In their study Talley and Temple (2015) found that executives' emotions, displayed via nonverbal communication, particularly specific hand gestures, were very effective at creating immediacy between them and the followers. The authors claim that by becoming aware of specific hand gestures and using them, executives might have a better chance of acceptance of their verbal message, which is critical to success. According to Wood (2012), nonverbal cues can help

business people determine others' motivations and analyse business interactions with much more richness, depth, and insight than can come from simply relying on spoken or printed words.

There are many studies that deal with the ability of managers' nonverbal cues recognition. Business executives who more accurately recognize nonverbal emotional expressions have higher supervisory status (Rosenthal, Hall, DiMatteo, Rogers, & Archer, 1979). Being able to accurately perceive others' non-verbal emotional expressions is an essential skill for managers due to their need to be responsive to cues in their environment (Hooijberg et al., 1997). Moreover, managers need to be able to detect when a subordinate is dissatisfied, even when verbal cues are not forthcoming. In the study by Byron (2007), the results suggested that managers may use emotional information to provide emotional support and to be more persuasive. In general, managers who more accurately perceived non-verbal expressions are rated as more supportive and persuasive, and have, in-turn, more satisfied subordinates and higher job performance ratings (Sedmar, Robins, & Ferris). Supervisor nonverbal immediacy were positively and significantly related to subordinates' self-reported satisfaction, liking for the supervisor, and work enjoyment (Teven, 2007).

CONCLUSION

From all mentioned above, it can be concluded that nonverbal communication is very important, in some cases, even more important than verbal one, thus great attention should be given to it. Also, many researches who have examined this topic found that correct use of nonverbal signals leads to better business results.

As change becomes a constant in our global workforce, business people must look for more effective ways to make the connection with stakeholders and create immediacy in order to move the entire organization forward. Given the tremendous impact of nonverbal communication on various organizational performances, an accurate expression and interpretation of nonverbal behaviour may be critical to success. Therefore, companies should consider using nonverbal communication training as part of their leadership development training programs, as well as the tests of nonverbal behaviour recognition to assess the developmental needs of their employees.

Modern managers and leaders must learn how use gestures to create meaning which followers perceive and interpret, thereby creating impression management – this could be a small, but precious think that will distinguish them and their companies from others.

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LEADERSHIP AND EMOTIONAL INTELLIGENCE IN RELATION TO LEADERSHIP

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ABSTRACT

This paper presents leadership, characteristics and skills of a leader, characteristics of the most successful leaders as well as a connection between leadership and emotional intelligence. A leader is someone who leads, who realizes his/her vision and objective with the help of his/her followers. In order to realize the objective a leader has to deserve a great confidence and respect of the followers. Leadership is a process in which an individual makes the influence on a group in order to achieve a common objective. The essence of leadership is reflected in following a leader. The most successful leaders are characterized by: determination, responsibility, self-respect, creativity, innovativeness, honesty, respect, ambition, loyalty, flexibility, intelligence, the power of persuasion and a desire for leadership. A good leader knows how to perform activities and how to direct and lead his/her people. Emotional intelligence is important in leadership because it, in the first place, makes abilities such as: self-consciousness, the ability to direct oneself, social consciousness and relation management.

Key words: leader, leadership, characteristics of a leader and emotional intelligence.

INTRODUCTION

Leaders appear in all spheres of social life, in health care, science, culture, sports, art. When we speak about leadership, we often use expressions such as leaders, managers, directors. There are similar characteristics which leaders and managers share but there are also some differences. A leader creates an encouraging vision of the future in which his followers believe, he has a mission which provokes emotions and motifs while a manager is a problem solver, oriented towards the organization of activities and fulfilling a concrete business plan which is a part of the vision (Goleman, Bojicis, Maki, 2006).

A leader is oriented to people and he inspires, motivates and persuades them by his values and ideas unlike a manager who is more oriented to situation analysis and rational control of the accomplished work by means of reward and punishment. Leadership represents a distinct social influence of a group member which is related to beliefs, opinions, emotions and behaviour of a group and which a leader motivates and directs towards achieving the common objectives. The task of a leader is to use his/her emotional competence in order to evoke positive emotions of employees and make a desired emotional climate in his/her group. Emotional intelligence is consisted of: self-consciousness, social consciousness, self-management and other people management. The task of a leader is to create a vision, to start the energy of the followers so they could realize the vision and to lead the followers towards the vision realization, to create and realize the changes. (Janićijević, 2008). Leaders must have power and they must use the power in order to create changes in other people. A personal power represents a leader's ability to exert the influence as someone who is considered to be professional and likable by the followers. This type of power reflects the characteristics which the followers give to leaders, for example, when the employees see in them a good model. Apart from this type of power,

there is also the power of position, where leaders exert their influence on the basis of their position in the organization, having a higher status than their followers. Leadership is also a process in which an individual makes the influence on a group for the sake of achieving the common objective. The results of leadership depend on the organization in the same extent they depend on leader's personal attitude. (Jančev, 2007).

There are two forms of leadership, formal and informal leadership. Formal leadership is based on formal title or position in the organization. Unlike formal, informal leadership represents an individual way of behaviour which gives him/her the support of the followers. For this reason, it is emphasized that leadership is oriented towards the objectives. Leaders are those who direct a group towards achieving a certain task or result, in other words, they direct their energy towards individuals who are trying to achieve a common objective. In order to achieve an objective there has to be a solid relationship between a leader and his/her followers in which a leader makes conditions for the communication during the process. Leaders have a moral responsibility to look after needs and interests of the followers (Northouse, 2008). Top leaders motivate, communicate, serve, plan and set the objectives, they develop people, innovate, manage stress, negotiate, recruit, employ and keep the best employees. The essence of leadership is to follow the leader and it assumes readiness of people to follow a certain person (Jančev, 2007).

NOTION AND DEFINITION OF LEADERS AND LEADERSHIP

A leader is a head of a group or an organization who defines organizational objectives and in this way determines a direction of collective activities. He/she observes the reality and creates a vision of an organizational future which contains ideal states that represent the objective. First of all, a leader should be persuasive in order to persuade the group members to believe in the vision and accept it as their own. He /she has to know how to inspire, motivate and lead the people towards realization of organizational objectives. A good leader should not only know what is good for the organization and the members but also how to come to the desired objective. Motivation is one of the most important factors because it leads towards achieving the best results. A leader must have the followers who believe him. A special kind of dependence is made between a leader and the followers which is voluntary, so the followers accept that someone else defines and explains the issues, events and phenomena in their surroundings and determines the actions as well. People are willing to follow a person who will enable them to secure the means for realization of their own desires, needs and aims.

Leaders are heads of a group in order to make easier, inspire and encourage the group. They use their imagination, they are openminded, they synthesize, take risks, have long-term views, they are interested in new things, active, dynamic, looking for alternatives, they experiment and deal with strategy. Every organization passes through various changes, it has a vision which directs and the followers who represent means and a leader who is an author. A leader has to initiate the vision and the program of the organization and to control and take care about the mission and realistic objectives in relation to the circumstances on the market. He also presents the objectives and information in the best possible way to the followers. Leadership skills originate from the need, deeply rooted in our consciousness, to prove ourselves and develop abilities which will enable us to create a new reality and connect it with important fragments of known information. A professional is formed through the authority of knowledge and through an ability to function in practice like a manager and a follower (Haas, Tamarkin, 1995). Leaders do not run away from the changes trying to find comfort in the past or present. They understand the change as a new opportunity and not a threat. They see it as a challenge.

Leaders group people, ideas, systems, attitudes and technologies in order to make true their vision which is usually a fruit of their long- term perspective. They insist on training of all employees no matter the level and education. In the same time, leaders make flexible teams adaptable to changes. Definition of organizational culture is also a part of their work. Here, it is important to take care of details because nothing must be neglected (Haas, Tamarkin, 1995). Leaders must be creative. Creativity assumes a series of characteristics such as having knowledge, both technical knowledge and

technological knowledge of the company. They should know people which means that they should be communicative and able to listen. On the other hand, they should be able to transform complex things into simple ones and to learn constantly even from own mistakes. Other important characteristics of leaders are their character, clear and solid attitude, honesty and optimism. Leaders listen to their inner voice and believe their instincts when they have to solve a problem. Making an emotional bond with their followers which includes confidence is of high importance. The most significant components of confidence are:

- Integrity. Integrity is considered to be honest behaviour. If a person possesses a moral integrity then we can believe that person and build confidence.
- Confidence. Confidence is based on our belief that a confident person is competent for the work. Confidence is built on experience and practice.
- Consistency. It is related to consistency between the words and deeds. It is based on reliability.
- Loyalty. Leaders must show to their employees that they are loyal and ready to protect them.
- Openness. It assumes that a person who we believe is open to us and do not hide anything from us (Janićijević, 2008).

Leaders see new possibilities and they present them to their company and the people in their surroundings, no matter a possible risk. They are ready do accept the risk and they believe in changes. Leaders are born with a talent for leading but they should have appropriate education and personal characteristics. One of the key elements of top management is the rejection of a belief according to which there is a business model, no matter how solid and well formed, that can function automatically. It means that nothing is perfect and that everything can be improved. The most successful leaders improve their models and change the old models of their own leaders (Sajfert, Adamović, Bešić, 2005). Some of the most successful leaders have the following characteristics: energy, persistence, work endurance, good health and stress tolerance, intelligence, honesty, integrity, resistance to problems, frustrations and stress, motivation, ability to take reasonable risks, self-confidence, optimism, responsibility, good observation skills, creativity and initiative, flexibility, harmony between words and deeds, objectivity and an ability to control personal impulses and bad habits (Mihailović, Borovnjak, 2008).

CHARACTERISTICS AND COMPETENCES OF LEADERS

The following question is often asked: Was a leader born or made? The most frequent characteristics of leaders are the following: self-confidence, openness, intelligence. However, other people and not only leaders have these characteristics, so we can say that these are the most desirable characteristics of leaders. Table 1 shows some of these characteristics according to the opinion of researchers.

Table 1 Characteristics according to the opinion of researchers

Characteristics of leaders	Description
Motivation	High desire for success, ambition, initiative, energy
Honesty and moral integrity	Reliability, confidence
Self-respect	Belief in their own values
Cognitive abilities	Competence to accept, process and interpret a large amount of information
Creativity	Originality
Desire for leadership	Willingness to become a leader
Flexibility	Competence to adapt to different followers and situation

Source: *Ivancević J., Konopaske R., Matteson M. (2005)*

Some researches state that basic characteristics and competences of successful leaders in organizations are:

1. Motivation to be persistent in realization of the objectives,

2. Motivation to lead people and influence them,
3. Integrity which includes a desire for truth and making deeds from words,
4. Self-confidence which makes the others have confidence in leaders,
5. Intelligence which is most frequently consisted of the ability to process information, solve problems and relieve solutions,
6. Knowing the business field of the organization,
7. Emotional intelligence (Janićijević, 2008).

EMOTIONAL INTELLIGENCE AND ITS RELATIONSHIP WITH LEADERSHIP

- Emotional intelligence includes a range of specific abilities:
- Ability to understand oneself (a good introspection, knowing the needs, affects, conflicts, self - observation);
- Ability of emotional self-control (affects restraining, suppression of turbulent emotions, blocking and shaping emotions according to realistic and social norms);
- Self-confidence (self-belief and optimism);
- Empathy (accepting hard observed signals, affability);
- Ability to understand other people` emotions;
- Skill to solve inter-personal conflicts (good organizers, successful leaders, popular);
- Ability to establish harmonious friendly relations (they are good friends and popular colleagues at work) and
- Ability to lead a group.

Emotional intelligence in leadership does not represent a mere politeness or non-stop smiling and indulgence to an interlocutor but it can be vice versa opposing to wrong opinion and harmful prejudices. It does not represent uncontrolled emotions, on the contrary, it represents a very successful control of emotions, mostly the wrong ones. Emotional intelligence is developing and becoming stronger throughout life (Goleman, Bojacis, Maki, 2006). The structure of emotional intelligence is consisted of four domains: self-consciousness, social consciousness, managing oneself and managing the others. Self-consciousness represents a deep understanding of ones own emotions, needs, purposes, values, and weaknesses. Managing oneself means a control of ones own emotions which helps a leader to react in the right way in a certain situation. Social consciousness helps leaders to become closer to their followers. Managing the others is important because, in this way, a solid relation based on confidence between a leader and his followers is made.

SELF-CONSCIOUSNESS

A leader must possess: emotional consciousness, exact evaluation of oneself and self-confidence. Self-conscious leaders are realistic, they understand their own values, objectives and desires and they are aware of the direction they are going to in order to reach them. They make decisions on the grounds of intuition. Firstly, they have to know themselves very well and then to learn how to understand, direct and control other people. If an individual is self-aware of his/her productivity, he/she will tend to behave in the same manner in practice (Sajfert, 1993).

ABILITY OF MANAGING ONESELF

Leaders cannot let their negative emotions influence their behaviour. They must know how to avoid frustration, anger, anxiety and fear, they must be calm and know how to react in stressful situations. Primarily, they have to know how to manage their own emotions in order to be able to manage other people emotions. Successful leaders do not let their private lives influence their work. They are authentic and do not pretend to be better or different from what they really are. If a conflict appears, real leaders must choose the best possible reaction. Emotionally intelligent leaders know how to restrain their impulses.

SOCIAL CONSCIOUSNESS

If leaders have this characteristic, then they are considered to be empathic. When leaders are able to understand emotions and opinions of the others they systematically direct their emotions so as everything they say or do appears consistently. Leaders must believe in what they do or say and have the ability to convey their vision and message to the others, confidently and with motivation in order to direct them towards the action.

MANAGING RELATIONSHIPS

Managing relationships is related to the ability to articulate a common vision, the ability to persuade, solve a conflict successfully and create and keep emotional bonds as well as to work in teams (Goleman, Bojancic, Maki, 2006). Leaders must be honest with their followers because in this way they build confidence. They also have to behave in accordance with their real emotions and be ready to make various contacts with their employees in order to fulfill the task and achieve the common aim. Therefore, confidence and respect are crucial for building a successful relationship between leaders and their followers.

CHARACTERISTICS AND FEATURES OF LEADERS IN SERBIA

Some of the most desired characteristics of leaders, such as energy, honesty, integrity, motivation, self-confidence, professionalism, creativity, originality and flexibility can increase a probability for achieving success in organizations. On the basis of previous researches carried out in Serbia it can be concluded that a majority of people think that we do not have good leaders and that there is no positive opinion about them. It is considered that Serbian leaders have negative characteristics, such as greediness, manipulation and money grabbing. According to some researches, most leaders in Serbia are male, middle aged and were over 30 when they were employed for the first time. Most of them are married and they think that marriage and family represent an important support for a career. The researches show that most leaders come from a lower social status, from working class families, there are fewer of them who come from educated families, especially those with higher education. Based on the interview carried out within the research which included questions from general education, such as literature, culture and art, the researchers concluded that leaders in Serbia are intelligent but not educated enough. The most striking feature which appear in majority of them is an enormous working energy. The answers showed that the leaders worked a lot and that work consumed most of their time. Another characteristic of domestic leaders is their persistence which is related to achieving the objective, to realization of the set tasks, to making important contact and becoming leaders in the relevant field. Consistency is the characteristic which could be found in a great number of them, in other words, consistent behaviour both towards employees and fulfilling the given promises. Most leaders, especially males, are not depressive, they are, on the contrary, natural optimists. They are not conflicting persons, and if a conflict appears, they know how to settle it. Our leaders are curious, often charming, charismatic with developed sense of humour. Despite these surely positive characteristics, modern leaders in Serbia should have a good and clear vision and enough knowledge to direct their followers towards a desired objective if they want to be successful in their job.

CONCLUSION

It can be concluded from everything said in this paper that a leader is a person who leads a group of people towards a certain objective. Success and positive results cannot be achieved without the help, support and confidence of the followers. A relationship based on confidence and good mutual communication must be developed between leaders and their followers. Leaders have a vision which they convey to their people. They are self-confident, responsible and consistent. Their task includes leading other people, fast reaction, flexibility to changes, creativity in finding new solutions and full commitment to employees and objectives. Emotional intelligence helps leaders to develop abilities of understanding, self-respect and making decisions in the best possible way and also to avoid negative emotions, such as anger and aggressive behaviour. Leaders should be responsible, decisive, creative,

innovative and hard-working persons who can view the situations realistically and take actions in accordance to them. Leadership is a process in which one person, a leader of the group, leads other members towards the final objective. The results and success of the organization depend on skills and abilities of leaders as its representatives.

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REWARDING WORKERS IN A COMPANY

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ABSTRACT

The authors of this paper deal with the management and development of human resources through the concept of rewarding employees in the company. The prizes can be divided into two groups: tangible and intangible. The material prizes will be again divided into direct and indirect material rewards. Intangible rewards can be divided into appropriate design work, demonstrating the preferred style of management, the participation of employees in management, management by objectives, forms of flexible working hours and other intangible rewards, compensation and motivation strategies.

Key words: management, employees, potential, rewarding companies

INTRODUCTION

The management of human resources means theoretical scientific and educational disciplines, as well as control measures and activities to provide, develop, direct, adjust and improve the knowledge, skills, abilities and other potentials of employees, for their rational use and achieving organizational and individual goals.

The process of human resource management is very complex because human behavior is changeable and unpredictable character. Every man is a separate person and every organization story. In addition to the standard rules must be created and rules adapted to the specific people, specific organizations and particular environment. In order to be achieved but a good knowledge of environmental factors and designing adequate organizational structure, it is essential and a good knowledge of human nature, in order to faithfully and fully portrayed, and insight into the needs, habits, interests, values attitudes and expectations of individuals and groups.

To successfully operated, each company must find the optimal combination of material and non-material incentives for its employees, which will depend on many factors: the sector in which it operates, competition in the labor market, the nature of work, the employed. To ensure adequate quality of employees in the enterprise-wide, it is necessary to provide an adequate level of earnings, but it is only a necessary condition, not sufficient.

MATERIAL PRIZES

The system of material rewards, compensation and stimulation means wages, salaries, fees, other payments and certain contributions based on labor and employment. Earnings is a term which describes the monthly income of employees. The term salary used to mean monthly earnings of employees in state bodies and organizations, public services and activities of general interest or in the public sector. Fees means the right of employment, which achieves instead in wage or salary, in terms

of temporary inability or incapacity to work, work part-time, work invalids with residual work capacity and work in other appropriate cases.

In addition, the employee is entitled to other benefits based on labor and employment, such as coming to work and leaving work, during a business trip, for food during labor, food and accommodation during the stay at the field and the recourse to the name of annual vacation. You have the right to receive severance pay based on the occasion of his retirement, compensation for funeral services, compensation for occupational injuries and compensation for occupational diseases.

An employee has the right to social security (pension, disability and health insurance, and unemployment insurance).

Material rewards, compensation and incentives are considered a key factor human resources management system. Depending on their nature, scale and regularity of their income and the role of individual performance and behavior in achieving them differ:

- direct material (financial) rewards, compensation and motivation and strategy
- indirect pecuniary (financial) rewards, compensation and motivation strategies (benefits).

Table 1: Separation of material rewards

CLASSIFICATION OF MATERIAL COMPENSATION OF EMPLOYEES			
		Direct material compensation	Indirect material compensation
LEVEL	INDIVIDUAL	- Salary or wages	- Grants and scholarships
		- Stimulation	- Study tours
		- Fees for innovation and rationalization	- Specialization
		- The fee for the extension of knowledge and flexibility	- Paid leave from work and days off
		- Other incentives	- Company car
			- Managerial benefits

Direct material (financial) rewards

Direct material rewards system is characterized by earnings and other financial benefits associated with individual or group work, which are treated as direct remuneration for the work. In addition to the above include fees and pay based on work and performance (compensation for certain expenses, earnings on the basis of severance pay on the occasion of his retirement, compensation for injuries, for occupational diseases and the like.).

Determining individual earnings ie. salary is a significant activity in the system of material rewards of employees and an important part of encouraging good work. Other incentives, incentives and benefits are adjacent to it, which is why their performance often depends on how it is conceived that the first and foremost form of remuneration. Thus, the projected whole system of direct material rewards, compensation and motivation strategies.

Indirect material compensation

Indirect material compensation or benefits (employee benefits) are part of the total compensation of the material through which companies can (indirectly) to encourage employee motivation. Considering the number and variety of material compensation (benefits) that are specific to the fact that the right to their use is not regulated by the agreement between staff and employers.

The introduction and development of indirect material compensation has two main reasons:

- First, legislation that determines the norms and obligations of the organization in relation to the benefits (pension, social security and health insurance, etc.) And
- The second is the need by organizations to better meet the needs of their employees, and care about them, attract and / or maintain the quality and capable people.

Because of their "beneficial" effect on employees' motivation, in practice, it is recorded (at) increase allocations for indirect pecuniary compensation. This state has a relevant impact on the growth of operating costs (because benefits are an increasingly important element of the business policy of contemporary organizations). At the same time, it was observed that all workers have the same preferences. Therefore, in practice increasingly so. flexible benefit schemes (employees from a "menu" of benefits that offers them the organization can make a personal choice - choose the ones that best suit them personally).

NON-MATERIAL REWARDS

In addition to material rewards, compensation strategies and motivating system of rewarding and motivating staff complement and various forms of intangible incentives to work.

Strategy intangible reward and motivation may be very different, and are commonly used as follows:

- adequately designing work,
- demonstration of the preferred style of management,
- participation of employees in management,
- management by objectives,
- flexible forms of working time
- other intangible rewards, compensation and motivation strategies.

Adequate design work

By designing a work means the process which determines the content of the job and its functions, as well as social relations at work and in order to achieve the objectives of organizational and meet the individual needs of employees. It determines which jobs and to what extent are performed in a particular workplace, what knowledge and skills are necessary for this kind of responsibility they have hired to perform them and how those jobs associated with other asses in the organization. In the process of designing the job applied two approaches are as follows:

- **Specialist approach to the design of work** in which is contained the idea of the necessity of a high division of labor and a very narrow specialization, for individuals to perform one operation or one task in order to achieve greater productivity and control employees.
- **Motivational approach to designing work** relies on the intense motivation that is contrary to the intense specialization, as it is facing increasing diversity and complexity of tasks and autonomy, greater responsibility and authority employees.

Demonstration of the preferred management style

Because managers are responsible for the achievement of organizational goals, their main task is to motivate employees to maximally engage themselves at work in order to achieve the expected results of the work.

It is well known that the style of management has a great impact on the motivation of employees. Democratic and consultative styles have much better impact on her than the autocratic and paternalistic management style. The democratic participatory style involves the use of not only material but also immaterial strategies to motivate employees. Democratic style of management unlike other styles has a high motivational potential, because it favored different ways of rewarding and motivating, based on the development of individual potential, the participation of employees in management, team work, high goals, mutual trust and respect.

The participation of employees in management

Includes the participation of employees, or their representatives, in the decision-making process on issues important to the organization, its business, employees, and the conditions under which they work. The main objectives of which it wants to achieve:

- Increasing the motivation to work,
- Rational use of potential employees,
- Improving the quality of decisions made,
- Increased identification of employees with the organization and its goals,
- Improving the quality of working life,
- Increase organizational performance.

Management by objectives

It is believed the strategy of modern management, especially in motivating employees, the quality of decisions, use and development of human resources, increasing the flexibility and speed of response to changes in the environment. Managers and employees together define goals for each organizational unit, each project and each individual.

Managerial strategy of management by objectives involves joint setting of objectives at the organizational, sectoral, group and individual level. Objectives are the basis and starting point in the creation of plans and programs of activities. Goals are a source of motivation because they encourage employees to greater activity.

Flexible forms of working time

Are aimed at greater harmonization of individual and work responsibilities and needs. In practice, apply different forms of flexible working. They consist of:

- **Flexible working time** which allows the employee to autonomously determine working hours for the job. In determining working hours apply to different options:
 - Employees can determine the time to come to work and from work, with a certain amount of time required for presence at work,
 - Specifies the period in which they can come to work (eg. From 7 to 10 am) and the period in which you can go from work (eg. 15 to 18 hours), provided that the day for planned working time.
- **The shortened workweek** is characterized by the ability to weekly number of working satiii determined in 3 to 4 working days. Daily working hours are from 10 to 12 hours. Such working hours leads to a reduction in overtime, improve business efficiency, more free working days, reducing the costs of employees and the like.
- **Flexible working year** is a model of redistribution of working time on an annual basis. Employees are you to organize your work so that in some months to work longer and some shorter than the standard monthly working hours, with the obligation that during the calendar year as doing full fund anticipated annual operating hours.
- **Conditional-time** is a strategy that enables employees to perform tasks envisaged in the short term, and after that went kući. That way of work is possible in sectors where they are precisely defined daily labor standards.

Other non-material rewards, compensation and motivation strategies

Payment of the intangible reward and incentive are:

- **Recognition of success** is considered as an important factor of motivation. Such awards are presented in the form of praise, support and the like. In some organizations, there are clear rules on which to determine who is the best in the business or sector, and what awards and any

awards him because they belong to. The main goal of such treatment is that employees realize that their efforts are worthwhile and appropriately valued.

- **Feedback on work performance** is one of the most useful types of information that employees can get. Feedback on the working performance is provided:
 - on increasing the motivation to work,
 - of the greater confidence of employees,
 - on professional development,
 - enhancement of organizational expectations and performance standards
 - about encouraging desirable behaviors,
 - on establishing greater trust between employees and management of the organization,
 - on confirmation of the fact that everyone's work is monitored and that good work is worth it.

Feedback on working performance should become a permanent form of communication between managers and employees.

CONCLUSION

Motivational drivers are factors that are essential for the success of the change and they are: a clear vision, a unique and gritty team that implemented changes, education of participants and communication with all those who at various levels should implement changes, or that their resistance can be hampered by them. All fundamental changes require a great leadership.

Satisfaction and motivation of employees are becoming key issues of modern organizations. The common goal of the model and the system of measuring customer satisfaction and employee motivation is the desire to be with each individual develop a sense that employees share a common destiny - the destiny of the company, ensuring that the material and non-material incentives liberate the creative potential of employees.

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RESEARCH ABOUT THE IMPACT OF LEADERSHIP ETHICS ON THE IMPLEMENTATION OF KNOWLEDGE MANAGEMENT IN COMPANIES IN SERBIA

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ABSTRACT

The paper investigates the aspects of ethics, leadership and management skills. The authors wonder whether there will be an increase in the lattice of leadership and its impact on knowledge management. Analysis between the relationship of leader's ethics and knowledge management shows that in the evolutionary sense knowledge differ from leaders. The leaders throughout history were not ethical, but only recently they are trying to have knowledge. In fact, the more the leaders progress in ethics, the faster they discover new solutions by using knowledge management. In addition, at managers the rule is that the weakest individuals should have the same rights as the most powerful, but in knowledge management it is not worth it, those with less knowledge will disappear compared to those who have it. The aim of this study was to establish the relationship between ethical leadership and management skills, as well as analyzing the importance of leadership ethics in the successful implementation of knowledge management. Orientation towards knowledge, learning, constant technological development, knowledge workers and intangible assets of the company are just some of the challenges that lie ahead ethical leader, and this is what we want to explore in this paper. In response to these and similar questions, the authors in this paper provide an array of knowledge and insight to this that we had no opportunity to observe in the works devoted to this topic.

Key words: Leadership, Ethics, Knowledge Management, Serbia.

INTRODUCTION

One of the earliest works with central theme of ethics in leadership appeared only in 1996. It's about a number of working papers of a small group of scientists in the field of leadership, which brought together institutions WK Kellogg Foundation. These scholars have questioned how the theory and practice of leadership can be used to build a caring and equitable society. Ideas of Kellogg et al. were published in the edition Ethics, the Heart of Leadership (Ciulla, 1998).

There was a fast, growing interest in the nature of ethics, leadership, particularly because of the many scandals in corporations in the world. There has appeared a great interest in exploring the nature of ethical leadership also in the academic sector (Aronson, 2001; Ciulla, 2001, 2003; Johanson, 2005; Kanungo, 2001; Trevino, Brown and Hartman, 2003). From the perspective of the Western tradition, the development of the theory of ethics starts from Plato (427-347. BC) and Aristoteles (384-322. BC). The word ethics has its roots in the Greek word ethos, which means "custom", "behavior" or

"character". According to Northouse (2008) in the context of leadership, ethics deals with what leaders do and how they are. It deals with the nature of the behavior of leaders and their morality. In any situation when deciding on something, the question of ethics is implicitly or explicitly set. Northouse further stated that in theories of ethics the operation of leaders and how they are as people are observed. Consistent to Aristotle, today's proponents of the theory based on the virtues, point out that more attention should be devoted to the development and training of moral values (Velasquez, 1992). Based on the records of Aristotle a moral person shows virtues such as: courage, temperance, patience, self-control, honesty, sociability, modesty, fairness and justice (Velasquez, 1992).

Since societies across the globe depend on professional expertise at a rapidly increasing pace as the technology enters pervasively human lives, the ethical considerations must be integral in any and all decision making processes (Kreiner, Putcha, 2005). Leaders engage followers who are making efforts to achieve common goals. In all these situations, leaders have an ethical responsibility to treat the followers with dignity and respect - as human beings with unique identities. This means that leaders must respect the interests, needs and conscience of followers (Beauchamp and Bowie, 1988). According to Northouse (2008) ethics is crucial for leadership. A leader is crucial for helping establishing and respecting the organizational values. Every leader has a certain philosophy and point of view. "Every leader has an agenda, a set of beliefs, suggestions, values, ideas and questions that he wants to put on the table" (Gini, 1998). The values that the leader promotes has a significant impact on the values that the organization represents (Carlson and Perrewe, 1995; Schminke, Ambrose and Noel, 1997; Trevino, 1986). Again, because of their influence, leaders play a major role in the establishment of ethics in their organizations.

Leaders who serve are altruistic; they put in the first place the welfare of the followers. At the workplace, altruistic service can be observed in activities such as mentoring, delegation, team-building and expression of belonging (Kanungo, 2001). Rawls (1971) argued that issues of fairness must deal with all the people who work together to promote common interests. This is similar to the golden rule: Treat others the same as you would want them to treat you.

To be moral is to be fair and considerate of others, particularly to show them the respect that we ourselves demand acknowledges rights to life, liberty and property. Ethics is a discipline we freely embrace that regulates our baser instincts so as to promote a harmonious community and thereby reduce conflict and disorder (Kreiner, Flores, Krishnamurthy, 2004).

INTRODUCTION TO KNOWLEDGE MANAGEMENT IN THEORY AND PRACTICE

Continuous improvement of the productivity of knowledge and work is the basic imperative of modern economy and certainly the most important factor in competitive struggle at the global market (Sajfert, Đorđević, Bešić, 2007). Knowledge is mainly used as a weapon for success and advancement of individuals, rather than for the benefit of the whole organization. Replacement of such new concepts, which stems from the idea: "The power is in the exchange of knowledge" cannot happen overnight. Yet many organizations are becoming aware of the need to do just that (Sajfert, Z., Đorđević, D., Bešić, C., 2007).

In defining the critical factors and their impact on the implementation of knowledge management guiding was the analysis of theoretical knowledge on this topic and this research just started identifying baselines of many authors who investigated this area. Since we've noticed that firms have enough difficulty distinguishing among their related concepts, however, we're not inclined to address more. For practical purposes, we'll lump higher-order concepts such as wisdom and insight into knowledge (Sternberg, 1989). Davenport and Prusak (1998) famous in his book, working knowledge says: "And things like "reslove" and "action", while desirably pointing to the need to do something with knowledge, we'd put into a different category of "things you do with knowledge" rather than a variation on knowledge itself". The only sustainable advance a firm has comes from what it collectively knows, how efficiently it uses what it knows, and how quickly it acquires and uses new

knowledge (Kamiz, 2005). The focus of intellectual capital management (ICM), on the other hand, is on those pieces of knowledge that are of business value to the organization – referred to as intellectual capital or assets (Bontis and Nokitopoulos, 2001). The best way to retain valuable knowledge is to identify intellectual assets and then to ensure that legacy materials are produced and subsequently stored in such a way as to make their future retrieval and reuse as easy as possible (Stewart, 2000). Nickols (2000) summarizes these goals as follows: “the basic aim of knowledge management is to leverage knowledge to the organization’s advantage.” Some of management's motives are obvious: the loss of skilled people through turnover, pressures to avoid reinventing the wheel, pressures for organization-wide innovations in processes as well as products, management of risk, and the accelerating rate at which new knowledge is being created.

Creation of knowledge, knowledge sharing and reuse are the core of the program for the management of knowledge in organizations that are oriented towards knowledge. As people share knowledge, and other knowledge workers use this knowledge and find new ways to improve and innovate, so does the value of knowledge for everyone in the organization grow. (Sajfert, Đorđević, Bešić, 2007). Knowledge management is specific and people need to know how knowledge is created, preserved, shared and used.

Knowledge management is a collaborative and integrated approach to the creation, capture, organization, access and use of enterprises intellectual assets (Grey, 1996). Knowledge is one, if not the principal factor that makes personal, organizational, and social intelligent behavior possible. (Wiig, 1993, pp. 38/39). Wiig (1993) also emphasizes that given the importance of knowledge in virtually all areas of daily and commercial life, two knowledge-related aspects are crucial for viability and success at any level. Knowledge management makes use of a mixture of techniques from knowledge-based system design, such as structured knowledge acquisition strategies from subject matter experts (McGraw and Harrison-Briggs, 1989) and educational technology (e.g., task and job analysis to design and develop task support systems; see Gery, 1991).

SURVEY RESULTS

The survey was conducted in the metal industry of Serbia in the period June 2013 - September 2014. The survey covered six companies in Zrenjanin, Belgrade, Valjevo and Cacak. The answers to the questionnaire gave 133 associates subordinate to leaders. In the study of relations the respondents' answers are essential about their leaders, so there is a statistical significance for the exchange of leader - follower.

The question: Which of the following statements best describes the status of introduction of knowledge management in your company in the first place is to prepare for the introduction of KM with 53%, in second place, there are basic elements of KM 25%. In the third place was the introduction of preparation KM 9 %. In fourth place was the answer I not to know and in fifth place is considered the need for the introduction of KM 5%.

In figure 1 we can see the answers about the question of modernization and exchange of knowledge in enterprises. The following answers were given: There is an informal exchange of knowledge with colleagues considered 33% of respondents, up to 29% of its knowledge exchange with experts in the field. The third is learning to keep pace with developments in the profession thinks 17%, and visiting teaching seminar answers gave 12% of them. In fifth place are the other experts who understand the knowledge, 9% of them.

In figure 2 when asked what factors affect the efficiency of knowledge management the following answers were given: In the first place the organizational culture with 28% in the second place human resource management with 23%, in the third place information technology with 19%. In fourth place is the leadership with 16% and in the fifth place is the control of business processes with 14%.

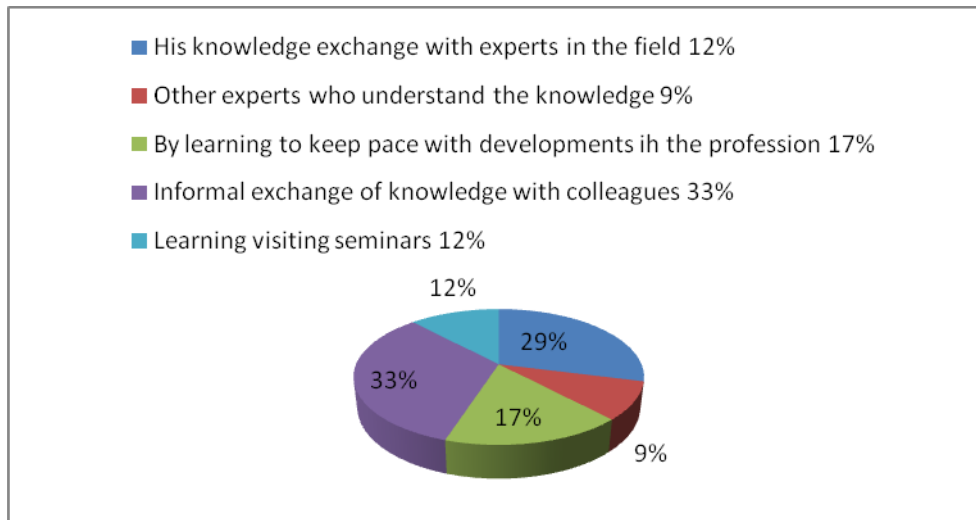


Figure 1: Methods of knowledge implementation

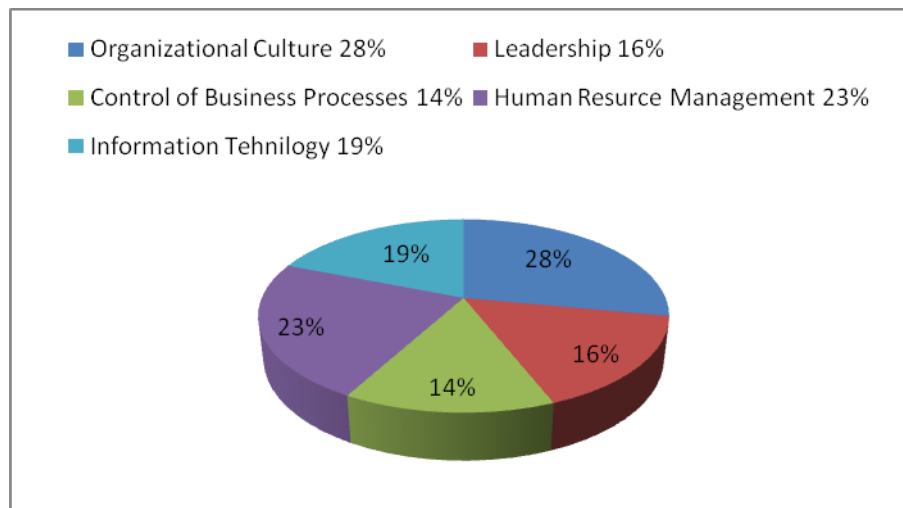


Figure 2: Factors affecting the efficiency of knowledge management

On the question about improvements that knowledge management brings, the following answer was given: The first is the discovery of new ways to do work with 25%, the second is to increase the skills of employees by 22%, in third place, increased customer satisfaction by 20%. In fourth place is easier to make decisions with 18% and the fifth is the increasing creativity with 15%.

On the question what are the aggravating circumstances affecting the introduction of KM. The following answers were given: In the first place there is a complex system with 25%, the second place is poorly hindsight personal gains 21%, in third place, there is no willingness to exchange knowledge with 19% the fourth place is no incentive for the implementation of KM with 18% and in the fifth is the lack of money for the implementation of KM with 17%.

On the issue of improving the KM the following answers were given: In the first place the training and of employed with 23%, the second place is insisting on exchange KM to 22%, in third place is the introduction of KM as activities of employees by 20%. In fourth place is the support of leaders 18% and in fifth is the definition of needs for knowledge with 17%.

The respondents in the first place put ethical guidelines of leader with 20%. The second is the integrity of the leader with 18%, and in third place is the righteousness of leader with 17%. In fourth place is the role of classification of ethical leaders with 16%, while the orientation on people in fifth place with 15%. In the sixth place is power sharing with 14%.

Individually in exchange leader - follower according to a survey that was performed and the response that the associates leader gave have the following sequence: the first is leaders satisfaction with followers with 26%, in the second place is how leader understands labor problems with 22%, in third place with 19% is how a leader feels the followers potential. In fourth place is the degree to which a leader wants to use the power gained to help follower with 18%, while the fifth is: how much is a leader willing to help you in a problem even to his own detriment with 15%.

CONCLUSION

The authors of the paper discussed the factors of ethics of leadership and management skills. The general conclusion to which the authors came analyzing the results of this survey is that knowledge management, although still insufficiently developed and applied, awakens the interest and attention of leaders in companies in Serbia. Research has shown that over 78% of respondents have no contact with the knowledge management (53% prepare for the introduction of KM and at 25% there are basic elements of KM). The implementation methods of knowledge are very popular and account 79% (33% of informal knowledge exchange, 29% of its knowledge exchange with experts from the field and 17% keep learning step). Factors that influence the effectiveness of KM represent 71% (28% Organizational Culture, Human Resource Management 23% and 19% the informational technology). Yet what is encouraging is that 85% of respondents believe that there are improvements of KM (25% discovery of new ways carrying out the work, 22% increase in employee skills, 20% increase in customer satisfaction, 18% easier decision making.) There are also aggravating circumstances for the introduction of KM and make it 83% (25% compounding system, 21% Poor hindsight personal gain, 19% no will for the exchange of knowledge, 18% no incentive for KM). Improving the management of knowledge is reflected according to a study in 83% (23% training and staff training, insistence on the exchange of knowledge, 20% Introduction KM as an activity of employees and 18% support of leaders).

Desirable qualities of leaders are reflected in the survey in 86% of respondents (20% Ethical guidelines, Integrity 18%, 17% Equity, Role classifications 16% and 15% orientation on people). Leader's ethics according to the survey had the following results: 26% of the responses concerning the level of satisfaction of leaders, 22% of leader understand problems. In 19% of cases, leader to a certain extent feel and recognize potential and 18% leader wants to use acquired the power to help.

In this research, we came to know that there are leaders turn to knowledge or as they call them leaders of knowledge. Successful ethical leadership is focused on knowledge, but in terms of its efficiency in order to achieve added value for the company. We can infer that knowledge management is a major challenge to contemporary ethical leaders. In today's business environment, knowledge and learning are becoming an integral part of ethical leadership. Based on the analysis of theoretical sources, in particular the chain of knowledge, we can conclude that the impact of ethical leadership on the implementation of knowledge management is very large. We are aware that more time is needed to be characterized as a true ethical knowledge leader in our companies. We believe that it is encouraging that the positive characteristics of leaders could be recognized in our study.

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THE IMPACT OF PROCEDURAL JUSTICE ON HUMAN RESOURCES MANAGEMENT IN THE ORGANIZATION IN SERBIA

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ABSTRACT

Employees as part of the organizational system, it is often highlighted as the most important resource of the organization. In practice, it often happens that this resource does not recognize from management enough. Employees are treated as a "consumables, transient and easily exchangeable" goods. This is a highlighted in countries undergoing a period of transition, such as Serbia. One of the indicators of the quality of relationships in organization, between employees and management is procedural justice. Individual perceptions about the fairness of these relations. To achieve the correct way to manage the employees, it is not enough just to have a way to do this, but it is necessary by the management of the organization, to adhere to codes of ethics and strive for justice in the establishment of an equitable climate. This is the main argument for research on the impact of procedural justice on human resources management in the organization, as well as an understanding of its instrumental and moral leadership in the process by the employees of the organization.

Key words: procedural justice, human resources management, employees, Republic of Serbia

INTRODUCTION

Organizations in the period of transition, how old privatized organization and created new foreign or domestic capital, and meet with old and new problems in interpersonal relationships in organizations. These problems are often a result of changes and conflicts old and new values (culture, standards, employee relations, relationship to the managers). In such a situation there is non-compliance with obligations of the owners, managers, employees and jeopardizing the rights of other entities in the organization of work, reducing the number of employees in order to reduce costs of implementing the various disciplinary measures against employees, etc., Which creates a huge impact on the quality and fair management of human resources in the organization. It should be noted that much has been done by the law on discrimination and harassment at work (mobbing) and detailed instructions and procedures, but the very existence of the possibility of appeal and exercise of the rights of employees is tailored to the specific circumstances, business tradition, culture and standards and largely depends on the judiciary and the time required to achieve this right. In fact, this is considered a fundamental question: whether in such an environment, to employees are treated fairly?

The existence of procedural justice in organizations and its maintenance of a high quality level of the relations, employer - employee is closely linked with the existence of the rights of employees to express their views and that their views and can express, e.g. whether employees of the organization have the ability to express his opinion through his voice. The effect of voice explains the role of procedural justice in organizations. Also, the existence of the right of appeal of employees includes instrumental and non-instrumental explanation- unified as mutually intertwined and have structural and interpersonal aspects of the organizational procedures (also the court) for the settlement of disputes. This observation allows us an explanation of how the data are interpreted as support for non-

instrumental abilities, and in fact support the instrumental abilities (and vice versa) and this why the voice effect applies an explanation. All of this continues and runs a story about the ethics and culture of the business. What we know about the impact of procedural justice in human resource management is solely the result of research conducted in Western cultures, and it is very important to consider the impact on countries undergoing major changes cultural, economic, political, such as Serbia.

PROCEDURAL JUSTICE AND HUMAN RESOURCES MANAGEMENT

Fairness is a basic standard of human relations, which exist in every human community and is based on the principles: to give everyone his, not hurting anyone (Njegovan 2013). Procedural justice refers to the perceived fairness of the processes used to determine organizational outcomes (Colquitt et al., 2001; Folger et al., 1989). It derives from the perceived equity of organizational policies and procedures determining resource allocation and other managerial decisions (Peelle., 2007). Employees are judged the equity of procedures by the amount of bias, the width and accuracy of information gathering, a number of relevant parties given voice in the decisions, ethical standards applied, and the consistency and universality of a decision implementation (Stecher et al., 2005). Consistency in procedures has shown to be an important determining factor of fairness across differing allocation situations (Greenberg 1987). Decisions based on procedures that are perceived as fair are more likely to be accepted by those they affect, then decisions arising from procedures that are not perceived fairness (Cropanzano et al., 1997; Elamin 2012).

Human resources management

Human resource management is a part of the organization management system, or part of the company's business policy, and involves managing or directing people in the company. The basic principles on which this is based management are: motivation for work, organizational socialization, organizational culture, relationships between individuals, relationships between individuals and groups within the company. Human resource management is based on personnel policy and its effective implementation. It is a process that combines the "planning and development, selection and scheduling, evaluating and rewarding, replacement, retirement and layoffs, rest and reactions."(Stamenkovic 2013).

METHODOLOGY

Data processing was planned and implemented in accordance with the objectives of the research and complete research plan. Statistical analysis was performed in MANOVA program for processing data from univariate methods applied to Roy's test. To avoid losing information by finding the finest links and information on nonparametric sizes, scaling is performed on the data tables of contingency. This procedure, based on the frequency, each class a real number. The fact that the scaled values of possible application procedures related to the scale of the situation shows that in this way leads to new discoveries in research, that can not be obtained using methods and procedures related to the non-parametric scales. Scaling the data do not exclude the use of nonparametric tests. Based on the above it is evident that the scaled data possible application of multivariate analysis (MANOVA), discriminant analysis and other parametric procedures and methods. From the univariate procedures shall be implemented Roy's test, Pearson's coefficient of contingency (χ), multiple correlations coefficient (R).

Sample

Using a self-administered questionnaire, 4208 employees were randomly selected and surveyed. The participants were selected from organizations which represented a wide range of industries. The study included respondents with valid answers, which are divided into 2 subgroups according to gender (female and male), 7 subsamples based on age, 4 subsamples according to the working position, 6 subsamples according to the number of employees in the organization and 2 subgroups according to the type of company ownership, this is shown in Table 1. The respondents were representing top,

middle and bottom levels of management in different types of organization.

Table 1: The Description of the Study Sample

Gender		Age		Job level		Num. of empl. in org.		Type of owner.	
Male	2140	-18	429	J	2338	-20	1356	P	3480
Female	2068	19-25	1399	ML	1169	21-50	658	S	728
		26-30	1020	TM	411	51-100	599		
		31-35	586	IC	290	101-500	819		
		36-40	349			501-1000	263		
		40-	357-68			1000+	513		

Measures

Procedural Justice

For the measurement of perceptions of procedural justice is used adopted a six-item procedural justice scale developed by Niehoff and Moorman (1993). Moorman (1991) has reported reliability above .90. previous works. The measure was assessed on a 5- point scale ranging from 0 “strongly disagree” to 4 “strongly agree”. The Cronbach alpha for the six items was 0.918. Analysis of procedural justice was done using the following variables:

- Organisational procedures allow for receipt of requests for information about decisions. (Q1)
- Organisational procedures are applied consistently to all employees. (Q2)
- Organisational procedures allow complaints against decisions taken. (Q3)
- Organisational procedures follow set standards for decision making. (Q4)
- Organisational procedures allow you to hear the opinion of all employees who are dissatisfied with the decisions made. (Q5)
- Organisational procedures provide useful feedback about decisions and implementation decisions. (Q6)

Human resources management

In order to determine the impact of procedural justice in human resource management, we conducted a survey in five thematic sections. The relationship of procedural justice in relation to variable indicators of human resources management system in the organization, This is shown in Table 2, Table 3, Table 4, Table 5, and table 6. Variable indicators are:employee satisfaction,the system of remuneration,the number of conflicts in the organization and their successful resolution, the level of climate in the organization, motivation of employees in the organization.

RESULTS

Processing data was planned and implemented in accord with the research goals and the full research concept. For checking the validity of the questionnaire on procedural justice, applied, was the factor analysis, with the oblique angle Promax rotation. To reduce the variables used was the main components method, and thus the replies from the people surveyed were reduced to the first main component of the suitable subscale. Hence, in addition to descriptive statistics, used was the factor analysis, canonic correlational analysis, t-test, variance analysis and multiple regression analysis.

Using the enter method, the tables give us information, for the use of questions to determine the relationship between measured variables of procedural justice and human resources management variables. All tables except Table 2 for the first question, we show that there is a significant effect of procedural justice on the management of human resources in organizations in the Republic of Serbia, because $p < .1$ accepts that there is a significant difference between modalities of the measured variables.

Table 2: Influence of procedural justice on job satisfaction

	χ	r	f	p	k.dsk
Q 1	.043	.032	.896	.466	.003
Q 2	.142	.136	16.140	.000*	.021
Q 3	.079	.059	3.013	.018*	.005
Q 4	.072	.057	2.763	.027*	.006
Q 5	.066	.057	2.827	.024*	.002
Q 6	.090	.068	3.917	.004*	.002

Legend: k.dsk is the coefficient of discrimination

Table 3: Influence of procedural justice on the reward system in organization

	χ	r	f	p	k.dsk
Q 1	.562	.504	290.900	.000	.028
Q 2	.697	.725	945.229	.000	.569
Q 3	.601	.603	487.737	.000	.101
Q 4	.593	.608	500.152	.000	.153
Q 5	.602	.614	515.972	.000	.109
Q 6	.601	.609	505.962	.000	.107

Legend: k.dsk is the coefficient of discrimination

Table 4: Influence of procedural justice on the number of conflicts in the organization and the speed of resolving conflict

	χ	r	f	p	k.dsk
Q 1	.095	.070	4.249	.002	.003
Q 2	.081	.066	3.693	.006	.001
Q 3	.097	.092	7.284	.000	.002
Q 4	.116	.105	9.526	.000	.004
Q 5	.093	.090	6.905	.000	.001
Q 6	.112	.096	7.973	.000	.003

Legend: k.dsk is the coefficient of discrimination

Table 5: Influence of procedural justice on the climate of interpersonal relationships in the organization

	χ	r	f	p	k.dsk
Q 1	.085	.066	4.972	.002	.001
Q 2	.055	.046	2.441	.062	.002
Q 3	.073	.069	5.502	.001	.000
Q 4	.128	.125	18.020	.000	.008
Q 5	.100	.095	10.396	.000	.002
Q 6	.083	.066	4.981	.002	.001

Legend: k.dsk is the coefficient of discrimination

Table 6: Influence of procedural justice on on the motivation of employees in the organization

	χ	r	f	p	k.dsk
Q 1	.106	.099	8.513	.000	.003
Q 2	.095	.084	6.057	.000	.002
Q 3	.114	.101	8.845	.000	.006
Q 4	.113	.096	7.979	.000	.002
Q 5	.064	.060	3.046	.017	.002
Q 6	.117	.096	7.934	.000	.003

Legend: k.dsk is the coefficient of discrimination

DISCUSSION

This research was conducted in the Republic of Serbia and covered the entire territory. Also, this research examined the influence of procedural justice on human resources management in the

Republic of Serbia. The results showed that procedural justice has a significant impact on human resources management, and the influence of procedural justice is more pronounced in the less developed areas of the Republic of Serbia than in more developed. The study also shows, that in all the subjects who showed greater satisfaction with justice in the organization, and expressed greater satisfaction with how to manage employees in the organization.

Limitations and Future Research Directions

The measurement instruments were complicated in that they contained numerous scales that had to be cross-correlated for purposes of the study. It is recommended that further research in this area includes more detailed research into the relationship between the demographic variables of employees and procedural justice.

Implications

The relationship between procedural justice and human resources management in the organization takes place between employers, employees, management, desires, needs, requirements, organizational structure, organizational and individual goals. Fair and equitable treatment of employees in the organization considered solely from a legal standpoint. This may be one reason why procedural justice is not being considered as an indicator of the success of the organization in Serbia. Organizations often do not take into account the indicator of fairness and fair treatment when it comes to managing employees in the organization. For the regulation of such relations there are no regulations or laws, but ethics, culture and traditions of participants or factors that relate. Despite employers have the option of using state funded used to improve the treatment of employees, often top management, supervisors, directors or managers ruin the initiative's success in treating employees poorly. One way to ensure that employees are treated fairly is to achieve and maintain a high level of procedural justice, which would mean showing respect and understanding for employees, to ensure the participation of employees in solving problems that directly affect them, and to ensure employees have sufficient information and to encourage active participation in the creation of procedural justice, especially the part that deals with human and honest relationships between employees.

CONCLUSION

In this first study on the impact of procedural justice on the management of human resources in organizations in Serbia are the following conclusions: the perception of procedural justice among employees is an important predictor of their motivation, job satisfaction and work performance. Second, different perceptions of procedural justice among employees cause different reactions and responses of employees. The direct consequence of such reactions leading to changes in the results of performance appraisal of employees and their views on how decisions are made in the organization and the quality of human resource management organization. Third, the perception of procedural justice is an important driver in employees. If employees are satisfied with the fairness of how they are managed, their results will be much better and their sense of belonging to the organization will be stronger.

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ORGANIZATIONAL CHANGE MANAGEMENT

UDC: 005.7

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ABSTRACT:

To succeed, the organization of the future must serve customers better, create new advantages and survive in bitterly contested markets. To stay competitive, companies must do away with work and processes that don't add value. Change must be continually managed to yield sustained results. Measurement provides a way to track progress. An effective measurement system would be specific, simple to understand, creative and involve both managers and employees.

Key words: management; change, organization.

INTRODUCTION

Today's business environment requires companies to undergo changes almost constantly if they are to remain competitive. Factors such as globalization of markets and rapidly evolving technology force businesses to respond in order to survive. Such changes may be relatively minor—as in the case of installing a new software program—or quite major—as in the case of refocusing an overall marketing strategy. Managing organizational change is the process of planning and implementing change in organizations in such a way as to minimize employee resistance and cost to the organization, while also maximizing the effectiveness of the change effort.

Businesses and organizations must be able to adapt to changes in the marketplace, world, political climate and other areas. Managing change can be difficult, because most people become accustomed to one way of doing things, and change can cause stress for individuals. You can use some proven techniques to manage change in an organization and help to diminish the stress and potentially damaging effects on the organization and its members, employees and customers (Writing A., Demand M. 2015).

Organizational change occurs when business strategies or major sections of an organization are altered. It is defined as a change that has significant effects on the way work is performed in an organization. Organizational change may be apparent when there is a gap between how the work area is operating and how it should be operating to ensure successful future growth. Organizational change may be a result of the work area identifying goals that they want to achieve. Change management is a structured approach to shifting individuals, teams and organizations from a current state to a desired future state. It is an organizational process aimed at helping employees to accept and embrace changes in their current business environment. Kotter defines change management as the utilization of basic structures and tools to control any organizational change effort. Goal of change management is to minimize the change impacts on workers and avoid distractions. Change agents are responsible for

managing change activities. They see a future for the organization, which others have not identified, and they are able to motivate, invent and implement this vision. Change agents can be managers or non-managers, current or new employees, or outside consultants. In this era of globalization, Organizations need to cope up with the dynamic and inevitable changes, which take place very often. Because of these changes the competition among firms is becoming intense and every organization should be flexible enough to implement the changes whenever required for its survival.

MANAGEMENT

Pressures for change that originate inside the organization are generally recognizable in the form of signals indicating that something needs to be altered, such as the internal forces. 1. Declining effectiveness is a pressure to change. A company that experiences its third quarterly loss within a fiscal year is undoubtedly motivated to do something about it. Some companies react by instituting layoffs and massive cost – cutting programs, whereas others look at the bigger picture, view the loss as symptomatic of an underlying problem, and seek the cause of the problem. 2. A crisis situation also may stimulate change in an organization. Strikes or walkouts may lead management to change the wage structure. The resignation of a key decision-maker is one crisis that causes the company to rethink the composition of its management team and its role in the organization. A much-publicized crisis that led to change with Exxon was the oil spill accident with Exxon's Valdez oil tanker. The accident brought about many changes in Exxon's environmental policies. 3. Changes in employee expectations also can trigger change in organizations (Writing A., Demand M. 2015). A company that hires a group of young newcomers may be met with a set of expectations very different from those expressed by older workers. The work force is more educated than ever before. Although this has its advantages, workers with more education demand more of employers. Today's workforce is also concerned with career and family balance issues, such as dependent care. The many sources of workforce diversity hold potential for a host of differing expectations among employees. 4. Changes in the work climate at an organization can also stimulate change. A workforce that seems lethargic, unmotivated, and dissatisfied is a symptom that must be addressed. This symptom is common in organizations that have experienced layoffs. Workers who have escaped a layoff may grieve for those who have lost their jobs and may find it hard to continue to be productive. They may fear that they will be laid off as well, and many feel insecure in their jobs.

The organization's approach to change implementation is also important to consider. Unrealistic expectations that underestimate the amount of time and effort required to accomplish the change may lead to resistance (Ankrah et al.2008; Armenakis et al., 1999; Sullivan, 2011).

REASONS FOR RESISTING CHANGE

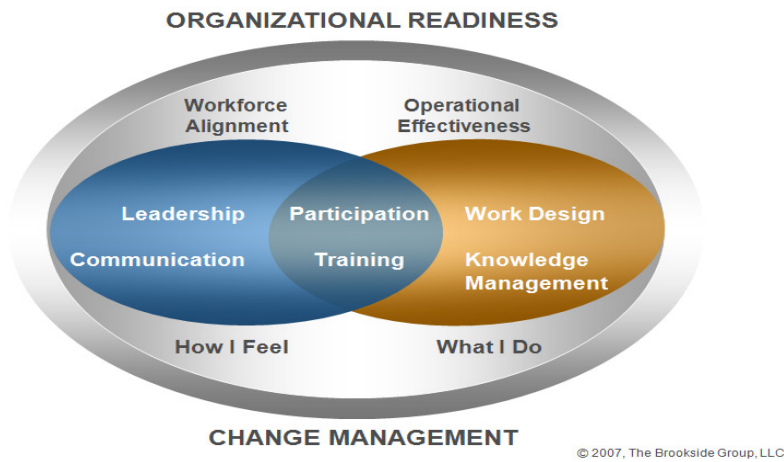
Organizational Change Management helps impacted people feel and do the right things through tactics such as communication, training and knowledge management. Organizational Readiness is different in that it uses those tactics as well as strong leadership, robust participatory programs and a focus on designing efficient and effective work practices. Organizational Readiness is the operational effectiveness and workforce alignment that results from change management; This is shown in Picture 1. (Rock 2012).

Planning, implementing and managing change in a fast-changing environment is increasingly the situation in which most organizations now work. Dynamic environments such as these require dynamic processes, people, systems and culture, especially for managing change successfully, notably effectively optimizing organizational response to market opportunities and threats.

Key elements for success:

- Plan long-term broadly - a sound strategic vision, not a specific detailed plan (the latter is impossible to predict reliably). Detailed five years plans are out of date two weeks after they are written. Focus on detail for establishing and measuring delivery of immediate actions, not medium-to-long-term plans.

- Establish forums and communicating methods to enable immediate review and decision-making. Participation of interested people is essential. This enables their input to be gained, their approval and commitment to be secured, and automatically takes care of communicating the actions and expectations.



Picture 1. Organizational Readiness and Change Management

- Empower people to make decisions at a local operating level - delegate responsibility and power as much as possible (or at least encourage people to make recommendations which can be quickly approved).
- Remove (as far as is possible) from strategic change and approval processes and teams (or circumvent) any ultra-cautious, ultra-autocratic or compulsively-interfering executives. Autocracy and interference are the biggest obstacles to establishing a successful and sustainable dynamic culture and capability.
- Encourage, enable and develop capable people to be active in other areas of the organization via 'virtual teams' and 'matrix management'.
- Scrutinize and optimize ICT (information and communications technology) systems to enable effective information management and key activity team-working.
- Use workshops as a vehicle to review priorities, agree broad medium-to-long-term vision and aims, and to agree short term action plans and implementation method and accountabilities.
- Adjust recruitment, training and development to accelerate the development of people who contribute positively to a culture of empowered dynamism.
- Use Nudge theory - to understand potential hidden influential factors on people are thinking (www.businessballs.com.)

Eight Reasons for Resisting Change (Schermerhorn, Hunt, & Osborn, 2005):

1. Fear of the unknown
2. Lack of good information
3. Fear of loss of security
4. No reasons to change
5. Fear of loss of power
6. Lack of resources
7. Bad timing
8. Habit

In "Leading Change Dr John Kotter outlined an 8 – Stage Process to Creating Major Change. This is shown in Picture 2.



Picture 2. Stage Process to Creating Major Change” (Kotter 1996)

The methods used in successful organizational transformations are all based on one fundamental insight: Major change does not happen easily. Even if leaders can see the problem needed change, it can still stall because of inwardly focused cultures, paralyzing bureaucracy, parochial politics, low trust, lack of teamwork, arrogant attitudes, lack of leadership, and fear of the unknown. To be effective, a method designed to alter strategies, reengineer processes, or improve performance must address these behaviors. The process of producing successful change has eight stages, each associated with one of the eight errors that undermine transformation (Kotter 1996) .

The first four steps help unfreeze a hardened status quo. Steps five to seven introduce new practices. Step eight grounds the changes in the organizational culture. Leaders often attempt only steps five, six, and seven. However, neglecting any of the unfreezing activities (steps one through four), precludes the establishment of a solid base. Without step eight, the changes won't stick.

CONCLUSION

All organizations go through change. Some organizations proactively opt to change to take advantage of new growth and opportunities; other organizations are forced to quickly change to survive and remain competitive .Those organizations highly effective at organizational change management.

Managers need an opportunity to disengage from the current state, they need a period of adjustment, and they need to become accustomed to a new way of working. Change involves loss, and people need time to let go of the past and embrace the future. Change often leads to feelings of stress and insecurity, problems that must be recognized and addressed before the organization can move on. Many managers seek to bring about changes in their organizations through restructuring or redesigning their organizations’ structures, their basic work processes, and their core systems. Such efforts are deeply rooted in the history of organizational change; reorganization is a familiar refrain in most public organizations. But there are more contemporary approaches that suggest greater flexibility on the one hand and greater attention to detail on the other. In either case, organizational structure—the arrangement of the organization’s human resources so as to best meet its objectives—is considered closely connected to the behavior of individuals within the organization. Presumably, all else being equal, people operating under one structure will behave differently from those operating under a different structure. Moreover, many believe that changes in the basic strategy of the organization must be reflected in the structure of the organization.

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MODERN KNOWLEDGE ORGANIZATION

UDC: 005.94

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ABSTRACT:

Organizations understand the significance of intellectual capital that is managed efficiently in order to improve the entire organizational performance by aligning the ability of employees in accordance with the overall business strategy. Knowledge management is a concept which is still constantly developing, as a number of firms proceed with overlapped information. The success of change management is critical for the survival and growth of enterprises. The emphasis is on knowledge as a resource and what should companies that provide innovation, improve services, increase revenue other numerous benefits.

Key words: knowledge; management; knowledge management; modern organization.

INTRODUCTION

Knowledge management is a concept which is still constantly developing, as a number of firms proceed with overlapped information. Knowledge management is gradually becoming a vital business function for a number of organizations as they now understand that competitiveness depends on efficient management of intellectual resources. The organizational knowledge may be managed to add value and competitive advantage(s) of businesses in an information-intensive society. Knowledge management enables the organization to create, spread, and apply all aspects of knowledge to achieve its overall goals.

Knowledge management is vital to reckon the organizational resource capabilities, align the organizational business processes, encourage innovation, and strengthen the social capital of the firm. Organizations that are reaching at the top level and have the competitive edge in the industry are better in their own dynamic capabilities. Dynamic capability or an organization refers to its abilities that are necessary for integrating, building, and reconfiguring the internal and external core factors that help to meet with the fast changing environments.

Modern organizations are seeking ways to create additional value through the identification, implementation and use of knowledge in a unique way, a process that is part science, part art, and partly luck. Organizations and their managers should strive to create a more explicit knowledge, which is collective in nature. Such knowledge is introduced into the operation cannot disappear in the way an individual can leave an organization. Explicit knowledge is contained in the data bank, information and knowledge of an organization are between 10 - 20%, and applying the concept of knowledge management this can be doubled (Fabac R.).

KNOWLEDGE MANAGEMENT

There are a number of factors that can motivate an organization to establish a formal and systematic management of knowledge. These include the desire or need to: (a) get a better insight on how the organization works; (b) reduce the time and effort in searching for information and documents; (c) avoid repetition of errors and unnecessary duplication of work; (d) reduce the response time to questions that are asked frequently; and (e) improve the quality and speed of making important decisions (Filemon A 2008).

The mechanism of organization s based on knowledge stresses upon the fact that knowledge is regarded as a central resource which drives organizations towards sustainable competitive advantages that link the knowledge to the organizational tasks. The mechanism further reveals that the knowledge in context of organization can also express technology, culture, and structure. Most of the studies on knowledge management throw light on major areas of the concept that contribute to its success. Furthermore, strategies have been devised which pour light on the meanings, objectivity, and importance of knowledge management practices in order to create, incorporate, distribute, and protect knowledge. This is shown in Figure 1.



Figure 1: Knowledge management

Knowledge management is also used in managing organizational knowledge to generate and enhance business, and to create competitive advantage. Due to the rapid changes in a business environment, sustainability of an organization is possible only if the knowledge management trademark is utilized (Grant, 1996). Knowledge management allows a firm to create, communicate, and apply knowledge of all kinds to achieve business objectives. The ability of the firm of integrating its intellectual assets for capitalizing its core competencies is necessary for persistent competitive advantage in the market. Kirk Klasson explains knowledge management as the ability by which greater value can be created and retained from core competencies of business. Knowledge management labels business issues and problems particularly of its creation, administration, improvement of work processes and practices, and produces innovative products and services. It also allows firms to retain, enhance, and manage the relationships with current and new customers, and also with the stakeholders of the organization.

The data obtained in the survey KPMG Consulting show that respondents believe that knowledge management plays a key role in achieving many important organizational goals. They were asked to express their opinion on the potential role that knowledge management can play in achieving the specific organizational goals. Respondents believe that knowledge management can have a very important or important role in achieving competitive advantage (79%) in terms of marketing (75%), in proving the consumer focus (72%), in fostering the development of employees (57%), in respect of innovation products (64%), increasing revenues (63%) and increasing profits (63%).

The aim of knowledge management is effective and efficient use of knowledge as vital resource in the era of knowledge economy. The challenge of management of modern enterprises is, therefore, defining, measuring, improving, evaluating and effective knowledge management. Knowledge of an

enterprise is a basis for building innovative capabilities, efficiency of innovation process and commercialization of innovation. Growth and development of enterprise have been determined by a realization rate of innovation due to shortening of product and technology life cycle (Krstic 2012). Knowledge management in enterprise provides a better use of knowledge and reduces the complexity of innovation process. Here, above all, tacit knowledge in enterprise is emphasized, as well as explicit (market and technological) knowledge used in innovation process. Better usage of knowledge resources influences more productive usage of other tangible and intangible resources in enterprise, which are at the same time exploited for creating various innovations. In this sense, knowledge management is a specific resource of enterprise.

MODERN KNOWLEDGE ORGANIZATION

Modern enterprises should continuously increase efficiency in using knowledge resources through an appropriate knowledge management system, and thereby improve its innovativeness. Therefore, enterprises that successfully manage knowledge and have developed system of innovations, can expect from their employees generating new innovative solutions and improving competences, because they represent key determinants of enterprise innovativeness (Krstic 2012).

Learning organizations are those that have the greatest chance for success and progress in the future, where people continually expand their capacity to produce the results you desire, where new and expansive ideas of caring, where collective aspirations released and people are constantly practicing how to learn together . Peter Sengija work shows the strength of a company whose managers are ready to create "a learning organization." The ability to learn faster than competitors may be the only sustainable competitive advantage in today's business environment.

Drucker says that the nature of knowledge in the ever-changing. The dynamics of knowledge imposes the requirement that every organization must be incorporated into the strategy of management changes in the organization. The organization must be exploited and must develop the next generation of change of its own success. Innovation must be organized and directed as a process in the modern organization. Modern organization consists of specialist knowledge in that it follows that it must be an organization of equals, not superiors and subordinate organizations. Drucker pointed to the evolutionary process of change in the concept of knowledge. Previously, knowledge was related to the figure now is about the work, and it became a resource and tool. Knowledge is the current criteria of public good. At the beginning of knowledge is applied to the processes and tools products. This was the basis of the industrial revolution.

Indeed, (Dixon 1994), in describing an “organizational learning cycle,” suggested that “accumulated knowledge... is of less significance than the processes needed to continuously revise or create knowledge”. These processes are closely related to the notion of “continuous improvement” through which an organization continuously identifies implements and institutionalizes improvements. The improvements are embedded in the organization through routines that may be written policies, prescribed machine settings, quality control limits or “best practices” for dealing with frequently occurring circumstances.

The goal of a modern organization is that all business processes are viewed as process knowledge. This includes knowledge creation, extension, upgrading and implementation throughout the organization. Modern organizations are seeking ways to create additional value through the identification, implementation and use of knowledge in a unique way, a process that is part science, part art, and partly luck. Organizations and their managers should strive to create a more explicit knowledge, which is collective in nature. Such knowledge is introduced into the operation cannot disappear in the way an individual can leave an organization. Explicit knowledge is contained in the data bank, information and knowledge of an organization are between 10 - 20%, and applying the concept of knowledge management this can be doubled (Chase 1997).

The advantages provided by a learning organization can be summarized as follows:

- ensure the long-term success of the organization
- continuous improvement becomes a reality,
- success and best practices are transferred to and emulate,
- enhance the creativity, innovation and adaptability,
- attracting people who want to succeed and learn, and their retention in the organization,
- ensuring that people are equipped to meet current and future needs organization.

There is no unique attitude in the literature about connection of these two concepts. Is the knowledge management component of the organizational learning, which contributes to development of the corporate memory and changes necessary for the successful function of the organization in turbulent environment? Is there a process in the learning organization, which helps the employees to create collective knowledge and knowledge management discipline, which makes organization learning stronger? If the literature, which in its focus has organizational learning and learning organization, preceded by the knowledge management concept, does it mean that knowledge management is continuity of this way of thinking? No matter what the answers are one is for certain, most themes are common for the “knowledge management” and “learning organization” concepts.

CONCLUSION

There are a number of factors that can motivate an organization to establish a formal and systematic management of knowledge. It is clear that the transition to a learning organization requires cost. Learning organizations are more effective they more organic organizational structure. Moreover, in the beginning there is a greater risk of failure of 2 main reasons: are the first people-the question is how much people are willing to switch to this mode. New business environments are characterized not only by rapid pace of change, but also discontinuous nature of such change.

Intellectual component of products and services gains in significance, so knowledge management development in organization also starts to become a priority. Possibility of managing the knowledge is becoming more and more important in modern economy. Knowledge creation and expansion in modern organizations become a key factor in achieving and sustaining competitive advantage. In fact, the level of firm’s knowledge how effectively firm uses that knowledge and how fast firm gain the knowledge, create sustainable competitive advantage. (Davenport, Prusak, 2000, p. 15) Modern organization, in the era of knowledge, is the one, which learns, memorizes and acts on the basis of the available information and knowledge on the best possible way.

The need that organization becomes the “learning organization” is increasingly present. If company wants to become learning organization knowledge management is necessity, which means that knowledge management depends on “learning organization”. That is like the story about the chicken and the egg (Aggestam, 2006). It is impossible to tell which concept came first, but we know that they are connected and that success of one depends on the success of the other concept. If organization wants the adjective of “learning organization” it has to pay attention on both concepts, which requires both understanding similarities and differences of these concepts.

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HIGHER EDUCATION AND TRAINING AS A PILLAR OF COMPETITIVENESS OF SERBIAN ECONOMY

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ABSTRACT

During the last decade, in the higher education sector of Serbia reforms are intensively carried out in the direction of creating a European system of university teaching, overcoming many rigid attitudes and inefficient practices that have characterized the previous system as well as the accession of the European Higher Education Area. By signing the Bologna Declaration and the adoption of the new Law on Higher Education, among other things, introduced the European Credit Transfer System and completely changed the structure of the study by delineation of academic and professional studies and determining the three cycles of study. The research problem concerning with identification and analysis of the current competitive position of Serbia in the field of higher education and training, as well as a comparison with trends in previous years. The subject of the research involves the establishment of variables that are manifested as competitive strengths and weaknesses of Serbia in the field of higher education and training. Applying desk method and method of content analysis in order to collect relevant research data as well as by using descriptive and comparative research methods, defined general and specific research hypotheses will be tested. The aim of this research is to determine the importance of higher education and training as a pillar of competitiveness of Serbian economy, identify problem areas and suggest measures to improve the current situation in the studied area by using appropriate research methods.

Key words: higher education and training, competitiveness, pillars of competitiveness, competitive strengths, competitive weaknesses

INTRODUCTION

By signing the Bologna Declaration and acceptance of the European system of university teaching and research, Serbia has made the initial steps on the path of significant reforms of the higher education system. In order to create the European Higher Education Area and undertake systemic reforms in June 1999, a joint declaration was signed in Bologna by the ministers of education from 29 European countries. An academic revolution has taken place in higher education in the past half century marked by transformations unprecedented in scope and diversity (Altbach, Reisberg and Rumbley, 2009). In the period that followed, with intervals of two years each, ministerial conferences were organized with an aim to consider the achieved results and approve the access of other countries that were not initial signatories to the Bologna Declaration, and over time 18 more European countries signed the Declaration as well. The Bologna Process represents the totality of commitments freely taken by each signatory country to reform its own higher education system in order to create overall convergence at the European level, as a way to enhance international/global competitiveness (Van der Wende, 2009). Serbia signed the Declaration at the Conference of Ministers of Education in Berlin in 2003, and thus became involved in the process of changes in higher education, with the objective to create a unified European Higher Education Area (Kabok, 2010). In accordance with such intentions, the new Law on Higher Education was adopted in Serbia in 2005, requiring the creation of a unified European system

of university teaching and research, while recognizing and preserving diversity and national specificities. The reforms of higher education introduced the European Credit Transfer System (ECTS), adopted a new structure of studies which lasts for three cycles, encouraged the mobility of students and teachers and accepted a system of comparable degrees. Higher education has now become central to the changes sweeping through emerging nations, in which worldwide networking and exchange are reshaping social, economic and cultural life (Marginson and Van der Wende, 2007). In Serbia, the subsequent implementation of a number of changes manifested primarily in the form of expansion of various educational methods, contemporary manners of knowledge evaluation, shortening the period of study and introduction of mandatory constant work evaluation and accreditation of higher education institutions and their study programs. Taking into account the “pre-Bologna” state, it has been concluded that the changes were necessary and that they will take a more drastic form in the future. We are in need of education that shall encourage individuals and develop their responsibility to respect and build their collective, cultural and spiritual heritage, to be tolerant towards social, political and religious systems that are different from their own (Karavidić, 2006).

One of the pillars of competitiveness of each economy is higher education and training, whose potentials are particularly evident in countries that generate GDP per capita ranging from 3,000 to 9,000 US\$ and are in the second phase of development according to the criteria of the World Economic Forum. Serbia has met the abovementioned criteria and therefore it is considered that its economy is driven by efficiency factors. Dealing with the characteristics of higher education in the 21st century Gibbons (1998) stated, among other things, that there is clearly a relationship between excellence in science, especially basic research, and international competitiveness.

METHODOLOGY AND HYPOTHESIS

In the process of collecting research data the desk method was applied, which resulted in gaining information regarding the range of number and gender of enrolled and graduated students at all three levels of studies from 2007 to 2013. Among the collected data there were those regarding the number of students that attended state and private faculties, i.e. state and private higher schools with regard to the financing and field of study. This also led to data on the results that Serbia has achieved in the last four years in the area of higher education and training as the pillar of competitiveness, as well as data on the variables that constitute the aforementioned pillar, and are manifested in the form of competitive strengths and weaknesses. During the collection of the abovementioned quantitative data, two secondary sources were used: database of the Republic Institute for Statistics of Serbia in the field of demography and social statistics, and annual reports on global competitiveness published by the World Economic Forum in the period from 2007 to 2014.

Data analysis was conducted using the method of description and method of comparison with the primary purpose of proving the hypothesis that states as follows: *By signing the Bologna Declaration and undertaking the necessary reforms, the higher education sector has improved significantly, but in the forthcoming period a huge effort must be made along with adequate measures in order for the higher education and training to become one of the key pillars of competitiveness of the Serbian economy, while ensuring a larger number of competitive advantages over competitive disadvantages.*

The research also includes the proving of the several specific hypotheses. Confirmation or exclusion of the general and specific hypotheses shall provide relevant scientific conclusions and recommendations for the creation of future strategies in the field of higher education and improvement of competitiveness of higher education and training of Serbia along with achieving a greater number of competitive advantages and minimizing competitive disadvantages.

FINDINGS AND DISCUSSION

With the aim of realistic observation of competitiveness of higher education in Serbia, a research has been conducted with regard to current and previous trends in the number of enrolled and graduated

students in terms of gender, financing, area of interest and proprietary nature of the attended higher education institution. During the school year 2014/2015, out of the total number of enrolled students, 53% were female and 47% were male students, which is shown in Table 1. 85% of the students opted to study at one of the state-owned higher education institutions (61% of students enrolled in state faculties and 24% in state higher schools). Costs of education of 51% of enrolled students are financed from the budget of the Republic of Serbia and 49% of students independently finance their own education at one of the aforementioned state or private institutions.

Table 1: Trends in the number of enrolled students by gender and financing at state and private institutions of higher education in 2014/2015

	TOTAL			BUDGET			SELF-FINANCED		
	All	Male	Female	All	Male	Female	All	Male	Female
State Faculties	32305	13868	18437	20593	8561	12032	11712	5307	6405
Private Faculties	6216	3371	2845	0	0	0	6216	3371	2845
State Higher Schools	12698	6609	6089	6317	3143	3174	6381	3466	2915
Private Higher Schools	1522	889	633	0	0	0	1522	889	633
Total	52741	24737	28004	26910	11704	15206	25831	13033	12798

Female students prevail among the students that are financed from the budget, while in the group of self-financed students there is an equal level of both genders. At state faculties, there are 14% more female than male students enrolled, while at all other analyzed institutions, there is a larger share of male students. Pursuant to the data presented in Table 2, it can be concluded that in the school year 2014/2015, 36% of enrolled students have chosen to study economics and law, 16% technical sciences, mechanical engineering and construction, and 11% of students enrolled at the Academy of Arts. Students have especially been interested in privately owned higher education institutions in the field of economics and law, with recorded enrollment of 27% of students in private faculties and 4% in private higher schools, which is explained by the largest share of private capital in this very field of study.

Table 2: Trends in the number of enrolled students by field of study at state and private institutions of higher education in 2014/2015

	State Faculties	Private Faculties	State Higher Schools	Private Higher Schools	Total
Education	12186	424	4348	0	16958
Art	22381	1393	2058	0	25832
Economics and Law	47703	22924	10386	3446	84459
Mathematics and Computer Science	17541	1950	4421	240	24152
Technique, Production and Construction	27673	775	9768	0	38216
Agriculture and Veterinary	6649	372	1039	0	8060
Health and Social Protection	17046	538	3240	890	21714
Service	10919	1822	6109	704	19554
Total	162098	30198	41369	5280	238945

Less attractive fields of study are math and computer sciences (10% of enrolled students), health and social care (9%), service industry (8%), education and upbringing (7%) and agriculture and animal health (3%). By observing the changes in the trends in the number of enrolled students in the last seven years, it can be concluded that the number of students has increased at all levels of study, regardless of their gender. The first level of studies in Serbia is related to the basic academic and applied studies, the second level of studies involves graduate academic, specialist academic and specialist applied studies, while the third level refers to doctoral studies. Given that Figure 1 shows red lines representing the changes in the number of female enrolled and graduated students and blue lines representing male students, it may be concluded that at the first level of studies, in all of the analyzed years, there have been more female than male students. The same can be noted at the second level of studies where this difference is even more intensive. There have also been more female students in the total number of enrolled students at the third level, except that at the beginning of the analyzed period, the difference between student genders was small, but kept increasing in favor of females year after year. Within the analyzed period, a larger number of female students graduated the first instance

studies, in comparison to male students, and the difference is larger than in the trend in the number of enrolled students at the same level of studies. At the second level of study, the difference in the number of graduated students according to their gender is even more expressed in favor of females. At the beginning of the analyzed period that difference was small, in 2008 nearly the same number of students of both genders graduated from second level studies, but the difference kept increasing markedly in the following period. In 2009 there was a sharp rise in the number of graduated students of both genders, while at 2010 the number of female graduates increased by nearly 50% compared to the trends in 2009. During 2010, at second level studies, 61% of the graduates were female and 39% were male.

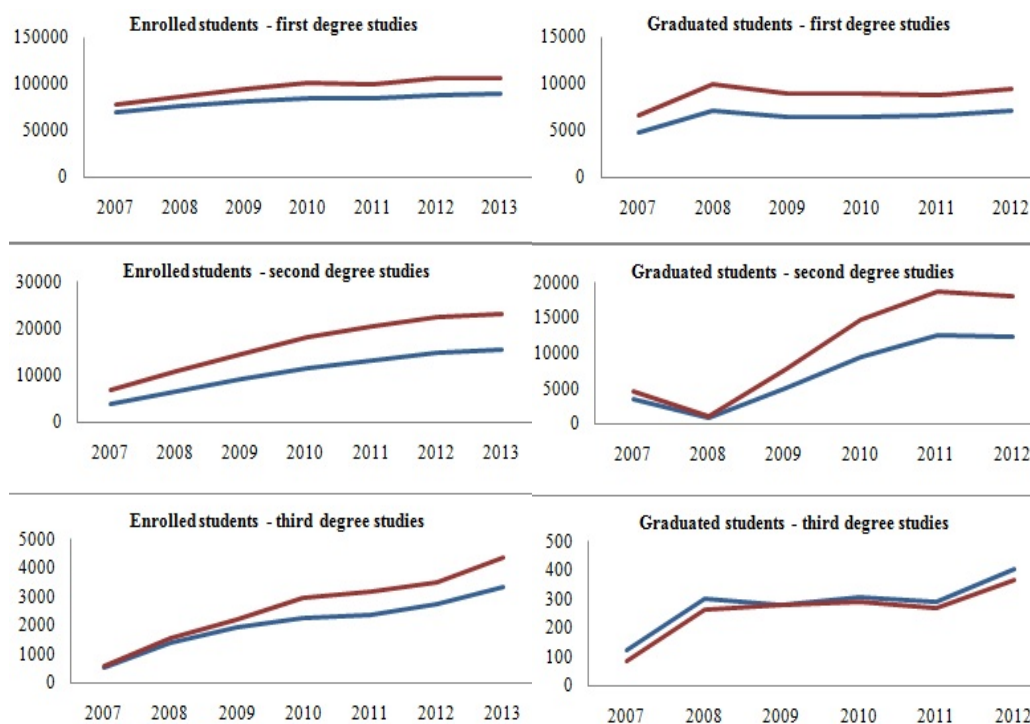


Figure 1: Trend in the number of enrolled and graduated students at first, second and third degree studies from 2007 to 2012

The third level of study is characterized by a greater share of males than females among the graduates, which is in accordance with the aforementioned trends in the number of enrolled students at the same level of studies. Particularly noteworthy is the year 2008 when there was a sharp rise in the number of graduated students, with a 3-time increase in the number of female graduates, and 2.5-time increase in the number of male graduates, in comparison to the trends in the previous year. However, the aforementioned trends in the number of enrolled and graduated students in Serbia differ in comparison to other countries in the world included in the analysis of competitiveness of higher education and training. The following graphic display (Figure 2) shows an improvement of the competitive position of Serbia at the end of the analyzed period, when it reached the score of 4.3 units, except that, in the previous four years (2010-2013) the situation had remained unchanged and the result had been at the level of 4 units.

The best results in 2014 in this field were achieved by developed countries such as Finland (6.22), Singapore (6.09), the Netherlands (5.99), Switzerland (5.98) and Belgium (5.98). During that same year, among the neighboring countries, Bosnia and Herzegovina and Macedonia achieved the same result as Serbia (4.3), while Croatia and Montenegro achieved a better result of 4.7 units. As the most developed country in the region, Slovenia has achieved better results in all fields of competitiveness, in comparison to all of the other republics of the former Yugoslavia, and therefore it also has a far more competitive system of higher education and training, which was confirmed by a result of 5.33 units achieved in 2014. Achievement of better results in Serbia in 2014 (4.3) in comparison to the previous years (4.0) occurred due to the fact that, in the aforementioned years, the results of individual variables that define higher education and training as a pillar of competitiveness had become better or remained unchanged. Figure 3 shows the mentioned trends, on the basis of which it can be concluded that the number of students enrolled in secondary schools increased slightly from 2011 onwards, reaching a percentage of 91.7% of potential candidates that enrolled into high schools and met the prescribed requirements in 2014.

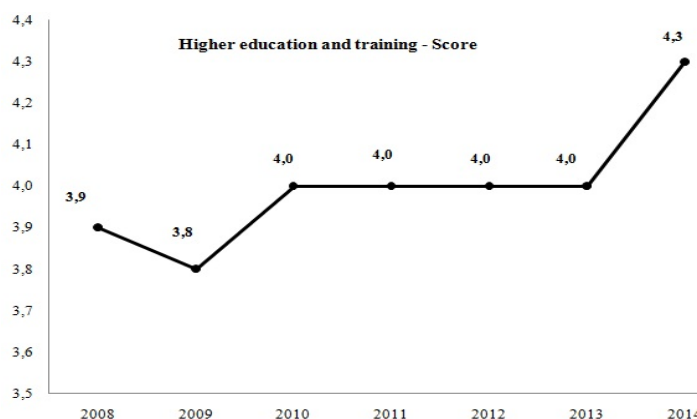


Figure 2: Score of higher education and training as pillar of competitiveness of Serbian economy in 2014

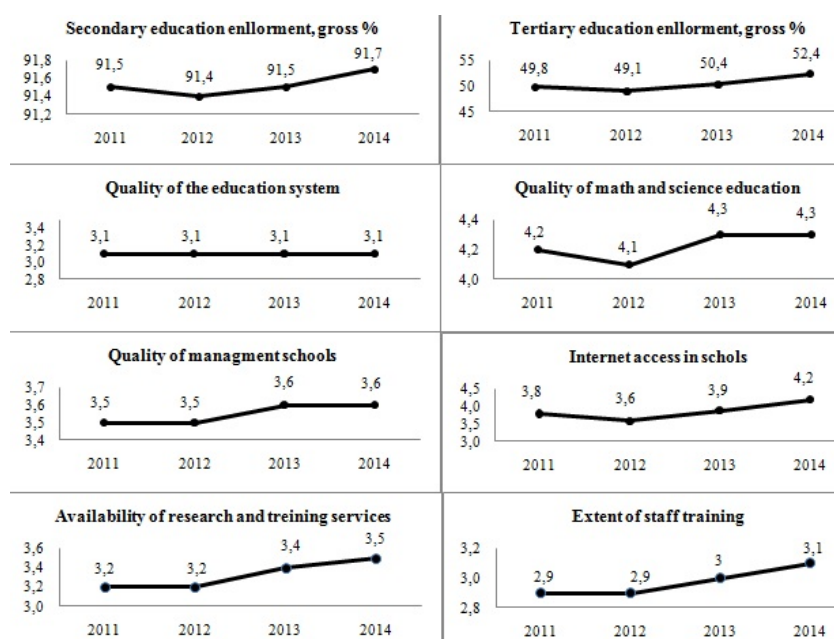


Figure 3: Variables of higher education and training as pillar of competitiveness of Serbian economy in 2014

In that same year, 52.4% of the total number of candidates that met the requirements stipulated by the Law on higher education and regulations of higher education institutions enrolled into higher education institutions. In Croatia, as the neighboring country and former Yugoslav republic, which has recently become a member of the EU, more than 60% of candidates enroll into higher education institutions. The quality of the general system of higher education of Serbia in the analyzed period showed no progress since the achieved results remained unchanged, while the quality of higher education in the field of mathematical sciences improved. There was a minimal, but insufficient rise in the quality of higher education in higher management schools and achieved result of 3.6 units in 2014, which enabled Serbia to position itself at the 114th place among 144 analyzed countries. In the same year, Croatia was positioned at 76th place, and Slovenia 62nd. The analyzed period showed intensified use of computers and provided better access to the Internet to the students, which contributed to the increase in quality of the teaching process and achievement of better pre-exam and exam results. In the period between 2011 and 2014, Serbia achieved progress in providing opportunities for teaching staff to conduct research and training, and also intensified the training of teaching staff in the field of higher education. Taking into account the significant arrearage of Serbia in these fields in comparison to many countries of the world, the abovementioned improvements have become negligible. In fact, in 2014 when the best result was achieved (Availability of research and training services – 3.5 units;

Extent of staff training – 3.1 units), Serbia reached 106th position in the field of provision of opportunities for staff training and research, i.e. 134th position from the aspect of extent of staff training in higher education institutions, compared to 144 countries covered by the analysis of competitiveness conducted by the World Economic Forum.

CONCLUSIONS

Upon signing the Bologna Declaration and adoption of the new Law on Higher Education, Serbia has supported the creation of a unified European system of university teaching and research, while recognizing and preserving diversity and national specificities. The undertaken reforms of higher education resulted in the introduction of the European Credit Transfer System (ECTS), adoption of a new structure of studies which lasts for three cycles, encouraging the mobility of students and teachers and acceptance of a system of comparable degrees. The higher education sector has improved significantly, but in the forthcoming period a huge effort must be made along with adequate measures in order for the higher education and training to become one of the key pillars of competitiveness of the Serbian economy, while ensuring a larger number of competitive advantages over competitive disadvantages. When he talking about global and national competitiveness of the higher education and training Marginson (2006) refers that higher education is now situated in an open information environment in which national borders are routinely crossed and identities are continually made and self-made in encounters with diverse others. In the last seven years, there has been some improvement in the results in the field of higher education and training as a pillar of competitiveness of Serbia, which is still minimal and insufficient to claim that there has been significant progress in this sector and improved competitive position. Judging by the achieved results of individual variables that define higher education and training as the pillar of competitiveness, it can be concluded that, in the analyzed period, Serbia did not achieve any competitive advantages, but that all of the analyzed variables represent its competitive weaknesses. Although certain progress has been recorded in the achieved results of analyzed variables, while certain results have remained unchanged, Serbia still has an uncompetitive higher education. The intensity of enrollment of candidates in higher schools and faculties may turn into a competitive advantage in the future, as more and more of secondary school graduates opt for studying at one of the higher education institutions in Serbia. Also, higher education in the field of mathematical sciences represents a variable that could become a competitive advantage in the forthcoming period and encourage the improvement of results and positioning of Serbia in the field of higher education and training.

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MANAGEMENT SKILLS AND LEADERSHIP - THEIR INFLUENCE ON CREATING SUSTAINABLE COMPETITIVE ADVANTAGE

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ABSTRACT

The modern economy, less oriented to natural resources, and more to the advantage of intellectual point of view, based on the fact that the competitive advantage of any company is in the knowledge that she possesses. Terms of economic theory terms, it is necessary to build a strategy that will produce a super profit, ie. a strategy that will enable efficient exploitation of knowledge firms to win a competitive advantage. The assumption is that knowledge in its explicit or implicit manifestations, can be managed. The question is how to develop a knowledge management strategy that would take advantage of this important resource and to protect its value. The possibility of knowledge management is becoming increasingly important in today's so-called. knowledge economy (knowledge economy). Creation and dissemination of knowledge within modern organizations is becoming increasingly decisive factor in achieving and maintaining its competitive advantage. In fact, the only sustainable advantage of modern organizations derives from what the company knows how effectively uses what they know and how quickly acquires and uses new knowledge. Modern organizations in the knowledge era is one that learns, remembers and act on information and knowledge available in the best possible way.

Key words: knowledge management, sustainable competitive advantage

INTRODUCTION

Knowledge management involves the adoption of collective knowledge in order to achieve the business goals of the company. In short, knowledge management has a role to ensure that people have the knowledge they need, where they need at the moment when they need it, ie. The right knowledge at the right place and at the right time. The broadest approach to this concept is thinking about knowledge management as a process that represents the union of the three components [1]: people, processes and technology. The aim of the modern organization is that all business processes are viewed as a process of knowledge. This starting point is the creation of knowledge (Creation), the conquest of knowledge (Capture), preservation of knowledge (Storing), knowledge sharing (Sharing) and the application of knowledge (Application) in a way that will contribute to the creation of added value for the organization.

KNOWLEDGE MANAGEMENT AS THE ORGANIZATIONAL PROCESSES

As a strategic view of knowledge management that considers the union between technology and human factors as a basis for survival in the changing environment emphasizes the definition according to which knowledge management includes the most important critical issues of organizational adaptation, survival and competence in the face of ever-changing and rapid changes in the business environment. Basically, knowledge management embodies organizational processes which seek collaboration and combination of data and information that increase the capacity of information technologies and create and innovate potential human capacity. This is the concept of collective knowledge of an organization whose ultimate goal is the efficient application of knowledge in situations where decisions are made. It is particularly important to emphasize that this knowledge should be available along with really little effort and effort, and it can be applied. The concept of knowledge management, is thus "power to the relatively short time it comes to information that will enable everyone in the organization to make the best decision, whether it be

on market conditions, product, service, process, planned activities of competitors or other information important for the success of the company. In short, knowledge management is the process through which organizations generate value from their intellectual assets based on knowledge. A study of knowledge management, inevitably leads to defining and analyzing the factors which influence the effectiveness of the program management knowledge can definite as positive or negative, as well as enhancing or limiting, as well as motivating or de motivating. In this sense, speaking on leadership as a factor in the success of the program management skills, we have witnessed the almost unanimous consent of contemporary authors, theorists and practitioners in the field, that one of the key sites in the constellation occupies leadership. Famous writers such as Davenport and Prusak, Skyrme and Amidon, Ginsberg, Bixler and Probst, are just some of fully inclusive emphasize the link between these two phenomena and consider the role of leader in implementing performance management knowledge is very important, if not crucial. Some authors even the very nature of the concept of knowledge management differ from other strategic concepts just by passion, courage and confidence of the leaders of knowledge (knowledge leader), as they call them. Given the complexity of the modern business environment, globalization, rapid and continuous development of technology, knowledge workers as bearers of innovative and creative process, only knowledge as the basis of competitive advantage of the organization, we can rightly conclude that the role, competence and responsibility of leaders is crucial for business contemporary organizations.

THE ROLE AND IMPORTANCE OF LEADER IN THE KNOWLEDGE ECONOMY

The organization, which at its center has implemented a program management skills and fighting for their competitive advantage in an environment of knowledge economy has characteristics and specifics that require special, to knowledge-oriented leaders or, as we have already named, the leaders of knowledge. These leaders are facing a very difficult task. It is necessary to manage the organization with the following characteristics: a priority flow of knowledge; relationship with the customer service is no longer a one-way, but turns into a partnership that creates a common solution in which the flow of knowledge sided; employees whose daily routine includes program management knowledge to know more about the technical basis of business, have a better feel for the market and closer to the customer than their employers; productive factor of such organizations, employees or creative knowledge workers, work best in creative chaos in the conditions in which the organizational hierarchy is irrelevant; primary driving force of the organization is to control the flow of information and it is subordinate to the Internet and the internal network; basis of sharing knowledge among employees trust; Office does not represent a symbol of power and importance of informal communication is the maximum stresses. Management of such an organization is very difficult, responsible and challenging task.

Leader of knowledge

The literature already under the title of "Leader of knowledge" (Knowledge Leader). Its existence is confirmed in practice examples of many organizations, but about its importance, type, name, position and role in the organization, also, water and many discussions. What is indisputable, and about which most authors agree is that the organization is going in the direction of the strategy and implementation of knowledge management program knowledge, the key issue to create a culture that will support cooperation and trust. If knowledge is the main resource of modern business and the means to achieve competitive advantage of the organization, then changing relationships that employees have towards their work and their colleagues, the measurement of which is a new way of doing business for the organization, building trust as a condition for the peaceful sharing and dissemination of knowledge within organizations, globalization and technological development, and requires leaders who, thanks to its special characteristics and skills in these conditions will be able to manage knowledge in the organization and to the requirements of variable and turbulent environment into practice. The most commonly encountered in practice following knowledge leaders, with different names, in organization, for any of the jobs, tasks and place in the organizational structure:

- 1) The engineer of knowledge (Knowledge engineer). This type of leader occurs in organizations that have a very tactical / procedural approach to knowledge management. The task of the leader is, in order to, in his own name and could conclude that explicit knowledge is converted into instructions, software systems and applications codified. Practically, in this way be reduced and reduces the current knowledge to have codified. The downside of this set features the leaders know is that

detailed knowledge codification carried out in this manner prevents the change in the environment when required.

- 2) Analyst knowledge (Knowledge analyst) is responsible for collecting, organizing and disseminating knowledge, usually upon request. This type of leader conducts its function in such a way that it becomes a warehouse best practices. The lack of such a tool designed leaders know is that his departure from the organization there is a risk to go and best practice. Another potential danger behind leaders such knowledge is to become invaluable to their immediate environment, so it is not able to put their skills at the disposal of the other parts of the organization, which is required.
- 3) Knowledge Manager (Knowledge Manager) has a supervisory role. This approach to leadership knowledge has the best results in organizations where it is believed that knowledge is the result of various individuals throughout the entire organization. Knowledge Manager is responsible for coordinating the efforts of engineers, architects and analysts. This position is best suited to large organizations where there is a risk that a large number of special process of sharing knowledge and isolate fragments. In this case the Knowledge Manager should provide the same level of coordination of these activities in all parts of the organization.
- 4) The Director of Knowledge (Chief knowledge officer) is very traditional, approach to managing knowledge. Director of Knowledge is responsible for ensuring wide coordination of all the leaders of the knowledge and reports directly to the Executive Director of the organization. The success of such a meaningful leadership role of knowledge, it is essential to establishing a culture of sharing knowledge in the organization.
- 5) Chief knowledge officer (Knowledge steward) is very similar to the manager know. This kind of knowledge most successful leaders in the organizations that do not see knowledge as a corporate resource that must be managed from the top to the lowest level in the company. This role is quite unreliable in practice, means ensuring minimal, but ongoing support to users of knowledge in the form of help with the methods and practices of leadership skills.

Which of the following best fits the role of the organization, will depend on various factors such as the level at which there is a sharing of knowledge in the organization, willingness and support leadership skills, as well as the receptivity culture of knowledge management in an organization. Regardless of what the role of work, it is undisputed that the leader of knowledge plays a major role in achieving the program's performance management knowledge in the organization.

"7 cs" - leadership skills

The knowledge economy requires a transformation of our most precious resource management, human resource management. This transformation requires the function of leadership to the traditional function-based command and control, moves to the function of connecting, networking and routing. [1] Talking about leadership in the knowledge economy, the authors Debra Amindon and Doug Macnamara, who belong to the leading theoreticians, and practitioners of management knowledge, consider that modern leaders are those who are not afraid of speed changes, which are grappling with constant learning, who know that effective management is not a matter of possessing knowledge, but know how to use it, who know that it is not enough to know the modern concepts of management, but also to implement them. In the view of the above authors, regardless of what leadership is more art than science, it is necessary to look for an appropriate measure that would allow us to measure the yield of successful leadership (ROL Return - on - leadership). The connection between knowledge and progress is not new and unknown. However, the knowledge economy, knowledge management and the ability to increase the effects of which we have knowledge of it more develop and share, and requires a new style of leadership. There are seven areas that make leaders successful knowledge, so-called. "7C" Leadership skills:

1. Leadership Knowledge is a matter of context (Context). The leader must know to understand the complex nature of the context within which it works, and to be able to convey the meaning of care so that inspires others.
2. Leadership is a matter of knowledge competence (Competence). Leaders must know that knowledge to competence based on knowledge and that they are much more dynamic than static attributes such as skills. Building a competency framework requires systematized learning.
3. Leadership skills is a question of culture (Culture). Leaders must recognize the connection of motivation (psychology) individual and culture (sociology) organization. You should be familiar

with the tradition and heritage (anthropology), and to know that more than 2% of their name period managers should pay the vision that represents the life-force business for future generations.

4. Leadership is a matter of knowledge communities (Communities). Knowledge Leaders need to understand the value of the collective - teams, networks and communities that are working to realize that vision. "Collaborative advantage" can be competences of the new millennium.
5. Leadership skills is a matter of conversation and a common language (Conversations, Common Language). Leaders must know how to develop a common language and to understand that it is much more power in the results of the dialogue, but in the documents that result from individual planning process.
6. Leadership skills is a question of Communications (Communications). Leaders should evaluate communication processes, both technical and interpersonal. This evaluation should not be based only on what is being communicated, but on what new can be learned and how new knowledge can be applied in order to achieve benefits for the organization or society as a whole.
7. Leadership skills is a question of training (Coaching). Leaders should train and be trained by people who have similar skills and vision.

IMPACT ON LEADERSHIP PROGRAM MANAGEMENT SKILLS

According to Michael Porter, a potential source of competitive advantage can be found everywhere in the organization. To come to the identification of the potential of an organization to achieve competitive advantage, it is necessary to analyze each component so. value chain: the five primary (input logistics, production, output logistics, marketing and sales, service, or after-sales services) and four secondary activities to support the creation of value (infrastructure organization, human resource management, technology development and procurement). All of these activities are undertaken in order to build a bridge between strategy formulation and implementation to. Based on Porter's value chain, the literature did the idea of forming the so-called theoretical analysis. chain model of knowledge (Knowledge Chain Model). [1] Model chain knowledge will allow us to more detailed analysis of the situation and the impact of leadership on the effectiveness of the program management skills. The basic premise of the model is that the organization's ability to learn and the success of its projects, a very important component of organizational success and achieve competitive advantage. The primary activities in the value chain model activities that are common to the entire organization and that fall under the jurisdiction of Directors of knowledge. The five primary activities include:

1. The acquisition of knowledge (knowledge acquisition from external sources and undertaking activities that knowledge to become eligible for future use)
2. Selection of knowledge (selection of necessary knowledge from internal resources and taking action to make this knowledge eligible for future use)
3. The creation of knowledge (knowledge creation or discovering a new or obtaining of existing knowledge)
4. Internalization of knowledge (update of organizational knowledge resources distribution and storage acquired, selected or created knowledge) and
5. Outsourcing Knowledge (embedding knowledge into organizational knowledge outputs in order to release into the environment).

In addition to the primary, there are four secondary activities in the model chain of knowledge that support the primary activities. Secondary activities include:

1. Leadership skills (establishing the conditions that enable and facilitate useful knowledge management activities)
2. The co-ordination skills (management of interdependent activities of knowledge management in order to ensure real processes and resources at the right time)
3. Control of knowledge (ensuring that the necessary process knowledge and resources are available in sufficient quantity and quality to ensure the set requirements) and
4. Measurement of knowledge (evaluation value resource of knowledge, process knowledge and their development).

Of the four secondary activities of knowledge management, leadership occupies a primary position. Leadership skills sets the basic tone of organizational culture focused on coordination, control and

measurement results, qualifying the expression of each of the primary activities. In short, leadership should enable the creation of conditions for achieving successful and fruitful management knowledge, the other eight activities. Basic features such as inspirational leadership, mentoring, giving examples, in order to create trust and respect, cohesive and creative culture, establishing a vision, learning, listening, teaching and sharing knowledge. For examples of successful companies, so-called. corporate leaders, authors Cavaleri and Sharon, [1] lists the characteristics of leadership skills and his connection with the management of knowledge. According to the author, corporate leaders such as 3M, Best Buy, BMW, BP Amoco, Canon, Fuji Xerox, Hewlett Packard, Intel, Nokia, Siemens, Royal Dutch Shell, Sony, Toyota, Unilever and Xerox routinely speak of the importance knowledge for their success in the long term. Some of these companies such as 3M, Toyota and Xerox, have become something more than the companies that use knowledge management. These companies are themselves transformed into a knowledge-based organizations (KBO - Knowledge Based Organizations). What is important for the subject of the work, and as mentioned authors especially emphasize is that leaders in these knowledge-based companies do not tend to manage knowledge (manage knowledge) within their companies, but seek to skilled and knowledge-based methods (knowledgeably manage) manage, in order to achieve competitive advantage. So we come to the main characteristics of the leaders of knowledge - understanding their primary objective, and it is transforming its organization to organization based on knowledge that will use the knowledge to achieve results that can not be achieved by the competition. The leaders need knowledge management knowledge to integrate with the development of knowledge (knowledge development) and be sure that the knowledge embedded in the activities, management systems and infrastructure of the organization. Successful leadership that is focused on knowledge, but in terms of its utilization to provide additional value to the organization, giving very positive results in practice, which is usually reflected in increasing productivity and agility of the company, strengthening innovation, improving the reputation, enhancing creativity of employees and enhance their morality. We can infer that knowledge management is a major challenge to contemporary leaders. Almost in the literature there is unanimous approval by scholars that the efficiency and success of knowledge management program depends primarily on the attitude of leaders on this issue. In fact, it is very likely that if the leaders of companies do not realize the importance of knowledge management programs, as well as potential benefits for the organization, the program will be doomed to failure. In today's business environment, knowledge and learning are becoming an integral part of leadership, and the impact of leadership on the implementation of the program management knowledge is very large. This can be seen not only in literature, but also numerous examples from practice. Leadership only in conjunction with other activities, knowledge can contribute to the success of this program. Of course, the leadership that should be a factor that contributes to knowledge management program has to resolve one of the fundamental dilemmas of leadership, and that is the way I am managing knowledge workers. In fact, even Machiavelli raised the question whether it is for leaders better to be loved or to be feared followers. His conclusion is that if a leader can not be both (a few people to be), then it is much more efficient latter - to be followers of fear. In fact, knowledge workers do not respond positively to the rigid measures of punishment and reward, as well as in their work, there is no simple reward system based on a clear measurement of productivity. So with all knowledge workers is based on creativity and relationships of trust. Therefore, the leader can not strictly comply with one, exactly the set and predictable style of management, but it must, following signals from the environment and the signals sent by the workers themselves know, tweaking the situation, of course, in accordance with their limits and abilities. The leader in variable and complex business environment must be able to see the unusual potential in ordinary people and their decisions are made with the balance between idealism and pragmatism. Or, as some authors call this model of leadership "leadership from behind", defining it as a leadership that enables the creation of such an organizational culture in which different people at different times, depending on the requirements of the environment, their aspirations, abilities, skills and innovation directions, go out at the head of the group and to lead it in the direction in which the potrebn. This may be the way to knowledge workers to fully come to the fore, that the benefits of knowledge management programs become more visible and shared knowledge available to everyone in the organization contribute to the creation of added value for the organization and effective and efficient decision making.

QUALITY OF OPERATIONS, KNOWLEDGE AND COMPETITIVENESS

Companies can create competitive advantage from many sources, such as superiority in terms of quality, speed, security, service, design and reliability, together with the lower cost, lower price and so on. Often it

is a unique combination of everything, and not one universal and magical solution, a combination that gives supremacy. It should be understood that the competitive advantage relative, not absolute. Drucker believes that the core of any organization is marketing and innovation. [2] Innovation is about delivering economic pleasures. It is not enough that a company offering a product or service. It must offer better products and services. The most productive innovation is a different product or service that creates a new opportunity to meet the needs, not promotion. The main problems that are present in the domestic setting when it comes to market development are:

- Failure to adopt the marketing logic,
- Lack of understanding of the concept of integrated marketing,
- Incorrect interpretation of marketing,
- Inadequate treatment of investments in market development,
- Issues of organizational structure,
- The slow pace of adoption of new trends, methods and management techniques.

So, marketing must be interpreted as a business philosophy whose importance stems from the fact that marketing unites, coordinates and directs the work activity of the company in identifying and anticipating and satisfying the needs and demands of clients. The main problem of insufficient market performance of local companies in the business probably is in terms of bad business productivity and inadequate relative price - quality products. Domestic companies have in recent decades had significant problems with labor productivity, which resulted in cost growth and the formation of selling prices that were uncompetitive in the market. Regardless of the growth in the number of companies that have implemented a quality management system and development of quality movement in the domestic economy, in general the results are still daunting. Unfortunately, domestic SMEs are still insufficiently implemented a quality management system which significantly affects their competitiveness, both domestically and internationally. The managers of these enterprises mainly due to their lack of information are not interested in investing in the implementation of ISO 9000: 2000 because they believe that they do not yet need. However, the reality of the international market are always quick to make changes in opinion, but it is usually too late, because the competition in this market pronounced. In promoting international standards that unless the state and its institutions have an important role to entrepreneurs because without their initiative and motivation all other efforts are futile. The processes of globalization of markets and international competition require that companies if they want to survive in their positions must possess three key resources include: funding, new technology and knowledge. The key to the improvement of the quality of domestic companies should look for in an appropriate use of knowledge. Unfortunately, except for financial assets and new technology to domestic firms miss another resource, and it is knowledge. Education and knowledge are the creators of the new competition. Local managers need advancement of knowledge in the field of enterprise management. Likewise, every individual employed in the enterprise must be constantly innovating and improving their knowledge. A set of such persons who are continually improve and enhance the productivity of their knowledge builds productive company. The advancement of knowledge, improves the productivity of business. Knowledge is becoming an elementary business resource. All other business resources are of secondary importance, because their productivity is directly dependent on the use of knowledge. Modern (information) society is a society of knowledge where knowledge has become a fundamental resource useful and good. In terms of the modern economy, the development of the competitiveness of companies must begin in the domestic market, where the company is exposed to the assaults of the global market leader. Comparison with competitors must start already on the domestic market, in order to define a clear market position of domestic firms and recognized the action plan for bridging the gap competitiveness. On the other hand, the issue of the lack of competitiveness of domestic enterprises for short periods can be solved by using reengineering, a long-term perspective based on the implementation of the concept of quality management systems and the creation of an integrated management system. The quality management system presents such a management system which, in terms of quality, the water company and it is managed. The series of international standards is primarily focused on satisfying customer requirements as one of the elementary preconditions for continuous improvement of the quality of operations, in order to improve competitiveness. For domestic enterprises faced with the challenge of adapting to the market conditions and the demands of customers and other stakeholders, there is a need to regulate business processes and integration of management systems in order to improve business performance and gain a competitive advantage. The integrated management system to build a quality management system, environmental protection and health and safety at work. It can be said that the implemented and maintained Integrated Management System is a condition of survival of the company in

the market. Therefore, the application of an integrated management system is one of the most serious ways to achieve competitiveness of domestic enterprises in the international environment as possible to shorten the time required to achieve elements of business excellence, creating conditions that companies from the less developed countries, respecting the requirements of international standards, create business a system that can provide for the effective presence in the market. Improving knowledge managers and expert teams of local companies is the most important way to improve the competitiveness of which is based on the implementation of integrated management systems.

CONCLUSION

The modern economy, less oriented to natural resources, and more to the advantage of intellectual point of view, based on the fact that the competitive advantage of any company is in the knowledge that she possesses. Terms of economic theory terms, it is necessary to build a strategy that will produce a super profit, ie. a strategy that will enable efficient exploitation of knowledge firms to win a competitive advantage. Creation and dissemination of knowledge within modern organizations is becoming increasingly decisive factor in achieving and maintaining its competitive advantage. In fact, the only sustainable advantage of modern organizations derives from what the company knows how efficiently use what they know and how quickly acquires and uses new knowledge. Modern organizations in the knowledge era is one that learns, remembers and act on information and knowledge available in the best possible way.

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RESEARCH ON THE SIGNIFICANCE OF LEADERSHIP SKILLS FOR MANAGERIAL DECISION MAKING PROCESS

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ABSTRACT

The paper presents some basic characteristics and key elements of the basic model process of managerial decision making, which are different for different hierarchical levels of management within business organisations. Also, this paper presents the concept of leadership based on the adoption and development of key leadership skills (technical, humanistic and conceptual), and their significance for different levels of management processes. The main reason why this research has been conducted was to obtain relevant indicators and determine to what extent do leadership skills influence the process of business decision making by managers, but also the effectiveness of business processes, respectively to organisational performance. There exists a significant positive correlation between leadership skills that managers use in making business decisions and the quality of those decisions and other managerial processes, as well as the effectiveness of the business organisation as a whole.

Key words: business decisions, decision making process, leadership, leadership skills, business process.

INTRODUCTION AND THEORETICAL BASIS

The decision is a choice that is made between two or more possible options. Decision making is the process of choosing the best options for achieving the goals, and managers are daily in a position to make decisions during all managerial processes (planning, management, influence and control), which to a greater or lesser extent, affects the organisation, and are communicated to other members of the organisation (Zaleznik, 1989). Besides the impact on the organisation, the decisions that are made can have a significant impact on the career of managers who bring them.

Decisions can be categorised according to the fact of how much time a manager has to spend on their adoption, how much of the organisation must be included in their adoption, and according to the functions of the organisation to that target. But generally speaking, probably the most widely accepted model of decision's categorisation is based on the computer's language, and in that context there are: programmed (routine and repeated) and unprogrammed (one-off) decisions (Kohn, 1977).

Due to the fact that organisations are different, it is necessary to develop some kind of rationale to properly determine who within the organisation has the responsibility for making certain decisions, which is primarily based on two factors: *the scope of the decisions* to be taken, and *the level of management or managerial level* (Certo, 2008).

- *The scope of the decision* includes part of the overall management to which the decision will affect, and the larger that part is, the wider the scope of the decision will be.

- *The level of management* involves three managerial levels, lower or operational level, medium and high level, and the rationale for deciding who will make the decision in this case, is the following: the wider the scope of the decision, the more responsible for making that decision the manager will be.

A manager who is responsible for making certain decisions, prior to its enactment may seek the opinion of other managers or employees, and the decision made that way, in a group (team), represents a consensus or consensual decision of all individuals involved in its adoption (Wilkof, 1989). When it comes to group decisions, it should be noted that the manager who asks the group to decide by consensus, must keep in mind that the group may not be able to make a decision, due to poor interpersonal relationships, or because of a lack of ownership of technical, humanistic and conceptual skills, which is why this subject was selected as the topic of this study, the importance of having these (leadership) skills for making quality management decisions.

There are five **key elements** in the situation of deciding (Wilson, Alexis, 1962):

- *The decision maker* is the first element of decision making situations, and it is an individual or a group who chooses between possible options.
- *Achieving the goals* that decision makers want to achieve, is the second element of decision making situations, and in business decision making these are mainly specific organisational goals.
- *The relevant alternatives*. The decision making situation usually consists of at least two alternatives, and the one that is considered to be enforceable to solve the existing problems is relevant.
- *Ranking the alternatives*. The decision making situation requires the mechanism for ranking of alternatives from most desirable to least desirable. This process can be subjective, objective and combined.
- *The choice of alternatives*, is the last element of decision making situations, and presents a real choice between possible alternatives. The decisions are made by it, and generally managers choose the alternative that maximises long-term returns to organisation.

The decision making process consists of the steps that the decision-maker undertakes to choose one alternative, and that process has a significant impact on the quality of those decisions, because if managers use the organised and systematic process, the likelihood of their decisions to be correct is higher than when using unorganised and unsystematic approach (Mitchel et al, 1998). In Figure 1, a decision making model is shown, which is recommended for managers to use.

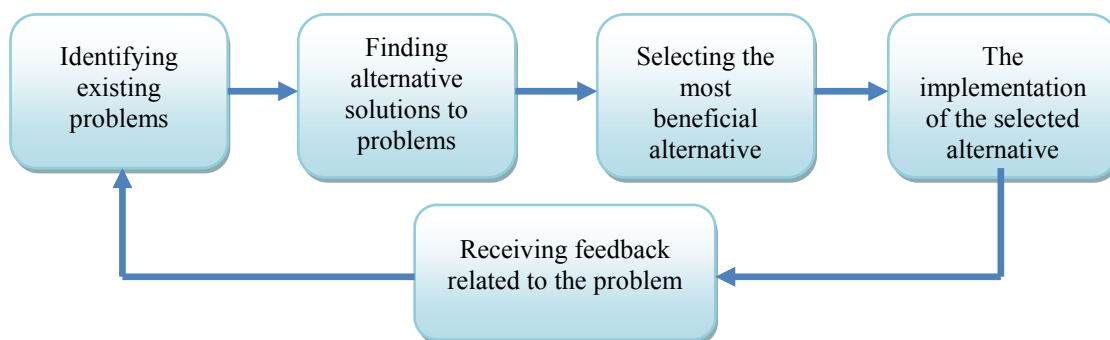


Figure 1. The decision making process (Source: Certo, 2008)

Decision making is essentially a process of problem solving that involves the removal of obstacles to the achievement of organisational goals, and the first step in this process is *the identification of problems* and obstacles, because management can remove problems only after they are recognised. When the problem is identified, managers should consider the different possible solutions. There are very few organisational problems that can be solved in only one way, which is why managers need to look for a number of possible alternatives for most organisational problems. Before the search for solutions, managers must be aware of the limitations of five possible alternatives to solve the problem: factor of authority, biological or human factor, psychological factor, technological factor, economic factor (Tannenbaum et al, 1961). Factors that limit or prohibit alternatives outside this area are: legal prohibitions, moral and ethical norms, formal policies and rules and informal social norms (Shull, et al, 1970).

Selecting the most beneficial alternative follows only after careful evaluation of each alternative, which consists of three steps. The first is the realisation of the potential effects of each alternative, the second is joining factors of the likelihood of

any potential effect, and the third is to have in mind the organisational goals, and in this context it is necessary to compare the expected effect of each alternative and the individual probability of these effects (Wensley, 1989). After these steps, the manager will know which alternative is the most favorable for the organisation. *The implementation of the selected alternative* is the next step and it is implied that the chosen alternative should be carried into action. The last step is *to gather feedback related to the problem* in order to determine the effects of alternatives carried out on a separate problem, and if the isolated problem is not solved, managers must find and implement other alternative.

The main reason why this study was conducted, was to obtain the relevant indicators and determine the extent to which leadership skills influence making quality management decisions, but also on the effectiveness of the management of business processes and organisational performance.

The leader is a person who takes responsibility (planning and implementing the vision he/she believes in) and that coordinates the activities of people in their effort to achieve their goal (Bass, 1991). According to the most authors in this field, the leadership has a more important role than the standard managerial control, because the management is a static form of determining the direction of the organisational movement, and leadership necessarily has a dynamic form of movement toward a goal that can be defined as the dynamic change in order to achieve greater market competitiveness (Collins, 2007).

Today leadership is studied in the world by applying qualitative and quantitative methods, in different organisational contexts, and some authors define leadership as a set of properties, the others as a form of behavior, the third view it from the aspect of information processing or human relationships, the fourth view leadership as a set of skills useful for management of certain processes. This last mentioned context is the theme of this work, observation of leadership through owning and developing specific skills, by whose practical application leaders (managers) promote processes that govern or lead them.

Concept of leadership based on the development and application of leadership skills

At the present time of globalisation and high dynamics of business, skills that are essential for success in the management of the business are identified as very important, and it is essential that the new generation of managers gain some leadership skills, because education is crucial for future leaders, with the existence of certain predisposition. Leaders combine innate talent (leadership qualities) to conduct, with the knowledge and skills acquired by learning and practice. Thereby the strategic importance of leadership development is further emphasised, which is why more and more companies in the world are investing in training and development of leadership skills of their managers.

Approach to leadership as a set of skills, suggests that successful leadership requires certain knowledge and skills. Based on field research in the administration sector and direct observation of employees at their workplace, Katz concluded that effective management (leadership) depends on three main groups of personal skills: technical, humanistic and conceptual (Katz, 1955). Also, he found that these skills vary greatly from personal characteristics of leaders, because *leader's skills can be acquired*, while the characteristics are what the leaders *are* (these are their innate characteristics).

For leaders, it is important to have all three skills, noting that depending on where they are located within the hierarchical management structure, some skills are becoming more important than the other, as shown in Figure 2.

Technical skill means having knowledge and skills when it comes to certain types of work or activity, and implies competence in a given area of specialisation, analytical skills, and the ability to use appropriate tools and techniques (Katz, 1955). Technical skills are mainly related to work with things, processes or objects. In essence, technical skills include current activities related to basic products or processes within the organisation. As seen in the previous figure, for the leaders of the lower and middle levels of management, the most important is to have exact technical skills, while for leaders at the highest (top) levels (Director or Chairman of the Board), technical skills are not extremely important because they rely on the associates at a lower level who are dealing with technical issues and production operations.

Humanistic or human skill presents the knowledge and the ability to work with people, and is quite different from the technical skills that are related to work with things (Katz, 1955). Humanistic skill is actually communication skill with people and involves skills that help the leader to work effectively with subordinates, co-workers at the same level, and with superiors, in order to achieve the common goals of the organisation. Being the leader of the humanistic skills means

being sensitive to the needs and interests of others, and to make decisions taking into account the needs of others, thus creating a positive atmosphere of trust in which employees (followers) feel comfortable and encouraged to carry out their work activities. On the previous figure it is shown that the importance of these skills is not slowing down no matter what level of management it is about, respectively they are relevant to all three levels.

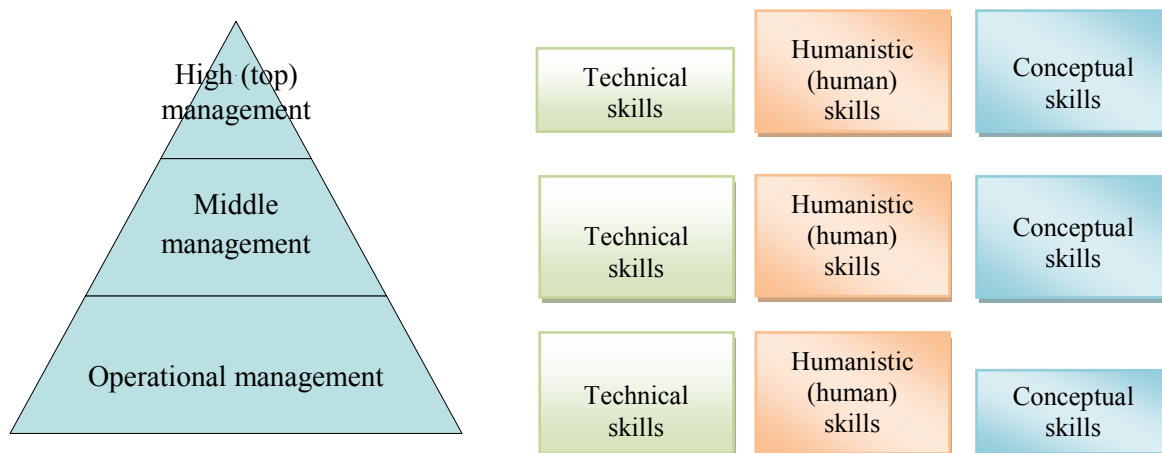


Figure 2. The importance of leadership skills in various management levels (Source: Northouse, 2008)

Conceptual skill involves the ability to work on ideas and concepts, and the ability to lead the organisation as a whole, as a leader with this skill is able to understand how the different functions of the organisation complement each other. So, while the technical skills are related to work with things, humanistic to work with people, conceptual skills are related to *work on ideas*. The leader of this skill is ready to talk about the ideas that strategically and long-term shape its organisation. Conceptual skills are related to mental work aimed at giving a meaning to the organisation and strategic issues in terms of understanding of what the organisation stands for and in which direction to go (Katz, 1955). On the previous figure it is shown that the conceptual skills are most important for high (top) level management, but are important for middle management as well, while for lower operational level these skills are losing significance.

METHODOLOGICAL ITEM OF RESEARCH

The questionnaire used for the survey is designed to provide all the information about the leadership skills of managers in organisations that were the subject of research, but is also designed so that managers can use it for self-evaluation, as well as a good tool for training and developing their own skills. The questionnaire was designed so that it can make a clear distinction on the type of skills that a leader has (technical, humanistic or conceptual), and measuring the intensity (power) of each of these skills to determine in which direction of action (education and adoption of leadership skills), manager needs to focus its activities in the future.

Objectives, tasks and hypothesis of the research

The main reason why this study was conducted, was to obtain the relevant indicators and determine the extent to which leadership skills influence the business decision making, the effectiveness of the management of business processes, and organisational performance.

The main objective of the research was to determine the extent to which the concept of leadership, based on key leadership skills (technical, humanistic and conceptual), has an impact on the quality (accuracy) of business decision making and the effective management of business processes, using the adequate analysis that was done on the basis of measurements.

The main task of this study was to, on the basis of values obtained from the questionnaire that was used during the research, establish and present to managers to which direction they need to go in the future, so that they could strengthen their existing leadership skills through education and training, but

also adopt those that they do not possess, and thus acquire additional competencies useful for business decision making.

Hypothesis of the research. Business decision making and business processes in organisations that are run by managers with high (strong) leadership skills, regardless of which level of management hierarchy they are (operational, medium or high), have a higher effectiveness than the managers who do not or insufficiently apply the above leadership skills.

Method and mode of work

The research was performed in 22 business organisations from various sectors in Bosnia and Herzegovina, during December 2014 and January 2015. Research was preceded by the introductory explanation to managers (all three hierarchical levels) on the purpose and significance of research. The method of scientific research, surveys and interviewing techniques, and instrument in the form of questionnaires were utilised in this survey. The questionnaire was anonymous and it consisted of 18 questions with five possible answers to the existence and strength of leadership skills: not true, rarely true, sometimes true, true to some extent, entirely true. Based on the answers it was possible to be relatively accurate in determining what kind of skills the manager has, and what was the intensity (strength) of these skills. The survey included 27 managers from all three hierarchical levels. The questions covered the three broad groups of leadership skills: technical, humanistic (human) and conceptual.

RESEARCH RESULTS

The following diagram shows the intensity and power (strength) of leadership skills for managers at all levels who, by managing business processes, among other things, make the business decisions.

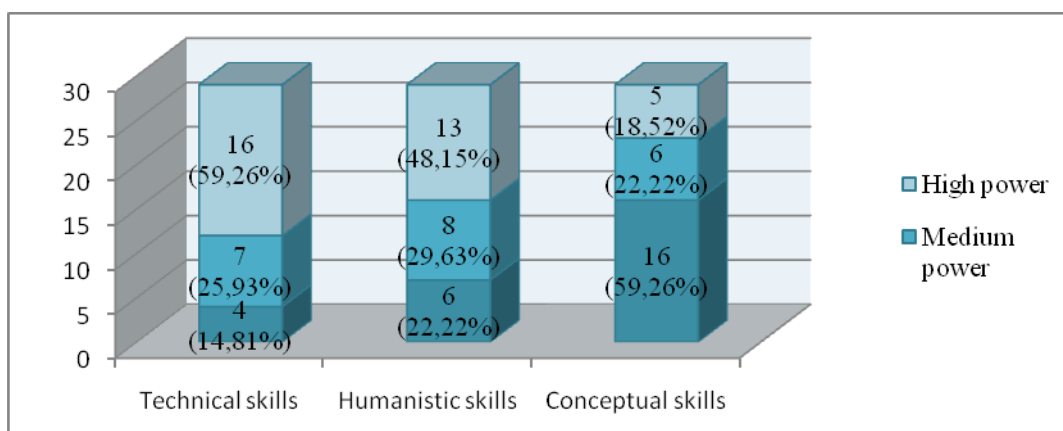


Diagram 1: Research results

DISCUSSION

Before completing the questionnaire whose results were presented in the previous section, respondents (managers of all three levels) were asked if they know what the leadership is, what are the leadership qualities and what are skills, do they know the difference between technical, humanistic and conceptual skills, what is the difference between management and leadership, and what they have in common, do they know the difference between management and guidance, and whether they are satisfied with the quality (correctness) of business decisions they make every day. From these first responses before completing the questionnaire, we found out that most respondents define and identify concept of leadership with the concept of leaders who are head of a team, that the insignificant number of them knows the difference between leadership qualities (which are innate) and skills (which are learned and acquired over time), and these two terms are generally mixed.

However, most of them noted correctly that the leadership is an ability to lead groups and business processes that are assigned to the jurisdiction of the group, in order to achieve a particular goal in business, and in this context the adoption of good management decisions.

Based on the presented data from the questionnaire, shown in the previous section, it can be concluded that managers at all levels generally have the technical and humanistic skills, but when it comes to conceptual skills, it can be seen that for half of them it is unknown (59,26%). 22.22% have some of conceptual skills but their strength is not expressed, while 18.52% have expressed conceptual skills.

CONCLUSION

In every organisation, regardless of its size and scope of activity, many different decisions must be made, such as decisions about how to produce a product, how to ensure the quality of the product, how to establish good business communication with customers, how to maintain the machines, etc. Due to the fact that organisations are different, it is necessary to develop some kind of rationale to properly determine who within the organisation has the responsibility for making certain decisions.

In the approach to leadership as a set of skills that significantly affect the quality of decision making, treated in this paper, the importance of having certain leadership skills depends on the position of managers in the managerial hierarchy, so for managers at lower management levels (operational management), technical and humanistic skills are the most important, while at higher levels (top) of management, conceptual skills are important for managers, and humanistic (interpersonal) skills are desirable for a manager at each level of management hierarchy (the lower, middle, and high).

Also, among other things, this approach enables leaders to discover their own strengths and weaknesses in relation to the aforementioned technical, humanistic and conceptual skills, so they can gain deeper insight into their own leadership competencies, and based on that, guide its development through training and exercises in areas where necessary, in order to enhance their contribution to the organisation in which they work.

The study confirms the hypothesis that managers with a broader spectrum of possessed leadership skills and with greater power of these skills, make better business decisions and manage business processes within its scope more effectively than the managers who have less leadership skills or whose power level of these skills is lower.

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THE SIGNIFICANCE OF MANAGER'S CREATIVITY FOR MANAGEMENT, DEVELOPMENT AND EFFECTIVENESS OF HUMAN RESOURCES

UDC: 005.96:159.954

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ABSTRACT

Considering the evidence for a constant need to improve human resources in the performance of business activities for which they are responsible, through a variety of methods and techniques, it can be concluded that the use of human resources and investment in their development (quality), is the primary factor of growth and development of every organisation regardless in which sector it operates. The paper presents some basic characteristics and key elements of the process of human resource management based on the skills and methods of development (stimulation) of managers' creativity who manage human resources, and staff. Also, this paper presents the importance of creativity for the effectiveness of discharge of duties, the effectiveness of human resource management, the effectiveness of all other business processes, and organisational performance of which depends the competitiveness and market positioning of the organisation as a whole. There exists significant positive correlation between the manager's creativity and human resources, with the business effectiveness of organisation as a whole.

Key words: human resources, process of management, business process, creativity.

INTRODUCTION AND THEORETICAL BASIS

One of the most important tasks of a good manager is to adequately contribute to make the most of all available organisational resources, and since, by many authors in this field, the most important organisational resource is a person, we can conclude that the human resources management is a phase of operational management through which the organisation creates the prerequisites for the overall high level of commitment of all other resources.

Analysing relevant sources, the existence of a multitude of definitions of human resource management is evident, but in this paper only some will be mentioned. People, their development, motivation and satisfaction become the main tool of competitive ability of the highly competitive global market, which is why they should be the dominant preoccupation of modern managers and organisations (Sajfert, 2006). Human resources represent a living factor of organisations which are, with their knowledge, skills, abilities and *creativity*, the major contributors to the competitiveness and the successful achievement of the objectives of business organisation. Human resources are unique for each company and can not be copied (Buble, 2006). The main feature of human resources management process is its focus on the future, the provision and development of people in accordance with the future position of the organisation and its business needs, while eliminating weaknesses at the same time, which actually represents the continuous improvement of business. It should enable and support the achievement of strategic goals of the organisation (Tipurić, 1999). Today in modern

management the major preoccupation of modern managers and organisations are people. Human resource management refers to policies and activities in the exercise of managerial tasks in the field of human resources, especially in terms of acquiring, training, assessment and competence in terms of safe and fair environment for employees in the organisation (Dessler, 2002). The consent of the authors about the responsibilities of human resources management for the human dimension of the organisation is notable, that the purpose of human resource management in improving the performance of employees is in strategic, ethical and socially responsible manner (Decenzo & Robbins, 2002). Managers in the organisation dealing with management and development of human resources, must pay special attention to finding quality people because they really are a key source of competitiveness, and finding human resources is one of the central processes by which they attract candidates to vacancies, whereby the candidate should satisfy all the criteria for successful job performance and the achievement of the organisation's objectives (Horvat, 2007). Human resource management refers to directing people in the organisation, and is based on the motivation to work, organisational socialisation, organisational culture, relations between individuals and groups, and relations between groups in the organisation (Bošković, 2003). Many studies confirm the improvement of operating results as a result of the effective application of activities in human resources management, which is why the use of human resources and investment in their quality is the primary factor of the development. In practice, all activities in the field of human resources management are usually grouped by further classification on a dozen basic activities as for example: job analysis, human resource planning, recruitment of human resources, selection of human resources, training and education of employees, evaluating the performance of employees, rewarding and motivating employees, career management (Kulić, 2002).

Therefore, human resource management as *a management function* implies a complex and responsible role, which significantly affects the efficiency of other functions in the organisation.

The role of managers in the effective management of human resources

Managers represent the relationship between people and organisations, in a way that, by doing their function in the context of human resource management, they realise the compactness of the system, while achieving the satisfaction of the people and the achievement of organisational goals at the same time. The best efficiency of the individual is achieved by the fact that he is set at the position where most of his abilities will come to the fore, where his qualities, knowledge and skills will match the work tasks he would carry out, where he will be satisfied with the job and where he will be allowed to further develop. Unfortunately, it is common practice that the business environment does not recognise the potential of every individual, and those who are stronger, more belligerent and arrogant come to the fore.

Human resource management in the increasingly dynamic business environment is more and more seen in the context of responses to a variety of business challenges related to the strategy of business activities, the application of modern technology, the impact of market changes on corporate performance, education and competence development of employees, which makes the need for managers who are responsible for managing and developing human resources in the organisations all the more emphasised, to possess strong interpersonal management skills, to be *creative*, innovative and able to manage changes, and are willing to strengthen the organisation as well as performance of each individual within the organisation. Human skills as the topic of this paper, are the skills of managers that enable them to create cooperation within work teams, they include work with the attitudes and communication, briefly, working with people.

Management skill is the ability to execute the process of achieving organisational goals with people and other organisational resources. Learning the skill of management and focus on its development are crucial because possessing such skills are considered as a precondition for managerial success (Worrall & Cooper, 2001). One of the main tasks that modern managers perform in the process of managing organisational resources, is an activity connected with people and relating to the effort that the manager invests in dealing with people in the organisation, including the provision of support and

encouragement to others, giving recognition to the work results, development skills and confidence of the other members of the organisation, consultation when making decisions, and empowerment of others to solve problems (Yukl, Gordon & Taber, 2002). Since management skills are considered a prerequisite for a high effectiveness of managerial activities, those who want to become good managers should aim to develop such skills among themselves, and some of the most important skills of human resources management were included in a questionnaire during this study.

The effectiveness of managers depends on the manner in which the combination and the usage of all the organisation's resource activities are implemented, including human resources, which actually refers to the use of the organisational resources to achieve the objectives. To carry out all of the above activities towards the development of their own, but also skills of available human resources, managers should first of all pay special attention to the development of their creativity and innovation.

Creativity as an individual and organisational performance

Most of the authors in this field agree that stimulation of creativity and innovation are very important for a successful business organisation and overcoming all resistance to change that contributes to a better positioning of the organisation in the market. Also, it is known that creativity that an individual carries comes to the fore in a given organisational atmosphere, but also in the social environment the incentives come from. Therefore, the task of a good manager is to recognise the creative individual in the organisation and ensure the conditions in which his ability will come to the fore, and where he will be able to continue to develop creatively.

From the perspective of management, creativity in the organisation is the ability to create original conceptions (ideas) or consider existing ideas in new ways, with the condition that the idea should be useful and enforceable and should have the desired effect on the way that managers achieve organisational goals (Cameron, 2000). Creativity involves observation of problems with different points of view and getting out of the frame of the old rules and norms that organisations associate with traditional methods of performing work. Creativity enables managers to make a difference and helps them to find new answers and solutions to old and new problems (Carson, 1999). Creativity of every individual, whether he is a manager or an employee, is a function of the three elements whose overlap leads to creativity: *expertise* (everything an individual knows and can do in his business area), *creative thinking skills* (the ability of individuals to combine old ideas in a new way which actually determines how individuals approach flexibly and imaginatively to solving business problems) and *motivation* (which relates to passion or need of an individual to be creative). Since the creativity of managers and employees is a key factor influencing the effective execution of tasks and achievement of organisational goals, a good manager should continuously work to develop his own creativity as well as the creativity of his employees. They can do it in different ways, some of which are (Certo & Certo, 2008):

- Give the workers exemplary (demanding) tasks that represent a business challenge for them, because when facing the task of exemplary, people almost naturally look for new creative ideas that will enable them to do their job better.
- Give the workers freedom in performing tasks, because people tend to be more creative in their job if they are free to influence the process of its performing, but prerequisite to such freedom is the assumption that members of the organisation clearly understand the objectives to be achieved.
- Give the workers enough time to complete tasks, because if they do not have enough time they will be preoccupied with performing tasks and will not be able to think creatively.
- The formation of various working groups (teams), because the diversity of views (beliefs) on solving tasks encourages creativity of ideas.
- Personal encouraging of workers to creativity, because such incentives prove members of the organisation that their creativity is important for the organisation and that is why managers prize their creative efforts.
- Recruitment and retention of creatives is the last tactics that managers can apply to increase creativity in the organisation, and for its implementation it is necessary to identify potential candidates with creative people who are usually: of free spirit, silent, emotional, entertaining, flexible in decision making, ready to risk, persistent, willing to learn, and, in the selection that lasts a relatively short period, that is actually hard to notice.

METHODOLOGICAL ITEM OF RESEARCH

The questionnaire used for the survey is designed to provide all the information on the skills and methods of managers that they need in order to maximise their creativity as well as creativity of human resources in organisations that were the subject of research. The questionnaire was also designed so that managers can use it for self-evaluation, as well as a good tool for training and developing their own skills that will increase the level of creativity and thus of innovation.

Objectives, tasks and hypothesis of the research

The main objective of the research was to, by adequate analysis done on the basis of measurements, determine the extent to which creativity of managers who manage human resources in the organisation, has significance for the working efficiency of people, to develop their creativity, the efficiency of tasks that human resources are committed, to effective management of business processes, and the overall performance of the organisation as a unique business system.

The main task of this study was to, on the basis of established values obtained from the questionnaire that was used during the research, establish and present to managers in what direction they need to go in the future, so that through education and training they would strengthen their existing skills and methods that affect the level of their creativity, but also adopt those that they do not possess, and thus acquire additional competencies useful for the effective management of human resources and other business processes in the organisation.

The hypothesis of the research. The process of human resource management, and other business processes in organisations that are run by managers with expressed (strong) creativity, are significantly more effective than these processes in organisations where managers who manage these processes do not, or insufficiently apply their creativity, which significantly affects the organisational performances.

Method and mode of work

The research was performed in 17 business organisations from various sectors in Bosnia and Herzegovina, during January and February 2015. Research was preceded by the introductory explanation to managers and employees about the purpose and significance of research. The method of scientific research, surveys and interviewing techniques, and instrument in the form of questionnaires were utilised for the survey. The questionnaire was anonymous and it consisted of 12 questions with five possible answers to the existence and strength of creativity with managers: not true, rarely true, sometimes true, true to some extent, entirely true. Based on the answers it was possible to relatively accurately determine the intensity (strength) of managers' creativity. The survey included 17 managers in charge of human resources management and 43 workers were interviewed, and were asked to answer in relation to the intensity and scope of creativity of managers who manage their human resources as well as other business processes in the organisation.

RESEARCH RESULTS

The table 1 shows the amount of time managers spent on the development of creativity of employees.

Table 1: The amount of time spent on the development of creativity (Source: The authors)

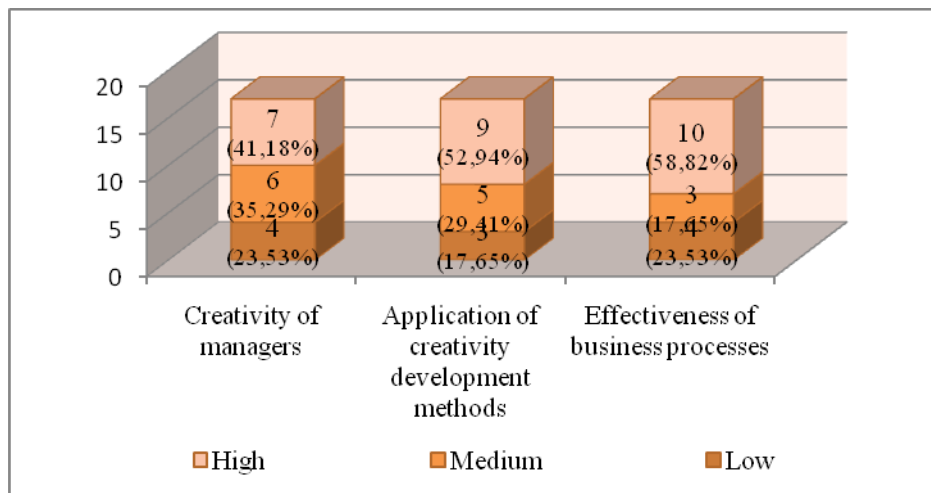
The ordinal number	Management skills of managing human resources that develop creativity	Hours spent out of 10 working hours	% consumption of the total working hours
1.	Development (training and advice on how to develop creativity)	1,5	15%
2.	Providing support to employees during the performance of work tasks	1	10%
3.	Appreciation (giving praise for the efficient working achievements)	1	10%
4.	Short-term planning (how to take advantage of people and other resources to effectively perform tasks)	1,5	15%
5.	Periodic determination of the most appropriate ways that can coordinate the activities of all employees	2,5	25%
6.	A clear division of roles (explaining the tasks, goals and expected results)	2,5	25%
			100%

The table 2 presents the results of the extent and intensity of the known methods of human resources creativity development, which covers 43 employees.

The diagram 1 shows the intensity and power (strength) of creativity of managers who are in charge of human resources management, the scope and intensity of the application of known creativity development methods in human resources, and the intensity of the impact of creativity and methods applied to the working efficiency of human resources and the efficiency of business processes (organisational performance).

Table 2: The scope and intensity of creativity development methods' application among employees (Source: The authors)

THE DEVELOPMENT METHOD OF HUMAN RESOURCES CREATIVITY		Slightly (a little)	Average	Significantly (a lot)
1.	Giving demanding tasks that represent business challenge	11 (25,58%)	23 (53,49%)	9 (20,93%)
2.	Giving freedom to do their jobs	8 (18,60%)	19 (44,19%)	16 (37,21%)
3.	Giving enough time for job performance	6 (13,95%)	16 (37,21%)	21 (48,84%)
4.	Forming teams (working groups) with the varied structure	32 (74,42%)	3 (6,98%)	8 (18,60%)
5.	Personal or systemic encouragement of employees to creativity	16 (37,21%)	17 (39,53%)	10 (23,26%)
6.	Recruitment and retention of creatives	34 (79,07%)	4 (9,30%)	5 (11,63%)



The Diagram 1. Research results (17 managers)

DISCUSSION

Based on the research results, it can be concluded that in the organisations that were the subject of this research, managers in charge of human resources management spend a significant part of their working time for the development of their own, but also for the creativity of their employees, by applying some of the known skills of human resources management that develop creativity and innovation, as can be seen from Table 1. From the research results presented in Table 2 it is shown that managers in these organisations apply some methods of developing creativity of human resources comprehensively and more intensively than any other method, including for example a method of giving enough time for job performance (so that employees are not performing the tasks under pressure and in that state they could only focus on a task and not the way how to do it creatively and as effective as possible), even 48.84% of the respondents (of 43) found that their manager applies this method in his work, while only 13.95% found that managers do not apply this creativity development method of human resources.

On the other hand, when it comes to methods of recruitment and retention of creative people, then it is vice versa, because 97.07% of managers slightly (a little) apply this method and only 11.63% of managers use this method to increase the overall organisational creativity and performance to a higher level. In the diagram 1 it is clearly evident that out of 17 managers who were included in this study, 7 of them are very creative, 6 are partially creative, and 4 are not creative. The diagram also shows that

some managers extensively apply methods of developing creativity and that they achieve better efficiency of business processes (58.82%) and thus better organisational performance, than the managers who do not apply these methods. The results show that, despite evident indicators that managers and employees know the importance of creativity for the effective performance of business processes in the organisation, more attention and time should be paid to the field of creativity development.

CONCLUSION

Human resources are one of the elements that determine the value of the organisation, which is why managing them in itself inextricably combines elements that are crucial and have long-term effects on business conduct and success of the organisation on the way to achieving organisational strategic goals. In fact, human resources play a key role in shaping and implementing this strategy.

In essence, the primary role of the manager is to lead the organisation towards achieving goals because each organisation has its aims and objectives, and managers are responsible for combining and usage of organisational resources to ensure that their organisation achieves its purpose and business objectives. Managers achieve these goals by working with people in a way that they are properly distributed (managed), taking into account their skills and knowledge that they have.

It is evident in the business world that managers daily confront challenges of more efficient resistance to competition, and in that context, coping with challenges such as motivating members of the organisation to achieve greater effectiveness is almost a daily activity, in which their creativity significantly helps because it gives them new ideas for effective task forces and more effective management of business processes.

The paper has proven research hypothesis which is formulated as a statement that the processes of human resource management and other business processes, as well as organisational performance, in organisations that are run by managers who expressed a (strong) creativity, are significantly more effective than these processes in organisations where managers who manage these processes, do not or insufficiently apply their creativity.

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CROSS-BORDER COOPERATION AND INTERNATIONAL EXCHANGE - REQUIRED SKILLS AND KNOWLEDGE OF MODERN ENTREPRENEURSHIP IN THE BALKANS

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ABSTRACT

In a market economy and the existence of competition from other economic entities is essential organized business approach every entrepreneur or business enterprise in the appearance on the market in order to survive and be able to realize their business ideas and goals. The main goal of any business entrepreneur or business enterprise is earning income. Profit is realized when an entrepreneur or a company successfully operates, and that means its available resources, contained in their knowledge and skills of management started an entrepreneurial venture, engaged the material and financial resources, in an organized manner used, or used, so as to realize lower costs operations, and achieves maximum revenue. Under market operations is understood that while the participation of entrepreneurs or legal entities in the market of agricultural products, offering the same or similar products or services. Entrepreneur or a company that is better organized, which possesses better knowledge and management skills and jobs available means, with better chosen technology work better selected range of products or services, which are increasingly looking to market, etc., and thus tends to the same available funds realized in the market, competitive prices, higher sales, higher revenue and higher profits.

Key words: entrepreneur, business plan, international exchange, financial plan.

THE MAIN OBJECTIVE

The main objective is to train unemployed people, mainly females, as well as significant resources in underdeveloped rural areas, to quickly and successfully self-organizing and conducting carefully selected their own agribusiness. This program of training the unemployed to quickly master the skills of managing individual entrepreneurship should contribute to increasing the production and marketing of agricultural products with specific locations of undeveloped mountainous areas in the domestic and foreign market. This paper provides for the creation of such a training program, which provides that the participants familiarize themselves with the necessary processes and procedures of establishing their own business enterprise and compiling key initial document "business plan" as a basic document for verification and proof of market mobility selected "subjects" of the individual business enterprise. Business plan is also an important document when submitting requests appropriate state and financial institutions (development funds and commercial banks), that encourage and / or provide financial support for the development of individual entrepreneurship through self-employment in order to improve their economic position and strengthen the economic potential of the country. At the end of the training, participants after the final consultation with lecturers, verification of short tests, the goal is for the participants to be able to prepare their own business plan and compete in order to obtain initial funding.

THE BROAD OBJECTIVES AND THE NECESSARY SKILLS AND KNOWLEDGE

The broad objectives related to it, that participants are sufficiently informed and motivated for self-employment and individual finding their own adequate and reliable business solutions using all available resources (knowledge, land, waterways climate, roads, connections for electricity, environmental benefits, etc.) as well as the available agricultural and other equipment, to be able to confidently:

- comprehend the basic principles of successful leadership of individual business enterprise, particularly in critical operating conditions,
- perceive processes and procedures for the establishment and registration of organized business enterprise,
- master the basic knowledge and skills for a variety of items of their own business ventures, based on previous marketing tests Intended business mobility market, which represents a key element in the formation of successful entrepreneurship,
- learn about the basic elements of assets, equity and liabilities in order to successfully lead the financial operations and protection of business risks in the performance of Intended own business enterprise,
- introduce a system of financial statements that are applied in practice, as an instrument of communication between individual entrepreneurs and financial institutions that provide financial support to individual entrepreneurs since its founding to the regular scheduled operations,

Plan can prepare the necessary financial resources for their business venture and analyze competitive ability, including:

- viability of the business,
- liquidity
- solvency (step of solvency), and
- financial forecast for period of operations,
- learn the basic skills of drawing up business plans, objectives and contents of the business plan in terms of obtaining the necessary funds, then the monitoring and control of the planned course of business enterprise, and in particular the setting of limits to what amounts to an individual entrepreneur can borrow and thus reduce financial risks in business,
- calculate and interpret basic financial indicators of its business,
- evaluate the effects of investment to own and borrowed financial resources to expected and actual business results of operations,
- recognize the warning signs that may lead to a delay in repayments on loans and to be able to plan a backup solution, corrective strategies and safer debt collection,
- understand the way in which their own accounting may affect the significance and reliability of the information obtained, which presents the credit provider (development funds and banks).

MARKET ASSESSMENT AND FINANCIAL VENTURE

In practice, many entrepreneurs and managers of companies in the market of agricultural products, due to ignorance or lack of knowledge of the role, importance and process of developing business plans are in great difficulties, primarily due to lack of financial resources, which leads to a chain of financial insolvency, failing to execute obligations under suppliers for delivery of materials, lack of regular payment of earned income, leading to a halt in operations less labor productivity, appearance usurious losses of business, leading to bankruptcy and bankruptcy. A business plan is a necessary "tool" for achieving the preconditions of successful leadership and business management intended entrepreneurial venture, or consolidating existing business legal person or company in a complex market conditions. Determining the status of the missing funds and the process of determining the necessary funds for regular operations are the key segments of the business plan.

This document puts an emphasis on current problems of development of the financial aspects during the preparation and drafting of business plans, as a key segment for their successful implementation (McGuigan, N., Weil, S., Kem, T., & Hu, B. 2012). To familiarize participants with the skills and knowledge of modern entrepreneurship and specific start and develop their own agricultural businesses in rural and mountainous areas, especially designed women's faces. After initial introductions with possible alternative procedures of establishing farms or processing plants for agricultural products, the focus of the training is aimed at exploring the basic elements of marketing and finding the optimum items of business enterprise, for which there is no market mobility, and market demand based on the utilization of existing resources in a rural setting where live, on the basis of self- establishment of their own farm, as a business entity, with the status of an action or as a legal entity with the status of partnership, or limited partnership (Plojovic Š, 2008; Becirovic et al. 2012, Becirovic et al. 2011.).

The training is provided to inform participants that the books should lead, in accordance with the applicable regulations for entrepreneurs and small business companies (the partnership and limited partnerships). The focus should be on getting to know the benefits of establishing partnership companies, where two or more persons under contracts established an equal partnership, where all decisions are made by consensus. Such pooling easier affording the initial market difficulties and potential business risks easier to distribute and submit, which is very important in mitigating and aggravating the crisis conditions of starting a new business.

When interested in mastering the art of finding and choosing appropriate subjects own business, what is most important in this training, continues to meet with basic information about the procedures of market research to determine the scope of work that can be successfully qualify, and in connection therewith to be planned volume of business, and on the basis of a plan drawn up the necessary financial resources to successfully conduct business started.

THE MAIN FEATURES OF THE PLAN

Business plan is a one-time document for determining the financial ability to legally organized business enterprise (Službeni glasnik RS, 2009, 2011), (registered agricultural households, registered as farm shops) or of the company (partnership or limited partnership or a limited responsibility) in order to achieve financial support in order to:

- the exercise of the new business, new business enterprise or the establishment of new undertaking,
- the introduction of an alternative program for production or business that is market-competitive and allows the successful opposition to the competition,
- consolidation business undertaking (farm or farms) or entity (of the company), which has been in financial difficulties due to outdated technology, poor quality of products or services, uncompetitive prices and loss of market, lack of funds and other weaknesses in the management of an entrepreneurial venture in the previous period, and
- the expansion of existing business, or increase the capacities of working satisfying increasing market demand of its products or organizing a production for export (Vignjević Đorđević N. 2010).

Business plan is specific business document, based on special methodology, with requirements under financial institutions, how individual entrepreneurs appearance or administration business Society gave satisfactory answers to some key fattening provider financial loans (Službeni glasnik RS, 2009), (the creditor), like their business skills and justifiability required to:

- What meets the needs of the proposed chosen product or service?
- Who are the potential buyers of a product or service?
- What are the benefits of a product or service compared to competitors?
- In what ways will provide funds to finance business enterprise?
- What is the price of a product or service?
- How will the profits realized?
- How quickly will generate money, etc.?

Business Plan (Dragojević D., Dikić S., 2011) as a key business document and at the same time "tool" for effective management started a business venture, established or actions of the company is intended for:

- entrepreneur who intends to start an entrepreneurial venture,
- the legal entity that intends to conquer new products and services, according to market demand,
- the legal entity that has decided to change or extend registered activities,
- investors who intend to invest in certain investment business ventures, (purchase of new farm operation, joint ventures, etc.)

Business plan should provide , first of all, a timely decision and reliable business or investment decisions for the timely consideration of projected total business enterprise, timely identifying potential business and investment risks. Business plans are normally prepared prior to making business and or investment decisions . In a market economy, a business plan is drawn up for each business idea , business venture and investment decisions. A business plan drawn up during the preparation of the request to be submitted to banks or other credit institutions for securing short-term or long-term funding for regular business.

The essential feature when composing a business plan is the choice of the appropriate methodology for developing a business plan. Some banks or financial institutions (Development Fund and similar institutions) in order to determine their specific needs and their methodology for the preparation of business plans. Therefore, before the accession of developing a business plan, entrepreneur , and management of economic societies need to decide where previously the financial institution will pay for security porebnih financial resources and thus dated by the appropriate methodology for the selection process of a business plan.

The existence of different methodologies for the development of business plans has been created due to the existence of various vested interests of individual banks. Some banks insist on a more detailed elaboration of the marketing segment analysis and marketing risks, and other banks devote more attention to the proper selection of products or services that are the subject of a business plan, analysis of critical points of return, more realistic look at the volume of investments, analyzing investment risks and opportunities refund of his investment.

CONCLUSION

A key factor for the successful operation of each undertaking in the market (duly registered agricultural facility, farms, shops, orgačkog, komaditnog company or a limited liability company) is available with sufficient financial resources for the initial market research that will successfully market your products or refer services, then finance the sale of finished products or services , the timely procurement of raw materials, as well as the financing of business processes , production , service delivery, and the like. In the harsh conditions of sale, with the emergence of the financial crisis and general providing financial liquidity, necessary additional financial resources for lending to customers. Without sufficient financial resources it is impossible to achieve a successful business. Financial resources are also market the product and it is very expensive. To every entrepreneur and company rationally used their available funds or vice versa determine the missing funds, in order to ensure sufficient resources to achieve their business cileva need to make timely prepare and draw up appropriate business plan. In this paper puts an emphasis on current problems of development of the financial aspects during the preparation and drafting of business plans, as a key segment for their successful implementation. To familiarize participants with the skills and knowledge of modern entrepreneurship and specific start and develop their own agricultural businesses in rural and mountainous areas, especially designed women's faces. After initial introductions with possible alternative procedures of establishing farms or processing plants for agricultural products, the focus of the training is aimed at exploring the basic elements of marketing and finding the optimum items of business enterprise , for which there is no market mobility , and market demand based on the utilization of existing resources in a rural setting where live , on the basis of self- establishment of their own farm, as a business entity , with the status of an action or as a legal entity with the status of partnership , or limited partnership. When participants sufficiently motivated to start their own business enterprise, you yourself will feel the need to pursue a more detailed training for dealing with entrepreneurship skills successfully. Business plan is primarily intended for entrepreneurs and owners privrenih companies for easier and more efficient planning of operations and design business results . Aim of each business plan is to check the profitability of investment (financial) investments in business ventures, which are particularly susceptible to fierce competition and the difficult economic conditions. For security identified the missing funds, which was previously found , an entrepreneur needs to know what you should prepare the documents to be able to compete or submit a request development funds or commercial banks to allocate adequate financial resources. This program is specifically focused on the specifics of the development of independent businesses in agriculture in underdeveloped mountainous areas, for better understanding of the opportunities opening up and development of private entrepreneurship in rural areas, especially aimed to attract women , as well as a significant potential for economic development , increase production of goods and services, order to satisfy domestic demand and increasing exports in the future.

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PURPOSE OF HUMAN RESOURCES IN FUNCTION OF IMPROVING THE KNOWLEDGE MANAGEMENT

UDC: 005.94

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ABSTRACT

In the New Economy characterised by properties such as globalisation, intangibility and interconnectivity, business organisations are required to face new challenges, especially the changing nature of competition coupled with the enhanced dynamism and complexity of the environment in which they operate. One of the current strategic philosophies assisting firms to develop strategic capabilities dealing with uncertainty is knowledge management (KM). Through the systematic acquisition, creation, sharing, and use of knowledge, organisations develop, renew and exploit their knowledge-based resources, thereby allowing them to be proactive and adaptable to external changes and attain competitive success.

Key words: knowledge management, competitive advantage, learning organisation, conversion processes, organisational structure, organisational culture, people (or T-shaped skills).

INTRODUCTION

In the old economy, firms had a choice between three generic strategies in their attempts to develop a competitive advantage (hereafter referred to as CA), namely cost leadership, market differentiation, and niche orientation (Porter 1985). In the new economy which is characterised by properties such as globalisation, intangibility, and inter-connectivity, business organisations are required to face new challenges (Coyle 1999; Kelly 1998). In particular, the globalisation of business activity coupled with the increasingly rapid development and diffusion of technology gradually led to an erosion of traditional sources of CA (Jacome, Lisboa & Yasin 2002), requiring firms to clearly understand the changing nature of competition and adopt complementary and/or supplementary strategic approaches (Jackson, Hitt & DeNisi 2003). One popular approach used to understand competitive dynamics is the resource-based view (hereafter referred to as RBV) of the firm. According to this view, only those resources that are valuable, rare, hard to imitate, and cannot be substituted provide a sustainable competitive advantage (hereafter referred to as SCA) (Barney 1991; 1995; Ferdinand 1999; Hamel & Prahalad 1994; Michalisin, Smith & Kline 1997; Porter 1996; Teece, Pisano & Shuen 1997), leading to higher performance of the firm (Peteraf 1993). Jackson, Hitt & DeNisi (2003) argue that in any competitive landscape, intangible resources are likely to produce a CA, among which human capital is usually the most important because it is the most difficult to imitate. Moreover, in today's dynamic environment with its rapid and unpredictable changes, tangible assets have become easily accessible, imitable, and substitutable. As such, the foundations of organisational competitiveness have been shifting to an emphasis on knowledge (Riahi-Belkaoui 2003). According to Walters, Halliday and Glaser (2002), knowledge is considered to be the only strategic asset which increases with use rather

than diminishing. The competitive edge of individuals, enterprises, and even nations has increasingly become dependent on their ability to apply knowledge and leverage it in a continuous way (Dimitriadis 2005). In accordance with the knowledge-based view (hereafter referred to as KBV) of the firm (Grant 1996a), managing knowledge-based resources has become the key for sustaining a CA and superior performance (Grant 1996b; Grover & Davenport 2001; Jackson, Hitt & DeNisi 2003; Sharkie 2003; Teece, Pisano & Shuen 1997).

KNOWLEDGE MANAGEMENT CAPABILITY - BASED COMPETITIVE ADVANTAGE

In accordance with the RBV, Grant (1991, p.191) posits that „while resources are the source of a firm’s capabilities, capabilities are the main source of CA“. Therefore, it has been emphasised that the key to achieving an SCA from the firm’s stock of resources lies in the ability to integrate different resources to form strong organisational capabilities (Grant 1996b; Verona & Ravasi 2003; Zollo & Winter 2002). It is a firm’s core capabilities, those that create major value (Robbins et al. 2000), that make the most significant contribution to CA (Prahalad & Hamel 1990). The RBV of the firm, blended with a knowledge-based perspective, highlights the effective ways of coordinating individuals’ activities within the firm and integrating their knowledge (Grant 1996a; Lopez 2005). Gold, Malhotra and Segars (2001) argue that it is how effectively firms leverage and combine their KM resources to create a unique KM capability that determines their overall effectiveness. In other words, firms can and do differentiate themselves on the basis of their valuable resources of KM capability which are complex to acquire and difficult to imitate, thereby, providing them with a sustained CA (Chuang 2004). The question of whether KM infrastructure capability, which is an integration of various KM resources such as organisational structure, organisational culture, human skills, and information technology, can significantly contribute to organisational CA will be discussed in a later section (Figure 1.). Knowledge management infrastructure capabilities or KM enablers (or influencing factors) are the overall organisational activities or mechanisms that can stimulate knowledge creation, protect knowledge, and facilitate the sharing of knowledge in an organisation (Lee & Choi 2003; Migdadi 2005). The next subsection presents a brief outline of each component of KM infrastructure capability of a firm in terms of social perspectives.

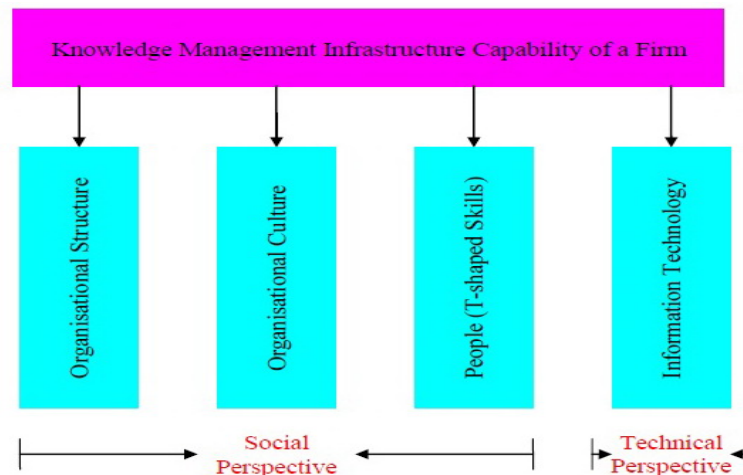


Figure 1 –KM Infrastructure

Source: Adapted from Gold, Maholtra and Segars (2001) and Lee and Choi (2003)

SOCIAL PERSPECTIVE

In terms of social perspective, the KM infrastructure capabilities of a firm encompass three components: organisational structure, organisational culture, and people (or T-shaped skills) (Chuang 2004; Lee & Choi 2003). These key dimensions of social KM infrastructure.

Organisational structure

In systems thinking, an organisation is conceived of as being composed of elements and relations between elements. These relations as a whole constitute an organisation (Checkland 1999). According to Miller and Droge (1986), organisational structure involves centralisation of authority, formalisation, complexity, and integration. It is the way in which responsibility and power are allocated and work procedures are carried out among organisational members (Nahm, Vonderembse & Koufteros 2003). Since it provides the skeletal structure for all organisational decisions and processes, organisational structure is the primary driver of change (Wang & Ahmed 2003). Among various ways of categorising shifts of organisational structure, Schein (1971; 1988) identifies three dimensions: the hierarchical dimension which contains the ranks within an organisation in a manner similar to an organisational chart; the functional dimension which identifies the different types of work to be done; and the inclusion and centrality dimension which shows the distance of any given person from the central core of the organisation. Considerable attention has been paid to the relationships of contingency between environments, organisational form and function, and a number of studies have examined the impact of changing external circumstances and the need to develop appropriate structural forms (Chandler 1962). In particular, the common trajectory of structural transition involves a scenario in which a traditional hierarchical structure is replaced by flatter and more flexible one in the post-modern world of business (Piercy & Cravens 1994, 2000). In other words, hierarchical structures in turbulent business environments become deficient (Drucker 1995), displaying their unwanted side effects of rigid bureaucracy which hinders the flow of information and promotes excessive specialisation of work processes which hinder the integration of expert knowledge and speedy responses to the competitive environment (Cross 2000). Instead, it is argued that organic structures are better suited because of their ability to create and adapt, providing organisations with high flexibility without degenerating into chaos (Sawhney & Prandelli 2002). Consequently, a range of new forms of organisational structures have emerged in the new economy such as network organisations, knowledge-based organisations, virtual organisations, modular organisations, and hypertext organisations (Wang & Ahmed 2003). These organisational structures are created on the basis of core competence or knowledge creation which is inherently dynamic, sensitive to the environment and can easily adapt to external pressures as well as actively meet or even exceed internal demands (Prahalad & Hamel 1990). Since KM initiatives can be structurally organised as separate organisational units, as projects, or as informal initiatives (Maier & Remus 2002), the organisational structure within an organisation may encourage or inhibit KM (Gold, Malhotra & Segars 2001; Hedlund 1994; Nonaka & Takeuchi 1995). While agreeing that organisational structure is one important independent variable affecting the facilitation of the knowledge processes, Dilnutt (2000) also concludes that organisational structure can inhibit or enable effective KM through the influence of the structural framework in place, the way this framework facilitates knowledge creation and innovation, the impact of this framework on corporate behaviour, and the provision of access to knowledge to foster creativity with the allocation of responsibility to individuals.

Organisational culture

Organisations are made up of individuals, each with their own unique behaviours, norms, and values (Prusak 1996), and the accumulation of those individuals creates the organizational culture (Dilnutt 2000). In other words, organisational culture is an aggregate of the shared understandings of individuals which influence the collective behaviour of the organization (Lyles & Schwenk 1992). There are many definitions of organisational culture, some of which have an anthropological foundation and some of which have a sociological foundation (Roman-Velazquez 2004). According to Schein (1992, p. 9), organisational culture refers to „a pattern of basic assumptions that the group learns as it solves its problems of external adaption and internal integration“. Moreover, this pattern of assumptions should „work well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems“ (Schein 1992, p. 9). Schein argues that there are three basic levels to the way in which the culture is visible to the observer, namely artifacts, exposed values, and basic underlying assumptions. The last level refers to unconscious, taken-for-granted beliefs, perceptions, thoughts, and feelings, which are the deeper level

of culture and source of values and actions. While the concept of organisational culture is hard to define, analyse, measure, and manage, efforts to understand it are worthwhile because many of the complex and mysterious problems in organisations suddenly become clear when the culture is understood (Schein 1992). With regard to the functions of organisational culture, Martin and Terblanche (2003) summarise them as internal integration and coordination. In particular, internal integration can be described as the socialising of new members in the organisation, creating the boundaries of the organisation, and the feeling of identity among personnel and commitment to the organisation. The coordination function refers to creating a competitive edge, making sense of the environment in terms of acceptable behaviour and social system stability (Migdadi 2005). In relation to the concept of KM, DeLong and Fahey (2000) identify four comprehensive ways in which culture influences the behaviours central to knowledge creation, sharing, and use. First, culture shapes assumptions about what knowledge is and which knowledge is worth managing. Second, culture defines relationships between individual and organizational knowledge, determining who is expected to control specific knowledge, as well as who must share it and who can hoard it. Third, culture creates the context for social interaction that determines how knowledge will be used in particular situations. Finally, culture shapes the processes by which new knowledge with its accompanying uncertainties is created, legitimated, and distributed in organisations. Cultures that explicitly favour knowledge sharing and knowledge integration encourage debate and dialogue in facilitating contributions from individuals at multiple levels of the organisation (Davenport & Prusak 1998). In particular, dialogue between individuals or groups is often the basis for the creation of new ideas and can, therefore, be viewed as having the potential for creating knowledge. Moreover, employee interaction and collaboration, especially among those not working side by side, are very important when an organisation attempts to transmit tacit knowledge between individuals or convert tacit knowledge into explicit knowledge, thereby transforming it from the individual to the organisational level (Nonaka 1990, 1994; Nonaka & Konno 1998, Nonaka & Takeuchi 1995; O'Dell & Grayson 1998). Dilnutt (2000) in his doctoral thesis on KM investigates how the independent variable of organisational culture inhibits or enables KM processes. While McDermott and O'Dell (2001) conclude that culture is a key inhibitor to effective knowledge sharing, Turban and Aronson (2001, p.355) add that „the ability of an organisation to learn, develop memory, and share knowledge is dependent on culture“. Organisations should establish an appropriate culture that encourages people to create and share knowledge within an organisation (Holsapple & Joshi 2001; Leonard-Barton 1995). Consequently, organisational culture becomes one of the most important factors for the successful implementation of KM efforts (Davenport & Prusak 1998; Gold, Malhotra & Segars 2001; Lee & Choi 2003; Martin 2000; Roman-Velazquez 2004). It is the development of a culture that promotes and encourages the KM practices toward organisational objectives that are essential to enhance corporate performance and achieve CA based on innovation (Donate & Guadamillas 2010; Tseng 2010).

People (T-shaped skills)

People of organisations are recognised to be the key enabler in successful KM (Lee & Choi 2003). Since knowledge resides in people's heads, human resources are at the heart of creating organisational knowledge (Chase 1997; Holsapple & Joshi 2001; Ndlela & Toit 2001; Lee & Choi 2003). In addition, human interaction is the critical source of intangible value in the intellectual age (O'Donnell & Berkery 2003). To stay competitive, organisations need to capitalise on their intellectual assets, especially the intellectual capacity of their workers (Hung 1998). Thus, managing people who are willing to create and share knowledge is an important task and finding new sources of motivation to increase people participation in knowledge sharing is a real challenge for organisations (O'Dell & Grayson 1999; Migdadi 2005). According to Leonard-Barton (1995), the skills and knowledge embodied in employees is the dimension most often associated with core capabilities and thus, the most important factor in sustaining organisational CA. He argues that there are at least three types of skills and knowledge constituting this dimension of a core capability, including public or scientific, industry-specific, and firm-specific knowledge. The first two kinds of skills and knowledge can be easily duplicated through formal educational and training programs or by hiring consultants and luring industry specialists from competitors. However, firm-specific or inhouse knowledge is not so easily

imitated and it must be cultivated overtime (Leonard-Barton 1995). Skills have been classified in the broad and deep knowledge areas with functional or disciplinary skills relate to deep knowledge and those skills that can be applied across situations and interdepartmentally are termed broad knowledge (Truran 1998). People possessing both knowledge areas would be said to have T-shaped skills where the stem of the T shows deep knowledge and the cross of the T represents broad knowledge (Figure 2.).

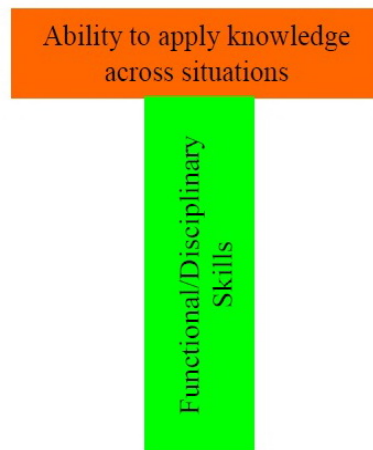


Figure 2 – T-shaped Skills
Source: Leonard-Barton (1995, p.76)

Tshaped skills enable their possessors to explore the interfaces between their particular knowledge domain and various applications of that knowledge in particular products (Leonard-Barton 1995). People with T-shaped skills would have a desired ability to understand the technical facets of their discipline and also understand the operation of the organisation as a whole (Migdadi 2005). For example, in his research, Iansiti (1993) found that these people not only have a deep knowledge of a discipline like ceramic materials engineering but also know how their discipline interacts with others such as polymer processing. In addition, he found that team members with T-shaped skills constituted the underpinnings of the systems-focused approach used by superior-performing firms who needed fewer than one-third the engineers and completed their projects an average of 2.6 years sooner than competitors designing directly competing products in the same business. In other words, people with T-shaped skills are able to expand their competence across several functional areas and thus, they are capable of convergent, synergistic thinking (Leonard- Barton 1995). They can also combine theoretical and practical knowledge and integrate diverse knowledge sets. As a result, the presence of employees with T-shaped skills has a significant and positive impact on knowledge creation process (Leonard-Barton 1995; Johannessen, Olsen & Olaisen 1999; Madhavan & Grover 1998; Migdadi 2005). However, these people will attempt to create new knowledge only if their organisation has an environment that encourages forming T-shaped skills and provides a systematic management of these skills (Lee & Choi 2003; Migdadi 2005).

BENEFITS OF KNOWLEDGE MANAGEMENT

Knowledge management is a strategic activity that should add value and, thus, is a close link between KM and the strategic plans of the organisation which ensures that knowledge activities contribute to profitability and strategic advantage (Duffy 2000). Sharing this view, Walters, Haliday and Glaser (2002) state that KM within strategic operations enables an organisation (or combination of organisations) to make more effective decisions about how to structure value chain operations to maximise customer satisfaction. The importance of KM for value chain (virtual organisation) management is also emphasised by Blumentritt and Johnston (1999, p. 287) who state that „the ability to identify, locate, and deliver information and knowledge to a point of valuable applications is transforming existing industries and facilitating the emergence of entirely new industries“. In terms of

specific organisational impacts of KM, Becerra-Fernandez, Gonzalez and Sabherwal (2004) suggest four levels, consisting of people, processes, products, and the overall performance. First, KM can (1) facilitate employees' learning in a variety of ways, including externalisation, internalisation, socialisation, and communities of practice; and (2) engender greater adaptability among employees and their job satisfaction. Second, KM enables improvements in organisational processes in the three dimensions of effectiveness, efficiency and innovation. At the product level, the impact of KM can be seen in two respects: value-added products and knowledge-based products. Finally, the benefits to the overall organisational performance of using KM is divided into two types: direct and indirect (achievement of economies of scale and scope, and generation of SCA). Similarly, Leng and Shepherson (2000) as cited in James (2005) posit that KM can improve efficiency and effectiveness, along with responsiveness and flexibility to market changes. It can also be used to improve product development, innovation and quality, and develop a better understanding of customer and stakeholder relationships (Davenport & Prusak 1998; Hauschild, Licht & Stein 2001; Martensson 2000; Skyrme & Amidon 1998). In terms of SCA, many authors (e.g. Grant 1996b; Hamel & Prahalad 1994; Ho 2008; Powell & Snellman 2004; Sharkie 2003; Teece, Pisano & Shuen 1997; and Verona & Ravasi 2003) support the viewpoint that in the current complex and challenging environment with high uncertainty and dynamism, the ability to acquire, develop, share and apply knowledge has become the key for gaining sustained CA and sustained superior performance.

CONCLUSION

People are the originator of knowledge. According to Davenport & Volpel (2001), "managing knowledge is managing people; managing people is managing knowledge". Managing knowledge involves managers developing a set of practices to capture, collect and transfer of relevant knowledge within the organisation of people to improve services, outcomes and performances. Thus, through collegial and professional teamwork, knowledge management practices actively encourage and engage people at many organizational levels in sharing with others what they know, and what they are learning. Knowledge itself can be reused and new knowledge can be integrated with current knowledge to develop even more valuable knowledge and strategically valuable new insights, creating a unique valuable synergy to improve the firm's performance (Sharkie 2003). Moreover, it is superior knowledge that enables organisations to exploit, combine, and develop other traditional tangible and intangible resources in new and distinctive ways and, thereby, provide superior value to customers, enhance the fundamental ability to compete and allow an organisation to develop SCA and do better than rivals, even if its other resources are not unique.

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Session C: MARKETING AND MARKETING MANAGEMENT

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BUSINESS COMMUNICATION AS SUPPORT OF RELATIONS WITH THE PUBLIC THROUGH THE FORM OF PROMOTION IN HIGHER EDUCATION

UDC: 659.4:005.57

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ABSTRACT

This paper is a business communications to support public relations through the form of process improvement in the promotion of higher education, where we'll look back and briefly explain the improvement of the promotion process. The objective of any higher education institution are satisfied and loyal customers of enabling achievement of long-term profitability of the institution itself. To institutions had loyal customers, in addition to high-quality services, adequate price and distribution channels, should be adequately and to communicate with them and to promote their services. Communication "One more to" provide the maintenance of good relations with the users, which leads to trust and long effects for the institution.

Key words: business communications, public relations, marketing

INTRODUCTION

American Association for Marketing gave the following definition of process improvement presentations: "Process Improvement presentation includes those marketing activities, I personal sales, economic propaganda and publicity, which stimulate the senses of consumers and effectiveness of intermediaries, such exposure, display presentations and demonstrations and other measures to improve the presentation that are not used regularly."

Many authors have provided some definitions of improving promotion process, but concluded that this issue can not be reduced to a single definition, so here are some of the most important definitions:

- Simons process improvement promotion activity coordination is defined various promotional activities in the organization
- Cohen improving the process of promotion is defined as: Promotional activity that complements the actions of commercial advertising and helps them to be more successful.

I'd tried in their own way to define process improvement promotion, it would only be a good idea, which is used at the right time and the right place with the right people of course. Improving the process of promoting the steady and constant process that aims to service users so satisfied, and the actors themselves of this activity to be successful, with the ultimate aim of those profits. When we talk about marketing and about the process of promotion in general, we will first to define this term. Advertising is generally the way and reveals, build and meet the needs of its users. Marketing will help you discover who your potential customers, place and price your services compared to the competition and also the company's position in the market. When we talk about marketing and about the process of promotion and advertising (in the professional vocabulary we use the term "Advertisiting", we have the following facts:

- As a PR and marketing deals with the strategic creation of the image of the institution or company and its products – services
- The main instrument of marketing is advertising promotion (Advertajsing) through classical or alternative advertising channels, based on the planning of appearance of advertising messages (so-called marketing plan), while the domain of PR and is principally engaged accurate and objective information on the activities of institutions, and promote the image of the institutions by providing information about its activities.

PUBLIC RELATIONS

Definition of the concept public relations

When we want to show the essence of public relations, then it is usually done through definitions. Any of the following definition emphasizes certain aspects of this field, which is directed, what it improves and what are its priorities:

- **"PR is art to offer people reasons to convince yourself!"**
- Public relations are a positive represented her organization's general public [3].
- Manage communication between an organization and its republics, is considered a public relations [4].
- Public relations consist of all forms of planned communication, internal and external, between an organization and its public, with the aim of achieving specific goals concerning their mutual understanding [5].
- The practice of public relations is the art and social science of analyzing trends, predicting their consequences, counseling organization's management and implementation of the planned program of activities that will serve the interests of both organizations, and the public [6].

It can be said that the basic function of public relations maintain two-way communication with the environment, ie. two-way communication institutions and various "types" to the public: State organs, Local communities, Professionals, Competition, Employees, depending on what is to be achieved

DIVISION OF PUBLIC RELATIONS

The flow of information in relation to aspects of business communication takes place according to two main trends: Internal and external public relations.

Internal PR

Internal means a form of negotiation to achieve certain objectives within the strategy of the business. The strategic plan includes:[2]

- Presentation of certain ideas by placing facts and information
- Presentation of new programs
- Making decisions that are directed to the output stream and presenting to the public
- Creating a good atmosphere in the organization
- Visual identity
- Advertising (special monitoring of advertisements)

Eksternal PR

External Relations PR -a more complex in relation to the internal, and includes:[1]

- The presentation (content, interpretation)
- Check, whether the message is accepted
- Certificate and the quality of their programs
- Predicting the future
- Reputation = a good voice

- The image = "image", which others have of us. The image is hazy, never to detail clear and image building process takes three to five years and needs to be invested.
- The identity should lead to good, but to achieve the same image 'identities.

The internal and external information flow

This process is recirculated. It is necessary that there is this feedback.

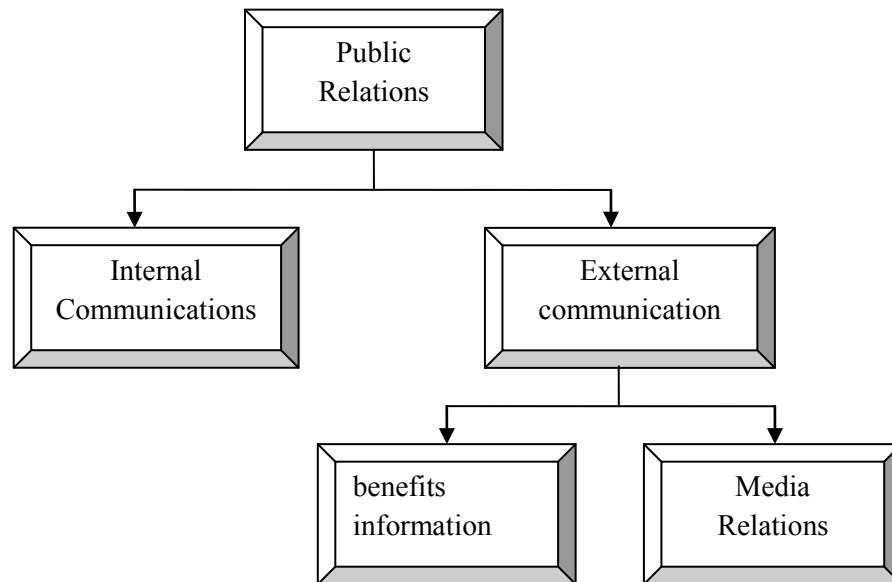


Figure 1: internal and external information flow

Public Relations and its related field

What I noticed in preparing this work is that the public relations directly related to public opinion, more accurately maintained at the overall picture that public opinion has on the institution (organization). The three most important areas related to public relations, which are therefore directly related to the PR activities are:

- Advertising and promotional activities
- Direct communication with customers
- Communication via the Internet that users have with your institution.

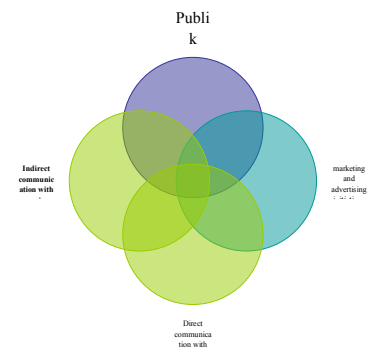


Figure 2: Public Opinion

The figure 2 is just an explanation to the direct connection between the topics:

PUBLIC RELATIONS AS A FORM OF IMPROVING THE PROCESS OF PROMOTION AT THE TECHNICAL VOCATIONAL SCHOOL IN KRAGUJEVAC

Basic data about the high Technical School in Kragujevac

Higher Technical School in Kragujevac was established in 1959. The reason for the establishment of the school was the lack of personnel with higher education, which was missing in the scale of education between the technicians and graduate engineers.

According to the decision of the Ministry of Education and Sports for approval and the new curriculum Technical College school year 2006/2007 enrolled in the study group whose school curricula developed based on the concept of three-year applied studies, containing relevant elements of the Bologna process, the study programs validated by the European concept transfer points.

Technical College has grown in the High Technical School of Professional Studies. Commission for accreditation and quality assurance has decided that High Technical College in Kragujevac meets the prescribed standards for the accreditation of specialist professional studies:

- INFORMATION TECHNOLOGIES AND SYSTEMS
- ROAD TRAFFIC CONTROL
- ENGINEERING ECOLOGY modules:
 - Industrial Ecology
 - Motor vehicles

Higher Technical College has over 700 students, simply put, this school has no boundaries and has a long tradition of existence. In addition to the many good things that this school has, there are some things that need to innovate, to change, to introduce ... I give myself the right to do this work on this topic because I have just been here since the very beginning, first as a student, and now in the role of teaching assistants. Not only as a student, almost two years and I do the same and I got a lot of these high vocational school, so I think this will be my research of benefit to the Technical College of Professional Studies.

With the sale of these types of products, "knowledge" competition is becoming bigger and bigger, the demand for schools is enormous, at every turn is located beside the university. How do we differ from these "other" how to distinguish from "High Technical School of Professional Studies" build the brand and create an image, that is to create a positive self-image about our work and behavior.

The aim of the Higher Technical School of Professional Studies is to raise education, knowledge of the global and domestic trends of business people. It should be noted that in fact the Bologna process. When already mention Bologna, I think it's a dead track "Bologna" impossible especially in our conditions, but some things have to be put in order.

When we did a survey last year before enrollment and asked students how they found out about our school that you are enrolled, 80% said that they knew of students who are already studying. That says it all. So the main question is how to improve sales in higher education that is. as the new school year to enroll a sufficient number of students? So very simply, the current students to a satisfactory because they are our best advertisement.

What is the Bologna Process?

The Bologna Process is the name of higher education reform in Europe, which is the basic objective of promoting the mobility of students and teachers by means of the European Higher Education Area by 2010. Particular attention should be paid to increasing the international competitiveness of European higher education system. We need to ensure that the European higher education system becomes attractive around the world, according to our special cultural and scientific tradition.

Acknowledging the general principles laid down in the Bologna Declaration, we'll match their policy so that in a short time, achieve the following objectives, which we consider to be of primary importance to establish a European area of higher education and its promotion in the world:

- Adoption of a system of easily readable and comparable degrees and introduction of supplements (supplements) diploma, in order to promote European citizens employability and the international competitiveness of European higher education system.
- Adoption of a system of share in two cycles, basic professional studies and specialist. The degree awarded after three years as an appropriate level of classification in the European labor

market. The second cycle leads us to specialized studies, as is the case in many European countries.

- The introduction of a credit system, such as the ECTS, as an acceptable means of promoting the widest exchange of students.
- Enabling overcoming obstacles to free movement, in particular:
- Students: to give the opportunity to learn, access to study and relevant services
- Teachers, researchers and administrative staff, known and evaluate the time they spent in Europe researching, teaching and training, without prejudicing their statutory rights.
- Promotion of European cooperation in quality assurance in order to develop comparable criteria and methodologies
- Improve the needs of European dimensions in higher education, particularly in curricular development, inter-institutional cooperation, mobility schemes and integrated programs of study, training and research.

What is actually "Bologna" (student perspective)

(tested students high technical school of professional studies in Kragujevac)

- the student is at the center
- aim is to increase the process of transience, but the students may not wear off (the goal is solving the "eternal student")
- aims to reduce the average study
- Students should be encouraged to constantly activity
- Work needs to be constantly monitored and based on that are awarded points
- teaching should take place in small groups of people
- professor must always be available to students and should nationalize their time
- degrees will be easier recognized outside Serbia and the easier it will be to find a job
- Students should also be encouraged to learn foreign languages
- a large part of the Bologna process is the downloading of responsibilities - both students and professors.

When students ask any questions related to the Bologna process, they will first shrug his shoulders and only then begin to answer specific questions. These answers I gathered from the students of the Technical School of Professional Studies in Kragujevac, in order to reach as accurate data. I think that students are more than confused, that they themselves do not have a real vision on studying the Bologna process. Attached to the polls on which the students of the High Technical School of Professional Studies in Kragujevac gave answers.

POLL FOR THE PURPOSE OF THIS CONTRIBUTION TO RESEARCH WORK

What is your opinion on the process of education at the Higher Technical School?

Thinking about the process of education at the Higher Technical School in Kragujevac is GOOD. Students of the school have a very low opinion, but there are also a response to the bad education process. From all the results that I dealt with, I came to the conclusion that the overall opinion of students well, although there is no danger that the poor opinion "leaked" to the public, because the image that students have the education you get in school, meet, but that does not mean that we should not do that this process still improve

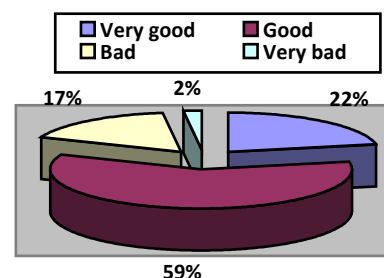


Figure 3: Opinion on the process of education

Do you know someone who is studying at the Higher Technical School?

Of course it does, because I was a student and enrolled. Upon the recommendation of a student with a high school, most students who complete this survey. As we said, our students are our brands, our advertising, our main asset.

"What do you think what kind of image the public has high Technical College"?

I think that these survey results look quite good. If I

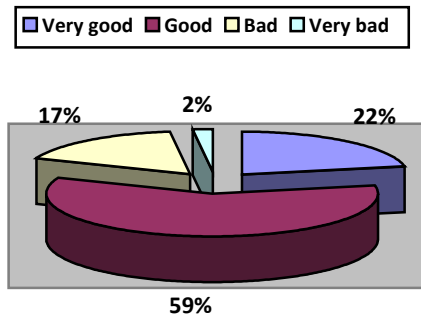


Figure 5: Public image

In your opinion of the quality of education at the Higher Technical School?

CONCLUSION

It's nice to work in public relations. Despite different opinions about the real benefits of this profession, the fact is that public relations have never been appreciated as it is today. But still, a specialist in public relations today is a difficult task.

Studying and doing this work, I can freely say that public relations are necessary for each of serious organization that wants to talk about it and who wants to display their work to the public, and that is possible only with the work of people who are able and willing to convey the truth with the best possible focus - to appeal to people. Higher education institutions need to monitor changes in the atmosphere. Governments change, but universities remain. We should ask ourselves whether we have time for reflection? We need to keep and open all the doors to improvement, to change, because if we do we will pay the price of our inaction and not taught.

So it is not a priority to increase sales and earnings, as well as marketing, but to strengthen the reputation, which in turn can provide a long-term and higher earnings.

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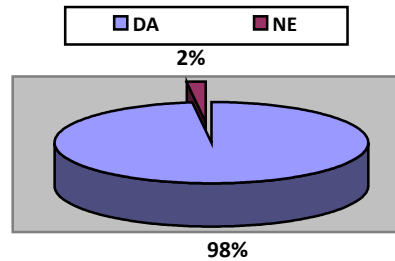


Figure 4: When the students school

did this survey a year ago, I think that this public image was very poor. But now from the perspective of the public may say that I am very happy, because the public has a positive opinion about us. I can even say that I expected more severe when the results of the survey on the issue in question. Good public image means that we managed to overcome all those who are retraining our reputation collapsed overnight, we've outgrown them and that we are on the best possible way emerged from a bad public image

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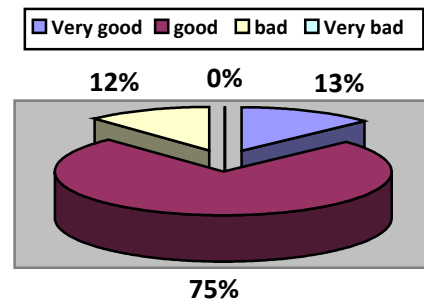


Figure 6: Quality of education

THE PERSPECTIVE OF PERSONAL SELLING IN THE 21st CENTURY

UDC: 004.738.5:658.841

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ABSTRACT

The terms and ways of doing business dramatically changed over the last two decades. The world has literally become a global village. Information technology contributed to the change of nature of relationship between companies and consumers. It also influenced the change of content, context and infrastructure within which the economic entities function. The companies adapted their modes of operation to newly created circumstances in various ways. Some opted for reducing their sales operative units, while others developed autochthonous sales strategies in the virtual space. During the last decade of the twentieth century some experts feared that the Internet will contribute to the bypassing of the traditional marketing channel members, i.e. to the minimizing of the need for the personal sale. Practice has denied these negative predictions, since the personal selling changed in accordance with the evolution of the environment. Personal selling has been increasingly used on the Internet. Numerous studies have found that visitors to the sites behave as passive observers as a rule. In order to convert them into customers the business web sites developed tools that enable direct, real-time communication with the customer service representative.

Key words: personal selling, information technology, Internet, business environment.

INTRODUCTION

Selling is old, honorable and hard work that contributes to improving the quality of life. Modern purchasers expect far more than mere physical characteristics from the products they buy. The fact is that the primary objective - **the satisfaction of scarcity**, is realized by *using* or *possessing* of offers. However, the new conditions in the business environment have imposed that it is no longer insisted on *sale today*, but on creating *the long-term ally role*. Consequently, short-term planning and transactional marketing give way to long-term planning decisions and *relationship marketing*.

“**The golden rule of personal selling** refers to the philosophy of selfless conduct towards others in a way you would like others to treat you“ (Futrell, 2011, p. 8). Consequently, the sale is not seen as a battle between warring parties but, above all, assisting in solving problems. We need to put customer requirements in the first place, since the operating result is directly proportional to the level of service provided! During the sales process a seller's key task is to *identify the needs of the "other side"* and to *subordinate their own interests to someone else's!* In this way a seller has the role of the consultant and partner while at the same time he builds a quality basis for developing long-term relationships. To achieve this goal it is necessary to know the product/service, even better than the purchasers themselves.

Some authors believe that **personal selling has evolved through five stages** (Table 1). 1) *Provider stage* – sales activities are limited to *the accepting of orders and delivery/provision of goods/services to customers*; 2) *Persuader stage* – seller tries to *persuade a member of the marketing channel* to accept the available offer; 3) *Prospector stage* – sales activity is focused on the seeking out selected buyers who have realized *their own need for an offer*, and at the same time *they have the resources and authority to conduct the procurement*; 4) *Problem-solver stage* – a buyer participates in the

process of *legitimization of their own problems* which can then be *converted into needs*, and then *presenting the existing offer* that can satisfy the respective needs and solve problems defined; 5) *Procreator stage* – a buyer's problems (needs) and possible solutions are defined by an active cooperation of business partners and then the *offer that is tailored to the unique requirements* is formed.

Table 1: Stages of personal selling evolution

STAGES AND DESCRIPTION	CHARACTERISTICS OF THE STAGES			
	CUSTOMER'S NEEDS	TYPE OF MARKET	CHARACTER AND INTENSITY OF COMPETITION	EXAMPLES
1. <i>Provider</i> : accepts orders and delivers to the buyer.	It is assumed to exist but they are not a subject of interest.	Seller's	None	Salespeople; some retail sellers.
2. <i>Persuader</i> : attempts to convince buyer to purchase available offerings.	Created, awakened.	Buyer's	Undifferentiated; slight intensity.	Telemarketers for photo studio; many new car dealers.
3. <i>Prospector</i> : seeks out prospects with a need for available offering and resources to buy.	Considered but inferred.	Segmented.	Differentiated; growing.	Car insurance salespeople calling on new car buyers; office supplies sellers calling on small businesses.
4. <i>Problem-solver</i> : solves customer-stated problems with available offerings.	Diagnosed, with attention to customer input.	Participative.	Responsive and counteractive with increasing resources.	Communication systems salespeople for a telephone company; architectural services sellers calling on building contractors.
5. <i>Procreator</i> : Creates a unique offering to match the buyer's needs as mutually specified, involving any or all aspects of the seller's total marketing mix.	Mutually defined; matched with tailored offering.	Coactive.	Focused, growing in breadth of market and service offerings.	Industrial equipment salespeople who design and sell a system to fit a buyer's manufacturing facility.

Source: *Belch & Belch (2012)*.

In each of the five stages of personal selling evolution, companies are taking on a different market orientation, promotional strategy, organizational structure/design, personnel policies, as well as models of rewarding employees.

THE PLACE OF PERSONAL SELLING IN THE IT MARKETING ENVIRONMENT

The era of information economy started in the sixties. Information became *the most important resource*, and *business is defined* from the viewpoint of establishing relationships with consumers and joint value creation, *due to changes in power relations*. "Creating value together with consumers helps the elimination of potential discord in relationships with them, increases the tolerance of consumers to mistakes made by the company and immunity to the actions of competitors, reducing the time necessary for the fulfillment of their demands which leads to stability of business and to increase of business efficiency" (Đukić, 2011, p. 18). The new era characterizes the problem of too much data (unlike the previous period marked by the lack of information). In the circumstances of unlimited availability of data, a new challenge is imposed upon the seller - *to make a selection of information*, and marketing and sales (with a focus on establishing long-term and mutually satisfying relationships) are gaining importance.

The effects of the use of modern technical and technological solutions are evident, among other things, *on TV and mobile phones*. The average household now has more than 100 cable channels, and that number was several times lower at the beginning of the millennium. Connecting a mobile phone to the Internet has provided multiple benefits to customers: it is possible to compare price without going to the store, deliver coupons electronically, inform and target based on existing locations, obtain the opinions of others about the offer and more. Large diffusion of mobile phones has affected advertisers to increasingly use the display of the specified devices in order to send a message to potential buyers at the moment when they are at precisely determined location or in a specific purchasing situation.

SMS messages are widely used form of communication. According to "Portio Research" 7.8 trillion SMS messages were sent in 2011, i.e. about 1,000 messages per capita of the globe ("Text Messaging for Better Sales Conversion", 2013). An increasing use of the above-mentioned kind of communication has been recorded especially for timely communication of important information on the industrial market (for example, confirmation of receipt of documents, reminder for an appointment, inquiry about missing data, etc.). In a survey conducted by "Velocify" (USA) in 2012, based on a sample of 400 companies, it was found that SMS messages, in relation to e-mail, have a *higher open and response rate*. It is a tool that can effectively be used as a complement to other communication channels (phone, e-mail, etc.). Sending SMS messages, after initial contact, contributes to increasing the probability of turning potential into actual customer (*conversion rate*). The content, timing and number of sent messages should be conditioned by the activities undertaken by the sender, as well as his/her position in the sales process. For efficient use of SMS messages in the business market, it is necessary to obtain permission from the "other side", because only in this way the intrusion and violation of privacy is avoided.

"Information technology is not only changing the nature of the relationship between businesses and consumers, but changing the content, context and infrastructure in which the company operates" (Milisavljević, 2013, p. 300). In order to evaluate the changes caused by the direct application of information technology **the concept of information value chain** has been developed (Fletcher, 2003, p. 11-42). The relative value chain is consisted of five parts, which correspond to elements of a broader definition of information technology. These are the following steps: *collection and transmission of data, data management, interpretation of data, models and decision making support systems*. According to this concept, the basic value of the information is expressed through higher revenue from future transactions and/or lower costs of given transaction.

The consequences of the application of modern technical and technological achievements **in the process of personal selling** are (Futrell, 2011, p. 192-199):

1. Increasing of work productivity of the seller - using modern software package for managing contacts, time, strategy/tactics, presentations and so on.
2. Improving communication with customers and employers - the use of computer programmes for text correction (*word processing*), *e-mail, fax*, and similar applications.

3. Quality processing of orders and better support provision to customers - using modern mobile devices (GPS - *global positioning systems*, PDAs - *personal digital assistant*, etc.).

In the 90s some experts feared that the "network of networks" will contribute bypassing traditional marketing channel members, i.e. it will minimize the need for personal selling! Practice has denied the negative predictions, since **personal selling was changing in the way the environment was changing**. Sellers are among the first who began to use the Internet, especially for *obtaining and processing data, connecting* (people to people, one company with another, etc.), *screening and selection of potential customers, sales forecasting* (it was made possible to uniformly determine sales territories, effectively programme routes and time management), *maintaining constant contact with suppliers* (regardless of the large spatial distance), *database design, communication and providing other relevant information*. Due to these advantages, the sellers of the new millennium spend less time on the acceptance of orders, and focus their attention towards far more profitable activities (conclusion of sales, finding new customers, creating long-term relationships, etc.).

The appearance of **social media** has greatly contributed to *increasing the level of transparency and a more active role of the user* throughout the business process (creation, production, promotion, distribution)! It is online media that were created and are used by customers (e.g. blogs, social networks, forums, etc.). They allow them to share different content, communicate their opinions, emotions, experiences, etc. Social software platforms are used for communication within companies as well as between companies and customers/suppliers, for the sake of reducing operating costs and diagnosing the state of the market. "The communication value of social media is limited by the type of contact between the communication partners and the number of people who can communicate through them, as well as the amount of information that can be transmitted per unit of time" (Đukić, 2011, p. 21).

In order to achieve competitive advantage in the use of social media it is necessary to *ensure the presence* in positions where targeted public spend their time! First, conversations with the target groups are started in virtual space (transfer of information in an efficient and effective manner), and then *cooperative relations* (understanding) and *direct engagement* are tried to be built leading to *joint value creation*. Owing to the above, the implementation of the strategy of withdrawal is facilitated (pull strategy), which both parties can use in the business relationship. "We should bear in mind that the main goal of social network marketing is not to make direct sales, but to contribute to the reputation of the brand and customer engagement for it in the form of the development of digital relationships with them" (Sudarević, 2011, p. 200).

Some researchers believe that the use of social media in the company business is a logical continuation in the evolution of customer relationship management (CRM) and hence in the literature the phrase **social CRM** is more often mentioned. A number of schools of thought *about the place in the organizational structures* of individuals who are engaged in social media have resolved. From those who position experts in social media marketing departments, to those who think it is necessary to form an independent service which should operate as an independent entity! Regardless of the divided opinions, the literature notes the unique position that each company must clearly define the *social media policy* and ensure its *integration into the system of marketing communication*. This provides the conditions for achieving the synergy effect and transmitting a consistent message.

Despite the increasingly important role of technical aids, **the position of the seller in personal selling is indisputable**, as it represents the *main intermediary* between *information technology* and *shared value creation* with the "other side". The seller represents the *key carrier of strategic-consultative sales model implementation* (where the buyer is in the centre) and must *possess a wide range of knowledge* in order to be able to be a promoter of the marketing team, contributing to the coordination and directing the efforts of various sectors that operate within the company.

Organizing training is one of the main *tasks of sales managers*. Along with recruiting, selecting, motivating and monitoring it represents *sales management activity*. The magazine "Training", by

conducting an annual analysis of the trainings organized by employers in organizations in the United States, states that *the sellers are in a group of employees who are most intensively trained!* However, we must be aware that customers are interested in how much the sellers know only when they become aware of how much they really care about them! "Leading marketers recognize the role of staff training in serving customers and building relationships. Sales staff at the company Container Store receives more than 240 hours of training and generous benefits, compared with an average of eight hours of training and modest benefits for employees in that industry" (Lamb et al., 2013, p. 10).

CONCLUSION

"Consumers are no longer passive recipients who will sit and soak up the unfiltered advertising messages which are dictated by marketers" (Belch & Belch, 2012, p. 5). Hence, **a new marketing thinking** is being developed which is based, among other, on the following premises (Fernandez, 2009, p. 21): 1) the basics of marketing is *conversation*, 2) it is necessary to give priority to *forecasting*, 3) *the buyer* must be at the centre of all business processes, 4) *learning* ensures alignment with the changes in the environment, 5) the benefit is realized by collaboration with *creative people* (inside and outside the company) who fully *understand the mission of the company*, 6) new and innovative methods provide the *customer binding to the brand*. Using social media for the realization of the underlying tasks is increasing, since the mass media is losing the race in relation to social networks, forums, blogs and so on. Hence, we should not wonder that every year more and more company's marketing budgets resources are used to finance campaigns that are realized through the above-mentioned media. In cases of complex business environment it is very important to establish an adequate *system of marketing communication*, which should contribute to creating a positive image of the company and its offer for all interest groups: buyers/consumers, investors, shareholders, employees, suppliers, government and others! Review of literature unequivocally indicates that in the case of B2B marketing *personal selling is considered to be the most important instrument in the promotional mix*. This statement is confirmed, among other things, by increasing amount of cost of sales (absolute and relative). Consequently, **the seller becomes an essential element** in closing the sales and maintenance of after-sales contact on the industrial market. At the same time he *personally connects two crucial systems* (purchase and sale). From the point of view of a collocutor, he personifies the organization which he represents, and in the case of marketing services, credibility and trust that he gives are even considered as *surrogate characteristics of tangible products*. Under pressure from the environment (competitors and customers, primarily) the seller's position list is changing - from passive recipients of active orders to active suppliers of the same order. In the new market environment sellers undertake, in addition to traditional, *large number of new tasks* and consequently *additional responsibility*. When it comes to **personal selling perspective**, the literature encounters two opposing schools of thought. One foresees a *gradual withering away*, while the other emphasizes the *important role of keeping* the respective promotional instrument in the near future. Hence, companies adapt their business to newly created circumstances in different ways. Some opt to *reduce the sales operations*, while others prefer *developing indigenous approach to sales in the virtual space*. Personal selling is becoming more common on the Internet, as numerous studies have found that visitors to the websites, as a rule, are passive observers! For the purpose of converting them into customers, companies' websites more often provide different tools (*live help*) that allow direct communication (in real time) with a sales representative. The effects of the above-mentioned instrument are seen in the example of the seller of women's clothing „Chico's"¹, which introduced the *"live help from a Chico's stylist"* in 2009 and achieved that even 25% of the occupants of the functions simultaneously buy some of the products (Belch & Belch, 2012, p. 706). Those results should not be surprising! The new marketing channel creates atmosphere in which the observer confidently governs purchasing process and makes a decision on final acceptance of the offer more easily, due to professional help that is available to him. The introduction of *live help* options contributes to the

1 <https://www.chicos.com/store/home.jsp>.

transformation of the virtual space (until recently, inert middle) into the active environment that enables companies to affect the behaviour of potential customers. Regardless of divided opinions, "the challenges that this form of marketing communication faces are: better informed buyers, rising costs of personal selling as well as the development of direct marketing and marketing on the Internet as a new form of communication" (Ognjanov, 2004, p. 151). Sales managers must be aware that in the 21st century, the boundaries between online and offline communication are becoming more porous, and the use of the Internet as a medium has the advantage since it allows reaching audiences in those moments when they express the greatest interest. Therefore, companies are increasingly developing and implementing cross-media promotional strategies.

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THE IMPACT OF ERP SYSTEMS ON SUPPLY CHAIN MANAGEMENT

UDC: 658.7:005.5

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ABSTRACT

This paper analyses the influence of modern ERP systems on supply chain management and its performance. Also, it defines main characteristics of these ERP systems, activities, costs and standard technologies included in the implementation. As an example of the ERP system integration in the supply chains of consumer goods, this paper describes the structure and functioning of ASW ERP system within the company "Gomex" d.o.o. from Zrenjanin.

Key words: ERP systems, supply chain management, "Gomex" d.o.o.

INTRODUCTION

The term "supply chain management" has emerged as a result of observing the entire process of supplying a product (or service) to the customer. Practically every participant in this chain is one link, which connects the source of raw materials with customers. As in every business segment, in the supply chain management, it is necessary to organize the operating frameworks. Through Enterprise Resource Planning (hereinafter ERP) system for the organization's operations, it can be carried out automation of key activities in the supply chain management using best practices. ERP system are used in order to increase level of managing, control, reduction of the business cost, faster transactions. Quick response to changing demand requires effective ERP solutions in all elements of the chain: production, storage, supply, transportation and distribution. This means that in today's competitive conditions, a key factor for the survival and development of enterprises becomes efficient use of available resources and the proper management of resources which is offered by ERP systems.

SUPPLY CHAIN MANAGEMENT

Supply chain management involves flows of materials, products, services and information from the initial supplier to the final user. It requires coordination between the various participants such as manufacturers, suppliers, distributors, carriers and vendors. The goal of management is the delivery of the right product at the right place, at the right time, in the right conditions and with the right price (Chopra et al., Meindl et al., 2011). Supply chain management today refers to the idea of exchanging and sharing of information between users who participate in it and it is commonly associated with the management field of certain business operations, logistics, procurement and information technology and it is directed towards an integrated approach (Bartsch, 2013). Supply chain management represents the continuing efforts of enterprises and companies (or groups of companies) to develop and implement the chains on the most efficient and effective way. Supply chain management has a wide scope, ranging from individual companies that are taking steps to improve information flows between themselves and their supply partners, to the large commercial organizations that want to standardize the transport cost and practices.

In the traditional process of supply chain, companies are delivering goods from existing stocks. ERP allows to predict demand, using information about customer needs in a manner that: at every moment the required amount of product in circulation - is known. To increase the efficiency of the supply chain, information must be timely, in order to be exchanged between the participants in the chain. The main problem with the "Supply Chain Management" (hereinafter SCM) is planning of production and distribution. To meet the demand, production planning problem relates to the questions "Who will be the manufacturer?", "When should we produce?" and "How to produce for some consumers?". Distribution planning is a key process of decision-making channels for delivery of products from producers to consumers. These problems are connected with each other and it is necessary to operate them at the same time (Gligorić et al., Uzelac et al., Vuković et al., 2011). A number of organizations tends to make their IT infrastructure to be open for integration with suppliers, customers and partners within the supply chain. There are a number of proposals for the implementation of this problem. Some of the approaches are based on system of production related to the agents that allow organizations to dynamically and with reduced costs integrate, optimize, stimulate and control not only its own system of production, but also their net of supply (Park et al., Choi et al., Kang et al., 2007). Unlike logistics management, supply chain consists of all those participants who, in an indirect or direct manner, participate in meeting the consumers needs, and this usually means: suppliers, manufacturers, carriers, warehouse owners, distributors and retailers. Supply Chain Management is primarily oriented towards consumers and this new business strategy (in which predominates planning of all segments of the goods and information movement within the distribution process), gets its marketing "weight" (Rapaić, 2010).

Supply chain management with its network structure and cooperation basic factors within the chain, represents a way of establishing efficiency and increase productivity, and therefore the possibility of significant cost reductions. In the most technical industries, logistics costs in total production costs take up a considerable proportion, thus reducing logistics costs can achieve the greatest savings in operating costs. This is achieved by synchronizing procurement, inventory optimization, reduction of transport costs, or the optimization of commodity and information flows, which is only feasible in the supply chain in which all participants are interconnected and operate on a single market, with the same goal to satisfy consumers (Aćimović, 2006). If the level of integration between all participants in the supply chain increase, companies that participate in this chain will become more competitive and according to professor Aćimović: "Customers get the value they want, economic entities in the supply chain receive a value certificate through the charging and feedback, in other words - profitable business." (Aćimović, 2006).

THE ROLE OF ERP SYSTEMS AND INFORMATION TECHNOLOGIES IN THE SUPPLY CHAIN MANAGEMENT

The role of information technology in the supply chain is reflected, among other things, on the use of ERP systems. ERP systems focus on finance, forecasting, sale analysis, tracking orders, distribution and quality control. Companies can improve supply chain management in several ways:

- the introduction of ERP systems that seek to satisfy more intense demand for the optimal solution in all areas, as well as in the areas of e-business,
- by extending the planning horizon beyond the one that is offered by the ERP system, regardless of the fact whether their supply chains is enabled or not,
- expanding the scope of its supply chain by including manufacturers and customers and improving planning for short and medium term,
- extending the functional scope of its supply chain by including product design, sales and consumer relationship management,
- with the advent of new distribution channels, particularly electronic markets, and
- by establishment of more intensive cooperation among the participants in the supply chain as well as final users (Bošković, 2013).

ERP is actually a set of software modules that enables organizations to automate the transactions involved in the flow of business processes. One of the modules in the ERP package is SCM module that automates transactions in supply chains. Many companies prefer to buy separate SCM software, rather than to rely on SCM modules in ERP systems. SCM separate software is less complex than the ERP and it is more focused on the possibilities of solving the problems of supply and distribution. ERP system enables the integration of a large number of data, the use of available databases and consolidation of a large number of incompatible systems. Also, ERP systems are very powerful tools for monitoring and reporting and their use requires a well-defined data (Milovanović, 2013). These software packages are fully commercial and are designed for all sizes of companies. Every ERP software solution can be adapted to the specific needs of companies. Some of the most popular ERP software solutions today are: SAP (BusinessOne, AiO, R/3); ORACLE (People Soft); BAAN (Baan ERP); Microsoft Corp. (Microsoft Dynamics NAV, Microsoft Dynamics AX, Microsoft Dynamics GP, Microsoft Dynamics SL); (Solomon); ASW Engineering (asw:dominus)(Subramanian et al., Peslak et al., 2010). In order to implement ERP system in the company, it is necessary to undertake a number of important activities, such as: analyze business processes, train staff to handle ERP systems, implement new operating procedures. The most important phases in the implementation are: election of packages, modules, technical installation, adjustment, operation, maintenance. Implementation strategy can be gradual (step by step), total (big bang) and modular - module by module (Milovanović, 2013).

Development of SCM was taking place in several stages. The first phase defines the era of internal logistics as a significant function in the organization. In the second phase, logistics is moved from organizational decentralization to the centralization of the basic functions, leading to new attitudes about optimization costs and customers service. The third stage testifies about the drastic expansion and logistics, including new concepts of interest for connection the internal operations with analogous functions that are performed by the business partners in the supply chain. As the concept of cohesion in the supply chain was expanded, the old concept of logistics gives way to a fourth phase, integrated approach to supply chain management. With the application of Internet technology in the concept of SCM we came to the fifth stage, supply chains in the e-environment, or e-SCM (Rejman, Petrović et al., Milanović et al., Kalinić et al., 2012). Stages in the development of SCM are shown in Figure 1 (Ross, 2003).

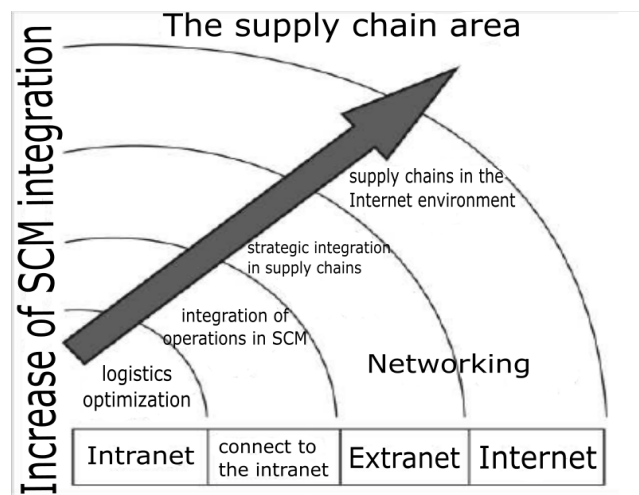


Figure 1: Stages in the development of SCM
Source: Ross, 2003.

ERP systems and EDI (Electronic Data Interchange-EDI) technology infrastructure impose severe limits in the range of information communications and raise barriers by limiting organization's participation. On the other hand, the integration of the Internet and SCM provides the ability to the entire supply chain to create something good for their customers, through the plan definition for achieving agility, creating flexible systems and networks with high performance, with Web accessible to customers, suppliers, and with the plan for the critical reporting flow of information. Therefore, the

use of Internet technology has given a new dimension to the concept of SCM (Arsovski et al., Rejman Petrović et al., Ranković et al., Milanović et al., Kalinić et al., 2012).

STANDARD TECHNOLOGY OF MODERN ERP SYSTEM

Through the development of the information technology, new technology standards has always appeared on the market and it is alternating initiatives for standardization group of problems and architecture layers of typical modern ERP system. In the area of data presentation, the most important standards are XML20 and BPEL, which represent the primary means for displaying and sharing data on various business processes in a structured way, via a web service. Application layer of the ERP system is characterized by the application of the fourth generation programming languages. The most widely used software platform for the development of ERP system is a J2EE (Java 2 Platform Enterprise Edition). Its breakthrough on the market was dominant versus ISO21 or ECMA22 regulations and even today it is the basis for the certification of ERP systems (J2EE compliance). However, although it is supported by the dominant commercial systems, they can still rely on its developed interpreters such as PL/SQL (Oracle), PeopleCode (PeopleSoft) and ABAP (SAP). In the data storage layer (in the integration of application logic with database servers), the dominant standards are JDBC23, ODBC24, ADO25, OLE/DB26 and ODBO27. The greatest efforts today focus on the formulation and development of interoperability components standards of the business information system. Integration ERP system layer is characterized by the increasing use of Web services, i.e. the corresponding standard methods and procedures. The most important standards in this area are SOAP, UDDI and WSDL. SOAP provides the possibility of remote procedure of Web service call through HTTP28 protocols; UDDI is used for publishing and discovering new existing Web service (the equivalent of DNS29-in); WSDL is an XML-based language for describing Web service interfaces.

ASPECTS OF THE IMPLEMENTATION OF ERP SYSTEM IN “GOMEX” COMPANY

“Gomex” company from Zrenjanin has one of the largest chains of consumer goods retail stores in the territory of Serbia. “Gomex” now operates in 119 retail stores throughout Vojvodina, while the facility in Šabac marked the beginning of the spread network sales in central Serbia. Stores are easily accessible to consumers and provide wide daily range of quality products with the best prices. Currently, the company employs more than 1,000 workers. The company development is also based on investment in new information technology and accordingly, the company is working with ASW ERP systems. The aim of the ASW implementation is to improve the business, company management and other processes. Figure 2 shows the functional content of the information system. All these parts are integrated with each other and constitute a single information system - IIS (ASW Inženjering, 2015.). Technologies that are used in this system include: Oracle, Java technology, PostgreSQL database, the Linux environment, Microstrategy, Windows environment. The project of integrated information system in the company is carried out in three phases. The first phase has included the implementation of central ERP system asw:dominus that covers all business functions (commodity business management, finance, bookkeeping, payroll, personnel records and assets management), as well as the implementation of a system for the retail outlets management - asw: mercantis in shops. Complete integration of asw:dominus and asw:mercantis system allows the company to fully control its retail network from the headquarters of the company and also the supply planning is done on the up to date data basis about sales and inventory. The second phase of the integrated information system included the implementation of a business intelligence (business intelligence) asw:sapiens. This system has enabled managers at all decision-making levels to monitor the implementation of plans and have detailed analysis about the large amount of data. In the third phase of the project, it was implemented asw:loyalty system - a system for manipulating loyalty programs, marketing and rewards. In the “Gomex” company there are currently in circulation more than 100,000 loyalty card that indicates the quality and potential of the system asw:loyalty(ASW Inženjering, 2015.).

Figure 3 shows the complete architecture of a complex system, which represents the connection of all software, hardware and human resources in this unique information system. The whole concept of software solutions is based on the functions distribution and centralization of data.

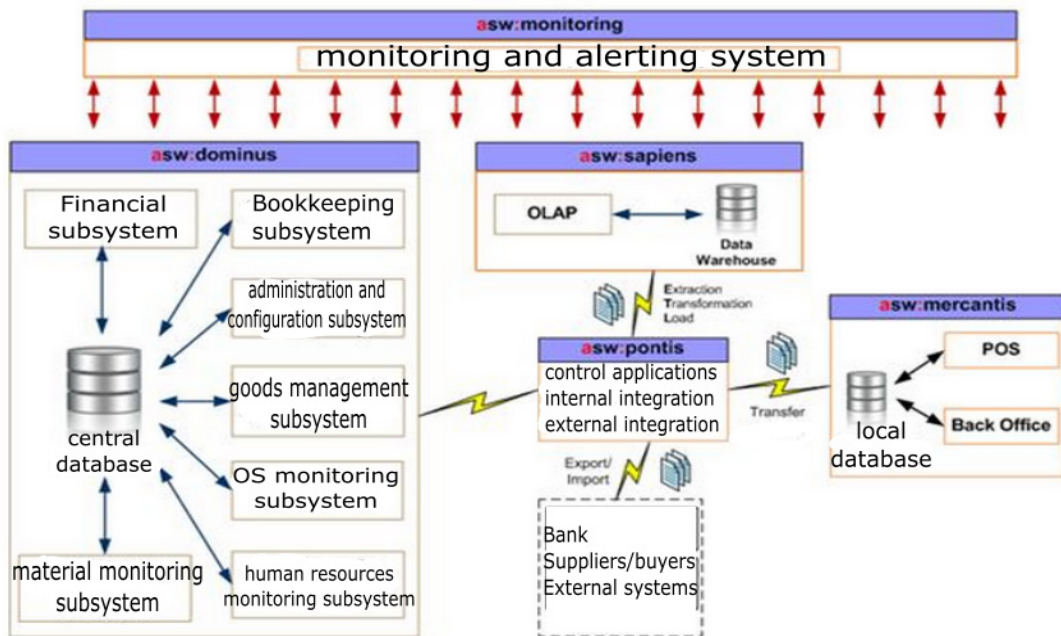


Figure 2: Integrated Information System Structure – IIS
Source: ASW Inženjering, 2015.

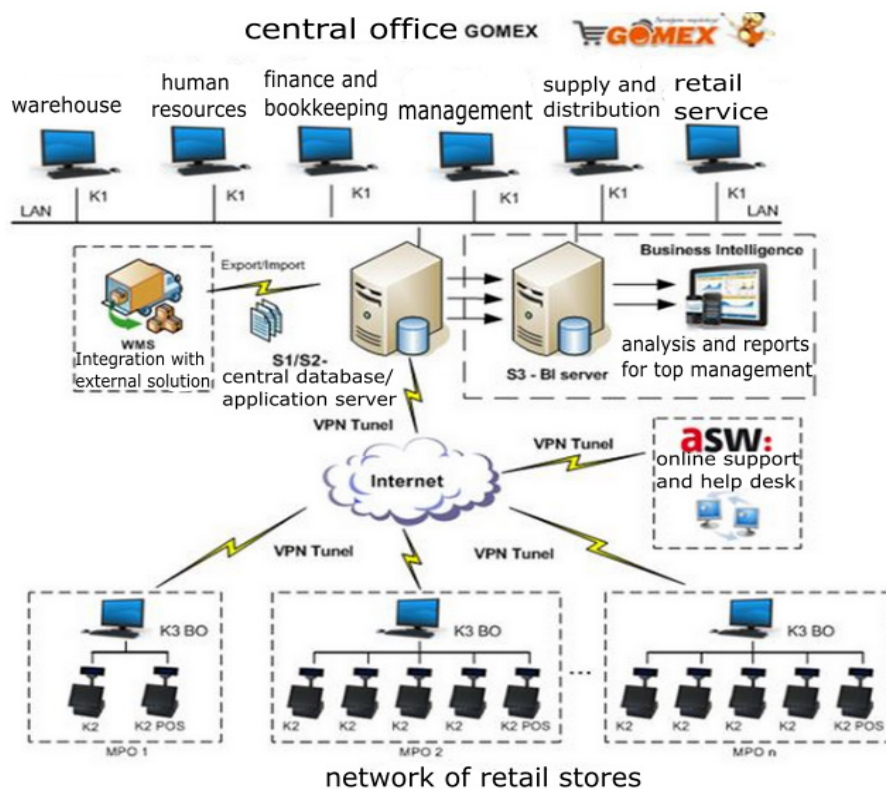


Figure 3: System Architecture
Source: ASW Inženjering, 2015.

In addition to the built ASW information system, the company “Gomex” has also WMS system. The “Logisoft” company has done integration of WMS system in a cooling center for distribution and

processing of fresh meat and meat products of “Gomex”, which includes a system of measuring units, connected to the touch screen computers, on which there is a new “Logisoft” application, LogScale, integrated into the WMS system. With “ASW” software company from Belgrade, “Gomex” has made the integration of new communication between the WMS and ASW ERP systems. Development, customization and integration of communication between ASW Dominus ERP system and WMS, was also performed for “Expo Commerce” company from Kotor. The new financial system, with new principles of work, demanded that WMS system adapt the work procedure that prevails within the ASW system. With the implementation of WMS systems, “Gomex” has achieved the goal of storage efficiency and it is keeping record in its products management.

CONCLUSION

There is no standardized chart of the supply chain when it comes to a single product or service, especially when it comes to the course of various goods. In order to effectively manage a single supply chain we need a good knowledge of the managed company and its environment with which it is operating. It is necessary to know every link in the chain. An important role in supply chains managing have ERP and separate SCM systems, which purpose is to combine different processes in the enterprise, to make it easier to manage the business and to reduce the costs. As an example of successful ERP systems implementation in Zrenjanin, in this paper was emphasized the company "Gomex" d.o.o. which uses ASW and WMS systems, that are aligned in parallel and whose mutual communication takes place after all the set plans.

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SOCIAL NETWORKS - MARKETING PLATFORM OF THE FUTURE

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ABSTRACT

Internet as a global trend has drastically shifted the business of financial institutions. Banks realized the importance of the Internet, and integrated the internet into their regular business processes. Are the benefits, customer requirements or competition were the triggers for the implementation of internet banking, it is not important because not only does the bank that uses the application of this global trend, but the banks turned to the new trend - social networks. So called Gen Y population is responsible for this action of banks, it is population which is increasing, which is present in social networks, and very soon the banks will have to adapt to their requirements. The characteristics of marketing with special emphasis on the social networks, changes in the business of banks due to the implementation of this medium, proposals for achieving success on social networks, as well as the challenges that await them in the coming period are the focus of this paper.

Key words: marketing, social networks, banks

INTRODUCTION

This paper aims to show how banks can achieve success doing business on social networks, how best to take advantage of, and avoid the dangers and risks of this way of doing business. The conducted research aims to show which the social network banks commonly used and in what way, as well as awareness of the presence of banks on social networks. This research focuses on the Serbian banking market. In addition to online and mobile banking, banks have been present for some time on social networks. It has become standard practice for banks, though limited to the major social networks (Facebook, Twitter, YouTube and LinkedIn), marketing communications and tracking of complaints and problems. It is a challenge for banks to achieve effective client Arrangements which means to develop digital interaction with clients, as an alternative to traditional banking face to face interaction. Regarding the use of social networks to access bank account and payment, opinions are divided.

IMPLEMENTATION OF SOCIAL NETWORKS IN THE MARKETING OF BANKS

In practice there are successful examples of the use of social networks by banks to launch new products, delivery of non-financial offers, gathering ideas from customers, exploiting the potential of big data, etc. (Pearson and Sundarrajan, 2013). However, the level of trust people in intangibles is still at a high level. Only 5% of Citizens in Serbia use Internet banking services, because most clients like personal contact and prefer to visit a local branch of the bank. Even 70% of people (BIF, 2013) stated that it would not use the services of Internet banking. Although this percentage is high, banks should not give up on alternative distribution channels, because it will decrease the percentage of time considering that the younger generation, especially generation of social networks, begin to use banking services (Lučić, 2007). The forerunner of today's forms of social networks is Six Degrees, where users could create their own profile, make a list of friends and exchange messages with them

(Boyd and Ellison, 2007). As a system that allows engagement, content sharing, learning, trade, promotion of social networks has grown very fast and we are witnessing everyday innovations. A growth rate of popularity speaks report McCann's Universal Wave 3 Report which showed the following (Weinberg, 2009): 394 million users watch video clips online, 346 million users read blogs, 202 million manages profiles on social networks, 248 million set photos. Worldwide, the number of users of social networks increases, so it is expected that the number of 1.47 billion users in 2012, increase to 2.55 billion in 2017 (Capgemini, 2013). According to the mentioned author expected that by 2017 to reach the largest increase in the Asia-Pacific region. It is also expected that developing economies outperform developed economies of North America and Western Europe by the number of users of social networks. With the exception of two specified regions, it is expected that every third, fourth inhabitant of the world use social networks. This statistic indicates the enormous potential and offers the opportunity to take advantage of social networks, to institutions closer to its customers and meet their needs (Capgemini, 2013). The following graph shows the expected trend growth in the number of users of social networks in the regions.

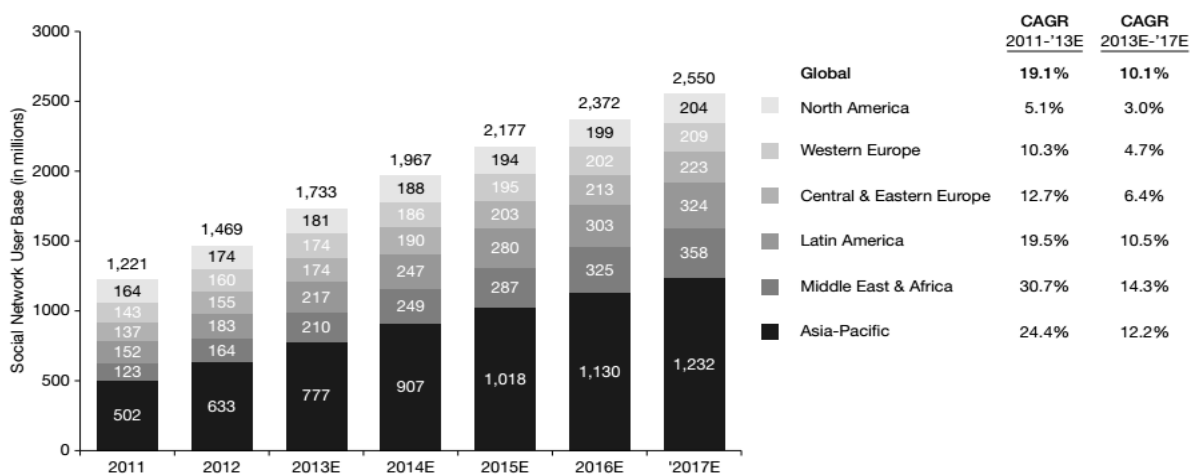


Figure 1: Social Network User Base by Regions

Source: Capgemini Analysis 2014., "Social Networking Reaches Nearly One in Four around the World", eMarketer

Social networks can be defined as any online platform, where most of the content (text, images, video, multimedia files) generated by the end-user (Capgemini, 2013). Slightly wider definition of social networks is seen as a form of service that allows users to create their own public or private profile and so establish a list of users with whom they will share content on the Internet, all with the aim of establishing personal and business contacts (CARNetCERT, 2009). Social networks can be classified into four groups (Capgemini, 2013): 1. The social networking sites (Facebook, Google+), 2. Mikroblog sites (Twitter), 3. Professional Networking Sites (LinkedIn) 4. Sites content sharing (YouTube). Basic social networking features are: gratuitousness (to create accounts on social networks, it is enough to have email and password), transparency (all content is public, their activities are available for communication), focus on the community (by creating a community of users with similar interests), unlimited user capabilities, global connectivity and so on. In addition to unlimited by time and communication, this medium allows the sharing of promotional content among users, which is the skin rapidly expand (Kirtis and Karahan, 2011). The following figure shows the importance that is attributed to social networks by banks and clients.

The global economic crisis that has engulfed the whole world was hit by marketing strategies of banks, as well as clients and their perceptions. Survival in a crisis means a reduction in costs, and promotional costs are the first target. However, promotional activities are an important factor influencing the increase and maintain the volume of sales. In order to survive in such conditions, banks had to find low-cost solutions. The first was to remove all the irrational marketing activities, namely to reduce promotional costs. Because of the great importance of promotional activities, the bank should not have to completely eliminate them, so it was necessary to find such a tool, which could lead to positive effects with

optimal costs. One of the best ways to lower marketing costs, and it should not be at the expense of promotion, is turning to social networks. Although this medium began as a means of entertainment, soon became a phenomenon that began to be used for marketing purposes. Marketing costs can be drastically reduced by using this medium, primarily because most of the social network free of charge. Then, the development of target groups and advertising are available at lower prices. This is the best way for banks to gain new clients and to retain the old ones. From the perspective of marketing, it opens up the possibility of creating a brand through community rating. Creating a community of users of products and services is one way of market research. From the period of financial crisis, many financial institutions have not only become participants in this medium, but actively use them as a marketing tool. Thus, for example Fidor Bank in Germany in response to the crisis developed a new type of interaction with customers through social networks. The above mentioned interactions include (Hopek, 2014): 1. A discussion of the development of the product (when the Bank develops products and forms the price, she contacts customers through online communities), 2. Mutual assisting clients (on the forums can ask questions and respond to the same by clients), 3. Promotion (higher interest rates on savings from clients that the Bank promoted on Facebook).

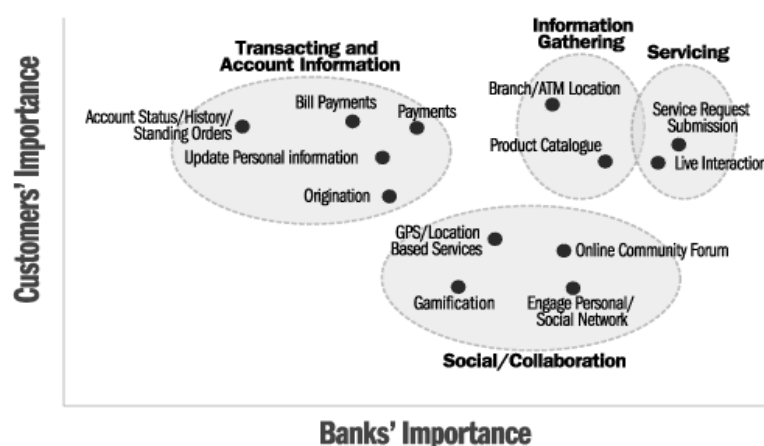


Figure 2: Importance ascribed by customers and banks to social media banking functionality

Source: Marous J., 2014., Capgemini/Efma, *The Financial Brand*,

<http://thefinancialbrand.com/39352/2014-capgemini-social-media-banking-research-study/>

It is clear that the crisis has prompted massive use of social networks by banks, but it is inevitable that customers expect their bank to be present on a platform of social networks. For it is the most affected tzv. Gen Y generation, a generation which belongs to the population born after 1980, which is often called the Internet generation. The generation that want to do everything faster and easier way and who loves innovation. Banks need to pay attention to this generation, because their influence is growing. The fact is that today, this population is not able to generate the largest amount of revenue the bank, but Gen Y will bring value to the bank in the coming period. "Just when we thought we had under control mobile and internet banking, now Gen Y population calls out social networks" - said director Phil Gom Capgemini and leader in the banking industry in Australia. The Bank needs to time to identify these needs, while not too late, because there is a huge competition and ready to persistent fight.

The most used social network by banks is Facebook. Studies have shown that the primary use for tracking negative comments rating, as this may damage the reputation of the bank. A number of the bank was aimed at addressing directly with clients regarding complaints, appeals and not to be given out publicly on social networks. Based on the survey results and the attitudes of the surveyed bankers, it is led to the following observations (Pearson and Sundarajan, 2013): Social networks are generally used as a means of communication and activities for corporate social responsibility. Social networks are useful as a tool for customer engagement, because they are more open to social networks. Selling products is difficult and limited and banks generally do not see social networks as a channel for selling products in the near future. Banks have found a way to more effectively engage in conversation in the relevant community in which they can promote their services. Banks have seen that the power of social networks is that their clients take advantage of as representatives of their brand. The focus is not on measuring the effectiveness of social networks and on sales, as the same may be incorrect.

The first bank which has begun to use Twitter as a customer service was Bank of America. In this way, the bank has achieved a mutualism contact with its clients in order to solve their problems. Feedback is the Bank received a lot faster

than it was the case with the traditional channels, plus the cost of customer service was very low. An example of a successful campaign on social networking site Facebook has made Deniz Bank of Turkey, which is now a branch of Sberbank of Russia. It is the first bank that has made Facebook branch. Clients have the opportunity conduct money transfers 24 hours, every day of the year and can monitor condition at its credit cards, deposit and savings accounts (DenizBank, 2014). The clients have been at disposal the application "Customer First" over which was made possible continuous communication. After two weeks, there were 10% of bank customers who use this application. The Bank points out that banking on Facebook, one of the most successful projects in the history of PR activities of the bank (DenizBank, 2014). This is the first bank which has enabled the transfer of money through Facebook, regardless of whether the transaction is done via mobile phone or computer. The National Bank of Australia in December 2012 launched "the command center of social networks". Center was responsible for monitoring comments and complaints. In May 2013, the Bank had more than 120,000 users in social networks with 5000 comments per month. Erste Bank Austria a social network used as an advisory channel and as a support to their clients. Specifically, the Bank has made Facebook a virtual branch where clients could communicate with the bank. Branch is open 24 hours a day and clients can in a fun and stylish way get information. In fact, due to customer dissatisfaction that have neither the time nor the desire to go to the local branch and want modern bank, led Erste Group to develop a Facebook branch. ASB Bank of New Zealand has implemented in its business virtual branch on social networks. Clicking on a photo of one of the members of the staff client starts a conversation one-on-one (Marousi, 2014). Barclaycard in the United States, CommonwealthBank and Sberbank use Crowdsourcing concept. This is where the bank uses the tools of social networking to build a common audience. They encourage their clients to suggest new ideas and products.

As 2013 was significant for social networks in the banking sector, there is a tendency that is expected to grow in the coming period, and was related to the regulatory oversight. Accordingly, the bank should have in mind the following four trends (Camhi, 2014): 1. Details and marketing on social networks (necessary to maintain the loyalty of customers so they would have to seriously understand the business on social networks. They must also find a way to make use of data from social networks), 2. the consolidated efforts of social networks (banks will have to centralize its focus on certain channels of social networks, or even for one, which is known to be the most effective. it is difficult to control the content is public, why complicate the presence of the more social networking platform), 3. Deepening the customer relationship with small businesses (banks will begin to offer training to customers of small businesses on how to seize and sell their products through social networks, which will help build loyal relationships), 4. More regulatory guidelines (in the coming period this area will be more regulated, so that the banks should be ready for it. it is necessary to establish and steering committee with members from departments dealing with social media activities, with the right to review how the bank operates in social networks). Banks also need to be aware of the following facts (Veenswyk, 2013): 1. Social networks have a log-in box for entering a password and user name. Many employees updated on the same media site, so there is no control and audit functions when access to your account and get in touch with clients; 2. Social networks do not offer the ability to control individual communication. As the scope of communication, and disappears ability to respond to any content; 3. There is no possibility of long-term storage of content; 4. On social networks there are no automated applications that prevent inappropriate disclosure by employees and clients; 5. In order to stifle sales and marketing across platforms mentioned it is necessary to respect FINRA, NASD and SEC regulations.

According to the study site e Business Knowledgebase in March 2015, a social network that had the highest estimated monthly unique visitors a platform Facebook with 900 million users. In second place is the social network Twitter with 310 million visitors, LinkedIn is third with 225 million followers, followed by Pinterest, Google+, Tumblr, Instagram, VK, Flickr, Vine, Meetup, Tagged, Ask.fm, MeetMe and Classmates on the fifteenth place with 15 million monthly visits.

BANK ON SOCIAL NETWORKS ON THE SERBIAN MARKET

In order to see the presence of social networks on the four most popular platform desktop research was conducted. The survey was conducted in March 2015. The research sample consists of banks operating in the Serbian market, ranked according to the criteria of total assets on the basis of financial reports of the NBS. It is important to note that each bank in the sample, which is present in social networks, on

their web portals have links to social platforms. The table below shows the share of banks in Serbia and their commitment to social networks.

The table shows the way how all banks operate in the Serbian market, and are present on the most popular social networks. Alpha Bank, ProCredit, Marfin, Serbian bank, Findomestic, Jubmes, KBM, VTB, Opportunity and the Danube banks that do not appear on any of the social networks. The largest increase in just six months had UniCredit Bank, which is on Facebook network recorded a drastic increase from 657 likes to 12292 likes. The cause of this growth was the policy of the Bank, which turned opening an account for students, foregrounding the Gen Y population. Mentioned bank can be connected and Telenor bank, which in a short period managed to gain over 41000 likes. The most popular social network in Serbia is certainly Facebook. It is worth noting that the bank, which is the most represented on social platforms is Erste Bank, the banking business, which sells the eight social networks (in addition to the aforementioned four, Erste Bank is already on Google+, Instagram, Foursquare, Slideshare). Twitter is less popular compared to Facebook. The social network is not used by all banks, but it is best to see how the Twitter account of banks popular among users if the criteria, the number of followers. LinkedIn is a business social network and is rarely used for marketing purposes. The advantage of these networks has become aware of the banks in Serbia that are focused on the business network. The most popular bank in the LinkedIn network is UniCredit with 3228 business associates. A bank that is its marketing strategy focused on the younger generation networks via Facebook and orientation to the corporate network via the LinkedIn platform, other networks is excluded. YouTube is a social network that allows banks cheap displaying promotional videos that can be viewed millions auditorium. The greatest number of hits have bank Intesa and Eurobank. Based on the research it can be seen that the banks have become aware of the possibilities of social networks and their operations and enhance presence on the most popular social networks.

Table 1: The use of social networks by banks in Serbia, with the number of currently present users

Bank	Rang	Facebook	Twitter			LinkedIn	YouTube	
		Like	Tweets	Following	Followers	Followers	Follow me	Views
Banka Intesa	1	154406	4401	3700	7353	2593	596	344884
Komercijalna banka	2	121182	2263	2578	2999	1767	104	187197
UniCredit bank	3	12292	-	-	-	3228	76	9978
Raiffeisen Bank	4	41091	364	157	844	-	90	89614
Societe Generale	5	15355	178	325	194	-	-	-
AIK bank	6	9883	1673	957	1918	-	-	-
Eurobank	7	67061	764	307	348	-	111	316546
Vojvodanska banka	8	29561	1130	825	987	799	27	13693
Hypo Alpe Adria	9	8808	589	476	588	-	11	1300
Bank Poštanska štedionica	10	11866	404	153	333	434	42	1364
Sberbank	11	3643	-	-	-	735	27	42271
Erste Bank	12	64359	2287	1542	7082	1750	158	151646
Credit Agricole	15	7226	-	-	-	354	39	15230
Piraeus	16	5626	-	-	-	151	4	1175
OTP	17	6529	-	-	-	-	31	39971
Čačanska bank	18	6764	-	-	-	-	-	-
NLB	19	12425	-	-	-	-	-	-
Telenor bank	28	41930	995	857	5573	566	476	76729
Jugobanka Jugbanka	29	363	-	-	-	-	-	-

Source: NBS, Sector Supervision Department, Report III quarter of 2014, downloaded from the website http://www.nbs.rs/export/sites/default/internet/latinica/55/55_4/kvartalni_izvestaj_III_14.pdf

CONCLUSION

Social networks are initially represented a form of entertainment, but soon became a marketing strategy for their business benefits. Although banks has long been present in some of the most popular social platform, that does not mean das fully adopted in the business rules in social networks and to achieve success on them. Banks should critically consider their business and choose platform of social networks, which corresponds to the bank's operations. To the success of activity on social networks was guaranteed, it is necessary to build a strategy and leadership. With such a basis, the bank can on a successful way to design your business on social networks and to reap the fruits of that system. Many banks will not be able to cope with this form of media, the other will become leaders. We are aware of the fact that banks cannot function without a physical presence, but we have also seen that social networks are changing the way in which the branches operate. Finally, the potential offered by social networking is huge and banks are aware of this. However, much remains to be done, such as the harmonization of business with the prescribed guidelines and rules, defining the strategy implemented in the goals of the business, hiring professional staff in this area of business, creating opportunities to sell products through social networks and the like.

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MARKETING STRATEGIES OF ATTRACTING AND WINNING CONSUMERS - MARKETING IN SML COMPANIES

UDC: 339.138

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ABSTRACT

The conditions of the modern market today are committed to all the fiercer competition and consumers, who have daily more pronounced desires and needs. New approaches to modern management and a growing commitment to the marketing, as the primary enterprise size, necessarily present in every company, brings the knowledge that the company implement in order to achieve its main objectives-winning and keeping the customers. Marketing skills imply a focus on consumers and their awareness in a creative and imaginative way. When there are limited resources, especially in small and medium-sized enterprises, the solution can be found in Guerilla marketing (which is expressed through ideas and creativity, rather than material resources) in order to achieve an effective impression on consumers.

Key words: competition, consumers, small and medium enterprises, guerrilla marketing.

INTRODUCTION

When we perceive business conditions today, it is evident that it is very difficult to provide a stable market position. Time of turbulence and dynamics face company with high demands that the authors (Djordjevic, 2007) define, where:

- the market sets increasingly harsh demands,
- there are limited resources,
- competitive advantage is difficult to obtain and easy to lose.
- rapid technological change happens,
- consumers and society as a whole measure the quality of business.

This, from which the earliest beginnings of business originate (of course, when it comes to the successful companies) is certainly to provide quality products, which would be the best way to serve the purpose it was intended to. However, in recent years, it is evident that it is far more necessary for the successful marketing of products on the market and attracting new customers, who, more importantly, you should and must keep. Proof of that is the Great Depression in the United States, which is a real indicator that the economy is not a major problem in production or economic growth, but how to sell the manufactured. It is very clarified that all business functions within the company must be consistent, timely implemented and established, and presented in the best possible way. It is important to point out that marketing, which is responsible for the creation and delivery of products can be efficient and effective only if it complies with all other business functions. Regarding to this, the following applies: „ The best marketing sector in the world can not sell products that are poorly designed or do not meet one's needs'. (Milisavljević, 2007).

This fact testifies to the necessary synergy of the three functions, that the authors cite as the three most important, namely: marketing, research and development and quality. (Seifert, 2006).

Marketing is the 'tool' for establishing communication between businesses and consumers. It is 'every bit of contact' that the company generates with its customers. The most successful companies that manage marketing, especially give the importance to understanding and communicating with consumers. The orientation towards meeting the needs of consumers and the formation of a company's business vision in accordance with the requirements of the consumer's is the basic guiding principle of modern companies.

The time in which we live is dictated by the new market 'rules', where the orientation towards new ideas, innovation, creativity, and greater commitment, the studying in order to achieve communication and mutually beneficial relations between management and customers dominates. The paper will also discuss the mode of operation of small and medium-sized enterprises, as well as the importance of marketing that permeates through their business. Guerrilla marketing is a marketing approach, which is present in these companies, and about whose effective implementation will be discussed.

CREATING THE CROSS-BENEFICIAL RELATIONSHIPS BETWEEN ENTERPRISES AND CONSUMERS

Strategies to attract and influence on the business customer

Most often the main goal of every company says customer loyalty, as mutually beneficial relationship that lasts. During such a long-term philosophy and the realization of such ambitions enterprises, it is in a much better position, because consumers themselves eventually become 'marketing' for the company. They mutually share and exchange positive impression about the company, where the number of users increases. However, before that, the question is: How primarily to attract the attention of consumers? How to reach the moment of preferences for products or services, to think about them, and fostering a desire to use them? The message sent to consumers is a key factor that affects the awakening of awareness among consumers. Managers tend to establish communication in the simplest and most effective way with their customers, in order to enhance their interest in the product as much as possible. What modern marketing skills have as a task, as the author states, (Stari Grad D., 2008), is to realize the design of message as such that:

- Cause attention;
- Modern marketing techniques are aimed at consumers in the field of common knowledge, so that consumers can understand what message has been sent about the product;
- The efforts of successful companies with their marketing operation tend to wake up the feeling of need for a given product at their future users, and also to raise awareness that the product suggests a way of satisfying their needs.

Causing impression with consumers is an important moment for the company's operations. Guerrilla marketing, which will be discussed, represents the attitude that the idea is to awake the attention which is very important because the effectiveness of the message that is being sent, really leaves an impression that lasts long in the minds of consumers. This refers particularly to the business of small and medium-sized enterprises because they are often not in a position to devote a lot of funds for marketing, but also in every company there should be striving for provoking a strong impression on advertising that has been sent to consumers. Then investing in marketing, in fact, has the effect.

When a company succeeds to arouse interest at its consumers, then it has the opportunity to influence a buyer, would not that same customer has become a company's consumer. The process of impact on the business customer is complex and often psychologically oriented process performed by the best marketing team members company has. Therefore, it is the hardest step for a company, that with different processes and techniques affect their customers, with their strategic ventures to affects their consciousness so that they themselves will be satisfied with their conditions. In particular, the processes which can be considered as guidelines for exercising influence are (Gligorijević M., 2012): persuasion, compromise, negotiation and agreement.

Persuasion is a process that induces the customer to use the product to solve their problems. It is often referred to and described as a mental game which affect consumer awareness. The necessity for the success of methods is acquired by establishing trust and user friendly appearance and, more importantly, providing strong evidence that what is in front of the consumer is valid and true. Persuading which is conducted in a relatively short period of time is a good starting point of impact on consumers.

The concept of compromise in the process of buying and selling refers to the fact that it creates a climate for highlighting the situation in which it is stated that both sides in the exchange have something to gain, and something to lose. Skilled management sector provides 'climate' in which rules the law that the customer is always the one who gets the most.

Negotiation is another strategic interaction, goal-oriented, in order to achieve mutual benefits. Consumers and retailers have a choice in which they decide whether they want to realize the negotiation process and increase the overall performance and their own well-being, or to avoid cooperation.

Arranging is the only contemporary concept that involves a long-term approach to relations between the seller and the buyer. Arranging always maximize profit to the buyer and the seller, because the buyers themselves realize that entering into the agreement contributes to their own interest. This is achieved through a commitment to the relationship of trust and raising awareness that cooperation contributes to the long-term benefits and continuous cooperation between the two business parties.

Gaining the trust and implementing strategies related to the customer and his consciousness, leads to the point where the customer is thinking about entering into mutually beneficial relationship with the company and fulfilling primarily their own benefit and that after using the product feels satisfaction with the achieved cooperation, which will guide him in redemand for the products to repeat cooperation with the given company.

Building the relationship with customers

Building the relationships with customers is based on a mutually beneficial relationship, when the company strives to achieve a sense of satisfaction among consumers, as well as friendship and business relationship for the purpose of continuous cooperation. Today's management, in order to achieve integration of communication with consumers, introduces changes that improve the relationship with consumers because (Seifert, 2006):

- today's consumer, in the process of marketing communication, increasingly plays the role of the sender of the message, which encodes its own needs and desires;
- modern companies increasingly have to invest in marketing eligibility, based on the flexibility of technology, knowledge, and integrated marketing communications.

Research shows that often very successful companies, which do not have a state monopoly, have more non-customers than customers. Evidence for this is that only a few companies are supplying up to 30% of the market (which they are oriented to) (Drucker, 2003). Indicators of non-buyers are really interesting for research, because every beginning of any change starts from non-buyers. This points to the necessity of knowing the consumer, all of which the company wants to have as their customers, in order to know how to create the value for them. In accordance to this, the author states the following conclusion (Drucker, 2003): Fundamentals of modern management must be the value for the customer and customers' decisions on the allocation of their own disposable incomes. From this base will increasingly be required to start the policies and strategies of modern management "

As already mentioned in this paper, it is first necessary to attract the attention of consumers, which is based on the finding of instruments and new marketing tools, which will keep the consumer in the long run. Likewise, attention to already present and loyal clients must not lack. On the contrary, knowledge in the field of modern methods of management, in the field of management psychology of

consumers and continuously motivating them, knowledge and research what is what consumers want, maintains continuous cooperation of those consumers who are already in contact with the company—who are aware of the presence of a company, who cooperate with it, and who constantly need to be returned.

When the cooperation is realized, and when positive results are the outcome, it is necessary to have the consciousness itself that each consumer is highly important for the company, and to advocate that permanent intercession for the consumers must not lack. The author cites several reasons why each customer should be 'kept' and why marketing activities should be directed at them (Božić, 2012):

- The consumer is much more satisfied if the largest number of purchases is performed in one company;
- Permanent consumers are easier to be sold goods to, which directly reduces the costs of sales services;
- Consumers who are already present in companies are less sensitive to price increases;
- Consumers retained in the long term are the best and cheapest advertising for attracting new customers.

That's why every company should strive to provide as many benefits to its customers, and that their marketing activities are dedicated to the conquest, and even more on retaining existing customers. Service, amenities and attention to customers is now considered as one of the most effective marketing weapons in raising and creating consumer value, or in the formation of the difference between the benefits and costs of a purchase. Investing in relationships with consumers today is most prevalent trend in the business strategies of the company.

MARKETING IN SML COMPANIES AND GERILA MARKETING

Often in the literature, much less is talked about small and medium-sized enterprises, and a larger space is given to the mode of operation and the establishment of marketing in large companies. However, SMEs are now very common and also represent one of the central questions of development of any economy. The proof of this statement are the following facts (Seifert, 2006):

- In the European Union annually is established over 350 000 new companies, where the total number of almost 70% represents mikrocompanies, which employ about 27% of all employees.
- On the European market, SMEs employ over 100 million people.
- In the European countries and in The United States, the whole region are formed, whose economy is largely based on SMEs. These regions have progressed faster than average national economy has.

In previous chapters, there was a talk about forming relationships with customers and winning their attention, which is certainly necessary in every business organization, and it is certain that SMEs should nurture relationships with their customers. However, specifically, here we would like to encompass marketing SMEs which are more difficult to obtain due, mainly, to the lack of funds allocated for marketing. Above, the importance of the awakening of attention among consumers, then process the impact on consumers, to building a relationship with them is emphasized. The same is expected from SMEs, provided that in such enterprises are difficult because they often do not have the financial resources for serious marketing ventures. Therefore, it is often stated that the management of these companies takes the form of enterprise management in conditions of limited resources. The situation in our country is widely known, where we have largely limited resources, but where the government, as far as it can, efforts to provide assistance to SMEs in Serbia. It is precisely because of the necessary funds, which often lack, that we have the program 'Support to SMEs development in Serbia', which provides an opportunity for entrepreneurs to realize projects of various themes: from market research (which often includes the highest cost), to strategic planning, then quality management environment etc ... With this support, which comes from the EU and EBRD (European Bank for Reconstruction and Development), there is a possibility for entrepreneurs to develop their

business, which is in the form of financial support, expert advice and practical experience to a higher level.

The above-mentioned facts testify to the lack of resources available to small and medium-sized enterprises, although such operations and requires less investment in terms of proportionality in relation to the number of employees. However, what often leads entrepreneurs is that due to lack of resources, companies must be guided by the logic of increasing profits, and in this way to create basic philosophy. This is the wrong philosophy, as well as large companies, SMEs have to tend to business in continuity, so as the management which is concerned with gaining the trust of consumers.

When entrepreneurs intend to start their own business, mainly the questions that are confusing and often discouraging them are (Seifert, 2006): How to choose an idea? How to find the necessary funding? How to realize the idea on the market and make a profit?

Guerrilla marketing is the marketing that helps these companies in achieving their goals, by proper application of marketing and with little investment, they will be able to 'wake up' the attention we talked about in the beginning of this paper. Guerrilla marketing is just the most frequently applied to SMEs, where the emphasis is on the idea, at the launch of own brain cells to create a successful business without over-spending. Guerrilla is often defined as farfetched method to attract attention, to initiate public discussion, or to launched propaganda 'from mouth to mouth'. The guerrillas listen to the customer, remain in contact with him, go into human psychology and deal with customers. Guerrilla marketing can be summed up in 16 words, whose guiding we use to come up with ideas on how to reach out to consumers. These are: commitment, investment, consistency, trust, patience, arsenal, order, convenience, enthusiasm, measure, inclusion, dependency, weapons, consent, content and increase. (Levinson, 2007)

Here is an example which implies the presence of terms that reflect the nature of guerrilla warfare: Tribis is the Swiss school for dogs who drew attention to himself in a very interesting way. Specifically, when the people would return to pick up their dogs, who were tied outside the store, they would simply stay out of breath, scared, surprised. They found their dogs to hold the teeth in a piece of clothing which remained a part of some pants or other garment. When the owner came up to his dog and looked at the cloth, he would read: 'You were lucky, this is just a piece of advertising. If you really doubted the propriety of your pet, it is time to make an appointment with us'. ([Http://mlmbiznis.npage.eu/marketing/gerila-marketing.html](http://mlmbiznis.npage.eu/marketing/gerila-marketing.html)) Research shows that the result was amazing, all the terms for admission to the course were filled! People have responded very quickly, and then all the terms for applying to the course became busy. How this marketing move should be perceived? Low budget, crafty ideas, a lot of action. When we have a well designed guerilla-marketing strategy, then it must be courageous, creative and a bit loud, rude and rebellious, and in the best case-spectacular. Guerilla marketing ideas are unexpected, surprising, unannounced, and most importantly, they leave an impression on consumers and lead to the purchase. It is spectacular and has been always more to the story. It provokes emotions, so much more remains in the memory than the conventional advertising.

Many studies have been conducted in order to observe the influence of guerrilla marketing on consumers and realized business results. Thus, the market research agency 'McKinsey' revealed that 67% of retail sales caused by effective stories, which were provoking strong impression by method 'spread by word of mouth'. The American firm 'Ammo Marketing', which stands behind many 'guerrilla campaign' in the USA, testifies to the effective impact of these marketing skills, whose director concluded the following: 'Identification of super-consumers, who can become brand advocates and spread good vibes about any product produced significant effect. If only one person acquires a good impression about a product due to guerilla marketing, it can affect another 5 or 6 potential brand consumers thanks to the strong impression that causes'.

Guerrilla marketing can affect attention and interest which are needed to be induced with the consumer. However, it is important to be aware that after that it remains the company to engage itself

with the quality of its products and is try to keep consumers. Business in SMEs requires great sacrifices and commitment because the competition is very strong (and how quickly they arise so quickly these enterprises also disappear). Therefore, skill, creativity and ideas should be placed and implemented in the best possible way, in order that a company, in a sea of others, has the qualities to succeed

CONCLUSION

Business today is a great challenge for all companies, since the conditions which are imposed on the market more and more demanding. There is a continuing struggle among competitors to win and retain customers. The main objectives of the company are causing consumers' attention, and the establishment of proper processes necessary to create mutually beneficial communication between consumers and management, in order to make them the loyal, permanent customers. Therefore, attention is paid to creating messages that are sent to consumers, making them the first thing throughout company attracts customers, in order to make the message as effective and strong as it could be. For SMEs, which often have a problem with the limitations of resources, methods of guerrilla marketing are oftenly applied, which is based on the idea and creativity, rather than on financial investments. Both, large companies and SMEs are aimed at consumer loyalty, which is valuable for any company, so the special emphasis is placed on the importance of constant and loyal consumer, who must always be stimulated in marketing activities, because originally there was a tendency to just these consumers are attracted to the creative idea.

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THE FUTURE OF MEDIA SYSTEMS IN TERMS OF EXPANSION OF AUDIO, VIDEO AND INFORMATION TECHNOLOGY (AVIT)

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ABSTRACT

The expansion of the sophisticated converged interactive technology, with wireless digital communications and virtual reality, has brought new challenges to the information society. Engineering Management is directed not only towards solving technology and business problems or designing new products, but also towards intuitive recognition of new integrative systems and platforms that will forestall the growing competition. The daily expansion of AVIT contribute to the creation of new forms and models, and rapid implementation, flexibility and creativity is therefore expected from the media corporations. Networking, transformation of form and content, has become easy and accessible for organizations that learn, know how to generate and transfer knowledge, for systems that are designed as variable and adaptable to any level at any time. How will the media be able to keep up with new technologies or will production of content become one of the diversified solutions of companies that produce technology? This paper presents the considerations on the future of media systems and models for sustainable development. In addition, we will provide the results of research on the quantity and the way in which media content users are interested in the survival of commercial and public services, and the ways of consuming media content.

Key words: AVIT, new media platforms, media systems, engineering management

INTRODUCTION

We live *mediasation*, as Klikauer explains, Mediasation of modern culture is the general process by which the transmission of symbolic forms becomes increasingly mediated by the managerial and institutional apparatuses of the media industry (2013:28). The omnipresent screens, digital platforms, music and texts are sent and exchanged in all sorts of ways. Reality is transformed through authentic or imaginary messages and contents, often unwittingly with our help. Our digital amplifications from which we don't part, enable a continuity of discourse, an exchange of musical or film contents, regardless of value, quality, need or desire, for our consumerism when it comes to media content oftentimes is not a result of our preferences, but a response to the supply and to what is 'shared', a 'must see', hear or have. The technology which enables us access and interaction usually represents a status symbol in our environment, and as such an inert concurrence with our previous choices or chosen behavioral models. The lack of media literacy in Serbia has only contributed to this imposition, instead of reviewing and evaluating, whether it comes to technology or content. In an effort towards a more effective and quality rendition, we define a few basic terms related to the subject. We see media as means of communication – a means of exchanging images, text, sound, idea concepts and completed content, through offered forms and channels: text, radio, television, internet... The media is also a specific cultural phenomenon because it is functional, dispersive and multidisciplinary, which enables a non-linear transmission function in all walks of life. Van Dijk observes that markets, politics, policies, exploitation, and marginalization all need an ideological basis and those ideologies require production and reproduction through public text and talk, which in our modern times are largely generated or mediated by the mass media, whom they must be the architects of their construction or the designers of their destruction (Van Dijk, 1995). Discursive elements of media

messages, the context and power the media have gained through technological development, speed of information exchange and influence on the diversity of socio-economic phenomenon, enables a sustainable development – all they have to do is choose the right form and access in a competitive global environment, since no media system can be observed on any other level but global, owing to wireless transmission. This paper is foremost directed towards electronic media. The auditorium won't be considered as passive audience, but as a participant in media transformation – a consumer creator, who directed the development of technology and content supply with their choices. By observing IT as support for design, development and management of computer information systems, software applications and hardware, in interaction and convergence with audio-visual technologies, we witness the inception of a variety of interactive and integrated media systems. Computer graphics have become a time and space determinant - everything else has been abolished.

SUSTAINABLE DEVELOPMENT OF MEDIA SYSTEMS THROUGH NEW MODELS

A variety of choices are considered stimulating in commerce. On the other hand, too many alternative solutions, from a psychological point of view, lead to uncertainty and difficulty in deciding. When there are too many different options offered, an individual usually searches for the perfect specimen which would entail all the different (and to them most needed) characteristics of all models offered : whether we are looking for a platform for personal, group or business purposes and application, we are always searching for just one more option. When technology is filled with content, the preferences are endless, and also open a path toward creating new ways of access as well as user satisfaction. The term '*user experience (UX)*' was first used in 1988. by Norman (1988), a cognitive sciences researcher, who also initially described the significance of placing the user in the center of design (a notion which refers to basing design decisions on user needs and preferences). Keeping in mind the user satisfaction with the platform, navigation and ease of motion, new offers are created, not just technological but mostly of content. Are media companies endangered by doing so? Definitely gained a new form of competitiveness, since the companies which besides manufacturing technology now offer content as well, can make technology users completely independent from media strategies. The struggle for viewership/ listeners/ visitors/ readers has moved onto a new terrain – a cyber space in which anything is possible, even circumvention of the conventional and regulated. The time determinant in cyber space is also not on the side of traditional media which require a lot of time to create their program. Another occurrence has made cyber space into a dangerous competitor for the media, and that is the full participation of the auditorium with creating and criticizing. Up to a few years ago, the media might have been able to manage and channel notions of the auditorium, but this task is increasingly difficult to fulfill, unless if it is controlled by the highest authority of a country and succumbs to total censorship in a sense of denying internet access or censoring providers of individual contents, platforms and specific websites. Some media corporations have managed to meet new trends and survival conditions, and offered editorial and journalistic tasks to the auditorium, which is not the case with the majority of media in Serbia, especially not the public media services. The solutions for following this trend were mostly conditioned by investment potential, but also with media laborers creativity.

At the *Integrated Systems Europe* fair in Amsterdam in February 2015, *Microsoft* introduced the *Microsoft Surface Hub*, a new platform which comes with *Microsoft Office* applications: *Word*, *Excel*, and *PowerPoint*, *OneNote* whiteboard and *Skype for Business*. *Microsoft Surface Hub* offers a variety of inputs including wireless projection, HDMI, NFC, Bluetooth, and ports to connect to peripheral devices. A responsive and natural inking experience that feels as fluid as a pen on paper. Advanced touch capabilities recognize up to 100 touch points with precision, allowing multiple people to interact with the screen simultaneously. The greatest characteristic of the *Microsoft surface hub* amongst everything similar offered on the market is the ability to call on text, sound, image, internet, video, and everything else integrated – at the same time. New platforms will change how media content is created: technology conditions the creators to adapt to design trends, through current topics demanded by the audience, content access will change with content becoming more accessible and cheaper because of high supply; the same contents will surely have several variations manufactured to suit different personality types, business models, group characteristics or regionally and geographically

customized to cultural and customary values. Design of a technology intended for wide-spread usage, by which we firstly encompass apps, media and mobile platforms, needs to meet all aspects of the person's experience with the system including industrial design, graphics, the interface, the physical interaction, and the manual. Michael Cumming (2010) created the user experience design diagram which clearly shows levels of an individual's consciousness of elements that make up a design of a certain product: programming and interaction and interface design are at the lowest level, the level rises with information and animation design, towards awareness of sound, graphic design and language. The integration of audio, video and integration technologies stems from the need to satisfy user demands, and the future of their convergence, with digital transmission and Wi-Fi will contribute to a greater and faster media industry development. Media industry development will entail an even greater popularity of mobile and wireless communications. The implementation and placement of ViGig (a specification which enables devices to communicate wirelessly on larger gigabit speeds) also awaits us. The challenge of wirelessly connecting a device with a screen is also omnipresent and there are at least five competing fractions for this wireless 'standard' (Intel's Wi-Fi Direct, Wi-Fi Alliance, Wi-Fi CERTIFIED Miracast, Apple AirPlay, and Digital Living Network Alliance). Tech managers can extend and distribute HD content over a network, multicast HDMI video, and deliver HD video where you want it, over a LAN (Douaihy, 2014). The most important task for all – to offer a display (of adjusted size) with the ability of emitting and connecting without limitations.

The ability of creating interesting and profitable media content will have the leading and crucial role in media system survival. As digitalization has facilitated both manufacturing and distribution, so will content be more available and susceptible to criticism and evaluation. Broadband television with multi-channel emitting and wide supply enables larger audience fragmentation, which will also influence assortment generation. It is expected that the audience will become more educated with such supply, but only if there is diversity, which is the opposite of the current media image in Serbia when it comes to channels distributing domestic production. It wouldn't be surprising if manufacturers of media content were to appear from industries and economy sectors that deal with neither media nor technology affairs. The struggle for the market and buyer, or rather user access can cause such new 'niches' for media content manufacturing to turn up, mostly for one main reason, and that is general mediaization – everything around us is digitalized and sent through media. Media system sustainability is a much discussed subject – from whether public services in Europe will survive, to whether and how will media exist in this form in which we follow it today. Media companies deal with the most wanted commodity, and that are attitudes, opinions and consumer habits. The media can assign themselves the role of the factor which resolves management issues. If they were to create polling data bases through communicating with the auditorium, they could cross analyze this data with market analysis: economy and placement problems, consumer demands and needs. This way, they would get stock-in-trade. For example: creating "cookies", small files which collect information about what users do when they visit websites. This information is valuable for market research and targeting users with ads and offers, as well. The media can also create ranking lists, ratings for certain products, and so on. Besides, media companies can pose as social networks as well: they can create pages on their web sites specifically for posting conversational topics, encouraging blog creators and forums to communicate on these pages, to offer space for status updates, posts, posters, photos, etc. A sum of all of this would result in an abundance of information on which, amongst others, social networks and web browsers survive. Virtual and real focus groups could be an especially interesting activity. This way, media houses could take over marketing and PR agency roles, and deal with resulting pilot product placement, commercials, etc. Convergence and interaction of audio visual and information technologies has produced a completely new means of income for media systems: education and training. Aside from the usual educational forms, media companies have the opportunity to not only manufacture educational content on transportable platforms separately, but to also create on-line seminars, specializations and trainings for employees of different economic sectors. Every responsible company tends to have its employees abreast with new developments of technology and knowledge in the area of its economizing, and is therefore surely ready to invest in it. Thanks to modern technology, the media can develop different ways of specialization for any line of work. If they are missing experts of certain fields in their organization, they can invite some interesting and attractive guests. They can also

mediate organization of remote seminars with experts abroad by offering simultaneous translation and enabling the interaction technologically – asking questions and exchanging experiences.

Developing their own mobile phone PC or touch-screen apps, can also be a new approach to audience with great economic potential. Informational touch-screen stations are more and more numerous and have room for ad space sale, content and product promotion. It is imperative to promote the new app as a ‘must have’ and commit to creating content. Within such apps short media forms can be posted: miniseries, shows, and concerts – anything that can be viewed in 5-10’ during a break or public transportation ride.

Another option for any media company to create is the electronic newspaper option. Aside the teletext option offered via analogue methods, the idea of a cable text transmission app of news in images via internet is quite realistic. Redactions have already created news and content of different types, all that is left is for them to find a way to resell them. There are different ways of making curtain business models sustainable in spite of being categorized as highly competitive and threatened by globalization. Several conditions need to be met in order to overcome such obstacles: aside from a responsible leader approach, an analysis of the market and a realistic insight into own qualities and management is needed – everything that helps us determine our stance, our direction, and distance from the goal; a positive, unconditioned personnel selection with creativity as a crucial trait for this industry; a transparent selection of quality suppliers as a primary criteria; a good external and internal communication with stakeholders; training and education investments; as well as promotion and marketing which are often regarded as expenses.

For purposes of this paper, a sample survey of 354 respondents from the territory of Serbia was realized. The results suggest that citizens are not satisfied with the overall media image in Serbia at all (52%) and that what bothers them the most is the sensationalism in media, a lack of responsibility for what is publicly stated, as well as a lack of diversity – everybody is copying each other. When asked if they are satisfied with the technological characteristics of broadcasters respondents stated that they would appreciate if the media companies updated their platforms in accordance with technology development. When it comes to communicating with the auditorium, which is considered to be the starting point for earning profits for media companies, as well as for their positioning, citizens responded that the media broadcasts only that which is for them in one way or another profitable (56%), and that program is created with the intent of imposing what to watch, without any regard to their preferences. Respondents (77.56%) agree that citizens should have a means of expressing their opinions on commercial broadcasters, regardless of them not being financed from the budget, because they contribute to the overall media image which we are all exposed to. Over 80% of respondents consider the survival and development of PSB, to insure pluralism, program diversity, editorial independence, responsibility and transparency. Only 6.12% believe the PSB should be terminated. We gained various answers with the question asking to grade the value of what is currently broadcasted via PSB. Citizens do not consider the broadcasted program very valuable as is shown through their answers: 18.37% would pay the 1.5 Euro compensation; 12.24% would pay up to 5 Euros monthly; 22.45% would not give compensation for the broadcasted program; 16.33% would pay subscription if PSB became more technologically and business thriving; 16.33% are willing to pay if there was a simple way for them to express their opinion, in other words - if communication with them improved; and 14.29% would pay subscription if the operating was more rational and transparent. The next question referred to the possibility of organizing a referendum on PSB survival. Only 4.08% of respondents think that the PSB should be cancelled, 6.12% are not sure which solution would be best, 16.33% are convinced that PSB should stay, while most consider serious reforms should be implemented: 55.1% for reforming and reorganizing, 10.2% for cutting business expenses. A portion of respondents (8.16%) believe that it would be beneficial to introduce another independent PSB in accordance with the model implemented in the UK. Statistical data shows that about 60% of Serbian citizens watch television entirely via cable. We were interested in how internet and cable services users, as well as those with analog connection imagine and foresee their status in the future. The majority of respondents (36.73%) opted for the modality of TV stations that are in step with the times in terms of technology implementation, production and broadcasting of programs that are current, obsolete and not simply cheap; 22.45% of them would like to have an option of multi-functionality that would enable simultaneous internet, mobile and TV connection, as well as the use of a PC. The 354 surveyed respondents have also expressed as quite open towards the option of an offered TV platform: Would you like a TV platform in the future on which you could choose the program or create a collage of program according to your own preferences, needs and time at your disposal that would enable the simultaneous communication of any kind? The conclusion of the respondents’ answers analysis indicates a highly developed awareness of technical abilities of media and the capacity of comparison with what is offered in Serbia.

Citizens expect to gain more by accessing internet, to simultaneously follow different media and have simultaneous access to different apps offered today.

AUDIO-VISUAL AND INFORMATION TECHNOLOGIES FOR NEW FORMS AND FEATURES

The American experience, based on 50 million users, didn't only provide a cable TV implementation model in Europe, but the leading cable operators are in fact from the USA. The domination of American production in Europe is unambiguous, whilst the preservation of European cinematography and TV production identity is in question. In the mean time, a phenomenon of general discontent and mistrust with the media is shaping up in the USA, at least when it comes to reporting. The Gallup Institute in its research finds that Americans' trust in the media has dropped slightly in election years, and again in 2014. - only to edge its way back up again in the following odd-numbered years (Gallup poll). Taking this into account, we cannot help questioning whether the only media partition in the future is into informational and entertaining. How does the PSB fit into this? Technology will surely play the deciding factor in this partition. Historically, the BBC (as the brightest example of PSB) was in the begging (10.18.1922.-1.1.1927.) under the control of a consortium (Marconi's Wireless Telegraph Company, Metropolitan Vickers Electrical Company, Radio Communication Company, The British Thomson-Houston Company, The General Electric Company, Western Electric Company. of radio manufacturers, formed under license from the Post Office). The company was reformed in December 1926, and its assets were transferred to the non-commercial and Crown Chartered British Broadcasting Corporation, in order to guarantee pluralism and the fulfillment of the PSB function. On the other hand, this might be the model of PSB sustainability: public-private partnership, with clearly determined roles, obligations and responsibilities, with maximal transparency. Some countries are definitely on a certain level of socio-economic development and can allow this. Serbia is not amongst these countries, to which everyday media testify with reports of corruption, lack of transparency, irresponsibility and judiciary and prosecution systems not sufficiently independent to maintain order and awareness of the necessity for punishment of illegal and immoral deeds. Besides, Serbia as a low income society and a country of many economic problems can hardly allow large investments into PSB. And without investment, especially into technology, survival in the modern world is not possible. As a result we may expect commercial broadcasters, growing in numbers in Serbia, to take over the lead on public informing (in the sense of offers), Barlovac (2014).

The development of audio-visual and information technologies is at the peak of its expansion and convergence. All existing switches and routers that convert or divert signals will become all-powerful. We will see more solutions that enable video collaboration and instant video chatting via WebRTC and related platforms. The focus is tilting towards Web browsers and apps (Douaihy, 2014). It is the next step in light industry for displays, after OLED are nano-crystals, which will enable a clearer image. Trends foresee even faster mobile and wireless communication, limitless networking and cheaper solutions, enabling the creation of better control systems. Such trends have initiated changes in education, mobility and manpower needs, by demanding both subspecialties for certain jobs and wide spectrum skills for specific working conditions. The future can bring a certain way of individual coding, with a mobile device we would always keep at our side and express needs, realize intent and receive instructions and work tasks through it.

CONCLUSION

The term 'power' represents the ability to do something, to influence immediate surroundings, but can also be viewed as a domination of an individual/a group/a corporation over another group. In both cases, it entails possession of the capacity to shape activity (Price, 2011:59). Shaping activity can be achieved by mind and technology, and most often by a combination of the two. Media literacy is the state in which the individual has gained enough knowledge to be able to receive, analyze and interpret a media message, because one is aware of how it is created and broadcasted. The very relation between production, text and the audience is emphasized by the idea of seeing media as an institution Alvarado describes as a model: 1.The relation of the artifact and the institution through which it

creates, distributes and consumes; 2.The relation of media companies and the private and national capital – the teaching on TV as an industry which entails numerous institutions; 3.The relation of media companies and the state – the teaching on TV as an industry, a BBC and ABE duopoly, regulated and controlled by the federal government” (Price 2011:481). Legal norms in Serbia don’t suggest that media system owners have to meet the conditions of that institutional framework. Not much attention goes into controlling of what was approved with program concepts whilst assigning the frequency spectrum and broadcasting license either. Media critique is long gone with power and jurisdiction struggles and the race for profit, and any aware individual has grasped the interdependence and conditions of survival. Choosing a discourse, setting trends, keeping up with technology are all challenges for the media, which have to change sensibly and at their volition to not be changed by others, especially those not chosen by their own volition. Thus we return to the core of the problem: audio, visual and information technology, digitalization, networking, reshaping forms and content through their expansion contribute to the creation of potential and new sustainable development models every day. Media need to find a way to meet these challenges and interdependence, and to influence the usage of new technologies by setting discourse. They need to react and step up as large scope product innovators which present new products. Product and procedure innovation are in mutual interaction “No outside factor, such as market or technology factors, influences technological innovation on its own. Stimulation sources found inside of the production segment often present the key factor of incenting technological innovation... Historic development patterns of several segments of production suggest that the efforts of engineers-managers in improving the production procedures themselves could be a key factor of incenting technological innovation” (Abernathy, Townsend, 1975).

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LOGISTICS AS A COMPONENT OF CUSTOMER SERVICE

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ABSTRACT

In order to survive in the conditions of growing competition, companies are trying to satisfy the needs of their customers as efficiently as possible. In this regard, more attention is paid to services, which are the primary mean of differentiation. Any additional services that increase the utility for customers, by reducing uncertainty and their efforts in making purchase decisions, represent customer service. It is related with logistics activities, which are also involved in the process of creating and delivering value to customers. The importance of logistics in the context of customer service is usually studied from marketing aspect. In this paper, in addition to various theoretical aspects of logistics, its role in customer service is presented as well. In this regard, all logistics components and dimensions of customer service are also analyzed.

Key words: logistics, customer service, value creation

INTRODUCTION

From business area, where skills and experience dominated, logistics developed into a scientific discipline, which is affirmed in almost all spheres of human life and work. Functionally connecting all partial activities of overcoming spatial and temporal transformations, from the sender (point of delivery) to the recipient (point of receipt), it is directly involved in the process of value creation and satisfying market needs.

The role of logistics is particularly important in terms of providing an adequate level of customer service. Through delivering the right product at the right time and the right place, one of the basic prerequisites of successful purchase transaction is achieved, along with the reduction of customers' efforts and costs. In this way, customers' satisfaction and their loyalty can be increased as well. Therefore, in addition to the basic definitions and objectives of logistics, in this article attention is dedicated to its role in the system of customer service.

CONCEPTUAL DEFINITION OF LOGISTICS

Logistics as a separate activity has been refined parallel with the development of human civilization. From its significant role in organizing large-scale migrations and numerous wars, in contemporary business conditions logistics grew into a young scientific discipline, which can be studied and applied in almost all areas of human activity (Regodić, 2010).

In the early 20th century, logistics rapidly developed and affirmed in the civilian sector. At the beginning, it has been related to many terms, including physical distribution, materials management, logistics engineering, supply management, etc. (Roca, 2004). In the literature, logistics was first mentioned in 1901 in the context of physical distribution (Kent and Flint, 1997). However, in time, it became the subject of numerous studies within different scientific disciplines. In addition to the

engineering aspect (particularly important in the military sector), it has been studied from the point of marketing, operational management and mathematical modeling as well.

Since the nineties of the twentieth century, with the implementation of supply chain management concept, most authors (Bloomberg et al., 2006; Frankel et al. 2008; Milovanović et al., 2011; Felea and Albăstroiu, 2013) analyze logistics as one of its main components. Therefore, in recent years the focus of several researches is on the processes of business integration and synchronization of production and information flows in the supply chain.

As logistics has been investigated from various aspects, there are different explanations of this term. Some of them are presented in the following table.

Table 1: Logistics Definitions

Logistics	Authors
<i>The process of strategic procurement management, movement and storage of materials, parts, finished products and information throughout the organization and its marketing channels, in a way that maximizes current and future profitability through cost-effective realization of orders.</i>	Christopher (1998)
<i>The organization, planning, implementation and controlling the product flow from the development and purchasing through production and distribution, to the interested buyers, with the aim of satisfying the demands of the market at a minimum cost and minimum capital engagement.</i>	Pfohl (2003)
<i>Responsibility in designing and managing systems of control movement and geographical positioning of raw materials, semi-finished and finished goods inventory at the lowest total cost.</i>	Bowersox et al. (2006)
<i>A set of planned, coordinated and controlled intangible activities, which are functionally linking all partial processes of overcoming the spatial and temporal transformation of materials, semi-finished products, knowledge, capital, people and information in a rational, unified logistics processes and flows from the sender (point of delivery) to the recipient (point of receipt), in order to satisfy market demands, with minimal invested resources.</i>	Zelenika and Pupavac (2007)
<i>Delivering the right product in the right quantity, right quality, at the right place at the right time in the right way, to the right buyer at the right (minimum) cost.</i>	Mangan et al. (2008)
<i>The function responsible for the transport and storage of materials on the way from initial suppliers, through indirect operations, to final customers.</i>	Waters (2008)
<i>Planning, regulation, implementation and coordination of space-time, quantitative and qualitative transformation of logistics flows.</i>	Kalinić et al. (2009)
<i>Efficient transfer of products from the source of supply, through the production process, to the point of sale, in a cost-effective way with providing adequate customer service.</i>	Rushton et al. (2010)
<i>Set of activities related to planning, realizing and controlling spatiotemporal transformation of goods.</i>	Milovanović et al. (2011)

One of the most acceptable explanations of logistics was given by the organization "Council of Logistics Management" (CLM), which has been renamed into "Counsel of Supply Chain Management Professionals (CSCMP)" in 2005. As logistics has been developing over time, CSCMP organization was changing its views on this concept (Frankel et al. 2008). At first it was defined as "the process of planning, implementing and controlling the efficient and cost-effective flow and storage of raw materials, semi-finished products and information from the point of delivery to the point of consumption in order to meet customer needs." However, under the influence of globalization, technological development and deployment of new business systems, logistics has evolved into a "part of the supply chain that plans, implements and controls the efficient and cost-effective direct and reverse flow and storage of goods, services and information from the point of delivery to the place of consumption, in order to meet customer needs."

Main logistics objectives

With the efficient realization of logistics activities, companies can improve their positions on business markets. Therefore, besides procurement, production, sale, marketing and other activities, logistics has very important place in value creating process.

The role of logistics in the process of value creation was primarily emphasized by Porter (2007), lumping it into the main activities of the value chain. In addition, he distinguishes operations of inbound and outbound logistics. While inbound logistics includes activities related to the reception, storage and distribution of inputs (such as the transport, storage, handling and inventory control), outbound logistics consists of activities related to the collection, storage and distribution of products to customers (such as storage of finished products, materials handling and planning deliveries).

Unlike Porter, Bloomberg et al. (2006) analyze the role of logistics in the process of value creation from the aspect of usefulness. In this regard, there are four different types of utility (economic usability) that add value to the product or service: form, ownership, spatial and time utility.

Logistics provides these utilities through managing product and information flows, in order to satisfy customer needs. According to this, Gudehus and Kotzab (2009) differentiate three main logistics objectives, related to: company performances, quality and costs. Logistics objectives related to company performances include order fulfillment, throughput, storing and delivering. Mentioned activities are controlled by pre-defined and quantifiable criteria, which have to be adapted to new market conditions. The second set of objectives focuses on quality, with the distinction between product, service and performance quality. For logistics, of particular importance is the quality of performance, which is usually associated with the possibility of the realization of certain operations. In the most important qualitative logistics objectives, Gudehus and Kotzab (2009) include: availability to deliver storekeeping articles, availability to execute production orders, shipment quality and delivery reliability. The combination of these parameters influences the service level, which is often equated with the quality of the logistics system (Gudehus and Kotzab, 2009). It refers the likelihood that orders will be delivered in specified time, in accordance with pre-defined qualitative and quantitative specifications. Bearing in mind that higher level of service has positive impact on customer satisfaction, special attention should be dedicated to this objective.

In addition to quality, logistics costs should not be neglected neither. As they make up a significant part of total company's costs, their reduction represents one of the main logistics objectives.

Relations between logistics and marketing

In the context of creating value and satisfying customer needs, Murphy and Wood (2004) emphasize the importance of the connection between logistics and marketing. The relationship between these functions, they explain through the instruments of marketing mix:

- Location – logistics provides the effective way for moving and storing products from the point of production to the point of consumption;
- Price – company's profitability depends on the size of all business costs, thus logistics costs represent important item in price calculations;
- Product – the role of logistics in product development refers to the activities of its identification, tracking and storage, whereby its design can also affect the efficiency and effectiveness of different logistics processes;
- Promotion – by ensuring the availability of promoted products and with adequate packaging designs, logistics makes a significant contribution to the promotional activities of the company.

The relationship between logistics and marketing, Grant (2011) discusses from the aspect of "customer service". Since both functions (logistics and marketing) are directly involved in the process of creating and delivering value to customers, this process represents the link that connects them. While the

objectives and standards regarding the level of service are set within the marketing function, its realization depends on outbound logistics activities.

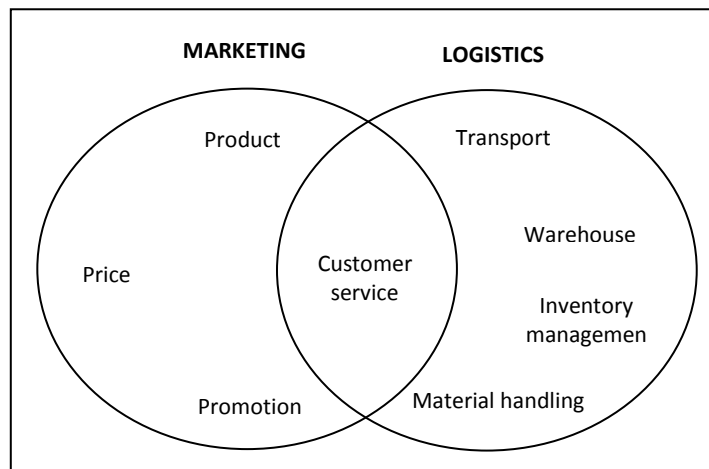


Figure 1: Relation between marketing and logistics (Grant, 2011)

According to Murphy and Wood (2004, p. 101), outbound logistics, as part of marketing, may have a "corrective" role in making these decisions. By analyzing all customer service activities from the cost point of view, different alternatives for accomplishing company's objectives can be compared. Consequently, company can opt for the alternative that provides the desired level of service at the lowest cost.

LOGISTICS AND CUSTOMER SERVICE

In order to achieve competitive advantage, companies pay increasing attention to services, which are becoming the primary mean of differentiation. Therefore, emphasized borders between physical products and services are slowly disappearing (Lovreta et al. 2010). Together they make up the value tailored to the needs of customers. In this regard, Rushton et al. (2010, p. 31) in addition to product, its quality, technological and other characteristics, highlight the importance of services, which make the "product surround." In basic service elements they include: product availability, ease of ordering, delivery speed and other forms of support (Fig. 2).

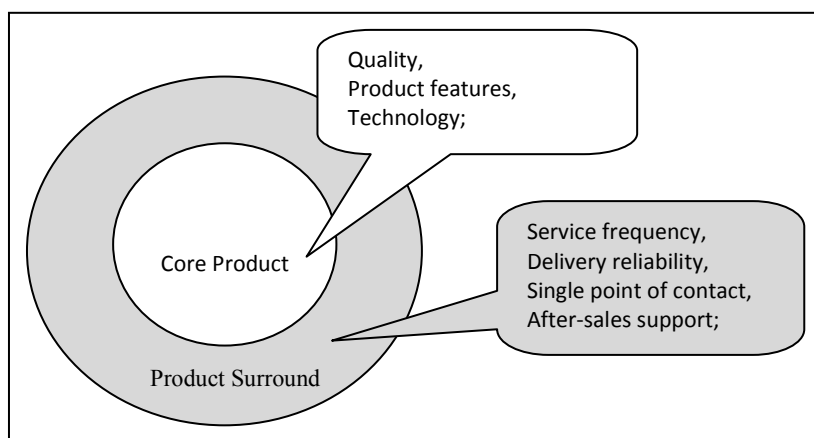


Figure 2: Core Product and its surrounding (Rushton et al. 2010)

Any additional services that increase the utility for customers, reducing uncertainty and their efforts in making purchase decision, Grant (2011) associated with the customer service. While Murphy and Wood (2004) define this term as the set of activities which companies perform in order to retain and increase customer satisfaction, for Christopher (2005) it represents the group of factors that affect the

process of ensuring the availability of products and services. Considering it as an integral part of the product, Fallah (2011) points to the positive impact of customer service on the profitability and employee satisfaction.

Bearing in mind that logistics activities are directly involved in the flow of products from suppliers to final customers, they represent a significant part of customer service (Rushton et al. 2010). In this context, the role of logistics is reflected in fulfilling the criteria of "7R", i.e. in delivering the "right product", at the "right quantity", to the "right buyer" at the "right time", at the "right place", in the "right conditions" and at the "right costs".

According to Rushton et al. (2010, p. 32), logistics components of customer service can be classified on the basis of several criteria. Depending on the specifics of the service itself, they differ pre-transaction, transaction and post-transaction elements.

Pre-transaction elements precede the primary service (Roca, 2004). They are usually analyzed from management and organizational aspect, whereby they are associated with the creation of an adequate environment for establishing effective customer service system. They consist of (Rushton et al. 2010): written customer service policy, accessibility of order personnel, single order contact point, organizational structure, method of ordering, order size constraints, system flexibility, and transaction elements.

Transaction elements are directly related to logistics and distribution process (Christopher, 2005). They are focused on the realization of activities of customer orders (Fallah, 2011). They include (Rushton et al. 2010): order cycle time, order preparation, inventory availability, delivery alternatives, delivery time, delivery reliability, delivery of complete order, condition of goods and order status information.

Transaction elements are connected with post-transaction elements, which are responsible for the provision of an adequate business support (Christopher, 2005). According to Rushton et al. (2006), these elements are directly related to product "use". They include (Rushton et al., 2010; Fallah, 2011): montage, availability of spares, warranty, invoicing procedures, invoicing accuracy, product tracing, returns policy, customer complaints and procedures, product replacement and claims procedures.

Elements of customer service can be classified from the functional point of view as well (Rushton et al. 2010, p. 33). In this respect, there are four multifunctional dimensions: time (usually order fulfillment cycle time), dependability (guaranteed fixed delivery times of accurate, undamaged orders), communications (ease of order taking, and queries response) and flexibility (the ability to recognize and respond to a customer's changing needs). Each of these dimensions can be further broken down into more elements.

CONCLUSION

In contemporary market conditions, under the influence of growing competition, in different ways companies are trying to meet the demands of their customers. Therefore, they must not neglect the cost side of their business, as well. In such circumstances, logistics activities can be of a great importance in achieving the given tasks. With their successful implementation, not only that they can improve business performance, but also they can reduce costs and increase their service quality. In this way, they are directly involved in the process of creating value by providing multiple types of utility, especially spatial and temporal. The role of logistics is particularly important in the context of customer service, through meeting the criteria of "7R", i.e. delivering the right amount, of the right product, to the right buyer at the right time, at the right place, in the right conditions and at the right cost. In this regard, it is necessary to consider all pre-transaction, transaction and post-transaction logistical components. While the first two groups relate to the establishment of an adequate business conditions and the realization of orders, the third group of elements is associated with the provision of

business support and the use of the product. Thus, the coordination of these elements represents the basis for an effective increase in the level of customer service.

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LOBBYING AS AN ACTIVITY OF PUBLIC RELATIONS

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ABSTRACT

This paper presents the basics of lobbying, as well as specific public relations activities. The prerequisites of successful lobbying are presented. A successful lobbyist must comply with all these rules. Lobbying is a specific activity and the organization can choose to entrust this work to professional lobbyists, who have the experience and necessary acquaintances for the realization of these kinds of tasks. It is pointed to the ethical and legal aspects of lobbying. Lobbying can be considered ethical if it is conducted in an ethical manner. Appropriate legislations, that are made in many countries in the world can be of help.

Key words: public relations, successful lobbying, the ethical aspects of lobbying.

INTRODUCTION

Public Relations (PR) is a multi-dimensional and extremely complex business activity, which requires knowledge of different disciplines (psychology, communication studies, journalism, economics, politics, ethics, culture, etc.) and combining them in order to achieve efficient communication (Đorđević, Bešić, 2005). Similarly, Gordon (2011) suggests that public relations is developed from a number of different disciplines, such as psychology, sociology, media communication and management.

According to (Kotler, Armstrong, 1996), public relations, have the task to build good relationships with different audiences, to build a good image of the organization and solve the problems caused by unfavorable stories, rumors and events. Public relations is a business activity that is aimed at establishing, maintaining and developing an understanding of the different segments of the public. It is a communication activity of the organization in order to ensure public confidence and create a positive and favorable image of the organization in public.

Among other PR activities, the organization should establish and maintain good relations with the members of parliament, state administration and special interest groups. Some members of Parliament or a particular interest group may be particularly interested in the problems of certain organizations. In such cases, organizations need to direct attention to such individuals and groups. Implementing the above mentioned, stands out as a lobbying activity.

Some of the definitions of lobbying are:

- Lobbying is a stimulated and transferred communication, made through someone who represents the organization, with decision makers from governmental structures, with the hope that it will influence their decision (Milbrath, 1960).
- Lobbying (parliamentary ties) implies the involvement of specialized people in charge of building positive business relationships between an organization (whose representatives) and political and civil institutions and organizations (members of government, members of parliament, ministers and representatives of individual ministries). Lobbying means working on the positive presentation of the case, events or organizations, governmental and parliamentary services and institutions (Filipović, Kostić, Prohaska, 2003).
- Lobbying is an attempt to influence the decisions of the state administration, through the provision of representatives to represent the interests of companies, or certain groups (Đorđević, Bešić, 2005).
- Lobbying is an effort that seems to influence government decisions (Nownes, 2006).

According to (Black, 2003), lobbying should always be carried out on a decent (nice) way, and it consists of three elements:

1. Understanding. The organization needs to be aware of the specific situation from start, ie, the opportunities and risks of a particular situation. On the basis of these findings the strategy and tactics are defined. It takes time to identify "friends" and "enemies", ie individuals and groups that favor or not favor the organization and its goals. Also, it is important to define the time frame for action.
2. Communication. It is necessary to adequately convey a definite message to the identified target group. Communication should be done at the right time.
3. Pressing. Pressing ensures that the right people take the necessary actions and to be consistent in their implementation. Like the previous two elements, the time frame is very important, so the press is done in the most favorable moment.

PUBLIC RELATIONS AND LOBBYING

Public relations is becoming an increasingly important factor in achieving the overall business success of a number of organizations. Their task is to build good relationships with different audiences, to build a good image of the organization and solve the problems caused by unfavorable stories, rumors and events. Public relations is a business activity that is aimed at establishing, maintaining and developing an understanding of the different segments of the public. It is a communication activity of the organization in order to ensure public confidence and create a positive and favorable image of the organization in public.

Favourable climate in public (which is best achieved through the work of public relations), along with high quality and differentiated products, provides a good image of the organization, which is a prerequisite for achieving positive, desired business results. Thus, public relations have strategic importance for the organization (Nikolić, 2012).

From the standpoint of business organizations, lobbying is a strategically oriented communication with the environment. Also, lobbying is based on communication, persuasion and negotiation. Therefore, lobbying, as a business activity is usually organized within the PR department. In this way, lobbying has become one of PR activities.

There are some doubts if lobbying is a part of the activities of public relations. However, numerous references indicate that lobbying is an important part of public relations (Verčič, Tkalac Verčič, 2012; Newsom, VanSlyke Turk, Kruckberg, 2010; Johnson, 2005). A research in Norway (Haug, Koppang, 1997) has shown that, in that country, lobbying was conducted by the top manager and the PR service. According to (de Lange, 2000), in the Netherlands PR practitioners spend a great deal of time in activities related to lobbying.

The organization decides whether the lobbying activities will be entrusted to their PR practitioners, or to outsource, people of specialty in lobbying. These people are called lobbyists. Lobbying is a specific activity, so often successful PR practitioners prefer to leave this business to lobbyists. In addition, an unprofessional approach to lobbying activities, can be expensive and / or counterproductive. According to (Đorđević, Bešić, 2005), only the largest organizations can independently lobby in an effective way for their interests.

For these reasons, it often happens that organizations entrust this work to lobbyists. Lobbyists represent certain views at politicians and civil servants, in order to influence the content and timing of laws and regulations. Lobbyists do so in accordance with the interests of the organization that hired them.

Lobbying can be done openly or secretly, directly or indirectly (Verčič, Tkalac Verčič, 2012). Lobbying is often done informally, in closed circles. However, lately, lobbyists a significant part of their efforts direct at media relations, to ensure that the problem occurs before the relevant politicians and civil servants, and to the media that they prefer (Davis, 2005). In this way, a public opinion is created for a decision that is in the interest of the organization. This process can be gradual or accelerated, depending on the situation and the interests of the organization. Here again, there can be seen the connection between lobbying and public relations.

PREREQUISITES OF A SUCCESSFUL LOBBYING

Lobbyists have a main task and that is to "win" the decision makers (government member, a member of parliament, a certain minister etc.) in favor of the organizations represented. To succeed in this, it is necessary to comply with the five basic principles (Filipović, Kostić, Prohaska, 2003):

1. To speak the truth. If only one doubts the veracity of certain facts, shaken or lost trust is difficult to regain.
2. Never promise more than you can accomplish. There is a similar situation here as at the previous principle.
3. It is necessary to know to "listen" to understand exactly what is "heard." Lobbying is implemented with the use of "political language", which often contains a diplomatic tone and balanced, stylized phrases, implied politeness and others. There are many phrases in "political language" that indicate a desire to help, but does not provide explicit support. Because sometimes it may seem that the decision maker has accepted all lobbyists seeking, and that it is not really so. Therefore, lobbyists must have some experience in order to distinguish this situation.
4. Cooperation with personnel decision-makers. Lobbyists must not neglect the exercise of trust and cooperation with other staff personnel, for example, in some ministries, political parties and like. Some of these people have important functions, participate in decision-making can have significant powers, influences and others.
5. Avoid surprises. Politicians have a need and want on time to meet with all available data. Surprises are for them undesirable and stressful.

These principles are simple, but if a lobbyist does not comply with only one of them, there is very little chance to achieve their goals. In addition to the basic principles for successful lobbying there are some important rules:

- Lobbyists must understand the position of the decision maker.
- Lobbyist have to respect the views of decision-makers.
- Lobbyists should know the politicians and to use existing contacts.
- Lobbyist should promptly identify the individuals and groups who are not on his side and find the appropriate solutions in this regard.
- Communication with decision-makers should be well planned and its flow should be controlled.
- Communication should be concise and clear.

- The lobbyist must be polite, communicative, friendly, respect the time and the needs of decision-makers.
- Each specific case of lobbying must have the consent and support of the public (connection with public relations).

From the above mentioned it can be concluded that being a lobbyist is not easy. Lobbyists should be a person who has: determination, courage, and extreme desire for success, multidisciplinary knowledge and views, a gift for listening, ability to adapt to various situations, the ability to convey complex messages. Therefore, it is a logical assertion that success depends at lobbying 20% of the problems and circumstances, and even 80% of the lobbyists, ie, his skills and abilities (Filipović, Kostić, Prohaska, 2003).

More broadly, it is important for the organization to act openly, especially in relation to the state administration, government experts, political officials, and members of different political groups. It is desirable that they are invited to visits to the organization to become familiar with the operations of the company, development plans, corporate social responsibility and others. If the organization does business in a foreign country, it is preferable to present the cultural and historical heritage of the country, to stand in agreement with the interests of the host country, contributing to the development of the economy of the host country, to enable visits to his country, to provide the necessary contacts and others.

At the same time, one should be cautious, because all of these activities are not lobbying. Lobbying does not include: casual conversations over coffee at the premises of the Government, kind invitations to receptions, giving gifts (in extreme cases of bribery), seduction, flirting, etc.

ETHICAL AND LEGAL ASPECTS OF LOBBYING

When lobbying some questions arise: is lobbying, in general, ethical? On this question, we can give a simple answer: yes, lobbying is ethically right, if ethically implemented. According to (Black, 2003), lobbying is, if it is conducted in a fair manner, a very important part of connecting with Parliament and should play a significant role in many programs of public relations. Lobbying is legitimate only if it is in accordance with accepted standards of behavior.

Lobbying is included in all democratic processes, and its nature is determined by the type of parliamentary and political system. In some cases, lobbying is an activity that involves informing the public administration and politicians about the effects of legislation passed. Then lobbying is not only an act which is conducted on behalf of an organization, it becomes an important factor in the service of general public interest.

According to (Verčič, Tkalac Verčič, 2012), many countries in the world recognize the growing importance and influence of lobbying. These states make laws which legally regulate lobbying. Putting lobbying in the legal framework provides the establishment of certain rules, boundaries and ways of functioning of lobbyists and organizations that hire them. The USA was the first country in the world that has passed a law on lobbying in 1935. Germany did so in 1951, Canada in 1989, and the European Parliament in 1996. After 2000, there was an accelerated legal regulation of lobbying, especially among European countries.

CONCLUSION

Lobbying is a very important activity of public relations. Lobbying is often the difference between a successful and unsuccessful implementation of a business project. Lobbying is often entrusted to professional lobbyists, since this complex and specific tasks can hardly be done in a quality manner by

PR practitioners. A lobbyist must possess certain qualities as a person as the success of lobbying depends largely on his own skills.

Questions about ethics in lobbying activities is frequently asked. It can be concluded that lobbying is unethical, if it is conducted in an ethical manner. In the developed countries, lobbying is legally regulated, and that is the basis for ethical implementation of these activities. In any case further increased importance of lobbying as public relations activities should be expected.

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STRATEGY FORMULATION UNDER THE INFLUENCE OF THE FORCES OF COMPETITION

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ABSTRACT

In this work, the subject of the research is defined starting hypothesis that the formulation in the form of answers to the question: What factors - competitive forces shape strategy? Formulating strategy basically boils down to the competition. Competitors everyone - customers, suppliers, potential new entrants in the market and the producers of substitutes - and depending on the branches, may be more or less important or active. The first primary determinant of the profitability of a company's attractiveness of the economic system to which it belongs. Competitive strategy must be developed from a basic knowledge of the rules of competition, that determine the attractiveness of an economic system. The ultimate goal of competitive strategy is the application, or - ideally - change these rules in favor of the company. In any economic system, regardless of whether it is domestic or international and whether products or services, the rules of competition are embodied in five factors of competitiveness, the five basic forces: the entry of new competitors into the market, the threat of substitution, bargaining power of the buyer, bargaining power of suppliers, and rivalry among existing competitors. The joint strength of these forces determines the ultimate potential of an activity to make a profit.

Key words: market, strategy, competition, profit

INTRODUCTION

Competition in a branch depends on the following factors that determine the competitive power: the entry of new competitors into the market, the existence of substitutes, bargaining power of buyers and suppliers rivalry among existing competitors. [1] Accumulated power of these factors define the final possibility in some areas and industry sectors to achieve positive financial performance. It ranges from intense in industries such as manufacturing tires, cans and steel, where no company achieves spectacular returns on investment, to moderate in industries such as oil exploitation and production of proper equipment, or production of soft drinks and cosmetics where there is room for a fairly high yields. However, as the force, taken all together, the weaker, the greater the possibility of achieving above average operating results. Whatever the joint strength of competitive forces, the goal of corporate strategy is to gain a position in the industry in which the company can best be defended by them, or to influence them so to act on her behalf. The joint strength of these forces can be more than obvious to all opponents, however, to make them come to an end, the strategist must delve into the matter and to individually analyze their sources. For example, why certain branches sensitive to the emergence of new competitors? What determines the bargaining power of suppliers? Knowing these basic sources of competitive pressure provides a basis for strategic action plan. These sources indicate the most important advantages and disadvantages of the company, affecting the positioning of the company in its field, indicate areas where strategic changes can best be paid and highlight where developments in the industry promises to be the most important in good and in the bad sense. The above five factors that determine the profitability of the segment, because they influence the prices, costs and investment required, ie, the elements of the return on investment. The power of each of the five factors that affect competition depends on the structure of the segment, ie. of the basic economic and technical characteristics. When the five factors - the force competitiveness and their structural

determinants depended exclusively on the internal characteristics of the segments, competitive strategy would be largely based on the excellent choice of the segment and a better understanding of these five factors of competitors. Although both of these things are certainly important, and in some business segments represent the essence of competitive strategy, the company usually is not a prisoner of the structure of the segment to which it belongs. Their strategies and the company itself may affect factors of competitiveness. If it is able to shape the structure, the company can fundamentally change the attractiveness of the segment for the better or for the worse. Just so many successful strategies have changed the rules of competition. [2] In each economic segment not all five factors-force will be equally important, and specific factors, characteristic of the structure of the segments, each will vary. Any commercial segment is specific and has its specific structure. Framework that includes all five factors to firms that despite its complexity identify and select those that are most important for the competitiveness of the economy in its segment, as well as to identify strategic innovations that will largely improve its profitability, but also the profitability of the business segments. The aforementioned framework does not eliminate the need for finding new creative ways to compete in one business segment. He actually directs the creative energy managers on those aspects of the structure of the segments that are most important for long-term profitability. This time frame usually increases the possibility of discovering desirable strategic innovation.

STRATEGY AND ORGANIZATIONAL STRUCTURE

Strategies that alter the structure of the segment can be double-edged sword, because as you can to improve them, the company can destroy the structure and profitability of the segment. For instance, new product design that breaks through the barriers to market entry, or increases the uncertainty of rivalry, could undermine the long-term profitability of the segment, despite the driver of these changes at the beginning of a greater profit. Similarly, constantly lowering prices may jeopardize differentiation. For example, in the tobacco industry generic cigarettes pose a serious potential threat to the structure of the segment. Generic products may increase the sensitivity of customers to price, to encourage competition to raise prices and to reduce the cost of advertising barriers to entry for new firms to the market. Companies often make strategic decisions without thinking about the long term consequences for the structure of its business segments. They see improvement in its competitive position if the move proves successful, but fail to predict the outcome of the reaction of competitors. If you support any moves by major competitors cause destruction of the structure of the segment, they will be damaged. Such "busters" business segment are usually second-class companies that are trying to overcome their greatest competitive disadvantages for companies that are faced with serious problems and desperately trying to get rid of them. The ability to shape the structure of the segment imposes a special responsibility to companies that are leaders in their respective business segments. Activities leaders can have a disproportionately large impact on the structure, because of their size and impact on customers, suppliers and other competitors. At the same time, their large share of the market guarantees that what has changed is the overall structure of the segment, whatever it is concerned, the impact on themselves. Therefore, leaders must constantly balance between its competitive position and performance of the segment as a whole. They often achieve more when taking measures that enhance or protect the structure of the industry, but only when gaining weight greater its competitive advantages. This principle was followed by leaders such as Coca-Cola and Kembels sups. [1]

THE THREAT OF NEW COMPETITORS

New competitors entered the industry in new capacity, the desire to gain market share, and often substantial resources. Companies that diversify or to other markets through acquisitions entering into a new activity or often use their resources for causing the need, as it once did SIMPO chocolate "Simka". The seriousness of this threat depends on the existing barriers and reactions of existing competitors that the new company can expect. If that entry barriers are high, a new company can expect severe retaliation by established competitors, it will not be a serious threat of the emergence of new competitors. There are six major entry barriers:

1. Economies of scale. It deters entry by interested forces or to engage in large scale or to accept inferiority in the sphere of costs. Economies of scale in production, research, marketing and services probably represents the greatest barrier to entry in the manufacturing example. computers. Economies of scale can act as a barrier in the distribution, using sales staff, funding and almost all aspects of the business.

2. Product differentiation. Identification of the brand creates a barrier by forcing new company on a huge investment in order to overcome customer loyalty. Factors affecting the identification brands are advertising, customer service after the purchase, the primacy of the sector and specialty products. This is perhaps the most significant barriers to market entry free alcohol drinks, drugs that are sold without prescription, cosmetic products, investment banking and public accounting. In order to disassociate themselves high fences, beer manufacturers identify brand enhancing economies of scale, which is used in the production, distribution and marketing.
3. Requests for capital. The need to invest significant funds that could compete creates a barrier to entry - especially when it is necessary capital expenditures that can not be compensated for, say, advertising or research and development. Capital is essential not only for fixed assets but also for lending to customers as well as for supplies and absorb initial losses. While larger corporations have the financial resources necessary for entry into almost every activity, huge capital needs in certain areas, for example in the production of computers, or in the extractive industry, limiting the number of potential new companies.
4. Cost inferiority regardless of size. Already established companies can enjoy cost advantages that their potential competitors are not available, regardless of size or economies of scale. These benefits may arise from the effects of the learning curve (and the curve of her closest experience), patented technology, access to the best sources of raw materials, purchased the property at prices before inflation, government subsidies and favorable location. Cost advantages can sometimes be legally provided as in the case of patents.
5. Access to distribution channels. A new competitor must, of course, to provide for the distribution of its products and services. For example, new food product must be squeezed out from the shelf at the supermarket the other similar products - any price, either through promotion, intensive sales activities or otherwise. What are the wholesale and retail channels, and more limited as they took over existing competitors, it will obviously be difficult and enter the relevant activity.
6. State policy. Entering the individual branches of state may limit or even prevent using instruments such as requirements to hold a license, or restricting access to raw materials. Regulated activities such as road transport, alcoholic beverages and forwarding services, are familiar examples;

The state may also play an important indirect role by influencing the entry barriers through instruments such as environmental standards in relation to the protection of water and air, and regulations in connection with security.

CURVE EXPERIENCE AS ENTRY BARRIERS

In recent years about the experience curve was discussed as the most important element of the industrial structure. In line with this concept, the unit cost in many processing industries, as well as some service sectors, reduce parallel with the acquisition of "experience" or special cumulative production volume of the company. Causes of reducing unit costs lie in the combination of several different elements, such as economies of scale, learning curve for labor and capital for labor substitution. Reduction in expenses creates an entry barrier because the new competitors who do not have "experience" faced with higher costs than the current - especially when it comes to the manufacturer with the largest market share - and it was not easy to catch up with existing competitors.

Proponents of the curve experiences that emphasize the importance of maximizing the entry barriers at achieving the leadership position in the market and recommend an aggressive action for its implementation, for example, a reduction in price in anticipation of reducing costs to economies of scale. If costs are reduced thanks to the company's increasing reap the benefits of economies of scale because it uses more efficient automated equipment and vertical integration, then the cumulative volume of Preparation irrelevant to its relative cost position. Here's cheapest producer of one that has the largest, most efficient plants. A new competitor could easily be more efficient than their more experienced colleagues - if you built a modern drive, will have to try to catch up. Does the cost reduction that accompanies the cumulative volume raises entry barriers depends on the reason for this decrease. If costs are reduced thanks to the technological advancements that are well known in the industry, or due to the development of sophisticated equipment that can be copied or buy from a vendor, the experience curve does not represent an entry barrier - in fact, new or less experienced competitors can gain a cost advantage in relation to the leaders. Since it is not burdened by large investments in the past, the new, less experienced competitor can buy or copy the latest and cheapest equipment and technology.

In the event that the experience can be patented, the leaders will hold a cost advantage. However, new competitors to reduce costs may be required less experience than needed leaders. All this indicates that the fault is not safe experience barriers where you can build a strategy.

There are several important elements for determining the appropriateness of those strategies based on the entry barrier, which provides fault the experience:

- Size of the barrier depends on how much they cost, compared to other areas - such as marketing, sales and innovation, significant competition.
- Barriers may be completely neutralized if any of the product or process innovation that lead to a fairly significant technological change, creating a completely new experience curve. New competitors can skip the leaders in the industry and to rely on the experience curve, to which these leaders with regard to their position, they can easily be reoriented.
- If your strategy builds on the experience curve more than one strong company, the results can be almost fatal. Then when you only have one competitor that implements such a strategy, it is possible that the growth of the sector to be stopped, and that the prospects for reaping the fruits of victory, but many more exist.

NEGOTIATING POSITION OF CUSTOMERS AND SUPPLIERS

Their bargaining power in relation to other actors in an industry suppliers can express so they increase prices or reduce the quality of services and products that you buy. Strong suppliers thus can reduce the profitability of activities if not able to compensate for the increase in costs through their own prices. By raising prices, manufacturers concentrate for non-alcoholic beverages contributed to the erosion of profitability of companies that were bottled, because these are faced with tough competition concentrate powder, fruit and other drinks, had little space to adequately raise their prices. Customers also can dampen prices, to demand better quality and better service, and to provoke conflict within competitors - all at the expense of profits in the industry. The power of each important group of suppliers or customers depends on the characteristics of the market, as well as the relative importance of sales in the industry, or purchase from it compared to their overall business. The group of suppliers is strong in the following cases:

- When it is dominated by a few companies and when its concentration is higher in comparison to the sector where sales.
- When its product is unique or at least differentiated, or if the costs imposed reorientation. The cost of re-orientation are fixed costs with which customers face when they change suppliers. They arise, inter alia, because the customer's specifications such that they "bind" for certain suppliers, or because the buyer has invested heavily in specialized ancillary equipment, or training for the use of the supply of equipment (when it comes to computer software), or the customer's production lines associated with the supplier's production facilities (as in the case of some manufacturers of packaging for beverages).
- When a supplier is not required to compete with other products to sell certain activities. For example, the competition who will be able to sell products manufacturers bends cans - manufacturers of steel or aluminum producers - limits the power of suppliers.
- When presenting a credible threat that could integrate forward and start operating in the industry it belongs to a certain activity.
- When the sector does not represent a significant customer for a group of suppliers. If the sector important customer, the supplier will be the fate of her tightly bound, and will therefore want to protect the reasonable prices and providing assistance in activities such as research and development and lobbying.
- The group of buyers is strong in the following cases:
- When concentrated, or when buying huge quantities. The big buyers are particularly strong power if the branch typical high fixed costs - as is the case in the production of metal packaging and chemicals in bulk, or in the processing of corn - which raises the stakes in conjunction with the full usage of capacity.
- When the products they purchased from the sector in standard or undifferentiated.
- When buying products that represent the sector component of its products, as well as a significant part of its cost. Customers will probably insist on low prices, and buy selectively. When a product that sector sales slightly participate in the cost of customers, they will be much less sensitive to price.
- When you realized a small profit, which creates a strong incentive to reduce the cost of your purchases. However, most profitable customers are usually less sensitive to prices.

- When the product of the sector is not significant for the quality of the customer's products or services. When the quality of customer products greatly affects the product of the sector, customers are generally less sensitive to price.
- When customers represent a credible threat in terms of backward integration capabilities, which enabled them to produce products of that industry. "Big Three", the three largest car manufacturers, as well as close-car buyers, often in negotiations threatened to do something themselves to produce. However, the reporting sector can sometimes threaten to customers that will integrate its members in advance.

Substitutes

By determining the ceiling price that can be achieved, substitutes, as products and services, limiting the potential of one branch. If you can not increase the quality of the product, or that in some other way (eg marketing) is differentiated, the branches will have problems with income and growth. What is attractive substitution relationship in connection with the behavior of prices that offer substitutes, the possibility of profitable growth in the sector, clearly, will be more limited. Sugar producers, faced with massive selling corn syrup, high fructose, or substitutes for sugar, it is now faced with this. Substitutes not only limit profits in normal times, but they also reduce the possibility that at the time of the rise of activity achieved extraordinary profits. In 1978, the manufacturers of insulating material of glass wool have experienced unprecedented demand due to high energy prices and a harsh winter. However, the possibility that activity to raise prices thwart a myriad of substitutes - as they were insulating materials made from cellulose, rock wool and polystyrene. These substitutes will likely become even greater force when the current production capacity expansion manufacturer of insulation material of glass wool become insufficient to meet demand. [3] The biggest strategic substitutes deserve attention when (a) are subject to trends that promote substitution ratio price behavior of substitutes and their impact in relation to the product sector, or when the (b) product industries that generate high profits. Substitutes often quickly come into play when something happens in sectors that produce them intensifies competition and reduce prices or improve results.

The rivalry among existing competitors

The rivalry takes place as known maneuver in order to gain a position through tactics such as applying pricing, new product launches and the "war" commercials. Intense rivalry is associated with the presence of several factors: [4]

- There are a large number of competitors of the same size and strength.
- Growth in the sector has been slow, leading to a fight for market share.
- The product or service is not differentiated and do not impose costs reorientation, which connects buyers and protect one of the actors from the attacks of others to his clients.
- Fixed costs are high or the product is perishable, which strongly encourages the reduction in price.
- Exit barriers are high. Barriers to exit from the market, as a special reason for the commitment of management to a particular type of work, forcing companies to continue to apply - regardless of the fact that on your investment is low or even negative returns.

Excess capacity is still functional, and the profitability of successful competitors becomes compromised because he interfered unsuccessful. If all branch suffers from excess capacity, it is possible to seek help from the government - particularly if present foreign competition. As the sector matures, changes and their rate of growth, leading to a reduction in profits, and often to the elimination of some companies. In the early seventies, when the industry recreational vehicles flourished, almost every manufacturer has been successful; However, subsequent slower growth reduced the high yields all but the strongest, most notably weaker companies. Same story on profits appeared in other sectors - manufacturing of sports equipment is just one example.

Strategy Formulation

The strategy defines the basic direction and manner of realization of objectives and achieve the purpose of the organization. Formulating a strategy involves finding alternative solutions (strategy) and selection of the best strategy, ie. Optimal strategies - the best in the circumstances, which will be implemented. It is necessary to emphasize that the strategy formulation continuous process, a process that is carried out in accordance with the dynamics of the relevant requirements (externally or internally conditioned). The successful formulation of strategic options involves respecting all relevant factors, especially the vision, mission and objectives, and with a knowledge obtained SWOT analysis, on the other hand. In formulating a strategy, managers should devote special attention to the needs of consumers. And not only through the establishment of such intimate communication with consumers, but also through the creation of common values that are important for both partner page. Implementation of the strategy is the process of implementation of selected strategic options. This process, as its result, has a strategic change. Under the strategic changes imply changes in all the performance of the organization they represent an adequate response to the challenges of the environment. According to the Model "7-S" [5], which has created a consultancy organization McKinsey, strategic change involves a change in the following variables: Structure (structure), Strategy (Strategy) Systems (systems), Style (Style), Staff (Staff) Skills (ability) and Shared Values (shared values).

CONCLUSION

The strongest competitive factor determines the profitability of a business, and it is therefore of the utmost importance for strategy formulation. For example, even a company with a strong position in the industry that do not jeopardize the potential competitive will achieve only low yields when faced with better or cheaper substitute - as well as to learn leading manufacturers of vacuum tubes and coffee maker. In such a situation, coping with the substitute becomes a strategic priority number one. Of course, in each activity are important for the establishment of competition other forces. The production overseas tankers most important force presumably represent customers (leading oil companies), while in the tire industry to not only powerful customers from among car manufacturers, but also fierce competitors. In the steel industry the most important forces are foreign competitors and substitutes. Each branch has its basic structure, or a series of fundamental economic and technical characteristics that encourage these competing forces. If you want to position the company so it works best within their industry, or to the environment is affected in its own favor, strategists need to understand what drives a certain environment. Modern market requires enormous efforts to realize a competitive advantage. The fundamental goal of modern business is to achieve business excellence and achievement world-class products and services. This can be achieved only on the basis of continuous improvement of quality of operations of the company, which is based on increasing the productivity of labor and knowledge of each person employed in the company. Continuing to improve productivity of knowledge work and the basic imperative of modern economy and certainly the most important factor in the competitive struggle enterprises in the modern market. This attitude of competition refers equally to service activities and the sale of products.

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THE IMPACT OF SOCIAL MEDIA ON PUBLIC RELATIONS

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ABSTRACT

Media plays a very important role in public relations. Media is present in everyone's daily lives throughout the whole world. Nowadays, when the marketplace is more challenging and competitive an effective media relations effort is crucial for success. The fast growth of new media and the impacts of media are present, particularly via the Internet, interactive and social media.

Key words: Social media, public relations, communication with public.

INTRODUCTION

According to Kotler and Armstrong (1996), public relations, have the task to build good relationships with different audiences, to build a good image of the organization and resolve problems caused by unfavorable stories, rumors and events. Public relations is an activity that is aimed at establishing, maintaining and developing an understanding of the different segments of the public. It is a communication activity of the organization with the aim to ensure public confidence and create a positive and favorable image of the organization in public (Nikolic, 2012).

Media, on the global level, experienced significant growth in recent decades. New media were introduced and existing ones improved. This has contributed to the enormous technological development, which is reflected in the development and integration of telecommunications and information technologies. A very significant moment was finding satellites: information through artificial satellites orbiting the Earth is becoming available throughout the world. Electronic media, based on high technology, enable immediate transmission of information, which once traveled for years or months. The system of mass communication is seen as the most powerful and most universal institution of the twentieth century (Nikolić, 2012).

Social media is considered to be fast, cheap and interactive channel for reaching targeted audiences. In public relations, social media have been warmly welcomed because they make it possible to communicate directly with public groups, bypassing the filtering processes of journalists and other gatekeepers (Kent, 2013).

PUBLIC RELATIONS AND MEDIA

The media create public opinion. According to Davis (2007), media provide a framework for the social reality, they inform and establish values. The same author claims that people form their opinions and

define their own views on whether or not something is socially acceptable on the basis of messages from the media. PR people have the ability to frame situations, attributes, choices, actions, issues, responsibility and news (Hallahan, 1999).

Media as means for transferring messages can be diverse. From the standpoint of public relations and marketing communications, primarily referring to the mass media are: (Nikolic, 2012)

- Daily newspapers.
- Magazines (magazines and the trade press).
- Radio.
- Television.
- Outdoor advertising.
- Internet.

At the use of media, public relations, have the following three challenges: (Gordon, 2011)

- PR practitioners must constantly analyze the media in order to find the best way to reach the target public.
- PR practitioners need to attract media attention by providing compelling, important and interesting information at the right time and in the right way.
- PR practitioners need to be sure that their messages are presented to the organization in the desired manner and that those messages contribute to achieving the objectives of the organization.

In the framework of cooperation with the media, it is desirable to take into account the following: (Black, 2003)

- Always provide accurate information.
- Respect deadlines.
- In some situations, it is useful to be funny and awkward to turn the subject into a joke.
- Take care about potentially "inconvenient" questions and predict the answers to these questions.
- PR practitioners should have some knowledge in the area in which the organization works.
- It is preferred to avoid not answering questions. Also, it should not be answered by "no comment".

Technology has changed the world and facilitated the building of relationships with media and interaction with a wider audience than ever before. The digital world has led to changes in communication within and between organizations and their various publics. Social media have changed the way organizations communicate with their publics (Wright & Hinson, 2009). The World Wide Web is now becoming an important communication tool on which media relations can be effectively exercised.

The Internet is much more powerful and complex media from traditional media (Brown, 2009). It is distinguished by its technology, customers and services. Internet becomes a medium on which the organization relies on: its operations and public relations. Most organizations have their own websites where people can find information about the organization, its products, services, and various news. An interesting and well designed web site can contribute significantly to the organization's business performance, but also provide assistance in realization of a PR program.

PR practitioners need to follow the development of new technologies and must be able to adapt to new trends and to use them to communicate with target audiences. This is especially related to the Internet, web sites, emails, blogs, and the development of social networks such as Facebook, Twitter, MySpace and others (Nikolić, 2012).

SOCIAL MEDIA

According to Dykeman (2008) social media are the means for any person to: publish digital creative content; provide and obtain real-time feedback via online discussions, commentary and evaluations; and incorporate changes or corrections to the original content. New media enables faster flow of communication, it connect people give them voice and video. Media encourages people to discuss on the topic of common interest. New social media enables a "global conversation" in which everyone can participate, exchange opinions, knowledge, ideas without time and geographical constraints, circumventing the traditional methods of communication (Locke, Levine, Searls & Weinberger, 2000). These technologies are evolving so fast, that research about them is always playing catch-up. (Verčič, Tklac Verčič, Sriramesh, 2015).

A population of 2710 professionals from 43 European countries working on different hierarchical levels, both in communication departments and agencies across Europe were surveyed as part of a larger transnational online survey (Moreno, Navarro, Tench, Zerfass, 2015). The results of the aforementioned study show that practitioners with a high level of usage of social media give more importance to social media channels influence of social media on internal and external stakeholders and relevance of key gatekeepers and stakeholders along with a better self-estimation of competences.

Planning the behavior of the organization in times of crisis, is the basis for successfully overcoming crises and its consequences. This planning includes the preparation and implementation of procedures to prevent crises or mitigate the effects of it (contingency plan). (Nikolic, 2012). Crisis planning is neglected in many organizations. This can have significant consequences, which become visible only when it is too late. According to some data (Wilcox, Cameron, 2009), approximately 50% of organizations do not have a contingency plan. PR must undertake extensive and long-term activities related to the prediction of crisis situations, behavior and actions during the crisis and after the crisis. Of crucial importance is honest, fair and open access at any time. There are papers dealing with social media usage in crisis situations. (Graham, Avery, Park, 2015; Ott, Theunissen, 2015). The conclusion is, that social media is nowadays very important in crisis situations.

PR AND DIRECT COMMUNICATION WITH USERS

One of the most important sources of influence in shaping public opinion is direct communication with the users of a product/service. According to Grunig and Hunt (1984) the basis of PR excellence theory is the "two-way symmetrical model". This model is based on two-way communication, which represents the organization's own interests, but also those of the public. Among the various digital technologies, social media have gained a particular relevance in the field of public relations as the "new" channels, not only for communicating to and with publics and stakeholders, but for nourishing relationships with them (Verhoeven, Tench, Zerfass, Moreno, & Verčič, 2012). The dominant discourse in public relations is that using social media is good, because social media can help organizations in developing dialogs and relationships with publics and in engaging with them (Valentini, 2015). In 2009, PR Week, considered by many to be the nation's most dominant public relations trade publication, changed its weekly print edition into an online format, although it does produce a printed magazine each month. Social media have been praised for their capacity to enable more symmetrical, two-way communications between organizations and their publics (Coombs & Holladay, 2014; Macnamara & Zerfass, 2012)

The eighth annual survey measuring how social and other emerging media are being used in public relations practice found the use of these new media has continued to increase each year. Results also indicate those who practice public relations believe social and other emerging media continue to improve in terms of accuracy, credibility, honesty, trust and truth telling. The time public relations people spend with blogs and other social media during an average workday continues to increase with 35 percent of our 2012 respondents spending at least 25 percent of their average workday with these new media while 15 percent devote more than half of their working time to activities involving these

new media. As was the case in previous years, respondents continue to consider social networks – especially Facebook and LinkedIn – the most important social media in the overall communication and public relations efforts of their organizations (or their client’s organizations) followed (in this order) by micro-blogging sites such as Twitter, search engine marketing, video sharing sites such as YouTube, blogs, electronic forums and podcasts (Wright & Hinson, 2013). Table 1 presents responses to a question about social media usage of public relation practitioners.

Table 1: Responses to these questions: On average, approximately what percentage of your time working in public relations is spent with social media? (Wright & Hinson, 2013)

	None	1%to 10%	11% to 25%	26% to 50%	51% to 75%
2009	7%	48%	30%	11%	4%
2010	4%	38%	34%	17%	7%
2011	3%	36%	34%	19%	7%
2012	3%	29%	34%	21%	10%
2013	1%	30%	34%	16%	14%

CONCLUSION

The emergence and increasing popularity of social media have changed the practice of public relations. Social media offer numerous opportunities for public relations practitioners to interact with a wide range of stakeholders. Dealing with digital/social/mobile media is among the top three concerns in practice (Zerfass, Tench, Verčič, Verhoeven, & Moreno, 2014) and positions in jobs related to these media will be among the drivers of new employment in public relations in the US at least until 2022 (Bureau of Labor Statistics, 2014). The conclusion is that, in public relations using social media is a good thing for the organization, because social media help organizations in developing dialogs and relationships with publics and thereby engage them.

It is of high importance to implement social media training in organizations. This training should include not only a focus on how to use certain tools, but also how to determine what tools to use and how to effectively measure their use. Companies must be prepared to efficiently navigate through the changes of social media tools as each day brings new forms of social media.

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THE RELATIONSHIP BETWEEN PUBLIC RELATIONS AND FIRM'S EFFECTIVENESS

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ABSTRACT

In today's business environment the organizations' effectiveness depends upon the well organized and strategic managed function of public relations. The strategic planning of public relations comprises defining the purpose and goals of communications program, identifying target publics and determining the strategies. In our article we have examined the influence of public relations on the effectiveness of organization. Our article is divided into theoretical and empirical part. We present the public relations variables by which the company's effectiveness is affected in the theoretical part of our research. The public relations are oriented to reach the organizations goals and to keep the good relationship and comprehension between the company and its strategic publics. On the base of primary data collected in the sample of Slovenian companies in the empirical part of our research we have explored the relationship between the public relations factors and the company's effectiveness

Key words: Business negotiations, the negotiation process, negotiation tactics, negotiators characteristics, Slovenian negotiators

INTRODUCTION AND THEORETICAL BACKGROUNDS

Any company can develop a public relations program regardless of their public relations budget or staff size. The key to implementing a successful program is to incorporate measurement and analysis from the beginning. Overall measurement of public relations programs should provide a holistic view of public relations against corporate goals and objectives. The company's effectiveness as a philosophy and as a result of communication activities has been explored by innumerable authors (McArthur and Griffin, 1997; Schultz and Kitchen, 1997; Low, 2000; Pickton and Broderick, 2001). Company's effectiveness and related performance is a robust and ongoing necessity to business. Have companies become so good at implementing public relations to lead to company's effectiveness? Moreover, an even more important issue concerns the ability of public relations to interface effectively with key stakeholders who could impact on organisational performance.

Public relations make an organization more effective when it identifies strategic constituencies in the environment and then develops communication programs to build long-term, trusting relationships with them. Participation in strategic management provides the integrating link for public relations to enhance organizational effectiveness. To provide its unique contribution, however, public relations must be separate from other management functions. However, communication programs should be integrated or coordinated by a public relations department; and that department should have a matrix arrangement with other departments it serves (Pieccka, 2008).

They have always known that public relations in the form of trade and business media relations, case histories, thought-leadership campaigns and industry conferences – deals effectively with hard news and detailed information. What is new, however, is the emerging power of public relations to drive the marketing communications machine, especially when the core message is value. Smart marketers will examine how their competitors publicize their accomplishments, what messages they deliver, which

statistics they cite and which influences advocate their positions, and then incorporate that information into their public relations strategy (Shadle, 1998).

PUBLIC RELATIONS AND FIRM'S EFFECTIVENESS

Lots of different systems have been invented for competitive reasons, each claiming to be a better form of public relations measurement. Public relations program evaluation plays a significant role in demonstrating effectiveness (Dozier, 1990; Fairchild, 2002), and organizational impact (Radford and Goldstein, 2002). As there is no method for measuring effectiveness, practitioners select among an array of different methods and models to demonstrate their effectiveness. Evaluation models can be categorized into those focusing on a specific process of public relations such as media evaluation, or those accommodating an integrated planning approach or impact model of public relations (Xavier et al., 2005).

Other public relations performance measures can derive from how is public relations managed. Senior public relations professionals participate in the strategic decision processes of an organisation and counsel other managers participating in that process about the consequences of potential decisions on publics. In effect, they bring the voices of publics into strategic decision making by researching and listening to publics before decisions are made (Watson, 2011). Excellent public relations departments then strategically plan, administer and evaluate public relations programmes to communicate with these publics, both before and after management decisions are made, so that the organisation can build and maintain good, long-term relationships with them (Grunig and Grunig, 2002).

Excellent public relations units do not de-emphasise the traditional technical skills of public relations, such as writing and preparing materials for the media and for publications, writing speeches, working with the media or developing audio-visual materials and websites. Public relations departments must serve a managerial role as well as a technical role in their organisations. Public relations units play an important role in the strategic management of their organisations. They identify critical publics who affect or are affected by management decisions and who can create issues and crises for the organisation (Grunig and Grunig, 2002).

James and Larisa Grunig (1998) have developed a list of the criteria that must be satisfied within in order for public relations to remain excellent within an organization: (1) the public relations functions should be located in the organizational structure so that it has ready access to key decisions makers of the organization, so that it can contribute to the strategic management process of the organization; (2) all communication programs should be integrated or coordinated by the public relations department; (3) public relations should not be subordinated to other departments such as marketing, human resources, or finance; (4) public relations departments should be structured horizontally to reflect strategic publics and so that it is possible to reassign people and resources to new programs as new strategic publics emerge and other publics cease to be strategic.

EMPIRICAL FINDINGS

The main research instrument for empirical investigation, e.g. a questionnaire, was developed on the derived theoretical basis. The covering letters with questionnaires were mailed to the corporate directors, marketing directors or director of 1000 the Slovenian enterprises. We choose the convenience sample. The survey was conducted in 2014. A total of 200 useful responses were received and that gave the response rate of 20,0%. The results present in this paper are related to the sample of 200 respondents. The collected empirical data were processed with SPSS 18.0, where the emphasis was given to descriptive statistical analysis. We intend to use the regression analysis and hypothesis testing.

The relevant data of the companies were provided mainly by marketing directors (28,3% of cases), followed by company's directors with 26,3%, members of top managers (18,7%), business consultants (9,6%) and head executives (6,1%). Members of the managing boards, heads of public relations offices and counselling specialists answered in 2,5%. Other respondents appeared in 3,5% of cases. Company size was determined regarding the number of employees. The sample consists of 45,8% small companies, 31,9% middle sized companies and 32,3% of large companies. The companies included in the sample are distributed according to industries as follows. 41% of respondents belong to production oriented companies, 30% of respondents belong to service oriented companies and 24,5% were trade oriented companies. The sample consists of 1,5% of institutions, 0,5% of government organizations and 2,5% of companies chose the answer »other«.

The impact of public relations on company's effectiveness

For each statement of public relations, the average value and the standard deviation have been calculated. Results show that achieved mean scores regarding public relations statements are 4,5 and more, so we can conclude that the respondents agree with statements regarding public relations. Standard deviation results shows, that many scores are on the interval between 1,30 and 2,12 about mean. We suppose that the variability in answers is the result of significant statistical differences among different groups of companies regarding their size.

Table 1: Mean scores regarding statements of public relations

Statements about public relations	Mean scores	SD
Top management of our company has the complete trust in the strategy of public relations strategy of our company.	5,73	1,30
The public relations strategy arises from the corporate business strategy.	5,57	1,30
The control of public relations activities is centralized in our company.	4,79	1,85
The public relations implementation is centralized in our company.	4,88	1,91
The primary function of public relations is to increase the company's reputation.	5,93	1,44
The public relations office takes part in strategic decisions in our company.	4,51	2,12
The public relations office holds a consultation with the managing board or the top management of our company.	5,43	1,98
We are planning all or public relations activities in our company.	4,76	1,92
Public relations manage build and manage relationships with company's strategic publics.	4,90	1,92

Correlation between public relations and company's effectiveness

One of the objectives of the paper is concerned about the correlation between different statement of public relations and company's effectiveness exists. Accordingly, we make the hypothesis as follows:

Null hypothesis H₀: There is no correlation between public relations and company's effectiveness.

Alternative hypothesis H₁: There is a correlation between public relations and company's effectiveness.

The correlation coefficients between 0,300 and 0,700 are considerate that there's a moderate correlation between marketing capabilities and competitive advantage. The test statistic exceeds the critical value so we reject the null hypothesis and conclude that there is a significant correlation between all tested public relations statements and company's effectiveness.

Table 2: Correlation matrix between public relations and company's effectiveness

Correlation		Company's effectiveness
Top management of our company has the complete trust in the strategy of public relations of our company.	r	0,378(**)
	p	0,000
The public relations strategy arises from the corporate business strategy.	r	0,384(**)
	p	0,000
The control of public relations activities is centralized in our company.	r	0,326(**)
	p	0,000
The public relations implementation is centralized in our company.	r	0,225(**)
	p	0,000
The primary function of public relations is to increase the company's reputation.	r	0,263(**)
	p	0,000
The public relations office takes part in strategic decisions in our company.	r	0,222(**)
	p	0,002
The public relations office holds a consultation with the managing board or the top management of our company.	r	0,245(**)
	p	0,001
We are planning all or public relations activities in our company.	r	0,361(**)
	p	0,000
Public relations manage build and manage relationships with company's strategic publics.	r	0,279(**)
	p	0,000

Legend:

** ** Correlation is significant at the 0.01 level (2-tailed).

r = Pearson Correlation coefficient

p = Statistical significance

Because the pair wise correlation is found to be significant the relationship between the variables will be investigated by producing a regression model in the form of a linear equation. The independent variables (public relations statements) have been constructed on the basis of questionnaire items, detecting the distinct potential impact on company's effectiveness. It is important to note that all the variables have been measured on a seven-level Likert scale. For each independent variable, the average value and the standard deviation have been calculated.

We would like to test if is the regression model with one predictor variable (e.g. public relations) significantly related to the criterion variable Y (e.g. company's effectiveness)? We test the equivalent null hypothesis that there is no relationship in the sample between dependent variable and independent variable, but we found significance level at impact of public relations on company's effectiveness. Accordingly to this, the null hypotheses, which we tried to reject by means of regression analysis, could be formulated as follows:

Null hypothesis H₀: There is no relationship between the dependent and independent variables, e.g. The correlation coefficient between the dependent and independent variables equals 0 ($H_0: R_{xy} = 0$).

Alternative hypothesis H₂: There is a positive relationship between the dependent and independent variables, e.g. The correlation coefficient between the dependent and independent variables is significantly higher than 0 ($H_2: R_{xy} > 0$).

For the tested relationship, we selected the regression model with the highest significance, i.e. the model with the significance closest to the significance level of 5%. To investigate the hypothesis, entering all variables in a single block, we found that the proposed model explains a significant

percentage of variance in the company's effectiveness. Table 3 shows that 17,4 per cent of the observed variability in company's effectiveness is explained by the one independent variable i.e. public relations ($R^2=0,174$; adjusted $R^2=0,174$).

Table 3: Relationship between public relations and company's effectiveness

Independent variable (x)	Dependent variable (y)	R ²	Adjusted R ²	Model	(Sign.) α
Public relations	Company's effectiveness	0,174	0,170	Lin: $y = 3,340 + 0,331x$	0,000

Although the empirical results do not provide a high level of support to the conclusion, we believe that the positive relationship between the public relations and its company's effectiveness can be still accepted on the basis of the available data. Such a result is in accordance to the findings of other authors (Spanos, 2001).

Table 4: Results of regression coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3,340	0,273		12,222	0,000
Public relations	0,331	0,051	0,417	6,455	0,000 ^a

^a Dependent variable: Company's effectiveness

Results from Table 4 indicate that we can reject the null hypotheses that the coefficients for customer service (Beta = 0,417, t = 6,455, p = 0,000) are 0. The beta weight (Beta = 0,417) shows that the public relations has a significant influence on company's effectiveness.

Managerial implications

We argued and documented empirically that the public relations had a significant impact on company's effectiveness in the sample of Slovenian companies. Additionally, each company may choose to have a unique public relations strategy but it should consider its unique characteristics when developing successful public relations programs. We identified these characteristics as public relations factors which can affect the company's effectiveness. Knowing these characteristics in developing public relations programs can provide competitive advantages over competitors.

CONCLUSIONS

The purpose of this paper is to provide additional insight into some of the theoretical and managerial issues in designing, implementing, and evaluating public relations programs in the changing environment. We approach this task from the organizational point of view - primarily from the perspective of how company's effectiveness is affected by public relations. The paper consists of two parts: the theoretical framework for the role of public relations for the overall effectiveness of the company and the empirical analysis, based on the primary data collected. This paper presents the results of a study that examines factors of public relations affecting the company's effectiveness in the sample of Slovenian companies.

Next, we discuss the development and the current status of the public relations profession in Slovenia. Public relations consulting have expanded considerably and the largest agencies have grown even larger. Data show that 42,3% of companies are using the outside public relations agencies, and the remaining 57,7% of companies have its own in-house public relations office. Therefore, we add that

an integrated marketing communications program should be coordinated through the broader public relations function.

This study helps to explain the impact of public relations to the concept of company's effectiveness. Managers in respondents companies assessed the public relations issues in their companies and its impact on company's effectiveness. The study confirms that there is an association between all statements of public relations and company's effectiveness. A statistical test supported the hypothesis that a positive relationship exists between public relations and company's effectiveness. With the statistical test we can confirm a positive relationship between public relations and company's effectiveness and we can suggest that public relations influence the company's effectiveness.

A paper provides a perspective of how to analyze the factors affecting the overall company's effectiveness. The guidelines that emerge from this approach should be particularly relevant for public relations managers in industry.

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CAPITAL PRICE OF A CORPORATION

UDC: 330.14:334.72

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ABSTRACT:

Cost of capital serves as a basic indicator of successful composing of capital structure in any corporation. The fixing of cost of capital is important because it enables maximizing the value of corporation and making numerous financial decisions in the corporation. The data of financing costs concerning the existing capital structure are not authoritative for fixing cost of capital, but the date of the costs of additional out of which a corporation intends to be financed. That means it is necessary to determine the cost of own capital, the cost of borrowed capital and the cost of hybrid capital. For this reason, composing adequate capital structure in a corporation presents a very complex problem. This complexity implies not only the need of knowing the cost of every single financing source, but also knowing of the average cost of capital. The aim of this paper is to point to the complexity of certain aspects of fixing the cost of capital process as a criterion for making strategic financial decisions at the corporation level.

Key words: cost of capital, capital structure, corporation.

INTRODUCTION

From the standpoint of financial decision making in a corporation, the cost of capital is given great significance today, since the cost of capital is used as the main indicator of successful composing of the capital structure of each specific company. In fact, in modern business conditions, it is difficult to assume that any company has at any given moment an optimal capital structure that provides optimal financing costs. In pursuit of such an optimum, determining the cost of capital, which is conditioned by a combination of existing and potential sources of financing, is almost an inevitable path to establishing economically rational criteria for financial decision making at a company level. Bearing in mind the fact that there are no free sources of financing in the market economy, it follows that composing a good capital structure of a company is a rather complex problem. This complexity necessitates knowledge of not only the cost of each individual source of financing, but also the knowledge of the average cost of capital of a company. Consequently, in the following presentation, we will try to briefly explain the main set of issues related to both the costs of individual sources of financing and the average cost of capital of a company. In this context, attention will be focused on the consideration of the following set of issues:

- Cost of capital from the issue of ordinary shares
- Cost of accumulated income
- Cost of long-term debt
- Cost of capital from the issue of preference shares
- Average cost of capital.

COST OF CAPITAL FROM THE ISSUE OF ORDINARY SHARES

Theoretically, the cost of capital from the issue of ordinary shares can be defined as the minimum rate of return that a company needs to realize by investing into business in order to prevent a decrease in the market price of shares. From the standpoint of investors in shares, the cost of capital from the issue of ordinary shares could be defined as the return that they expect to obtain by investing in the shares of the company. If we start from the logical assumption that shareholders expect the dividends to grow steadily in the future (model of constant dividend growth), then the rate of return for potential investors, which from the standpoint of the company represents the cost of capital from that source, can be quantified as follows:

$$r_e = \frac{D_1}{P_0} + g \quad (1)$$

where: $D_1 = D_0 (1 + g)$

r_e - cost of capital from the issue of ordinary shares

D_1 - expected dividend in the following year

P_0 - current price of shares

g - dividend growth rate

Based on the given formulae, it is clear that by applying the model of constant dividend growth, the cost of capital from the issue of ordinary shares is estimated according to the current price of shares, dividends per share and dividend growth rate. For companies whose shares are traded on the market, information on the current price of shares and dividends per share can be obtained directly, while the dividend growth rate must be estimated. In addition, it can be estimated based on the dividend growth rate realized in the previous period or based on estimates of the future dividend growth rate. According to this model, the cost of capital from the new issue of ordinary shares is equal to the discount rate (internal rate of return) that equates the present value of the expected dividend per share with the current price of share, assuming that a steady growth in net profit and dividends is expected.

However, it should be noted that the model for determining the cost of capital from the issue of ordinary shares described here has its advantages and disadvantages. The advantages of this model are reflected, on the one hand, in it being simple and understandable, since the return in the form of dividend can be easily estimated, and on the other hand, not all future dividends have to be directly estimated, but it is necessary to estimate the dividend growth rate. However, there are several important disadvantages of this model, namely: (a) the model can be applied only to companies that pay dividends, (b) the model assumes that dividends grow at a constant rate, which is not the case in practice, (c) the model is very sensitive to the estimated dividend growth rate, and (d) the model does not take into account the risk, i.e. there is no direct adjustment to the investment risk, since the current price of shares is used.

COST OF ACCUMULATED INCOME

For many companies a significant percentage of long-term financing sources come from the accumulated net income. That part of the net income cannot be considered a free source of financial assets due to the presence of the opportunity costs of financing. The level of these costs is in fact determined by the dividend which had to be sacrificed by shareholders since the proportionate share of the net income is not distributed but is retained and invested in the company's operations. Similarly, the cost of capital resulting from the accumulation of net income could be defined as the rate of return the shareholders expect to obtain from the ordinary shares of the company. However, the cost of accumulated income is quite difficult to quantify. In addition, there are two basic criteria or approaches as possible solutions to this problem, namely: (a) the criterion of the sacrificed income, and (b) the criterion of external income.

a) According to the criterion of sacrificed income – the cost of the accumulated income is in the functional dependence with the dividend sacrificed by shareholders, since the net income is not paid in full, but is reinvested in the company's operations. In addition, the boundary of the justification of

income accumulation is seen in the equal rates of return that can be achieved on such assets in the company and the rate of return that would be received by shareholders by investing individually in other market alternatives with equivalent risk. If we disregard here the effect of taxation of dividends, then the cost of accumulated income (r_a) in this context is equal to the required rate of return on external sources of owned capital (ordinary shares), which can be expressed in the following formula:

$$r_a = \frac{D_1}{P_0} + g \quad (2)$$

In the previous part, we saw that the cost of capital from the issue of ordinary shares was determined according to the given formula, which means that the same formula can be used to determine the cost of accumulated income. In this regard, it is considered that at such a cost of accumulated income, the market price of shares would remain unchanged. In other words, the market price of shares will remain unchanged if the rate of return equal to the cost of share capital is realized for the invested accumulated income. Consequently, the income which is lower or higher than the cost of capital will result in a decrease, i.e. an increase in the market price of the shares. However, opponents of such considerations point to the fact that the cost of accumulated income (r_a) as determined in the previous way is high, because the income of shareholders from dividends is lower for the amount of tax they have to pay to the dividend received, as well as for the amount of any intermediary commission which they have to pay in the event that the received dividend is reinvested outside the company. Accordingly, shareholders will realize a lower rate of return than (r_a) which at the same time means that those moments will have to be included in the formula we have previously given. After the inclusion of these facts in the mathematical form, we get the following quantitative expression:

$$r_a = \left[\frac{D_1}{P_0} + g \right] \times (1 - T) \times (1 - B) = r_e \times (1 - T) \times (1 - B) \quad (3)$$

r_a - cost of accumulated income

r_e - cost of share capital

T - marginal tax rate paid by the shareholders to the total income

B - percentage of intermediary commission

b) According to the criterion of external income - in determining the cost of accumulated income, a company is based on the criteria of external income. According to this criterion, in determining the cost of accumulated income, a company must consider investment opportunities into available market alternatives with identical risk outside the company. The logic of this approach is that the potential income of the best available external alternative, according to the principle of opportunity cost, must be added to accumulated incomes as the cost of capital. Unlike the previous approach which insists on the income that the shareholders could achieve by excluding the distributed profit and placing it somewhere else, the criterion of external income assumes that the assessment is done by the company itself, leaving the income within the business. Therefore, it is considered that the criterion of external income reflects economically reasonable opportunity costs from the standpoint of the company and, consequently, can be consistently applied in determining the cost of the accumulated income.

COST OF LONG-TERM DEBT

The borrowed capital is characterized by precise time of maturity, as well as the predetermined amount and time schedule of the interest expenses. Consequently, identifying the cost of debt is based on the two cash flows that occur as a result of debt assumption, namely: (a) the net income from debt (sale price of bonds P_0), and (b) periodic expenses for interest and repayment of principal at the maturity of debt. Consequently, finding of the discount rate which equates the present value of these two flows is assumed. For a potential buyer, this rate is the expected rate of return on a bond, or alternatively, the profit up to the maturity. In addition, the accounting treatment of interest as the expense and

coverage of its operating profit (profit before taxation) reduces the taxable result of the company, which results in lower tax expenditures. For its part, this causes the cost of debt to be determined in two levels: before and after taxation.

Cost of debt before taxation is the contracted interest rate for assets acquired through long-term loan arrangements. For the assets procured through the sale of bonds, the cost of debt is equal to the nominal interest rate, provided that the nominal interest rate and the market rate are the same. If we assume that the company is financed only by debt and share capital, then the cost of debt can be defined as the minimum rate of return that must be achieved on the investment from debt in order to avoid a decrease on the rate of return on the share capital. Otherwise, theoretically speaking, the cost of debt (borrowed long-term sources) is the rate of return that must be earned on investments financed with borrowed capital in order to enable the return of debt principal with the agreed interest. In addition, mathematically, it is possible to calculate the cost of capital from this source by adapting the model of the market value of bonds. Namely, it is well known that the market value of bonds can be calculated by the following formula:

$$V_0 = \sum_{i=1}^n \frac{In + Vn}{(1+i)^i} \quad (4)$$

Mathematically, the price of bond as a form of debt can be calculated by adapting the model for the determination of the market value of bonds. In addition, adaptation of the model of market value of bonds is realized by replacing the market value (V_0) with the net income from the sale of bonds (P_0) as the known value. Consequently, we have the formula:

$$P_0 = \sum_{i=1}^n \frac{I_t}{(1+i)^i} + \frac{V_n}{(1+i)^n} \quad (5)$$

I_t - annual (periodic) amount of interest

V_n - amount of the principal at maturity

n - maturity

i - cost of bond as a form of debt, before taxation

P_0 - sale price of bond

Determining the cost of debt after taxation requires adjusting the cost of debt before taxation for the expected effect of the income tax. Business income represents the total effect of business with the total business assets, regardless of the source from which it is financed. This means that in the accounting sense, if the company in the capital structure has borrowed sources, expenditures for interest are in fact a part of business income. In addition, tax legislation treats interest expenses as expense for the period and determines the tax as the difference between operating income and interest expenses. Consequently, with the same amount of business income, the amount of tax base (income before taxation) is directly determined by the amount of expenditures for interest, i.e. capital structure of the company. Logically, this means that at the same level of business profit, a company with a high share of foreign capital in the financing structure and high interest expenses will have a lower taxable base compared to a company that has no expenses for interest, i.e. is funded only by own capital. This effect is known as the tax savings and it de facto favors financing companies from borrowed sources. In the context of the cost of debt, the tax savings result in a higher cost of debt before taxation than after taxation. However, the effect of the tax savings is only possible if the company operates profitably, i.e. realizes operating profit. Companies operating with losses or at the breakeven point of profitability cannot count on the effect of the tax savings, since for them the tax rate is zero, and the cost of debt is equal to the interest rate.

Regardless of the methods of obtaining long-term borrowed capital (loan arrangements or bond issue), the cost of debt can be determined as the discount rate that equates the current net cash income from specific sources of financing with the present value of future expenditures on behalf of the interest and principal as adjusted for the expected effect of taxation. In this context, and in accordance with notes listed here, it is clear that the cost of debt before taxation must be corrected for the effect of income taxes to the profit. This correction is performed by the model which can be represented in the following formula:

$$k = k_d (1 - t) \quad (6)$$

k_d - cost of debt before taxation (internal rate of return)
 k - cost of debt after taxation
 t - income tax rate

COST OF CAPITAL FROM THE ISSUE OF PREFERENCE SHARES

Preference shares are a hybrid source of financing for a company that bears the characteristics of debt and share capital. Namely, preference shares are similar to debt in that they cause fixed periodic expenses such as dividends for the company and that privileged shareholders in the event of liquidation of the company have a pre-emption right to the company's assets in relation to the ordinary shareholders. In accordance with the fact that the preference shares are hybrid sources of financing, determining costs so obtained capital is quite similar to determining the cost of debt. Accordingly, identifying the cost of this source of financing starts from two cash flows that occur as a result of the sale of preference shares, namely: (a) one-time cash receipts from the sale of shares in the amount of the price which shares reach on the market, minus any flotation costs, and (b) a permanent issue based on preferred dividends, which by its characteristics represents a perpetual annuity. In addition, the problem of determining the cost of this source of financing comes down to finding the discount rate at which the present values of the aforementioned flows are equalized. In addition, mathematically, the cost of capital from the emission of preference shares can be reached by adapting the model of the market value of preference shares. Namely, it is well known that the market value of preference shares can be calculated by the following formula:

$$V_{pa} = \sum_{t=1}^{\infty} \frac{D_t}{(1+k)^t} = \frac{D}{k} \quad (7)$$

Mathematically, we can calculate the cost of capital from the issue of preference shares by adapting the model for determination of the market value of preference shares. In addition, the adaptation of the model of the market value of preference shares is realized by replacing the market value of preference shares (V_{pa}) with the market price of preference shares (P_{pa}), i.e. income from the issue of preference shares. Consequently, we will have the following formula: $P_{pa} = D / k_{pa}$ where the P_{pa} is the market price of preference shares, D is the annual amount of preferred dividend, while k_{pa} is the cost of capital from the issue of preference shares. Solving the above formula according to k_{pa} , it follows that the cost of capital from the emission of preference shares can be expressed as the ratio of the annual preferred dividend (D) and their market price (P_{pa}), i.e. cash income from the sale of preference shares. This can be represented by the following form: $k_{pa} = D / P_{pa}$ where we have already explained the meaning of the given symbols.

AVERAGE COST OF CAPITAL

Bearing in mind the fact that the capital of the company is, as a rule, composed of multiple sources of different costs, determining its average cost is not an easy task. Due to the different relative share of individual sources in the capital structure, the average cost of capital of a company cannot be established as a simple mathematical mean of costs of individual sources. Similarly, for finding the average cost of capital of a company, a system of weighing the individual cost of individual sources is usually used, the most commonly used weights being the relative shares of individual sources in the capital structure of the company. As a result of this process, the weighted average cost of capital (*WACC*) is obtained, which expresses the expected average future costs of capital of a company in the long run.

Observing the abovementioned, it can be said that the weighted average cost of capital (*WACC*) is a standard methodology for calculation of the average cost of capital. In addition, the process of calculating the weighted average cost of capital of the company is reduced to multiplication of the cost of capital from each individual source of financing with appropriate weights. However, the specific calculation of the average cost of capital can be estimated only when the cost of capital obtained from each individual source of financing is known. Similarly, assuming that the company is funded from various sources, the weighted average cost of capital (*WACC*) could be calculated using the following formula:

$$\text{WACC} = k_1 w_1 + k_2 w_2 + k_3 w_3 + k_4 w_4 + \dots k_n w_n \quad (8)$$

In the mentioned formula, $k_1, k_2, k_3, k_4, \dots, k_n$ are costs of individual sources of financing (after taxation) included in the capital structure of the company, while $w_1, w_2, w_3, w_4, \dots, w_n$ represent the respective weights, i.e. the relative participation of individual sources in the capital structure. In addition, it does not need to be specially noted that $w_1 + w_2 + w_3 + w_4 + \dots w_n = 1,0$. However, the process of quantifying the weighted average cost of capital of a company necessarily requires addressing two key issues, namely: (1) determining the costs of individual sources of financing (after taxation) that are involved in the given capital structure of the company, and (2) specifying the basis for weighting.

CONCLUSION

The previous discussion has shown that in most cases the corporation can choose any capital structure it wants. Accordingly, modern research has shown that companies with similar activities tend to have a similar capital structure, which indicates that the nature of their assets and operations is essentially determined by the structure of their capital. It has also been noted that the companies include in the capital structure larger amounts of debt when marginal tax rates rise and when the management function is clearly separated from the ownership function. On the other hand, companies are going to reduce the share of debt when they have unstable and variable cash flows, when there is no ability to control the company and when there is a need for flexibility in terms of decision-making in the future. In addition, research has shown that financial managers in the choice of capital structure prefer the accumulated income and capital from the issue of pure and convertible bonds. In fact, only when they cannot be financed from these sources, do they include the capital obtained by issuing ordinary and preference shares in the capital structure. In addition, whenever it is possible, financial managers will turn to financing from the so-called clean sources (issuing bonds and shares), i.e. only if they have no other option will they resort to obtaining capital by issuing hybrid securities (convertible bonds and preference shares). Consequently, the main reason for a greater inclusion of debt in the capital structure is the need to maximize share prices. At the same time, the main reason given for avoiding financing by issue of shares is to avoid the dilution of the company's capital.

Composing an adequate capital structure is a very complex problem. A traditional financial rule was that the ratio of owned and borrowed capital is 1:1. However, in conditions of modern corporation operations, the practice has simply refuted this rule and it has been abandoned. Similarly, it is considered that the modern corporation should decide on such a ratio of debt and share capital which maximizes the value of ordinary shares, i.e. which maximizes the value of the entire company. In addition, it is important to note that changes in the value of a company are the same as the net effect for shareholders and, consequently, financial managers must always strive to find such a capital structure that maximizes the value of the company.

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HYBRID SOURCES OF FINANCE OF A CORPORATION

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ABSTRACT

Hybrid capital represents the capital obtained through the issuance of hybrid securities, i.e. securities which have the characteristics of both debt and equity securities. These are relatively new forms of securities which originated in countries with a developed capital market due to the lack of possibilities for financing through classical debt and equity securities. Hybrid capital, i.e. hybrid sources of finance mostly consist of: (a) capital from the issue of preference shares, and (b) capital from the issue of hybrid bonds. The aim of this paper is to present both types of securities as well as the possibilities and limitations of their application in the finances of a modern corporation.

Key words: securities, hybrid capital, preference share, loan stock.

INTRODUCTION

Nowadays, securities represent one of the most important instruments of company financing and have become a much more prominent form of financing compared to conventional loans in modern developed economies. The issue of securities can raise significant financial assets to finance various needs of a company. Therefore, it is extremely important to know the characteristics, types and functioning of certain securities in the modern financial practice. Securities are written documents that contain a written obligation of the issuer of the security to fulfill the obligation recorded in this document towards the rightful holder of the security. This means that the issuer of a security has the obligation to settle only the obligation to which he committed in writing and may not be held responsible for commitments given orally, which are not contained in the written document. In this regard, it should be noted that for a company the financial claim may be in the form of equity capital (shares) or debt (bonds). Similarly, it follows that shares are equity securities, while bonds are debt securities. However, there are relatively recent forms of securities with characteristics of both debt and equity securities. These are called hybrid securities and originated from the inability of corporate companies to be financed by traditional debt and equity securities. Hybrid securities, i.e. hybrid sources of company financing usually consist of: (1) the capital from the issue of preference shares, and (2) the capital of the issue of hybrid bonds.

CAPITAL FROM THE ISSUE OF PREFERENCE SHARES

Apart from obtaining capital by the issue of ordinary shares, a company can obtain it by the issue of preference shares. Preference shares are actually hybrid securities which combine the characteristics of ordinary shares and bonds. On the one hand, preference shares are similar to ordinary shares in that they do not have fixed maturity period, default of dividend payment on these shares cannot lead to

bankruptcy of the company, and dividend expenses are included in the tax base. On the other hand, preference shares are similar to bonds in that dividends are limited. In this regard, the amount of dividends on preference shares is usually fixed either as a cash amount or as a percentage of the nominal value of a share. In addition, the issue of these shares often requires coverage as in the case of bonds, i.e. there is no limit to the amount of capital which can be obtained by the issue of these shares. Generally, preference shares do not carry voting rights, except in the case where a company has not paid preferred dividends for a certain period to its shareholders. In this context, preference shares simultaneously have characteristics of both equity and debt securities, i.e. are considered hybrid securities. Therefore, the equity capital from the issue of these shares is considered a hybrid source of financing. This capital is treated as equity capital and it is especially recognized in the balance of the corporation. In fact, it is treated as the capital from the issue of preference shares (preference share capital). This capital is sometimes treated as a debt and sometimes as equity capital, depending on the type of financial analysis. In this regard, the capital from the issue of preference shares can be viewed from different aspects. From the standpoint of ordinary shareholders, this capital is similar to debt since preferred dividends represent a fixed expense, which reduces income of ordinary shareholders. From the standpoint of bondholders, this capital is similar to equity capital from the issue of ordinary shares since claims for interest have priority over the claims in the form of dividends. From the standpoint of management, capital from the issue of preference shares lies between debt and equity from the issue of ordinary shares. Since the inability to pay preferred dividends cannot lead to bankruptcy of the company or bankruptcy of the issuer, this leads to the conclusion that it is safer to use capital from the issue of preference shares rather than financing from debt.

The main motives of a corporation to issue preference (privileged) shares are multiple and they are primarily reflected in the following: (a) the expansion of the possibilities of using the limited financing sources, as the capital by investors is attracted because they are not willing to buy ordinary shares due to the uncertain amount of dividends, (b) avoiding greater differentiation between shares and costs incurred on that basis, (c) the preservation of existing rights of management by ordinary shareholders, (d) possible increase of the income of the ordinary shareholders originating from favorable financial structure of the company. On the other hand, preference shares are very attractive for investors, especially those who prefer more secure investments with a return that is higher than the interest rates. The very name of these actions (priority) speaks in their favor. Unlike ordinary shares, preference (priority) shares have a number of very important characteristics, namely: (1) the right to a preferred dividend, (2) the right to participate in the distribution of funds from the liquidation of companies in the event of bankruptcy, (3) the convertibility, and (4) the redemption.

- *The right to a preferred dividend.* Preferred dividend has a priority in the allocation of net income, which means that owners of preference shares are entitled to receive dividends before any distribution to ordinary shareholders. In addition, the obligation for preferred dividends exists only if a company generates a sufficient amount of net income. However, there is a special type of the so-called cumulative preference shares, in which the unpaid dividends do not lose value immediately and irreversibly, but the right of shareholders is accumulated and transmitted to the several following periods (usually three years). The unpaid cumulative preferred dividend is recorded in the books of the company as a liability for unpaid dividends. If within the prescribed period, the company does not achieve the required amount of income for the payment of unpaid dividends, then the accumulated right of the shareholders is withdrawn, i.e. the value is lost.
- *The right to participate in the distribution of funds from the liquidation amount* - in the case of company bankruptcy. This right of preference shareholders holds a priority only in relation to the others and by order comes immediately after creditors. The size of this participation is determined by the nominal value of preference shares with possible increase in accumulated unpaid dividends.
- *Convertibility of preference shares.* This feature of preference shares refers to the entitlement of shareholders to be able to convert their preference shares into ordinary shares within certain deadlines and thereby become regular shareholders. From the standpoint of a company, convertibility is desirable for two reasons: *firstly*, this instrument enables reduction of financing

costs, and *secondly*, a favorable impact on the value of the ordinary and preference shares is achieved.

- *Redemption of the preference shares.* Although preference shares do not mature, the issuer companies reserve the right to redeem them. This right is usually used in cases when market interest rates drop significantly, or when shares are issued at a very high rate of return, or the company has cash which it cannot invest profitably. In these situations, the company avoids unnecessary financing costs by redeeming and purchasing preference shares. If the redemption of shares is planned in advance, then the company can create a special-purpose reserve for redemption. During the redemption and purchase of shares, apart from payment of nominal value, the company usually pays a certain redemption premium, which usually amounts to 10% of the nominal value of a share. In this regard, issue of preference shares is not recommended without established premiums for redemption, since without them the redemption is difficult to execute. Normally, the redemption system is so designed that the initial premium declines within successive periods, in order to disappear completely after a certain time.

From the standpoint of issuer company, financing by the issue of preference shares has certain advantages but certain disadvantages as well. The advantages are reflected in the fact that with the issue of these shares there is no division of control over the operations of the issuer company, as well as in the fact that the dividends are fixed, and consequently, most of the profit remains with the shareholders in the event of profit growth, i.e. there is no danger of liquidation in the event of low profit. Through issue and placement of these shares, companies can relatively quickly gather the necessary capital which they are under no obligation to return, because it is considered a part of their owned capital and in some cases the company may delay the payment of preferred dividends (cumulative preference shares). Depending on the degree of urgency of the need for equity, preference shareholders may also be given the right to vote and in some cases even an increased voting rights in relation to ordinary shareholders (e.g. in case the capital can be obtained only by changing the owner). However, financing by the issue of preference shares has certain disadvantages. The disadvantages are reflected in the fact that there is a higher cost of capital after taxation in relation to the debt, because the preferred (priority) dividends are subject to taxation, which also makes the basic disadvantage of financing companies in this way. Nevertheless, if the company pays a small tax or does not pay it at all because it is not profitable, then the fact that interest on debt is not subject to taxation does not have much significance for the company. Namely, if the business is situated in a lower tax group, it is much more likely that it will go to funding by issuing preference shares rather than through long-term debt.

From the standpoint of investors, investing in preference shares has certain advantages but disadvantages as well. The advantages are reflected in the fact that preference shares provide a steadier income than ordinary shares, that they have a priority in payment in the event of liquidation of a company and that more than a half of the reported preferred dividends by the corporate company are not taxed because they are usually company-owned. In this case, the motive of investors to invest in preference shares is clear: lower risk, but still high enough income, particularly in relation to that which could be obtained by investing in debt securities. However, investment of capital in preference shares has certain disadvantages as well. The disadvantages are reflected in the following: limited profit, the absence of the right to an additional dividend, and for individuals, lower income after tax from the income from the bonds, which are also less risky.

In order to avoid tax paying, the so-called convertible preference shares have been used increasingly in recent years. This is especially true in cases of voluntary integration of companies (mergers) where the purchase of shares of one company by another is not made in cash, but the preference shares are exchanged for ordinary shares of the company that is being merged. In this way, taxation is avoided since the exchange of securities is not subject to taxation (shareholders of the merged companies receive preference shares by which tax payment on capital shares is de facto postponed). Such transactions allow the shareholders of the merged companies, who are interested in profit, to obtain preference shares, i.e. the shareholders who are interested in capital income, to obtain convertible preference shares, which are convertible into ordinary shares.

In modern conditions, most companies withdraw and replace preference shares with bonds, since the preferred dividends are taxed and interest on the bonds is not. However, where neither bonds nor

ordinary shares are a suitable solution, the company usually turns to the issue of preference shares in order to increase long-term capital. In this regard, public companies often use the issue of preference shares in order to improve their capital structure, as they are capital-intensive and that there is a high share of debt (bonds) in their capital structure. These companies invest significantly in equity capital which is why the costs of depreciation are also high reducing the effect of tax rates on the increase in the costs of capital, i.e. the basic disadvantage of company financing by issue of preference shares is partially neutralized with respect to the issue of bonds.

CAPITAL FROM THE ISSUE OF HYBRID BONDS

A bond is a debt security with a fixed income, whose issuer undertakes to pay to the person indicated on the bond (bond to the name of) or to bearer thereof (bonds to the bearer) a nominal value of a bond and pay interest for a certain period of time. Depending on whether they contain certain characteristics of shares or not, bonds may be pure and hybrid. Bearing in mind the nature and objectives of this paper, our following elaboration will be dedicated to hybrid bonds exclusively. In this context, it should be first said that the following are considered hybrid bonds:

- *Bonds with the obligation to be exchanged for shares*
- *Bonds with the right to participate in profits*
- *Bonds with premiums*
- *Bonds with warrants*
- *Convertible bonds.*

Observing the significance of these hybrid bonds, we will try to briefly explain each of them, in the previously stated order. In addition, given the special importance of bonds with warrants and convertible bonds, they will be given a little more attention.

Bonds with the obligation to be exchanged for shares - are the bonds that give the right to a fixed profit in the form of interest, but also an obligation to, with the expiry of the maturity period, under specified conditions, be exchanged for shares, whereby this right, i.e. the obligation of exchange can be transferred independently of the bonds.

Bonds with the right to participate in profits - are bonds which in addition to the right to a return of principal and payment of fixed interest give their owners the right to participate in profits which depends on the size of the dividend to be paid on this basis.

Bonds with premiums - are bonds which in principle assume that customers prefer games of chance, so these bonds are issued with a minimum interest rate or without it. After that, the saved interests are collected so that, by using a lottery system, certain bond owners will have the premium paid. In addition, the owner of such bonds shall be entitled to a refund of the nominal value, as well as a certain amount of minimum fixed interest, and possibly to the premium as well.

Bonds with warrants - are as a rule, long-term bonds, which apart from the fixed profit to their owner provide a warrant as well. Each warrant gives the holder the right but not the obligation to buy a specified number of ordinary shares directly from the issuer at a specified price within a specified period of time. In addition, a warrant specifies the number of ordinary shares that its holder can purchase, the exercise price of the warrant and the expiry time. Warrants which entitle the holder to buy a certain number of ordinary shares at a fixed price can be considered a long-term purchase options on shares which were sold with the bond. If the execution of the warrant occurs, there is an additional payment for the purchase of shares or the holder of the bond must pay to the issuer an additional amount for the shares above the price of the original bonds.

Warrants are often referred to as benefits in the purchase of shares because in order to lend the assets to a company, the investors provide benefits in the form of warrants with the right to purchase shares of the company. Warrants are usually issued at the public offering of bonds with new share issues. Bearing in mind the fact that they have hybrid characteristics i.e. characteristics of both bonds and shares, issuing of these securities is frequent in practice because they make equity investment attractive to lenders. Consequently, the company that wants to be financed by issuing bonds with

warrants, issues the attached warrants together with bonds, provided that the agreement on the issue of bonds is determined by the moment when the warrants are detachable from the bond (usually immediately after the issue).

The main reason for the issue of bonds with warrants is reflected, on the one hand, in that the company may issue cheap bonds attaching warrants to them that allow the interest rate on the bonds to be below market interest rates on pure bonds, and on the other hand, the issue of these bonds allows the company to issue ordinary shares at a premium above the current market price, so that the issue of these bonds is de facto a delayed sale of ordinary shares at relatively high prices. Additionally, it should be borne in mind that today all warrants are detachable from bonds and that they can be traded with separately. After detachment of warrants, bonds with low interest rates remain issued, which allows the issuer to obtain additional capital independently of bonds. The main bonds and detached warrants are purchased by various types of investors for various reasons.

From the standpoint of investors, the issue of bonds with warrants provides potential investors with the opportunity to become ordinary shareholders of the company. The status of ordinary shareholders provides them with significantly greater rights in terms of profit (dividends and capital income) as well as participation in decision-making in relation to decisions about the company. Bonds with warrants are attractive to a larger number of customers because the realization of warrants in the future can realize a substantial capital income if the market price of ordinary shares rises above the option price. In any case, bonds with warrants are attractive to investors because they have flexibility in terms of keeping or sale of these bonds, with or without a warrant. In addition, if a liquidation of the issuer occurs, the investor must be paid before the shareholders because bonds have priority in payment. But the placement of bonds with warrants bears the risk attached to the warrants, whereby the warrant does not bring the income.

From the standpoint of the issuer company, issue and sale of bonds with warrants increase the participation of a cheaper long-term debt in the capital structure of the company, which will have influence on the decrease the average cost of capital of the company and increase its market value. However, it also means increasing the financial risk for the company. Given the fact that with the implementation of warrants the number of ordinary shares is increased, which actually increases the share of owned capital in the total capital of the company, logically, it follows that all of this will result in the reduction of financial risk. After all, the issue of bonds with warrants is also done with the intention of future increases in the owned capital of the company.

5. *Convertible bonds* – are bonds that are similar to bonds with warrants, but differ from them in that the bonds with warrants consist of two independent securities (bonds and warrants) which is not the case with convertible bonds. Namely, convertible bonds are long-term securities that give their holders the right to fixed income in the form of interest, as well as the right to convert them in a certain period of time (up to maturity) and under specific conditions, into ordinary shares, preference shares or other debt securities of the issuer company. Therefore, instead of requiring the payment of debt in the form of a nominal value of bonds, investors in convertible bonds can simply convert them into shares or other securities of the company at a fixed conversion price, which is usually higher than the current market price. The conversion allows the issuer to offer a lower interest rate which makes this type of bond less sensitive to interest rate changes than is the case with pure bonds. Therefore, this type of bonds is particularly important for companies in a situation where the market conditions deteriorate, because it allows them, on the one hand, to obtain the necessary funds under favorable terms, and on the other hand, to offer shares on a predetermined date in the future and at a price higher than the current one.

Once an investor converts bonds into shares or other securities of the issuer company, convertible bonds cease to exist, as do all obligations of the issuer under them. Bearing in mind the fact that with the conversion the investor can obtain ordinary shares or other securities of the issuer, which he can sell on the market and thus gain profit, the interest rate on the convertible bonds is also lower than the interest rate on pure bonds. Namely, investors hope that the price of the conversion will be lower than

the future prices of shares so that they will be able to buy shares at a lower price, or to sell them at a higher price. This option to obtain profit allows the issuer company to sell convertible bonds, which carry a lower interest rate compared to pure bonds.

CONCLUSION

A company can finance its growth and development from various external sources, and one of these sources is financing through the issue of hybrid securities - preference shares and hybrid bonds. Both types of securities have their advantages and disadvantages. However, the common ground is that the company resorts to their issuing each time when it does not have sufficient funds for the realization of a particular investment project. In addition, the main advantage of financing through the issue of securities is that it gives the user the possibility to break down long-term needs for capital into smaller sums. In this way, the company can sell the issued securities to raise a considerably larger amount of funds than they would achieve by collecting funds from a single source. One of the main advantages of preference shares is that they have no maturity date and can be treated as a permanent loan. But also, by issuing hybrid bonds company seeks to mobilize capital that is essential for the growth and development. In addition, the company opts to obtain the necessary capital by issuing bonds, rather than issuing shares, because the interest is not taxed. In addition, when choosing between the issue of shares or bonds, the company always has in mind the so-called leverage effect that issue of bonds brings. In this regard, leverage is not only a financial operation but also the financial strategy of the company, since it allows the company to borrow capital by issuing bonds (under a fixed interest rate) so that the company would generate a higher return through the productive investment from which the debt is returned. Investors are also more likely to prefer the purchase of bonds, because they are a source of steady income, since the interest is fixed.

However, in the recent practice of the financial market in Serbia, corporate bonds still have not had a more prominent application, especially when it comes to convertible bonds. It is assumed that the main reasons for non-use of bonds as a way to finance companies primarily lies with the lack of practice of issuing corporate bonds in general, the lack of adequate tax incentives in bond issuing, as well as insufficient knowledge of this option by management of corporate companies and the consequences of its application. Therefore, we believe that the potential of this instrument is not fully used because neither investors nor potential issuers have recognized the clear advantages of investing in bonds, i.e. their issuing. However, recently, due to the increased interest of foreign investors in the issue of convertible bonds as well as domestic companies that want to exploit this instrument to better manage their debt, we believe that this area is gradually becoming more prominent. Consequently, there is no doubt that the hybrid capital, i.e. hybrid securities, in the period ahead will gradually become a more significant funding modality of a modern corporate company, and logically, in the following period, hybrid financing sources will increasingly gain in importance in relation to the classic loan financing.

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IMPACT OF INTERNATIONAL REGULATION ON CORPORATIVE PERFORMANCES BANKING SECTOR OF SERBIA AND SEE COUNTRIES

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ABSTRACT:

With the development of modern banking level of banks exposure has increased to various types of risks. The task of banks is reflected in their timely and quantify, as well as the determination of regular mechanisms to ensure successful operations in increasingly difficult conditions. Capital is the most stable part of the financial resources banks. Banks have to pay special attention to the minimum supervisory standards, so that their performances were quality in terms of capital and profitability. Implementation of this standards should ease risk points in the banking and prevent lack of their capital, that provide stability and security of the financial system. One of the main challenges bank management is providing a satisfactory level of capital and his constantly retaining to protect the interests of depositors. The aim of this paper is to indicate relevance and appropriateness of Basel principles for banking operations with a particular emphasis on capital adequacy, as well as impact on level profitability of banks. Significance of standards is reflected in the level of regulation required to be at the necessary level, in order to successfully overcome all obstacles in the banking. Through the case studies it 's analyzed the capital adequacy of the banking system in Serbia and SEE countries, as well as profitability of banks by key indicators ROA and ROE.

Key words: Basel principles, supervision, capital, profitability

INTRODUCTION

The first set of measures represents a cut in interest rate policy and ensuring adequaty liquidity of shattered financial institutions. In response to these tensions, ECB enabled the banks in Eurozone to the overnight basically entails the full amount necessary liquid assets. Banks have raised a total of 95 billion euros, which indicates the severity of flow. The bankruptcy of Lehman Brothers in September 2008, were undermined confidence that large institutions are to big to to fail. Significant recapitalization measures and government guarantees to prevent the collapse of major banks, indicating explicit commitment to not permit failures of systematically important banks. The crisis in the US is tighten and passed to other areas. That is influenced to a large number of national economies in Europe. European Union has reacted with 216 billion euros injection of capital into financial institutions in the period October 2008 to Maj 2010. The amount of the guarantee in the issuing of the bonds and providing loans in the EU amounted to 957.7 billion euros and support assets of 346.5 billion euros, so that the total volume of all interventions in the European Union accounted for 26% of GDP in 2008. Past experiences have shown that key moment in the easing banking crisis was government intervention measures with the aim of restoring consumer confidence in the financial system. The new regulations raise the quality, consistency and transparency of the capital base and strengthen the risk coverage of the capital framework. The implementation of Basel III will significantly increase the quality and level of capital, reduce systemic risk and leave enough time and space for a gradual transition to the new regime.

FROM BASEL I TO BASEL III

Basel I was primarily focused on credit risk. This standard had a positive effect on the level of capital in terms of halting the decline of capital in banking organizations, so it can be concluded that primary aim is realized. The advantage of Basel I is manifested in his simplicity and wide acceptance.

According to the Basel I standard

- The minimum ratio of 4% of the primary capital to the total risk weighted assets
- The minimum ratio of 8% of primary plus secondary capital to total risk weighted assets, which is the sum of the secondary capital is limited to 10% value of primary capital.

The essence of Basel II standards is reflected in the fact that each bank estimate own requirements of the minimum capital based on her risk exposure. At this standard, the focus is on internal models and methods of banks, supervision and greater market discipline. Accordingly, the primary feature of Basel II standard is his structure, which consists of three fundamental pillars:

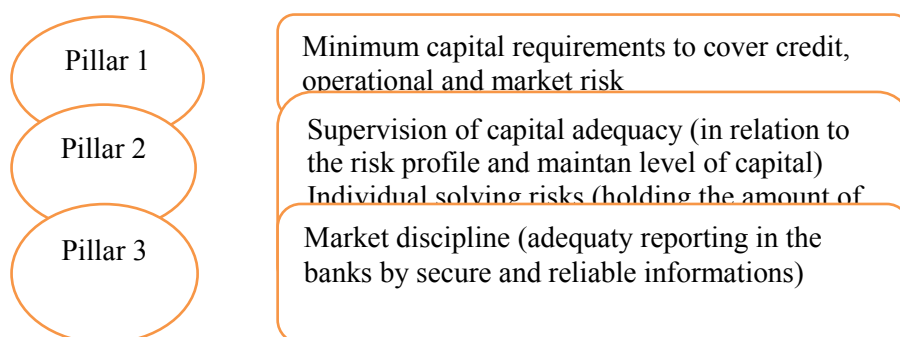
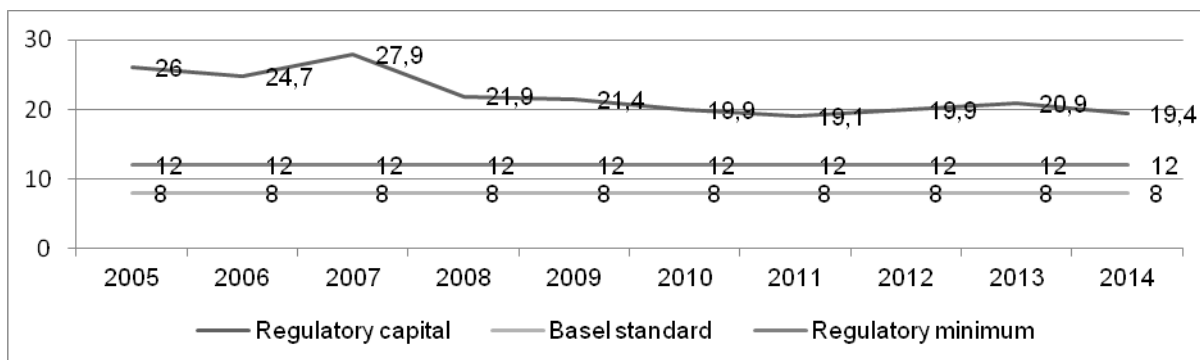


Figure 1: Basel II standard – three pillars
Source: Michael, F., Ulrich, H., Markus, R., 2005

One of the fundamental characteristics of current state of the global financial system and the banking market is the high level of instability and concentration of different types of risks faced by banking organizations. The presence of a crisis period, corrective banking regulations, as well as highlighted the volatility in trade flows are relevant obstacles in the modern banking operations. Regulatory standards in the pre-crisis period were the result of international cooperation and coordination but because of the rigidity, they couldn't see of the latest trends in the financial market. Dynamic financial markets have created additional space for maneuver in which through creative accounting nominally respected regulatory arrangements, while the real situation was unsustainable. This unsustainability is manifested through a large degree of leverage, pronounced systemic risk and lack of transparency, negative selection and moral hazard and in such circumstances the appearance of the financial crisis was inevitable.

The reaction of supervisory authorities was focused on the creation of stronger regulatory requirements in terms of liquidity, leverage, volume and quality of capital, as well as coverage levels of individual risks. The new regulatory framework implies a more rigorous regulations in the procedure for calculation of regulatory capital to risk-weighted assets. To create long term stability of the economic and financial flows, it is necessary to ensure greater transparency and market discipline of banks with respecting new standards of liquidity and capital. Basel Committee on banking supervision has created a new agreement called Basel III in order to improve ability of banks to absorb the negative influence deriving from the financial crisis and prevent a spillover effect from the financial crisis in the real sector. The reform is reflected in the application of micro and macro approach security within whics the requirements for capital is defined (Siniša Đerić. Sarajevo, BiH 2013., Basel standard III in function of strengthening stability of the banking systems at the global level).



Graph 1: The capital adequacy of the banking sector in Serbia
Source: NBS

Two key tasks that need to effectively limit systemic risk are reducing procyclicality of the financial system that reinforces the rises and downs of the real economy and to take interconnectedness and common exposures among individual financial institutions. Basel III recommends the additional protection anti-cyclical capital or absorbers (Contracyclical Buffer) from 0% to 2.5% which is formed in a period of expansion and pulls in the period of recession and potential stresses. This category of capital is not required but its formation is recommended and national regulators have discretion depending on the circumstances in which banks operate levy commitment of this category of capital. Basel III provides security for development of complete and powerfull macroprudential framework.

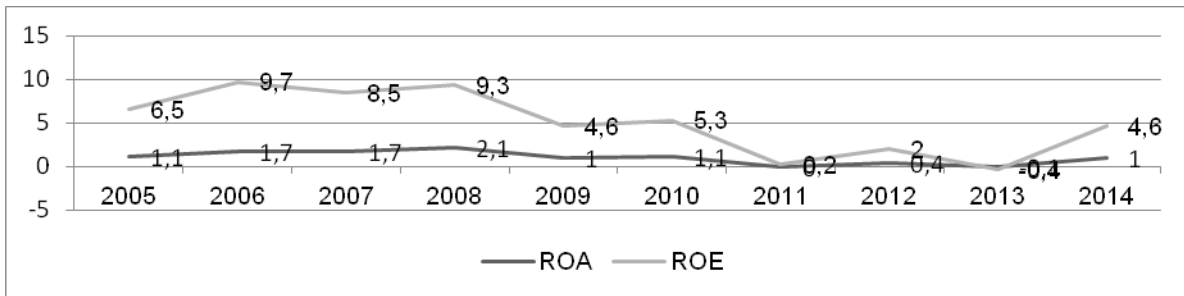
Table 1: Comparison of standards Basel II and Basel III

	Basel II			Basel III		
	Common equity	Tier I capital	Total capital	Common equity	Tier I capital	Total capital
Minimum requirements	2.0%	4.0%	8.0%	4.5%	6.0%	8.0%
Conservation buffer	not applicable			2.5%		
Countercyclical buffer	not applicable			0 - 2.5%		
Additional requirements for systematically important financial institutions	not applicable			It can be added to other risk weighted requirements		
Leverage ratio	not applicable			It can affect adding risk weighted requirements		

Source: BIS "Basel III: A global regulator framework for more resilient bank and banking system" - paper Global financial crisis and answer European Union, 2010.

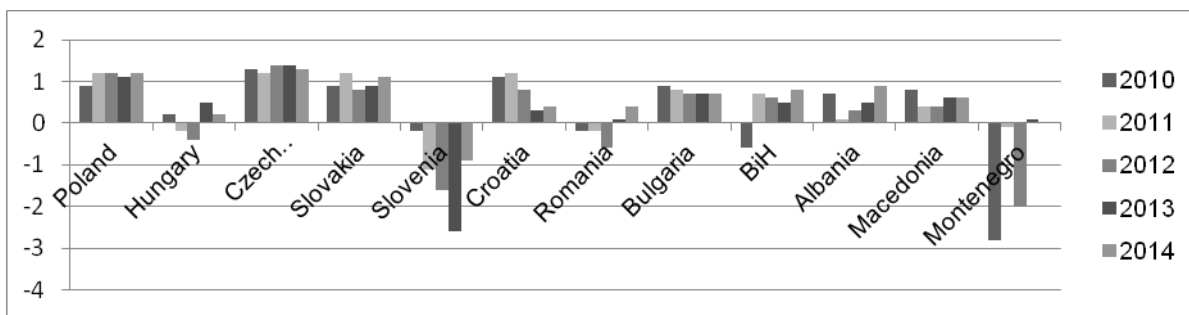
CORPORATIVE PERFORMANCES OF BANKING SECTOR IN SERBIA AND SEE COUNTRIES

In long term strict regulation of certain segment of the banking business may threaten the competitive ability of bank and encourage the abuse of monopoly position. Overexpressed regulation of the banking sector with a parallel process of international harmonization of banking control and supervision can lead to a unification of banking activity to the extent that choked her further growth and development of suppression own "self – care". This direction of innovation has shifted from the development of banking products to the development process. Today regulation and supervision of banks emphasize the best possible risk management and capital adequacy of banks.



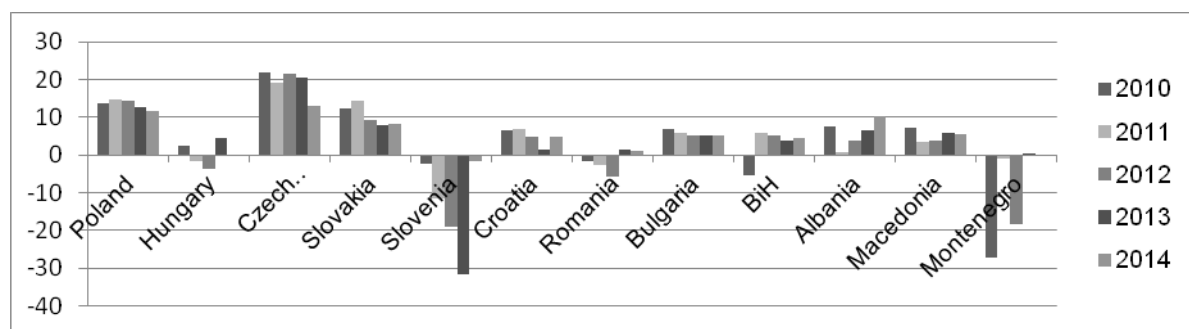
Graph 2: Profitability indicators of the banking sector in Serbia
Source: NBS

Looking profitability indicators within a time horizon, it is clear that our banks significantly improve profitability in the transition period. In the initial transition period return on equity recorded an exponential growth with the highest value at 2006 and the following year there was a slight decline due to the recapitalization of banks. After that, ROE recorded growth based on credit expansion. Dramatic decline in the value of both indicators is the product of reducing the profit generated by the banks in 2011. Considering that equity and assets of the banks didn't increase at 2011, compared to 2010, the logical conclusion is there has been a decline in net earning ability of the banks. The level of bank profitability was higher in 2014 where ROA and ROE increased by 0.9% and 4.2% compared to 2013.



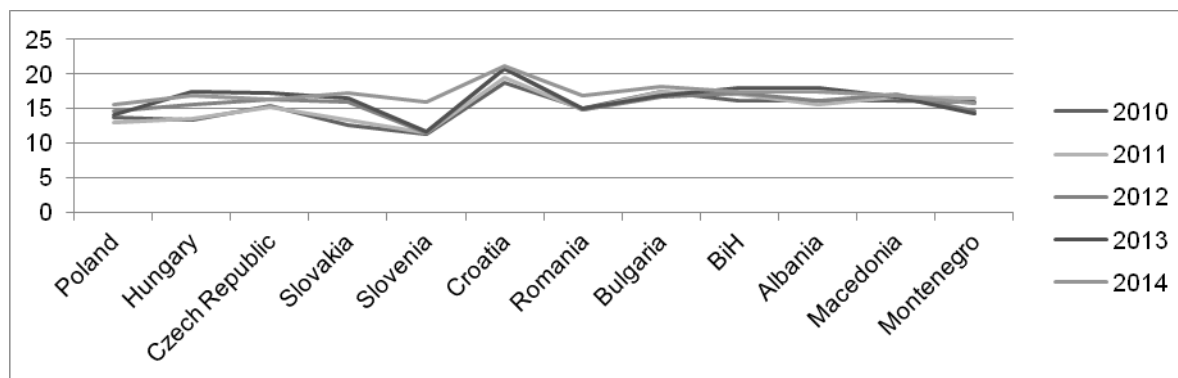
Graph 3: Indicator of profitability ROA (return on assets) in SEE countries 2010 – 2014.
Source: Authors, data from national central banks

Graph 3 shows trend of profitability indicators ROA in SEE countries in the reporting period 2005 – 2014. Characteristic of this banks is reflected in the stable level of profits throughout the period. That is especially applies to the banking sector of Poland, Czech Republic and Slovakia, where this indicator recorded approximately the same values. However, it is indicative that level of banking profit in this part of Europe slightly declining in some countries, which can be attributed to the negative effects of the global economic crisis. Therefore, banks should pay more attention to non-interest income as alternative sources if they want to hold a similar trend in profitability.



Graph 4: Indicator of profitability ROE (return on equity) in SEE countries 2010 – 2014.
Source: Authors, data from national central banks

Graph 4 shows level of profitability ROE in SEE countries for the period 2005 – 2014. At the beginning of the period, it is evident that almost all SEE countries have achieved value above average level with double - digit rate. The banking sectors of Poland, Hungary, Czech Republic, Bulgaria and Albania have had a particularly pronounced growth of ROE, where the went over 20%. However, the emergence of crisis elements in the global economy led to a declining tendency in banking profits throughout Europe, including this part of the continent. This led to a sharp fall the level of profitability of banks in all countries where it is drastically reduced. Slovenia and Bulgaria are the best example for this fact.



Graph 5: Capital adequacy ratio in SEE countries 2010 – 2014.
 Source: Authors, data from national central banks

As with profitability indicators and in this indicator, we can concluded a continuous trend of capital movements observed in most countries. The banking sectors maintained a more or less similar level of capital adequacy but this indicator recorded increase in some countries. On the other hand, banks have had declining tendency in some countries where particular emphasis Montenegro, Romania and Macedonia. If we put a year at the beginning in the comparison with a year to the end of the period, it's notably the double digit decrease the level of bank capital in Montenegro. Looking at the level of the capital in SEE countries, we see that almost all banking sectors are stable and secure in terms of the analyzed indicators. Capital of bank is primary pillar of security and reliance of depositors and it's height is of crucial importance for banking business.

CONCLUSION

The global economic crisis has greatly slowed the development of the banking sector, reduced the level of profitability, influenced the change of strategy and forced the banks to conservative approach when providing services to clients. In the past a large number of banks and financial organizations have closed their doors succumbing to the sharp impact of the global economic crisis because of inadequate preparedness to respond to adverse global trends. Present time, as well as future requires innovative approaches and financial ventures in solving problems in the banking business. International banking regulation represents defined mechanism of recommendations and standards that bank must respect and implement in their operations, in order to ensure an adequate level of security and stability of the banking system. The aim of Basel III standards is reflected in resistance of banks to systemic risk through intensive capital base and liquidity position. The introduction of regulatory recommendations and standards has positive implications for the awareness of the relevance risk management in banks. Improving the base framework should contribute pronounced soundness of the banking sector which is the primary condition for the stability of the entire economy. The paper focused on international standards of supervision and regulations and their impact on corporate performance of banks with special emphasis on the banking sector of Serbia and SEE countries. In the future it can be expected a downward trend of profitability indicators with regard to international regulations in the Basel III require a higher level of liquidity or that the banks allocate more funds to the security and stability for their operations. If bank hold more assets in the form of liquid reserves rather than have the form of loans and securities it will cause a lower level of bank's profit.

Characteristic of banks in SEE countries is above-average profitability and double-digit growth rates of indicators ROA and ROE followed by a stable level of capital adequacy. This especially applies to the period before escalation of the global crisis when indicators were been on the extremely high level. Banking organizations will efficient and highly profitable when management create a competitive strategies which will contribute to new banking products and services and thereby expansion and diversification of their portfolios.

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IMPACT OF PROACTIVE MAINTENANCE EQUIPMENT PRODUCTION COMPANIES TO INCREASE INSURANCE PREMIUMS

UDC: 62-7:368

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ABSTRACT

In this analysis, we will show how the maintenance of machines and mechanical installations in the long term, it may reflect the reduction in insurance premiums. Production companies because of the crisis in the production and degradation of equipment and the inability to purchase new equipment from one year to reduce the funds intended for the implementation of insurance, and insurance companies, pressured by competition and market conditions, introducing the benefits in terms of reducing insurance premiums for those economic enterprises which are maintaining plants dedicated significant attention. We will introduce models which are used to reduce insurance premiums and what is the distribution of portfolios in the third quarter of 2014 years in Serbia.

Key words: maintenance, risk, insurance, premium.

INTRODUCTION

Looking at the period before the ownership transformation of the Republic of Serbia, it could be noticed that the insurance (particularly when the economic operators concerned) enforced through two dominant insurance companies, then owned by the state. Business entities are ensured all its assets recorded in the inventory lists, all vehicles owned by all the listed risks crop, accident workers, etc. - in short: all insurance that were then in the supply of these insurance companies. This range of risks insured business are secured and which they paid insurance premiums, enabled the institutes to business secured by commercial entities being viewed in a broader level, or ignoring the paid damages that depress only one branch of insurance: all potential damages would be solved on the level of concluded business in all branches of insurance, while respecting the contractual obligations and the principles of professionalism in the profession. At the beginning of the transformation of ownership in the Republic of Serbia has inevitably led to a drastic change in the situation on the insurance market: the entry of a large number of insurance companies on the Serbian market. These companies brought with them and their products where the risks are distributed in a package of insurance which is a former insurance market meant a huge drop in certain types of insurance represented in the previous period. The current situation in which our economy as well as economies in transition is reflected in:

- A higher degree of deterioration of production capacities
- Much more difficult economic and social conditions,
- The limitation of the possibility of investing in new equipment,
- Limited investment opportunities in the procurement of spare parts from abroad,
- The high rate of written-off equipment (over 80%),
- High average age of equipment (over 30 years),
- Great uncertainty equipment
- High failure rate, and at the end of

- Degradation of equipment due to standing-corrosion and other related phenomena, since the equipment is not preserved (Bulatović, M., 2002)

MAINTENANCE POSITION IN THE LIGHT OF HIGH TECHNOLOGY AND SECURITY

The aspiration of every serious economy is certainly, among other things, the competitiveness and quality of products on the market. If the company pave the way to meet these criteria, which are the basic criteria for survival on the demanding market of Western Europe and of the world, it should be in the direction of introducing high technologies in production. High technology leads to simplification of work, work processes are easier to measure, shortening the time of each product, increased reliability, increased internal competition and the like. and therefore between high technology and system maintenance there is a double relation: high technology require new approach to maintenance, and the new maintenance approach requires the use of high technology and new methods and procedures. (Jolic, M., Grujic, N., et al., 2003)

High technologies require specific organization and maintenance of production plants. Many machines have their own software maintenance, that is usually combined with periodic maintenance elements, which are designed to overhaul the longer term exploitation. In other words, the composition of the machines there are parts of the machine control system are under permanent control of the sensor and is usually a system of proactive maintenance thus conceived machine implemented in the control system.

PROACTIVE MAINTENANCE - INFORMATION AND EXPERT SYSTEMS

Control of working capacity of technical systems, the diagnosis of the condition, measuring the operating parameters, controls wear debris and combustion control was vibration, noise control, control the structure of materials, monitoring geometric accuracy and power control parameters are just some of the procedures proactive maintenance machine during operation. (Adamovic, Z., Stefanovic, S., et al., 2008)

By constantly calculating time of the machine and parameters from the sensor, proactive maintenance system acting on pre-defined parameters to maintain, if necessary, activate the system, motors and solenoid valves for example: lubricates certain circuits (hydrodynamic, hydrostatic, border and flexhydrodynamic), adjusts the clearance of the vehicle due to wear workpiece and the like.

The second part of the combination of machines represent overhaul of machines (partial, periodic or general, depending on the work as planned), which represent a radically maintenance and preparation machines for new production cycle. At the moment, the maintenance department could come to a problem of supply of quality spare parts, which will be the main factor of quality-built overhaul.

Here we must mention maintenance information system that uses hardware resources (machines and media) software (programs and procedures) and human resources (users and specialists) for the implementation of activities input, processing, storing and control and to transform data into information resources products. The goal of maintenance information system must be the execution of all the planned maintenance work. That's why they need mainly the following information about existing work:

- Required the perpetrators and their training
- Time (the term)
- Place (in plants, workshop, etc.)
- Types of maintenance procedures
- Needs special of laboratories and workshops,
- Needed tools, equipment, instruments and transport equipment,
- Necessary materials and spare parts,
- The estimated duration of maintenance procedures
- Coordination et al.

Information systems maintenance in its work communicate with the following services:

- Production and commercial (procurement and sale)
- The calculation and accounting,
- The human resources etc. (Adamovic, Z., Stefanovic, S., et al., 2008)

In addition to the information system into practice is widely used expert systems that can be associated to improve the condition of the system or indirectly reduced insurance premium in machine breakdown – as breakdowns of the insurance machine. This means that expert systems are replaced man - diagnostician.

In the literature and in practice, is known for a larger number of expert systems that are widely applicable, and these are:

- XPECTION, to help experts in assessing the state of the system,
- ESR - A system for the assessment, service life of system components,
- TMDS, for providing diagnostics condition of rotating system software,
- PROVIAR, (recording process data visualization, animation) to optimize the system,
- EPR - DDAS, system for the collection and processing of diagnostic data systems,
- CMS a system for tracking non-stationary phenomenon and fatigue,
- EPRMS, system reliability, and condition monitoring equipment,
- VMS the system for monitoring the condition of the valve.
- ECMS, a system for monitoring the conditions of wiring,
- TURBINEAID, system status monitoring turbines,
- GENAID system for monitoring the status of the generator,
- CHEMAID, the system for monitoring water-chemical regime and others (Scepanovic, S., Adamovic, Z., et al. 2003)

REDUCING RISK - DISCOUNT ON INSURANCE PREMIUM

What we can control and plan and that in the end the "charge" of insurance companies through discounts - of course, is part of the concept of proactive maintenance, which is called risk assessment of cancellation, and that the software can be implemented into the system of proactive maintenance, which will in the future lead to a reduction of failures (and thus reduce the risk of dismissal and insurance premiums). During the planning of this software should consider four basic conditions related to each risk:

- The Research (whether they know enough about the risk? Whether it is necessary to gather additional information and characteristics of each risk before taking decisions on the necessary actions?)
- Acceptance (If we may be faced with the consequences of the realization of risk? Is the risk may accept and go on without any action?)
- -Management (whether it can do something that will reduce the damage when the risk occurs?)
- Avoiding (if the risk can be avoided?) (Adamovic, Z., Meza, S., et al., 2008)

Seen from the perspective of insurance companies, from the standpoint of maintaining plant and equipment, the maintenance described above which is a reflection of high technologies in enterprises with us, he could have a longer period of time, lead to a reduction in insurance premiums from certain tariffs and permanent application of certain benefits in terms of discount on the premium. Insurance companies have always had some benefits when the insured person approached with care maintaining its production facilities. Thus, the system of bonus / malus among the first tools to decrease or increase premium depending on the degree of machines that can be seen as the ratio of claims paid in respect of part of the premium intended to pay for damages. Lowering the amount of settled damage claims in a three year period the insured has sought a maximum bonus of 30% of the insurance premium. When the machines are held regularly - there is less damage and vice versa. This is the oldest and toughest method which has been present in Tariffs of insurance companies.

PROCEDURES REDUCE THE INSURANCE PREMIUM RELATES TO THE IMPLEMENTED SCOPE AND QUALITY OF MAINTENANCE

Over time, they created other methods that meets enterprises organized into account the maintenance of machinery. So the company "Dunav" Insurance in 2002 announced that the premium rates of insurance machinery breakdown for the first time began to directly stimulate the maintenance of the logistics process in each production or economic activity. In fact, next to the category bonus-malus, which still exists in the premiums rates of insurance machinery breakdown in "Dunav" Insurance Company Inc., introduced a discount for quality maintenance of the equipment, while maintaining the equipment in this Tariff includes: permanent, daily, preventive and routine maintenance, periodic reviews, as well as the existence of a plan and program for regularly performing overhaul for it in the prescribed time limits, knowledge, experience and training of employees in the relevant departments of preparation and holding of production and the aforementioned discount ranges of up to 5-15%! (Jolic, M., Grujic, N., et al., 2003)

Analyzing the insurance market have been observed and other methods to lower insurance premiums as a reward for attention to maintenance as one of the most important items of functioning enterprises, namely:

- At insurance of machinery and equipment in cases where insurance billing period ends so that the insured did not have damage due to system maintenance, enabled the participation of the insured in a positive technical result - in other words, made the refund of premiums after the expiration of insurance if the insured had no pity.
- In some insurance firms have been observed techniques "discount underwriter". The underwriter is responsible person in the insurance company that sees the maintenance system in companies when he says that the system of maintenance decorated and designed in a way that affects the reduction in the cancellation plant, may grant a discount up to 30% of the insurance premium.

Since the premiums machinery breakdown and some other threats roughly 40-60% of the total premiums of all concluded insurance, it is easy to defend the thesis that virtually the benefit insurance companies allow the insured to any indirect saving and to maintain its production lines and training its employees in maintaining allocate at least ten percent per year of the cost of equipment.

It is significant because, in terms of the insurance companies that particularly larger or existing and potential policyholders, when you renew or admission into insurance and during the insurance period detail and a professional do the "capture" of risk, in order to realistically assess the maximum possible the degree of risk, ie. certainty of occurrence of certain adverse events and ensure (if necessary) of the observed risk reinsurance cover adequately insured obligation downloaded. It is also very important at this time, when the game among insurers is becoming increasingly ruthless, tariffs and conditions of the insurance premium to clearly differentiate and stimulate the insured person who has much invested in maintaining their facilities and equipment, and one that does not do this, and this, clearly and precisely define and highlight!

In table 1. gives a ratio of total insurance premiums, insurance number and the amount received per unit of insurance which shows that the above mentioned benefits when the maintenance of the equipment in question (as one of the parameters that contribute to avoiding machine failures) contributed to reducing the amount of the premium per unit of insurance machinery breakdown (failure) during the observation period and that the trend of reduction in insurance premiums in part, talking about the active participation of the insured in the maintenance of its plants in despite the increased number of insurance in the reporting period by years.

Table 1: Amounts per unit of insurance for Serbia by year

Amounts in thousands of dinars	2004		
	Number of insurance	Total insurance premium	The amount per unit of insurance
Fire insurance in industry and handicrafts	11179	2502710	224
Insurance against machinery breakdown	14775	3118325	211

	2009		
	Number of insurance	Total insurance premium	The amount per unit of insurance
Fire insurance in industry and handicrafts	14079	2070261	147
Insurance against machinery breakdown	16454	2978038	181

	2012		
	Number of insurance	Total insurance premium	The amount per unit of insurance
Fire insurance in industry and handicrafts	12466	1986933	159
Insurance against machinery breakdown	26364	2949404	112

	2014		
	Number of insurance	Total insurance premium	The amount per unit of insurance
Fire insurance in industry and handicrafts	11571	1770923	153
Insurance against machinery breakdown	30260	2566062	85

Source: National Bank of Serbia - Insurance Supervision Department - the official site.

STRUCTURE OF INSURANCE COMPANIES IN SERBIA AND SCHEDULE BY TYPE IN%

Chart 1 shows the ownership structure of insurance companies who do business with us. At the end of the third quarter (T3) 2014. operating in Serbia, 27 insurance companies, of which 21 of them foreign-owned and 6 in the domestic properly- private and public.

The total premium in T3 2014 amounted to 51.4 billion dinars. In the structure of non-life insurance premium share amounted to 79.1% and 20.9% in life. Highlights of 79.1% property insurance within which the aforementioned insurance and machinery breakdown - failures.

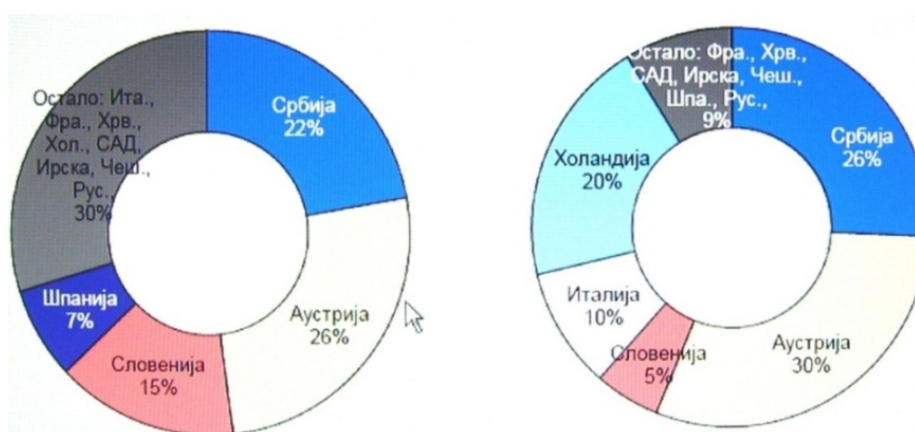


Figure 1: Structure of insurance companies in Serbia.

Source: official website of the National Bank of Serbia www.nbs.gov.rs page 4

Given that 40-60% of the amount of insurance for property damage, we come to the insurance premiums in Table 1. Other insurance are: automobile liability insurance 30.5%, 15.6% and 9% other non-life insurance and motor hull.

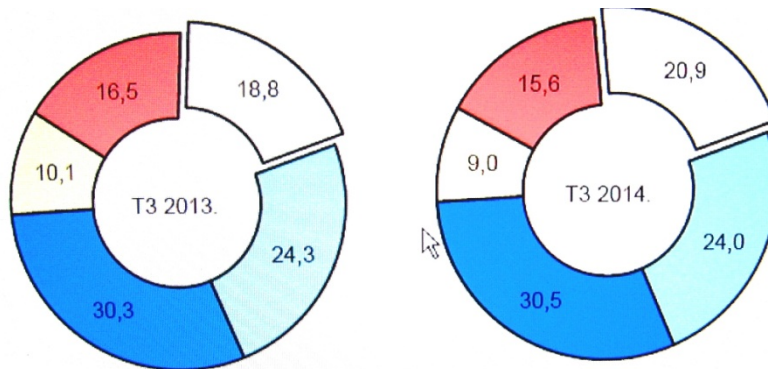


Chart 2: Total premiums by type of insurance in Q3 2014 in%
Source: official website www.nbs.gov.rs National Bank of Serbia, foreign 5th

CONCLUSION

The fight against the "weak points" and the aging of the technical system must be permanent and Development.

Conditioning of machines and equipment must be planned and realized in the process of maintenance, reduction of weakness to a minimum with proper reconstruction, modernization and revitalization. Optimal system maintenance can be achieved by applying appropriate methods of technical diagnostics, timely and proactive audits of the integral maintenance. Improving the state of the system (to be better than projected) and providing functional guarantees for the coming period conditional scientific approach of maintenance and engineering networking activities ie. teamwork will lead to the reduction in system status "in failure" and to an adequate discount in terms of reducing insurance premiums through various kinds of benefits that are prepared for the occasion insurance companies.

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MANAGEMENT STRATEGY RATIO LIQUIDITY IN FUNCTION OF THE STABILITY OF SERBIAN BANKING SYSTEM

UDC: 336.71:658.153(497.11)

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ABSTRACT

Strong development of financial markets and increasing banking organizations exposure to different types of risks, create agreement within the Basel Committee on the need for an agreement that would allow the stability of the international banking system. Banks will also experience increased pressure on their return on equity and return on assets due to the increasing cost of capital and liquidity. Through the case studies it's analyzed the liquidity and capital adequacy of the banking system Serbia. It's studied trend based on the projection of the authors suggests that in the future we may expect a growing trend of liquidity indicators with respect to Basel III standard requires a higher level of liquidity in terms of preserving stability and security operations. Coefficient of determination indicates that the indicator ROE is explained by the influence of regulatory capital 43.95%, while the ROA is explained by the influence of the liquidity ratio only 9.62%. From the analysis of indicators liquidity it see how the Serbian banking sector takes into account the share of cash and assets structure for simply liquidity management. On the other hand worrying increasing in the share of loans, especially the quality of these loans. If we look at the context of cyclic operation of the Serbian economy, in favorable phases of the economy leads to some increasing in loans to deposits ratio in the banking sector, which is reflected in the reduction of liquidity.

Keywords: liquidity, capital, profitability, risk

INTRODUCTION

Last financial crisis has revealed a number of deficiencies relating to corporate governance and risk management and thus renewed the question of regulation and supervision of the financial system. Banks must pay special attention to the minimum supervisory standards, so that their performance was significance in terms of capital and liquidity. Application of these standards should mitigate risk points in the banking business and prevent their lack of capital, that provide stability and security of the entire financial system. The aim of this paper is to highlight the relevance and appropriateness of Basel principles for banking operations with a particular emphasis on liquidity and capital adequacy. Significance of standards is reflected in the level of regulation required to be at the required level, in order to successfully overcome all obstacles in the banking business. The most important methodological tool of work that is directly related to the introduction of evidence is the degree of linear stacking indicators of liquidity and profitability indicators, among which traditionally theory predicts an inverse relationship. Ratio analysis together with descriptive statistics, correlation analysis and regression analysis of the subject of this research. Hypothesis test uses the impact of liquidity indicators at the level of profitability of the banking sector in Serbia, as well as test impact level of capital adequacy at the level of return on capital. Banks are due to increased costs of capital and liquidity experienced increased pressure on their movement to the indicator of profitability.

CONCEPT OF LIQUIDITY

The global financial crisis has reminded that the policy of increasing profitability, must lead the way as does not threaten liquidity. The task set before the management of each bank is to ensure an appropriate level of liquidity. Bank liquidity is the ability of the bank to meet its expected and unexpected financial obligations and to provide additional resources to increase the funds needed bank. Liquidity risk management is at the heart of creating a sense of trust and security of the public in the bank or banking system. The problem of maintaining perfect bank's liquidity in a market economy aggravated by the fact that banks such financial institutions - in the conversion of deposits into loans - perform maturity transformation. (master paper Milosevic S., 2010.). It is important to emphasize that the liquidity and profitability are important performance of each bank and their relevance should not be ignored. For this reason, banks must continuously strive (trend) to improve the basic balance of components to be included in the competition adequately. Bearing in mind the conflicting goals of basic banking principles, banks are forced to seek optimum, which will be the result of nuanced equilibrium rate of profit, solvency and liquidity, which has been in operation improvement performance and an acceptable level of risk for individual banks. This indicates that the liquidity of banks highly individualized problem, which is why there are no universal solutions for managing liquidity policy. (master paper Milosevic S., 2010.)

INTERNATIONAL REGULATIV IN PLACE OF LIQUIDITY BANKING SISTEM

Basel III in the management of liquidity risk by introducing new measures that are important to preserve liquidity indicator of liquidity coverage - LCR (liquidity coverage ratio) and an indication of the net stable funding sources - NSFR (net stable funding ratio). Indicator liquidity coverage is a standard for managing liquidity at which banks are required to hold cash and liquid assets in the amount that is sufficient to withstand a 30-day liquidity disorder. This indicator is calculated by the following formula (BCBS, 2010.)

$$\text{LCR} = \frac{\text{High Quality Liquidity Assets}}{\text{Total net cash outflows within 30 days}} \geq 1 \quad (1)$$

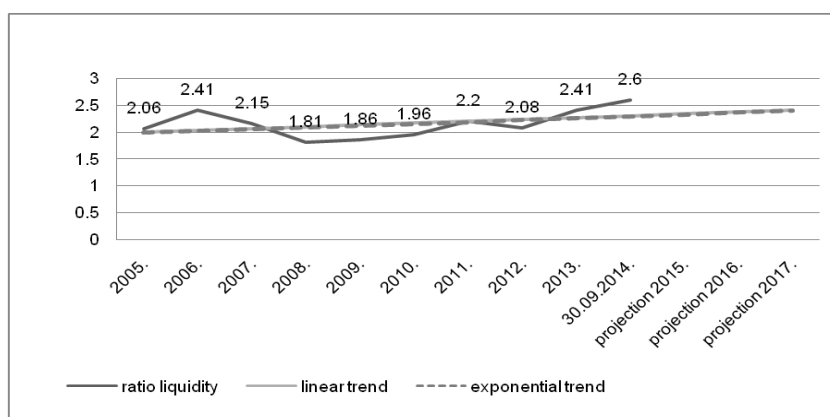
Indicator cover liquidity will be introduced gradually, since the beginning of 2015, whereby the minimum requirements to be set at 60% of the indicator. From 2015 to 2019 indicator this will increase to 100% and finally in January 2019 reached a level of 100%. The net stable funding source is the percentage of available stable funding of the total requested funds. It is anticipated that this indicator is more than 100% or 1. Implementation of this indicator will begin in January 2019, with the aim to promote long-term financing and reduce maturity mismatches between the elements of the assets and liabilities with residual maturity of a minimum of one year.

$$\text{NSFR} = \frac{\text{Available stable funding}}{\text{Required stable funding}} \geq 1 \quad (2)$$

The level of the bank's liquidity is monitored through indicators of liquidity, which is calculated as the ratio of the sum of liquid receivables of first order and liquid receivables of second order, on the one hand, and the sum of liabilities on demand without maturity and deposits with agreed maturity up to a month from performing the calculation of this indicator, on the other hand. In a situation of increased liquidity risk, the bank is required to stabilize and diversify its own sources of funding and create conditions for rapidly converting other forms of assets in the form of cash. The condition for survival in the world of banking means respect the principles of banking business. The basic rule for save liquidity in the banking system relates to better synchronize the maturities of liabilities with maturities of debt collection.

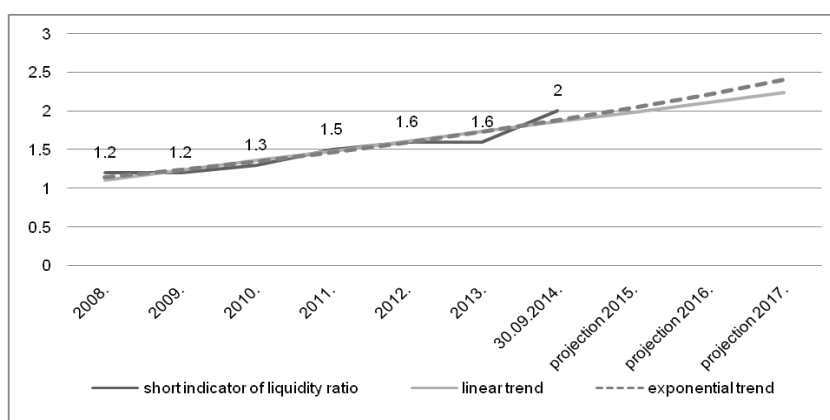
EMPIRICAL ANALYSISE

Average monthly indicator of liquidity in the banking system in Serbia after the third quarter of 2014 was 2.6 which is well above the regulatory minimum of 1. Based on the calculated slope coefficient in the observed period from 2005 to 2014, the rate of liquidity in the banking sector in Republic of Serbia every year, on average, increased by 1.57%. The calculated values of the trend, as well as the value of the original time series are shown in the image below. Based on the authors' calculations assumption extrapolation of the trend is that the same factors that liquidity acted in the past and present and act in the future, about the same force in the same direction and no significant impact of new factors. The projected value of the ratio of the banking sector in Serbia from 2015 to 2017 by linear and exponential trend shows the successive growth of 2.3% to 2.4%. Mean square error for a created projection is 0.05%.



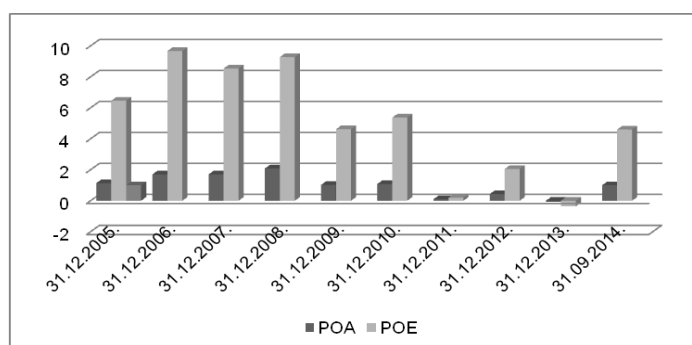
Graph 1: Indicator of liquidity ratio in the banking system in Serbia
Source: Authors (www.nbs.rs) Projection – Authors' calculations

Short indicator of liquidity ratio was 2 at the end of the third quarter 2014, which is well above the minimum of 0.7. The data presented banking sector in Serbia suggest that banks are facing a liquidity problem, which is largely a result of these restrictive measures of monetary policy by the National Bank of Serbia. Navigating the narrow indicators of liquidity in the banking sector in Serbia in the period from 2008 to 2014. Illustrated in Graph No.2 based on the calculated slope coefficient in the observed period from 2008 to 2014. narrower indicator of liquidity in the banking sector in Republic of Serbia each year an average of 8.62%. The projected value of the immediate liquidity ratio of the banking sector in Serbia from 2015 to 2017 by linear and exponential trend shows the successive growth of 2.03% to 2.4%. Mean square error for a created projection is 0.01%



Graph : Short indicator liquidity ratio of banks in Serbia
Source: Authors (www.nbs.rs) Projection – Author's calculations

Studied trend based on the projection of the author suggests that in the future we may expect a growing trend of liquidity indicators with respect to Basel III standard requires a higher level of liquidity in terms of preserving stability and security operations. Statistical correlation of monthly indicators of liquidity and ROA is an inverse linear. Regression analysis indicates that changes with the change of liquidity profitability. Keeping more resources in terms of liquidity reserves reduces the possibility of loans and investments in securities, which significantly affects the reduction in earning performance. It shows the movement of profitability indicators ROE and ROA in the observed period from 2005. to 2014. Serbian banking sector is characterized by a significant decline in profitability indicators since 2008, which confirms that the global financial crisis eroded earning performance of banks.



Graph 3: Profitability indicators ROA and ROE in Serbian banking sector

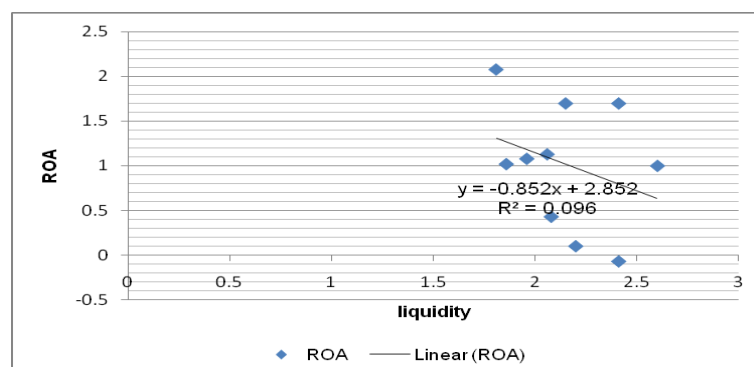
Source: Authors (www.nbs.rs)

Table 1: Spredadsheet of regresion analysis liquidity ratio and ROA

Period	Ratio of liquidity	ROA	\hat{Y}	e^2	$(\hat{Y} - \acute{Y})^2$	$(Y - \acute{Y})^2$
2005.	2,06	1,13	1,0971181	0,00108122	0,0064189	0,012769
2006.	2,41	1,7	0,7988061	0,8121504	0,0476086	0,466489
2007.	2,15	1,7	1,0204093	0,46184355	0,000011	0,466489
2008.	1,81	2,08	1,310198	0,59259509	0,0859651	1,129969
2009.	1,86	1,02	1,267582	0,06129686	0,0627914	0,000011
2010.	1,96	1,08	1,18235	0,01047553	0,0273406	0,003969
2011.	2,2	0,1	0,9777933	0,77052106	0,0015372	0,840889
2012.	2,08	0,43	1,0800717	0,42259317	0,003978	0,344569
2013.	2,41	-0,07	0,7988061	0,75482409	0,0476086	1,181569
30.09.2014.	2,6	1	0,6368654	0,13186677	0,1445023	0,000289

Source: Author's calculations based on data on the average liquidity ratio and ROA

Correlation coefficient of liquidity ratios and profitability ratios ROA is -0.31, which indicates that there is a low level of negative variation of the dependent variable that is explained by the influence of the independent variables. Determination coefficient indicates that the ROA explained the influence of the liquidity ratio only 9.62%, while the remaining 90.38% of the variation is not explained by the model, that came under the influence of other factors. Negative correlation diagram is presented in Figure i shows that with increasing liquidity indicator of profitability indicators ROA declines. The diagram shows that the dispersion between varijacijabli there is quantitative agreement. It is a stochastic relationship with that individual cases show a departure from the general rule. Slope coefficient is -0.85 and shows that the annual increase in the liquidity of 1% return on assets declining to 0.85%.



Graph 4 : Scatter diagram of liquidity ratio and ROA

Source: Author's calculations

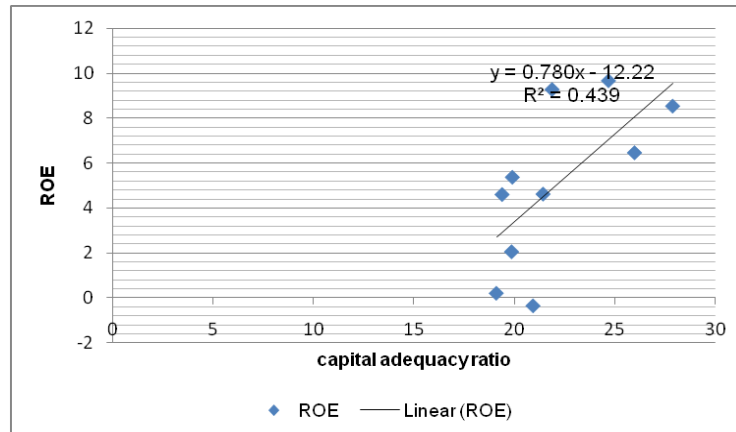
By analyzing the statistics of regression correlation coefficient of return on equity ROE and liquidity amounts to - 0.24, which indicates that there is a low level of negative variations regressors who explained the influence of the independent variables. Determination coefficient indicates that the indicator ROE explained the influence of the liquidity ratio only 5.53%, while the remaining 94.47% of the variation can be explained by specific factors that bind to the bank. Beta coefficient is -0.016 and indicates that with increasing liquidity annual 1% return on equity decreases to 0.016%. Very high levels of capital adequacy present in practice goes in favor of the banking sector R. Serbia resistant to shocks. Over the years the observed level of capital adequacy in Serbia ranged from 19.11% to 27.9% and was significantly higher compared with the banking sector surveyed countries. Capital adequacy ratio in 2014 was reduced by 8.3% if one considers 2007, when the banking heavily in Serbia recorded the highest capital adequacy kapitala. Link of capital adequacy and profitability indicators (ROE) is 0.66, which indicates that the correlation between moderate and there is a significant correlation between these two variables.

Table 2: Spredadsheet regression ana regulatornog kapitala u POE

period	CAP	ROE	\hat{Y}	e^2	$(\hat{Y} - \bar{Y})^2$	$(Y - \bar{Y})^2$
2005.	26	6,46	8,07503781	2,608347122	9,19325327	2,007889
2006.	24,7	9,67	7,06019508	6,811081713	4,069075996	21,409129
2007.	27,9	8,54	9,55826949	1,036872745	20,38765853	12,229009
2008.	21,89	9,28	4,8665735	19,47833351	0,031126312	17,952169
2009.	21,44	4,62	4,51528178	0,010965905	0,278486517	0,178929
2010.	19,91	5,37	3,32088996	4,198851966	2,965662998	0,106929
2011.	19,11	0,2	2,69637136	6,23186995	5,50666599	23,454649
2012.	19,87	2,05	3,28966403	1,536766901	3,074187032	8,958049
2013.	20,94	-0,36	4,12495766	20,11484518	0,842801745	29,192409
30.09.2014.	19,4	4,6	2,92275935	2,8131362	4,495420416	0,196249

Source: Author's calculations based on data on the average of regulatory capital and ROE

Determination coefficient indicates that the indicator ROE explained the influence of regulatory capital 43.95%, while the remaining 56.05% of the variation occurs is influenced by other factors. Dispersion diagram is presented in Figure no. 2 and indicate a stochastic relationship level of capital adequacy and profitability and the average deviation of data from the corresponding values in real regeresionoj is 2.85%. Slope coefficient is 0.78, and shows that the annual increase in the capital adequacy ratio by 1% return on equity increases by 0.78%.



Graph No. 5: Scatter diagram of regulatory capital and return on equity
Source: Author's calculations

CONCLUSION

The introduction of the LCR and NSFR indicators of banks will increasingly be focused on long-term funding sources and to hold low-yielding assets or liquid form, which will be reflected in the bank's profitability. Statistical correlation of monthly indicators of liquidity and ROA is an inverse linear. The objective of Basel 3 standards reflected in strengthening bank resilience to systemic risks through intensive capital base and liquidity position. To banking organizations were efficient and highly profitable, management must create a new competitive strategies that will contribute to new banking products and services, and thereby expand and diversify their portfolios. It is necessary to stress that the provision of adequate liquidity represents a permanent problem banks, which still has a significant impact on their profitability. Liquidity and profitability are a reflection of the success and efficiency of any banking organization. This paper presents the performance indicators of the banking sector in Serbia with an emphasis on liquidity, profitability and capital adequacy. Looking at the above indicators can be concluded that the Serbian banking sector is extremely liquid and stable from the perspective of capital adequacy, while the profitability of the sector at a slightly lower level compared to the previous period.

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RISK MANAGEMENT IN THE BANK OPERATIONS

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ABSTRACT

Modern business is subject to the everyday changes, turmoil and new risks. Identification of exposure within the sub-phases to identify all existing, current and future risks on the basis of valid data collected in a systematic way. In this paper the authors are concerned with the management of risks in the banks operations and its segments such as credit risk management, credit risk measurement and authorities for the management of credit risks.

Key words: management, bank, credit, risk, operations

INTRODUCTION

In modern conditions commercial banks operating in an environment with other banks, customers and the economy as a whole, all of which brings an element of risk in the banking business, but it should be borne in mind that in modern conditions the dynamics of changes in society and the economy very accelerated, as again is a source of risk for the banking business.

Risk management in the strict sense is defined as a function of buying insurance and, more broadly, as well as evaluation, control and funding exposure to losses. All resources of the bank may be at risk and hence the interest of the bank to manage all of these risks, reducing them to a minimum, and slice them to materialize their payment from reserves or otherwise, in order not to jeopardize the financial performance of the bank.

TERM OF RISK MANAGEMENT FOR BANK OPERATIONS

Risk management in banking can be defined as a function of the bank, which includes the set of activities:

- Identification of risk exposure for all categories of assets and estimation of potential losses,
- Risk assessment that includes measurement and analysis of the loss in the past, in order to assess the variables that will affect the future,
- Control, in terms of reducing or eliminating the risk of loss, using all kinds of support,
- Financing risk security reserves, including insurance,
- Development of administrative techniques and use of expertise (risk management)

To make the process complete and should assess the potential losses that may arise from the manifestation of risky behavior. After the process of identification and assessment of needs to create awareness of the risk exposure for all staff who are in contact with this substance. This is followed by measurement of risk, which includes a variety of methods that define the management of the bank, if the classification of risky assets of banks in order to facilitate control. For phase measurement of risk is usually said that it was the center or heart risk (most urgent phase). Finally, if the risk already

occurs, the bank must provide sufficient funds for the reconstruction of incurred losses. By law, the bank is obliged to the relationship between the bank's capital to risk assets ratio maintained at a certain minimum, in order to protect creditors and the banking system as a whole.

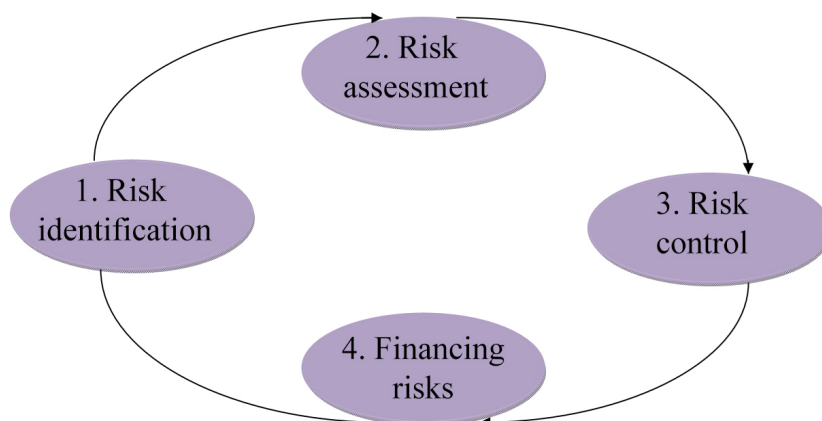


Figure 1: The risk management process

Risk management in the banking industry has two main objectives. The first is to avoid the insolvency of the bank, and the other is to maximize the rate of return on equity adjusted for risk (risk adjusted rate on Capital - RAROC).

CREDIT RISK MANAGEMENT

Credit risk, or the risk of repayment of the approved loan and accrued interest being called into question, is the most important risk that banks face today. The main causes of serious problems in the banking sector and increasing losses as a result of credit risk lie in the bad credit standards for borrowers and other counterparties, poor portfolio risk management or lack of attention to changes in the economy or other circumstances that might lead to a deterioration in the credit standing counterparties Bank.

In order to minimize credit risk, the Bank managed loans and structured credit portfolio in order to carry out its diversification. At the level of the appropriate authorities set up an appropriate system of regular periodic reporting and members of the Management Board on concentration risk. The great importance of managing credit risk arises from the potential danger of increasing the number of users not being able to regularly service their obligations. This can cause the entry of banks into the zone of technical insolvency (higher value of the bank's liabilities from the value of its claims). So there's a big responsibility bankers primarily employed in the credit department to monitor the effect of all factors affecting for the quality of credit portfolio and to promptly respond to adverse developments which may lead to the bankruptcy of the bank.

Realization of credit risk is the most common reason why commercial banks fail. Therefore, in almost all jurisdictions of the world introduced standards for credit risk management.

According to the principles of credit risk management, which are prescribed by the Basel Committee, the strategy of credit risk management include:

- Insurance application environment for measuring and managing credit risk,
- Valid, reliable and consistent process of loan approval,
- Suitable process credit administration,
- Active measurement, control and monitoring of credit risk,
- Suitable control exposure,
- Active participation and supervision of regulatory institutions.

Insurance application environment for measuring and managing credit risk means that banks have to develop a strategy or plan for credit risk, which determines the objectives of the bank's activities,

which are related to the granting of loans, and to adopt the necessary policies and procedures for the implementation of these activities.

Correct, reliable and consistent loan approval process involves four main principles, the most important of which says that banks must operate within well-defined criteria for granting loans.

Family process of credit administration, measurement, management and monitoring of credit risk - Banks must have in place a system for continuous administration of their portfolios. Depending on the size of banks, credit administration may be organized as a separate department or only a few employees can keep those jobs.

CREDIT RISK MEASUREMENT

Measuring credit risk leads to a series of problems, which are caused by the following:

- First, the event due obligations occurs so rarely, so that the results of applying any statistical methods based on actual observations are highly unreliable. The problem is further complicated by the existence of a correlation between the events of default arising due obligations.
- Second, in contrast to the yield on instruments that are traded daily, which yields generated on the basis of credit is difficult to observe because figuring in a number of years. When credit risk exposure is valid for the entire period until the time of maturity.

There are three basic approaches to measuring credit risk:

Standardized approach. The standardized approach is the simplest approach to measuring credit risk. The conceptual framework is the same as from 1988, with providing greater sensitivity to risk. Under this approach, the bank is required to share all their investments in certain categories of borrower, as defined by the Committee, in accordance with clear characteristics of concrete placement. For each category of loans applies to prescribed risk weights, while the sum of these products gives the total amount of risk-weighted assets.

An important innovation in relation to the frame of 1988 is linked to the special treatment of loans to households, which generally means lower amounts of weights, as well as the possibility that SMEs are recognized as loans to households, provided that they meet strict criteria set by control authorities. Also, a standardized approach to measuring credit risk acceptance and expanded list of eligible collateral which reduces the level of so-called credit risk. credit risk mitigants, and defines the various options for determining the degree of reduction depending on the market value of the collateral accepted.

Basic approach based on internal measurements, Access to internal measurement rating is based on the assumption that the banks themselves choose how you will measure the rating of its customers. This approach must be approved by the bank's supervisor. Internal access is an advanced method and proposed that the banks gradually developed and introduced.

In this approach, the basic input for the calculation of capital issuance are internal assessments of key risk factors the bank. Therefore, it is possible to determine the extent of capital that best suits the level of credit risk the bank is exposed. However, this approach does not allow banks to independently evaluate all the elements that are necessary for the calculation of capital adequacy.

The advanced approach based on internal measurements.

BODIES FOR CREDIT RISK MANAGEMENT

Department for credit risk management involves appropriate classification and experiential structure of employees, and adequate organization management placements.

Credit department of the bank should define limits on the maximum level of exposure in relation to individual clients, activity and geographic area, and that they are in the form of written

recommendations to submit to the approval of the Department of Credit Risk Management. Credit policies and procedures define the manner of control of approved loans and credit in use. The Board has a duty to adopt such measures in the framework of which are approved and monitored loans, as well as to clearly define responsibilities for the successful implementation of credit policies. All employees who consider applications for credit, letters of credit and guarantees must be instructed to inform the management of the bank for the total liability of the loan to the bank.

Bank Board makes decisions on which way will be kept informed of the process of revision of the loan and how much information (form, time intervals, parameters).

The control of credit operations is that potential losses to banks against loans granted to the least possible extent, by performing regular and systematic quality control in all departments and organizational units of the bank, whose jobs are located in the area of credit risk for the bank.

The credit committee of the bank's decision-making body and is an integral part of the senior management of the bank. Its function is to maintain and develop a stable and profitable loan portfolio and risk assets in the bank. Members of the credit committee appointed by the board of the bank. Members of the Credit Committee are employed in the retail banking sector, sector risk, and members of the Executive Board are responsible for both sectors. The Board shall oversee the management of the loan portfolio in order to control risk and maintain satisfactory profitability of the loan portfolio.

The Management Board shall receive draft program of audit of loans from the Executive Board, which is independent from that of the loan portfolio.

CONCLUSION

In the banking business, risk management has appeared as a relatively new discipline and has evolved from the insurance business, as in the conduct of insurance is observed that the traditional way (through the compensation of damage) can not successfully minimize the risk of doing business in any industry. Risk management in banks is a complex mechanism that combines the dimensions of internal risk management policy banks, as well as contracting of hedging with insurance companies. It is an indispensable part of the business policy of the bank and is usually associated with one its organizational work, which is in an ideal situation, the board of directors directly responsible.

Modern business is subject to the everyday changes, turmoil and new risks. Identification of exposure within the sub-phases to identify all existing, current and future risks on the basis of valid data collected in a systematic way. To make the process complete and should assess the potential losses that may arise from the manifestation of risky behavior. After the process of identification and assessment of needs to create awareness of the risk exposure for all staff who are in contact with this substance. This is followed by measurement of risk, which includes a variety of methods that define the management of the bank, if the classification of risky assets the bank in order to facilitate control. For phase measurement of risk is usually said that it was the center or heart risk (most urgent phase). Finally, if the risk already occurs, the bank must provide sufficient funds for the reconstruction of incurred losses. By law, the bank is obliged to the relationship between the bank's capital to risk assets ratio maintained at a certain minimum, in order to protect creditors and the banking system as a whole.

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ESTABLISHING AN EFFECTIVE SYSTEM OF RISK MANAGEMENT IN INSURANCE COMPANIES - SOLVENCY II

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ABSTRACT

In order to establish an effective risk management process for insurance companies, there are specific input elements necessary to make decisions regarding the assumption of certain risks which are by their nature the chances of adopting adequate alternative strategies for diversifying risk, minimizing risk, and optimizing the strategic planning process and making decisions about redistribution, i.e. redirection of funds. To ensure solvency, insurance companies must adequately manage their capital and risk, i.e. they should provide the adequate amount of capital to cover all the risks they are facing in their business. The essence of the new model, known as Solvency II, is a comprehensive analysis of all the risks that insurance companies face in their business, not just those assumed by the policyholders. The main objectives of Solvency II are the better harmonization of requirements in terms of solvency with the actual risks faced by the insurance industry and the motivation of insurance companies to improve the risk management process.

Keywords: risk, insurance companies, solvency.

INTRODUCTION

Due to the sense of its existence and nature of business operations in the conditions of the global economic crisis, the insurance sector should alleviate the negative factors of crisis and initiate a country's economic development. There is a close mutual relationship between the insurance industry on the one side, and the economic and social development of a country on the other. Insurance market development is affected by numerous economic and demographic factors, such as the amount of gross domestic product (GDP), monetary and currency stability, employment rate, the citizens' propensity to save, foreign capital inflow, education and culture level, the population's age structure, development level of insurance companies, and many other factors.

Given that insurance companies have at their disposal capital which is long term in character, characterised by high quality and high mobility, which directly determines their role on the capital market in terms of allocation and re-allocation of long-term assets, it can be said that successful or unsuccessful operation of insurance companies makes a significant impact on successful or unsuccessful functioning of the country's overall financial system.

The first forms of regulating solvency in insurance in Europe were set by two directives: for non-life insurance – First Council Directive 73/239/EEC from 1973, and for life insurance - First Council Directive 79/239/EEC from 1979. These two directives required insurance companies to possess adequate amounts of capital to enable them to deal with the insecurity arising from insurance operation, that is, risks assumed from the policyholders. Regulating the solvency and preventing insolvent insurance companies from setting up and operating provides the policyholders with

protection from financial insecurity and secures the reliability of paying insurance claims. The main objective of setting up solvency control was to provide supervisory bodies with an opportunity for timely detection of problems in the operation of insurance companies and thus provide better protection of the insured.

SOLVENCY I DIRECTIVE

The essential motive for introducing the Solvency I Directive was the need to provide supervisory bodies with additional powers in terms of intervening when the financial position of an insurance company starts deteriorating. The Solvency I Directive sets the minimum capital requirements at the level of three million euros, margin solvency ratio 16%-18% of the non-life insurance premium, and 4% of the technical provisions for non-life insurance. The main shortcoming of the Solvency I Directive is its solely quantitative approach without analysing the qualitative aspect of insurance company financing.

The significant shortcomings of this Directive:

- there is no valuation of the positions of assets and liabilities at market values; rather than all risks, only insurance risks were considered;
- there is no reward for the insurance company for appropriate risk management; and
- risk transfer issues are inadequately covered.

The existing Solvency I Directive, i.e. regulatory framework for insurance supervision within the European Union, with minor changes, dates back to the 1970s. Due to the outdated character of the basic supervision element, an initiative was launched in the later 1990s for a revision of regulations for insurance supervision, parallel with the development of Basel II standard for banks.

Another objective of the new framework is levelling the operating conditions for all market participants, harmonisation of supervision at the EU level, improving capital allocation, and improving competition within the insurance industry in the European Union. An addition to solvency regulation comprises the EU directives defining investment guidelines that determine how technical provisions will be invested, providing limitations for asset classes that may be invested in, and maximum participation allowed to be held in each. As the investment regulation is set in this way, risks inherent to assets are not included in the Solvency I capital requirements.

In the meantime, the doctrine and practices of risk management have made considerable advancements. Many companies in the insurance industry have developed sophisticated risk management systems enabling appropriate positioning of management structures towards risk identification, measurement and management. In addition, via economic development, the insurance industry has become the second most important industry in the financial services sector of the European Union, where the negative effects in this industry could be reflected on the overall financial system. Modern-day economic systems also generate new risks, such as operation and reputation risks. These require special attention and appropriate management. The above mentioned changes that appeared in the insurance industry and the fact that Solvency I, in essence, does not represent a significant innovation of solvency regulation since the one established in the 1970s, have resulted in the need to launch an initiative by the European Commission in 2001 for a new framework of solvency regulation – the Solvency II Project (hereinafter referred to as Solvency II).

The European Union decided to do this through two steps:

- the first step, Solvency I (entering into force in 2004) moved certain outdated thresholds of the old regimen without changing the structure;
- the second step, Solvency II, is the fundamental reform of the supervision structure and practice, making it more suitable for the policyholders and beneficiaries

SOLVENCY II – THE THREE PILLARS

Regulatory bodies in the European Union are setting more difficult, new and additional challenges before the insurance sector. Wishing to provide security in the operations of insurance companies in the European Union, the development was initiated of a regulatory framework for the operation of insurance companies known as Solvency II Directive. The creation of Solvency II features replacing the simple solvency structure that used to exist in insurance in Europe, and creating a modern, risk consistent financial supervision system. Assessment of the required capital is the basis of the new regulation – Solvency II.

Within the new system, insurance companies will be required to take into account all types of risk to which they are exposed and manage these risks more efficiently. Provisions for these risks will be held in the form of solvency capital requirements (SCR). Groups of insurance companies will have a designated “group supervisor”, who will enable better monitoring of the group as a whole.

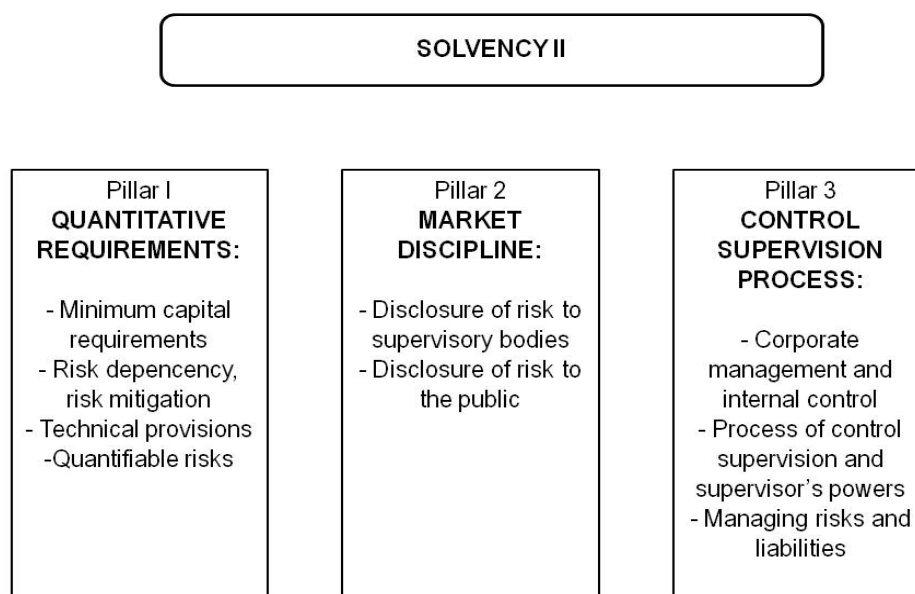


Figure 1: The three pillars of Solvency II

The first pillar refers to the set of quantitative requirements that the insurer must meet in order to protect the interests of policyholders and beneficiaries and provide stable and secure operation. Regulatory requirements therefore refer to valuation of assets and liabilities (especially technical provisions and investments) and solvency capital requirements.

The Solvency II Directive provides valuation of assets and liabilities at fair values. The fair value principle refers to the value at which particular insurer's assets or liabilities can be transferred (i.e. sold) in a legal transaction between known contracting parties. The Directive strives to be compatible and consistent, wherever possible, with the international accounting standards, especially in sections relating to asset and liability valuation, including technical provisions.

As regards the valuation (establishment) of technical provisions, the Solvency II Directive aims at harmonising and coordinating the calculation methods of technical provisions. This practically means that the sum of technical provisions should be equal to the best estimate sum (future cash flow taking into consideration the time value of money with the use of the risk-free interest rate) and risk margin (which provides the appropriate capital levels for solvency in meeting the insurance company's liabilities), calculated separately. Solvency II introduces a new way of calculating capital requirements based on the assumed risk, the so-called Minimal Capital Requirement (MCR) and Solvency Capital Requirement (SCR).

The aim of solvency capital requirement is to reflect the level of required own assets enabling the insurer to absorb losses with the confidence level of 99.5% at the annual level. The level of capital for solvency provision must be calculated so that it covers all quantified risks assumed by the insurer or reinsurer. Practically, this means that the minimum of the following risks must be covered: non-life insurance, life insurance, health insurance, market risks, credit risk and operational risks. The calculation of the solvency capital requirement may take into account risk mitigation techniques (such as reinsurance), provided that credit risks and other risks associated with the application of such techniques are properly elaborated in the solvency capital requirement. The accounts of the solvency capital requirement must be submitted to the supervisor once year in the form of appropriate report.

The second pillar of Solvency II indicates that insurance companies are to secure continuity and regularity in their operative performance, which implies provision of appropriate systems, resources and procedures, and also contingency plans for unforeseen situations. The Directive emphasises the importance of management by the supervisory bodies in the risk process, and new experience. The supervisory bodies have the power to undertake preventive and corrective measures that will ensure that the insurer operates in compliance with the Solvency II Directive. This implies that supervisory bodies can control the operations of insurance companies at their premises or on any grounds (source) externally, requesting the presentation of particular data.

Supervisory bodies may request that the adopted strategies, processes and reporting procedures be evaluated so as to harmonise them with the Directive. In accordance with their powers, the supervisory body acts in accordance with the proportionality principle. If the result of the audit is such that the company's risk profile departs from the foreseen solvency capital requirement, this entails an audit of components of identified risks comprising the standard formula or internal model, or viewing the problem in the company management process, which, in turn, entails allocation of additional capital provision. Each audit of the capital level must be revised at least once a year.

Insurers and reinsurers should have an effective management system, appropriate to their activities, which provides strong and controlled corporate management. In addition, it must include specific requirements related the risk management, internal control, internal audit, actuary service and control of various outsourcing arrangements. All staff employed in insurance, primarily on risk assumption, or have some other key function in the company, must be high-quality and suitable.

The third pillar is based on disclosure and transparency, in order to strengthen market mechanisms and risk-based supervision. The aim is to provide policyholders, investors, rating agencies and other stakeholders a comprehensive picture of an insurance company's risks, so that this information have a disciplinary effect on the company management. Disclosure requirements depend to a great extent on the measure included in the first and the second pillar. It has not been decided yet when and which supervision information will be disclosed, as publicising an unfavourable solvency position of insurance companies may deteriorate their condition. On the other hand, disclosure of unfavourable information on the company's operations can be important for potential policyholders to make an informed choice.

Owing to this, all interested stakeholders will make their decision based on the overview of the insurer's financial position. At the same time, transparent development of value and risk management process will provide relevant and well-founded indicators of the insurer's economic strength. In addition, requirements to disclose financial indicators, sensitivity to assumed risks, as well the level and quality of own assets will secure the insurer's competitiveness and minimise the need for the regulatory body's arbitration. All insurers have the obligation to publicise reports on solvency and financial operations once year. Before being disclosed to the public, this report must be approved by the insurer's relevant bodies. This implies the responsibility of the insurer's top management for the presented report (form and structure).

If there are substantial changes within the reporting period that significantly affect the enclosed information, the insurer has the obligation to submit necessary explanation. In other words, the aim is to provide policyholders, investors, rating agencies and other stakeholders with a comprehensive picture of an insurance company's risks, so that this information has a disciplinary effect on the insurance company's management. Disclosure requirements are highly dependent on the measures included in Pillars I and II. It has not been decided yet when and which supervision information will be disclosed, as publicising an unfavourable solvency position of insurance companies may deteriorate their condition. On the other hand, disclosure of unfavourable information on the company's operations can be important for potential policyholders to make an informed choice.

THE POSSIBILITY OF IMPLEMENTING SOLVENCY II IN THE INSURANCE COMPANIES IN THE COUNTRIES OF THE REGION

As regards the organisation of insurance companies in the region from the risk management aspect, it will be somewhat different than the EU. That is to say, the organisational structure will be supplemented with units required for surmounting risks. This refers to committees for surmounting risks. In addition, the already existing organisational units within the insurance company will get new activities, which will include management and organising operative units, and supervision. Finally, some of the current organisational units in the company will merge. Here we refer, above all to actuaries and the financial sector in the company. What is also very important is the change in decision makers in insurance companies, primarily persons involved in company management. Decisions will always be made with regard to what level of risk to achieving the required business results is acceptable to the insurance company.

The role of public supervisory bodies is also highly important. The role of supervisory institutions will substantially change in the area of verifying the fulfilment of certain normative requirements and indicators. Actually, this verification will transform into a qualitative control of the structure and success of an insurance company's business. The supervisory bodies will have to supplement their knowledge of regulations with practical expertise in the operation of the financial and insurance markets. Conducting stress tests is also envisaged, which will simulate extreme scenarios for an insurance company. These measures will have a preventive impact, to prevent the occurrence of more numerous liquidation procedures, as a result of climate changes, technological advances and risks insurance companies may still be insufficiently aware of. The state and individual insurance companies should comprehend the necessity of establishing a risk surmounting system, as foreseen in the Solvency II, which is also essential both to the survival of insurance companies and facilitating the accession of the countries of the region to the European Union.

As regards insurance companies in the countries of the region, the long-term consequences will be the same like in the EU, but they will be primarily caused by reinsurers' demands. For this reason, it will be necessary to invest a lot of energy and assets in programming equipment, data quality and continuous data analysis due to risk individualisation. Insurance companies will be better informed about their financial exposure and adapt their investment policy accordingly, which will result in emerging requirements for lower capital, resulting in more competitive premiums. Insurance companies will look for less risky and long-term investments with lower returns, with higher premiums as a consequence. This will result in the need to develop the financial market and seek opportunities for investment abroad.

CONCLUSION

Solvency II will be a particular challenge to insurance companies with a track record of insufficient or inappropriate risk assumption systems. This is especially the case in life insurance, where traditional actuarial practices very often did not get involved in valuation and assessment of guarantees and options included in the products. Generally speaking, Solvency II will strengthen the insurance

companies' focus on risk and return on capital, and increase professionalism related to appropriate risk-based pricing and risk and capital management in the insurance sector. Effective policyholder protection requires that the Solvency II framework be based on economic principles: diversification, permitting internal models, giving appropriate support to reinsurance and other risk mitigation techniques (financial hedging – e.g. derivatives and insurance-related securities), strengthening trust in market mechanisms, relying on growing transparency. Solvency II will lead to unequivocal identification of risks faced by insurance companies, as well as risks related to life and non-life insurance, catastrophic events, investments and claim positions. In addition, the effects of capital preservation will be measurable due to diversification and risk transfer. All this information enables management of insurance companies in a manner controlling overall risk exposure (risk assumption, investment process and risk transfer process management).

Solvency II will eliminate erroneous incentives to risk assessment (by monitoring investment risk, credit risk, and catastrophic event risk), and the main benefit of Solvency II for insurance industry is risk-based pricing of insurance products. Solvency II will enable product innovation contributing to creation of products with the characteristics of manageable risks. Solvency II will strengthen the focus of insurance companies on creating economic value, which is inevitably connected with strong risk management. On the other hand, Solvency II will require insurance companies to harmonise different information necessary for calculating capital requirements responding to the companies' risk, and to continuously update information in accordance with the change of risk in the environment. This will result in to higher costs and requirements for lifelong learning and strict application of the risk/return focus. Lifelong learning is not essential only for insurance companies. It is also highly important for supervision bodies. Failure to provide a harmonised regulatory framework based on economic principles may create an inappropriate incentive to the industry.

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TAX ON ASSETS AS A FACTOR OF INCREASING ECONOMIC ACTIVITIES

UDC: 336.226.2

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ABSTRACT

In this paper authors are presenting idea of an Asset Tax as a new category of state fiscal income as well as instrument for better allocation of wealth and increase of economic activity. Authors explain concept of Asset tax from social, ethical and economic aspect. In current legislative there are Laws that treat taxation of property, profit and investments. However, the authors argue that taxation of all the assets, especially those unused, should be considered.

Key words: Asset tax, taxation, economic activity, wealth distribution.

INTRODUCTION

In this paper authors discuss an uncommon tax in today's tax systems for which might contribute to more balanced wealth distribution and state income. This tax authors name as Asset Tax. Asset tax is a percentage on total value of assets of a business from the balance sheet and it would be similar to the property tax, but it would cover not just a land and buildings but also equipment and other assets. All taxes, except property tax, are calculated according to the income statements. The authors advocate for the tax that is calculated on the items from the balance sheet.

A METHODOLOGICAL FRAMEWORK

The focus of this paper is taxation of property for businesses and entrepreneurs in a new way that would in addition to real-estate include equipment and capital as subjects to taxation.

Goal of this paper is to show justification of this tax and to explain this fiscal instrument from different aspects. To reach this goal, authors have taken the following tasks:

- Investigate social justification for the Asset tax
- Examine ethical grounds of the Asset tax
- Examine economic justification of the Asset tax
- Compare the current method of taxation with the proposed model.

The authors of the study started with the following basic hypothesis: Asset tax is the fiscal instrument that would improve the redistribution of resources in society and accelerate economic activities. In addition to these basic hypotheses, the authors raise the following hypotheses:

- There is a sociological justification for the adoption of the Asset Tax
- There are sound ethical grounds for the Asset Tax
- There is economic justification for the Asset Tax

The verification of the initial hypothesis authors performed using scientific and research methods. They used the method of analysis of existing literature on the subject, then method of analogy and the method of synthesis in drawing conclusions. They start the research by analysing current legislative that regulates the field of taxation as well as the comments of current tax laws and studies about their efficiency.

CURRENT REGULATIONS IN RELATION TO THE PROPOSED MODEL

- The issue of taxation of property of individuals and businesses in Serbia is regulated by the Law on:
- Property Tax (Zakon o porezu na imovinu ("Sl. glasnik RS", br. 26/01, "Sl. list SRJ", br. 42/02 - odluka SUS i "Sl. glasnik RS", br. 80/02, 80/02 - dr. zakon, 135/04, 61/07, 5/09, 101/10, 24/11, 78/11, 57/12 - odluka US i 47/13) http://www.invest-in-serbia.com/laws/srpski/Zakon_porezu_imovinu.pdf),
- Law on Personal Income Tax (Zakon o porezu na dohodak građana ("Službeni glasnik RS" br. 24/01, 80/02 - dr. zakon, 80/02, 135/04, 62/06, 65/06 - ispravka, 31/09, 44/09, 18/10, 50/11, 91/11 - US, 93/12, 114/12 - US, 47/13, 48/13 - ispravka, 108/13, 57/14),
- Law on Corporate Profit Tax (Zakon o porezu na dobit pravnih lica ("Sl. glasnik RS", br. 25/2001, 80/2002, 80/2002 - dr. zakon, 43/2003, 84/2004, 18/2010, 101/2011, 119/2012, 47/2013, 108/2013 i 68/2014 - dr. zakon).

This Law treats buildings and land, or real estates as basis for taxation, but not the equipment or cash in the current accounts or provision. The property tax rate for taxpayers who are keeping the financial books is 0.40%.

In taxation practice in Serbia, but also in the practice of developed economies the following applies: "One of the basic postulates when designing a successful tax system is the principle that every penny should be taxed once and only once. Multiple taxation of the same money is an indication of inefficient system, while the possibility that the money is not taxed on any stage suggests a potentially poorly designed tax system." (Altiparmakov, 2010).

Savings are also treated by the current Laws and are subject to taxation only in the part of receiving interests or capital gains (Arsić M. et al., 2012). However, the authors of this paper suggest another principle by which tax laws should be developed: That every penny that is not in use should be taxed, every year.

SOCIOLOGICAL JUSTIFICATION OF THE ASSET TAX

Jean Jacques Rousseau in his work Social Contract says that as a rule, an individual should have only that amount of land which is able to process. This is not actually the property of the individual but it is given to him to use and he needs to pay to the community for use of the resources. On this basis, the items one earned are also not his/her property but are the property of the community to which he/she has come through his/her activities and claim the right to use them during his/her life in that community.

Based on the positive legislation an individual becomes independent from 18 to 21 years depending on the state and carries out its economic activity until the retirement which in most countries is after 60 to 65 years of age. This means that average working life is around 40 years. In that period individuals

works and earns his wealth. If we look this from the aspect of the social contract the society provided environment and conditions for the individual to work and earn his/her living. He/she gained this opportunity according to the social contract which is based on reciprocity of giving and taking, so he/she should return the just amount the society of what he gained. If the society gives the individual to earn his wealth in 40 years, that wealth is part of the social contract were society guarantees an individual conditions in which he can earn his wealth and the individual should in return give back to the society an adequate amount (Becirovic et al. 2010).

As an individual is collecting wealth in the period of 40 years (on average) it would be appropriate to annually give back to the society 1/40 of what he/she currently possesses so that in an average work life an individual can fulfil his obligation to the society entirely. The society on the other hand would use these resources to compensate to those individuals to whom society failed to provide these conditions to work and earn.

This tax should not be confused with other types of taxes since it is essentially different from the taxes that are currently paid which are related to revenues or profits. None of these taxes do not cover the assets of the businesses. The Asset tax is not a substitute to the existing taxes but a new category of taxation and redistribution of social wealth that has not been taxed before (Becirovic et al. 2012). According to the above said we can conclude that in this way there is no double taxation which is socially and ethically unjustifiable.

ETHICAL BASIS FOR THE ASSET TAX

There are many issues regarding taxation related to ethics. Here we will only focus on helping or giving support to those in need by those that have taken that obligation. If we look the statement that Asset tax should be paid by the businesses that earn using the resources and conditions provided by the society than we also need to emphasize that they earn their wealth by collecting their revenue from other members of the society.

The value in the accounts of the businesses or in their assets comes from other members of the society that the businesses have provided with products or services. However, according to the social contract each member of the society has its role in the society which he/she needs to fulfil in order for society to function. The key question is: if we, as members of the society, have our roles and functions that society has given us, on what basis we collect our wealth by fulfilling these roles. If the businesses are earning wealth by fulfilling some function for other members of the society, than it should pay “rent” to the society for using the business environment and conditions (Plojovic et al. 2011).

The next question is how much that “rent” for the use of the resources, business environment and conditions should be? When we discussed the social justification of the Asset Tax we defined the rate according to the average duration of working life of an individual. The similar situation is with the businesses, but it demands explanation.

The businesses are organizations founded by individuals, or other companies which are in the end founded by individuals with the same average working life of 40 years. Although many companies work for several centuries this cannot be used as an argument since during this period structure of the ownership of the company changed over that period were each generation could use the resources and conditions provided by the society during their working life that is 40 years in average. The public companies also should not be an exception since their “owner” is the society were again the average working life is 40 years, and for each year of work they should pay the “rent” for use of the wealth that society has enabled them to use.

Earning wealth on expense of other members of the society breaks the social contract on which society is constituted on and it represents unequal distribution of work, obligation and rewards which needs to be corrected with this solution.

ECONOMIC JUSTIFICATION OF THE ASSET TAX

One of the basic indicators for quality of business is engagement of resources. If we manage to decrease the resources needed for successful completion of certain work than they increase the quality of business processes. Profit should not be the only reason for existence of businesses, but rather doing certain functions in the society (Plojovic et al 2011). One of those functions is more efficient use of resources like Just-in-time production. The society needs to motivate businesses to do their work in line with this principle. This would in the end lead that businesses would try not to leave any of their resources unused. Capital that is in use tend to multiply and capital that is static tend to lose its value. The society must have an objective to motivate businesses to work with less resources for fulfilling their social function. As one of the best tools to achieve this objective is Asset tax. If we look at the society as a system than we can say that in this way those parts of the society that unjustifiably stack and do not use social resources. Everyone that stores and do not use resources prevents making of new added value from the use of those resources that might be created if the society gave those resources to someone else to use in an efficient business activities.

CONCLUSION

Asset tax, as we have defined it, is a new category of taxation. This taxation the society ensures more just distribution of wealth, on one hand, and increases effectiveness of the economic system on the other. Authors did not cover techniques and models for collection of this tax, but focused on presenting the concept that can contribute to increase in economic activity to wither scientific community. Authors emphasize that there is justification for the Asset tax as a new fiscal instrument with the objective for more just wealth distribution and increased cash flow. The initial hypothesis has been verified to be true.

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EVALUATING THE COMPETITIVENESS OF NATIONAL ECONOMIES: THE CASE OF EU CANDIDATE COUNTRIES

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ABSTRACT

Evaluating the competitiveness of national economies is a challenging task because of the sheer number and variety of influences on economic growth. For all countries, especially for EU candidate countries, the competitiveness indices are important tools for policy creation – comparing the results with more developed countries shows for developing countries the right directions of development process. The goal of the evaluation is to determine the causes and differences of EU candidate countries' competitiveness, as well as the differences or similarities in the results of an analysis based on competitiveness indices obtained by the application of different methodological approaches. Evaluating countries' competitiveness based on competitiveness indices reveals important new insights into the causes of competitiveness. Also, it unravels the relationships between economic growth and competitiveness, giving countries a way to detach the impact of externally given conditions from their own policy choices.

Key words: evaluating the competitiveness, national economies, EU candidate countries, indices

INTRODUCTION

In recent years, the importance of evaluating the competitiveness of national economies has been increasingly recognized. Economic literature has provided many discussions about the theoretical framework for evaluating the competitive positions of national economies (Aiginger et al., 2014, Porter, 2008; Bienkowski, 2006; Garelli, 2003; Ezeala-Harrison, 1999). Emphasis is also laid on the role of competitiveness in transition and integration processes in the European Union (Huemer et al., 2013; Sachs et al. 2000; Warner, 2002). These discussions are theoretical basis for evaluating the competitiveness of national economies and accepting appropriate policies. This paper will give an overview of the evaluation of the EU candidate and member countries' competitiveness obtained by way of different methodological approaches: Europe 2020 Competitiveness methodological approach, the World Economic Forum Competitiveness methodological approach, the World Bank methodological approach and the Heritage Foundation methodological approach. Evaluation results are based on competitiveness indices obtained by the application of different methodological approaches.

EVALUATING THE COMPETITIVENESS OF NATIONAL ECONOMIES: THEORETICAL BACKGROUND

The theoretical foundations of the competitiveness evaluation methodological approaches are similar. They integrate the main considerations about the concept of competitiveness, emphasizing its multifaceted nature and the need to characterize a country's competitiveness within various dimensions and categories by means of a comprehensive set of competitiveness indicators. According to Garelli (2003, p. 711–713), the concept of competitiveness is the result of a long history of thinking, which has helped to define the various aspects of this modern and complex idea. Aiginger et al. (2014)

redefine the concept „competitiveness“ to make it more useful also for evaluation of national economy performance and for policy conclusions. They aim to set a definition that is adequate if economic policy aspires for a new growth path that is more dynamic, socially inclusive and ecologically sustainable. Huemer et al. (2013) criticize the traditional concepts of evaluating competitiveness of national economies since these concepts ignore the fact that competitiveness can change not only due to market processes but also because of political decision making. The methodological approaches distinguish from one another fundamentally in how they choose and group the initial indicators and how this information is aggregated into overall competitiveness indices and rankings. It is necessary to use two types of data in order to capture competitiveness firstly, as it is measured (hard data or statistical data) and secondly, as it is perceived (survey data or soft data). The motivation for the use of both types of data in a study of economies with countries in transition is twofold (Sachs et al., 2000b, pp. 3): 1) it allows summarizing a large amount of data in a tractable way. The combination of statistical indicators with survey information provides an easy way to capture the competitiveness concept in the case where a single specific variable fails to do it; 2) this approach helps to overcome problems of scarcity and quality of the data. Bienkowski (2007, pp.13) define competitiveness as the ability of the country to achieve economic growth faster than other countries. The most widely used indicator for evaluating the nation's standard of living and the level of economic growth is a country's per capita Gross Domestic Product (GDP), adjusted to Purchasing Power Parity (PPP). Competitiveness correlates well, with GDP PPP per capita and GDP growth. Porter (2008) notes that a meaningful indicator of competitiveness at the national level is productivity which is defined as the value of the output produced by a labour unit. The countries can develop competitive and sustainable economic growth if they improve productivity and specialize in the products and services where they are most productive and innovative. Ezeala-Harrison (1999) defines competitiveness as the ability of the nation's firms to produce a good or render a service and promote them. Certain analysts point out the impact of economic freedom on economic growth and competitiveness (Vukotić and Baćović, 2006, p.81).

Warner (2002) examines an economic aim to achieve sustainable growth by shifting resources to new sectors and industries. When the Europe 2020 strategy was adopted by the EU, it aimed at defining a long-term economic growth agenda that would result in a more competitive, inclusive and sustainable society. Europe 2020 is a decade-long strategy devised to make European economies more competitive by encouraging national policies that provide smart, sustainable and inclusive growth to 2020. Europe 2020 Competitiveness index is based on a set of relevant, accepted, credible, easy to monitor and robust indicators presented by the European Commission. Competitiveness is a way to use uniform criteria to evaluate whether a country is doing everything it can to promote sustained improvements in its population's well-being, given the increasing competition in the world markets it faces (Sachs et al., 2000). It is impossible to evaluate the level of competitiveness using only one indicator, particularly if we try to discuss conducted comparative evaluations for the countries with different historical and political backgrounds and levels of economic growth (for instance, selected the EU candidate and the developed EU member countries). Level of a country's competitiveness can be presented by a group of various measurable indicators. Therefore, it is evident that different competitiveness methodological approaches considering the comparative strengths and weaknesses of national economies can provide different results about the competitive position of a country. Thus a comparison of the country's rankings obtained by different methodological approaches would certainly provide a extensive picture of this country's competitiveness and would also give reliable information for policy/decision makers.

METHODOLOGICAL APPROACHES FOR EVALUATING THE COMPETITIVENESS OF NATIONAL ECONOMIES BASED ON COMPETITIVENESS INDICES

In order to evaluate competitiveness of selected EU member and candidate countries, several methodological approaches will be discussed: European Commission - Europe 2020 Competitiveness methodological approach, the World Economic Forum Competitiveness methodological approach, the World Bank methodological approach and the Heritage Foundation methodological approach. Through the methodological approach of the Europe 2020 Competitiveness Index (figure 1), the report

of EU measures the extent to which the 28 EU member countries and EU candidate countries have in place the institutions, policies and services to make Europe a smart, inclusive and environmentally sustainable society. The report indicates that Europe as a whole trails world leaders in terms of building a knowledge-driven economy, although there are significant differences among countries (European Commission, 2015). The European Commission created a strategy entitled „Europe 2020 - EU Strategy for Smart, Sustainable and Inclusive Growth“, which points out the most important elements of the program. Europe has identified new engines to boost growth and jobs. These areas are addressed by Europa 2020 flagship initiatives. The top three priorities are (European Commission, 2010): 1) Smart growth: economic development based on knowledge and innovation; 2) Sustainable growth: promoting a resource efficient, greener and more competitive economy and 3) Inclusive growth: providing a high-employment economy delivering economic, social and territorial cohesion.

Europe 2020 Flagship Initiatives	The Europe 2020 Competitiveness Index (EU 2020 CI)- Seven pillars	
An Industrial Policy for the Globalization Era A Digital Agenda for Europe Innovation Union Youth on the Move	SMART	Enterprise environment Digital agenda Innovative Europe Education and training
An Agenda for New skills and Jobs European Platform Against Poverty		Labour market and employment Social inclusion
Resource-Efficient Europe	SUSTAINABLE	Environmental sustainability

Figure 1: Europe 2020 Competitiveness methodological framework
 Source: World Economic Forum: Europe 2020 Competitiveness Report 2014:
Building a More Competitive Europe, Geneva, Switzerland [Accessed: 16 March 2015].

According to Europe 2020 Competitiveness methodological framework the smart growth sub-index aims to measure the extent to which European countries are developing economies based on knowledge and innovation. It is made up of four pillars that capture various aspects of Europe’s ability to develop smart economies (EU 2020 Competitiveness Report, 2014, pp.8): enterprise environment, digital agenda, innovative Europe and education and training. The inclusive growth sub-index captures the extent to which every member of society can contribute to and benefit from Europe’s economic growth. This is captured through two pillars, one measuring the labour market and employment conditions, and the other measuring social inclusion more generally. The sustainable growth sub-index is made up of just one pillar, measuring the extent to which the natural environment is contributing to overall national competitiveness and the preservation of a pollution-free environment. The assessment of Europe’s competitiveness is based on available quantitative data. The overall scores for each country are calculated as unweighted averages of the individual scores from the seven pillars. The scores and rankings of the countries covered by the Report are extracted from a database covering 148 countries. All the scores are presented on a scale from one to seven, where higher values indicate stronger performance. The methodological approach of World Economic Forum (WEF) has evolved over time with the inclusion of information about the factors that affect the competitiveness and economic growth. In this context, the WEF introduces the Global Competitiveness Index, which is focused on the evaluation of national competitiveness. The WEF bases its competitiveness analysis on the Global Competitiveness Index (GCI), which includes both microeconomic and macroeconomic bases of national competitiveness. The GCI starts from the premise that competitiveness is a complex phenomenon, influenced by many factors, which are grouped into 12 pillars of competitiveness (institutions, infrastructure, macroeconomic stability, health and primary education, higher education and training, goods market efficiency, labour market efficiency, financial market efficiency, technological readiness, market size, business sophistication and innovation), organized into three stages of economy (factor-driven, efficiency-driven and innovation-driven). In addition to the World Economic Forum, the World Bank Announces Reports on Ease of doing business, which aims to rank countries according to the quality of the business environment as determinant of competitiveness. The Doing Business data are collected in a standardized way. To start, the Doing Business team, with

academic advisers, designs a questionnaire. The questionnaire uses a simple business case to ensure comparability across economies and over time—with assumptions about the legal form of the business, its size, its location and the nature of its operations. The Doing Business index (DBI) analyzes indicator values by areas (WB, 2014): 1) Starting a business, 2) Dealing with construction permits, 3) Getting electricity, 4) Registering property, 5) Getting credit; 6) Protecting investors, 7) Paying taxes; 8) Trading across borders; 9) Enforcing contracts; 10) Closing a business. Index of Economic Freedom, published by Heritage Foundation (HF), is much more than a set of data obtained by empirical studies. This is a detailed theoretical analysis of the factors that affect institutional environment and economic development. Although there are many theories about the origins and causes of economic development, the Heritage Foundation methodology indicates that: the country with the greatest economic freedom has a higher rate of economic growth and prosperity than countries with less economic freedom. The Index of Economic Freedom (IEF) represents an average of ten individual freedoms (HF, 2014): business freedom, trade freedom, monetary freedom, government spending, fiscal freedom, property rights, investment freedom, financial freedom, freedom from corruption and labor freedom.

EVALUATION RESULTS: COMPARATIVE ANALYSIS BETWEEN EU MEMBER AND CANDIDATE COUNTRIES

In the analysis shown in Table 1, which compares the rankings of EU member and candidate countries according to different competitiveness indices for 2014 and GDP PPP per capita, the best ranked countries are the EU member countries (Estonia and Lithuania). Compared to them Serbia is the worst ranked country. According to Europe 2020 CI and GCI for 2014, the best ranked country is Estonia while Serbia and Macedonia are the worst ranked countries. The best ranked countries according to DBI indicators for 2014 are: Lithuania and Estonia. Compared to them, Serbia and Croatia are the worst ranked. According to IEF for 2014, the best ranked country is Estonia and Serbia is the worst ranked. According to the key competitiveness indicator for measuring economic growth – GDP PPP per capita the best ranked countries are Slovenia and Czech Republic. Compared to them Serbia and Macedonia, as EU candidate countries, are the worst ranked countries.

Table 1: Comparison of the rankings in selected EU member and candidate countries according to different competitiveness indices for 2014. and GDP PPP per capita

	EU 2020 CI (28)	GCI (148)	DBI (189)	IEF (177)	GDP PPP per capita
Selected EU member countries					
Estonia	1	12	2	1	4
Slovenia	2		5	13	1
Lithuania	3	3	1	2	5
Czech Republic	4	2	13	3	2
Latvia	5	4	3	4	9
Poland	6	5	7	6	6
Slovak Republic	7	13	8	8	3
Croatia	8	14	14	14	8
Hungary	9	9	9	7	7
Bulgaria	10	7	10	9	12
Romania	11	8	12	10	11
EU candidate countries					
Montenegro	12	11	6	12	13
Turkey	13	6	11	11	10
Macedonia	14	10	4	5	14
Serbia	15	15	15	15	15

Legend: EU 2020 CI -The Europe 2020 Competitiveness Index, GCI - Global Competitiveness Index, DBI - Doing Business Index, IEF - Index of Economic Freedom.

Source: Calculated on the basis of data published by the European Commission, World Economic Forum, World Bank, Heritage Foundation and national accounts database for 2014.

Further analysis will show the significance of the characteristics of the perception of research competitiveness studies, which are largely used to construct the indices of competitiveness of various international institutions. The interdependence of rankings according to different studies (European Commission, World Economic Forum, World Bank, Heritage Foundation) and hard statistical indicator (GDP PPP per capita) as a broadest measure of economic growth, is shown in Table 2, as represented by Spearman's rank correlation coefficient. The data was processed via the SPSS 20 statistical software package.

Table 2: Spearman's correlation coefficient for analyzed competitiveness indices for the presented EU member states and candidate countries

	EU 2020 CI	GCI	DBI	IEF	GDP PPP per capita
EU 2020 CI	1,000	,532*	,504	,550*	,879**
GCI	,532*	1,000	,436	,836**	,339
DBI	,504	,436	1,000	,618*	,261
IEF	,550*	,836**	,618*	1,000	,389
GDP PPP per capita	,879**	,339	,261	,389	1,000

*. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed).

Source: Author's own calculations.

Conducted analysis of Spearman's rank correlation coefficient provides an answer to the question which methodological approach of competitiveness evaluation reflects the success of the national economy and competitiveness of analyzed EU member and candidate countries in the most reliable way. Positive correlation between the indices of economic freedom and the global competitiveness indices with a correlation coefficient of 0,836, has suggested that achieving higher level of competitiveness depends on economic freedom because the country with the greatest economic freedom have a higher rate of economic growth than countries with less economic freedom. Rank interdependence is pronounced between EU 2020 competitiveness indices and indices of economic growth (GDP PPP per capita), with a correlation coefficient of 0,879. The level of competitiveness of selected EU candidate and member countries analyzed in terms of different methodological approaches, indicates that methodological approach developed by European Commission highly correlates with the actual level of economic growth, evidenced by a very high correlation between the European Competitiveness Indices 2020 and the GDP PPP per capita as a most reliable measure of economic growth.

CONCLUSION

In conclusion, the analysis based on overall competitiveness indices serve to give information about the macro and micro environment that create business conditions for developing competitiveness of national economies in selected EU candidate countries. These conditions also influence economic growth in the long run. Thereby they have a lagged impact on the competitiveness rankings in selected EU candidate countries. Comparing the results of the use of different methodological approaches for evaluating competitiveness of the EU member and candidate countries, it is possible to conclude that the leading positions belongs to EU member country - Estonia. The results of using different methodological approaches for evaluating competitiveness of EU candidate countries indicate that Europe 2020 methodological framework captures progress in transition on the most reliable way. Thus, the multifaceted nature of the competitiveness of national economies concept is evident. Therefore, for elaborating the countries' competitiveness rankings in EU candidate and member countries, it is important to rely on a combination of indices obtained by application of various competitiveness studies, hard statistical indicators and people's perceptions about the competitive environment of a national economy. Evidently the EU member countries' lessons in integrating countries with different economic and political backgrounds are valuable in supporting the EU enlargement process and the reintegration of the new member countries into European Union. These lessons are also valuable for adjustment to the requirements and challenges of globalization and

liberalization. The role of using proper policy models will grow in the course of creating conditions for improving competitiveness, sustainable development and economic growth of the EU candidate countries. Choosing the right policy depends on identifying the cause of the lack of competitiveness. The causes of poor competitiveness in EU candidate countries vary between countries and over time.

However, methodological approach for evaluating competitiveness developed by European Commission promises to reveal new insights into the causes of competitiveness. It will help EU candidate countries to recognize policies for smart, inclusive and sustainable growth, each of which requires different policy tools. While a united effort is desired from all EU candidate and member countries to improve knowledge-driven economy in Europe, it is obvious from the large national disparities that paths towards this goal, and policy priorities for improvement, will differ across national economies. However, for all European economies, investments in knowledge-generating assets will translate into important drivers for future economic growth – those drivers being a common focus on Europe 2020 pillars, e.g. education, information and communication technologies, the digital agenda and reforms to improve the overall enterprise environment and competitiveness across the region.

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ARCHITECTURAL MODEL OF EXPERT SYSTEMS

UDC: 004.891

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ABSTRACT

Expert systems use research results from the knowledge engineering are for the purpose of developing functional and commercial application capable to bring advantages to the simple decision taker as well as to the decision takers that are leading organizations. Expert systems come in the aid of the user, helping him run tasks at the performance level of the expert, giving them the experts acquired knowledge and experience. Expert systems can be applicable in any domain because of its quickness and readiness at solving problems, the easiness of use and consulting in actions for taking optimal decisions. Because of this reason, we taught about researching expert systems, creating an architectural model which can be applied after in various fields, taking into account the nature and particularity of decisional problems. Studying specialty literature we identified numerous approaches to expert systems architecture. We will present the ones which were of use to use in the clarification of concepts, we will describe the special used components in representing knowledge and rules, outlining the architectural model proposed by us.

Key words: expert systems, inference engine, knowledge system, knowledge engineer

INTRODUCTION

In the current business environment the problem of taking quality decision, both at individual and organizational level, has become a very difficult task, because of the big volume of information which circulates in a very fast rhythm, are coming from a wide variety of sources and are difficult to process in real time. To have fast and innovative to the pressures and opportunities of the business environment, the decision takers need to resort to the aid offered by new informational technologies, known as decision support systems (DSS).

Researchers of support systems for decisions have built and studied a large variety of systems like this. From the vast area of decision support systems, a category which is enjoying great interest are expert systems (ES). These were developed by combining artificial intelligence tools with techniques from the decision support systems and knowledge engineering sphere.

Expert systems are generally designed very differently from traditional systems because the problems they are going to solve don't have algorithmic solutions. The purpose of expert systems is to aid the user in the reasoning needed to solve the problems, after getting the knowledge from human experts. This knowledge needs to be explicit intelligible, expert systems using the research results from artificial intelligence for the purpose of developing applications capable of bringing benefits to the organizations.

Expert systems come to the aid of the novice user, less knowledgeable in his domain, helping him to complete his tasks at the level of an expert. To highlight the importance of expert system, from the

point of view of the methodologies specific elaborating the present paper, we will present firstly the characteristics, applicable areas and recent applications of expert systems.

Starting from the premise that expert system architecture can be consider a special case of generic architecture of decision support systems, we will describe in the following the conceptual theoretic framework of DSS, identifying essential components and interdependencies between them. Showing the particularities of expert systems architecture found in specialty literature, will lead us to accomplishing the goal of this paper which is outlining the architectural model of expert systems.

CHARACTERISTICS OF EXPERT SYSTEMS AND THEIR AREAS OF APPLICABILITY

Characteristics of expert systems

”Expert systems are those informatics systems which try to capture the capacity of reasoning of humans to reply to the users. By incorporating expertise, expert systems provide solutions in decisional problems in a similar manner with decision takers which got the ability to solve problems using previous personal experiences or resorting to other people’s experiences.” (Sariyar & Ural, 2010)

Being a branch of artificial intelligence, expert systems present characteristics which differentiate them from other types of systems, which are (Turban, Sharda, & Delen, 2011):

- They use symbolic reasoning and heuristics. Expert systems integrate existing knowledge and subjective reasoning in a symbolic reasoning using heuristic methods of processing (non algorithmic) for the purpose of solving some problems usually found in interdependency.
- Self-Knowledge. Expert systems need to be capable of examining its own reasoning and explain the motives for which it got to a particular level of conclusions.
- Inference. Expert systems need to be able to combine and link knowledge for the purpose of obtaining new knowledge.
- Using expertise. This characteristic of expert systems gives them the ability to find solutions to a problem and determining the necessary competence necessary in the respective area.

Because of these characteristics, expert systems find applicability in a lot of areas. Expert Systems are valuable especially for organizations where there are persons with a high level of knowledge and expertise. (Giarranto & Riley, 2005).

Areas of applicability of expert systems

The areas of applicability of expert systems can be outlined by studying classic and recent applications of them. (Kiong et al., 2005) identifies as major areas of applicability of expert systems: agriculture, education, environment management, legislation, medicine. According to Turban, expert systems have found applicability in the next areas (Turban, Sharda, & Delen, 2011):

- Finance. Expert systems applied in this area include evaluations of insurance, credit analyzing, tax planning, fraud prevention, analyzing financial reports, financial planning and performance evaluation.
- Data processing. Expert systems for processing data include planning systems, selecting and maintaining equipment, evaluating providers and network management.
- Marketing. Marketing expert systems include the management of client relations, analyzing the market and planning of products.
- Human Resources. Expert systems used in this area provide useful information for planning human resources, evaluating performance, scheduling staff, managing pensions and advising employees.
- Production. Expert systems for production include production planning, quality management, product design, repairing and maintaining equipment.

- Management of medical care. There were many expert systems developed for bio information and other problems of health management.

Studying the most recent applications of expert systems we can observe that the focus of the researches in the area was channeled to solving problems tied with risk management, business rule automation, automatic surveillance of the market, diagnosis of illnesses, robotic systems, etc. We will list a few of the applications that obtained remarkable results:

- Systems for credit analyzing. The problem of evaluating credit risk is a difficult financial analyzing problem. Recently, researchers found that expert systems can find a solution for these complex problems pretty well compared with traditional statistical approaches (Mahmoud, Algadi, & Ali, 2008)..
- Consulting systems for pension funds. More expert systems are being developed that can provide information about the pension fund of employees. For this systems their data base is continuously updated to give the users advice for changes which appear according to new standards and regulations. Example: (The right pension advisor, 2014)
- Systems for disease diagnosis and plant and fruit pests. These systems were developed because of the fact that experts and reference books for disease diagnosis and fruit and plant pests are hard to find. Expert systems can provide support in this matter. Example of application: Expert System For Diagnosis Pest And Disease In Fruit Plants (Dewanto & Lukas, 2014).
- Robotic systems. According (Kumar & Jain, 2012) recently expert systems are used for instructing robots which transfer information about weather status from a region to another. The first robot receives the information from the environment, the second one gets them from the first one, using techniques of expert systems, etc. The time of information transmission is considerably reduced.

As a conclusion, we can say that expert systems have a big interest, because in every area, in the case that human experts will be able to specify steps and reasoning for a problem to be solved, an expert system can be created to solve this problem.

DECISION SUPPORT SYSTEM ARCHITECTURE – CONCEPTUAL FRAMEWORK

We will present next a generic conceptual framework which covers the majority of architectural solutions which can be identified in support systems for decision, no matter of the application area, adopted constructive approach or the informatics technology used. According to (Holsapple & Burstein, 2008) a DSS has the following essential components: the language system (LS), the presentation system (PS), the knowledge system (KS), and the problem processing system (PPS).

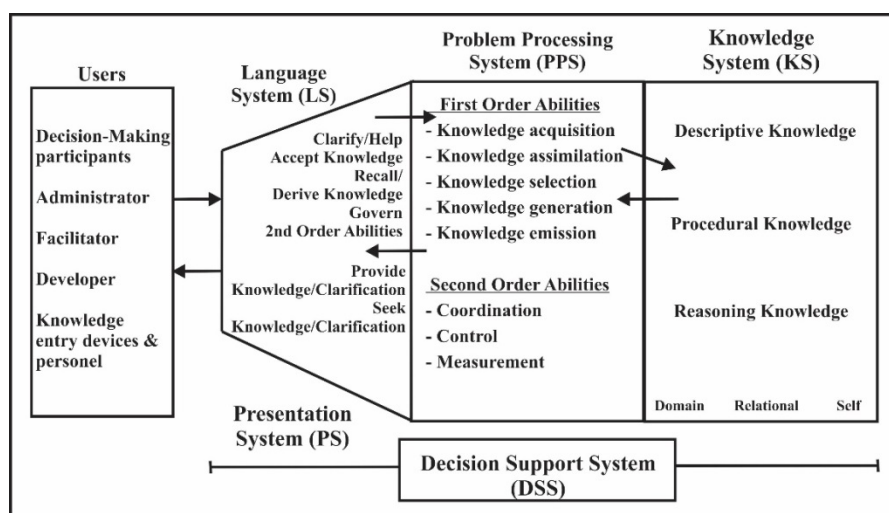


Figure 1. Fundamental architecture of a DSS

Source: (Holsapple & Burstein, 2008)

In Figure 1 we show the modality in which the four subsystems of an DSS are tied between them and their users. The system components determine the capacities and behavior of them. The first three components are the representation systems (Holsapple & Burstein, 2008):

- The language system which is composed from all the messages that the system can accept.
- The presentation system which is composed from all the messages that the system can emit.
- The knowledge system which is composed from all of the knowledge stored and kept by the system.

All of the three subsystems are used by the fourth element which is *the problem processing system*.

The problem processing system is an active component of the system. PPS is the DSS engine. Like the name suggests, this component tries to acknowledge and solve problems in the process of taking decisions. *Users* are usually the deciding factors or just attendants in the process of taking decisions. The user can be: a developer, the administrator, a person or a device of data entry. The user can make request of knowledge selection, of clarifying of previous requests or answers, of solving problems, of detecting problems, etc.

The user interface is defined by its subsystems of language and presentation, its abilities of acquiring and emitting knowledge, as well as the knowledge system content which PPS is using to interpret the language elements of the system to process the knowledge in the systems presentation elements. *The knowledge system* provides expertise and necessary knowledge for solving difficult and complex problems, unstructured or semi structured and in offers the system the intelligent attribute.

In the generic architecture of the DSS, we can observe common crucial and fundamental aspects for all the decision support systems, so for the expert systems as well. To fully appreciate the specific nature of any decision support system, we need to know the special requests which compose the system language, the special answer which compose the presentation system, the particular presentation of the knowledge system and the particular processing capacities of knowledge by the PPS.

By familiarizing with the architecture of decision support systems, identifying DSS components and the interdependency between them we created the necessary theoretical bases of approaching the particular subclass of decision support systems, namely expert systems.

EXPERT SYSTEMS ARCHITECTURE

Expert system architecture can be considered a special case of generic architecture of decision support systems, being based on a representation of knowledge technique which implies the use of rules. This technique evolved in the expert systems area, giving the capacity to manage the reasoning knowledge. In the expert systems architecture we will identify special components used in knowledge representation and rule usage. Studying the specialty literature we identified many approaches of the expert systems architecture. We will present the ones that were useful for us in clarifying the concepts and outlining the architectural model proposed by us.

Architectural details of expert systems

Analyzing the approaches of expert systems (Nikolopoulos, 1997), (O'Brien & Marakas, 2007), we can identify three main components which are: knowledge base, inference engine and the user interface. These components have been at the base of constructing the traditional expert systems. As the expert systems evolved in their components appeared new elements which had the purpose to improve the capacity of expert systems and to push their boundaries.

According to (Atanasova & Krupka, 2013) expert systems architecture is based on the clear separation from the acquisition module and the inference mechanism composed from two subsystems, which are the knowledge base and the inference engine. In the modern expert systems architecture represented in

Figure 2 we can acknowledge the presence of new elements: interactive module, coordination module, rule editor and knowledge editor.

Unlike the architectural models presented until now (Turban, Sharda, & Delen, 2011) identify in the structure of expert systems the next additional components: the knowledge acquisition subsystem, the workspace, the application module and the knowledge refinement module.

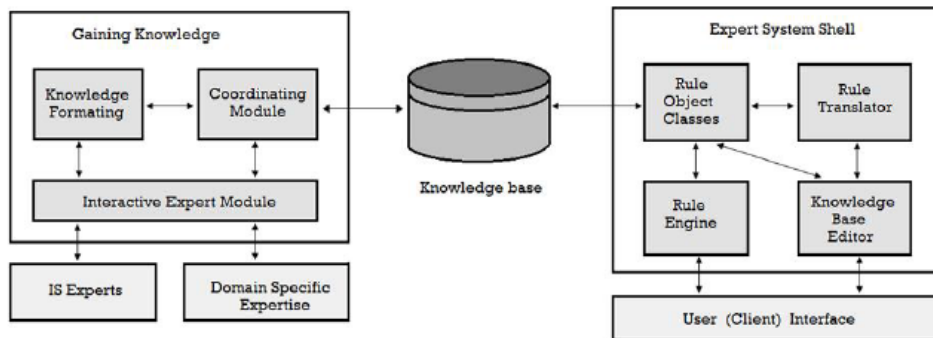


Figure 2. Modern expert system architecture
Source: (Atanasova & Krupka, 2013)

EXPERT SYSTEM ARCHITECTURE IN THE OPINION OF THE AUTHOR

To represent the architectural model of the expert systems proposed by us we used as a starting point the conceptual framework of DSS and the architectural details of experts systems tackled before. We will present in the following the particularities of the components identified by us in the expert system structure, comparing with the fundamental architecture of DSS. In Figure 3 we represented the architectural proposed by us.

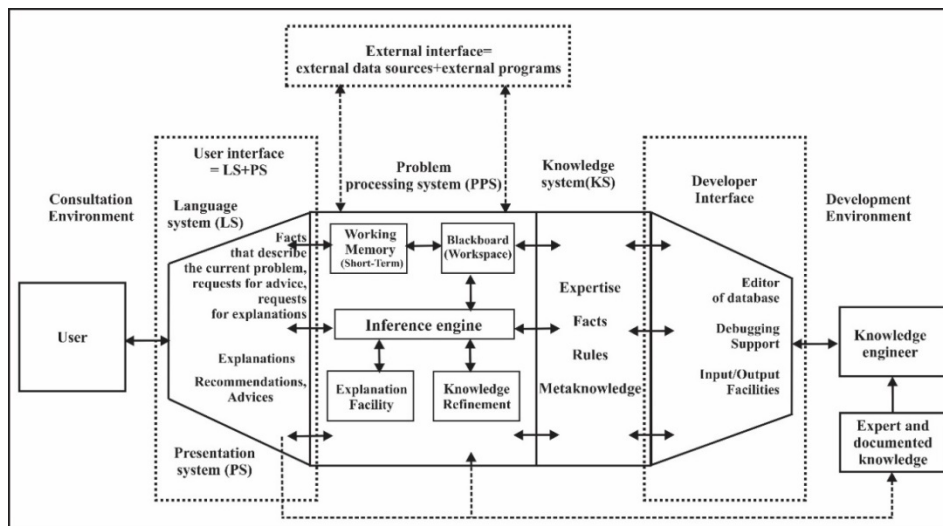


Figure 3. Architectural model of expert system proposed by the authors

The users of the expert systems are: 1) the persons who emit request to the system and receive answers and 2) the knowledge engineer. The persons in the first category have at their disposal the user interface composed from the language system and the presentation system. With the help of the language systems the users can emit counseling request, explication request and can introduce data which describes the current problem (facts). The presentation system includes messages which represent recommendations advices and explanations. The knowledge engineer takes the knowledge from the area and that provided by the experts and has at his disposal the interface with system developers which contain: the editor of the knowledge base, the support for debugging and the facilities for input/output. With the help of the knowledge base editor we can introduce data and

modify the rules and the modification made can be monitored. The support for debugging gives the knowledge engineer the possibility to detect and remove errors. The input and output facilities allow in the execution time of the expert system to request necessary information as many times as these are not available. The expert system interacts with the system users with the help of the two interfaces, and the connection with the exterior is ensured by the external interface which contains external data sources and external programs.

The knowledge system of an expert system is particularized by the fact that it contains facts, rules expertise and “metaknowledge” needed to solve the specific problems. The content of the KM is updated permanently by the knowledge engineer and the system component for processing problems. The problem processing system for expert system contains the inference engine, the workspace, the explanation module and the knowledge refinement module. PPS capabilities are given by the characteristics of its components. The inference engine gives it creation, revise, deletion capacities, of a bigger interest being the capacity to make logical deduction with a set of rules to produce requested counseling from a user. The general solutions (advices, recommendations) will be controlled by the user, also by the knowledge refinement module and to the component that contains the knowledge from the area. PPS also has the capacity to explain its behavior because of the presence of the explanatory module and the capacity of auto learning given by the presence of the knowledge refinement module.

CONCLUSIONS

Expert systems, because of the benefits it can bring, represent an area of great importance in modern business conditions with developing tendencies, especially in developed countries, with an economy based on knowledge. The developing of expert systems required to constantly try to overcome its limits. By adding extra modules (for example the explanatory module or the knowledge refinement one), by integrating web technologies and other tools from the artificial intelligence family expert systems which can bring many benefits were obtained. The architectural model proposed by us starts from a generic conceptual framework and tries to integrate the newest elements to ensure the success of using this systems.

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VIRTUAL MANUFACTURING – CONCEPT APPLIED IN TECHNICAL SCHOOL IN ZRENJANIN

UDC: 004.946:37

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ABSTRACT

Virtual manufacturing is conceptually based on the simulation of production processes on computers. The process is fully applicable even for the most complex production conditions, long before the production process is based in reality. This concept of development is fully applicable to the development of future production flows without major investment, for the consideration of problems in production and their current modifications, for the purposes of education and specialization of individual professional profiles and advanced managers as well as the presentation of future products to potential customers, ie, harmonization of needs and desires of the market.

Key words: virtual manufacturing, education process, computer simulation

INTRODUCTION

The new concept of development, production and marketing of certain products involves a very short period of the initial phase, i.e., the idea of the product, until the final stages, sales of the same. In achieving this goal, production process must, not only to speed up, but also to speed up the work of all suitable factors that are part of product development and marketing on increasingly demanding market.

In order to speed up the production process, elements of machining regimes are intensified, machines and operations upgraded and accuracy increase (developing KUMA-former CNC machines), there had been developed many specific tools and tool materials and changed the structure of the production plant and work organization and more. These measures are somewhat accelerated the concept of development of new products and an indicative example is the auto industry. Earlier, the new car model was on market every ten years, or even longer, until today this period is shortened to only 5-6 years. It is almost unacceptable to maintain even this period, and already projections for shortening present, usual time of production are made. Even in making projections of productivity, calculations are made on a daily basis, not on yearly basis as before.

In addition to the basic, immediate production, the organization of management is vital part in order to shorten the time of development of products, marketing, transportation and many other functional factors that in any way affect the market requirements (Sajfert, Besic, 2006). Almost that there exist a race of companies in the process of marketing of a new product on the market to regain its leading position and overcome competition from the very start. Even in the training of production workers and constructors it has resorted to shortening training time in order to get involved in production quickly.

All this would not be possible without the development of specific technologies that can respond to all the tasks. This technology can simply be reduced to two words – Virtual Manufacturing. The

development of computer technology, both hardware and especially software, allows development of this new concept in order to be acceptable for the new market relations. The software allows the simulation of each stage of the manufacturing process, before the real production, so it can be spot the deficiencies and eliminate any hold-up in production (Banerjee, Zeta, 2001).

In order to support virtual manufacturing and significantly shorten the time of development and placement of new products there have been developed many other forms of support to production (Plancak, Luzanin, 2010) such as Rapid Product Development, Concurrent Engineering, Rapid Prototyping and many others.

Given the needs of the market, the entire philosophy of the organization and management of production gets a whole new meaning (Sajfert, et al., 2007).

BRIEF HISTORY

The first application of virtual manufacturing was in the military industry, initiated by the Ministry of Defense of the United States of America for its needs. In civilian use, virtual manufacturing, starts its implementation in the mid 90s of the twentieth century and its beginning was, first, in the automotive industry. Given that the use of such production is directly linked to the computer simulations, it is understandable that with the development of computer technology and its expansion in the 80s and 90s of the last century, created ideal conditions for new technological discovery – virtual manufacturing.

Modern trends in the market set a whole new philosophy of direct access to the customer, in order to respond in the right way, even to the most demanding consumers. The company Matsushita has developed a unique suite of virtual kitchens that allows buyer to directly purchase kitchen appliances according to their needs and the most subtle requirements. In this way, it is presented to the customer the various functional forms, with defined standard elements, a combination of color and gloss, and also with the possibility of implementation of byers design and specific requirements. In our country the concept of training welders was developed (Higher Technical College in Zrenjanin), so that in a short time a combination of virtual technology and intensive practical training enable people to acquire high-level knowledge and skills needed for market requirements and thus enable faster employment of unemployed .

Not only virtual manufacturing means preparing the production and the actual production, but within the concept enables training to workers provided for product assembly. Example is a concept developed by BMW for the purpose of assembling their cars (Figure 1). By applying this system of training the workers were immediately able to perform all the necessary tasks, long before involvement in direct production in order to achieve the required level of skills assembly in a practical way, without disturbing the actual production.

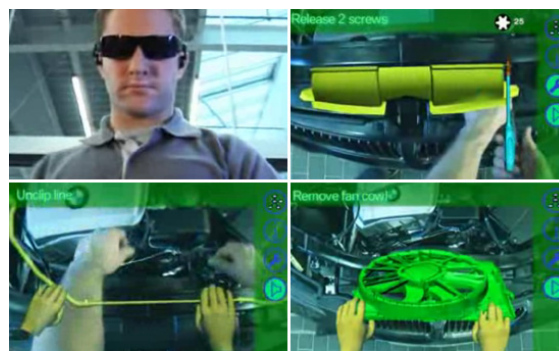


Figure 1. BMW's concept of virtual training of workers (designboom, 2015)

Perhaps the development of passenger aircraft Airbus A-380 is the best example of virtual manufacturing, which is fully designed and tested on the computer. Fully virtual environment from the moment of designing, developing all the components, assembly and at the end of the simulation work has enabled huge savings in development time, development of technical and technological documentation (there was no need for written documents), very expensive tests on a real model within the air tunnel etc., also to the commercial presentation within a presumed group of users within their business space. All this was aimed at a completely transparent information and customers as well as users of such transport.

Nowadays the virtual technology is applied in many areas, not only for simulation of simple products, but also to perform simulations almost unrecognizable living conditions, such as NASA's program of simulation of life on certain planets or program simulations of cosmic mechanics before departing orbit.

TECHNOLOGICAL PARTS OF VIRTUAL MANUFACTURING

Production engineering in the domain of virtual manufacturing has tried to figure out where can potential problems in the actual production show up and then, thanks to the principle of virtuality, rectify all the problems far before beginning of actual production. Resolving the many technological and structural problems in the design of the operation has led to a reduction in production costs, better utilization of available capacity, reducing and completely eliminating potential product rejects, and all together was aimed at increasing the quality of the product, its optimization and, most, lowering the total cost of production.

The process of virtual production clearly shows where it's possible to apply the principle of virtuality. The main body is made up of three distinct parts (Ong, Nee, 2004):

- Virtual product design
- Virtual management of individual parts
- Virtual production process

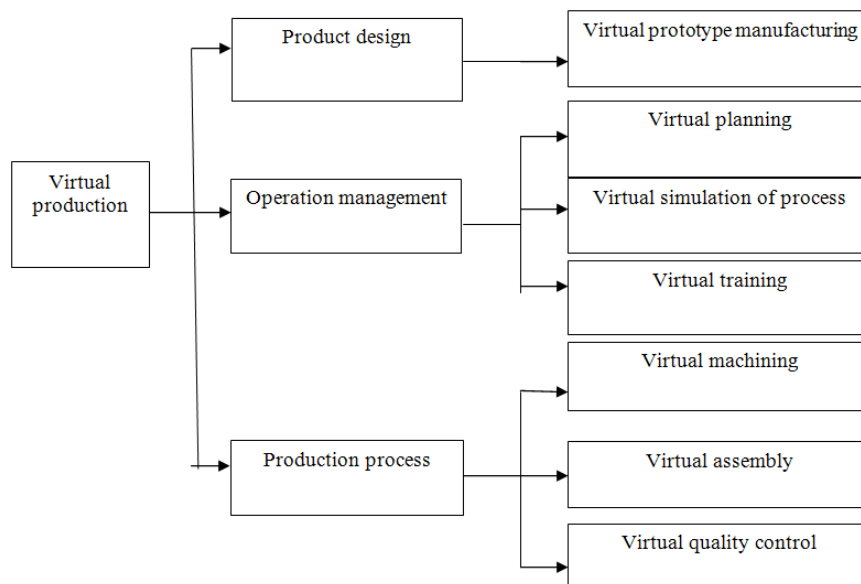


Figure 2: Technological parts of Virtual Manufacturing

CONCEPT OF APPLICATION IN TECHNICAL SCHOOL

Virtual design is a process where the designer faces a preliminary design of future product and conveys his idea on the necessary documentation. Designer is essentially assumed as the end user of the product and thus from the beginning he is in the practical interaction with future product. Because

of usage of object-oriented approach in designing ie modeling, the standard language for defining model is UML language (Unified Modelling Language), which is essentially a universal language and it is not based on any specific language for developing object-oriented systems.

To optimize the production process means to adequately exploit available resources (machines, tools, workpieces, accessories) (Milikić, 1999, Stankovic, 1971), in order to reduce production process cost to acceptable level. The machine itself is a major energy consumer, tools and equipment wears to a greater or lesser extent and it is necessary to anticipate periodic replacement, the workpiece is heated during machining and requires adequate cooling agent, and on all this it must be added the energy consumption in the immediate environment workplace. The question is how to rationalize all of these assumptions and receive adequate machining at great savings.

The principle of applied virtual manufacturing in Technical School provides an adequate answer to most of these requirements. The proper choice of the machine, while optimizing the parameters of the machining and constant simulation of processing in a given environment give us a clear and unequivocal answer to the optimal solution in machining process. In order to machine preform, defined as a 3D model, in virtual machining process, it is necessary to validate all surfaces for machining (cloud of points) (Figure 2), set the reference point at the appropriate surfaces and perform machining simulation. Large databases within an adequate software packages allow you to select different tools, tool materials and workpiece, adequate access of tools to workpiece to minimize wear and many other useful virtual tools that give us the possibility of rendering the actual conditions within the production process.

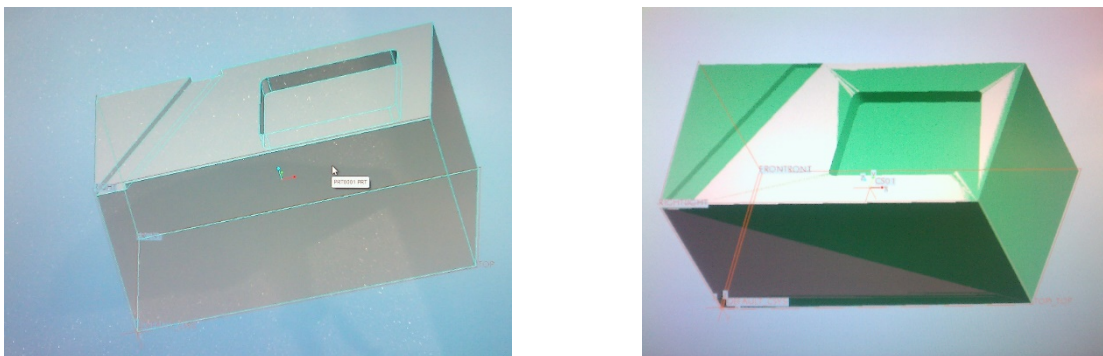


Figure 2. 3D model of the workpiece and validated model

CONCLUSION

Virtual manufacturing is process that fully supports the requirements of modern companies that offer their products on demanding market. It is almost inconceivable that in modern market conditions, does not examine in great detail what is wanted on current market, the price at which the product can be offered to future users and what is the expected profits in the optimal period. Being first on market and offer attractive product is the wish of every serious and ambitious managers. If we add to this acceptable price of the product, based on the minimum cost of production, then the dream of a successful manager turns into the greatest pleasure. Even the famous founder of the Ford company, Henry Ford (1863-1947), said that product must be available to every American, referring to the models of his cars. To satisfy his assumption, he had to offer the product at an affordable price. To achieve this, he organized a production vehicles in series, shorten time of making certain models and completely eliminate the reject products that minimized the losses. This is all done in real production, modifying manufacturing processes on site and along-acceptable weather delays. If he did it in real life, what would be the comparative advantages using todays technologies, especially virtual manufacturing, and with it, the virtual installation as well as all other segments of production based on virtual reality.

Virtual manufacturing has radically changed the concept of actual production. The actual production is precisely designed in a virtual environment, so we can say that the virtual and actual production are two sides of the same coin.

Today, we are greatly enriched by using the key components required for simulation in virtual environment. The application of computers with their technical characteristics allows simulation of the most complex situations that can be assumed in reality. Full acceptance of a virtual prototype on which it is possible to carry out the necessary tests and training allows us the necessary modifications to an acceptable level of development and design. Virtual prototype is especially important in specific areas of science, medicine, eg., in order to carry out the necessary training with countless repetition, and thus avoid most the loss of human life on the operating table.

Developing the concept of virtual manufacturing, modern companies are able to supply the market with the most suitable conditions for market of its products with a fair price-quality ratio. A number of areas in which virtual reality has its application is perhaps the greatest achievement of the modern concept and the intensive development of this technology in many ways can provide a much better and more productive life.

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INFORMATION TECHNOLOGY AND THEIR IMPLEMENTATION IN BUSINESS

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ABSTRACT

This paper describes how it is possible to implement information technology in business. In a time dominated technology track the latest technological advances enabling companies to increase efficiency and effectiveness in business.

Key words: Information technologies, implementation, business

INTRODUCTION

In the early years of information technology, the development of the system was known as "art". Since then, the goal was to make it more scientific. 70s of last century show the structural development of the system, making it become more standardized and efficient. Characterized by the following elements:

- Hand-coding in programming third generation languages.
- Methodology for the development of structured programming.
- The system of automated project management.
- Management System database.
- A mixture of online and batch applications within the same system.
- Development of mainly mainframe applications.
- Programming exclusively by professional programmers.
- Different automated, but not well integrated, software tools.
- Well defined processes described for delivery systems.
- Participation of beneficiaries, mainly in the phases of requirements specification and installation.

Methodologies of structural development to fully monitor the life cycle of the system are intended for manipulating the complexity of system design and development of inciting greater discipline, greater reliability and reducing errors, as well as more efficient use of resources. Greater discipline. Setting standards for intended processes and documentation, structural methodologies are trying to eliminate personal variations. At first glance it seems to threaten the creativity of developers, but their discipline actually increases productivity and enables developers to work with greater complexity. The complexity of governing through successive decomposition of the system components, in conjunction with stimulated practices for conducting analysis, design and construction. The result of all of this is the disciplined development process. Increased reliability and fewer errors. One of the basic tools designed to fight this tendency were (and still are) inspections that are performed at each developmental stage and at every level of decomposition of the system. The aim was to spot errors as early as possible. Methodologies also recognize that the iterations will be necessary to reset some parts of the system upon detection of errors.

More efficient use of resources. Logs in project management are usually included by structured methodology, together with a reduction in costs, increased productivity and better allocation of human resources. Imposing time systems and to reduce costs, the classical approach has reduced (but not eliminated) tend to efforts to develop a system to be exposed to price and time overcoming.

The interest in the implementation of information technology comes from previous experiences in organizations that were making significant investments in technology and people who are expecting resistance to the use of technology. Some of these resistance was due to fear that information technology will replace workers.

Does the Internet and the Web increase the implementation of the system? Today, the focus shifts to the application on the web for many reasons. Anyone who uses a Web-based system will do it via a Web browser, well-known and easy to use. So, theoretically, it is much easier to implement a system based on the web. However, the browser displays the interface; He has nothing to do with background processing logic in the system. Web-based system should be easier to implement, but it does not guarantee that anyone will fully exploit its potential. For these reasons, it is important to understand the implementation process and pay attention to when developing innovation with information technology.

WHAT IS THE IMPLEMENTATION

The implementation of the information system involves the installation of a new, computer-supported, operating system. In other words, it is the creation of a new system and the delivery of that system into operation, ie. everyday use. The implementation is part of the process of designing the system and a component changes. New information systems are changing the existence of procedures and process information frequently by changing the organization itself. Implementation strategy relates to the design team and vision actions of such system with success and contribution to the organization. This definition emphasizes the long-term nature of the implementation. It is part of a process that begins with the initial idea for the system and the changes it brings. Implementation ends when the system successful integration into operations of the organization. Much of implementation refers to the phenomenon of behavior, because people expect from system to change their work activities. Implementation becomes more important and more difficult to design if system radically changes. If the company takes great systemic project, she wants to change jobs in order to reduce costs and improve productivity in the organization.

SUCCESS OR FAILURE

There is not complete agreement about the absolute indicators in the successful implementation. One of the recognized approach is useful study in costs. In this assessment, it is estimated total cost of system development, and comparison with the usefulness of the capital obtained from the system. In theory, this assessment sounds like a good indicator of success, but in practice it is difficult to provide a meaningful estimate.

Displaying a price by size is not too big problem if adequate records are kept during the phase of system development. However, the evaluation of the usefulness of the information system resorts to many analyzes. Here we have a number of categories to classify the usefulness or value obtained using the technology. These categories include:

- Infrastructure,
- The required applications,
- Applications where the technology is the only solution,
- Applications that provide direct reimbursement,
- Technological initiatives that are competing needs,
- Strategic Applications,
- Transformation information technology.

Financial restitution can be directly seen only by a couple of all these options, making it difficult of execution cost analysis to determine the success of the system. As an alternative, several indicators of successful implementation can be applied to individual applications, depending on the type of system involved. In many cases, use of the system is available. The manager or other user can view the report on screen, but does not have to use information from it or even look at the data. Systems that provide interactive display information from the database can often be characterized as voluntary. The use of such systems is often discreet for the user. Manager of a personal computer in

her or his office does not have to use the system. For a system whose use is voluntary, the high level of use indicates a successful implementation.

For a system whose use is required, such as a system for production control or computer which provides market equation to brokers, customer evaluation system can be set as a measure of success. For example, one may question the satisfaction of users, such as service quality, timeline and accuracy of the information and the quality of the schedule of operations. The evaluation may include a panel of experts who handle information and inspect the design and operation of the system. Managers may consider the system to be successful if it achieves the objectives. Finally, although this is difficult to do, assess the impact of the system on the individual and the organization can be drawn by answering the following questions: How is the system affected the productivity and quality of the results of the staff? Does information technology show the impact on performance, either to individuals or organization?

RESEARCH ON THE IMPLEMENTATION

Most of the research on implementation represent an attempt to discover the factors that have to do with success. How are the independent variables associated with successful rollout? If any evidence showing conditional link between independent and dependent variables, one can develop an implementation strategy about independent variables. For example, suppose we have a few studies which have used different methodologies, where top management is demanded for new system, where they participate in its design and led to successful implementation. If sufficient evidence support this claim, implementation strategy should emphasize the action of top management.

Although some studies have determined the implementation of a number of independent variables in this field, there is no real consensus on the successful implementation or explanations about the unique strategy implementation. Dependent variables that are used in measuring the success of an implementation can be divided by the use of measures, the intended use or satisfaction with the system.

MODEL IMPLEMENTATION

Implementation model proposes that using a personal stake in the issues for the system is marked for, is an important factor in use. Personal interest indicates how important is a part of the system for individuals. From marketing managers are expected to have a large personal stake in the system for market research. Interest can be influential to a level where managers provide support to the system. Most accurate conclusion in a study of implementation is the importance of management support and leadership in the successful implementation. The urgency of the problem will most likely affect the personal interest. If the problem is more urgent, the greater will be the interest itself. Interest affects the direct use when the use is voluntary. Characteristics of the system will also affect use. Poorly designed system can be virtually unusable. The demographic characteristics of users, such as age and past experiences with computers, will also affect the usability of the system. Organizational functioning support indicates actions that facilitate the use of the system. For example, the usability of the system increases with the ease of entry system. The model suggests that high levels of use should lead to higher levels of satisfaction, and greater satisfaction will increase the level of use. Although the evidence is not strong, it appears that the use of technology associated with the performance of an individual or company in certain cases. This relationship is generally complex. For example, one study has gone to the representatives with a high coefficient of selling used the results of the system to work with customers in sales to infer what to order.

Vendors with a lower coefficient was also used by the results of the system, but are focused on the information indicative of what is wrong in their territories. Numerous technological efforts coincide with where the company reduce costs or increase revenues. However, task is to show cause in such situations because many variables are changing simultaneously.

IMPLEMENTATION PROCESS

The above mentioned research show work with variables or factors associated with successful implementation. The implementation process indicates a further connection between the individuals involved in the development of the system. The process model can be viewed at various stages during implementation and describes how the different parties work together during these stages. This model emphasizes the tasks that take place during its design. During the

earlier stages, individuals involved in the system must develop confidence in everyone's goals and competitiveness. Designers should help users, and users must have the desire to spend some time working with designers and their work on the design. If there is developing a cooperative relationship and instead of that individuals who make the system become rivals, the system is doomed to failure. The main aim during the design process is to lead people to accept the system. Professional designers, ironically, almost never use the systems they design. The user leaves the system at the end of the project. If the user does not "possess" the system from a psychological point of view, the system will not be successful. Some studies show that the final phase in the model is the most important one. At this stage companies are learning if users have developed ownership and attachment to the system.

CONCLUSION

Implementation strategy must charge the crucial problems in the process of developing information systems, as well as the factors that influence success. The design of the system can be seen as a planned change in the activities of the organization. The reason for the development of a new information system is to create change. Dissatisfaction with the current situation encourages the development of a new information system. Optionally, the user sees how technology can be used in new ways to improve the competitive position of the company.

For years, articles and books on design are aggravated user participation in the design process based on research in psychology, which determines the success of the approach changes, based on user participation. The first part of the strategy consists in encouraging users to participate and influence the design. Some of the reasons for this strategy consists of:

- Participation builds self-assessment, which gives the desired positions.
- Participation can be challenging and essentially satisfactory, leading to positive attitudes.
- Participation typically results in greater devotion to the changes. In this case, the user attachment to the system means that the system will be used more.
- Participants learn more about the changes, and aspire to greater technical quality control system, which will become more prepared for its use.
- Technical quality will be better because the participants know more about this issue than IS staff.
- Users retain much more control over their activities and therefore should have a friendly attitude.

User participation in the design of the system requires an investment of effort from both staff and users. Information Technology Sector should encourage participation, while users need to be willing to participate and get down to work.

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A GOAL PROGRAMMING PROCEDURE FOR FINANCIAL STRUCTURE OPTIMIZATION PROBLEM SOLVING

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ABSTRACT

The managing financial structure of a company is a multi-objective problem for whose solving we can use various methods that are not as effective neither from the standpoint of analysts nor from the standpoint of a decision-maker. The goal programming method belongs to a group of efficient methods for solving multi objective linear programming problems. However, when optimizing financial structure we are dealing with application of multi objective fractional linear programming in which the objective functions are linear fractional, and constraints are linear and form a convex set. The use of goal programming in such conditions causes problems of computational nature, since it has to solve the problem of nonlinear programming with nonlinear functions in the set of constraints. A new approach to linearization of linear fractional objective functions is introduced in this paper. A specific problem of optimizing the financial structure of a big company by applying the proposed goal programming approach is solved. The obtained results indicate a high level of efficiency of the proposed methodology in comparison with existing approaches which solve such kind of problems by using a goal programming method.

Key words: Multiple objective linear fractional programming, goal programming, financial structure optimization.

INTRODUCTION

In solving some economic problems objective functions can be expressed by the ratios of two economic magnitudes. Economic problems presented in such way can better reflect the quality of business results. Hence, if the objective functions are expressed by the ratios of two economic magnitudes, and if the parameters and variables in the model are linear, then the optimization of economic problems requires multi objective linear fractional programming (MOLFP).

In MOLFP problems to determine one or more efficient (Pareto optimal) solutions is technically demanding when objective functions are linear fractional. There are few multi objective programming methods for solving MOLFP problems, which are not efficient enough either from the viewpoint of the analyst or the decision maker (Cabarello and Hernandez, 2006; Chakraborty and Gupta, 2002; Hannan, 1981; Kornbluth and Steuer, 1981; Metev and Gueorguieva, 2000; Mishra and Singh, 2013; Sakawa and Yumine, 1983).

A special problem arises in the application of goal programming methods as by adding the deviation variables d^- and d^+ to the linear fractional functions to form the constraints of the goal programming model, nonlinear constraints are obtained which cause problems in model solving (Perić and Babić, 2014). Several methods have been developed that use goal programming to solve multi objective fractional linear programming model (Kao and Liu, 1981; Kornbluth and Steuer, 1981; Ohta and Yamaguchi, 1996; Pal and Basu, 1995; Pal et al., 2003; Perić and Babić, 2012; Tiwary et al., 1987), but there are few studies in which these methods are applied and tested in solving real economic problems (Mishra and Singh, 2013; Perić and Babić, 2014).

In this paper we propose a new goal programming approach based on the linearization of fractional linear objective functions for solving multi objective fractional programming problems. In the proposed method the decision maker is asked to provide the information on the desired value of the objective functions and the information on the relative importance of the objective functions. The proposed method has been tested on the example of financial structure optimization of a company.

Therefore, the main goals of the paper are: (1) propose a model based on the linearization of the objective functions for solving multi objective fractional linear programming problems, (2) test the applicability of the proposed model at solving the financial structure optimization problem.

GOAL PROGRAMMING METHODOLOGY FOR SOLVING MOFLP PROBLEMS

Molfp model

A MOLFP model can be written as (Pal et al., 2003)

$$\begin{aligned} \max Z &= [z_1, z_2, \dots, z_K] \\ \text{s. t. } Ax &* b, \\ x &\geq 0, \end{aligned} \tag{1}$$

where

$$z_k = \frac{\sum_{j=1}^n c_{jk} x_j + c_0^k}{\sum_{j=1}^n d_{jk} x_j + d_0^k}, \quad k = 1, 2, \dots, K,$$

are fractional linear functions, A is a $m \times n$ matrix, x is a n – dimensional nonnegative variable vector, b is a m – dimensional vector, and $*$ means ($\leq, =, \geq$). To solve the model (1) some methods are proposed which are not efficient enough from the point of view of decision makers and analysts.

The proposed goal programming model

To solve the problem of multi objective linear fractional programming with defined desired value of the objective functions by the decision maker by applying the goal programming method we propose a new linearization technique. The proposed model is a generalization of the one proposed in (Perić and Babić, 2014). Here the decision maker precisely defines the desired value of the objective functions and expresses the relative value of the objective functions by weights. If the decision maker is not able to express the relative importance of the objective functions by weights, the weights can be calculated by applying one of the weight determining methods. To solve the multi objective linear fractional programming model by applying the goal programming method we propose linearization of the linear fractional functions in the following way:

$$\frac{\sum_{j=1}^n c_{kj} x_j + c_0^k}{\sum_{j=1}^n d_{kj} x_j + d_0^k} \leq \bar{z}_k / \left(\sum_{j=1}^n d_{kj} x_j + d_0^k \right), \quad k = 1, 2, \dots, K$$

$$\sum_{j=1}^n c_{kj} x_j + c_0^k \leq \bar{z}_k \left(\sum_{j=1}^n d_{kj} x_j + d_0^k \right)$$

$$\sum_{j=1}^n c_{kj} x_j - \bar{z}_k \sum_{j=1}^n d_{kj} x_j \leq \bar{z}_k d_0^k - c_0^k$$

$$\sum_{j=1}^n (c_{kj} - \bar{z}_k d_{kj}) x_j \leq \bar{z}_k d_0^k - c_0^k$$

$$\sum_{j=1}^n C_{kj}x_j + d_k^- - d_k^+ = \bar{Z}_k \quad k=1,2,\dots,k_1, \quad (2)$$

where \bar{z}_k is the desired decision maker's value of k th objective function on the given set of constraints, $C_{kj} = c_{kj} - \bar{z}_k d_{kj}$, $\bar{Z}_k = \bar{z}_k d_0^k - c_0^k$, and d_k^- , d_k^+ are under and upper-deviational variables, respectively ($k = 1, 2, \dots, K$).

Therefore the goal programming model is presented as

$$\begin{aligned} & \min g_k (d_k^-, d_k^+) \\ & \text{subject to } C_{kj}x_j + d_k^- - d_k^+ = \bar{Z}_k, \quad k=1,2,\dots,K, \\ & Ax * b, \\ & x \geq 0, \\ & d_k^-, d_k^+ \geq 0. \end{aligned} \quad (3)$$

To solve the model (3) we can use numerous GP approaches for solving MOLGP models (see Perić and Babić, 2014). Here we present the min-sum weighting model, which is presented as according to Ignizio (1976) and Tiwary et al. (1987). The solutions obtained by the model (3) are efficient (Pareto optimal).

FINANCIAL STRUCTURE OPTIMIZATION PROBLEM

The problem

The data for the problem are taken from Perić and Babić (2012). Consider a firm which is expected to reach US\$ 60.0 million of capital in the next year. In order to increase the firm value, the firm's financial manager wants to improve the financial condition of the company by optimally constructing the financial structure. Based on the expected sales for the next year, it is desired to maximize the manager's satisfaction with some financial ratios. The Table 1 shows the variables which are considered. The manager's preferences of key financial ratios are summarized in the Table 2. The four conflicting fractional goals are as follows: (1) minimization of the current ratio, (2) minimization of the debt ratio, (3) maximization of the turnover ratio and (4) maximization of the profitability ratio.

Table 1: Definition of variables in the balance sheet (B/S)

Assets	Variable	Expected values	Liabilities and equality	Variable	Expected values
Current assets	x_{11}	$150 \leq x_{11} \leq 250$	Current liabilities	x_{21}	$75 \leq x_{21} \leq 300$
Fixed assets	x_{12}	$x_{12} \leq 300$	Long-term liabilities	x_{22}	$x_{21} + x_{22} \geq 250$ $100 \leq x_{22} \leq 300$
Total assets	$x_{11} + x_{12}$	$x_{11} + x_{12} \geq 350$	Shareholders equity	x_{23}	$75 \leq x_{23} \leq 125$
			Retained earning added	x_{24}	$100 \leq x_{24} \leq 140$
			Total liabilities and equity	$x_{21} + x_{22} + x_{23} + x_{24}$	

Molfp model

The data from the Table 1 are the basis for the following MOFLP model

$$\text{Min } z_1(x) = \frac{x_{11}}{x_{21}}, \quad \{\text{Current ratio}\} \quad (4)$$

$$\text{Min } z_2(x) = \frac{x_{21} + x_{22}}{x_{23} + x_{24}}, \quad \{\text{Debt ratio}\} \quad (5)$$

$$\text{Max } z_3(x) = \frac{60}{x_{11} + x_{12}} \quad \{\text{Turnover ratio}\} \quad (6)$$

$$\text{Max } z_4(x) = \frac{x_{24}}{60} \quad \{\text{Profitability ratio}\} \quad (7)$$

$$\text{s.t. } x_{11} + x_{12} = x_{21} + x_{22} + x_{23} + x_{24}, \quad (8)$$

$$150 \leq x_{11} \leq 250, \quad (9)$$

$$x_{12} \leq 300, \quad (10)$$

$$x_{11} + x_{12} \geq 350, \quad (11)$$

$$75 \leq x_{21} \leq 300, \quad (12)$$

$$100 \leq x_{22} \leq 300, \quad (13)$$

$$x_{21} + x_{22} \geq 250, \quad (14)$$

$$75 \leq x_{23} \leq 125, \quad (15)$$

$$100 \leq x_{24} \leq 140, \quad (16)$$

$$x_{11}, x_{12}, x_{21}, x_{22}, x_{23}, x_{24} \geq 0. \quad (17)$$

The model solving

Marginal solutions, obtained by maximizing each of the four objective functions individually on a given set of constraints, are presented in the following table:

Table 2: Marginal solutions

Marginal solution	Variable values		z_1	z_2	z_3	z_4
x_1^*	$x_{11} = 150$	$x_{12} = 300$	0.8571	1.5714	0.1333	1.6667
	$x_{21} = 175$	$x_{22} = 100$				
	$x_{23} = 75$	$x_{24} = 100$				
x_2^*	$x_{11} = 215$	$x_{12} = 300$	1.4333	0.9434	0.1165	2.3333
	$x_{21} = 150$	$x_{22} = 100$				
	$x_{23} = 125$	$x_{24} = 140$				
x_3^*	$x_{11} = 220$	$x_{12} = 205$	2.9333	1.4286	0.1412	1.6667
	$x_{21} = 75$	$x_{22} = 175$				
	$x_{23} = 75$	$x_{24} = 100$				
x_4^*	$x_{11} = 250$	$x_{12} = 300$	3.3333	1.5581	0.1091	2.3333
	$x_{21} = 75$	$x_{22} = 260$				
	$x_{23} = 75$	$x_{24} = 140$				

The decision maker is determined the desired aspiration level of the objective functions: $\bar{z}_1 = 0.95$, $\bar{z}_2 = 1.1$, $\bar{z}_3 = 0.13$, $\bar{z}_4 = 2.0$. Applying the model (2) to the data from the Table 2 and the desired value of the objective functions the functions z_1 , z_2 , z_3 and z_4 are linearized, and the following equations are obtained:

$$x_{11} - 0.95x_{21} - d_1^+ + d_1^- = 0, \quad (18)$$

$$x_{21} + x_{22} - 1.1x_{23} - 1.1x_{24} - d_2^+ + d_2^- = 0, \quad (19)$$

$$-0.13x_{11} - 0.13x_{12} - d_3^+ + d_3^- = -60 \quad (20)$$

$$x_{24} - d_4^+ + d_4^- = 120 \quad (21)$$

Based on this calculation we can form the linear goal programming model:

(i) The Min-Max weighting form:

$$\min g_k(w_k d_k^-, w_k d_k^+), k = 1, 2, 3, 4 \quad (22)$$

$$\text{s. t. } x_{11} - 0.95x_{21} + d_1^- - d_1^+ = 0, \quad (23)$$

$$x_{21} + x_{22} - 1.1x_{23} - 1.1x_{24} + d_2^- - d_2^+ = 0. \quad (24)$$

$$-0.13x_{11} - 0.13x_{12} + d_3^- - d_3^+ = -60 \quad (25)$$

$$x_{24} + d_4^- - d_4^+ = 120 \quad (26)$$

$$\text{constraints (9) – (18)}. \quad (27)$$

where $g_1(d_1^-, d_1^+) = w_1 d_1^- + w_1 d_1^+$, $g_2(w_2 d_2^-, w_2 d_2^+) = w_2 d_2^- + w_2 d_2^+$, $g_3(w_3 d_3^-, w_3 d_3^+) = w_3 d_3^- + w_3 d_3^+$, $g_4(w_4 d_4^-, w_4 d_4^+) = w_4 d_4^- + w_4 d_4^+$, $d_k^-, d_k^+ \geq 0$, $d_k^- \cdot d_k^+ = 0$, $k = 1, 2, 3, 4$.

The model (22) – (27) is converted to a linear program as follows (Zimmermann, 1978):

$$\text{Min } \lambda \quad (28)$$

$$\text{s.t. constraints (23) – (27)} \quad (29)$$

$$\lambda \geq g_k(w_k d_k^-, w_k d_k^+), k = 1, 2, 3, 4. \quad (30)$$

Model (28) – (30) is solved by the simplex method.

The solutions

The decision maker was not sure about the relative value of the objective functions. The table 3 presents the solutions with the various value of the objective functions weights given by the analyst.

Table 3: Goal programming solutions

Goal programming solution	Variable values		z ₁	z ₂	z ₃	z ₄
Model (29)-(31): w ₁ = w ₂ = w ₃ = w ₄ = 0.25	x ₁₁ = 160.71	x ₁₂ = 300.00	1.0714	1.1864	0.1302	2.2619
	x ₂₁ = 150.00	x ₂₂ = 100.00				
	x ₂₃ = 75.00	x ₂₄ = 135.71				
Model (29)-(31):): w ₁ = 0.40; w ₂ = w ₃ = w ₄ = 0.2	x ₁₁ = 154.84	x ₁₂ = 300.00	1.0323	1.2205	0.1319	2.1640
	x ₂₁ = 150.00	x ₂₂ = 100.00				
	x ₂₃ = 75	x ₂₄ = 129.84				
Model (29)-(31):): w ₁ = 0.3; w ₂ = 0.4; w ₃ = 0.2; w ₄ = 0.1	x ₁₁ = 150.00	x ₁₂ = 300.00	0.9956	1.2575	0.1333	2.0723
	x ₂₁ = 150.66	x ₂₂ = 100.00				
	x ₂₃ = 75.00	x ₂₄ = 124.34				
Model (29)-(31):): w ₁ = 0.5; w ₂ = w ₃ = 0.1; w ₄ = 0.3	x ₁₁ = 156.27	x ₁₂ = 300.00	1.0418	1.2120	0.1315	2.1878
	x ₂₁ = 150.00	x ₂₂ = 100.00				
	x ₂₃ = 75.00	x ₂₄ = 131.27				
Model (29)-(31):): w ₁ = 0.6; w ₂ = 0.2; w ₃ = w ₄ = 0.05	x ₁₁ = 154.84	x ₁₂ = 300.00	1.0323	1.2205	0.1319	2.1640
	x ₂₁ = 150.00	x ₂₂ = 100.00				
	x ₂₃ = 75.00	x ₂₄ = 129.84				

The application of the proposed model to solve financial structure optimization problem gives different solutions which correspond to the given objective function weights. If the decision maker cannot give the information on the relative importance of the objective functions, the decision maker must only decide which solution to choose. However, if the decision maker can give information on the relative importance of the objective functions, the choice of the preferred solution is facilitated since the obtained solutions express the decision maker's preferences.

CONCLUSION

This paper proposes the methodology of linearization of fractional linear objective functions to solve a MOLFP problem by goal programming methods. The applicability of the proposed methodology has been tested on the financial structure optimization problem.

The obtained results indicate the possibility of an efficient application of the proposed methodology in solving the given problem.

The proposed methodology has many advantages compared to the existing methods. The proposed methodology is simple for both the analyst and the decision maker. The decision maker can determine objective function weights, and thereby the obtained solutions reflect the decision maker's preferences. This method allows the analyst to form a set of efficient solutions by varying the objective function weights, from which the decision maker can choose the preferred one.

For further research we propose additional improving the methodology for solving all the classes of MOLFP problems by using different multiple objective programming methods.

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A NEW RECOMMENDATION METHOD FOR THE USER CLUSTERING-BASED RECOMMENDATION SYSTEM

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ABSTRACT

The aim of this paper is to propose a new recommendation method that is based on user clustering and would evaluate the peculiarities of user groups. To achieve this goal, we have reviewed clustering-based RS and have offered some new improvements. Finally, the proposed method is tested with the Jester data set. The research has disclosed dependencies of the efficiency of recommendations on the number of clusters. The experimental results have shown that the proposed method can be applied to high density databases and the results of recommendations are better than those of traditional methods.

Key words: recommendation systems, user clustering, user filtering algorithms, clustering-based recommendations.

INTRODUCTION

With a rapid development of technologies and the increasing number of internet users, many products and services are transferred into the virtual space. Various offers to buy something by the internet or to use a certain service without leaving the house should save client's time. However, new problems occur here. First of all, how to choose a product when the majority of the offered products are very similar and the client lacks experience? Secondly, how to find the necessary product among others, often unnecessary products? Recommendation systems are widely used to solve these problems. The key aim of recommendation systems is to create new product recommendations or predict the relevance of product to a purposive consumer. In both cases, the recommendation creation process is based on the known features of a user (Jamali, 2009).

Nowadays it has been created and widely used many effective recommendation methods. However, in practice all methods have strong and weak sides. Furthermore, the effectiveness of methods depends a lot on the specificity of data sets. The target of this paper is to propose a new recommendation method, that would evaluate the peculiarities of user groups, and to experimentally it in order to improve the recommendations. The peculiarity of the proposed method is that it is oriented at the data sets with a higher density.

A REVIEW OF CLUSTERING - BASED RS

Based on the collaborative filtering, RS predicts the evaluations by target users for products and generates recommendations for these users rather precisely. However, the decision is based on the comparison of evaluations made by the target user, with that of the product evaluation data base, where the known evaluations of other users are stored, i.e. it is necessary to compare the target user with all the other users. Such a comparison takes a lot of computing time, when the number of users

and products in the data set is large. This disadvantage is essential in online RS, e.g. in the e-shops, where the recommendations should be generated in seconds.

One way to speed-up the generation of recommendations by users is clustering of data, stored in the user-item matrix $V = \{V_{ij}, i = \overline{1, m}, j = \overline{1, n}\}$ of the estimates of products, and searching for similarities between the target user and different clusters of users. A cluster is a collection of data samples having similar features or close relationships. For the collaborative filtering task, clustering is often an intermediate process. The clustering methods for RS are classified into several different types in (Xu et al., 2012). Most popular clustering methods are presented graphically in Fig. 1, showing the coverage of the user-item matrix by clusters.

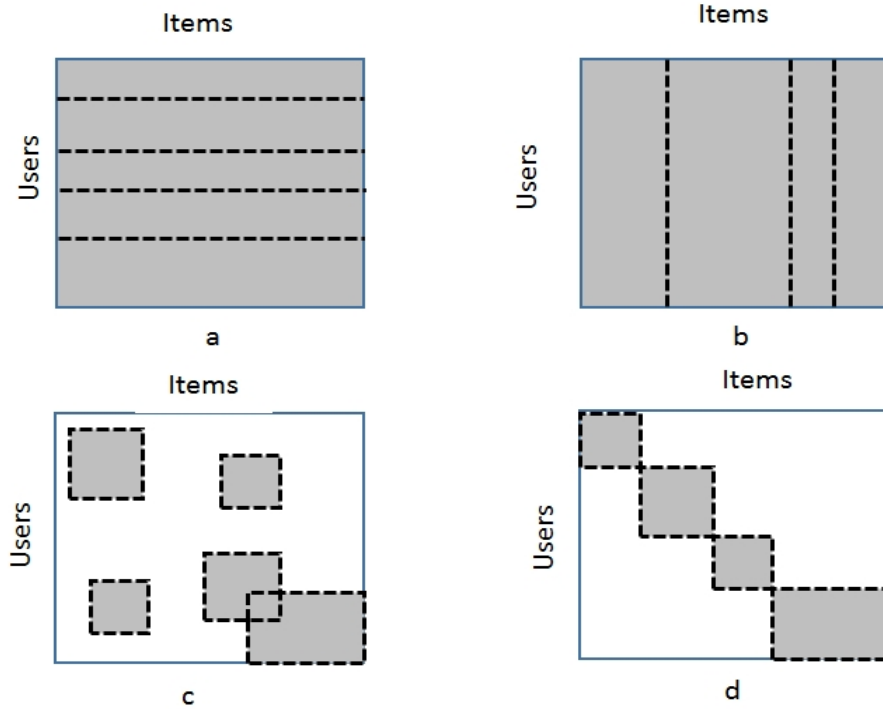


Figure 1: Clustering methods for collaborative filtering: a) User Clustering, b) Item Clustering, c) Biclustering, d) Co-Clustering

First way is to partition the users into distinct clusters (Sarvar et al., 2002). O'Connor and Herlocker (1999) use clustering algorithms to partition the set of items, based on the user rating data. Ungar and Foster (1998) combine separate clustering of users and items. The three above algorithms are all one-sided clustering, either for users or items. Some other works consider the two-sided clustering method (see e.g. Dhillon, 2009). These methods are called as co-clustering based collaborative filtering methods in (Xu et al., 2012), since their clustering strategies are traditional co-clustering, e.g., the key idea of (George, Merugu, 2005) is to simultaneously obtain user and item neighborhoods via co-clustering and to generate predictions, based on the average ratings of the co-clusters, while taking the biases of users and items into account. In this case, each cluster covers some users and some items; all the users and items are covered by the clusters; the clusters are not intersecting.

BASIC PRINCIPLES OF A PROPOSED RECOMMENDATION METHOD

Suppose that we have a user-item matrix $V = \{V_{ij}, i = \overline{1, m}, j = \overline{1, n}\}$ of m users a_1, \dots, a_m and n products b_1, \dots, b_n . Let the user evaluate products using the integer number scale $\{u_{min}, \dots, u_{max}\}$, consisting of n_u elements $n_u = u_{max} - u_{min} + 1$. The meaning of V_{ij} indicates the evaluation by the i -th user of the j -th product. $V_{ij} \notin \{u_{min}, \dots, u_{max}\}$, if the i -th user has not evaluated the j -th product.

Let us consider the matrix $V = \{V_{ij}, i = \overline{1, m}, j = \overline{1, n}\}$ as fully filled with the evaluations (it consists of the data about m users, who have rated all the n products). Using the matrix V , it is possible to classify the users into similar users' clusters C_1, C_2, \dots, C_k that comprise a different number of users:

$$\begin{aligned} C_1 &= \{a_1^1, a_2^1, \dots, a_{m_1}^1\} \text{ with } m_1 \text{ users,} \\ &(\dots) \\ C_k &= \{a_1^k, a_2^k, \dots, a_{m_k}^k\} \text{ with } m_k \text{ users,} \end{aligned}$$

where $m = \sum_{l=1}^k m_l$, a_i^l is the i -th user of the l -th cluster. Each cluster C_l , $l = \overline{1, k}$, has a center:

$$X_l = (x_1^l, \dots, x_n^l), x_j^l = \frac{\sum_{a_i \in C_l} V_{ij}}{m_l}, \quad (1)$$

where m_l is the number of users in the l -th cluster C_l .

When a new user a_N joins the system, s randomly selected products $b_{N_1}, b_{N_2}, \dots, b_{N_s}$ are presented for his evaluation from the set of products $\{b_1, \dots, b_n\}$. Here N_i is the number of product order between 1 to n ; $s < n$, and $V_N = (V_{NN_1}, \dots, V_{NN_s})$ are ratings of the products $b_{N_1}, b_{N_2}, \dots, b_{N_s}$ by the new user. After obtaining the new evaluations $V_{NN_1}, \dots, V_{NN_s}$ of s products $b_{N_1}, b_{N_2}, \dots, b_{N_s}$, lower dimensional cluster centers are selected in each cluster C_l , $l = \overline{1, k}$, based on the products b_{N_1}, \dots, b_{N_s} only:

$$X_l^N = (x_{N_1}^l, \dots, x_{N_s}^l). \quad (2)$$

Then the Euclidean distances

$$\rho(V_N, X_l^N) = \sqrt{\sum_{i=1}^s (V_{NN_i} - x_{N_i}^l)^2}, l = \overline{1, k} \quad (3)$$

between the ratings V_N and lower dimensional cluster centers are calculated. The user a_N is allocated to the cluster, where the distance (3) is lower. Afterwards, it is possible to offer the best rated products to the user a_N of the users from the cluster C_{l_k} .

Each product b_j in the cluster C_l has the distribution of rating, which shows how many users of the cluster C_l provided the rating u , $u \in \{u_{\min}, \dots, u_{\max}\}$, for this product. Using formula (4), it is possible to calculate the average rating given by the users of the cluster C_l for the product b_j :

$$\bar{V}_l^j = \frac{1}{u_{\max} - u_{\min} + 1} \sum_{u=u_{\min}}^{u_{\max}} P_{lu}^j u. \quad (4)$$

The product with the highest average rating in the cluster C_l is recommended for the user a_N . If this product has already been offered for this user, then the system recommends the product with the next in size rating.

After the new user has evaluated the recommended product, the total number of his evaluated products increases. The calculations above are repeated starting from formula (2), in which the evaluations of s products by the new user are used to calculate the lower dimensional cluster centers in each cluster C_l , $l = \overline{1, k}$, based on the products b_{N_1}, \dots, b_{N_s} . After the new user has finished the work (after using and rating the offered or chosen products), the matrix V is extended to a new row with the ratings of this user.

EXPERIMENTAL RESULTS

The proposed method is based on the principle that the users from the same cluster are similar in their behaviour. So, the comparison of experiments without clustering (i. e. $k = 1$) may be used for evaluating the advantages of clustering.

The flowchart of the experimental research contains four main items:

1. First *Jester* data set is used. The data of 24983 users, who have rated at least 36 products, are stored in this database. The database is presented in the form of a matrix, the rows of which correspond to different users. The columns store the user's evaluation of products in the interval $[-10; 10]$. This database is exceptional due to a high density of evaluations. The density of evaluations amounts up to 50%. Moreover, 7200 users have rated all the 100 products.
2. The experiments, in this paper, are carried out on the basis of data of these 7200 users. These users are divided into two subsets:
 - the basic subset, consisting of m users (in our case, $m = 6200$);
 - the validation subset, consisting of m_v users (in our case, $m_v = 1000$).
3. The users from the validation subset are considered as the new users, for which recommendations are generated. The known evaluations by these users allow us to estimate the efficiency of the proposed method.
4. In order to draw objective conclusions, calculations that disclose the new user's behaviour after rating the product s , are done a lot of times and the average results obtained. All the experimental results are presented in Table 1 in detail. They ground the existence of the optimal number of clusters.

Table 1: Experimental results of the dependence on the number of clusters.

k	\bar{u}_2	s^*	\bar{u}_{max}	s_{opt}	$\bar{u}_{max} - \bar{u}_2$	\bar{u}_n
1	3,877	-	3,877	1	0,000	1,081
2	3,949	36	4,048	11	0,099	1,068
3	3,936	38	4,045	13	0,109	1,051
5	3,929	44	4,032	16	0,102	1,062
10	3,948	68	4,235	24	0,287	1,081
15	3,851	75	4,232	22	0,387	1,080
20	3,801	79	4,204	28	0,403	1,073
30	3,677	86	4,210	26	0,534	1,062
50	3,355	92	4,131	39	0,796	1,081
100	3,116	94	3,940	50	0,825	1,074
150	2,495	97	3,976	44	1,481	1,067
200	2,190	98	3,916	56	1,726	1,062

From the experiments we see that in some starting interval $s \in [1, s_{opt}]$ the meaning of \bar{u}_{s+1} is growing. Here $s_{opt} = \arg \max_{s=1, n-1} \bar{u}_{s+1}$ is such a value of s where \bar{u}_{s+1} is maximal. Denote the maximal value of \bar{u}_{s+1} for all $s = \overline{1, n-1}$ by \bar{u}_{max} . Here n is the number of products, equal to 100 in this case. The maximal growth of \bar{u}_{s+1} is defined by $\bar{u}_{max} - \bar{u}_2$. The maximal growth increases with an increase in the number k of the user clusters, however, the best result (the highest value of \bar{u}_{s+1}) is obtained not with the highest or lowest number of the clusters. Therefore, it is some optimal number of clusters.

CONCLUSIONS

In this paper, the new method of recommendations is created to evaluate specific user groups. The efficiency of the application of the user clustering is examined and evaluated with a view to improve the recommendations. In order to get the best recommendations, it is necessary to set the optimum number k of users' clusters. In the case of one cluster ($k = 1$, no clustering), we assume that all the users are similar. Therefore, such case may be considered as a datum-level to evaluate the experimental results, where similar users are clustered. The experimental research with first *Jester* database has shown that the optimum number k of clusters here belongs to the interval $[10; 30]$. The best result is gained as $k = 10$, where the maximal average rating \bar{u}_{max} of the offered product over all the users increases up to 9,2%, as compared with the case $k = 1$. The best recommendations are

obtained when the history of the new user's evaluations of products contains 25% of all the products in the database. The evaluation of peculiarities of user groups, using the user clustering, improves the recommendations. The research has disclosed dependencies of the efficiency of recommendations on the number of clusters. The optimal number of clusters is different for various databases. However, the character of dependencies remains similar.

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A ROBUST SVD ALGORITHM FOR ARAP METHOD

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ABSTRACT

There are many programming libraries where the general singular value decomposition algorithm is included. However, in singular cases, these complex algorithms may return wrong answer, including simple 2×2 case for singular matrices. In this separate case we need a simple and robust algorithm that calculates singular value decomposition of real 2×2 matrix without using additional programming libraries and complex algorithms. An example for application of robust singular value decomposition algorithm could be a simple additional function in ARAP method for surface flattening. This paper represents correct and usable for programming explicit solution of singular value decomposition problem for 2×2 real matrix.

Key words: singular value decomposition, robust algorithm, simple 2×2 case, real matrix.

INTRODUCTION

In linear algebra, the singular value decomposition (SVD) is a factorization $U\Sigma V^T$ of given matrix A , where U and V are unitary matrices and Σ is a rectangular diagonal matrix with non-negative real numbers on the diagonal. For the 2×2 case, A matrix satisfies condition:

$$\begin{pmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{pmatrix} = \begin{pmatrix} u_{11} & u_{12} \\ u_{21} & u_{22} \end{pmatrix} \begin{pmatrix} \sigma_{11} & 0 \\ 0 & \sigma_{22} \end{pmatrix} \begin{pmatrix} v_{11} & v_{21} \\ v_{12} & v_{22} \end{pmatrix}, \quad (1)$$

where

$$UU^T = VV^T = I, \sigma_{11}, \sigma_{22} \geq 0. \quad (2)$$

Standard solution of SVD requires to calculate eigenvalues and eigenvectors of matrix AA^T . It is pretty difficult to realize it by programming. We will analyze an analytical method for calculation of SVD. (Blinn, 2002) proposed a direct computation for decomposing matrix

$$\begin{pmatrix} A & B \\ C & D \end{pmatrix} = \begin{pmatrix} \cos \delta & \sin \delta \\ -\sin \delta & \cos \delta \end{pmatrix} \begin{pmatrix} \sigma_{11} & 0 \\ 0 & \sigma_{22} \end{pmatrix} \begin{pmatrix} \cos \gamma & \sin \gamma \\ -\sin \gamma & \cos \gamma \end{pmatrix}.$$

He defined E, F, G , and H so that

$$\begin{pmatrix} A & B \\ C & D \end{pmatrix} = \begin{pmatrix} E & H \\ -H & E \end{pmatrix} + \begin{pmatrix} F & G \\ G & -F \end{pmatrix},$$

$$\frac{\sigma_{11} + \sigma_{22}}{2} = \sqrt{E^2 + H^2}, \quad \frac{\sigma_{11} - \sigma_{22}}{2} = \sqrt{F^2 + G^2}, \quad \gamma - \delta = \arctan\left(\frac{G}{F}\right), \quad \gamma + \delta = \arctan\left(\frac{H}{E}\right).$$

These explicit formulas does not work for $\sigma_{22} \geq 0$ and in cases $G = F = 0$ or $H = E = 0$ and in programming we have to set $\arctan(\infty)$ to $\frac{\pi}{2}$. In Ellis paper (Ellis, 2007) instead of $\arctan(x)$ we see $\text{atan2}(y, x)$ function:

$$\text{atan2}(y, x) = \begin{cases} \arctan(y/x), & x > 0, \\ \arctan(y/x) + \pi, & y \geq 0, x < 0, \\ \arctan(y/x) - \pi, & y < 0, x < 0, \\ \pi/2, & y > 0, x = 0, \\ -\pi/2, & y < 0, x = 0, \\ \text{undefined}, & y > 0, x = 0. \end{cases}$$

This function dates back at least as far as the FORTRAN programming language (Elliott, 1966) and is currently found in C's math.h standard library, the Java Math library, the Python math module, and elsewhere. $\text{atan2}(y, x)$ is the general function of $\arctan(x)$ and helps to define $\arctan(x)$ in feature cases. We will use $\text{atan2}(y, x)$ for solving SVD problem.

ANALYTICAL SOLUTION OF SINGULAR VALUE DECOMPOSITION

According to Blinn's explicit formula we can easily derive $\sigma_{11} \geq 0$, σ_{22} , and γ values:

$$\sigma_{11} = \frac{1}{2} \left(\sqrt{(a_{11} - a_{22})^2 + (a_{12} + a_{21})^2} + \sqrt{(a_{11} + a_{22})^2 + (a_{12} - a_{21})^2} \right).$$

For calculation of real value σ_{22} according non-negative condition we need to add modularity and the final formula can be expressed as

$$\sigma_{22} = \left| \sigma_{11} - \sqrt{(a_{11} - a_{22})^2 + (a_{12} + a_{21})^2} \right|.$$

Let's continue calculations with v_{21} value, because v_{11} is positive and can't define values of matrix V .

$$\begin{aligned} v_{21} = \sin \gamma &= \sin \left(\frac{1}{2} \left(\arctan \left(\frac{a_{12} + a_{21}}{a_{11} - a_{22}} \right) + \arctan \left(\frac{a_{12} - a_{21}}{a_{11} + a_{22}} \right) \right) \right) = \\ &= \sin \left(\frac{1}{2} \left(\arctan \left(\frac{2(a_{11}a_{12} + a_{21}a_{22})}{a_{11}^2 - a_{12}^2 + a_{21}^2 - a_{22}^2} \right) \right) \right), \end{aligned} \quad (3)$$

using arctangent sum formula.

Removing trigonometric functions

Let's remove from (3) trigonometric functions by replacing atan2 instead of \arctan . Denote

$$\alpha = 2a_{11}a_{12} + 2a_{21}a_{22}, \quad \beta = a_{11}^2 - a_{12}^2 + a_{21}^2 - a_{22}^2.$$

Then

$$\begin{aligned} \sin \left(\frac{\text{atan2}(\alpha, \beta)}{2} \right) &= \frac{\sqrt{2}}{2} \text{sgn}(\alpha) \sqrt{1 - \frac{\text{sgn}(\beta)}{\sqrt{1 + (\alpha/\beta)^2}}} = \text{sgn}(\alpha) \sqrt{\frac{1}{2} - \frac{|\beta| \text{sgn}(\beta)}{2\sqrt{\alpha^2 + \beta^2}}} \\ &= \text{sgn}(\alpha) \sqrt{\frac{\sigma_{11}^2 - \sigma_{22}^2 - \beta}{2(\sigma_{11}^2 - \sigma_{22}^2)}}. \end{aligned}$$

It is easy to check, that

$$\sqrt{\alpha^2 + \beta^2} = \sigma_{11}^2 - \sigma_{22}^2.$$

Finding matrix V

Previous formulas are defined for values $\sigma_{11}^2 > \sigma_{22}^2$. In the other hand, we can easily check that inequality $\sigma_{11}^2 < \sigma_{22}^2$ is impossible. In case $\sigma_{11}^2 = \sigma_{22}^2$ we have a zero matrix \mathbf{A} and then we can set \mathbf{U} and \mathbf{V} to identity matrix \mathbf{I} . Firstly, define value v_{11} :

$$v_{11} = \sqrt{1 - v_{21}^2} = \sqrt{1 - \left(\operatorname{sgn}(\alpha) \sqrt{\frac{\sigma_{11}^2 - \sigma_{22}^2 - \beta}{2(\sigma_{11}^2 - \sigma_{22}^2)}} \right)^2} = \sqrt{\frac{\sigma_{11}^2 - \sigma_{22}^2 + \beta}{2(\sigma_{11}^2 - \sigma_{22}^2)}} = \sqrt{\frac{\sigma_{11}^2 - a_{12}^2 - a_{22}^2}{\sigma_{11}^2 - \sigma_{22}^2}},$$

because

$$\sigma_{11}^2 + \sigma_{22}^2 = a_{11}^2 + a_{12}^2 + a_{21}^2 + a_{22}^2.$$

Finally,

$$v_{11} = \begin{cases} \sqrt{\frac{\sigma_{11}^2 - a_{12}^2 - a_{22}^2}{\sigma_{11}^2 - \sigma_{22}^2}}, & \text{if } \sigma_{11} > \sigma_{22}, \\ 1, & \text{otherwise.} \end{cases}$$

According to $\operatorname{sgn}(\alpha)$ the order values of \mathbf{V} equal to

$$v_{21} = \begin{cases} -\sqrt{1 - v_{21}^2}, & \text{if } a_{11}a_{12} + a_{21}a_{22} < 0, \\ \sqrt{1 - v_{11}^2}, & \text{otherwise,} \end{cases}$$

and

$$v_{12} = -v_{21}, \quad v_{22} = v_{11}.$$

Finding matrix \mathbf{U}

There is no reason to calculate δ to find matrix \mathbf{U} . If we have found Σ and \mathbf{V}^T correctly, then from (1, 2) follows equality $\mathbf{U}\Sigma = \mathbf{A}\mathbf{V}$ or:

$$a_{11}v_{11} + a_{12}v_{21} = u_{11}\sigma_{11}, \quad (4)$$

$$a_{11}v_{12} + a_{12}v_{22} = u_{12}\sigma_{22}, \quad (5)$$

$$a_{21}v_{11} + a_{22}v_{21} = u_{21}\sigma_{11}, \quad (6)$$

$$a_{21}v_{12} + a_{22}v_{22} = u_{22}\sigma_{22}. \quad (7)$$

A direct computation is available for the case $\sigma_{22} \neq 0$. Let's finish our calculations by solving (4, 5, 6, 7) equations. If $\sigma_{11} = 0$ then \mathbf{A} is zero matrix and we have to set \mathbf{U} to identity matrix \mathbf{I} :

$$u_{11} = \begin{cases} \frac{a_{11}v_{11} + a_{12}v_{21}}{\sigma_{11}}, & \text{if } \sigma_{11} \neq 0, \\ 1, & \text{otherwise,} \end{cases}$$

$$u_{21} = \begin{cases} \frac{a_{21}v_{11} + a_{22}v_{21}}{\sigma_{11}}, & \text{if } \sigma_{11} \neq 0, \\ 0, & \text{otherwise.} \end{cases}$$

If $\sigma_{22} = 0$ then \mathbf{A} is singular matrix. To construct unitary \mathbf{U} we have to set $u_{12} = -u_{21}$ and $u_{22} = u_{11}$:

$$u_{12} = \begin{cases} \frac{a_{11}v_{12} + a_{12}v_{22}}{\sigma_{22}}, & \text{if } \sigma_{22} \neq 0, \\ -u_{21}, & \text{otherwise,} \end{cases}$$

$$u_{22} = \begin{cases} \frac{a_{21}v_{12} + a_{22}v_{22}}{\sigma_{22}}, & \text{if } \sigma_{22} \neq 0, \\ u_{11}, & \text{otherwise.} \end{cases}$$

Code in C language

Figure 1 shows a function in C language for calculating singular value decomposition. An example of application of this function could be an additional function in as rigid as possible (ARAP) (Liu, 2008) method for numerical calculation of surface flattening.

```
void svd22(const double a[4], double u[4], double s[2], double v[4]) {
    s[0] = (sqrt(pow(a[0] - a[3], 2) + pow(a[1] + a[2], 2)) + sqrt(pow(a[0] + a[3], 2) + pow(a[1] - a[2], 2))) / 2;
    s[1] = fabs(s[0] - sqrt(pow(a[0] - a[3], 2) + pow(a[1] + a[2], 2)));
    v[0] = (s[0] > s[1]) ? sqrt(fabs((a[0] * a[0] - a[1] * a[1] + a[2] * a[2] - a[3] * a[3]) / (s[0] * s[0] - s[1] * s[1] + 1)) / sqrt(2) : 1;
    v[1] = (a[0] * a[1] < -a[2] * a[3]) ? sqrt(fabs(1 - v[0] * v[0])) : -sqrt(fabs(1 - v[0] * v[0]));
    v[2] = -v[1];
    v[3] = v[0];
    u[0] = (s[0] != 0) ? (a[0] * v[0] + a[1] * v[2]) / s[0] : 1;
    u[2] = (s[0] != 0) ? (a[2] * v[0] + a[3] * v[2]) / s[0] : 0;
    u[1] = (s[1] != 0) ? (a[0] * v[1] + a[1] * v[3]) / s[1] : -u[2];
    u[3] = (s[1] != 0) ? (a[2] * v[1] + a[3] * v[3]) / s[1] : u[0];
}
```

Figure 1: SVD calculating function in C language

CONCLUSION

Analytical solution of SVD for a real 2×2 matrix was proposed and realized in programming language C. To test (1, 2) conditions we have generated millions of integer and float matrices in different ranges. In all cases the answer of \mathbf{U} , $\mathbf{\Sigma}$, \mathbf{V}^T was correct. We used also additional absolute values because square roots of negative zeros are undefined in programming language C. In this paper we have provided a fragment of SVD code in C. For another test of this SVD algorithm we have chosen to integrate it in ARAP algorithm and calculate flattened surfaces. The answer was correct in all experiments.

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**Session F: ENVIRONMENTAL AND SAFETY MANAGEMENT
SYSTEMS**

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STUDY OF MARITIME ERGOSOFLOGY-CONTRIBUTION TO THE CONSERVATION AND SUSTAINABLE DEVELOPMENT OF THE WORKING LIFE OF VITALITY SEAFARERS ON BOARD "LONG VOYAGES"

UDC: 331.45:656.61

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ABSTRACT

Maritime such extremely different (specific) scientific field inevitably requires certain transformations that are conditioned modern marine systems as well as modern port reloading machines. The needs of the world's economy imposed by the shipbuilding industry request for adjustment of ship construction needs of world markets. Modern ships with new technologies in the power-more control systems are fully automated, which imposes a reduction in the number of seamen engaged in certain professional services. As An example of a state that in the seventies on cruise ships, which had been around 150-170. meters were engaged from 30 to 35 members of the ship's crew, while today on ships sailing overseas that are built up to 400 meters or more in length, is professionally engaged from 12 to 15 sailors. These parameters indicate that increasing the capacity of the ship and the installation of modern management propulsion system reduces the need for until recently the number of deployed sailors. In these events Maritime ergosofology as a professional socio-human science has found its place in the overall oeuvre of individual and collective health prevention seafarers. Online perturbing factors that are mobilized in terms of psychosomatic pain and physical alteration strongly impair the overall health habitus engaged a seafarer on board "long voyages" as a destructive influence on its circadian rhythm and mode of living and working on the boat, and even out of the boat (at disembarkation from the ship).

Key words: seaman long voyages, urban-ship systems, naval Ergosofology, circadian disorders, psychosomatic pain, socio physical alteration.

INTRODUCTION

The impact of modern information system is very much attracts attention both in economic activity as well as in shipbuilding and maritime industry. Installation of modern control and drive as well as service-reloading system not only changes the internal urban system of the ship as a dynamic system already dictates the number of engaged subject both on board and in port reloading.

In addition to the above, the installation of ship automation and strengthening of information systems on ships' long voyages "appears so. "Excess free time" that directly increase nostalgic index. These phenomena can observe in the oeuvre of professional maritime suffering.

On the other hand, an increase in the urban dimension of ship systems and reducing the number of engaged members of the ship's crew in the same associativity creates what can best observe in the context socio-physical alteration.

Maritime Ergosofology as a preventive human science, created by the professor. PhD. Danilo A. Đurovic for decades advocates and Curricula teaches students responsible argues that the study of the Maritime Ergosofology of students-future of professional seafarers creates a new value vision that has

many professional habit when it comes to conservation and sustainable development of working life the vitality of seafarers on board "long voyages"

WHAT DOES MARITIME ERGOSOFLOGY

The coin naval Ergosofology deals with specific educational postulates concerning the involvement of professional sailors and seamen on board "long voyages."

The term seaman in the study of the Maritime Ergosofology refers to each subject engaged on a ship that is not in their working activity is closely tied to the maritime profession. These include subject engaged in the service of "white-support staff," such as cooks, waiters and other people whose profession can smoothly perform the mainland.

The term professional seafarer is any person who is knowledgeable strictly for conducting maritime profession, or professionally engaged on board "long voyages" in service "Nautica" and "Shipip's engine rum departments."

Maritime Ergosofology is a subject which primarily aims and mission to professionally educate students-future seafarers in terms of the value of prevention.

Maritime call as a specific profession imposes no small number of factors that directly or indirectly affect the disruption of circadian rhythms and modes engaged subject (seafarer and professional seafarer's) on board "long voyages," which is often manifested in the composition of the psychosomatic suffering and socio-physical alteration.

The goal and mission Maritime ergosofology to professional and truly indicate trainee for maritime vocation-future seafarer to sail on the boat is not like they used to introduce the world (the world's ports) and other challenges posed by sailing on the sea and oceans.

Due to the modern port of transfer systems today ship "long voyages" very rarely stays in the reloading port two days or more, which in some way after a long and difficult navigation short stay in the port does not affect very favorably to the overall socio-health status of a seafarer.

For the foregoing reasons, and for reasons that ship with one aspect observes as urbo-dynamic system, while the second aspect observes as urbo-restrectiv system, indicating that the current divertible function at distortion socio personal and general health of the seafarer climate "for long voyages".

Traumatic strongly function at the creation of the acute and chronic pathogenesis at the Mariners' long voyages can be registered through:

- Separation from family and nostalgic sequence,
- Sexual abstinence,
- Influence of meteorological variables,
- Potential fear of the known and the unknown,
- Specific work and life (outside of work) conditions,
- Sociological air (forced the crew)
- Social isolation (restriction of shipping space)
- Psychosomatic suffering (nostalgia, due to the monotony of long voyages, apathy-working single type, nausea, ...
- Interpersonal relationships between superiors and subordinates and vice versa,
- A brief stay in port,
- Rocking, pitching vessel and its debalans status,
- Fear of piracy and sudden illness, surgery, infection, etc.

Maritime Ergosofology using different methods of prevention professional and professional models tends to point out not just snug maritime vocation for which students and young people in general very often without consulting the original professional maritime postulates, quickly and easily opt. The professional choice in any segment of the work, unless it's not aligned on the basis natal-physiological, and even mental impairment capital could be a very dangerous factor in overall employment, and current and lifetime work subject.

Since ancient times, it is known that the maritime profession is very complex and specific than that called subject engaged on board "long voyages" requires special flexibility that signifies through the preservation of the health of the imposed work-life professional milieu.

It is worth mentioning some of the scientific fields which are used and / or consult Maritime Ergosofology building its scientific vitality:

- Organizational Psychology,
- Psychology environment,
- Computer science and psychology of cyber dispersion,
- Sociology of work and the working environment,
- Urbo sociology,
- Urbo-sofology,
- Ecology,
- Ergonomics,
- Ergology,
- Ergosozology,
- Occupational Health,
- culture, religion, ...

Listed scientific field in its own way, enriching educational Naval Ergosofology who through their professional specificity tends real filtration between "personal aspirations and personal real habit." It is unrealistic perception of the overall personal, psychosomatic quality and quantity of potential trainee (Seafarers) in a very high percentage will lead to serious disruption of his health, as well as the dangers that are registered through the organic-functional non adaptability.

Violation of the health status of a seafarer on board "long voyages" at a time while the ship for several days is far from the mainland (the ocean) is an additional concern not only the potential subject care and concern of other members of the ship's collectives, with special view when it comes to possible contagious news, the sudden death of a seafarer on board, required surgery and cardio-house Internet urgent intervention of seafarers.

Maritime Ergosofology in his scientific publications, among other things sublimated knowledge of Nutri-food-science consistency, whose contribution represents serious health prevention especially when it comes to job-specific living conditions for seafarers on board 'long voyages. "

In our research, it is known that creative recreation practicum and consume nutritional vitality of sailors on the "board the ocean liner" undoubtedly contributes to reducing the suffering of psychosomatic and socio physical alteration, which is based on the true value of organo-functional adaptability and its viability easily finds.

CONCLUSION

From the present text it can be concluded that the subject titled Maritime Ergosofology is a very important preventive in building blocks in the study of marine professionalism. From the concept offered by Maritime Ergosofology it can be specified the following thinking that very often the author emphasizes to students in lectures: "If you knew what is waiting you in life, I'm sure it would be much

more addressed observational analytic dispersion offering finding solutions through educational postulates, I promise you in advance sense or nonsense maritime career choice than spending time in the illusion of easy money! "

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ENERGY MANAGEMENT AND ISO 50001

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ABSTRACT

Application of European recommendations and guidelines for planning of management processes in mining and energy complexes is an acceptable option because it uses existing standards and prescribed procedures. ISO 50001 standards regulate the energy management systems and encourage actions to increase the level of energy efficiency. This paper presents the possibility of ISO 50001 integration in the case of mining and energy complex management system. Application of ISO 50001 standard and determination of significant environmental aspects can greatly contribute to defining energy policy in the mining and energy complex. These paper discusses energy indicators, as a basis for improving the environmental management system in the mining and energy complexes.

Key words: management systems, energy, management, standard, ISO 50001

INTRODUCTION

Mining and energy complexes represent significant sources of pollutants. They lead to the emission of dust, gaseous products of coal combustion, wastewater discharges, disruption of groundwater flow, taking up vast areas and disrupting biodiversity. The introduction of modern management systems and the application of energy indicators make it possible to examine the situation completely and prevent the neglect of important aspects of the environment (International Atomic Energy Agency, 2005).

The impact of surface mining on environmental quality depends on the capacity of mining machinery and transport machinery, labour productivity and energy efficiency. Solving environmental problems without major financial investment is not possible. Necessary actions: regular suppression of dust at loading points, the use of water curtains and protective barriers to prevent dispersal of dust, setting dust collectors at loading points, construction of quality access roads, gritting the roads with binders, uniform loading of trucks, the use of closed conveyor belts, waste water filtering, the operation of gas purification plants, regular maintenance of electrostatic precipitators, proper disposal of tailings and ash, and the implementation of rehabilitation and remedial actions. Planning of measures to address the problem is one of the main tasks of the environmental management system in mining and energy complex.

MINING AND ENERGY COMPLEXES AND ENERGY MANAGEMENT

The ISO 16001 standard sets out the requirements relating to the improvement of energy management systems (ISO 16001:2011, 2009). The ISO 50001 standard was published in 2011 entitled "Energy management", at the same time as ISO 16001 standard. It is based on ISO 16001 standard, but has a

wider application (ISO 50001:2011, 2009). The standard includes general requirements, energy policy, planning, practical implementation, operation, checking and review of the management system by the top management. It refers to increasing levels of energy performance, which include energy efficiency, energy intensity, and energy consumption and carbon dioxide emissions.

ISO 50001 standards is based on applying the Deming cycle, so that there is a real basis for its integration with the standards ISO 9001 and ISO 14001. Their common requirements that are suitable for use in the management of mining and energy complex are: management responsibility for the achieved quality of products, environmental disruption and loss of energy, the establishment of policy for the quality management system of the environment and energy, process approach, the planning process of providing the required product quality, conservation of environmental quality and achieving appropriate levels of energy efficiency, the adoption of conservation goals for environmental quality, saving coal reserves and reducing energy losses, monitoring the realization of the adopted goals, defining responsibilities and powers, defining ways of controlling and monitoring procedures, defining procedures for the verification of compliance with applicable laws and regulations in the field of environmental protection and energy, system improvements, internal audits, finding nonconformities, control of the application of corrective and preventive actions and management review of energy and mining complex. Table T. 1 presents a comparative display of guidelines of 50001, which can be applied in an integrated management system of mining and energy complex.

Table 1: Guidelines of ISO 50001 standards in the system of environmental management and energy transformations in mining and energy complex (ISO 50001:2011, 2009)

Policy
– Energy Policy
Planning of mining and energy management system
– Energy profile and energy basis
– Energy performance of mining and energy complex
– Energy requirements
General and specific objectives of environmental protection and mining and energy complex programs
– Plans for achieving energy efficiency
– Control of coal consumption
– Internal audits on achieving the planned savings
– Energy efficiency analysis of coal energy transformation
Mining and energy complex documentation in the area of systems management
– Documenting of operations management processes and design processes
– Documenting the processes of internal audits and system improvements
– Planning of coal exploitation and energy source procurements
Reviewing management system improvements
– Nonconformities in the analysis of energy transformation
– Corrective and preventive actions for reducing energy losses in the course of coal mining, coal transportation, disposal of tailings and ash and energy distribution
– Responsibilities and authorities for nonconformities in the functioning of the energy management
– Improving the energy management system

ENERGY INDICATORS

Compliance of mining and energy complex operations with legal requirements in the area of environmental protection is very important task for the management. Indicators of environmental quality and energy indicators may contribute to a more realistic review of the environmental management system by the management (Methodologies for Indicators, The World Bank, 1995; International Atomic Energy Agency, 2005). Not all environmental indicators are applicable for the assessment of energy and mining complex impact on the environment, but they can facilitate the process of governance. Energy indicators point to the cause of the problems associated with the

decision-making. In any case, the use of energy indicators can contribute to real assessment of the impact of mining and energy complex on environmental quality.

Suitable indicators for assessing the impact of mining and energy complex are:

- greenhouse gases from the coal combustion;
- the share of pollutants from the mining and energy complex in ambient concentrations of pollutants of surrounding settlements;
- the emission of pollutants from the processes of coal transportation and transformation of primary energy of coal to electricity and;
- it's distribution and the concentration of pollutants originating from energy activities in the recipients and the surrounding soil.

The use of energy indicators is important for assessing the functioning of the environmental management system and presentation of the energy efficiency in the process of coal energy transformation. Establishing a set of indicators for mining and energy complex is a complex task. Department of environmental protection in cooperation with management representatives in mining and energy complex should define indicators, to allow for easier management, evaluation of work results and timely response.

CONCLUSION

The willingness of mining and energy complex management to deal with real problems facilitates decision-making, increases the level of energy efficiency. Identification of shortcomings is a good way to build modern management systems. Functioning of energy systems in mining and energy complexes, based on ISO 50001 guidelines and the implementation of energy indicators facilitates the work of mining and energy complex representatives, but also points to the effects of energy efficiency.

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MANAGEMENT SYSTEMS BASED ON THE INTEGRATION OF ISO STANDARDS AND QUALITY INDICATORS

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ABSTRACT

Improving the organization's management system is essential and is a priority task for the management. Application of international standards enables to facilitate the navigation through a number of problems, but also a better relation between stakeholders. Quality indicators provide an opportunity for a more realistic assessment of the progress of organizations in achieving the adopted policy.

Key words: management systems, standard, ISO 50011, quality, indicators

INTRODUCTION

Organizations in the Republic of Serbia mainly apply guidelines from ISO 9001 standard and they are in procedure for ensuring the conditions for ISO 14001 certification. Application of ISO 50001 standard is also essential in order to ensure a better position in the market, but also to save energy and increase energy efficiency.

INTERNATIONAL AND EUROPEAN STANDARDS

ISO 90001 standards is the basis for the introduction of quality management systems (ISO 9001, 2008). ISO 14001 standards defined the requirements relating to the improvement of environmental protection systems (ISO 14001, 2004). The ISO 50001 standard was published in 2011 entitled "Energy management" (ISO 50001, 2009).

The integration of ISO standards and quality management system (QMS), environmental management system (EMS) and energy management system (EnMS) is based on the Deming cycle (PDCA cycle) and common grounds. These standards have common elements, including:

- creation and adoption of policies,
- creation of documentation,
- the adoption of targets,
- definition of monitoring and measurement modes,
- establishing communication,
- implementation and monitoring of legal and other requirements,
- operational management,
- internal audits,
- management reviews,
- nonconformity,

- corrective and preventive actions and
- improvements.

Table 1 presents the similarities in guidelines of international ISO standards.

Table 1: Integration of ISO 9001, ISO 14001 and ISO 50001 (ISO 9001, 2008; ISO 14001, 2004; ISO 50001, 2009)

ISO STANDARDS GUIDELINES		
ISO 9001	ISO 14001	ISO 50001
Legal and other requirements	Environmental Policy	Energy policy
↓	↓	↓
Internal audits	Environmental aspects	Planning
↓	↓	↓
Documentation	Legal and other requirements	Energy profile
↓	↓	↓
Responsibilities and authorities	Planning	Energy basis
↓	↓	↓
Planning	General and specific objectives	Energy performance
↓	↓	↓
Objectives	EMS programs	Energy requirements
↓	↓	↓
Resource management	Responsibilities and authorities	Objectives
↓	↓	↓
Product realization	Internal audits	Measurement and analysis
↓	↓	↓
Design	Training	Documentation
↓	↓	↓
Purchasing	Development of environmental awareness	Specific plans
↓	↓	↓
Monitoring and measurement	Competence	Management of operations
↓	↓	↓
Improvements	Communication	Design
↓	↓	↓
Review	Documentation	Energy supply
↓	↓	↓
Traceability	Management	Internal audits
↓	↓	↓
Users' assets	Emergencies	Improvements
↓	↓	↓
Nonconformities	Nonconformity	Review and nonconformity
↓	↓	↓
Analysis of data	Preventive and corrective actions	Corrective and preventive actions
↓	↓	↓
Corrective and preventive actions	Review	Responsibilities and authorities

Table 1 presents a comparative review of the guidelines of ISO 9001, ISO 14001 and ISO 50001, based on which we can note the similarities and plan for integrated application, with the aim of improving the management system.

APPLICATION OF INDICATORS FOR THE QUALITY OF LIVING ENVIRONMENT AND WORKING ENVIRONMENT AS A BASIS FOR MANAGEMENT SYSTEM IMPROVEMENT

Indicators for the quality of working and living environment are of great importance for the improvement of management system for protection of working and living environment, because they describe events and provide information necessary to implement the procedures prescribed by

standards (International Atomic Energy Agency, 2005; Methodologies for Indicators, 1995). Their application is important in the part relating to the implementation of internal audits, identification of nonconformities and planning of corrective protective actions.

Ordinance on the national list of environmental indicators, published in the "Official Gazette" of the Republic of Serbia, contains a set of indicators that can be used as a basis for improving the management system (Regulation on the national list of environmental indicators, 2011). The list includes indicators grouped into twelve thematic sections. The tenth group consists of indicators of economic and social resources and activities of importance to the environment, such as:

- the environmental management system,
- total primary energy consumption by energy source,
- overall energy intensity and
- participation of recycling in gross domestic product.

The eleventh group of indicators includes indicators which represent the application of international and national legislation, strategies, plans, programs and agreements in the field of environmental protection (Regulation on the national list of environmental indicators, 2011). It includes the indicator used to describe the success of the legislation implementation.

The 12th group of indicators can express subjects of environmental protection system, such as:

- investments and current expenditures and
- funds for subsidies and other incentives.

Indicators can provide the information necessary for the review of the adopted quality policy, environmental policy or energy policy. The importance of application is based on measurability and systematic approach to determining trends of deviations from the adopted standards and procedures. The management of the organizations and departments for protection of living and working environment can easily improve the management system, since indicators, in a simple manner, clearly indicate an improvement or worsening of the situation monitored.

CONCLUSION REMARKS

The analysis of similarities and specificities of the ISO standards concludes that the improvement of the management system should be based on the integral implementation of the guidelines from presented standards. The results of the success of the organizations' management and implementation of the planned improvement actions should be realistically assessed. Quality indicators are the basis for understanding the consequences of the adopted policy of the organization and observation of failures in operations. Application of standards and indicators contributes to simpler and clearer setting of goals and to the improvement in the management system.

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PHARMACEUTICAL WASTE FROM HOUSEHOLDS - ENVIRONMENTAL RISK MANAGEMENT

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ABSTRACT

The aim of this study is to develop a regional model of pharmaceutical waste management based on the principles of life cycle assessment. It is focused towards the development of a model for managing expired household medications, taking into account the fact that 90% of pharmaceutical waste is home-generated. The survey covered 2600 households in the area of the city of Nis, which is 5.24% of Serbia's total population and 5.15% of the total number of households in Serbia. In the households in the study area, there were 8.21 medication packages per household, of which 12.22% (slightly more than one package per household) were medicines which had expired. More than two thirds (68.03%) of the total number of medication packages in the research area were classified into five ATC groups. Based on results obtained, the projected quantities of expired medications in Serbia will be 74.92 tonnes / year. The main feature of a developed regional model is to allow the application of methods for treatment of small quantities of pharmaceutical waste, as recommended by the WHO. The model grounded on ATC classification system is compatible with the classification based on environmental and health risk assessment of pharmaceuticals.

Key words: pharmaceutical waste, ATC classification, regional management model, WHO

INTRODUCTION

Medical waste is a heterogeneous mixture of municipal, infectious, pathoanatomical, pharmaceutical and laboratory waste, disinfectants and packaging, as well as chemical waste from medical and veterinary institutions.

It has been estimated that about 14,450 tonnes of bio-hazardous waste will be generated in medical institutions in 2015. If we take into account the additional 6,610 tonnes, which are supposed to be generated in outpatient health institutions, the expected annual quantity of waste will be over 21,000 tonnes. About 3% (6,300 tonnes) of the total waste is pharmaceutical waste. The World Health Organization (WHO) estimates that the quantity of medical waste will amount to about 8.5 kg per capita in the year to come. In the Republic of Serbia, according to data from the Waste Management Unfortunately, over 90% of pharmaceutical waste is home-generated. Disorganized system of pharmaceutical waste management in Serbia has caused the accumulation of significant quantities of pharmaceutical waste (about 200 tonnes), primarily unused or expired medications.

Significant amount of pharmaceutical waste, and above all substantial risks to the environment and human health which occur as a result of an inadequate pharmaceutical waste management system, urged the authors of this article to develop a regional model for pharmaceutical waste management. The model is based on the results of multi-criteria optimization process of pharmaceutical waste management. The most important criteria for optimization are: the quantities of various groups of pharmaceutical waste, the characteristics of pharmaceutical waste treatment technologies and environmental impacts of pharmaceutical waste. A regional model developed on this basis should significantly contribute to the efficiency and effectiveness of pharmaceutical waste management system at regional and national levels.

METHODOLOGY

The survey was conducted in the area of the city of Nis, which comprises of the city of Nis and the municipalities of Aleksinac, Svrnjig, Merošina, Razanj, Gadzin Han and Doljevac. The examined area included six municipalities and five city municipalities, with 376309 inhabitants living in 285 settlements. Figure 1 shows the area involved in the survey.

The questionnaire provides a sufficient amount of relevant data and qualitative indicators of the following issues: the structure and characteristics of households (number of age of household members), technical characteristics of home pharmacies (premise and storage place) and the respondents' views on the use of medications (daily dose, side effects, disposing unused or expired medicines, doctors' and pharmacists' consultation on the use of medications, etc.).

A special part of the questionnaire is the list of household medications with the following characteristics: name, type, dose, expiration date, number of medication packages or, the manner and frequency of medication intake (medication regimen) and the groups of medications according to the ATC classification system. According to the ATC classification system, the active ingredients in pharmaceuticals are divided into different groups, taking into account the organs or system on which they act and their therapeutic, pharmacological and chemical properties. All medications are primarily classified into fourteen main groups (the first level). Further classification indicates therapeutic subgroups (the second level) and chemical, pharmacological and therapeutic subgroups and the active. The data relevant for the ATC classification, such as chemical composition and interactions with other pharmaceuticals, pharmacology and mechanism of action, therapeutic indications, etc. are extremely useful for the development and implementation of all phases of managing unwanted medications – collection, transportation, storage, neutralization, dumping.

ATC classification system provides a good basis for the selection and implementation of methods for treatment of expired medications. Characteristics of certain treatment methods (chemical-technological properties, capacity, impact on the environment and human health, etc.) are the essential data required for the development of a regional model of pharmaceutical waste management.

ACT classification of pharmaceuticals is as follows: A - Alimentary tract and metabolism, B - Blood and blood forming organs, C - Cardiovascular system, D - Dermatologicals, G - Genito-urinary system and sex hormones, H - Systemic hormonal preparations, excluding sex hormones and insulins, J - Antiinfectives for systemic use, L - Antineoplastic and immunomodulating agents, M - Musculo-skeletal system, N - Nervous system, P - Antiparasitic products, insecticides and repellents, R - Respiratory system, S - Sensory organs and V - Various.

Reducing waste at the source is the essence of a proper system of pharmaceutical waste management. The disposal of small quantities of pharmaceutical waste is easy and relatively inexpensive, whereas large amounts of waste usually require complex and costly installations.

The most important methods for disposal and treatment of small quantities of pharmaceutical waste are outlined here:

- Sanitary landfills - daily quantities of pharmaceutical waste dissolved with larger quantities of another (inert) waste may be isolated here. Cytotoxic waste and narcotics should never be landfilled.

- Encapsulation - a very small amount of pharmaceutical waste can be disposed of by this method, together with sharps if necessary.
- Safe burial on hospital premises – special programmes allow waste burial in specially equipped premises, and this disposal method considerably reduces transportation cost.
- Discharge to a sewer - moderate quantities of liquid or semi-liquid waste pharmaceuticals, such as solutions containing vitamins, eye drops, cough syrups, solution for intravenous use, etc. could be diluted in water and afterwards discharged into a sewer system; however, cytotoxic medications and antibiotics are not allowed to be discharged at any circumstance.

Incineration - small quantities of pharmaceutical waste (no more than 1% of the total amount) can be incinerated together with infectious or municipal waste. The quantities are limited so as to prevent the emission of toxic gases into the atmosphere.

Large quantities of pharmaceutical waste, and in particular pharmaceutical waste after emergencies, are treated by either incineration or encapsulation.

Table 1: Medical and pharmaceutical waste treatment methods

PHARMACEUTICAL WASTE TREATMENT METHODS		
Methods suitable for different categories of pharmaceutical waste	Methods suitable for small quantities of pharmaceutical waste	Methods that cannot be used for pharmaceutical waste disposal
Rotary kiln, Encapsulation, Inertization, Return expired drugs to supplier	Pyrolytic incinerator, Safe burial on hospital premises, Sanitary landfill, Discharge to sewer	Single-chamber incinerator, Drum or brick incinerator, Chemical disinfection, Wet thermal treatment, Microwave irradiation

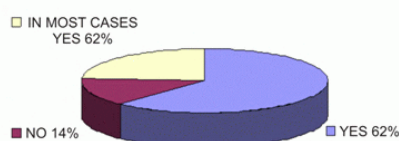
RESULTS

The questionnaire contained four sections: basic data about sample households, data about household storage of medicines, the respondents' views on the management of drugs beyond their expiration date, and a list of drugs according to ATC groups.

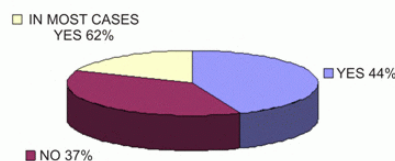
The average "home pharmacy" in the examined region is located in a cabinet (39%) or kitchen cabinet (28%), in the hallway (29%) or kitchen (21%). Only 5% of household medicines are within children's reach. In the third part of the research, we examined and analyzed the attitudes and behavior of respondents towards medications and how they dispose of expired medicines. The results are demonstrated in the following graph (Figure 1.).

Over 62% of respondents know the defined daily dose of medication they take, whereas 37% are not familiar with the side effects of the medicines they use. The majority of respondents (40%) were warned about side effects by the friends who take the same or similar medications, while only 9% were warned by the doctors. Almost all respondents (97%) throw the expired and unused medications in the household trash, and only 3% of the respondents take them back to the pharmacy. 41% related they consult a physician only. Of all people surveyed, 48% do not fully understand the information about the medicines they receive from their doctors or pharmacists.

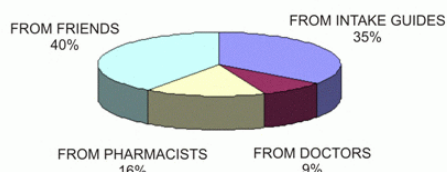
Table 2 shows the percentage of expired medications in the total amount of medications in "home pharmacies", by ATC groups and municipalities.



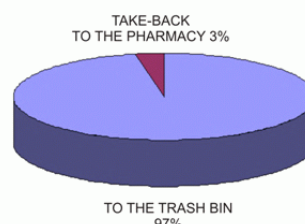
Do you know the defined daily doses of your medications?



Are you familiar with side effects of the medicines you take?



How did you find out about the side effects?



How do you dispose of expired medications?

Figure 1: Respondents' attitudes towards the disposal of expired medicines

Table 2: The proportion of medications beyond expiration date in the total amount of household medications (%)

ATC group	Expired medications (%)							
	Niš	Aleksinac	Svrljig	Doljevac	Merošina	G. Han	Ražanj	TOTAL
A	12,85	13,53	14,37	12,78	13,73	12,36	13,64	13,32
B	11,53	11,63	8,70	9,76	13,79	11,54	10,00	10,99
C	7,28	7,06	7,56	8,09	6,86	6,67	7,46	7,28
D	20,00	22,14	20,83	20,00	20,69	18,52	20,00	20,31
G	14,13	14,29	18,75	15,38	20,00	11,11	16,67	15,76
H	10,32	9,68	0,00	11,11	14,29	16,67	0,00	8,87
J	18,13	17,60	19,85	17,27	19,23	18,06	18,52	18,38
L	0,00	0,00	0,00	0,00	0,00	0,00	100,00	14,29
M	11,93	11,67	12,50	11,90	11,70	12,94	12,70	12,19
N	7,05	6,67	6,64	7,23	7,14	7,27	8,43	7,20
P	12,43	14,12	15,63	16,00	5,26	11,76	16,67	13,12
R	12,24	11,83	11,54	11,63	12,31	12,50	11,90	11,99
S	22,69	25,49	18,18	25,00	23,08	18,18	22,22	22,12
V	16,08	16,49	14,41	16,09	15,87	16,67	15,91	15,93
TOTAL	12,19	12,22	12,26	12,23	12,35	12,16	12,83	12,22

More than two thirds (68.03%) of the total number of packages in examined households has been classified into five ATC groups. The most common are group N - nervous system (16.81%) and group C - cardiovascular system (13.78%). 21,356 packages of medications were found in the households involved in the survey, which is 8.21 items per household, of which 2610 or 12.22% (slightly more than one package per household) were expired medications.

DISCUSSION

The results are shown in Table 3. Estimated annual amounts are based on the assumption that people cleanup or restock medications in "home pharmacies" three times a year.

According to WHO, between 0.3 and 0.4 kg / capita / year of hazardous medical waste is generated in middle-income countries occurs. The results obtained in this study are correlated with data from the National Waste Management Strategy which claims that 2410 tonnes of hazardous medical waste, or 0.33 kg / capita / year, are generated in The Republic of Serbia every year. Due to the fact that pharmaceutical

waste comprises 3% of total amount of hazardous medical waste, and that calculated annual generation of pharmaceutical waste in Serbia is 72.3 tonnes, the calculated quantities obtained in this study are slightly different (our calculation is 74.92 tonnes / year).

Table 3: Estimated amounts of expired medications in Serbian households, by ATC groups

ATC group	Number of packages	Quantity (t/year)	Percent of total amount (%)
A	364570	10,94	14,60
B	91860	2,76	3,70
C	204772	6,14	8,20
D	166497	5,00	6,67
G	39232	1,18	1,57
H	18181	0,55	0,73
J	404760	12,14	16,20
L	957	0,03	0,04
M	314813	9,44	12,60
N	241133	7,23	9,65
P	67938	2,04	2,72
R	211470	6,34	8,46
S	78464	2,35	3,14
V	292805	8,78	11,72
Σ	2497452	74,92	100

Based on survey results, we can propose the basic framework of the regional model of pharmaceutical waste management:

1. More than two thirds (64.77%) of the total quantity of expired medications are ATC group medications S, A, M, V and N, and in terms of waste disposal they are comprise particularly significant amounts of pharmaceutical waste. These five ATC groups generate about 48.5 tonnes of pharmaceutical waste in Serbia per year. Taking into account the amounts of waste and chemical-technological characteristics of waste disposal methods, a developed waste management model predicts regional systems of waste collection and treatment for this group of pharmaceuticals. The regional treatment allows the application of methods for disposal and treatment of small quantities of pharmaceutical waste (Table 1).
2. The following three ATC groups (R, C and D) annually generate about 17.5 tonnes of waste pharmaceuticals, which is 23,33% of total pharmaceutical waste tonnage. A developed cost effective and eco friendly model suggests the establishment of a network of regional collection centers, as well as the possibility of treatment at the national level. Regardless of the treatment at the national level, it is possible to use the method for treatment of small quantities of pharmaceutical waste (Table 3).

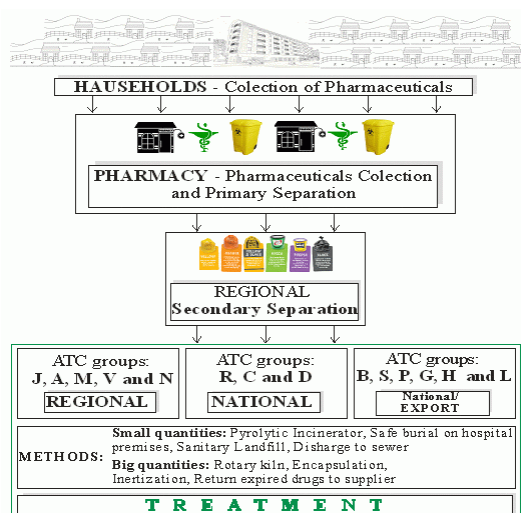


Figure 2: The fundamentals of a regional model for pharmaceutical waste management

3. The remaining six ATC groups (B, S, P, G, H and L) generate 11.9% of total pharmaceutical waste or 8.91 tonnes annually. For pharmaceuticals in these groups, the proposed model predicts the collection and treatment at the national level, or export to treatment in other countries.

Figure 2 shows the fundamentals of a regional model for pharmaceutical waste management.

The key feature of this model is that it allows the implementation of disposal methods for small quantities of pharmaceutical waste recommended by the WHO. The application of methods for treating larger quantities of pharmaceutical waste is conditioned, exclusively, by chemical and technological characteristics and significant impacts on the environment and human health.

The research is based on primary eco-toxicological characteristics of individual ATC group of pharmaceuticals, or their combinations. In addition, we have also considered the complexity of the physical and chemical monitoring and control of pharmaceuticals in the environment. The solutions presented in the paper take into account the fact that per capita consumption of medications is constantly increasing.

To develop a consistent system of management of expired pharmaceuticals, it is significant to provide pharmaceutical waste labels. Moreover, the model and disposal methods should be developed in line with ATC classification of pharmaceuticals. This classification is fully compatible with the classification based on environmental and health risk analysis of pharmaceuticals.

CONCLUSION

The research results show that it is of paramount importance to develop national programmes for effective and efficient management of pharmaceutical waste, more exactly the expired medications in the possession of consumers. The ideal outcome will be the implementation of these programmes at the local and regional level, as close as possible to the site where this type of pharmaceutical waste gets generated. The programmes intended for collection of unused and expired medications and their safe disposal and / or treatment must exclude or minimize adverse impacts on the environment and health of the population and employees in waste management sector. Moreover, these programmes should be designed so as not to create additional cost burdens on household residents.

Life cycle assessment of pharmaceutical products is the most efficient tool for managing home-generated pharmaceutical waste and should be used as the basis for integrated sustainable management of pharmaceutical waste flows.

The model of treatment, which has been presented in this article, provides a continuous evaluation of the management programme in terms of safety, effectiveness, efficiency and sustainability of funding this programme. A particularly important feature of this model is the prevention and management of accidents when dealing with expired medications, which has been achieved by managing the flows of household pharmaceutical waste. The model predicts the responsibility of informing the public or the household residents about the negative impacts of expired medications on the environment and human health.

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RISK AND DEFINING DAMAGE EVENT IN FORGE SMEDEREVO WITH CONSEQUENCES ON THE ENVIRONMENT

UDC: 005.334:669.17

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ABSTRACT

Working and living environment in the surrounding technological system is always exposed to the possibility of accidents and infected with the accident. Such an event has relevant consequences for people living environment, natural resources, manufacturing, technological system..Risk is a condition in which there is a possibility of a negative deviation from the desired outcome or risk the likelihood of disorder, and whose effects are loss. Working and living environment in the surrounding technological system is always exposed to the possibility of accidents and still is average. Such an event has relevant consequences for people living environment, natural resources, manufacturing and technological systems..Under the concept of average technical, technological system includes an event in which the damage to vital parts of the system, which is caused by the violent termination of the production process.Examples in the industry suggest that preventive engineering an important factor for economic organization and for the insurance company to reduce formation damage.

Keyword: risk, accidents, environment, adverse event.

INTRODUCTION

The basic influences on the occurrence of adverse events

Factors that influence the occurrence of adverse events can be divided into three groups:

- man (all people in any way, directly affect the operation or the occurrence of adverse event),
- technical systems (machines, object ...) technical infrastructure and support, such as systems of electricity, water, roads, communications ...) and
- environment in which it operates observed technical system; in the second case, when viewed alone technical system can be divided into five groups:
 - construction - project (design, project engineering, workshops and supporting documents)
 - Production (all technological elements of the production process, including quality management system),
 - maintenance (all elements of the system from the standpoint of concepts, technologies and organization and all the elements that are related to the process of maintenance and logistics support elements maintenance)
 - use (operation),
 - logistical support (all elements of integrated technical security that are necessary for the operation and maintenance of the system considered).

Depending on the duration, the amount of property damage and other adverse consequences, as well as the length of downtime technological systems, average events are classified into three categories: the first category breakdowns, accidents and other categories of accidents third category. All three categories of emergency events are defined by the Rule on average. Business units are required to prepare Guidelines on the operation during emergency events in which

exactly defines the rights and obligations of each of the perpetrator in the new situation (Production, leaf SARTID, p. 2, 1997).

The concept of risk is very tempered, but risks all have in common is that they must be the future and uncertain events. In the most general case is considered to be at risk of the occurrence of an adverse economic events. Risk is defined as a condition in which there is a possibility of a negative deviation from the desired outcomes that we expect or where we hope, that risk is the probability of occurrence of the disorder in a projected technical-organizational system, the consequences of which business and economic loss (Adamović, Meza, 2008.)

CRISIS AT TURBO BLOWERS IN OPERATION ENERGETICS (SMEDEREVO IRONWORKS)

During the manufacturing process on the shoulder blades turbo-blowers No. 3 in the drive Energetics There was an damage, as a consequence of aging or fatigue of material they are made the blades.

Often, the problem arises with poor quality industrial water, which is used for cooling oil and turbo-air, which contains substances that harm the material they were made the blades. Corrosion, punching the blades, breakage screws on the top cover turbo-blowers and the like represent the grounds of breakdown on the shoulder blades, and thus on turbo-blowers.

Turbo-blower produces and sends turbo air to drive blast furnace at a pressure of 2.75 bar. This turbo-air, using the of gas burners blown into the furnace in order to foster the process of production of raw liquid iron.

The consequences accidents to the turbo blowers for living environment

As a result of inaction turbo-blowers number 3,je reduce production turbo-Air Energy in operation until the termination of supply turbo-air blast furnace operation and the reduction of iron production in the further course of production. To drive Energy, damages turbo-blowers No. 3 cause a greater involvement of the rest of the installed technical systems, turbo-blowers 1 and 2.vanredne activities planned maintenance turbo-blowers No. 3. For the production itself, Stationary time and turbo-blowers will mark the loss in production. Losses in steel production can be significant, because it will cause a drop in temperature and the weaker the combustion of coke in the blast furnace, watering or burning out the tip nozzles for insufflation hot air and this will certainly have the effect loss of natural resources: water, electricity and other things.

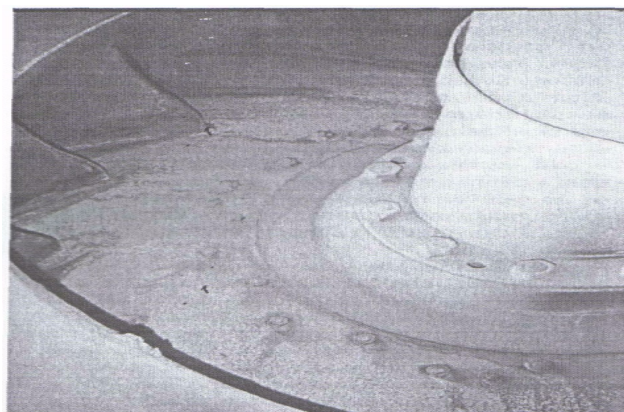


Figure 1. The accident on blades blowers (Production, leaf SARTID, p. 2, 1997).

Measures to reduce the possibility accidents to turbo-blowers are continuously monitoring the status of the blades using all possible methods of control, control of all media types that are related to turbo-blowers as well as the removal of perceived weaknesses in the work of turbo-blowers.

Injuries production and maintenance workers are rare, but fatal injuries workers are not possible. Work turbo-blowers are still assessed as risky and rarely unpredictable. In the case of facilities Energeticsat the time of twenty years of

monitoring technical systems, not one havarijski case, although there were near-emergency situations, without significant material losses.

ACCIDENTS ON IMPELLER FAN FOR DEDUSTING LIVNI PLATFORM BLAST FURNACE (SMEDEREVO IRONWORKS)

Casting platform, at the time of pouring liquid iron, the dusty graphite particles, dust and gases that go together with liquid metal. On the casting platform are Olivetti and other technology staff for which all of these substances must be removed from their work and impact in the environment. Therefore, in the central station for dusting installed three double flow centrifugal fan for dust casting platform. The fan suction gas AH - 24 x 2 to 0.62 working with limit the speed of rotation of 750 ° / min. and the power of 800 kW. The impeller fan has a diameter of 2400 mm, width 1120 mm. Blades, have them sixteen with one and sixteen on the other hand, are made of steel.0563. Welded on the disc and sleeve. Due to the fact abrozivnih materials, foreign bodies and all that is found in the atmosphere at the cast platform, and is subject to suction system for dust removal, will affect the state of turbines more or less. The blades of the impeller are exposed to abrozivnom fact, chemical and physical effect. This last has the effect of fracture of the scapula or spraying exposed to physical fact.

Often it happens that there is a misalignment of impeller shaft and electric motor or unrestraint shaft and the of impeller, causing retention, stockpiling or inflicting more or less the amount of dust on the parts of the blades to the disk. This dust can cause damage to the the blades gunshot THE WELD or drop-turbines and to emergency situations.

Such a failure is shown in an example and in Figure 3.

Human casualties or injuries was not. The consequences of accidents of impeller fan is categorized into fewer accidents and technological systems.

Remediation of damage lasts a few days, and the other two ventilators are working without problems(Production, leaf SARTID, p. 2, 1997).

The consequences for the environment

Fans for dedusting of gases and dust from the casting platforms are located in the immediate vicinity of the casting hall, but far enough not to interfere with the work in the the outpouring liquid iron. Suction Pipeline acceptance of dust and gas are on the casting platform from where the entire quantity of gas is transported to the electrostatic precipitators, of scrubber and output pipeline, the output of the installation. During spills liquid iron to creates dust up to several tons in weight, and the gases that go along with the liquid iron is several thousand cubic meters. In addition to the carbon monoxide, carbon dioxide, methane has a sulfur dioxide, nitrogen, blast furnace gas, methane, chlorine. All those gases, along with dust, should, by a ventilator, transported through filters, of scrubber and elekfrofiltera, the atmosphere naturally purified - without any of pollution or pollution in the permitted quantity.

In the event that damage occurs in one or more fans previous function would have been compromised, that is, would result in the pollution of the cast platform. To avoid compromising the work Furnaces, on the platform are made holes in the wall and the roof structure so that the resulting havarijskoj sistuaciji all amounts of dust and gas, as well as ease of media and raises the naturally in the atmosphere.

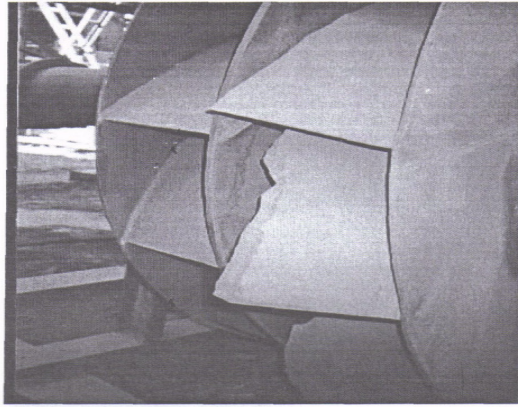


Figure 2. The accident to the impeller fan (Production, leaf SARTID, p. 2, 1997).

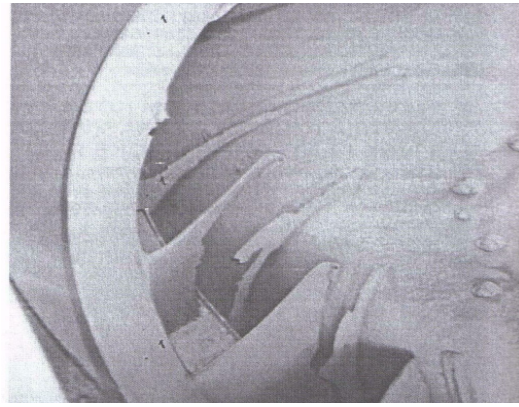


Figure 3. The accident to the impeller fan (Production, leaf SARTID, 1997).

Conducted measurements of environmental pollution by dust and gases. In cases case of hardware malfunction the pollution working and living environment exceed the permissible limit and dozens of times. This type of measurement for steelworks Smederevo works Institute for Occupational Safety in Nis. Damage to resources: energy, materials and other is not expressed.

DEFINING A DAMAGE EVENT

Working and living environment in the environment technological system is always exposed to the possibility accidents and infected with the accident. Such an event has a relevant impact on the environment of people, natural resources, manufacturing tehnološkogih system.

Under the concept of damage technical, technological system means the event at which the damage has occurred vital parts of the technical, technological system, which is caused by the violent termination of the technological process of production, the process of exploitation, ie, if there is a technical system parameters exceed the permitted, providing help to prevent heavier losses incurred of damage and so on.

Direct organizers Affairs on technological system shall: that within its jurisdiction organize tasks and of tasks of in a safe and secure way to prevent of damage and injuries of workers; Upon receiving notification about the damage you danger of of damage immediately leave the pitch to the spot, become familiar with the situation and take over the measures to prevent of damage; to report the breakdown of their direct superior and to record the event.

Organizational Manager of technological production system in connection with the accident and violation of workers is obliged: to organize a periodic review of the professional qualifications of the staff who work in jobs with an increased risk of of damage; to study analyzes-all resulting havraije, their causes and sources and to monitor the state of technological systems; that in case of the presence of a greater risk for of damage suspend the execution of certain tasks and duties; that in case of breakdown of the first and second category immediately notify the dispatcher of metallurgical production system and so on.

Director of technological production units, in conjunction with the average proceedings, has the obligation: to take measures to develop the necessary instructions - instructions; When leaving to the spot accidents assessment category of damage, inform the authorities in the metallurgical production system and compile records and reports; that after completion of remediation measures ensure the implementation of the proposal of the Commission for interrogation and repair of of damage and so on.

The Director-General, within the framework of its powers in connection with breakdowns are mandatory: after receiving notification of the accident evaluate the situation and, if necessary, immediately went out to the spot; to jointly with the Director of technological systems in which the accidents occurred first category straightway establishment of the Commission for The interrogation and remediation of damage; to take all the necessary measures

to The interrogation and remediation of accidents taking place in accordance with the provisions of the Rules of accidents.

Heads of the Sector, have an obligation in the event of damage to perceive the need to change production program to the consequences were less. Dispatching service of metallurgical production system has rights and obligations: to organize the arrival of subjects necessary for the tasks associated with interviewing and remediation of damage; that has an ordered records with addresses of competent persons.

The head of the security sector in the scope of its authority shall have the following obligations: to take measures to improve the technical competence of the Security the Sector to act effectively as a preventive and corrective in case of accident, fire or injury to workers; to organize the reporting of accidents the first and second categories of the competent authorities; that the competent state authorities with the work and provide all the necessary data and information in order to keeping the the investigation; to organize the work of Heads of Departments of Occupational Safety and protection of labor and the environment from fire and the like.

The procedures for registering and resolving damage event

In case of damage, regardless of its category, lays down the procedure for its solution, inform the competent director and formed the Commission for The interrogation emergency situation.

Permanent members of the Commission of all categories of damage are representatives of the security sector who work on the protection of working and living environment, health and safety and fire and representatives of the insurance company.

Investigations of accidents aims to:

- Set up the character of damage (description)
- determine the cause of accidents,
- The loss in the production facility,
- determine the material damage caused by the average proceedings;
- initiate proceedings for damages from the insurance company,
- to propose the optimal technical solution for the remediation of damage,
- to determine the responsibility for causing the accident and so on.

The basic records of breakdowns leading to the technological level of the production system, adapted to a more efficient analysis in order to take measures to prevent the repetition of the same breakdowns.

Damages first and second categories are reported to the police and the competent court, while the third category of accidents reported only responsible persons within the metallurgical production system, in accordance with the provisions of the Ordinance.

Commission for The interrogation and remediation of damage are obliged to draw up a report on the disaster in the following deadlines:

- The breakdown of the first category to 30 days
- The breakdown of the other categories to 10 days
- The breakdown of the third category up to 7 days

The basic records of the events case of hardware malfunction shall be kept at the level of business, production units.

Records of hardware malfunction leads to doing internal use, but can also be used externally or other production systems in order to inform the public about the consequences that may arise due to failure.

The rights and obligations of employees during emergency events

All employees of the direct perpetrator to the general director of the company, its work should be to prevent or minimize the likelihood and consequences of the occurrence of damage to the technical or technological systems. Each in its domain of work and tasks which executes has a certain level of rights and obligations.

The direct executors or workers who supervise technological systems are obliged to perform automatically their tasks in a safe and secure manner while respecting the rules and regulations, in the event of accidents, fire or injury to workers act according to instructions and instruction, in case of occurrence of damage to the technical system approaches to helping to prevent severe consequences caused disasters (Production, leaf SARTID, p. 2, 1997).

CONCLUSION

Scientists, engineers and technical staff involved in technical diagnostics and preventative maintenance in the industry and outside it, is almost the same enthusiasm and motivation reveals new procedures rid forestall any cancellation or possible malfunction of a technical system. In this certainly feels the need to reduce the risk of system failure, and property insurance, energy technology systems, resources, labor and the environment.

Effects maintenance of technical systems are best monitored through logistic parameters: reliability, availability and readiness, functional suitability, maintainability and cost (economic efficiency). Each parameter logistic is interconnected with each other and has its economic price.

Management system maintenance technology systems include: planning and implementation procedures of maintenance activities that have been identified, planned in the project of technological systems or are a consequence of the cancellation of the technical system. The procedure management maintenance technological system is a segment of system security and protection of working and living environment. Reliability technical systems, good organization of preventive maintenance and engineering will certainly give good results in the protection of workers, protection tools and technology systems, and thereby reducing the risk of incidents. Because every organization insurance industry, technology and technical systems must work closely with organizations to maintain technological and technical systems within the of preventive engineering, maintenance management systems and execution of maintenance activities. The risks of accidents should not be the concern of a foreign insurance against damage. Only by working together likelihood of accidents is reduced to a minimum.

The paper gives an overview of the methods of preventive maintenance of energy systems with the aim of creating opportunities for risk management. The above examples indicate that the industry is preventive inžerjig a very important factor for economic organization and for the insurance company to reduce the damages caused.

Method of administration preventive maintenance of power system indicates the assessment of risk and insurance. Interested parties should modernize methods of preventive maintenance organization applying new protection system.

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RELIEF OR BURDEN: A CLOSER LOOK AT THE IPPC/IED DIRECTIVE IN SERBIA

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ABSTRACT

Changes in the interpretation of the concepts of living environment, environmental quality, environmental capacity as well as environmental services bring with them and changes in thinking how to efficiently and effectively manage with them. In addition, efficient and effective environmental management can be viewed in two different ways. Efficient and effective environmental management from the perspective of society usually involves minimizing costs and capital commitment in any way. On the other hand, effective and efficient environmental management from the perspective of the environment means reaching the highest, "almost natural" norms of environmental quality. In the last fifty years, that is, since from occurrence of a global interest in environmental quality, these two approaches are in mutual respect. There is a tendency that the investment in the remediation of adverse effects of environmental pollution is increasingly relocated in the environmental pollution prevention activities. In this way, the environmental costs are reduced, while simultaneously the level of environmental quality is raised. Properly understood and properly implemented, IPPC/IED directive may represent a bridge that connects the two aforementioned approaches to environmental management.

Key words: environmental protection and management, pollution management, IPPC/IED

INTRODUCTION

At the European Union level, first directive concerning integrated pollution prevention and control was Council Directive 96/61/EC of 24th of September 1996, published in Official Journal L 257.[1] This Directive came into force on 30th October 1996. The aim of this Directive edition was the integrated prevention and control of pollution arising from the activities listed out in Annex I of the Directive.[2] Activities listed out in Annex I of the Directive included industries operating in energy sector, basic organic chemicals production, industries operating in waste management sector, and production of pulp from timber, as the slaughtering and production of food products from animal or vegetable raw materials. This Directive provided a basis for preventing environmental pollution from activities listed out in Annex I.[2]

Over time, ever present need for amendments in the field of environmental law lead to issuance of Council Directive 2008/1/EC of the European Parliament and of the Council of 15th January 2008, which replaces the Council Directive 96/61/EC of 24th September 1996 on IPPC matter. Council Directive 2008/1/EC of the European Parliament was published in Official Journal L 24 of 29th January 2008. This Directive came into force on 18th February 2008. As in the case of the previous one, an activity to which the Directive applies was listed out in Annex I of this Directive. Its provisions was remain applicable until 6th January 2014.[3]

On 6th January 2011 the Industrial Emissions Directive (IED) entered into force. The Industrial Emissions Directive (Directive 2010/75/EU of the European Parliament and of the Council of 24th November 2010 on industrial emissions (new term instead of integrated pollution prevention and control)). Directive 2010/75/EU was published in Official Journal L 334 of 12th December 2010.[4] With effect from 7th January 2014, Directive 2010/75/EU definitively replaces following Directives:

- Directive 78/176/EEC of 20th February 1978 on waste from the titanium dioxide industry (Titanium Dioxide Directive)
- Directive 82/883/EEC on the surveillance and monitoring of titanium dioxide waste
- Directive 92/112/EEC on the reduction of titanium dioxide industrial waste
- Directive 1999/13/EC on reducing emissions of volatile organic compounds (VOCs)
- Directive 2000/76/EC on waste incineration (Waste Incineration Directive (WID))
- Directive 2008/1/EC concerning integrated pollution prevention and control (IPPC Directive)

With effect from 1st January 2016, Directive 2010/75/EU definitively replaces Directive 2001/80/EC on the limitation of emissions of certain pollutants from large combustion plants (LCP Directive).[4] The IED aims to reduce or eliminate emissions of pollution from industrial activities, to increase the effectiveness of the best available techniques legislation, to strengthen existing minimum of environmental quality requirements and to reduce all unnecessary administrative burdens regarding implementation of Directive.[4]

IPPC/IED DIRECTIVE IN SERBIA

The Serbian Law on Environmental Protection, (Off. Gazette no. 135/2004, 36/2009, 36/2009 and 72/2009) defines measures and requirements for environmental protection. One of the listed preventive measures is integrated prevention and control of environmental pollution. The application of the provisions of the Integrated pollution prevention and control leads to a reduction in emissions of greenhouse gases, the reduction of the amount of waste/hazardous /special waste, reducing water pollution and soil pollution. [9]

Directive on Integrated Pollution Prevention and Control (Integrated Pollution Prevention and Control Directive- IPPC Directive) and Directive on industrial emissions (Industrial Emissions Directive - IED) is one of the basic elements of European Union legislation in the field of environmental protection. For countries in transition, such as Serbia, the harmonization of the provisions of national legislation with all the elements of this Directive is a very complex process in organizational/administrative terms, which in addition requires significant investments. The implementation of EU legislation relating to the integrated management of both prevention and control of pollution (which is actually the purpose of the Directive) requires significant administrative capacity and therefore poses a particular challenge in the process of accession to the European Union. With no less importance is the fact that the provisions of the IPPC / IED directive addressing a large part of the core economic organizations in Serbia (industry) but also a significant part of the agricultural and food production. Consequently, at the level of organizations, there are administrative, organizational and financial challenges associated with the implementation of the provisions of the IPPC / IED directive i.e. provisions of the Law on Integrated Pollution Prevention and Control (Off. Gazette no. 135/2004 and 24/15).[9] More detailed provisions regarding IPPC/IED licensing process in Serbia are defined in the following Regulations and Rules: [5,6,7,12,13,14,15]

Decree on the content and layout of integrated permits (Off. Gazette no. 30/06). This Decree precisely defines the content and layout of integrated permits

- Decree on content and method of keeping the register of issued integrated permit (Off. Gazette no. 69/05)
- Decree on the content, appearance and way of filling the request for issuing integrated permits (Off. Gazette no. 30/06)
- Rule on criteria for determining best available techniques, the application of quality standards, as well as to determine the emission limit values in the integrated permit (Off. Gazette no. 84/05)
- Rule on the contents of the program of existing facilities adjustment measures or activities prescribed by terms (Off. Gazette no. 84/05)
- Rule on types of activities and facilities on which integrated permits applies (Off. Gazette no. 84/05). According this Rule, activities performed by operators on which integrated permits applies, are divided into the following groups: 1. Energy production; 2. Production and processing of metals; 3. Mineral industry; 4. Chemical Industry; 5. Waste Management; 6. Other activities (wood processing, food processing, etc.)

– Rule establishing a timetable for submitting the application for integrated permit (Off. Gazette no. 108/08)

Current list of operators in Serbia, which is necessary to obtain an integrated permit is provided by Serbian Ministry of Agriculture and Environmental Protection (last revision performed in October, 2014).[10] In Serbia, according to this list, provisions of the Law on Integrated Pollution Prevention and Control apply to about 196 organizations. In comparison, there are approximately 52,000 IPPC/IED installations in the EU and accession countries combined, varying from around 9,000 in Germany, 4000 in the United Kingdom to 20 in Malta [8,11]. Figure 1 shows the list of operators on which integrated permits applies, divided into basic groups.

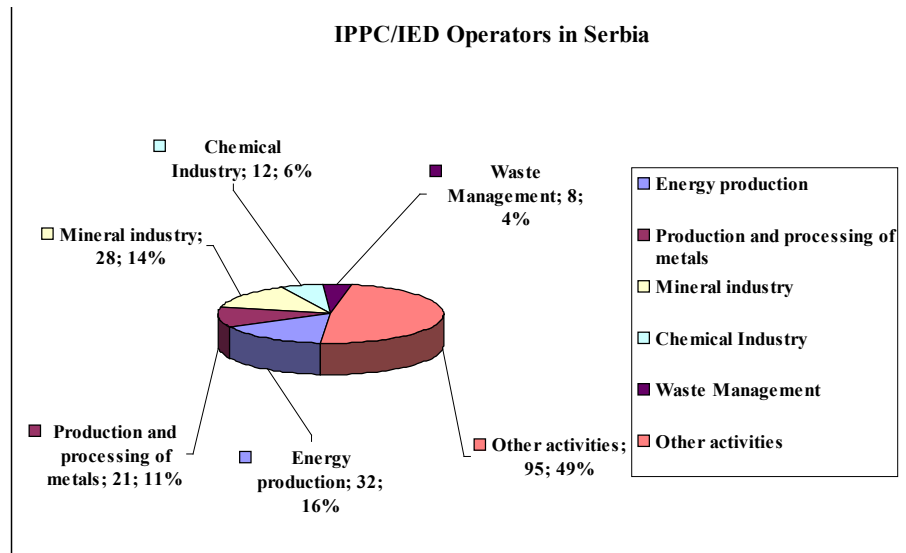


Figure 1: Operators in Serbia, on which integrated permit applies

While it is clear that the largest group consists of operators located within other activities group (49% of total number of operators) further analysis shows which branch of national economy is dominant in sense of operators on which integrated permits applies (Figure 2).

Figure 2 clearly indicates the fact that food production (food processing and intensive rearing of poultry and pigs) is the most dominant branch of national economy in sense of operators on which integrated permits applies (compared to United Kingdom where chemical sector constitutes largest category within IPPC plants). Furthermore, this indicates low development level of other industry branches. Rough analysis shows that in the case of the UK, one IPPC/IED installation goes per 16000 inhabitants, or IPPC/IED installation per 0.67 billion USD of UK's GDP. In case of Serbia, one IPPC/IED installation goes per 36550 inhabitants or one per 0.22 billion USD of Serbia's GDP.[16,17]

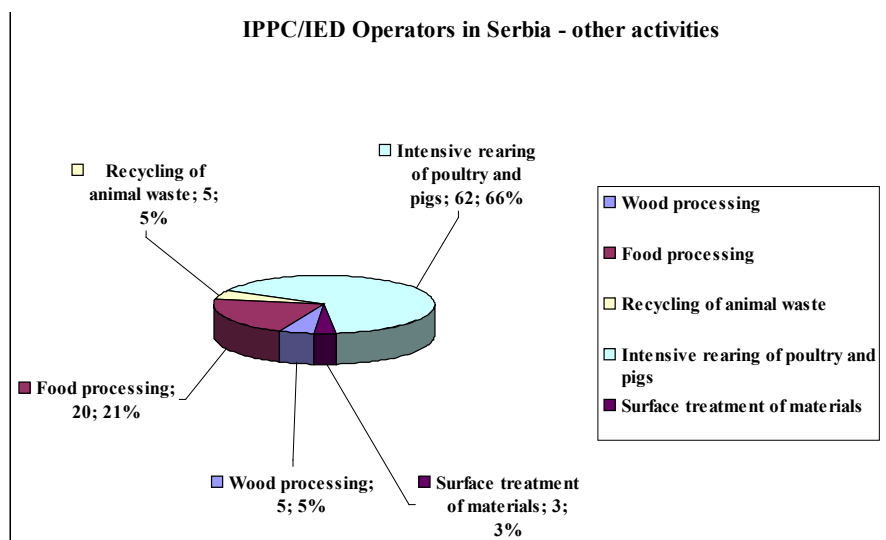


Figure 2: Operators in Serbia – other activities

CONCLUSION REMARKS

The Industrial Emissions Directive is the successor of the IPPC Directive, both regarding minimising pollution from various industrial sources throughout the European Union and accession countries. The IED list of installations is quite bigger than the IPPC list, due to new demands listed in Annexes of the Directive. In case of Serbia, there are indicators of low intensity rate in terms of total number of operating IPPC/IED installations, both per inhabitants and per GDP. Even more, majority of IPPC/IED installations operates within economic branches that are not in sphere of “cutting edge” technology. This poses a few questions, regarding future, more detailed research.

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