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Reviewers:
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Dragan Ćoćkalo, Ph.D, Professor, University of Novi Sad, Technical faculty "Mihajlo Pupin", Zrenjanin, Republic of Serbia
Edit Terek, Ph.D, Assistant Professor, University of Novi Sad, Technical faculty "Mihajlo Pupin", Zrenjanin, Republic of Serbia
Sanja Stanisavljev, Ph.D, Assistant Professor, University of Novi Sad, Technical faculty "Mihajlo Pupin", Zrenjanin, Republic of Serbia
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Dragana Milosavljev, M.Sc, Associate Assistant, University of Novi Sad, Technical faculty "Mihajlo Pupin", Zrenjanin, Republic of Serbia

Cover design:
Ivan Palinkaš, M.Sc, Assistant, University of Novi Sad, Technical faculty "Mihajlo Pupin", Zrenjanin, Republic of Serbia

Lecturer:
Edit Terek, Ph.D, Assistant Professor, University of Novi Sad, Technical faculty "Mihajlo Pupin", Zrenjanin, Republic of Serbia

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Sanja Stanisavljev, Ph.D, Assistant Professor, University of Novi Sad, Technical faculty "Mihajlo Pupin", Zrenjanin, Republic of Serbia

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Dragica Ivin, M.Sc, Lecturer, University of Novi Sad, Technical faculty "Mihajlo Pupin", Zrenjanin, Republic of Serbia

Organizing Committee:

Milan Nikolić, Ph.D, Professor, University of Novi Sad, Technical faculty "Mihajlo Pupin", Zrenjanin, Republic of Serbia – President of the Organizing Committee

Dejan Đorđević, Ph.D, Professor, University of Novi Sad, Technical faculty "Mihajlo Pupin", Zrenjanin, Republic of Serbia

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Predrag Pecev, Ph.D, Assistant professor, University of Novi Sad, Technical faculty "Mihajlo Pupin", Zrenjanin, Republic of Serbia

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Ivan Palinkaš, M.Sc, Assistant, University of Novi Sad, Technical faculty "Mihajlo Pupin", Zrenjanin, Republic of Serbia

Dragana Milosavljev, M.Sc, Associate assistant, University of Novi Sad, Technical faculty "Mihajlo Pupin", Zrenjanin, Republic of Serbia

Dragica Ivin, M.Sc, Lecturer, University of Novi Sad, Technical faculty "Mihajlo Pupin", Zrenjanin, Republic of Serbia

Mihalj Bakator, M.Sc, Research associate, University of Novi Sad, Technical faculty "Mihajlo Pupin", Zrenjanin, Republic of Serbia

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, Voronezh State University, Faculty of Economics, Voronezh, Russia and University of Montenegro, Maritime Faculty, Kotor, Montenegro.

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 IX International Symposium Engineering Management and Competitiveness (EMC 2019). This year at the symposium we have 33 papers and 2 abstracts. The authors come from 11 countries: Bosnia and Herzegovina, Greece, Hungary, Iran, Macedonia, Montenegro, Russia, Slovenia, Turkey, USA and Serbia. The papers are divided into eight sessions: Plenary session, Session A: Management and operation management, Session B: Human resource management, Session C: Marketing management, Session D: Economy, Session E: IT management, Session F: Abstracts.

We wish to thank Technical faculty "Mihajlo Pupin" from Zrenjanin and the dean Prof. Ph.D Dragica Radosav 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 sixth Symposium EMC.

Symposiums 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, anniversary 10th International Symposium Engineering Management and Competitiveness (EMC 2020) become better in organizational and program sense.

President of the Programming Committee
Professor Dragan Ćoćkalo, Ph.D.

Zrenjanin, June 2019.

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21-22nd June, Zrenjanin, Serbia

Plenary session

Papers (pp. 3-38):

CONSENSUS IN DECISION MAKING BY THE DELPHI TECHNIQUE

Ali Reza Afshari*
Department of Industrial Engineering, Shirvan Branch, Islamic Azad University, Shirvan, Iran
E-mail: afshari@mshdiau.ac.ir
Milan Nikolić
University of Novi Sad, Technical faculty "Mihajlo Pupin", Zrenjanin, Republic of Serbia

ABSTRACT

The Delphi technique is a widely used and accepted method for gathering data from respondents within their domain of expertise. The technique designed as a group communication process that aims to achieve a convergence of opinion on a specific real-world issue. The Delphi process has used in various fields of study such as program planning needs assessment, policy determination, and resource utilization to develop a full range of alternatives, explore or expose underlying assumptions, as well as correlate judgments on a topic spanning a wide range of disciplines. The Delphi technique is well suited as a method for consensus building by using a series of questionnaires delivered using multiple iterations to collect data from a panel of selected subjects.

Key words: Decision Making, Delphi Method, Consensus, Expert opinion.

INTRODUCTION

The Delphi technique, mainly developed by Dalkey and Helmer (1963) at the Rand Corporation in the 1950s, is a widely used and accepted method for achieving convergence of opinion concerning real world knowledge solicited from experts within certain topic areas. The Delphi technique is designed as a group communication process that aims at conducting detailed examinations and discussions of a specific issue for the purpose of goal setting, policy investigation, or predicting the occurrence of future events (Ludwig, 1997; Skinner, Nelson, Chin, & Land, 2015). Common surveys try to identify "what is," whereas the Delphi technique attempts to address "what should be" (Abdel-Basset, Mohamed, & Sangaiah, 2018; Miller, 2006). In the literature, Delphi has been used in various fields such as program planning, needs assessment, policy determination, and resource utilization. Delbecq, Van de Ven, and Gustafson (1975) specifically indicate that the Delphi technique can be used for achieving the following objectives:

1. *To determine or develop a range of possible program alternatives;*
2. *To explore or expose underlying assumptions or information leading to different judgments;*
3. *To seek out information which may generate a consensus on the part of the respondent group;*
4. *To correlate informed judgments on a topic spanning a wide range of disciplines, and;*
5. *To educate the respondent group as to the diverse and interrelated aspects of the topic.*

THE DELPHI METHOD

The Delphi technique is well suited as a means and method for consensus by using a series of questionnaires to collect data from a panel of selected subjects (Young & Jamieson, 2001). Delphi, in contrast to other data gathering and analysis techniques, employs multiple iterations designed to develop a consensus concerning a specific topic. Iterations refer to the feedback process. The process was viewed as a series of rounds; in each round every participant worked through a questionnaire which was returned to the researcher who collected, edited, and returned to every participant a statement of the position of the whole group and the participant's own position. A summation of

comments made each participant aware of the range of opinions and the reasons underlying those opinions (Okoli & Pawlowski, 2004). More specifically, the feedback process allows and encourages the selected Delphi participants to reassess their initial judgments about the information provided in previous iterations. In a Delphi study, the results of previous iterations regarding specific statements or items can be change or be modified by individual panel members in later iterations based on their ability to review and assess the comments and feedback provided by the other Delphi panelists. Other notable characteristics inherent with using the Delphi technique are the ability to provide anonymity to respondents, a controlled feedback process, and the suitability of a variety of statistical analysis techniques to interpret the data (N. C. Dalkey & Rourke, 1971; Douglas, 1983; Haynes & Shelton, 2018). These characteristics are designed to offset the shortcomings of conventional means of pooling opinions obtained from a group interaction (Adams, 2001).

One of the primary characteristics and advantages of the Delphi process is subject anonymity that can reduce the effects of dominant individuals which often is a concern when using group-based processes used to collect and synthesize information. Additionally, the issue of confidentiality is facilitated by geographic dispersion of the subjects as well as the use of electronic communication such as e-mail to solicit and exchange information. As such, certain downsides associated with group dynamics such as manipulation or coercion to conform or adopt a certain viewpoint can be minimized (Haynes & Shelton, 2018). Controlled feedback in the Delphi process is designed to reduce the effect of noise. Based upon Dalkey (1971), noise is that communication which occurs in a group process which both distorts the data and deals with group or individual interests rather than focusing on problem solving. As a result, the information developed from this kind of communication generally consists of bias not related to the purposes of the study. The controlled feedback process consists of a well-organized summary of the prior iteration intentionally distributed to the subjects that allows each participant an opportunity to generate additional insights and more thoroughly clarify the information developed by previous iterations. Through the operation of multiple iterations, subjects are expected to become more problem solving oriented, to offer their opinions more insightfully, and to minimize the effects of noise. Finally, the ability to use statistical analysis techniques is a practice that further reduces the potential of group pressure for conformity (Habibi, Sarafrazi, & Izadyar, 2014). More specifically, statistical analysis can ensure that opinions generated by each subject of a Delphi study are well represented in the final iteration because, at the end of the exercise there may still be a significant spread in individual opinions. That is, each subject would have no pressure, either real or perceived, to conform to another participant's responses that may originate from obedience to social norms, customs, organizational culture, or standing within a profession. The tools of statistical analysis allow for an objective and impartial analysis and summarization of the collected data (Custer, Scarcella, & Stewart, 1999).

Theoretically, the Delphi process can be continuously iterated until consensus have been achieved. However, three iterations are often sufficient to collect the needed information and to reach a consensus in most cases. The following discussion, however, provides guidelines for up to four iterations in order to assist those who decide to use the Delphi process as a data collection technique when it is determined additional iterations beyond three are needed or valuable (Hsu & Sandford, 2010).

Round 1: In the first round, the Delphi process traditionally begins with an open-ended questionnaire. The open-ended questionnaire serves as the cornerstone of soliciting specific information about a content area from the Delphi subjects. After receiving subjects' responses, investigators need to convert the collected information into a well-structured questionnaire. This questionnaire is used as the survey instrument for the second round of data collection. It should be noted that it is both an acceptable and a common modification of the Delphi process format to use a structured questionnaire in Round 1 that is based upon an extensive review of the literature. The use of a modified Delphi process is appropriate if basic information concerning the target issue is available and usable (Butzkueven et al., 2018).

Round 2: In the second round, each Delphi participant receives a second questionnaire and is asked to review the items summarized by the investigators based on the information provided in the first round. Accordingly, Delphi panelists may be required to rate or rank-order items to establish preliminary priorities among items. Because of round two, areas of disagreement and agreement are identified. In some cases, Delphi panelists are asked to state the rationale concerning rating priorities among items. In this round,

consensus begins forming and the actual outcomes can be presented among the participants' responses (Skinner et al., 2015).

Round 3: In the third round, each Delphi panelist receives a questionnaire that includes the items. Then ratings summarized by the investigators in the previous round. They are asked to revise judgments or to specify the reasons for remaining outside the consensus. This round gives Delphi panelists an opportunity to make further clarifications of both the information and their judgments of the relative importance of the items. However, compared to the previous round, only a slight increase in the degree of consensus can be expected (Alaloul, Liew, Zawawi, & Amila, 2015).

Round 4: In the fourth and often final round, the list of remaining items, their ratings, minority opinions, and items achieving consensus are distributed to the panelists. This round provides a final opportunity for participants to revise their judgments. It should be remembered that the number of Delphi iterations depends largely on the degree of consensus sought by the investigators and can vary from three to five (Balasubramanian & Agarwal, 2013).

SUBJECT SELECTION

Regarding the selection of subjects for a Delphi study, choosing the appropriate subjects is the most important step in the entire process because it directly relates to the quality of the results generated (Hallowell & Gambatese, 2009). Since the Delphi technique focuses on eliciting expert opinions over a short period, the selection of Delphi subjects is generally dependent upon the disciplinary areas of expertise required by the specific issue. Regarding any set standards of selecting Delphi subjects, there is, in fact, no exact criterion currently listed in the literature concerning the selection of Delphi participants. That is, throughout the Delphi literature, the definition of Delphi subjects has remained ambiguous. Regarding the criteria used to guide the selection of Delphi subjects, individuals are considered eligible to be invited to participate in a Delphi study. If they have somewhat related backgrounds and experiences concerning the target issue, are capable of contributing helpful inputs, and are willing to revise their initial or previous judgments for the purpose of reaching or attaining consensus (Garrod & Fyall, 2005). Choosing individuals who are simply knowledgeable concerning the target issue is not sufficient nor recommended. Considering the necessity of selecting the most qualified individuals, three groups of people are well qualified to be subjects of a Delphi study (Boylan, 2014). The authors recommend:

1. *The top management decision makers who will utilize the outcomes of the Delphi study;*
2. *The professional staff members together with their support team; and*
3. *The respondents to the Delphi questionnaire whose judgments are being sought.*

Delphi subjects should be highly trained and competent within the specialized area of knowledge related to the target issue. Investigators need to closely examine and seriously consider the qualifications of Delphi subjects. Choosing appropriate subjects is generally based on the judgment and discretion of the principal investigators. The principal investigators of a Delphi study should identify and select the most appropriate individuals through a nomination process. Ludwig (1997) also states that solicitation of nominations of well-known and respected individuals from the members within the target groups of experts was recommended. Generally, the pool of selecting possible Delphi subjects is likely to use positional leaders, to follow a review of authors of publications in the literature, and to make contacts with those who have firsthand relationships with a particular issue. The latter consists of individuals who are primary stakeholders with various interests related to the target issue or research effort.

Concerning the appropriate number of subjects to involve in a Delphi study, researchers should use the minimally sufficient number of subjects and should seek to verify the results through follow-up explorations. The number of experts used in a Delphi study is generally determined by the number required to constitute a representative pooling of judgments and the information processing capability of the research team. However, what constitutes an optimal number of subjects in a Delphi study never reaches a consensus in the literature. Delbecq et al. (1975) suggest that ten to fifteen subjects could be

sufficient if the background of the Delphi subjects is homogeneous. In contrast, if various reference groups are involved in a Delphi study, more subjects are anticipate to be needed. The approximate size of a Delphi panel is generally under 50, but more have been employed. The majority of Delphi studies have used between 15 and 20 respondents. In sum, the size of Delphi subjects is variable. If the sample size of a Delphi study is too small, these subjects may not be considered as having provided a representative pooling of judgments regarding the target issue. If the sample size is too large, the drawbacks inherent within the Delphi technique such as potentially low response rates and the obligation of large blocks of time by the respondents and the researchers can be the result (Balasubramanian & Agarwal, 2013).

Conducting a Delphi study can be time consuming. Specifically, when the instrument of a Delphi study consists of a large number of statements, subjects will need to dedicate large blocks of time to complete the questionnaires. A minimum of 45 days for the administration of a Delphi study is necessary. With regard to the time management between iterations, giving two weeks for Delphi subjects to respond to each round is encouraged. A drawback to Delphi was that the questionnaire method may slow the process greatly as several days or weeks may pass between rounds. More specifically, since developing the instrument, collecting the data, and administering the questionnaire are interconnected between iterations, ensuring Delphi subjects respond to the investigators on time does in many ways either promote or prohibit the ability of the investigators in analyzing the data, developing a new instrument based upon the prior responses, and distributing subsequent questionnaires in a timely fashion. These are challenging aspects of conducting a Delphi study and do require proper planning and management (Hsu & Sandford, 2007). The use and prevalence of electronic technologies such as e-mail and teleconferencing may facilitate those who are interested in using the Delphi technique. Electronic technology provides an opportunity for individuals to more easily employ the Delphi process by taking advantages of, (1) the storage, processing, and speed of transmission capabilities of computers; (2) the maintenance of respondent anonymity, and; (3) the potential for rapid feedback (Barnes & Mattsson, 2016).

DATA ANALYSIS

Regarding data analysis, decision rules must be established to assemble and organize the judgments and insights provided by Delphi subjects. However, the kind and type of criteria to use to both define and determine consensus in a Delphi study is subject to interpretation. Consensus on a topic can be decided if a certain percentage of the votes falls within a prescribed range (Miller, 2006). One criterion recommends that consensus be achieved by having 80 percent of subjects' votes fall within two categories on a seven-point scale. At least 70 percent of Delphi subjects need to rate three or higher on a four point Likert-type scale and the median has to be at 3.25 or higher. Some researchers argued that the use of percentage measures is inadequate. They suggest that a more reliable alternative is to measure the stability of subjects' responses in successive iterations. In the Delphi process, data analysis can involve both qualitative and quantitative data. Investigators need to deal with qualitative data if classic Delphi studies, which use open-ended questions to solicit subjects' opinions, are conducted in the initial iteration. Subsequent iterations are to identify and achieve the desired level of consensus as well as any changes of judgments among panelists. The major statistics used in Delphi studies are measures of central tendency (means, median, and mode) and level of dispersion (standard deviation and inter-quartile range) in order to present information concerning the collective judgments of respondents (Hasson, Keeney, & McKenna, 2000).

Generally, the uses of median and mode are favored. However, in some cases, the mean is also workable. In the literature, the use of median score, based on Likert-type scale, is strongly favored (Hsu, 2005). Considering the anticipated consensus and the skewed expectation of responses as they were compiled, the median would inherently appear best suited to reflect the resultant convergence of opinion. The use of mode is also suitable when reporting data in the Delphi process. The Delphi process has a tendency to create convergence, and though this was usually to a single point, there was

the possibility of polarization or clustering of the results around two or more points. In these instances, the mean or median could be misleading.

DISCUSSION

1. Due to the multiple feedback processes inherent and integral to the concept and use of the Delphi process, the potential exists for low response rates and striving to maintain robust feedback can be a challenge. In the Delphi technique, poor response rate is magnified fourfold because a maximum of four surveys may be sent to the same panelists. If certain portions of the subjects discontinue their responses during various stages of the Delphi process, the quality of information obtained could be discounted or at least critically scrutinized. Subject motivation, as the key to the successful implementation of a Delphi study and investigators need to play an active role in this area to help ensure as high a response rate as possible.
2. The Delphi technique can also be time-consuming and laborious. Unlike other data collection techniques such as the telephone survey and the face-to-face administration, which can be simultaneously conducted by a group of people and can be completed in a short period if the sample size is small, the Delphi technique is iterative and sequential. As a result, the necessity of taking large block of time to complete a Delphi process is inescapable. A drawback to Delphi was that the questionnaire method may slow the process greatly as several days or weeks may pass between rounds. Optimally speaking, the iteration characteristics of the Delphi process provide the opportunities for investigators and subjects to improve the accuracy of the results. In contrast, the same characteristic also increases the workload of investigators and the amount of time needed to successfully complete the data collection process (Cunliffe, 2002).
3. The iteration characteristics of the Delphi technique can potentially enable investigators to mold opinions (Altschuld, 2003). Delphi subjects would rate their responses differently after receiving a distorted feedback. Some 'leading' by the experimenters inevitably resulted from the selection of the information supplied. However, Delphi subjects rated the statement above average after receiving false feedback. Therefore, the Delphi technique could be used to mold opinion as well as to collect data. Indeed, subtle pressure to conform to group ratings was one of the major drawbacks in the Delphi technique. Delphi investigators need to be cognizant, exercise caution, and implement the proper safeguards in dealing with this issue.
4. An assumption concerning Delphi participants is that they are equivalent in knowledge and experience. However, this assumption might not be justified. More specifically, the expertise of Delphi panelists could be unevenly distributed, especially in the field of high technology. Some panelists may have much more in-depth knowledge of certain topics, whereas other panelists are more knowledgeable about different topics. Therefore, subjects who have less in-depth knowledge of certain topics are unable to specify the most important statements that have been identified by those subjects who possess in-depth knowledge concerning the target issue. The outcomes of a Delphi study could be the results of identifying a series of general statements rather than an in-depth exposition of the topic.

CONSLUSION

The Delphi technique provides those involved or interested in engaging in research, evaluation, fact-finding, issue exploration, or discovering what is actually known or not known about a specific topic a flexible and adaptable tool to gather and analyze the needed data. Subject selection and the periods for conducting and completing a Delphi study are two areas that should be considered carefully prior to initiating the study. The additional precautions concerning low response rates, unintentionally guiding feedback, and surveying panelists about their limited knowledge of the topic rather than soliciting their expert judgments should also be built into the design and implementation of the study. The Delphi technique has and will continue to be an important data collection methodology with a wide variety of applications and uses for people who want to gather information from those who are immersed and imbedded in the topic of interest and can provide real-time and real-world knowledge.

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PRESENTING A MULTI-OBJECTIVE MODEL FOR DETERMINATION OF QUOTAS IN GREEN SUPPLY CHAIN MANAGEMENT

Mohammad Anisseh*
Department of Industrial Management, Imam Khomeini International University, Iran
E-mail: manisseh@soc.ikiu.ac.ir

ABSTRACT

Supply chain management is one of the foundations of the business's implementation of the world. Increasing daily environmental pollution and the organizations responsible have led societies to implement green supply chain to improve environmental performance and economic development. So one of the well-known issues in supply chain management is the evaluation and selection of green suppliers and the allocation of quotas to them. Therefore, in this paper, a multi-objective mathematical model with different parameters will be presented to each supplier to determine the allocation of quotas. The mention model has been used in a numerical example, and the results have been evaluated.

Key words: Green supplier, Multi-objective mathematical modeling, Green supply chain management

INTRODUCTION

Supply Chain as a general description of the process integration involving organizations to transform raw materials into finished goods and to transport them to the end-user (Pienaar & Vogt, 2009). Industrial activities, due to the nature of their technology, pollute the environment and alone contribute to the level of environmental pollution. Therefore, if the consequences and environmental issues are not taken into account, there must be huge costs for the loss and damage caused by the lack of attention to this issue. Therefore, production with minimum waste and environmental damage should be one of the industry's major goals. Suppliers must pay attention to the environmental principles to achieve these goals (Lima Junior et al., 2014). The emergence of green supply chain activities and the reduction of waste and environmental pollutants will lead to better exploitation of natural resources, increased efficiency, lower operating costs, improve market share and opportunities for entry into new markets (Kannan et al., 2014). Selecting a best green supplier can be considered as an important decision not only to purchase the right materials for the organization, but also to improve its environmental performance (Yeh & Chuang, 2011). One of the main goals of evaluating suppliers is the allocation of quotas allocated to each supplier. Most researchers have studied this issue as a multi-objective issue. Typical objectives are Purchase price, Units refunded, and late delivery units (Janvier-James, 2011).

Green suppliers selection

Several methods are available in the selection of the suppliers, including linear weighing method that suppliers are weighed based on the different criteria, then supplier with the highest weight is the first rank and the supplier with the lowest weight is *m* rank. This model operates according to the criteria classification, and is a simple, fastest, easiest and least costly implementation method. It is; however, highly reliant on human resources and it is not accurate method (Frahani & Asgari, 2007).

Multi-objective optimization

Multi-objective optimization is the result of decision-making in the real world that the decision-maker faces with a set of conflicting criteria and conflicting goals. In these problems, unlike the one-goal optimization problems, and because of several conflicting objectives instead of just one answer, a set of solutions is obtained (De Boer et al., 2001).

$$\begin{aligned} &\min F(x) = \{ f_i(x), ..., f_n(x) \} \\ &s.t. \quad g(x) \le 0, \; h(x) = 0 \qquad (1) \\ &x \in R \end{aligned}$$

- $f_i(x)$ Objective function, and *i* is the multi-objective optimization problem
- $g(x)$ Unequal constraint set of multi-objective optimization problem
- $h(x)$ Equal constraint set of multi-objective optimization problem

Classical multi-objective optimization
The classical multi-objective optimization weighting method is as follows:

$$\begin{aligned} &\min F(x) = \{ f_i(x), ..., f_n(x) \} \\ &s.t. \quad g(x) \le 0, \; h(x) = 0 \\ &\qquad\qquad \Downarrow \qquad\qquad (2) \\ &\min w_1 f_1 + w_2 f_2 + ... + w_n f_n \\ &s.t. \quad g(x) \le 0, \; h(x) = 0 \end{aligned}$$

A simple method in terms of understanding and implementation that the application of this method is only for convex optimization problems (Ghodsypour & O'Brien, 2001).

THE PROPOSED MODEL

In this paper, four goals are studied: 1- Total of transaction costs to buy from suppliers, 2- Total cost of the purchase in one period, 3- Total of units refunded in one period, 4- Total of late delivery units

Table 1: Indices and the parameters used in the model

Symbol	Definition
i	Suppliers
j	Products
t	Period
P_{ijt}	The price of the product *j* in the period *t* proposed by the supplier *i*
W_i	Evaluation value of the supplier *i*
q_{ij}	Percentage of rejected units of the product *j* that taken by the supplier *i*
t_{ij}	Percentage of late delivery product *j* by the supplier *i*
Q_j	Maximum acceptable percentage of units rejected from the product *j* in time horizon
T_j	Maximum acceptable percentage of late delivery product *j* in time horizon
D_{jt}	The amount of product demand *j* in the period of *t*
a_{ij}	Purchase transaction cost to produce the product *j* from the supplier *i*
C_{ijt}	Supplier maximum capacity *i* to produce the product *j* in the period of *t*

Table 2: Decision making variables

Symbol	Definition
x_{ijt}	The order quantity of the product *j* that requested from the supplier *i* in the period of *t*
y_{ijt}	The binary variable is equal to one when the product *j* is purchased from the supplier *i* in the period of *t*

The proposed model with five objective function as follows:

$$\begin{aligned}
&\text{Min } Z_1 = \sum_j \sum_i \sum_t a_{ij}\, y_{ijt} \\
&\text{Min } Z_2 = \sum_j \sum_i \sum_t P_{ijt}\; x_{ijt} \\
&\text{Min } Z_3 = \sum_j \sum_i \sum_t q_{ij}\; x_{ijt} \\
&\text{Min } Z_4 = \sum_j \sum_i \sum_t t_{ij}\; x_{ijt} \\
&\text{Min } Z_5 = \sum_j \sum_i \sum_t W_i\; x_{ijt}.
\end{aligned} \tag{3}$$

The constraint are:

$$\sum_i y_{ijt}\; x_{ijt} \geq D_{jt} \quad \forall\, j,t \tag{4}$$

Constraint (4); demand for each product in the period *t* according to the supplier's satisfaction.

$$\sum_i \sum_t q_{ij} x_{ijt} \leq Q_j \sum_t D_{jt} \;\; \forall\, j \tag{5}$$

Constraint (5); ensures that the total units rejected for each product are below the maximum level allowed.

$$\sum_i \sum_t t_{ij} x_{ijt} \leq T_j \sum_t D_{jt} \;\; \forall\, j \tag{6}$$

Constraint (6); ensures that the total late delivery units for each product are below the maximum level allowed.

$$x_{ijt} \leq C_{ijt}\; y_{ijt} \quad \forall i, j, t \tag{7}$$

Constraint (7); shows that the order quantity of each product from each supplier at any period should be less than the supplier's production capacity.

$$y_{ijt} \leq \alpha_{ijt} \quad \forall i, j, t \tag{8}$$

Constraint (8); shows that all suppliers cannot offer all the products within a given time period.

$$x_{ijt} \geq 0,\; y_{ijt} = 0 \text{ or } 1 \quad \forall i, j, t \tag{8}$$

The ultimate objective function is as follows:

$$Min\,Z = b_1 \times \frac{Z_1 - Z_1^n}{Z_1^n} + b_2 \times \frac{Z_2 - Z_2^n}{Z_2^n} + b_3 \times \frac{Z_3 - Z_3^n}{Z_3^n} + b_4 \times \frac{Z_4 - Z_4^n}{Z_4^n} + b_5 \times \frac{Z_5^n - Z_5}{Z_5^n} \qquad (9)$$

$Z_1^n, Z_2^n, Z_3^n, Z_4^n, Z_5^n$ are normalized and b_1, b_2, b_3, b_4, b_5 are weight coefficients of objective function 1 to 5.

NUMERICAL EXAMPLE

In this section, first we work out a numerical example, to illustrate the proposed multi-objective mathematical model. Three suppliers with evaluation values of 90, 80 and 60 are from the total evaluation value of 100 ($W_1 = 90, W_2 = 80, W_3 = 60$). In this example, the weights of the objective functions is equal ($b_1 = b_2 = b_3 = b_4 = b_5 = 0.2$). The maximum acceptable percentage of rejected units of products and the late delivery units during the planning horizon is as follows:

Table 3: Decision making variables

	Product1	Product2	Product3	Product4
Q	0.06	0.09	0.12	0.085
T	0.09	0.12	0.12	0.05
q	0.06	0.09	0.12	0.085
t	0.09	0.12	0.12	0.05

Four product prices offered by three suppliers in four periods are in table 4.

Table 4: Products prices

P		Period1	Period2	Period3	Period4
Suplier1	Product1	105	110	0	115
	Product2	0	310	320	0
	Product3	405	0	0	0
	Product4	0	0	520	515
Suplier2	Product1	95	100	0	0
	Product2	295	300	310	305
	Product3	0	400	410	405
	Product4	495	0	510	0
Suplier3	Product1	85	0	100	0
	Product2	285	0	0	0
	Product3	385	0	0	395
	Product4	0	490	0	495

Supplier's maximum capacity to produce the four products in the four period are in table 5.

Table 5: Supplier's maximum capacity to produce products

C		Period1	Period2	Period3	Period4
Suplier1	Product1	100	50	0	190
	Product2	0	80	200	0
	Product3	150	0	0	0
	Product4	0	0	100	200
Suplier2	Product1	120	60	0	0
	Product2	85	150	200	105
	Product3	0	100	155	200
	Product4	175	0	120	0
Suplier3	Product1	80	0	100	0
	Product2	150	0	0	0
	Product3	125	0	0	200
	Product4	0	170	0	200

The percentage of units rejected for each product by any supplier is given in the table 6.

Table 6: The percentage of units rejected

q	Product1	Product2	Product3	Product4
Suplier1	0.05	0.1	0.06	0.06
Suplier2	0.03	0.05	0.01	0.08
Suplier3	0.08	0.15	0.02	0.1

The Percentage of late delivery units for each product by the suppliers are show in the table 7.

Table 7: The Percentage of late delivery units

t	Product1	Product2	Product3	Product4
Suplier1	0.1	0.15	0.06	0.03
Suplier2	0.07	0.1	0.08	0.04
Suplier3	0.06	0.08	0.11	0.06

The Purchase transaction cost for each product by the suppliers are show in the table 8.

Table 8: The Purchase transaction cost

a	Product1	Product2	Product3	Product4
Suplier1	40	60	70	80
Suplier2	20	30	40	35
Suplier3	15	50	60	25

In addition, the demand for each product from each supplier is as follows:

Table 9: Demand for each product

D	Product1	Product2	Product3	Product4
Period1	300	100	100	150
Period2	235	200	380	100
Period3	250	100	140	350
Period4	150	100	220	350

At first, by resolving objective functions with Lingo software, and then by considering the weights of objective functions, the final answer is obtained as follows:

Table 10: Lingo results

Z_{111}	1070	0.000000
Z_{222}	1093375	0.000000
Z_{333}	188.55	0.000000
Z_{444}	258.9	0.000000
Z_{555}	270060	0.000000

Table 11: Optimal values of objective functions

	Normalized objective functions				
T_Z	Z_1	Z_2	Z_3	Z_4	Z_5
26.676	0.51	67	61.1	70	68

The values of the main variables obtained by Lingo are as follows in Table 12.

As it seen, in the periods of 1.2 and 4, product 1 with values of 100, 50, and 190 provide by Supplier 1. During the period of 3, the product number 1 must not receive from Supplier 1. In the periods of 2 and 3, product 2 with values of 80, and 200 provide by Supplier 1. During the periods of 1 and 4, the product number 2 must not receive from Supplier 1, and so on.

Table 12: Variables values

X(1, 1, 1)	100.0000	0.000000	X(2, 3, 1)	0.000000	0.000000
X(1, 1, 2)	50.00000	0.000000	X(2, 3, 2)	100.0000	0.000000
X(1, 1, 3)	0.000000	0.000000	X(2, 3, 3)	155.0000	0.000000
X(1, 1, 4)	190.0000	0.000000	X(2, 3, 4)	200.0000	0.000000
X(1, 2, 1)	0.000000	0.000000	X(2, 4, 1)	175.0000	0.000000
X(1, 2, 2)	80.00000	0.000000	X(2, 4, 2)	0.000000	0.000000
X(1, 2, 3)	200.0000	0.000000	X(2, 4, 3)	120.0000	0.000000
X(1, 2, 4)	0.000000	0.000000	X(2, 4, 4)	0.000000	0.000000
X(1, 3, 1)	150.0000	0.000000	X(3, 1, 1)	80.00000	0.000000
X(1, 3, 2)	0.000000	0.000000	X(3, 1, 2)	0.000000	0.000000
X(1, 3, 3)	0.000000	0.000000	X(3, 1, 3)	100.0000	0.000000
X(1, 3, 4)	0.000000	0.000000	X(3, 1, 4)	0.000000	0.000000
X(1, 4, 1)	0.000000	0.000000	X(3, 2, 1)	150.0000	0.000000
X(1, 4, 2)	0.000000	0.000000	X(3, 2, 2)	0.000000	0.000000
X(1, 4, 3)	100.0000	0.000000	X(3, 2, 3)	0.000000	0.000000
X(1, 4, 4)	200.0000	0.000000	X(3, 2, 4)	0.000000	0.000000
X(2, 1, 1)	120.0000	0.000000	X(3, 3, 1)	125.0000	0.000000
X(2, 1, 2)	60.00000	0.000000	X(3, 3, 2)	0.000000	0.000000
X(2, 1, 3)	0.000000	0.000000	X(3, 3, 3)	0.000000	0.000000
X(2, 1, 4)	0.000000	0.000000	X(3, 3, 4)	200.0000	0.000000
X(2, 2, 1)	85.00000	0.000000	X(3, 4, 1)	0.000000	0.000000
X(2, 2, 2)	150.0000	0.000000	X(3, 4, 2)	131.0000	0.000000
X(2, 2, 3)	200.0000	0.000000	X(3, 4, 3)	0.000000	0.000000
X(2, 2, 4)	105.0000	0.000000	X(3, 4, 4)	150.0000	0.000000

CONCLUSION

The proposed model presented the issue of allocating quotas to suppliers as a multi-objective model. Objectives of the model are include: minimizing purchase costs, minimizing rejected units, minimizing late delivery product , minimizing purchase transaction cost from suppliers, and maximizing the evaluation value of the suppliers. Minimizing purchase transaction costs from suppliers proposed as a new and effective objective in this paper. Then, transformed the multi-objective model using a weighted method to a single-objective model. The results show that, in a multi-period planning horizon, what are the amount of the product quotas allocation to each supplier. The results show the effectiveness of the solutions obtained using the solution procedure.

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THE NEEDS OF THE ECONOMY AND ENCOURAGING ENTREPRENEURSHIP OF YOUNG PEOPLE IN CENTRAL BANAT REGION

Dragan Ćoćkalo*
University of Novi Sad, Technical Faculty "Mihajlo Pupin" in Zrenjanin, Republic of Serbia
E-mail: dragan.cockalo@tfzr.rs
Dejan Đorđević
University of Novi Sad, Technical Faculty "Mihajlo Pupin" in Zrenjanin, Republic of Serbia
Milan Nikolić
University of Novi Sad, Technical Faculty "Mihajlo Pupin" in Zrenjanin, Republic of Serbia
Sanja Stanisavljev
University of Novi Sad, Technical Faculty "Mihajlo Pupin" in Zrenjanin, Republic of Serbia
Edit Terek
University of Novi Sad, Technical Faculty "Mihajlo Pupin" in Zrenjanin, Republic of Serbia
Mihalj Bakator
University of Novi Sad, Technical Faculty "Mihajlo Pupin" in Zrenjanin, Republic of Serbia

ABSTRACT

The global economic crisis resulted in changes in modern business which have further influenced companies to change their way of thinking and their business conducting philosophies. The number of companies who apply entrepreneurship and entrepreneurial behavior is steadily growing. Developed countries have experienced that youth entrepreneurship is a crucial category for the development of entrepreneurship on a macro-economic level. In the European Union, young entrepreneurs receive significant incentives and support programs. In contrast, the Republic of Serbia is not following this trend. Similarly, other countries in the Western Balkan Region also face challenges in this domain. This paper analyzes the economic development of innovation, competitiveness, and entrepreneurship, with the focus on youth entrepreneurship.

Key words: young entrepreneurs, youth entrepreneurship, competitiveness, economic development, Serbia, Central Banat Region.

INTRODUCTION

Entrepreneurship can be viewed as a creative process that continuously exists with the goal to create and implement innovations in the company. The function is to successfully manage and solve problems of consumers and society overall. In order to successfully conduct business in the 21st century companies have to adequately deal with the emerging need for intellectual capital, and the necessity for applying new technologies in business processes. Also, companies have to be efficient in transferring information to consumers and customers. A modern company has to base its business activities on the concept of entrepreneurship, which focuses on the importance of strategic approach and includes the acceptance of risks, creating innovation, creativity, and the responsibility of each employee in the management process. This implies that every employee in the organization has to accept risks and to focus on contributing to innovations of products and business activities. Certainly, entrepreneurial behavior should be based on innovative products and services, through which a more competitive position on the market can be achieved.

Further, on the global market a strong emphasis is on innovation, as the modern society is based and thrives on knowledge. Companies have to conduct business in the domain of entrepreneurial concepts in a strategic and organized way in order to constantly and continuously initiate innovation among employees and in the overall company. Now, an appropriate organizational structure is needed for employees so they can act in

an entrepreneurial way. This further enables the company to systematically create innovations, or more precisely to develop innovative technical solutions, products and services. In addition, the company also has to establish and maintain a system or network where new connections and relations are made which allow entrepreneurial behavior among employees. The development of entrepreneurship and entrepreneurial behavior among young people is a complex field. However, it is limited to several factors which establish the framework for youth encouragement. Focused attention on the importance of gaining knowledge and skills in the domain of entrepreneurship is crucial. A large body of literature investigates entrepreneurship, and some of the studies analyze motivation (Kim-Soon, Ahmad, & Ibrahim, 2016), entrepreneurial intentions (e.g. Thompson, 2009, etc.), elements that influence development of entrepreneurial behavior and starting a new business (Franco et al., 2010, etc.), and all of this summed up, focuses on youth entrepreneurship.

This present study provides a significant insight into the domain of youth entrepreneurship and provides a good basis for future research. The analyzed concepts are important for the development of entrepreneurship among young people. The paper presents the results of an extensive research in the Central Banat Region, in the Republic of Serbia. The obtained results are significant, and present a quintessential basis for youth entrepreneurship analysis.

NEW MODELS OF ENTREPRENEURSHIP DEVELOPMENT

Companies in the modern economy, in order to successfully conduct business, have to create and nourish a climate which increases the potential of entrepreneurial behavior, process flexibility and innovation. Entrepreneurs can be viewed as producers of innovations. Modern beliefs propose that an entrepreneur doesn't have to be only the owner of the business, but an active employee as well. Drucker (2003, p.122) noted that an organization has to be managed in an entrepreneurial way, no matter the number of employees and financial resources. An increasing number of companies start to adopt and apply concepts of entrepreneurial business management and overall these companies start to behave in an entrepreneurial way. This can further lead to increased intensity of innovations in business activities and in products and services as well. It is important to note that in a modern company, entrepreneurship and entrepreneurial behavior is not linked to the activities of an individual, but rather it bases its processes on team work. Taken this into consideration, a model for corporate entrepreneurial behavior should be based and focused on team work. In addition, it is important for team members to be motivated, to thrive towards success and to calculate and take risks. Enterprises, especially large enterprises have to collaborate with partners and to encourage entrepreneurship in order to surpass challenges. These enterprises have to create separate business units which behave completely different compared to the main enterprise.

Furthermore, for enterprises in transition countries, applying entrepreneurship has an important role in competitiveness. The transition process that includes the changes of the society's economic structure – market economy, privatization, and liberalization of economic relations etc., represent the basis for successful inclusion in the international economy. The whole transition process should be focused on the training of economic entities for independent market appearance. This further can increase competitive ability of domestic enterprises and it can improve business management on an international level. Of course, this implies the necessity for significant changes in the way of how managers and employees think. It also requires changes in the organizational structure. Domestic capital owners and executive managers play a crucial role in this whole process. They have to establish a healthy market foundation for business. This foundation has to be based on the development of employee knowledge and increased productivity. Entrepreneurial concepts certainly "push" enterprises in the direction of innovation and competitiveness. Therefore, it can be assumed that entrepreneurship in transition economies is not only an option, but rather an imperative for the development of competitive ability on the global market.

Drucker (2005) argued, that every large enterprise has to expand, innovate, and continuously improve. In addition, Drucker (2005) noted that he isn't aware of such an enterprise, but there is a quite a few which are advancing in the right direction. As entrepreneurship is mainly based on hard work and effort, enterprises have to apply the entrepreneurial concept in an organized fashion and to constantly conduct innovation of products and services. Enterprises have to systematically apply innovations, in order to develop an adequate organizational structure where employees are allowed to behave in an entrepreneurial way.

Enterprises also have to establish such relations which will nourish entrepreneurial behavior among employees. In the modern business world, entrepreneurship is not a personality but rather an organization's behavior and suitable business practice. If enterprises want to be successful in the modern business environment, it is an imperative to integrate and apply entrepreneurial management in the enterprise's organizational structure. Also, enterprises have to adopt business policies which will enhance the enterprises' ability to generate innovations. This means that simply producing a product is not enough, as business adapting to, and adopting business policies which can improve business performance and increase the number of innovations, is becoming an imperative on the global market.

YOUTH UNEMPLOYMENT TRENDS

In the majority of developed countries there are principles which are related to the functioning of the labor market, more precisely, youth employment. These principles are:

1. youth unemployment is higher compared to adults and the rates are at least double the size;
2. the level of youth formal education is increasing significantly and it can be assumed that this trend will continue in the future;
3. the youth is afraid of marriage, and this is because of social security issues, and that is why the young are deciding to get married when they are older;
4. participation of women in employing is getting increasingly emphasized;
5. existing labor market programs for the youth, overall, have a low recovery rate.

In developed countries, state and government administrations are focused on new solutions for employing the youth, with the most emphasis on developing and improving entrepreneurial skills. Through self-employment individuals can define their own model of business and development. In developed countries governments view self-employment as a way for reducing unemployment, and decreasing poverty. Thus, the government encourages small business development. The reason for the confirmation of these actions and activities are the potential benefits. Some of these benefits are:

- starting a new business and entrepreneurship directly affects the increase of employment rates, as entrepreneurship is way of creating new jobs in the beginning of the business endeavors and in the near future;
- new small enterprises have a positive impact on the level of competitiveness on a national level, which further creates benefits for consumers;
- new enterprises or better yet, young entrepreneurs, can be more flexible when it comes to answering to market demands, especially in the domain of new technologies and following new market trends;
- with higher employment rates young people acquire higher self-esteem, and social welfare, too.

According to ILO estimated data (ILO, in the period between 2008 and 2018, total youth unemployment rates fluctuated from 10.8% in 2008, to 11.8% in 2018 (ILOSTAT, 2019). Further, when the unemployment rates among young people (15 to 24 years of age) are analyzed in the European countries in the period between 2008 and 2018, certain differences can be observed. In Germany the youth unemployment rate in 2008 was 10.6%, and 6.4% in 2018. Hungary faced a 19.6% youth unemployment rate in 2008 which peaked in 2012 at 28.2%. After 6 years, in 2018, this rate was 10.3%. Further, a more severe case of youth unemployment was reported in Greece. In 2008, youth unemployment was at 21.7%, which rose to 58.2% in 2013. A slow decrease led to 39.5% in 2018. Next, France didn't fully recover from the 2008 and 2009 crisis. The data shows that youth unemployment in 2008 in France was 18.2%, and after rising to 24.6% in 2015, it only dropped to 20.9% in 2018. Now, Serbia had a youth unemployment rate of 34.5% in 2008, which rose to 50.6% in 2012, and slowly decreased to 32.1% in 2018. Next, Bosnia and Herzegovina had and has higher youth unemployment rates, compared to Serbia and to the majority of other countries. In 2008, the youth unemployment rate was 48.2%, peaking at 62.9% in 2012, and decreased to 46.7% in 2018. Additional details on youth unemployment in the Western Balkan and other neighboring countries are presented on Figure 1.

Based on the presented data on Figure 1, it can be seen that Serbia has relatively large youth unemployment rates compared to its neighboring countries, between 2008 and 2018. Slovenia is the closest to the EU average, while Bosnia and Herzegovina have consistently high youth unemployment rates between 2008 and 2018.

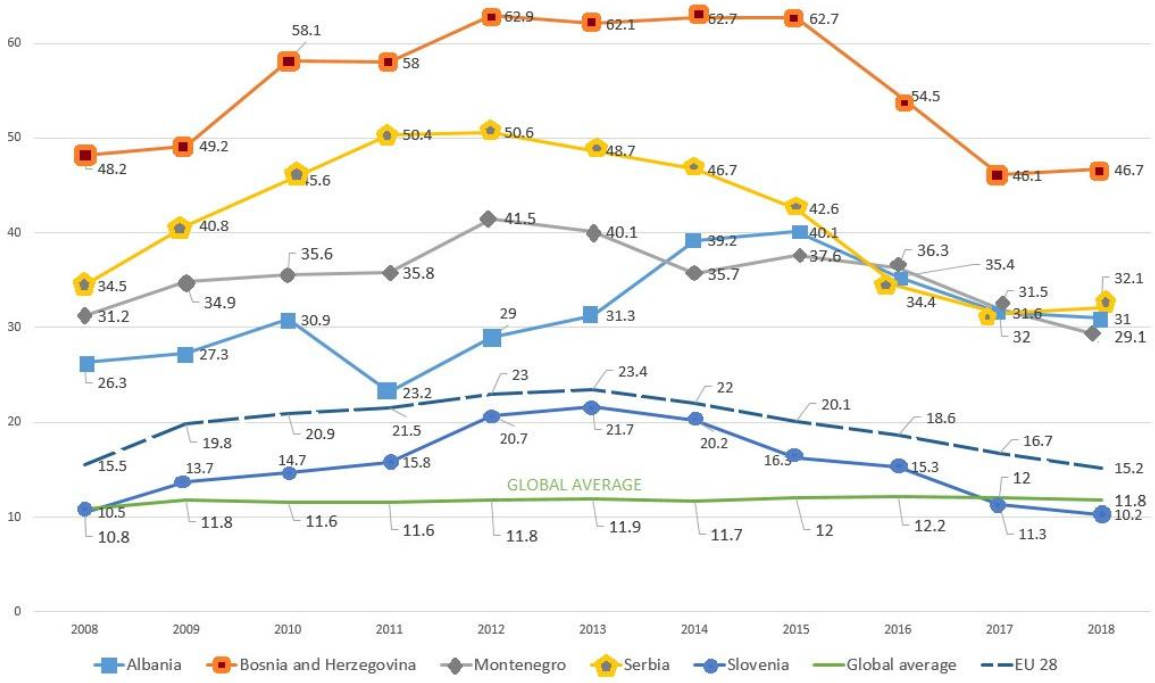

Figure 1: Youth unemployment rates in the Western Balkan and neighboring countries (Source: ILOSTAT, 2019)

YOUTH'S OPINION ON SELF-EMPLOYMENT - SERBIA AND CENTRAL BANAT REGION

A thorough research was conducted that analyzed young peoples' opinions and thoughts on starting their own company in Serbia. This research named "Analysis of young people's opinions and thoughts about starting their own company and applying socially responsible business" included over 4500 participants (students from high schools and universities) in the period between 2010 and 2018. The most recent research in 2017 included 592 participants. Interestingly, the majority of the surveyed students, more precisely 83.1% noted that they would like to start their own business. Further, 19.9% of the participants noted that private business for them is risky and uncertain, while 24.2% feels that starting their own business is a challenge. Some of the reasons for not starting their business are given in Table 1.

Table 1: Reasons for not starting own business - answers of young people from Serbia

	% from the sample
I don't have the right idea	20.1
Insufficient financial means	18.4
I do not have enough knowledge	13.3
Insecure political and economic situation	12.0
I am not interested	11.6
Lack of good partners to start the business with	10.3
Little experience in company management	9.9
Insecure about own skills	2.6

A similar research has been carried out in the Central Banat Region in Vojvodina in 2018. This research was financed by the AP Vojvodina. The main goal was to improve and develop entrepreneurship in this region. The study included 350 participants, from which 300 were active students from Zrenjanin, and 50 other people of appropriate age who graduated and were used as a control group. Thanks to the support of local small and medium-sized enterprises (SMEs), the control group consisted of people employed in these SMEs and from unemployed people. Now, almost 65% of the participants in the 2018 research, believe that a private business is more successful compared to other types of property, while 40% noted that private companies offer better working conditions compared to other types of companies.

When it comes to security, and profitability, only 18% of participants thought that private business is insecure and unprofitable. Two thirds of the participants (75%) believe that people overall are not aware of the real potential and possibilities of private enterprises. A high percent (74%) of the participants demonstrated readiness to start their own business. The participants who don't or can't start their own business stated the following as the most common reasons: lack of real idea (22.62%), lack of financial resources (22.62%), unstable and insecure economic and political situation (16.29%), not enough experience in managing a business (12.23%), not enough knowledge (8.14%) and indifference towards starting own business (7.24%).

Further, 54% of the participants estimate that start-up loans of business banks are not affordable for young people due to the high interest rates. Also, 16% of the participants shared the opinion that there are difficulties in receiving funds. The majority (55%) of the participants stated that they would rather use their own financial means, than bank loans. As for existing incentives for starting a new business, 58% are not familiar with them. In addition, from the participants who knew about the incentives 48% stated that they would not use them.

According to the research data, 80% of the participants from the Central Banat Region, believes that there is not stimulating environment for young people regarding entrepreneurship, or more precisely, starting their own business. As main limitations, the participants pointed out limited or insufficient financial resources (22.62%), unstable economic and political situation in the country (16.29%), and lack of a good innovative idea (22.62%). The majority (84%) of the research participants believe that the government should have the main role in stimulating and motivating young people to start their own businesses. When asked for opinions on how should the government stimulate youth entrepreneurship the majority of the answers were more affordable loans and education. Details of the answers are presented in Table 2. It is important to note that for this section, participants could answer with multiple choices, hence the more than 100% summed-up values.

Table 2: Opinions on how should the government stimulate and motivate youth entrepreneurship

More affordable loans	51%
Education	46%
Laws and policies for young entrepreneurs	25%
The development of new business centers and incubators	18%
Regulating the market	28%
Promoting the concept of youth entrepreneurship	31%
Other	2%

Furthermore, the young have evaluated competitiveness and innovativeness of enterprises as main elements of economic development level. Now, 81.73% of the examinees evaluated the competitiveness of domestic enterprises compared to the international environment as unsatisfactory. Also, the majority (77%) of the participants evaluated the level of innovativeness of domestic enterprises as inadequate. More than third of the participants (35%) pointed out modern management methods and techniques as necessary elements for competitive ability development of domestic enterprises. Additionally, 32% noted that modern technological solutions and equipment, and 29% pointed out significant investments in marketing as important for developing a competitive advantage.

In addition, other important factors for domestic enterprise development are pointed out. These are new technologies (50%), financial support (41%), education (43%) and employee motivation (34%).

Further, the control group disagreed with the main group of participants when it comes to the opinion that self-employment is more successful compared to other types of business. Also, disagreement was found in the opinion that people don't realize the full business potential of private enterprises. Similarly, the control group disagrees with the main group on the evaluation of innovativeness in domestic enterprises. Next, when it comes to starting capital, the control group would rather use government funds. The participants in the main group are more prone to use bank loans compared to the control group. Further, the main group is more informed on government incentives compared to the control group. The majority of participants in the main group failed to name a socially responsible enterprises. The control group managed to list several, however, the number was still low. The control group evaluated self-employment as insecure and risky. Also, the control group noted that the innovativeness of domestic enterprises is very low. In the main group, students enrolled in management studies were more ready to start their own business.

There was a statistical difference between the opinion of women and men, regarding the successfulness of self-employment compared to being an employee. Women are not convinced that self-employment is that much successful than being an employee. Women also find start-up loans more affordable than men. Interestingly, men

are more willing to use resources from incentive programs. When it comes to knowledge of a foreign language in business, women find it more important than men. Men were able to name more socially responsible enterprises compared to women.

Further, the research suggests that people are more ready to start their own business if somebody in their family already owns a business. Also, the majority of participants who would start their own business, would take resources through incentive programs. Finally, the participants who noted that the government should have a key role to motivate and stimulate youth entrepreneurship, also note that in Serbia there is not an adequate and stimulating environment for youth entrepreneurship.

CONCLUSION

Within the global economy, the entrepreneurial economy is a harsh reality where we see a continually increasing number of competitors. Strong competitors offer high quality and innovative products to consumers. Domestic enterprises have to match and exceed them in order to acquire competitive ability on the global market. Even though there is uncertainty in the global economy, there are also possibilities for organizations and individuals who are willing to take risks and to adapt to the demands and changes which taka place on the global market. National economies focus on encouraging entrepreneurial behavior as this is one of the main strategies for economic development, especially for emerging economies.

The data obtained in this research came from students of management and business, so there was the assumption that the majority of these participants wanted or planned to start their own business. Now, the obtained results suggest that the situation in Serbia is not adequate when it comes to stimulating and motivating entrepreneurial behavior. The absence of a stimulating environment for the young is one of the main factors that hinder entrepreneurial behavior. Additionally, lack of business ideas, lack of education and financial means also play an important role in the inadequacy of the entrepreneurial climate in Serbia. The study conducted in the Central Banat Region provided significant results, and presented valuable data on youth entrepreneurship. Based on the conducted research it can be concluded that the youth (in this study, students of management) is aware of the low competitive ability of domestic enterprises, and the lack of innovativeness. In order to establish competitiveness of Serbian enterprises it is necessary to acquire and apply new technologies and to create and nourish a stimulating business environment. For future research, a meta-analysis of previous studies can be conducted. In addition, a model for improving youth entrepreneurship could be developed. This current study provides a solid basis for the aforementioned future studies.

ACKNOWLEDGEMENT

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A CLOSER LOOK AT THE RELATIONSHIP OF PRIVATE BUSINESS INITIATIVE DEVELOPMENT AND FOREIGN DIRECT INVESTMENTS IN SERBIA

Robert Molnar
Technical College of Applied Sciences, Zrenjanin, Republic of Serbia
Zoran Eremić*
City of Zrenjanin, Zrenjanin, Republic of Serbia
E-mail: eremic_zoran@yahoo.com

ABSTRACT

The purpose of this paper is to point at some of the critical factors that could foster Serbian economy development in long term perspective based on autochthonous businesses support. This paper provides an overview on both private business initiative and entrepreneurship genesis in Serbia as well as influence of foreign direct investments on national economy. There is number of factors which led to contemporary condition of Serbian economy. Some of them are related to the geo-political factors like numerous wars Serbia passed through which led to the delayed industrialization and, after a more than a century, to delayed transition of its economy. Another group of factors are related to the internal political factors when the Government should have chosen right economic measures. Beside the low level of development of current Serbian economy, one of the consequences is related to the lack of entrepreneurial spirit, reflected in an uncompetitive autochthonous SME sector. On the other hand, Serbian government is very supportive to foreign investors whose companies manufacture, in most cases, products of low added value. The main finding of this paper is that FDIs produce not so positive effects in long term perspective, what is in opposite to huge expectations from the Government side.

Key words: Private business initiative, FDI, SMEs, Entrepreneurs, Autochthonous business

INTRODUCTION

Generally speaking, Serbian domestic private business initiative has never recognized the state and its institutions as a real partner. Even from the opposite perspective, the state with their institutions never recognized domestic entrepreneurs as trustworthy partners. One of the consequences of this mutual distrust is the development level of autochthonous businesses as well as general business environment in Serbia. This is not relevant just for nowadays, but also could be observed since Serbia started to build its economy.

Foreign influence was always present in the process of gaining "full" independence during the XIX century. History proves that full independence in economy has never been obtained due to constant presence of foreign influence, which just changed its intensity and ways of interference over time. Since the Berlin Congress Serbia was conditioned by great powers which determined its economy for long-term perspective (Aleksić, 2014).

Serbian economy suffers from different ways of economic subordinations implemented mostly through foreign finances but also through political and economy instruments implemented by foreign governments and transnational companies. This resulted that Serbia is still recognized on international market as a producer of raw materials and products with low added value.

The main goal of this study is to enlighten some components of the relationship between domestic private business initiative and foreign direct investments inflow in Serbian economy in order to find out which way these investments influences this initiative.

PRIVATE BUSINESS INITIATIVE AND ENTREPRENEURSHIP GENESIS IN SERBIA – A BRIEF OVERVIEW

Private business initiative and entrepreneurship in Serbia is relatively recent phenomenon. Whatever was the name of the country, its boundaries and socio-economic order in last two centuries there has never been good environment for entrepreneurship development.

For centuries Serbia was ruled by Turkish Empire. First visible progress in the country started during the 30's of 19th century when huge state works in construction have been realized across the country (Mirkov, 2013).[*] That was the first wave of industrialization for liberated country, but majority of its citizens still lived in rural areas dealing with agriculture. Private business initiative was represented mostly by handicrafts while industrial infrastructure was underdeveloped. Although huge amounts of foreign capital had already been invested in 470 Serbian factories till the WWI, small businesses with few employees, low investment capital and slight mechanical means of production still prevailed. Succeeding wars (Balkan wars and WWI) devastated Serbian infrastructure and there was huge need for fresh (foreign) capital. Following WWI, in a period 1919-1938 there were 2,193 factories established in the Kingdom of Yugoslavia.[**] Still, one of the major barriers to industrialization was permanent lack of capital. The very small league of real Serbian capitalists wasn't able to finance their businesses by themselves and they turned to the bank loans and foreign investors. Majority of the bank loans were issued by foreign banks equity. In relation to the equity capital, we need to mention that by the year 1938, 51.5% of total Yugoslavian equity was owned by foreigners (Čalić, 2004). Realizing unfavorable position of indigenous economy subjects, in the years before WWII the new Government significantly influenced the economy at least by establishing industrial enterprises and by widening monopolies (Vučo, 1975).

Serbia was thrown into the WWII where it experienced another great devastation of infrastructure and human capital. But this time, another factor predominantly influenced private business initiative - and it was new socio-economic order. New government in new country where Serbia belonged preferred state initiative in economy rather than private one. There were positive effects in economy in first decades of industrialization, where infrastructure and industrial complex has been built, but it was devastating for private business initiative and entrepreneurship spirit as well. In long term perspective, that economy model led to disintegration of the country by recent wars and infrastructure devastation (3 civil wars and NATO aggression) from 1991 till 1999.

At the dawn of 3rd millennia Serbian economy once again faced numerous challenges. In the aftermath of the civil war experience, new government accepted full cooperation with (Western) foreign financial institutions which led to the implementation of neo-liberal concept in Serbian economy. One of the main elements of it is related to the abolition of restrictions on foreign investments in domestic industries, banks and other financial organizations as well as the privatization and the establishment of a full and secure property rights over companies and their resources with complete withdrawal of state from the sphere of property rights. Economic policy based on the "deregulation-privatization-liberalization", led to the deindustrialization of Serbian economy and lack of own accumulation which is mostly transferred abroad. This is compensated by economic policy measures for FDI attraction (Drašković & Milivojević, 2016).

In parallel with previous processes a new supporting business environment being established. Even though often burdened by political influence, services offered by national business supporting infrastructure (Development Agency of Serbia with its network of Regional Development Agencies, Chamber of commerce, etc.) are improving and becoming more diversified. It offers information, logistics and intelligence for economic operators in the field of export, state aid and subsidies for both local companies and inward investors. On the down side, it seems that since year 2003, the focus of state assistance has shifted from supporting establishment, multiplicity and development of the local entrepreneurship, to the attraction of the foreign investment. State aid offered through various programs, calls for proposals and projects often remain far from reach of insufficiently developed local SMEs and entrepreneurs as qualification bar is often too high or requires investment not attainable from their ordinal business accumulation. On the contrary, following structured and planned advent to the market of Serbia, a FDI

[*] This relates to the part of the Serbia which lies on south of the Danube river.
[**] Only 718 were on the territory from 1912.

operator utilize as much of the offered benefits as it can, as they easily qualify due to their level of investment, exporting potential, expected turnover, impact on local employment and advertised prosperity for local community.

FOREIGN DIRECT INVESTMENTS IN SERBIAN ECONOMY AND THEIR INFLUENCE ON SOME BASIC ECONOMY INDICATORS

Investments in Serbia are regulated by the Law on investments (Official gazette 89/2015 and 95/2018). It defines investment as: "direct investment, which is investment in tangible and intangible assets of an economic operator, and; indirect investment, which is acquisition of shares or stocks of an economic operator." Consequently, investor is: "native or foreign, legal or personal entity which made any of the mentioned modes of investment in the territory of the Republic of Serbia in accordance with the ruling Law". The law also delegates decision making process and technical assistance in the field of state aid incentives to newly established bodies of Economic Council and Development Agency of Serbia, alongside to ministry in jurisdiction to economy affairs. It is important to stress that this law brought an article (#7) which formally equalized national residents and companies with the foreign investors, while previous legal solutions were in favor of FDI companies in terms of their legal rights and benefits thereof. Even so, economic potential, influence, national and political background and image of foreign investors companies rank them before native investors in the state aid decision making process. This practice brought live discontent, debate and criticism of state aid policy in the business representatives and general public of Serbia. Also, some authors even refer to FDI as often only "geographically foreign investment" whilst it is, in fact, disguised "anonymous" or "transitional" domestic capital drained from national accumulation during last decade of 20th century.

In short, there is impression that the state is simply insufficiently actively supports generation of native production companies-since there are virtually none relishing significant state aid comparable to foreign entries to the market of Serbia. In most cases, native companies not qualify to state aid as they are constrained by their production scale or weak development potentials, despite the fact some of them are export oriented.

However, there are expectations from side of various Serbian governments that FDI investments will improve state of national economy in general. According to available space, authors selected only few indicators and confront them with FDI inflow in Serbian econmy.[*]

FDIs influence on Serbian GDP

When FDI net inflows per capita is compared to selected GDP indicators in referent period, it becomes obvious that there is no closer relation between the two. For example, in year 2011 FDI net inflow per capita reached its maximum, while in following years value of GDP per capita dropped (Table 1).

FDIs influence on Business Demography in Serbia

According to the Serbian Business Register Agency, at the begging of the period 2010-2017 there were 109,961 active companies and 220,619 active entrepreneurs in Serbia. At the end of that period, in year 2017, there were 129,286 active companies and 238,664 active entrepreneurs in Serbia. By comparing numbers of active, newly opened and closing companies (and same indicators for entrepreneurs) with the level of FDI by years, there is no striking evidence of their impact on the demography of Serbia's economy. *Figure 1* shows FDI influence on new businesses (companies and entrepreneurs) creation as well as closing businesses in period 2010-2017. It could be observed that in year 2011, when level of FDI reached its maximum it was followed by maximum of closing businesses.

[*] FDI is selected as net inflows (Balance of Payments, current US$)

Table 1: FDI influence on GDP indicators in Serbia for period 2000-2017.

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
FDI net inflow (USD bill.)	0.052	0.177	0.491	1.467	0.958	1.577	4.256	4.424	4.056	2.929	1.693	4.930	1.276	2.060	2.000	2.345	2.355	2.879
FDI net inflow per capita(USD)	6.9	23.6	65.5	196.1	128.4	211.9	574.2	599.3	551.8	400.1	232.2	681.3	177.2	287.4	280.4	330.5	333.6	410.7
GDP per capita (current USD bill.)	870	1,635	2,150	2,832	3,331	3,528	4,130	5,458	6,702	5,821	5,412	6,423	5,659	6,354	6,200	5,237	5,426	5,901
GDP growth per capita (annual %)	8.10	5.17	7.22	4.34	9.30	5.86	5.32	6.32	5.82	-2.73	0.99	2.21	-0.53	3.07	-1.37	1.26	3.34	2.41

Sources: World Bank and authors' calculation for FDI net inflow per capita

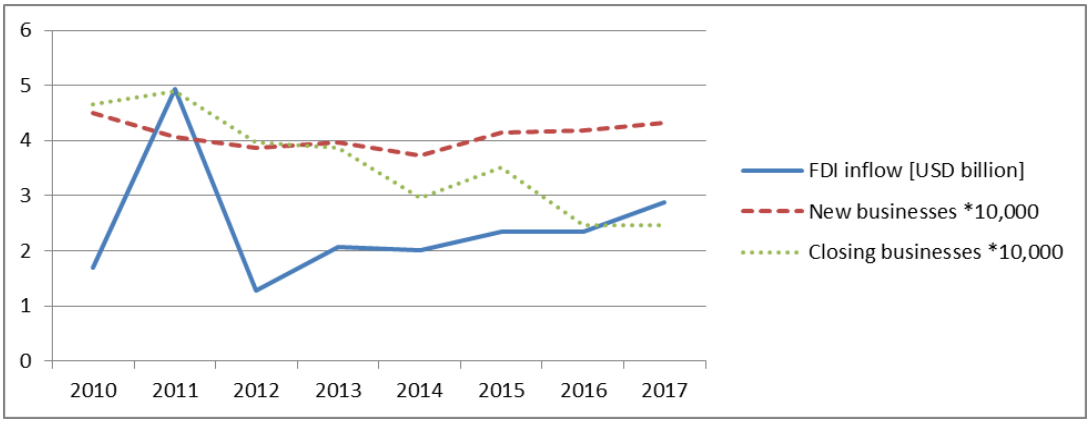

Figure 1: FDI influence on business demography in period 2010-2017.
Sources: World Bank and Serbian Business Register Agency

FDIs influence on Serbian Foreign Trade Balance

Figure 2 shows how FDI inflow in Serbian economy influenced its foreign trade balance in period 2009-2017. From the beginning of the referent period, until 2012 these indicators had opposite trends! Positive influence of FDI inflow is observed since 2012 until 2016, while in 2017 trend become the same as at the beginning of the referent period.

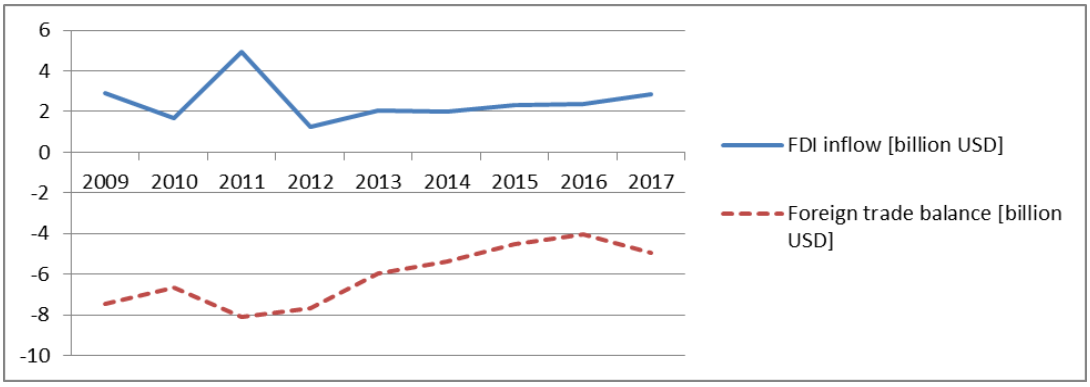

Figure 2: FDI influence on Serbian foreign trade balance in period 2009-2017.
Sources: World Bank and Statistical Office of the Republic of Serbia

FDIs influence on Employment in Serbia

Figure 3 shows how FDIs influenced employment in Serbia in period 2000-2016. It is clear that total number of employed people per 1,000 citizens in Serbia is pretty stable during the referent period. For example, in first years of the referent period FDI inflow per capita increased a couple of times yearly, while employment indicator remained same even dropped a little in year 2003. During the referent period there was invested, through different kinds of FDIs, total amount of USD 37.046 billion which improved selected employment indicator for only as much as 15.85%.

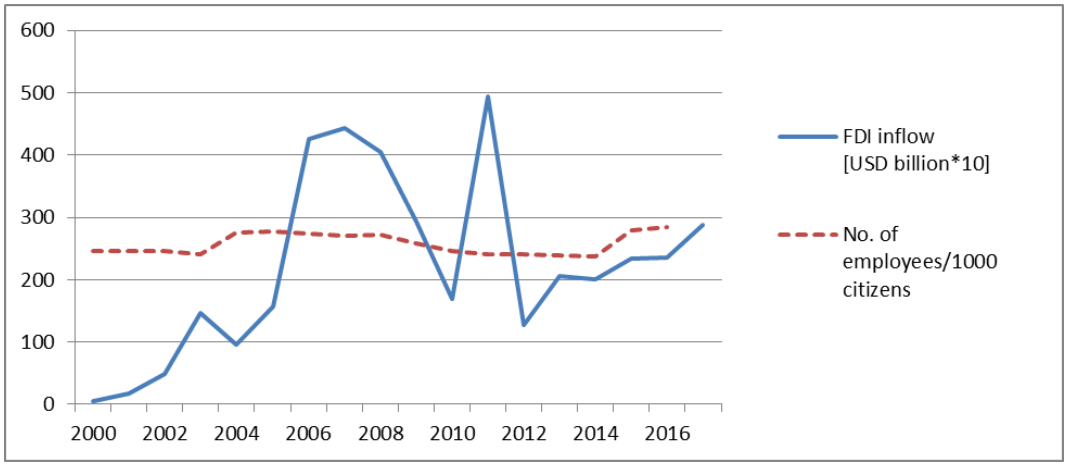

Figure 3: FDI influence on employment in period 2000-2016.
Sources: World Bank and Statistical Office of the Republic of Serbia

DISCUSSION

In absence of, above all, the financial capital, transition countries are forced to import it. Serbia has had in its history different experiences in this field, from long-term loans to foreign investment. In most cases, none of applied models weren't so favorable to Serbian economy in long-term perspective. According to available space, the authors selected four major indicators and tracked their changes in relation to FDI inflow.

If it is taken into account how FDI inflow influences Serbian GDP it is very hard to prove direct positive impact. This could be explained by influence of many other important factors such as natural resources exploitation, state of technology, innovation level etc.

The authors have found that FDI inflow didn't have direct significant positive influence on basic Serbian business demography. On the contrary, by looking at the number of new entries in both companies and entrepreneurs, negative trend is observed in first 5 years. Besides that, FDIs (with other factors) were more favorable to companies than to entrepreneurs, if we take into account number of active businesses.

Relating to FDI influence on foreign trade balance opposite trends prevails in referent period. What is more important, FDIs didn't have so strong impact which could move Serbian economy into positive foreign trade balance. Foreign companies have positive impact on Serbian export, but they are also big importers which finally results with small improvements in foreign trade balance.

Finally, if employment has taken into account, FDI has no direct significant impact to it as well. It has to be mentioned, that decrease in total population also influences selected indicator (employed/1000 citizens). Generally speaking, it seems that workforce just moves between business entities, rather than it is the case that FDI creates new jobs as it is widespread opinion!

However, the relatively low level of FDI inflow in Serbian economy, in comparison to other post-transitional countries, could be the reason for such low improvements in selected indicators. Beside that, it is obvious that a lot of other factors influence selected indicators.

CONCLUSIONS

Serbia, as a relatively small and economically less developed country is facing some challenges, both in the economic sphere as well as in the management of their total resources. Its resources are "attacked" by developed but also by developing countries as well. Beside natural, other resources are endangered, primarily human ones (Molnar, 2019).

Serbia has officially chosen foreign direct investments as an instrument for its economy growth. There are huge expectations from the Government as well as from wider audience that they really should put Serbian economy forward. Analyzed data suggests that effects that FDIs make are not so positive in long term perspective.

It has to be taken into account that the major foreign investors in Serbia, "have forgotten" to bring their activities in R&D field with them when they invested in Serbian economy. Besides that, majority of processing industry products made by companies established by foreign investors belong to low-technological ones and have low added value. Also, net inflow of the FDI in referent period is quite volatile and subject to political disturbances, which defines them as unreliable input in development of long term policies and economic strategies. To this extent, it is reasonable to reconsider official standing point that FDIs are the best instrument of economic growth.

Therefore, the model of economic growth must be based on another instrument, or combination of few of them. The authors believe that the development of an entrepreneurial culture, combined with an educational system that would promote private business initiative and developing the necessary knowledge and skills for self-employment, as well as financial and non-financial supporting instruments implemented by the government, in the environment in which already operate export-oriented enterprises (many of them are the result of FDI), in the medium term would enable development of indigenous small and mid-sized enterprises, out of which some could have potentials for transition to the large ones.

However, FDIs will have major role in Serbian economic growth at least in mid-term perspective. In this period indigenous SMEs should find way to establish closer business ties with FDI companies. On the other side, the government role should be more favorable to indigenous SMEs as well as very active in creation of entrepreneurial culture in Serbia. If it wouldn't happen, then FDI companies, or at least the most powerful ones, will have open space for many other operations which need not be necessary related to their businesses.

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MANAGEMENT OF PROJECT OF FORMATION OF YOUNG LEADERS' BUSINESS QUALITIES

Larisa M. Nikitina*
Voronezh State University, Voronezh, Russia
E- mail: lanikitina@yandex.ru
Maria B. Tabachnikova
Voronezh State University, Voronezh, Russia
Anna Yu. Kosobutskaya
Voronezh State University, Voronezh, Russia
Dmitriy Yu. Treschevsky
Voronezh State University, Voronezh, Russia

ABSTRACT

The article deals with the problem of management of the projects, intended to form business skills of the young people (university students and new graduates) seeking a career as a manager. The project management system "YouLead", implemented by non-commercial organization "Aiesec" in cooperation with Voronezh State University, has been reviewed in detail. The system of project planning and implementation has been investigated. The division of functions between the project team members is determined, its shortcomings are specified. The system of interaction of the project team with key stakeholders ("Aiesec" organization; national team; partner companies; Voronezh State University; forum delegates; public groups; authorities; media; speakers; volunteers; competitors) is clarified. The interests of the stakeholders are revealed. Improving proposals of "YouLead" project management, aimed to develop the work of the team and stakeholder values are formulated.

Key words: project, project management, social projects, stakeholders

INTRODUCTION

A project is a temporary enterprise designed to produce a unique product, service or result (American National Institute, 2013). According to the British standard BS 6079-1:2000, a project is a unique set of coordinated actions (works) with certain points of beginning and termination undertaken by an individual or organization to achieve certain purposes with fixed dates, costs and execution options. There is a number of project definitions (Bubeneva A.A., 2009; Pavlov A.N., 2017; Aleshin A.V. et al., 2013) whereof one can immediately identify the most significant characteristics of a project such as: the purpose and resource limitation, primarily timing budgets. A project is a comprehensive plan, a full-fledged model of actions.

PROJECT MANAGEMENT THEORY. GOALS, PARTICIPANTS, PROJECT LIFECYCLE

A project needs to be developed and implemented, which is the content of project management. It is important to note it's another important feature – a need to manage stakeholders and their interests in order to increase benefits from relationship with them and reduce negative impact. The project manager together with the corporate management team shapes the quantitative objectives of the project in several areas: the borrowings, the number of participants, the number of partners under barter arrangements. Two lines of effort are implemented within a framework of the "YouLead" project:

- career – for those who want to understand what needs to be done right now in order to obtain employment and land a dream job in the future;
- "Youth Speak" - for those who have their own projects, but suffer a shortage of knowledge in the field of business and expert support.

Life cycle of this project is seven months. The first stage is the choice of the project manager from the corporate staff, formation of the team and training. This stage lasts nearly a month. Organization and preparation for the project is the longest stage. It runs nearly half a year. The event concept is developed, all the necessary papers are collected, the experts and partners of the forum are engaged, contracts are signed, volunteers are involved and trained, the active PR-company to attract participants is conducted at this stage. The main activities take only two days in which the events are delivered.

PROJECT MANAGEMENT METHODOLOGY

Direct subject of the analysis is "The fourth All-Russian annual forum for young leaders "YouLead" which was held in Voronezh on October 29-30, 2016 on the basis of Voronezh State University. The initiator is the international non-profit organization "Aiesec".

The "YouLead" project is managed on the basis of the philosophy of the "Aiesec" organization: leadership development; responsibility for the future; variety, fun from work. Over the past seven years, more than 300 students and recent graduates in more than 15 countries of the world have become participants in Aiesec programs. About 2,000 students and recent university graduates are members of the organization (Aiesec). "Aiesec" governance at the local, national and global levels is carried out by steering committees consisting of young people from 18 to 30 years old - students and recent graduates from leading universities. The local committee in Voronezh was founded in 2010. Since 2013, "Aiesec Voronezh" annually holds a youth forum "YouLead". The purpose of the project for the organization is informing participants on the international trainings and raising financial resources.

As "YouLead" is an all-Russian forum, the general management is carried out by the national team of the "Aiesec" Russian division. Their main functions consist of building a vision of a current year forum, coordination, deadline management, search of national partners. "Aiesec" is a non-profit organization, and all its members work for free. The project team consists of: Team Leader (TL); Public Relations (PR) manager; Expert Experience (Ex) manager; Delegates (Ds) manager; Partnership (PS) manager; Logistics (Log) manager.

Competence of the Team Leader includes analysis, consideration for stakeholders and project stakeholder management; reduction of uncertainty of unique tasks; search for a venue for the event; coordination of project managers; work progress monitoring and analysis; project completion and documents archiving; interaction with government authorities.

Core activities of the PR-manager are publicity about the event, information partnering, media coverage, forum social media group administration, supervision of PR volunteers. The Experts Experience manager plans events; determines the content of sessions and workshops; coordinates work of the presenter, speakers and audiences, works with experts. The delegates manager is responsible directly for cooperation with the forum participants. The area of his responsibility includes involvement of students and their selection; recruitment and training of volunteers; business matchings and contract execution with partners.

The partnership manager carries out direct sale of B2B services. Service package tariffs depend on the status of a partner (title partner, key partner, main partner, career partner). This is shown in Table 1.
The main function of the Logistics manager is to provide the forum with all the necessary facilities. Since the project is not funded by the state and financial resources are very limited, one of the most

important functions of the logistics manager is to find partners and conclude barter agreements with them.

Table 1: Services provided to the companies at the "YouLead" forum

Services	Title partner	Key partner	Nain partner	Career partner
Advertising options (a logo on Forum POS equipment, web- and social media promotion, mailout for participants, holding of a competition)	✓	✓	✓	✓
Placement of advertising constructions	✓	✓	✓	✓
Placement of promo-materials, promotional materials and souvenirs	In participant's packet	In participant's packet	On display	On display
Presentation of career opportunities during a job fair	✓	✓	✓	✓
Management skills workshop (1.5 hours, 40 people)	✓	✓	✓	
Speech at opening of the second day (5 minutes, 400 people)		✓		
A trade-wise business game (2 hours, 100-120 people)	✓	✓		
Welcome speech of the company director at an opening session of the forum	✓			
Speech of the top manager of the company with a success story	✓			
Tariffs (in rubles)	60 000	40 000	20 000	10 000

We analyzed gathered data on functions and responsibilities of the project team members with the help of the RACI matrix (Fb.ru, 2018). This is shown in Table 2.

Table 2: "YouLead" team Responsibility assignment matrix

Work on a project	TL	PR	DS	Ex	PS	Log
Initiation and project planning	A, R	C	C	C	C	C
Government relations	A, R	I	I	I	I	I
Site requirements	A, R	I	I	I	C	I
Partner Project agreement undertaking	R, C	I	I	C	A, R	I
Logistic support	C	I	I	I	C	A, R
Involvement of participants	C	A, R	R	I	I	I
Volunteers management	R	R	A, R	C	C	C
Search and attraction of experts	C	I	I	A, R	R	I
Development of the event content	C	I	I	A, R	C	I
Documentation	A, R	I	I	I	R	R

Explanation of Symbols: R=Responsible, A=Accountable, C=Consulted, I=Informed.

RESULTS. INTERACTION WITH PARTNERS, TEAMWORK ORGANIZATION

Despite the projects actually completed, one can note the inefficient distribution of functions and responsibilities between the project team members. Thus, the Team Leader performs six functions of 10, including documentation management. For reasons undefined, the Partnership managers and the Logistics managers have this function also. As a realizer, the Team Leader functionally reports to the Delegates manager. In general, the matrix shows significant gaps in the project organization. A particular problem is working with stakeholders.

DISCUSSION. INTERACTION PROBLEMS WITH STAKEHOLDERS

Based on the project information, scientific works and the project documentation, it is possible to allocate the following groups of stakeholders of the "YouLead" forum:

- "Aiesec" organization as the main organizer of the forum;
- national team carrying out coordination at the all-Russian level;
- project leader;
- project team;
- government institutions (Department of Education, sciences and youth policy of the Voronezh region);
- forum partners buying services for product and career opportunities promotion ("Metro, Cash & Carry", "Leroy Merlin", "Atos", Alfa-Bank became such partners in 2016);
- forum partners under barter arrangements ("X-fit", Efko, "Tuc", "Kvarta" printing house, "HeadHunter", etc.);
- Voronezh State University as a provider of the forum site;
- society and separate public institutions;
- mass media;
- speakers;
- volunteers;
- competitors (alternative affairs, for example "The UN Model" which is carried out at the same time and on the same site as the "YouLead" forum).

Evaluation of interaction with stakeholders is based on the research and methodical works of Russian and foreign scientists: a table of stakeholders (Abdrabo M.A., Hasaan M., 2014) with a scale of assessment of need of each stakeholder involvement, proposed by L.M. Nikitina, D.V. Borzakov (Nikitina L.M., Borzakov D.V., 2017); stakeholder map (Kungurtzeva A.V., 2017); stakeholders' interests table (PowerBranding, 2018); "level of support / power of influence" matrix (Tsipes G.L., Shadaeva N.M., 2015); "power / interest" matrix (Belyakova E.V., Samartseva A.V., 2013); "power / predictability" matrix (Kossukhina M.A., 2013); Mitchell model (Projectimo.ru, 2018).

Systematization of data analysis of interaction of the forum "YouLead" with stakeholders is presented in Table 3.

Based on the information presented in Table 1, it can be stated that the interests of the "YouLead" forum stakeholders are rather specific. Basically they are social in nature: improvement of reputation, value-based positioning of the company. It is worth pointing out that forum organizers and volunteers are students and work for free. Their main motivation is unique experience, communication and development in a group of people with the same goals, values and view of life.

However, it is possible to calculate the commercial effect and savings from interaction with the project stakeholders. The commercial effect is created by the partner companies that directly purchase services while participating in the event. Economy is carried out at the expense of the partners providing logistic support under barter arrangements. The value of benefits of the project was 310,723.2 rubles in 2016 (13 times as expenses).

Looking ahead it is important to note that all stakeholders, except competitors, support the project. Competitors' attitude to the project is negative, the leader's influence is minimal, but the level of their

influence on the project is minimal also. Therefore, it is necessary to monitor their actions and react swiftly. It is necessary to distinguish the group "state authorities", since their influence is significant (y=4), and the leader's influence on the stakeholder is minimal (n=1). The group interest should be satisfied primarily.

Table 3. Interaction of the "YouLead" forum with the stakeholders

Stakeholder	Level of engagement	Stake-holders grid (x/y, n)	«support / influence» Matrix (strategy)	«power / interest» Matrix	«power / predictability» Matrix	Mitchell model (group)
'Aiesec'	Involve in Decision-Making	+5/4, 2	Collaborate and manage closely	"Key player"	Powerful but predictable	Dependent
National team	Involve in Decision-Making	+5/5, 2	Collaborate and manage closely	"Key player"	Powerful but predictable	Definitive
Project team	Consult	+5/3, 2	Engage	"Key player"	Powerful but predictable	Dependent
Partner companies	Involve in Decision-Making	+5/5, 3	Collaborate and manage closely	"Key player"	Powerful but predictable	Definitive
Voronezh State University	Consult	+5/3, 2	Collaborate and manage closely	"Sleeping Giant"	Powerful but predictable	Definitive
Forum delegates	Keep informed	+3/2, 2	Engage	"Key player"	Greater danger or opportunities	Dormant
Community groups	Minimal effort	+1/1, 1	Engage	"Chance companion"	Few problems	Dangerous
State	Consult	+4/4, 1	Collaborate and manage closely	"Key player"	Few problems	Definitive
Mass media entities	Minimal effort	+1/0, 2	Engage	"Chance companion"	Few problems	Demanding
Speakers	Keep informed	+4/2, 2	Engage	"Key player"	Powerful but predictable	Dormant
Volunteers	Keep informed	+3/1, 2	Engage	"Interested"	Unpredictable but manageable	Dormant
Competitors	Keep informed	+5/3, 1	Convince	"Chance companion"	Few problems	Demanding

CONSLUSIONS AND RECOMMENDATIONS

Based on the results of the study, presented in short form in Table 1, it can be affirmed that the project has a positive effect on both the project team and the stakeholders. The implementation of the project "YouLead" provides, above all, the preparation of young people for vigorous activity in management of economic and social processes. Each forum is attended by about 400 young people preparing for a manager career. The main effects for "Aiesec", the management and the national team of the project are realization of the statutory objectives, positioning of the company as socially oriented; development of project management skills.

The project team is provided with opportunities for advancement, professional and personal development and acquisition of business contacts. Promotion of goods of the company; increase in brand loyalty; young employee intake is important to the partners of the forum.

Voronezh State University is interested in mainstreaming; positioning as an innovative university; long-term cooperation with the authorities, business entities and socially-oriented non-profit organization. Forum delegates are provided with development of teamwork skills; acquaintance with job opportunities; bonuses from partners; possibility of internships in the partner companies.

The effect for public institutions is expressed in development of youth of the region; job placement assistance for students and recent graduates; social development of the region; support of local public activity. Social stability and public support are important for public authorities. Media obtain reliable and full information about the forum; access to the top officials of regional and local authorities.

Effects for speakers are: sharing experience with the younger generation; status enhancement in the business community; the company promotion opportunity; acquaintance of successful leaders. At the same time, management of the project should be improved. In particular, more effective interaction with stakeholders need to be organized. The interests of the "key players" should be satisfied timely and competently, while the "sleeping giant" should remain positively neutral. The most dangerous group of "key players" with power and high dynamism includes forum delegates. In this regard, it is important to maintain their interest in the forum throughout the entire period of forum preparation and its running.

Volunteers as their work is performed for free for rather long period have high dynamism. Forces of non-material motivation can be insufficient to keep their desire to work on the project. The increased focus on the stakeholders included in the definitive group is required. This is the national team, the partners, VSU, public authorities. More effective work requires also redistribution of functions between the project team members, in particular reduction of executorship of the team leader in favor of more effective interaction with key stakeholders.

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REDUCING THE UNEMPLOYMENT RATE AND HELPING CAREER PLANNING/BUSINESS STARTING THROUGH MICROFINANCE

László Szabó
Budapest Business School, Zalaegerszeg Faculty of Business Administration, Zalaegerszeg, Hungary
E-mail: szabo.laszlo4@gtk.uni-bge.hu
Károly Szabó
Zala County Government, Zalaegerszeg, Hungary
Ágnes Csanádi
Budapest Business School, Zalaegerszeg Faculty of Business Administration, Zalaegerszeg, Hungary

ABSTRACT

Currently one of the most important policy in Hungary is the strengthening of vocational training. Unfortunately, this type of training is the most important basis of the job seeker young people, at the age of 18 to 25, a highlighted group who do not typically continue their studies in higher education but will either become self-employed or have a shorter period of time before starting their own business after acquiring their profession. Through new –adaptable- financial methods we can easily help the business starting and career planning for them and we can reduce the unemployment rate at the same time.

Key words: financing, microfinance, microcredit, SME, self-employment, career planning.

INTRODUCTIONS

Nowadays hungarian economy facing off several challenges,. the economic growth of the previous years is seemed to be reducing. As it's visible the only way out from this situation can be the stronger focus on the innovation, R&D and the education of course. Hungarian government realized this process in an especially right way and did the needed steps in time:

- Introduced a new scheme of educational network
- Gave a stronger focus to the vocational training as a preparatory education level for engineering courses
- Encouraged the management view in the field educational leadership (Strategic planning, PDCA, concrete outputs and responsibles)
- Strengthening the applied R&D.

As we can see many developments have already been started, but with additional support programs, we can make these processes much more effective. One of these support possibilities is the microfinance, especially some innovative financial methods with we can easily help the business starting for youth people (Szekfü, 2012, Nyikos- Soós, 2018).

MICROFINANCE TO YOUTH PEOPLE FOR ENCOURAGING SELF-EMPLOYMENT

In an EU project (Interreg 2014-2020 ATM for SMEs) we had the possibility to get to know several innovative financing methods in the field of supporting youth people. One of these was a really strong best practice led by CEEI Burgos. The main part of the BP was that those young people who freshly finished the university and couldn't find their workplace on the labour market, can apply for a non-refundable financial support. The allocated amount per one transaction was planned on the ground of that logic, the applicants have to run their enterprises for minimum 3 years and the support is exactly the same than it would be paid for the unemployment applicant for 3 years as welfare. So if we are

thinking about this method, we can figure out this means that the whole 3-years-long welfare will be received by the unemployment applicant in one amount.

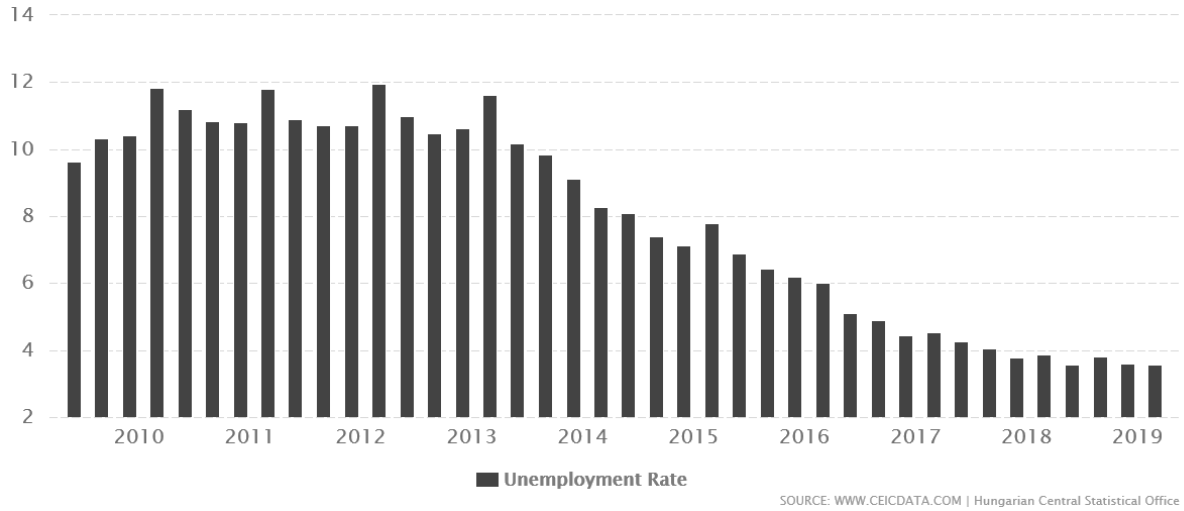

Figure 1: Unemployment Rate in Hungary
(Source: www.ceicdata.com*)*

We can easily notice, this financing system is an absolutely win-win situation:

- The state ensure the welfare for the unemployment in one amount to start a business
- Good for the state, it doesn't have to pay the welfare for 3 years (because the 3-years-long running of the business is obligatory)
- Good for the applicants because this way they break out from the unemployment
- Through the surviving enterprises, good for both of them.

As additional information, in Burgos, in the framework of this program most of the businesses are surviving. This advantage makes this program extraordinary successful.

Details: "*After the Global financial crisis, credit facilities were very limited in the traditional Spanish financial market and even more complex in rural areas. As a result, a partnership between SODEBUR (Provincial Governmental Agency) and CEEI Burgos was developed to offer rural entrepreneurs credits under EUR 25 000 without the need for a guarantee and at favorable interest rates (1,5%-3%). This product is exclusive to the Burgos region, which has 361,021 citizens and intends to reduce youth migration to other large Spanish cities…From its inception in January 2013 to June 2017, 120 applications were received, of which 59 loans were approved in the amount EUR 1,097,354. The region of Burgos has 361,021 citizens and a considerably lower unemployment rate of 10% compared to the rest of Spain (18%). In terms of social outcomes, the microloans disbursed generated 43 new jobs with a 100% survival rate of the projects. The total leveraged investment amount to EUR 1,515,826 (Overall investment of the projects supported).The main activities funded are automotive workshops, restaurants and bars, logistics, farming and rural hotels. Funds allocated for microfinance by SODEBUR have increased 6.4 times in the four years since programme inception. Proper due diligence in the management of the funds and the decision to invest rather than issue grants has allowed the possibility to generated a financial return and recycle the capital."* (www.europeanmicrofinance.org)

If we look at the details above then we have to highlight some of them. At the total resource of the program, we have to mention that fact it was financed by the provincial state, but in comparison with a county, a provincial state has wider opportunities in the field of resource allocation. The support was only available in the agricultural industry, and only could be used for being a self-employment within this sector. If we are thinking about the adaptation of the best practice, we have to expand this scale. Finally, the concrete amounts, as we mentioned local or county governments have fewer opportunities within the support planning, so we have to find that frame which fits to our local possibilities.

In the Burgos best practice we can rightly wonder about that why is only the agricultural ideas are supported? From one side, in the region the historical roots of the sector are really strong, on the other hand this is the sector where becoming of self-employment as well as encouraging of the self-employment is the easiest.

This program is separated from the youth financing program and the two programs have some differences. On the ground of these differences, we have to stand up some critics in connection with the youth financing program. Namely, the strong mentoring and coaching activities are missing from the program. In my opinion in this kind of support mentoring is obligatory. It's not enough to allocate a certain amount support to the unemployment to start a business, we have to follow up the enterprise and help them to survive through mentoring and teaching the basic enterprise knowledge.

In spite of this mistake, thanks for the strong natural resources, the historical agricultural roots, the agile youth people and the cooperation of business support organizations and the provincial government the program is a real success story.

If we try to gather the key factors of the success, we would have the following list. Key factors:
- Strong natural endowments (helps the agricultural self-employment)
- Wide educational possibilities in the region
- Strong cooperation between the provincial government and the business support organizations
- Social side approach of financing.

Some of these were not touched. In the region the agricultural education is especially strong, not just in the field of technical high schools but on university level also. Maybe it's the reason why is the mentoring is missing from the program, because after education they had a wide agricultural knowledge. (But my personal opinion is that entrepreneurial knowledge should be taught in the program.)

Another key factor is the strong cooperation between the provincial government and the business support organizations. For the successful operation of this type of support program, this kind of close cooperation is indispensable. Institutes have to change feedbacks about the operating program, the strengths, weaknesses and future possibilities. A close cooperation can greatly improve the operation of the support, the participants (government and business support organization) can involve a wider range of stakeholders this way and furthermore the communication can be more powerful and reach a better social impact on the local population.

The third and the most important key factor is the social approach of the financing. In this case, we don't count with the subsidy rate, so this kind of approach is exaltedly true. The provincial government didn't focus on the potential profit or other financial advantages, the focus– very correctly – only on the possible social impact, the reduction of the unemployment rate. At the planning of the total amount of the allocation, they count a price value rate and they asked that basic question, what is that amount frame which worth it to reach a given percentage of unemployment decrease? In my personal opinion, this is the elementary approach, method or logic, when we have to calculate a basically social aiming support program's allocation frame.

ADAPTATION PLAN

There were some similar program in Hungary, like the "Fiatalok Vállalkozóvá Válása"/"Youth People Becoming Entrepreneur" support program. The basic characteristics were quite the same, both program were a non-refundable financial support for youth people to start their own business. The main differences were seen in the philosophy. While the Spanish program aimed the reduction of unemployment rate and the helping of disadvantaged people, the Hungarian was a more financial project, aiming the development of the general youth business area. This was clearly seen in the selection criterias. At the "Youth People Becoming Entrepreneur" support program, after a long

educational part (basic entrepreneur knowledge), applicants had to make a Business Plan and from these ideas only the most attractive ones were chosen for future support. In spite of this, at the Spanish program, the main thought was that to "give a chance for everybody". On the ground of this theoretical background, the applicants had to hand in an idea description, and if it was realistic and sustainable, they can get the support.

Before we concretely speak about the adaptation, we have to disseminate somehow the corner stones of the best practice, the social approach and "giving chance for everybody". Of course, it's a long process. But if we want to plan a short-term adaptation, we have to translate this philosophy into practice and we have to define what can we do in the current situation. Currently, the best way is to find that institutes/local governments which already learned this approach or they are working among this logic for a long time. In the case of West-Transdanubian region, we are in that lucky situation there are many role-players who fits this requirement. (Few of them: local/county governments, business support organizations, chambers, educational providers)

As the basic concept is given – introducing a social aiming, business starting, non-refundable, financial support for unemployed and disadvantaged people -, first of all, we have to choose the basic participants of the consortium responsible for the future program. The most important requirement of the choosing is the previously mentioned social thinking of the potential partner.

At first, I suggest the introduction of the best practice as a pilot action, so the consortium can be the following:

- a local government (as the issuing institute)
- local business support organization (as intermediary)
- a controlling body (members chosen from local leaders and businessman)
- local universities (ensuring the mentoring & education)

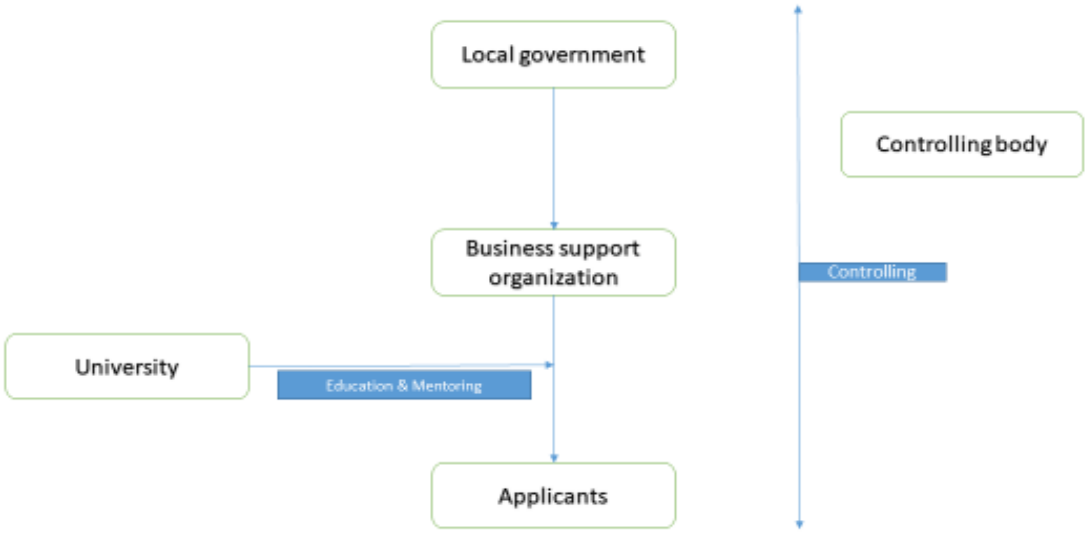

Figure 2: Institutional structure of the support program
(Source: own editing*)*

The first three step is in absolute harmony with the strategic planning. We have an idea, the adaptation of the best practice in Hungary, which means the vision of the strategy. We have a philosophy, the social approach of the program, which means the mission; and finally we have a consortium, containing the basic stakeholders, role-players and responsibles. The next step, on the ground of strategic planning, is the defining of the concrete outputs. Within this part we have to plan two demands, the total amount of the allocation and the timeframe. At the allocation planning, we stated that the essential approach is that we have to count a price value rate, and define which is that amount which worth us to reach a given social impact. In spite of this, in this case we must take into account

that it would be a pilot action at fist. This means we have to plan a lower allocation, and if the pilot action will be successful we can expand these frames. (In the next chapter, we will drive a concrete example on local level.) At the timeframe planning, we have to concentrate on that the participant institutes should prepare for program (e.g. universities have to find the concrete place of the mentoring, local government should choose the members of the controlling body, intermediaries should choose the responsible for the program etc.). As a pilot action a 3-5 year term should be ideal.

PROPOSALS

Resource: Own capital of Zalaegerszeg Local Government
Total amount of the needed allocation: 200.000 Euro
Total allocation per transaction (Maximum): 15.000 Euro
Timeframe: 2019-2022
Region: Zala County (primary Zalaegerszeg)
Target group (applicants only): Unemployed youth people (under 25 years)
Intermediaries: Zala County Foundation for Enterprise Promotion
Whole consortium: Zalaegerszeg Local Government, Zala County Foundation for Enterprise Promotion, Budapest Business School (Local Campus)

These conditions are not obligatory of course. The program can be started with other numbers, like the total amount of the allocation can be a lower amount at fisrt, e.g. 50.000 Euro, but in this case the other conditions should be tailored to the new size of the resource. At a 50.000 Euro-sized allocation, the maximum applicable amount per transaction should be 10.000 Euro, which still allows 7-8 transactions at the same time (if not every applicants apply for the maximum limit). If we reduce the central resource, we have to count on that the program will be more and more experimental and there is a chance for not to reach the needed social actions.

In the case of the region and the main partners, we chose Zala County, primary Zalaegerszeg and the most experienced role-players in the region.

Zala County Foundation for Enterprise Promotion is a financial intermediary with long-term experience in the field of financing, SME mentoring and management. The local government of Zalaegerszeg is an agile and a real cooperative institute with several development plans with a focus of business development. Local university - local campus of Budapest Business School – plays an important role in the life of the city and as a business school, it fits perfectly in the adaptation plan. In this section we can conclude that the role of the partners is relatively certain and if change something in the adaptation plan – like allocation –, the partnership should stay in this form. If the pilot action will be successful, it is more logical to extend the range of participants; e.g. we can involve regional role-players from Western-Transdanubia and if the pilot action is successful in the region as well, we can step on national level with establishing a national network.

CONCLUSIONS

Finally a few words about the target group. Currently one of the most important policy in Hungary is the strengthening of vocational training. The vocational training is the most important basis of the job seeker young people, at the age of 18 to 25. This is the group who do not typically continue their studies in higher education but will either become self-employed or have a shorter period of time before starting their own business after acquiring their profession. In both cases, the end result is the start of their own company. This is the reason why is perfect to aim the same target group as in Burgos. The only difference should be that in this case the consumption of the support won't be limited (as in Burgos – only agricultural usage); within the program from all industries would be free to apply for support.

As a summary, the increasing of self-employment through own capital is a really strong best practice which should be introduced into Hungary.

Main requirements and expected impacts:

- Good message to young people – the local government cares about them
- Easy to launch as a pilot action – just a given amount of central resource is needed (it can be started either with 50.000 Euro)
- Helps to improve the local business knowledge between youth people
- Helps to develop the connection between vocational schools and local stakeholders
- Helps to reduce the unemployment-rate in the region

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Session A: MANAGEMENT AND OPERATION MANAGEMENT

Papers (pp. 41-90):

MODELLING THE USE OF INDUSTRY 4.0 TECHNOLOGIES WITH LEAN MANUFACTURING

Mihalj Bakator*
University of Novi Sad, Technical Faculty "Mihajlo Pupin" in Zrenjanin, Republic of Serbia
E-mail: mihalj.bakator@uns.ac.rs
Dejan Đorđević
University of Novi Sad, Technical Faculty "Mihajlo Pupin" in Zrenjanin, Republic of Serbia
Miloš Vorkapić
University of Belgrade, Institute of Chemistry, Technology and Metallurgy - Centre for Microelectronic Technology and Mono-crystals, Belgrade, Republic of Serbia
Milenko Ćeha
Ministry of Internal Affairs, Belgrade, Republic of Serbia

ABSTRACT

The lean manufacturing approach has the potential to lower production costs and increase productivity through the reduction of various forms of waste. It is evident that lean manufacturing as a business model offers stable financial performance and overall good business performance. The fourth industrial revolution or Industry 4.0 (I4.0) includes the use of evolving technologies such as cloud computing, blockchain technologies, Internet of Things, big data analysis, additive manufacturing, simulation and others. In this paper a thorough analysis of literature is conducted. Based on the findings, a theoretical model for I4.0 technologies application with lean manufacturing is developed. The model depicts an enterprise and the possible solutions for improving business performance with I4.0 technologies and lean manufacturing. The main goal of this paper is to challenge the idea of I4.0 application with the lean approach in order to achieve higher competitiveness. I4.0 technologies often require expensive infrastructure and extensive financial investments, but including lean into the "equation" it is possible to "reap" the benefits of these technologies at a lower cost. The limitations of the model are addressed and future research is proposed.

Key words: lean manufacturing, Industry 4.0, SMEs, competitiveness, waste reduction

INTRODUCTION

In this paper the application of Industry 4.0 (I4.0) technologies in accordance with lean principles and lean manufacturing is addressed. Furthermore, a theoretical model is developed for I4.0 technology application with lean manufacturing. The globalization of markets has put companies in a tough position. Namely, through globalization a large number of markets are globalized thus enterprises face a more vibrant and intense competition. This leads to the necessity for strong competitiveness of enterprises. Now, lean manufacturing can be described as an approach, as a set of methods and tools through which waste is eliminated or reduced in the enterprise (Ajmera, Umarani, & Valase, 2017). In this case, waste is registered in various forms such as time moving around product parts, defect products, transportation, waste in the form of unnecessary movement etc. (Singh, Ramakrishna, & Gupta, 2017). Lean manufacturing can positively affect business performance through reducing production costs, higher productivity, fewer waste, and reduced inventory size (Marodin, Frank, Tortorella, & Fetterman, 2019). Further, lean manufacturing has the potential to apply one or more I4.0 technologies. More often than not these technologies are complementary with the lean approach. As lean manufacturing includes an array of tools and methods, it is necessary to define business goal in order to successfully integrate an I4.0 technology within lean manufacturing. Certainly, implementing an I4.0 technology has its challenges and it opposes a risk for the enterprise. Namely, any kind of investment in a new technology has the potential to fail. Therefore, managers have to get involved into the implementation process. Now, why is the application of I4.0 technologies with lean

manufacturing principles important? The main challenge that small and medium-sized enterprises (SMEs) face is the changing market environment amid the globalization of markets. Here, competitiveness plays an important role, thus SMEs have to find a way to increase their competitive power on the market. I4.0 technologies with the lean approach offer just that.

The main goal of this paper is to analyse the application of I4.0 technologies with lean manufacturing. Further, a theoretical model for I4.0 technology application with the lean approach is developed. The first section of the paper addresses the application of I4.0 technologies. Next, the lean manufacturing principles are analysed. Afterwards, the theoretical model is presented. Finally, the conclusions are draw, and guidelines for future research are proposed..

INDUSTRY 4.0 TECHNOLOGIES AND THEIR APPLICATION

The fourth industrial revolution or Industry 4.0 includes concepts, approaches and goals through which higher productivity can be achieved (Lu, 2017). Some of the technologies that represent Industry 4.0 are cognitive computing, cloud computing, RFID technologies, Internet of Things, Internet of Value, advanced robotics, social product development, 3D printing, mobile technologies, big data and analytics, cyber security, blockchain, machine learning, Enterprise Resource Planning (ERP) and others (Lu, 2017). For example a "smart" factory based on Industry 4.0 technologies would consist of three main layers. The physical resource layer, the data application layer and the network and connectivity layer.

Further, the application of Industry 4.0 technologies are broad. In smart manufacturing systems, sensors, data collection and analysis, control and monitoring od data flow, data driven machining, modelling and predication are some of the main elements which are used (Zheng et al., 2018). The main goal of Industry 4.0 technologies are industrial applications and solutions that will bring new opportunities for enterprises. The rapid development of Information and Communication Technologies (ICT) fuels the application of Industry 4.0 technologies (Xu, Xu, & Li, 2018). In the same study it was noted that Industry 4.0 is based on cyber physical systems (CPS). These systems are the core of the fourth industrial revolution. Now, innovative engineering and technology is a necessity for Industry 4.0 to be successful. Overall, there are expectations that the fourth industrial revolution will bring forward economic prosperity to enterprises and countries who apply various advanced forms of computer science, political science, sociology, engineering and sociology through Industry 4.0 (Wilkesmann, & Wilkesmann, 2018). It is evident that similar to previous industrial revolutions, Industry 4.0 spreads to all domains of human activity. The activities in Industry 4.0 application are:

- Smart machining. This approach involves real-time manufacturing and other synchronized manufacturing solutions.
- Smart design. Virtual reality, computer-aided design (CAD) and computer-aided manufacturing (CAM) can interact with physical prototypes thus creating opportunities to combine engineering changes virtually, decreasing the need for resources.
- Smart control. Production control through cloud-enabled platforms and control of production from distance can positively affect overall business performance of enterprises. This approach further includes robot-based assembly lines, sensors and smart machines.
- Smart monitoring. Alongside control, monitoring is an important aspect of Industry 4.0 technology application in manufacturing. Through monitoring data is collected in the process of manufacturing. This may include data on temperature, speed, electricity consumption, petrol consumption, vibration intensity and intervals. Further, based on the data, real-time warnings of failures can be obtained.

When it comes to Industry 4.0 technology application it can find its place in SMEs as well as Multi-national enterprises (MNEs). It is important to discuss the possibilities and limitations of Industry 4.0 technology application in SMEs. Namely, SMEs often have limited financial resources and a limited infrastructure for smart manufacturing systems (Mittal, Khan, Romero, & Wuest, 2018). However, partial or narrower implementation and application is possible. Identifying and defining problems

would be the first step. Further, technologies that require least financial resources could be introduced. From here, monitoring and controlling is key for sustained development. SMEs have to consider the benefits and take risks when it comes to Industry 4.0 technologies. If successfully implemented and applied, these technologies could surely contribute to competitiveness and overall business performance. Furthermore, in this present paper a theoretical model of Industry 4.0 technologies in accordance with the lean manufacturing approach is developed. The complex nature of Industry 4.0 technologies are taken into consideration. In addition, the various forms of enterprises is considered. The model is mainly aimed at SMEs. Before the model is introduced, lean manufacturing is addressed.

LEAN MANUFACTURING AND ITS IMPORTANCE FOR ACHIEVING COMPETITIVENESS

Lean manufacturing can be observed as a philosophy approach to manufacturing. It is also a set of tools, principles and techniques (Bhamu, & Singh Sangwan, 2014). The main goal of lean manufacturing is to reduce waste. Waste in it various forms such as defects, inventory, waste of unnecessary motion, processing, transportation, underutilized employees or the non-utilization of the knowledge and skills of employees (Shah, & Ward, 2007). In addition, lean manufacturing can be viewed as an approach through which continuous improvement is practiced in the enterprise.

Through lean manufacturing enterprises aim on waste reduction and increased efficiency in order to adapt to the changes on the market (Behrouzi, & Wong, 2011). In the same study it was noted that the lean manufacturing system is defined by nine main variables. These variables are elimination of waste, zero defects, continuous improvement, JIT deliveries, pull strategy, decentralization, vertical information systems (VIS) and integration of various functions in the business process. Further, lean manufacturing a prominent manufacturing approach which helps enterprises to achieve higher effectiveness and efficiency in production (Buer, Strandhagen, & Chan, 2018). Surely, reducing waste and increasing productivity positively affects competitiveness. However, increased competitiveness is not guaranteed as there are often challenges in the implementation process of lean manufacturing systems.

Based on another study, expert team building, lean communication planning, situational analysis, training, lean tools and techniques value stream mapping (VSM) and/or process mapping (PM), review of acquired knowledge and lessons learned by employees and managers, lean assessment, lean monitoring and controlling, and lean sustaining (Mostafa, Dumrak, & Soltan, 2013). Industry 4.0 technologies and lean manufacturing are crucial for achieving competitiveness on a regional and global scale. The “Moving bottleneck” was also mentioned, as it is a concept of cycle time variation with support tools a techniques of lean manufacturing, which enhances and improves business activities from a logistics standpoint.

What does this mean for lean manufacturing and competitiveness and how can the lean approach affect competitiveness of enterprises? Well, with an adequate organizational culture, implementing the lean approach is easier as flexible organizational cultures tend to provide more support for innovation. In addition, the organizational culture has to be based on strong leadership and management who is focused on long-term goals and accepting changes. As mentioned before, employee skills and knowledge has to be utilized as these are precious resources in the form of intellectual capital.

LEAN MANUFACTURING MODEL BASED ON INDUSTRY 4.0 TECHNOLOGIES

A lean manufacturing model with an addition of I4.0 technology application is developed. The theoretical model is based on insights from various studies in the domain of lean manufacturing and I4.0 (Brettel, Friederichsen, Keller, & Rosenberg, 2014; Jayaram, 2016). The model consists of fifteen (15) elements. Each element is labelled with numbers, and afterwards details are provided. In addition

the model depicts a generic production line where I4.0 technologies and lean manufacturing are applied. The mentioned mode is shown on Figure 1.

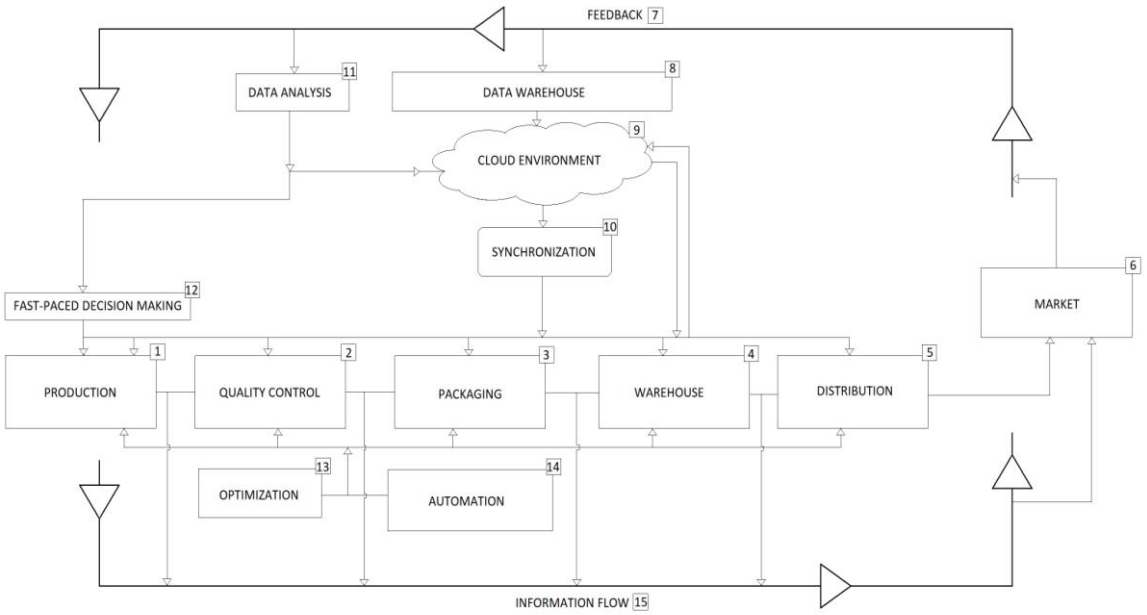

Figure 1. Lean manufacturing model based on I4.0 technologies

Further, details on the labelled elements of the model are given in Table 1.

Through these activities as part of the lean manufacturing model and the application of I4.0 technologies, enterprises could improve productivity, reduce production costs, create more value for customers and overall improve business performance. This theoretical model is certainly generic in nature. However, the goal was to develop a "default" production model which provides sufficient insight for future research in this domain.

CONSLUSION

In this paper a literature review of lean manufacturing and I4.0 technologies was conducted. In addition, a theoretical model was developed. The model depicted a generic production-to-market line with additional elements that depicted the application of I4.0 technologies and lean manufacturing principles. As mentioned, the model was based on studies which conducted significant research in this domain. It can be concluded that in today's modern business environment enterprises have to adapt to fast-paced changes on the market. The globalization of markets has put additional pressure on enterprises. Competitiveness is an imperative for survival. Quality of products and services don't always guarantee success. Additional business innovations are necessary for long-term success. I4.0 technologies are becoming more and more important for SMEs as they can provide an "edge" over the competition. Some the I4.0 technologies require significant financial resources for adequate implementation. However, there are technologies which are more cost-efficient and which don't require expensive and complex infrastructure. This implies that SMEs and startups have to take into consideration every aspect of the lean approach (lean tools, lean methods) and the I4.0 technologies as this would increase the chances for a successful implementation.

One of the main limitations of this paper is the lack of a specific model that provides more detail of the I4.0 technologies application and the application of lean tools and methods. However, this present study was focused on developing a generic theoretical model which is not too specific in regards of industry, enterprise size, products or services that are marketed. Therefore, it can be concluded that

this limitation is not severe and doesn't affect the contribution this paper. When conducting future research it is recommended to include a thorough meta-analysis of literature in this domain.

Table 1. Label description

Label	Meaning/process/procedure	Label	Meaning/process/procedure
1	Production: In the production process, tools such as Just-in-Time (JIT), Demand pull, One-Piece flow production, Kanban, Poka-Yoke and others. At the production level, the number of defect products can be lowered and also production costs can be lowered. In the first cycle of the production process, some of the I4.0 concepts such as automation, optimization and synchronization through a cloud based interface is dormant until the second cycle.	9	Cloud environment: A cost-effective solution that brings a lot of improvement to the production process. As one of the I4.0 technologies, cloud computing, and in this case a cloud environment manages to integrate information, data and to use that data for synchronization, optimization, automation and effective decision-making.
2	Quality control: Here, quality management systems, Total quality management, Fishbone diagram, and other quality tools can be applied in order to increase product quality which consequently positively affect customer satisfaction.	10	Synchronization: Through the cloud environment every business activity can be synchronized in order to lower the amount of time wasted which further leads to higher productivity.
3	Packaging: At the packaging process additional quality control should be conducted. Automation and optimization are applied after the first production cycle.	11	Data analysis: The data gathered from the beginning of the production process, and all the data stored in the data warehouse is analysed in order to predict future trends, modify the production process and develop future strategies.
4	Warehouse: The number of spare parts, warehoused products and other resources should be reduced to an absolute minimal amount.	12	Fast-paced decision making: Dynamic markets and the globalization markets put pressure on the companies. This pressure requires fast and effective decision making in order to stay competitive on the market.
5	Distribution: Mostly, one of the costliest business activities (depends on several factors). Here, lean-logistics should be applied. As data and information is collected and optimization occurs, the distribution costs can be reduced.	13	Optimization: Through the cloud environment and the gathered data, optimization of the production process and other business activities is conducted.
6	Market: In this model, the market includes customers, consumers, competitors. Information/feedback from the market is collected and stored in the data warehouse.	14	Automation: An important aspect of 4.0 technologies, where the reduction of error and the increase of productivity is achieved.
7	Feedback: Includes data from the market, production, quality control, packaging, warehouse and distribution sectors. The core element of the model, as the automation, optimization and synchronization processes are dependent on the feedback data.	15	Information flow: This is the main element of the model. Without gathering information and data there is little to no room of I4.0 technology application and lean manufacturing would also be compromised. Therefore, it is important to develop an effective information flow in the company.
8	Data warehouse: A digital warehouse where the obtained information is stored. From the through the cloud platform, data analysis is conducted, and synchronization, optimization and automation of the production process and overall business activities are conducted.		

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ACHIEVING BUSINESS EXCELLENCE WITH LEAN MANUFACTURING: A MODEL FOR ENTREPRENEURS

Dragan Ćoćkalo*
University of Novi Sad, Technical Faculty "Mihajlo Pupin" in Zrenjanin, Republic of Serbia
E-mail: dragan.cockalo@tfzr.rs
Mihalj Bakator
University of Novi Sad, Technical Faculty "Mihajlo Pupin" in Zrenjanin, Republic of Serbia
Srđan Bogetić
Belgrade Business Academy for Applied Studies, Belgrade, Republic of Serbia
Mila Kavalić
University of Novi Sad, Technical Faculty "Mihajlo Pupin" in Zrenjanin, Republic of Serbia
Jelena Jankov
Elementary School „Mihajlo Pupin", Veternik-Novi Sad, Republic of Serbia

ABSTRACT

In this paper a theoretical model based on lean manufacturing is proposed for entrepreneurs. Lean manufacturing is an approach that focuses on reducing waste in its various forms within the enterprise (time, defect, raw material etc.). The developed model depicts crucial business elements which are an imperative for achieving business excellence. Entrepreneurship is an important factor that positively affects the economy. Addressing lean methods, and creating a model that may be found useful for entrepreneurship in general, is a challenging task. When it comes to business excellence it can be split-up into more concrete metrics such as competitiveness on the market, financial performance, productivity, operational performance, and overall organizational performance. In this study all of these metrics are addressed and are taken into consideration during the modelling process. The theoretical model aims to be generic in nature so it may find use in practice. These use cases are discussed, the contribution of the paper is outlined and future research in this domain is suggested.

Key words: business excellence, competitiveness, lean manufacturing, model, entrepreneurship

INTRODUCTION

In this study a literature review of lean manufacturing and its potential application in enterprises is analyzed. The main goal is to develop a model based on the lean approach for entrepreneurs. Lean manufacturing as an approach and production model can be defined as a combination of methods, tools, and strategies through which higher productivity, waste elimination and lower production costs are achieved (Bhamu, & Singh Sangwan, 2014). Lean manufacturing has its origins in the Toyota company, more precisely from the Toyota Production System. The main goal of lean manufacturing is to reduce waste to undetectable levels. The importance of lean manufacturing lies in its potential to increase competitiveness of the enterprise. This is vital, as without adequate competitiveness an enterprise can't survive on the market. Now, the lean approach or the lean manufacturing process requires that all employees in the enterprise are involved. If managers fail to motivate employees and to create a dynamic environment, then the risk of implementation failure is significantly higher (Zhou, 2016). Therefore, it is necessary for managers to adequately analyze the enterprise's environment before the implementation of lean methods and tools.

Furthermore, entrepreneurs have to consider the benefits of lean manufacturing in order to be more competitive on the market. As lean manufacturing reduces waste in its various forms, starting entrepreneurs may find the lean approach helpful in beginning of their business endeavors. This is indeed important as entrepreneurship and small and medium-sized enterprises (SMEs) are a catalyst

for economic growth and prosperity (Bollingtoft, & Ulhoi, 2005). Further, this indicates that entrepreneurs significantly contribute to the wellbeing of the economy. Now, the lean approach or lean manufacturing application for young entrepreneurs or newly opened enterprises may come in the form of a "lean startup". "Lean startups" incorporate lean principles in order to reduce initial costs of business activities.

The main goal of this study is to present the potential that lean manufacturing possesses in terms of achieving higher productivity, lowering waste, lowering costs, improving competitiveness and overall achieving business excellence. A theoretical model of the lean approach for enterprises is developed. The paper consists of four main sections. First, literature in the domain of lean manufacturing is analyzed. Next, the importance of entrepreneurship, SMEs and competitiveness are addressed. Afterwards, a theoretical model of lean manufacturing is presented. Finally, conclusions are drawn and future research is recommended..

LEAN MANUFACTURING APPROACH

The concept of lean manufacturing was aimed at improving productivity, and decreasing or eliminating various forms of waste and activities that don't create value (Zahraee, 2016). In the same research it was noted that enterprises who want to compete on a global scale have to market high quality products for competitive prices, thus making lean manufacturing a necessity. As lean manufacturing lowers cost and reduces waste, SMEs should take into consideration this approach when developing long-term business activities. However, it is important to note that not all enterprises are successful when implementing the lean manufacturing approach (Zahraee, 2016). Further, lean manufacturing can be extremely helpful in the modern business era where changes are an everyday occurrence.

The word "lean" in lean manufacturing implies on efficiency and waste reduction policies through which productivity can be increased and enterprises can adapt to changing economic conditions (Behrouzi, & Wong, 2011). There are nine variables that are identified which define the lean manufacturing approach. These are zero defects, elimination of waste, JIT deliveries, continuous improvement, decentralization, pull of materials, multifunctional teams, integration of functions, and vertical information systems (Behrouzi, & Wong, 2011). The importance of lean manufacturing lies in its enormous potential to increase competitiveness of companies (Abdulmalek, & Rajgopal, 2007). The whole lean approach system focuses on identifying and eliminating waste. This waste can be in the form of defect products, excess processing activities, overproduction, time wasted waiting, unnecessary movement, inventory, unnecessary motion, and non-applied knowledge or non-utilized talent (Abdulmalek, & Rajgopal, 2007). When it comes to defect products, this type of waste tremendously increases the cost of production per unit of product or service. Therefore, eliminating waste in this form is an imperative for an adequate lean manufacturing system implementation. Further, JIT (just-in-time) deliveries or JIT approach focuses on reducing the size of inventory which further contributes to a leaner approach to production. The JIT approach basically involves the reduction of inventory, overproduction, and excess processing. Another main source of waste for enterprises is the non-utilization of intellectual capital or the knowledge and skills of employees. If the knowledge of skilled employees is not taken into consideration in the research and development process, the probability for innovative ideas is significantly lower.

It was mentioned that lean manufacturing has a strong positive impact on competitiveness. This is due to the main core design of the lean manufacturing approach. Namely, "lean manufacturing" originates from Japan, from the Toyota Company and it was known as the Toyota Production System (Bhamu, & Singh Sangwan, 2014). In addition, it was discussed that lean manufacturing can contribute to faster development of new products and services. The competitiveness aspect comes from the new products and services which may attract new customers and improve market position. Certainly, it can be argued that consistency in creating and marketing new products and services positively affects overall competitiveness of the enterprise. The process of waste removal includes all the members of the

organization or all the employees of the enterprise. This is necessary in order to reduce waste in all its forms within business activities. Some of the main barriers that lean manufacturing faces during the implementation and execution phases are lack of top management's commitment, lack of equipment effectiveness, lack of employee training and employee involvement, lack of infrastructure and ICT, high lead time, high setup time and high rejection rate (Upadhye, Deshmukh, & Garg, 2016). These barriers have to be taken into consideration when planning the implementation and use of lean manufacturing.

Finally, when it comes to lean manufacturing there are three levels of thinking (Panwar, Nepal, Jain, & Rathore, 2015). The first level is philosophy and it is the core of the lean process. The main concern of lean philosophy is how to eliminate waste in the organization and how to create and improve value for customers. The second level includes the principles of lean manufacturing. In the research of Panwar et al. (2015), it was noted that the five principles of lean manufacturing are value stream, value, flow, pull strategy and continuous improvements of business activities and activities overall in the enterprise. The third level of the lean approach is the operational level. This level includes the tools and techniques of the lean approach. Through these activities the outlined goals are achieved.

ENTREPRENEURSHIP, BUSINESS EXCELLENCE AND COMPETITIVENESS

Enterprises, especially SMEs are prone to the effects of various factors that affect their competitiveness and overall business performance. Therefore, it is challenging for them to achieve business excellence. Some of the factors that affect SMEs are underinvestment in the beginning, lack of record keeping and financial control, managerial experience level, industrial experience level, education (knowledge and skills), employee training, planning, economic environment, social indicators (parents, partners, age, minority groups) and marketing (Zaridis, & Mousiolis, 2014). It is evident that there is a lot of factors that may affect the business performance of SMEs. Therefore, it is necessary to address these factors when developing business models. These issues of SMEs or even micro, small and medium-sized enterprises (MSMEs) are even more present with startups. Young entrepreneurs and entrepreneurs overall, face various challenges in their business activities. Therefore, starting a business has to have goal of achieving a competitive position on the market as soon as possible.

Further, when it comes to regional competitiveness it is important to note that the regional environment has a strong effect on economic development of enterprises. This is even more so in globalized economies. However, it is difficult to adequately measure and examine competitiveness of enterprises as there are a lot of variables that may affect business performance (Man, Lau, & Chan, 2002). This is due to the nature of competitiveness as it can be viewed from different "angles". An objective approach of competitiveness was discussed in the research of Man, Lau, and Chan (2002). Here, it was noted that marketing, ICT, the enterprise's innovative capability, product and service quality and the economic environment together define the landscape where competitiveness could be identified. Now, why is the topic of entrepreneurship and SMEs competitiveness important? SMES are often considered as the pillar of economic growth and development (Singh, Garg, & Deshmukh, 2009). In addition, SMEs are account for 80% of the global economic growth. For example, in China as one of the leading economies in the world, SMEs account for 98.9 percent of the total number of businesses (Singh, Garg, & Deshmukh, 2009). In the era of globalization of markets, SMEs and competitiveness is an imperative for a stable economy. Entrepreneurs are important for a thriving economy. Countries have to ensure that domestic enterprises are competitive enough on the regional and global level. Further, manufacturing performance is an important element of competitiveness. Here, the link between enterprise competitiveness and lean manufacturing comes into play. Before a lean manufacturing model for enterprises is introduced, the importance of business experience and business knowledge is addressed. Namely, managerial knowledge and skills, employee training, employee knowledge and skills, and the use of ICT are important organizational predictors when it comes to success in entrepreneurship and achieving competitiveness (Staniewski, 2016). In sum, when developing a lean manufacturing model for entrepreneurs, the above mentioned concepts and factors

should be considered. In this present paper, these are adequately addressed. In the next section the theoretical model is presented.

LEAN MANUFACTURING MODEL FOR ENTREPRENEURS

The lean manufacturing model for entrepreneurs is a theoretical model based on various studies in this domain (Gnanaraj, Devadasan, & Shalij, 2010; Upadhye, Deshmukh, & Garg, 2016). The elements of the model are labelled numerically in order explain the min more detail. The model is presented on Figure 1.

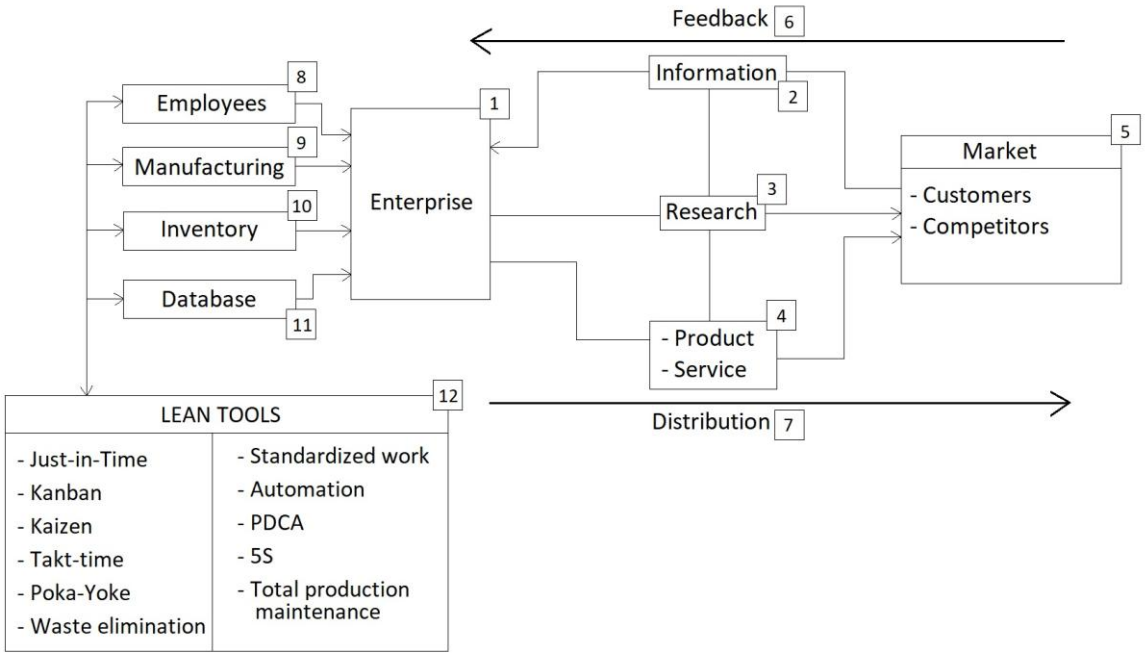

Figure 1: Lean manufacturing model

Further, details behind the labels are presented in Table 1.

Through these tools an enterprise could achieve higher levels of productivity, lower production costs, less waste in all its operations and overall better business performance. The presented theoretical model is robust and generic in nature, however it clearly depicts how an entrepreneur can apply the lean approach within its core business activities such as distribution and manufacturing.

CONSLUSION

In this paper a thorough literature review was conducted in order to develop a theoretical model of lean manufacturing for entrepreneurs. The literature analysis provided significant insight into this domain. It was demonstrated and noted multiple times that lean manufacturing can positively affect productivity, production costs, and overall business performance. Enterprises, and especially micro, small and medium-sized enterprises (MSMEs) could obtain higher competitiveness on the market if the apply the lean approach in some or all of their business practices. The lean approach with some or all of its tools can dramatically affect the level of waste that is present in the enterprise. Now, the main issue of lean manufacturing is the lack of flexibility. Reducing inventory size may negatively affect unpredicted changes on the market and unpredicted demand for more products and services. Therefore, it is necessary to implement the lean approach in accordance with market fluctuations and enterprise internal and external business activities. Furthermore, managers and every employee in the

enterprise has to get involved in the implementation process of lean tools. Is the lean approach always successful? No, there is always risk of miss-management of project development, and over-leaning or over-reducing inventory, and other resource allocation to lower-than-optimal levels. Thus, enterprises need to define in detail their resources, and levels of waste in each of their activities. This way, probability of over-leaning can be reduced.

Table 1: Label description

Label	Meaning/process/procedure	Label	Meaning/process/procedure
1	Enterprise: Represents the infrastructure, employees, resources, products, services, procedures, and all the business activities that are present in the enterprise.	7	Distribution: One of the costliest business activities. With distribution, it is necessary to address every factor and to adjust the logistics in accordance with the lean approach.
2	Information: Includes data from the internal and external environment of the enterprise. This includes information about products, services, employees, market performance, sales, and customers.	8	Employees: When it comes to the lean approach, every employee has to be involved. This way, the lean approach will have higher chances for success.
3	Research: This includes mainly market research and identifying and measuring customer satisfaction. Customer satisfaction is a crucial metric for adequate optimization of business activities. Through research, managers can obtain necessary information on which future decisions are made.	9	Manufacturing: The lean approach to manufacturing (lean manufacturing) has the potential to reduce the number of defect products, to reduce costs and increase productivity. SMEs have to consider every aspect of their manufacturing process in order to adequately apply the lean approach.
4	Product and service: Refers to the products and services which are distributed to the market. Lean manufacturing can drastically lower production costs, thus applying the lean approach in the production process has positive effects on business performance.	10	Inventory: One of the main aims of the lean approach is to reduce inventory or to totally eliminate the necessity for it. This is achievable with the just-in-time concept.
5	Market, customers, and competitors: Refers to the marketing environment, market factors, the behavior of consumers and customers.	11	Database: All the information collected from the feedback loop is stored and analyzed in order to optimize the manufacturing process, inventory size, distribution logistics and other business activities.
6	Feedback: The core of the lean approach. The feedback includes information about the market, sales, customers, consumer behavior, competitors and other crucial information which is used for optimizing business processes (administration, manufacturing etc.)	12	Lean tools: Array of tools that can be used in the application stage of lean manufacturing and the lean approach. Not every one of these are necessary to increase productivity and reduce waste. Entrepreneurs can analyze these tools, and make decisions based on the enterprise's infrastructure, employees, products, services, market and business performance.

The main limitation of this paper is the of lack industry collected data. However, this limitation is not severe, as the paper presents a theoretical model which is more broad in comparison to specific data from specific enterprises. For future research survey data should be included and analyzed. In

addition, a thorough meta-analysis is recommended. Next, lean manufacturing practices in small and medium sized enterprises should be compared with large enterprises. Additionally, cross-analysis of data should be conducted by industry, market size, number of employees and brand strength. This way a more broad overview can be obtained in this domain. Certainly, the complexity of lean manufacturing and lean approach overall, demands thorough analysis of previous studies that address the challenges of lean manufacturing.

ACKNOWLEDGEMENT

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IS THERE "FUZZY MATH" IN KINDERGARTEN?

Branka Janković
Preschool Teaching College, Novi Sad, Republic of Serbia
E-mail: jankovicrb@gmail.com

ABSTRACT

This paper gives an answer to the question of whether the theory of the fuzzy sets is present in kindergartens in the activities of adopting mathematical concepts in pre-school children. Some of the activities, which stimulate the fuzzy logical thinking of pre-school children, are described.

Key words: fuzzy logical thinking, crisp sets, fuzzy sets, preschool children, kindergarten.

INTRODUCTION

In everyday communication, people use a number of imprecise expressions that describe real phenomena and feelings. The fuzzy theory allows the use of numerous linguistic expressions (Zadeh, 1965; Zadeh, 1975), for example, very nice, not high, less tasty. The classic Boolean theory does not recognize these nuances, but only the utmost contradictions: beautiful-ugly, quick-slow.

The introduction of the concept of crisp sets and operations over them, in kindergartens, meetings many difficulties. Children are expected to adopt these terms intuitively in order to develop the concept of number and counting. Sets are formed with elements which are three-dimensional objects, and not only mathematical objects, which often lead to inaccuracy in a strictly mathematical sense.

Thinking about this problem, I wondered whether we were ever going out, completely unconscious of the crisp sets theory, and we are actually dealing with fuzzy sets. Children in their communication, as well as adults, often use imprecise concepts. We can hear them respond with: I'm not very small, he is very boring, she is very nice, etc. Bearing this in mind, the question arises as to whether the activities of adopting the notion of a crisp set in kindergartens emerge from the framework of Boolean logic and enter into the theory of the fuzzy logic. This paper aims to answer this question.

CRISP SETS

The notion of a set binds to the idea of a collection of different objects, and for each of the objects that form it, it is said that it is an element of that set. Elements of sets that are studied in mathematics can be objects whose nature is different: letters, numbers of the same types, equations, functions, etc (Šporer, 1987).

Below are listed the mathematical activities of children of pre-school age which contribute to the development of the term crisp set (Dal, Nordkvist, 2011; Dejić, 2016; Stojanović, Trajković, 2009; Šporer, 1987). At the beginner level in kindergartens, children start from the construction of concepts *one* and *a lot* and form sets of elements using the principle of moving from concrete to abstract. First, it starts from three-dimensional objects and forms sets that have one element and many elements. Then two sets of three-dimensional objects are formed and in the most obvious way it is determined whether these two sets have equal number of elements or not (joining 1-1). In this way, terms *less* and *more* (elements) are introduced. Then concepts *no one* and *nothing* are introduced.

At the middle level, a set of up to five elements is formed. It is insisted on comparing the number of one set in relation to the other, on the development of the concept of number and counting. Initially, the objects are set in a row, and then the objects are set in different schedules. For the abstraction of a number of specific objects, i.e. that one and the same number can be found in different sets of objects, it should be introduced term *so many*. For example, different sets with one element, 2 elements, etc. can be formed.

In the eldest group, children learn about the structure of the number within the number 5, and then the procedure is transferred to numbers within the first ten numbers. Methods which we use require from children to memorize numbers and verbally describe operations with numbers. In some stage children will recognize that the set has 5 elements without counting. Ordinary numbers are familiar to children from everyday life. The first stage in the learning of ordinary numbers is that children count on trimming or touching objects. It is important to emphasize the meaning of a ordinary number - it counts from a certain position to the places that elements occupy in relation to it. It always has to point out the position in relation to which it counts: the first from the left, the first to the window, and the other.

From the above, it is clear that forming sets within the mathematical activities of pre-school children is in the function of developing the concept of a number.

FUZZY LINGUISTIC VARIABLES

The linguistic variable has the value of the natural language. Values of linguistic variables consist of: basic linguistic values, linguistic modifiers and conjunctions (Zadeh, 1975; Subašić, 1997).

Basic linguistic values

These are the simplest linguistic values that can be used (young, old, tall, low). For example, if the variable height has values of low, medium, high these values are called basic linguistic values. It is best to specify three to seven linguistic values to define the linguistic variables. To describe a concept in communication between people, there are usually extremes for extreme cases, excellent and bad, and one medium term. Therefore, at least three linguistic values are needed to describe something, but no more than seven because a person can see a maximum of seven terms. Usually, when describing the linguistic variable, an odd number of values is used since the variables are defined symmetrically, and one term describes the middle between the extremes.

Linguistic modifiers

By adding linguistic modifiers (very, less, somewhat) to basic linguistic values, complex linguistic expressions can be obtained, for example, very nice, extremely talented, very boring.

Conjunction

In general, conjunction *and, or, not* in linguistic expressions, are defined as follows:

A *and* B = A $\cap$ B
A *or* B = A $\cup$ B
not A = $\tilde{A}$.

Linguistic modifiers and conjunctions can be defined depending on the problem, but it is important that their definition agrees with the understanding of the words used in complex linguistic expressions. *Definition.* A linguistic variable is characterized by: (x, T(x), U, M) where x is the name of the

variable, T(x) is the term set of x, the set of names or linguistic values assigned to x, with each value is a fuzzy variable defined in U and M is semantic rule associate with each variable (membership).

FUZZY SETS

Garcia-Honrado (2013) is considering the possibility of introducing fuzzy logic into education. In his paper, he deals with the possibilities of learning fuzzy logic at different levels of education, starting from kindergarten to college. In order to introduce fuzzy logical thinking of pre-school children, he proposes the following activities:

1. Classify the given figures as follows: figures that satisfy a given property, figures that do not meet the given property and figures that partially satisfy the given property.
2. Forming a set of high school students.
3. Usage of the conjunction *and, or, not* in the requirements of the design of a fuzzy sets.
4. Establishing fuzzy relations between objects, for example between objects that are similar in color.

With these activities, the introduction of the term fuzzy set is achieved.

These activities can be recognized in work with children of pre-school age in Serbia. It was said that at the initial level of mathematical concepts in kindergartens, a set with *a lot* of elements is formed. This criteria of the design of a set contributes to the development of fuzzy logical thinking, the children will form sets that differ in a cardinal number depending on what they consider as *a lot*.

Also, in kindergartens, when developing concepts large-small, two sets are formed, where the elements of the first set are small and the elements of the second set are large objects. And in this case, children will form different sets. Large-small refers to all dimensions of the object, it is thought of the volume of the object. The same case occurs in the design of concepts related to the spatial dimensions of objects: long-short, high-low, narrow-wide, thick-thin, deep-shallow. When measuring objects according to a particular criteria, objects can be connected to, for example, similar length or similar thickness, which establishes the fuzzy relationship between objects. Children in the younger age (3 years) can not distinguish all spatial dimensions of the object (long-short, high-low, narrow-wide, thick-thin, deep-shallow), so the above activities are best practiced with children aged 6 years.

In kindergartens, in the oldest group, children are expected to get familiar with the intersection and the union of two sets. When the elements of sets are mathematical objects (eg logical blocks), we speak of crisp sets, and in this case, the union and the intersection are uniquely determined. However, if we use conjugates *and, or* in linguistic expressions that are defined as the intersection and union of two sets (respectively), we can set up a requirement to form a set of children who have blue hair and (or) run fast. In such activities the design of fuzzy sets are present and precede the design of the union and the intersection of crisp sets, which is logical since these requirements are closer to what children know. Namely, in the development of mathematical concepts, we always adhere to the principle of moving from a familiar to an unknown.

The same case occurs when introducing geometric objects. Take for example a cube. Children are asked to name objects from their surroundings that are in the shape of a cube. In conversation with children, the common features of models and objects from the environment are noticed, and the properties of the mathematical model are performed. Then, two sets are formed, with requirement that elements of the first set satisfy all of the given properties (mathematical models) and that the elements of the second set satisfy some of the properties (objects from the environment).

Children in kindergartens meet the concepts of measure and measurements of mass, volume, length. Requirements may be posed for the classification of objects of similar mass, thereby establishing a fuzzy relation between objects. Also, two sets can be formed, where in one set there will be objects that are heavy (or very heavy) and in the second set objects that are not heavy, using the conjunction

not. We see that fuzzy relations, linguistic modifiers and conjunctions are used in the measurement activities. Similarly, the tasks in measuring the volume and length of the objects can be conceived.

Money is a term processed in the oldest group. In introducing concepts related to money, the term price is also described, cheap and costly. Goods can be classified according to the following requirements: a set of costly goods, goods with a good price and cheap goods. Also, the fuzzy relations between objects can be established by forming sets of goods with a similar price.

CONCLUSION

Although in Serbia, of course, fuzzy logic is not studied in education (except at some faculties at higher levels of education), mathematical activities in kindergartens enter the sphere of fuzzy logic at some point and contribute to the development of fuzzy logical thinking. In many cases of the design of sets, the criteria that are set up contain the linguistic variables, and the elements can vary in a different degree to the given set. Thus, educators, in fact unconsciously, ask for the design of fuzzy sets.

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SCHEME FOR SELECTING THE BEST SIMULATION APPROACH FOR A SUITABLE MANAGEMENT LEVEL

Bojan Jovanoski*,
Faculty of Mechanical Engineering, Ss. Cyril and Methodius University in Skopje, Macedonia
E-mail: bojan.jovanoski@mf.edu.mk
Robert Minovski
Faculty of Mechanical Engineering, Ss. Cyril and Methodius University in Skopje, Macedonia

ABSTRACT

The need to interpret the specific characteristics of a particular system is bigger than ever. It grows as the complexity of the system has risen, but also as well as the possibilities of certain tools that can present that. This paper is part of a research where the thesis is that every system should be modelled with a suitable tool. In this case, the simulation has been chosen as appropriate to show the dynamics of a system in one whole model. But, even in this case, one simulation approach is not always enough. That is why this paper treats the reasons how and what simulation approach to choose for a particular case.

Key words: simulation, management level, hybrid modeling, discrete-event simulation, system dynamics, agent based modelling

INTRODUCTION

The scenario that needed to be modelled is from a pharmaceutical company. The case was that the production process needs to be aligned with the sales (force) of the company and these two aspects need to be in a balance. So, the modeling is not only for the production process on its own, but also one has to take in account the marketing and sales processes of the company. In order to do that, the research started from considering the company as a whole, and then going deeper in details for the most relevant processes. Descriptions about the strategic and operative management have been presented as the main responsible for the business in the small and medium sized organizations, their characteristics and specifics. "The strategy alignment" has been accepted as a means for implementation of proper decisions in the frame of the enterprise. After that, the three main simulation approaches have been taken in consideration – the discrete simulation, system dynamics and agents based modelling. In order to make the decision – how the enterprise will be modelled – a detailed matrix analysis of the management levels and the simulation approaches has been carried out. On basis of the analysis, it has been decided to make a hybrid simulation model. This paper is dedicated to the goal of connection of different managerial levels in the organization, as a choice and adaptation of the appropriate approach through analysis of the most frequent used simulation approaches.

ANALYSIS OF THE MANAGEMENT LEVELS

In Figure 1 the description of the three management levels has been given in relation to the frequency of the activities and the type of processes performed on each level. The purpose was to show that the processes are very different on each level and cannot be considered in same manner.

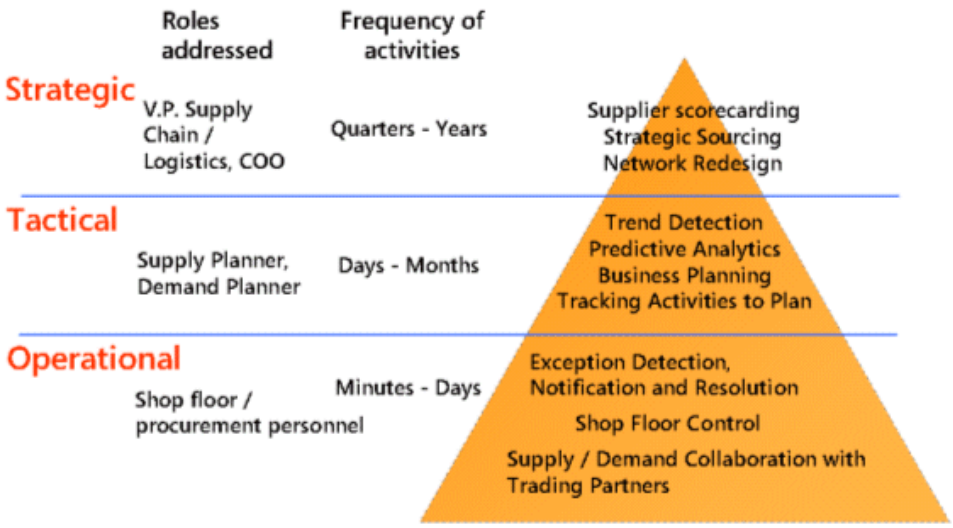

Figure 1: Different frequencies and activities on a particular management level, (Microsoft, 2013)

In Figure 2 a set of possible inputs and outputs have been given that are frequent on the strategic level. These were important because of the future hybrid model. These would be used as goals or points of intersection of the strategy part.

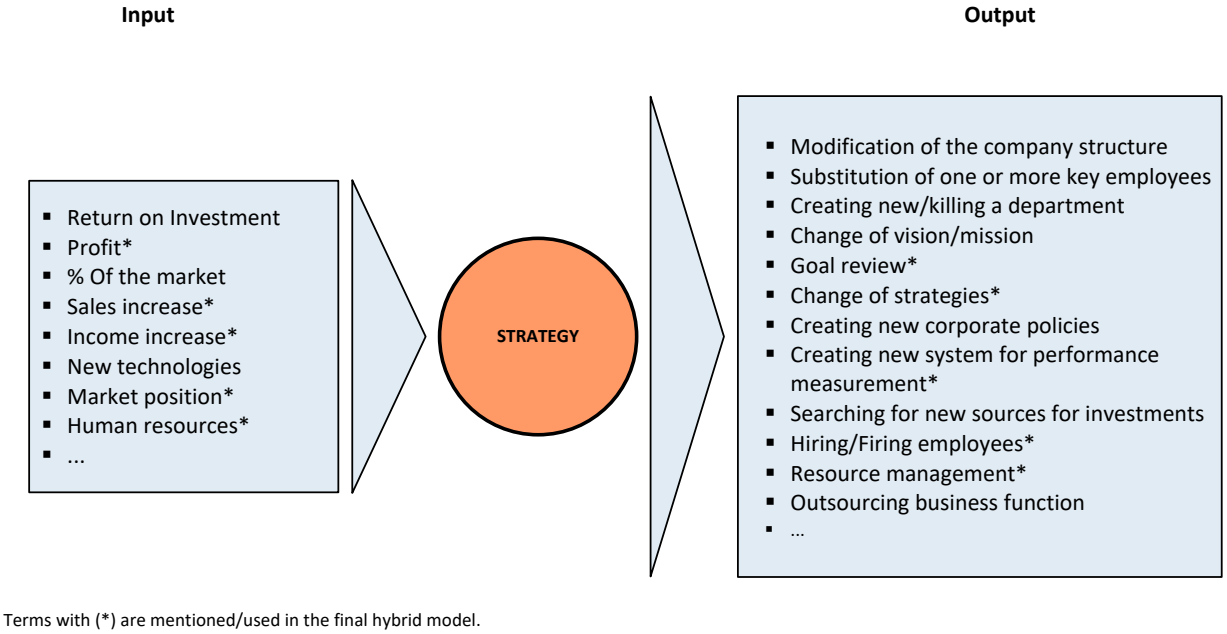

Figure 2: Inputs and outputs from the strategy

After all management levels have been analysed deeply and generated the possible inputs/outputs of each level, the characteristics were laid down. Table 1 shows the analysis performed about the strategic level, for example. It has been done according these criteria:

- Time period – how is the time character of the analysis?
- Detailing – what is the degree of details by the analysis?
- Interactions – how are the interactions on the single level of the analysis?
- Modelling perspective – from which perspective the things have been analysed?
- Complexity – what is the level of complexity that has been met?
- Goals – what are the set goals?

The criteria were chosen in order to analyse the three different management levels accordingly and equally. Each of the three management levels were analysed through the same approach.

Table 1: Description of the characteristics of the strategic management level

Criteria	Description
Time period	Long term
Detailing	Low level of details
Interactions	Medium to big level of interaction between the elements
Modelling perspective	Top to bottom
Complexity	Big complexity
Goals	Long-term goals

ANALYSIS OF THE SIMULATION APPROACHES

After the analysis of each of the management levels, an analysis was performed of the simulation approaches. The Discrete-Event Simulation (DES), System Dynamics (SD) and Agents Based Modelling (ABM) were taken in consideration.

Figure 3 is given as a further comparison of the modelling approaches according the level of abstraction, managerial level etc.

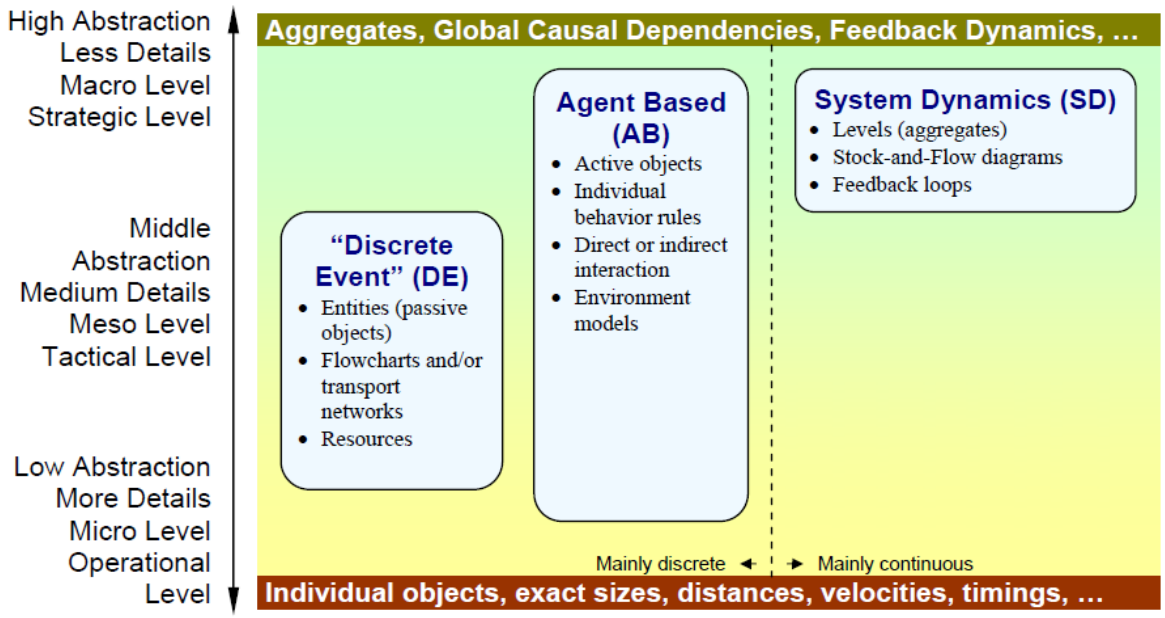

Figure 3: Mapping the simulation approaches on an abstraction scale, modified from (Borshchev & Filippov, 2004)

Table 2 presents an overview of the simulation approaches. It shows their perspective of modelling, the complexity of modelling etc. It was included to show the differences of the approaches and their focus points. They will be used when deciding which simulation approach to be used.

The same analysis has been performed for them as well, Table 3. The idea was to cross-match all these tables in order to decide which approach is most suitable for the suitable management level.

Table 2: Overview of the simulation approaches, (Owen, Love, & Albores, 2008)

Approach / Criteria	DES	SD	ABM
Goal	Decisions: optimization, assumptions and benchmarking	Creating policies: gaining knowledge about the system	Behaviour: determining the dynamics or patterns through agents
Perspective	Micro	Macro	Micro-macro
Modelling philosophy	Randomness associated with interconnected variables leads to system behaviour.	Causal structure of the system causes behaviour	Rules and states of agents create the dynamics of the model
Representation	System represented as queues and activities, processes	System represented as stocks and flows	System represented as agents
Interpretation of results	Interpretation of results require statistical knowledge	Results are easy to interpret, it does not require in-depth knowledge of stats	Results are easy to interpret, it does not require in-depth knowledge of stats
Data Sources	Primarily numerical, tangible data with some informational element	Broadly drawn: Subjective , judgemental data held in the form of mental maps is also crucial	Data from surveys, drawn from some analysis
Complexity	Complexity increases exponentially with size	Complexity increases linearly with size	Complexity increases exponentially with size

Table 3: Description of the characteristics of DES, SD and ABM

Criteria	**Description**		
	DES	**SD**	**ABM**
Time period	Mostly short (seconds, minutes, hours, days)	Mostly long term (days, weeks, months, years)	Short-term to medium term
Detailing	High level of details	Low level of details	Very high level of details
Interactions	Low level of interaction between the elements	Big possibilities for modelling interactions	Big possibilities for modelling interactions (between agents)
Modelling perspective	Bottom to top, in details	Top to bottom, holistically	Bottom to top
Complexity	Medium to big level of complexity	Low level	Big level of complexity
Goals	For optimization, performance analysis	Policy analysis, making	Gaining knowledge through interaction laws

SCHEME FOR SELECTION OF THE SUITABLE SIMULATION APPROACH

This part summarizes the outcomes from the analysis of the management levels and the simulation approaches. The management levels cover different functions in the enterprise and have their own specific processes. Each of these levels do not function exclusively for itself, isolated. Changes at one level cause changes at the other two levels. Changes, adjustments, new structures, etc. are the dynamics of an enterprise and they should be managed. This has been mentioned in the strategy alignment as a concept for successful management of strategical changes in an enterprise.

According to the needs for modelling of different levels and the capabilities of the simulation approaches, a 3D analysis has been carried out, presented in Figure 4. This is an aggregate analysis and it represents a perception of the criteria analysed for the strategic and operative management, vis-a-vis the same criteria for DES, SD and ABM. The interactions between the elements on a certain hierarchical level are taken as an example. Although DES is not the best approach for that, in relation with the operative management is the most appropriate because this level does not need the strongest interaction between the elements. At the prospects of modelling, DES is most appropriate for modelling manufacturing systems in relation to the other systems because of their nature. On the other side, SD is inviolable at the modelling on strategic level: from the detail level that needs to be presented, through the complexity and the goals of the modelling.

The main characteristic of the Agent Based Modelling (artificial intelligence at the agents) will not be used in this specific case. This is because there is not an implemented logic in the products that have been modelled and the machines have strong defined parameters. The needed "identity" of the products can be modelled in DES very easily and without problems. A unique possible space where the advantages of ABM can be used is the modelling of the patients. But, it is decided that it will be modelled in SD for the reasons that it is not the main goal of this work. Considering that one of the main goals of this research is that an appropriate simulation approach should be used always, ABM did not found its implementation here.

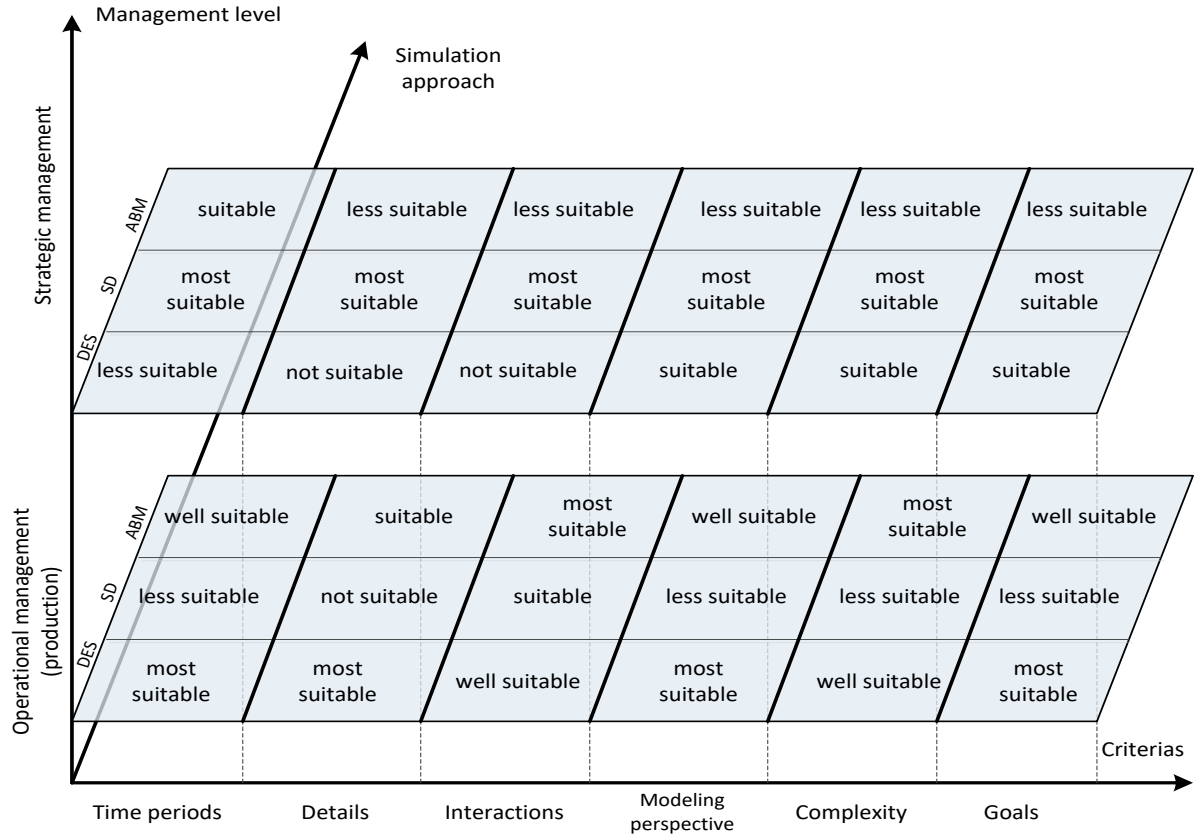

Figure 4: Matching the simulation approaches according the set criteria

CONCLUSSION

From the same diagram it can be seen that only one approach cannot be used in order to encompass the whole case. Given the problems and issues that needed to be modelled, the dilemma was between System Dynamics and Discrete-Event Simulation. The two approaches were analysed in-depth and concluded that each has its advantages and disadvantages. In the attempt to model one complex system of an enterprise, it showed that none of the approaches can model it on a satisfactory level. The key

modelling points were the details in the production, the dynamics of the demand/sales and the dependency between them. Because of that, the idea was born about designing a hybrid model that would include two sub-models which will present the reality in a most suitable way. Discrete-Event Simulations were most adequate for modelling the production process; System Dynamics for representing the dynamics of the demand/sales part.

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INDUSTRY 4.0 AND ORGANIZATION MANAGEMENT DEVELOPMENT PERSPECTIVES

Biljana Maljugić*
Student at University of Novi Sad, Technical Faculty "Mihajlo Pupin", Zrenjanin, Republic of Serbia
E-mail: biljanamaljugic28@gmail.com
Ivan Palinkaš
University of Novi Sad, Technical faculty "Mihajlo Pupin", Zrenjanin, Republic of Serbia
Dušanka Milanov
University of Novi Sad, Technical faculty "Mihajlo Pupin", Zrenjanin, Republic of Serbia

ABSTRACT

Today, in the period of fourth industry revolution, there is more efficient business process realization. Industry 4.0 has improved the existing knowledge in industry and production, but also set the demands for new technologies. In this paper it will be presented what kind of demands the Industry 4.0 set in front of today's production through Horizon 2020 program, and also what are the expected benefits in development and implementation of modern technologies in current area of organizational management.

Key words: Organizational management, changes, knowledge, ICT technologies, digitalization, research programs

INTRODUCTION

Dynamic changes in the environment, the development of competitiveness and market demands have spawned synergy of new knowledge that will initiate the implementation of information technologies in all technological areas. Digitalization and faster information transfer, sensor technology, have contributed to the development of robotics. Whether a business organization is willing to respond to changes depends on several factors. It primarily refers to management and the organization of employees who are skilled enough and have the necessary knowledge to respond to changes. With the growing pace of change, readiness and the ability to constantly develop is essential to the professional success of an individual and to the economic success of organizations. (Sajfert, 2008)

We are at a time when the basic task of management is to initiate, plan and institutionalize changes. The role of management is to integrate associates and direct them towards achieving company goals. The employment section should be based on the criteria of readiness and ability to implement the changes (Sajfert et al., 2005).The basic change is shifting from economic productivity to an economy based on information and knowledge. Speaking of the new concept of organization Draker says that the nature of knowledge is in frequent changes. The dynamics of knowledge imply the need for each organization to incorporate the change management into its own company's strategy. 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 a modern organization. A modern organization consists of knowledge specialists and from that follows that it must be an organization of equal, not the organization of superiors and subordinates. (Sajfert et al., 2005)

INFORMATION SOCIETY AND INDUSTRY 4.0

The information society requires experts who have a mix of different knowledge and skills, primarily in the field of management and information technology, who are able to make quick decisions, show interest and

ability to apply new methods and techniques of business that tend to improve the work processes. (Sajfert et al., 2006)

According to Dracer, what we call the Information Revolution is actually a knowledge revolution. What enabled the routine in the process is not the machine. The software represents a reorganization of traditional work. The key is not electronics, but a cognitive process. This further means that the key to maintaining the leadership position in the economy and technology will be the social position of knowledge experts and the social acceptance of their values.

It is especially important that experts have the sense of assessing information needs. In particular, this assumes that young professionals need to build an optimal relationship between thinking, sensing, and intuition, which will enable real and timely perception of information needs. (Sajfert et al., 2006)

Germany announced for the first time part of its strategic program "High-Tech Strategy 20" in Hannover in 2011 under the name "Industry 4.0", which even in Germany presents a vision of the future of intelligent production.

We are currently at the beginning of the fourth industrial revolution "Industry 4.0" characterized by "Cyber-Physical Systems" (CPS). The development of digital and advanced technologies, as well as innovation in production processes, presents challenges for the development of all technologies, including robotic technology. The convergence of digital and other technologies, and above all the sensory technology, has influenced the development of robotic technology. (Majstorović et al., 2015)

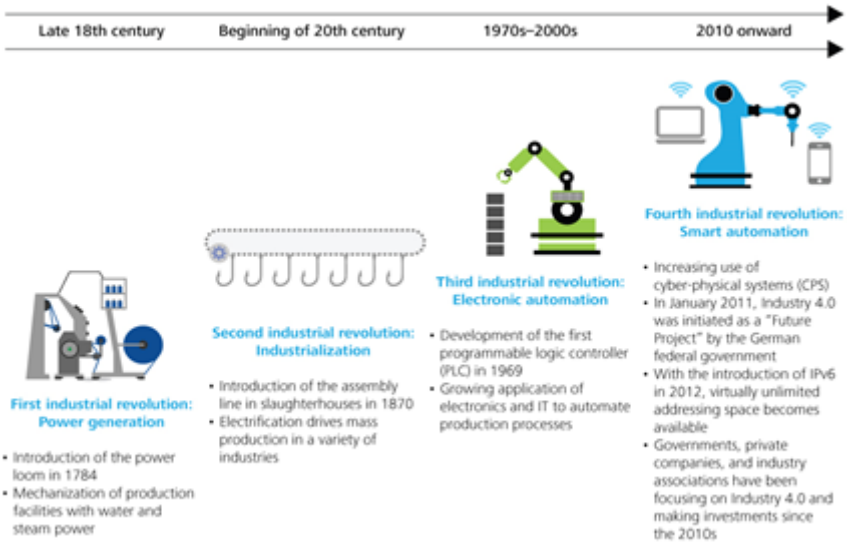

Figure 1: Industrial revolutions

Sources: Germany Trade & Invest, "INDUSTRIE 4.0 – Smart manufacturing for the future," July 1, 2014; National Academy of Science and Engineering, "Securing the future of German manufacturing industry: Recommendations for implementing the strategic initiative Industry 4.0", April 2013; Deloitte analysis

The first generation of industrial robots is the first robotic revolution to emerge in the 60's and 70's of the last century, and it is the industrial automation that is most represented in the automotive industry and many other manufacturing processes. With the application of digital technologies, which include: ICT technologies, sensor technologies and many other advanced technologies, have contributed to the development of second generation robots, where today we are in the time of another robotic revolution, where robots become sensitive and safe to work with, and they do not need to be separated from workers by fences.

Discrepancy between technological changes and business productivity is believed to be due to poor human adaptability, that is, the lack of knowledge about how companies organize, manage, develop, and align workers with new changes. The explanation for this discrepancy is best given in the book "Thank You for Being Late" in 2016 by Thomas Friedman, who explains graphs of discrepancies between: technology,

individual, company, and public policy, and the creator of graphs is Eric "Astro" Teller, CEO of Alphabet's Google X division, as shown in Figure 2.

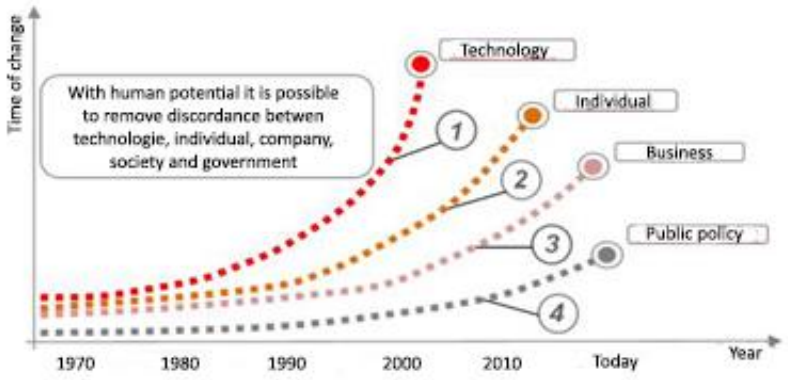

Figure 2: Discrepancy between: technology, individual, company, and public policy (Karabegović et al., 2018.)

- Curve 1 gives an illustration of technological change by exponential function, where it is known that the ability of computers doubles every 18-24 months, and that mobile devices, sensors, artificial intelligence, robotic technology have an impact on our lives more than ever before.
- Curve 2 gives us an illustration of the individual's adaptability to technological changes, so it can be concluded that individuals adapt very quickly and skillfully and adopt technological changes and that gap between them is small.
- Curve 3 shows an illustration of the adaptability of companies and organizations to technological change, and that the adaptations are far slower than for individuals. Also, if planning, organizational structure, job design, management and goal setting are already developed, companies have to constantly review them.
- Curve 4. illustrates adaptation of public policy to technological change, because it is seen that this has the biggest gap with technological changes. This directly affects companies, as it is about legislation, taxes, education, etc. In order to reduce this gap, the most important is the effective movement of human capital in the world, and in other words, we need to encourage changes in society. (Karabegovic et al., 2018.)

"We are at the brink of a technological revolution that will radically change our way of life, the way we work and treat each other," predicts Klaus Schwab, author of the “Fourth Industrial Revolution”, published in 2016. The consequences will affect how we are and how we relate to each other even in the farthest parts of the world: the revolution will affect the business market, the future of work, inequality in revenue, as well as geopolitical security and ethical determinants. (Popovic, 2016.)

FACTORIES OF THE FUTURE - RESEARCH PROGRAM HORIZON 2020

The EU research community for technological research encompasses a wide array of research programs (basic, development, innovation) that support the European manufacturing sector. Responding to global challenges, the EU 2020 strategy is focused on meeting market demands, whereby the manufacturing sector needs to undergo structural changes towards:

- Factory and nature> green / sustainable,
- The factory as a good neighbor> closer to the customer,
- Factories in value chain> cooperation, and
- Factory and people> oriented to man.

The realization of these transformations is based on coordinated efforts to improve research and innovation processes, which this program (FoF) supports.
The research priorities in the Factories of Future (FoF) program are defined through the following clusters:

- Cluster 1: Advanced technological processes,
- Cluster 2: Adaptive and smart technological systems,

- Cluster 3: Digital, virtual and resource-efficient factories,
- Cluster 4: Technological eco-systems,
- Cluster 5: Production Oriented to people, and
- Cluster 6: Production oriented to the customer.

In order for the results of research and development, as well as innovation, to give the desired results, special attention is paid to industrial applications, even at the initial stage of these processes.

For Horizon 2020, technology platforms programs - Technology Platform / Manufuture and Research Association - EFFRA, are a frameworks for research planning and innovative activities. These documents refer to all three columns of Horizon 2020 as the most important elements for generating their additional values.

Technology pillar I - Excellent Science

- ERC - In order to encourage the significant shifts in technological knowledge boundaries that can be applied in production, the ERC will support individual teams to conduct research in any area of basic scientific and technological research that falls within Horizon 2020, including engineering, social sciences and humanities.
- FET Encouraging new ideas - This area by not making frameworks allows generating and developing new ideas, wherever they appear, and in the widest range of disciplines and themes.
- Encouraging new skills through excellent initial training of researchers. Typically, successful partnerships will be in the form of research training networks or industrial doctorates, while individual institutions will be involved in innovative doctoral programs. Among other things, this topic will also provide training for researchers from industry.
- Development, deployment and application based on ICT e-Infrastructure - Network and cloud technologies provide practically unlimited computer systems for data processing; simulation of ecosystems supported by super computers at different scale levels; software and services, i.e. simulation and visualization; real-time tools; interoperability and openness of scientific data. Such approach and research platforms can be used for similar scientific research, or their joint activities.

Technology pillar II – Industrial leadership

- Information and Communication Technologies (ICT) - This area enables its own research and innovation, as well as collaborative activities in this field, based on a generic approach. ICT technologies provide manufacturing development and sustainable competitiveness, especially in the industry. In this context, key research directions relate to agile technological systems and processes in them, the life span of impeccable factories, the production oriented towards people, collaborative supply chains, design and production oriented to the customer.
- Nanotechnologies - Effective synthesis and production of nanomaterials, components and systems. In this area, attention is focused on the research, development and innovation of flexible and reproducible intelligent units for new and existing processes, in large-scale and mass production, with the transfer of these innovations and knowledge to real industry processes. The realization of mass production is a very important and demanding topic for these research.
- Materials for a sustainable industry - The development of new products and their application generate new consumer habits, which should lead to a reduction in energy needs, production / use with lower carbon emissions, recycling, reducing environmental pollution from new materials, reducing waste and recycling it.
- Optimizing the use of materials - Researching and developing alternative materials, their alternative usage as well as innovative business models for their development and application. Topics such as alternative use of materials, their application, energy needs, recycling and innovative business models must be examined in relation to current production activities.
- Technologies for the factories of the future - Promoting sustainable development, industrial growth based on a strategic shift in Europe, from a cost-based approach of production, to an approach based on creating high added value.
- New, sustainable business models - The core of cross-sectoral cooperation is the development of knowledge-based concepts and methodologies, which are specialized in production through the increase of creativity and innovation with a focus on business models, adapted to the requirements of globalized supply chain networks, in changed markets, for advanced and future industry.

Technology pillar III- Societal challenges
- Food safety, sustainable agriculture, marine research and bio-economy,
- Intelligent, green and integrated transport,
- Climatic changes, saving resources and raw materials,
- Facilitating the transition to a green economy through eco-innovation.

INDUSTRY 4.0 AND ITS ELEMENTS

"The Fourth Industrial Revolution is not determined by a set of newly emerging technologies, but by switching to new systems built on the infrastructure of the previous, digital revolution."says Swab, executive director of the World Economic Forum and one of the main enthusiasts of the revolution. (Popovic, 2016.)

Program Industry 4.0 is focused on creating and manufacturing smart products, as well as processes and systems that will enable it. Smart factories represent the key feature of Industry 4.0. Smart factories are able to process and manage complex systems and processes. In a smart factory, human beings, machines and resources communicate with each other naturally as in the social network. Smart products know the details about how they are being manufactured and how they are intended to be used. They actively support the production process, answering questions such as:

"How am I being made?",
"What parameters should I use for my production?",
"Where should I be delivered?", etc.

Its smart mobility interfaces, smart logistics and smart grids make the smart factory a key component of smart infrastructure of the future. This will lead to the transformation of conventional value chains and the emergence of new business models.

Digitalization

Digitalization of internal business offers only basic competitiveness in the modern market. Digital linking of businesses, assets and the environment is even more actively directed towards the needs of customers, quality and added value, as well as the development of new products, services and business models. The organization of production processes is already focused on the creation of custom products for a known customer, which requires changes in the process from the buyer to the supplier. Customers' requests, easily manage production, logistics and distribution in real time. Industry 4.0 strives for an individual, customer oriented production, which requires major changes and varied opportunities both on products and on processes that support production. This can be achieved by digitizing the production-business process, which controls the entire value chain. This connection is performed with standardized communication interfaces, advanced sensors (IoTs), control elements and programs with models for managing procedures, processes, devices, products and services. Digital business depends on integration. The higher the density of the connections, the greater the potential for creating value for the enterprise and customers. Digital transformation is based on intelligent use of data. The Big Data analysis, which is being collected today with a lot of resources, reduces costs and helps in making decisions. For example, companies can optimize business as well as design personal products and services. With the use of the electronic archive of exchanged data and eDocuments, companies gain insight into their own business and are able to optimize, manage and automate the process in real time. (INDUSTRIJA 4.0 - NOVA POSLOVNA STVARNOST, 2018.)

Management efficiency

Unpacking Industry 4.0, KPMG primarily dealt with the question of how it will affect business. Their research points to six parameters that Industry 4.0 will influence the development of an effective business plan:
- Strategy and business model - Industry 4.0 leaders should have a clear strategy and a precise development plan.

- Technology and system - many organizations still do not know where to invest capital in order to more effectively implement their primary strategy.
- Management and risk management - leaders need to focus on the added value that technology brings them, more than the costs of its implementation.
- Employees - new competencies are required to help companies with the changes brought by Industry 4.0, now and in the future. The focus is on developing the necessary skills, recruiting, integrating workers and sharing knowledge.
- Operational Excellence - Industry 4.0 has the potential to significantly improve operational performance. Industry 4.0 leaders have a unique opportunity to integrate the work process from start to finish in order to better deal with competition.
- Consumer experience - changes in consumer behavior require a significant change in the business model. The survey shows that organizations see the opportunity to build a better relationship with clients, which will later be one of the most important strategic advantages. (Sajfert, 2008.)

CONCLUSION

The emergence of globalization changed human and market needs. Technology has made so much progress that now it sets new business principles. The carrier of all changes, new products and a new way of life is Industry 4.0. Knowledge and information are primary resources. Information has become more and more valuable because it brings other new valuable knowledge that improves the productivity of the company. ICT technologies provide development and sustainable competitiveness for the production process, especially in the industry. Digitalization, digital transformation, or smart use of data, analyzes large amounts of data (Big Data), which are collected today from several sources, from multiple sides, thereby reducing costs and helping with decision making.

New ways of achieving productivity, business excellence, and implementation of knowledge in modern business require certain skills and continuous work of individuals and experts in all fields. Technological research: Excellence in Science, Leadership in Industry and Social Challenges, were presented as new knowledge by year 2020. The most important functions are research and development, product and services quality, and marketing.

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DEVELOPMENT AND EVOLUTION OF ENVIRONMENTAL PROTECTION LAW IN REPUBLIC OF SERBIA

Stevan Mušicki
University of Defence, Military Academy, Pavla Jurisica Sturma 33, 11000 Belgrade, Serbia
Goran Janaćković
University of Niš, Faculty of Occupational Safety, Čarnojevića 10a, 18000 Niš, Serbia
Dejan Vasović*
University of Niš, Faculty of Occupational Safety, Čarnojevića 10a, 18000 Niš, Serbia
E-mail: djnvasovic@gmail.com

ABSTRACT

The interest in maintaining and improving the quality of the environment and protecting the health of people is growing and therefore organizations of all sizes are paying more attention to the potential environmental impacts of their activities, products and services. The environmental impact of an organization becomes more and more important for internal and external stakeholders. Achieving the correct ecological effect requires the organization to accept the obligation to systematically approach the introduction of an environmental management system and its continuous improvement. In this context, knowledge of so-called environmental law, which is an extremely dynamic component, is of utmost importance, given that most of the obligations that organizations have to fulfill in either the state or the private sector derive from the obligations set out in Chapter 27. The aim of this paper is to summarize the development of environmental law in the Republic of Serbia, and give projections of the obligations deriving from it.

Key words: environmental protection, law issues, development, Republic of Serbia

INTRODUCTION

The beginning and the indication of the development of legislation in the field of environment in Republic of Serbia begins in 1947, when the first federal General Law on Forests was adopted. It is followed by the 1974 Law on Forests, which prohibits pistol and shrinkage of logging, which is not approved as a regular type of restoration of forests, pastures and goats and other livestock, collection of hay and moss, cutting of seed trees. In addition, this law provides that certain forests are declared for special purpose forests. The frame Law on Water was adopted at the federal level in 1963. However, by adopting constitutional amendments, a number of provisions of this law ceased to be valid due to the transfer of competencies from federal to federal units.

The change of jurisdiction soon resulted in the adoption of the Republican Water Act of Serbia in 1967, which prohibits the introduction of waste and toxic substances into water above maximum quantities, the disposal of industrial waste to surface waters and their coasts, as well as the execution of any works that could endanger biological minimum in the watercourse, groundwater regime or quality and yield of mineral, thermal and liquid water resources. This law also stipulates the obligation for all organizations of associated labor to construct appropriate wastewater treatment facilities by the end of 1975. More precisely, the period from 1947 to 1990 is characterized by scarce regulation in this area as a separate legal entity, due to frequent constitutional changes (Lekic, 2014). On the other hand, the lack of institutional capacities (primarily on the local scale) lead to insufficient or very slow application of some laws – which is particularly characteristic for the Integrated Pollution and Prevention permits.

EVOLUTION PROCESS

The period from 1991 to 2004 is characterized by the separation of environmental protection as a separate legal entity. With the adoption and entry into force of the Environmental Protection Act, for the first time in 1991, Serbia is attempting to regulate the system of protection and improvement of the environment, to determine the measures of protection, organize the execution of tasks for the protection of natural and created values, etc. However, the enactment of the Environmental Protection Act, unfortunately, failed to regulate the existing problems in this area, because it was not accompanied by an adequate number of laws and by-laws that would regulate this matter in more detail. Issues related to different areas, such as air quality, water quality, noise protection, nature protection, chemical management, waste management, etc., imply special, individual regulations for each of these areas. The aforementioned Environmental Protection Act, these areas are not, nor could have been adequately regulated. In 1993, the Law on National Parks was adopted, and only in 1996, the Law on Waste Treatment. In addition to its undeniable values, in particular through giving some importance to prevention of environmental protection, this law, which, with minor changes and amendments, was valid until 2004, has not been revived due to the general, difficult social circumstances in the Republic of Serbia in the 1990s. The characteristics of the period from 2004 to 2009 relate to the introduction into this area of few very important laws, which they represent and are called systemic laws. Thanks to the great assistance of certain European countries, in 2004, this set of modern environmental laws has been adopted, including: Law on Environmental Protection, Law on Strategic Environmental Assessment, Law on Environmental Impact Assessment and Law on integrated prevention and control of environmental pollution. These laws are in line with the following European environmental regulations: The Environmental Impact Assessment Directive, the Strategic Impact Assessment Directive, the Integrated Pollution Prevention and Control Directive (which is now renamed to Industrial Emissions Directive). It turned out that the implementation of these laws, for many reasons, is a problem. Namely, the key factors of insufficient or misplaced implementation lie in the poor administrative capacity of the state administration, the state's unwillingness to adopt the adopted laws, the state of the economy and the unequal position of those who were supposed to comply with their provisions. The Law on Environmental Protection from 2004 followed a number of decisions and solutions, but not rules, and the adoption of the new Law on Amendments to the Law on Environmental Protection in 2009 was adopted. The Law on Environmental Impact Assessment has been largely revived, while the Law on Integrated Pollution Prevention and Control (EIA) is best illustrated by the fact that a negligible number permits has been issued so far, compared with the fact that this regulation was adopted in 2004, so the deadlines are changed with the revision of this act, which is mentioned within the concluding remarks.

Table 1: Excerpt of representative laws and by-laws related to environmental protection

Law	**Sector**	**Application and related institutions**
Law of Environmental Protection	All environmental media protection	Ministry, sectoral agencies, local administration
Law on Nature	All environmental media protection	Ministry, sectoral agencies, local administration
Law on Integrated Pollution Prevention and Control	IPPC/IED operators	Local administration, provincial secretariat, Ministry
Law on Water	Water protection, protection from water, water usage	Local administration, Public utility companies, Public water enterprises
Law on Emergency Situations	Sector for emergency management	Ministry, departments and units for emergency management
Rule on the content of the accident prevention policy and its content and methodology for the development of the Safety Report and the Accident Protection Plan	Industrial accident prevention	Local administration, Seveso III establishments

The 2009 period relates to the submission of Serbia's application for accession to the EU, which preceded the adoption of a number of laws in the field of environmental protection during the said year. The Law on Waste Management, the Law on Packaging and Packaging Waste, the Law on Chemicals, the Law on Protection against Non-Ionizing Radiation, the Law on Nature Protection, the Law on Protection against Noise in the Environment, etc. should be mentioned among the more important, adopted acts or sectoral laws.

This adoption, transposition, was a reflection of the expressed political will to start with the accession process, which was not preceded by a serious analysis, or a critical reflection on the obligations imposed on the subjects to which it relates. Although their adoption has had positive changes, they are still characterized by the lack of a more serious solution to the accumulated problems in the field of environmental protection. Among other things, the mentioned laws envisaged the adoption of a large number of bylaws within one year from the date of their adoption in order to make their provisions more correctly applied.

This has not been done, but are by-laws or passed years later or not yet. In the same year, the following documents were adopted as one of the conditions in the process of accession of Serbia: National strategy for Serbia's accession to the EU, Feasibility study and priorities defined by the European Partnership, Waste Management Strategy, Sustainable Development Strategy, etc. The National Strategy for Approximation in the Environment was adopted in December 2011. The strategy represents an upgrade of the National Program for the Integration of the Republic of Serbia into the European Union, the National Environmental Program and the National Strategy for Sustainable Development. The National Approximation Strategy has a dual purpose: to respond to challenges related to the application of European environmental legislation, and to provide the basis for accession negotiations under Chapter 27 (Environmental Protection).

The National Program for the Adoption of the Legal Framework of the European Union for the period 2014-2018 was agreed in July 2014 and defines the development and strategic goals, relevant policies, reforms and measures necessary for the realization of these goals (Orlando, 2013). It establishes a detailed plan for the harmonization of legislation and defines the administrative and financial capacity needed for this. The strategic framework of environmental policy in Republic of Serbia is constantly refreshed by changing already existing strategies, but also by parallel development of new ones.

INSTITUTIONAL FRAMEWORK

In the Republic of Serbia, in 2001, the Ministry of Health and Environmental Protection (with an internal unit of the Environmental Protection Agency) was established, which was not a long time since 2001-2002; it was succeeded by the Ministry of Natural Resources and Environment 2002-2004. (with the internal unit of the Forest Administration); then in the next Government, the Ministry of Science and the Department of Science - Ministry of Science and Environmental Protection 2004-2007 joined. (with internal units: The Environmental Protection bureau and the Environmental Protection Agency); in the next Government that survived only a year, the Ministry functioned without the associated sector - the Ministry of Environmental Protection 2007-2008. (with an internal unit Environmental Protection Agency); then the Ministry of Environment was added to spatial planning - the Ministry of Environment and Spatial Planning 2008-2012. (with the internal unit Environmental Protection Agency), so that in the next Government, the spatial planning would be replaced by energy - the Ministry of Energy, Development and Environmental Protection 2012-2014, and finally, in the Government, which was established in 2014 - the Ministry of Agriculture and environmental protection, while in the current Government there is a separate Ministry of Environmental Protection.

Agencies subordinate to the Ministry also have a significant role, among which the Serbian Environmental Protection Agency (SEPA) should be identified, which carries out tasks related to: collecting and unifying environmental data, processing them and drafting environmental reports and implementing environmental policy, as well as cooperation with the European Environment Agency

(EEA). The agency was established in 2003. Regulatory bodies that were established after 2004 have also been mentioned, and which strengthen the institutional infrastructure. The Chemicals Agency was established in order to provide administrative conditions for quality, efficient and safe management of chemicals and biocidal products. Public health institutes deal with observing and measuring the quality of ambient air, monitoring hygienic correctness of drinking water and noise in the environment. Among the institutions that provide the Ministry with information and reports on the state of the environment, it should be mentioned: The Republic Hydrometeorological Institute, the Institute for Nature Protection of Serbia, the Institute for Water Management "Jaroslav Černi", the Institute for Land, the Institute for Health Protection of Serbia "Dr. Milan Jovanović Batut" and other public health institutes in Serbia (SEPA, 2018; RHMZ 2018 and others).

CONCLUSION

In the period from the 1950s to the 1990s, environmental issues were treated as public health issues in Serbia, incorporated into the corpus of laws in the field of health and environmental pollution control. With the adoption and entry into force of the Environmental Protection Act in 1991, a period of allocation of the environment issues was market with initiative to observe it as a separate legal entity.

However, this law failed to regulate existing environmental problems, because the law was not followed by appropriate legal and regulatory acts that would regulate this area in more detail - issues related to air quality, water, noise protection, nature protection, chemicals management, waste, etc., which imply individual regulations for each of these areas. A very important set of laws in the area of environmental protection was adopted in 2004: Law on Environmental Protection, Law on Strategic Environmental Assessment, The Law on Environmental Impact Assessment and the Law on Integrated Pollution Prevention and Control.

The implementation of this set of law packages represented the next key challenge in the period of 2004-2009. The weak capacities of the state administration, the state's unwillingness to implement the adopted laws, the state of the economy and the unequal position of those who should comply with legal provisions were key factors of insufficient implementation, so that with regard to most of the laws, the period of final implementation of the provisions is most often shifted for 2015 and 2020 respectively (Vasovic, 2016).

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MULTI-CRITERIA APPROACH TO SELECTING ORGANIZATIONS FOR PROJECT IMPLEMENTATION - PARTICIPATION OF THE ELEMENTS OF PRODUCTION CYCLE TIME

Milan Nikolić*
University of Novi Sad, Technical faculty "Mihajlo Pupin", Zrenjanin, Republic of Serbia
E-mail: mikaczr@sbb.rs
Predrag Mali
University of Novi Sad, Faculty of Technical Science, Novi Sad, Republic of Serbia
Siniša Mitić
University of Novi Sad, Faculty of Technical Science, Novi Sad, Republic of Serbia
Zoran Lajić
Maran Tankers Management Inc., Fleet Performance Department, Kallithea, Greece

ABSTRACT

The paper presents the procedure of ranking and selection of organizations in which the duration of the production cycle and the individual participation of elements of working time in enterprises will be tested. Ranking of organizations was done using the TOPSIS method of multi-criteria analysis. Criteria are set based on the research needs that are being conducted in the observed organizations. In doing so, the criteria are: Organization size (by number of employees), Type of production in organization (by seriality), Order of operations in the production cycle and Location of the organization. Five available organizations were considered and they were ranked in the overall order. The TOPSIS method proved to be successful in solving the described problem of multi-criteria selection.

Key words: Elements of production cycle time, Selection of organizations, TOPSIS method

INTRODUCTION

The research, which involves examining the duration of the production cycle and the individual participation of work time elements in order to optimize the production cycle, involves the definition and selection of production organizations in which appropriate monitoring, recording and analysis will be carried out. These organizations have the role of research subjects in measuring the given elements of production cycle times. Given that there was a large number of organizations available, it was necessary to choose those organizations whose size and production cycles correspond to the needs of these research to the greatest extent possible. The choice of organizations is necessary on the basis of a number of criteria, such as: Organization size (by number of employees), Type of production in organization (by seriality), Order of operations in the production cycle and Location of the organization (availability to researchers). Therefore, this problem can be considered as a problem of multiatributive decision making, that is, multi-criteria analysis. The problem of multi-criteria selection, in this case, was solved using the TOPSIS method. This method gives ranks of actions in a complete order, so at the end of the procedure it is possible to choose the appropriate number of organizations for the purposes of the described research.

TOPSIS METHOD

TOPSIS method (Technique for Order Preference by Similarity to Ideal Solution) is a widely used method of multi-criteria decision making. The authors of this method are Hwang and Yoon (1981). TOPSIS method has significant similarities to the ELECTRE method (also method of multi-criteria

decision analysis), so that it can be viewed as one of the frequently used ELECTRE method variants. The authors of ELECTRE method (ELimination and Et Choice Translating REality) are Benayoun, Roy and Sussman (1966).

The essence of the TOPSIS method is to define the ideal (best possible) solution and the negative ideal (worst possible) solution. Then, the most favorable action is taken, where this action should be the most similar to the ideal solution (to have the least distance from the best action), and most different from the negative ideal solution (to have the greatest distance from the worst action). The TOPSIS method is applied through an iterative process, which means that the method has the appropriate number of steps. More about the TOPSIS method can be read in the references (Triantaphyllou, 2000; Nikolić, 2012).

RANKING ORGANIZATIONS USING THE TOPSIS METHOD

The choice of organizations is done between five actions:
a1 - Organization 1,
a2 - Organization 2,
a3 - Organization 3,
a4 - Organization 4,
a5 - Organization 5.

The selection is based on four criteria:
A1 - Organization size (by number of employees),
A2 - Type of production in organization (by seriality),
A3 - Order of operations in the production cycle,
A4 - Location of the organization (availability to researchers).

According to all four criteria, actions are evaluated by qualitative attributes. The quantification of these qualitative attributes is done in a manner that is determined by the needs of the research, which is realized in the observed organizations. In other words, the significance of some qualitative attributes depends on the needs of the research being carried out. In this sense, this problem of multi-criteria analysis is specific, so the method of quantification of qualitative attributes is given separately, in Table 1.

Table 1: Quantitative evaluation of the attribute

A_1 Organization size (by number of employees)	A_2 Type of production in organization	A_3 Order of operations in the production cycle	A_4 Location of the organization
Small (10-25) - 9	Little serial - 9	Parallel (interrupt current) - 9	Zrenjanin - 9
Small (25-50) - 7	Medium serial - 7	Parallel (combined) - 7	Beograd - 7
Middle (50-250) - 5	Serial - 5	Combined - 5	Čačak - 5
Micro (<10) - 3	Individual - 3	Parallel (continuous) - 3	Novi Sad - 3
Big (>250) - 1	Mass - 1	Regular - 1	Valjevo - 1

Initial matrix of decision making contains estimates of all actions according to each criterion in particular. In this case, all estimates are qualitative, and the initial decision matrix has the values given in Table 2.

Table 2: The initial matrix of decision making

	A_1 Organization size	A_2 Type of production n organization	A_3 Order of operations	A_4 Location of the organization
a_1	Micro	Medium serial	Parallel (interrupt)	Valjevo
a_2	Small (10-25)	Little serial	Parallel (combined)	Novi Sad
a_3	Middle	Medium serial	Combined	Zrenjanin
a_4	Small (25-50)	Serial	Parallel (combined)	Zrenjanin
a_5	Small (25-50)	Little serial	Parallel (continuous)	Čačak

The quantification of qualitative attributes is done on the basis of Table 1, where the estimates have the following meaning: 1 - very unfavorable, 3 - unfavorable, 5 - average, 7 - favorable and 9 - very favorable. The quantified initial decision matrix is given in u Table 3.

Table 3: The quantified initial matrix of decision making

	A_1 Organization size	A_2 Type of production in organization	A_3 Order of operations	A_4 Location of the organization
a_1	3	7	9	1
a_2	9	9	7	3
a_3	5	7	5	9
a_4	7	5	7	9
a_5	7	9	3	5

Step 1. Calculating the decision matrix N with normalized values

The normalized decision matrix N is formed from the normalized values nij, which are calculated according to the expression:

$$n_{ij} = \frac{x_{ij}}{\sqrt{\sum_{i=1}^{m} x_{ij}^2}}, \tag{1}$$

where is: i = 1, 2,..., m - number of action; j = 1, 2,..., n - number of attribute.

To translate minimization Aj into maximization Aj the following expression is used:

$$n_{ij} = 1 - \frac{x_{ij}}{\sqrt{\sum_{i=1}^{m} x_{ij}^2}}, \tag{2}$$

The normalized decision matrix has the values given in Table 4. In this case, there are no criteria with a minimization request, so only the expression (1) is used for normalization.

Table 4: The normalized decision matrix

	A_1 Organization size	A_2 Type of production in organization	A_3 Order of operations	A_4 Location of the organization
a_1	0.2055	0.4146	0.6167	0.0712
a_2	0.6167	0.5331	0.4796	0.2137
a_3	0.3426	0.4146	0.3426	0.6412
a_4	0.4796	0.2962	0.4796	0.6412
a_5	0.4796	0.5331	0.2055	0.3562

Step 2. Determination of the normalized decision matrix V with weights
In this step, the weights of all the attributes are first defined in the following way:

w1 = 0.30; w2 = 0.25; w3 = 0.25; w4 = 0.20.

Now we calculate weighted normalized decision matrix V with weights. In general, this can be presented in the following way:

$$V = \begin{bmatrix} w_1 \cdot n_{11} & w_2 \cdot n_{12} & \dots & w_n \cdot n_{1n} \\ w_1 \cdot n_{21} & w_2 \cdot n_{22} & \dots & w_n \cdot n_{2n} \\ \dots & \dots & \dots & \dots \\ w_1 \cdot n_{m1} & w_2 \cdot n_{m2} & \dots & w_n \cdot n_{mn} \end{bmatrix} = \begin{bmatrix} v_{11} & v_{12} & \dots & v_{1n} \\ v_{21} & v_{22} & \dots & v_{2n} \\ \dots & \dots & \dots & \dots \\ v_{m1} & v_{m2} & \dots & v_{mn} \end{bmatrix} \quad (3)$$

The weighted normalized decision matrix has values given in Table 5.

Table 5: The weighted normalized decision matrix

	A_1 Organization size	A_2 Type of production in organization	A_3 Order of operations	A_4 Location of the organization
a_1	0.06165	0.10365	0.15417	0.01424
a_2	0.18501	0.13327	0.11990	0.04274
a_3	0.10278	0.10365	0.08565	0.12824
a_4	0.14388	0.07405	0.11990	0.12824
a_5	0.14388	0.13327	0.05137	0.07124

In general, determining the ideal solution is done on the basis of the form:

$a^* = \{(\max v_{ij} \mid \max A_j), (\min v_{ij} \mid \min A_j), i = 1, 2, ..., m\}$

In general, determining the negative ideal solution is done on the basis of the form:

$a^- = \{(\min v_{ij} \mid \max A_j), (\max v_{ij} \mid \min A_j), i = 1, 2, ..., m\}$

As the normalization process provides for translation min A_j into max A_j, so when selecting an ideal and negative ideal solution, only the maximum values for a^* and minimal for a^- are taken into account. In this case, these are sets with the following values:

$a^* = \{0.18501; 0.13327; 0.15417; 0.12824\}$
$a^- = \{0.06165; 0.07405; 0.05137; 0.01424\}$

Step 4. Calculating partial distances
In this step, for each action, the distance to an ideal and negative ideal solution is counted. Euclid's distance is used:

The distance of the action a_i to the ideal solution is given by the expression:

$$S_i^* = \sqrt{\sum_{j=1}^{n} \left(v_{ij} - v_j^*\right)^2}, \quad i = 1,2,..., m, \quad (4)$$

The distance of the action ai to the negative ideal solution is given by the expression:

$$S_i^- = \sqrt{\sum_{j=1}^{n} \left(v_{ij} - v_j^-\right)^2}\ , \quad i = 1,2,..., m \tag{5}$$

Partial distances to the ideal solution are:

$$S_1^* = \sqrt{(0.06165 - 0.18501)^2 + (0.10365 - 0.13327)^2 + (0.15417 - 0.15417)^2 + (0.01424 - 0.12824)^2} = 0.17057$$
$$S_2^* = \sqrt{(0.18501 - 0.18501)^2 + (0.13327 - 0.13327)^2 + (0.11990 - 0.15417)^2 + (0.04274 - 0.12824)^2} = 0.09211$$
$$S_3^* = \sqrt{(0.10278 - 0.18501)^2 + (0.10365 - 0.13327)^2 + (0.08565 - 0.15417)^2 + (0.12824 - 0.12824)^2} = 0.11110$$
$$S_4^* = \sqrt{(0.14388 - 0.18501)^2 + (0.07405 - 0.13327)^2 + (0.11990 - 0.15417)^2 + (0.12824 - 0.12824)^2} = 0.07983$$
$$S_5^* = \sqrt{(0.14388 - 0.18501)^2 + (0.13327 - 0.13327)^2 + (0.05137 - 0.15417)^2 + (0.07124 - 0.12824)^2} = 0.12453$$

Partial distances to the negative ideal solution are:

$$S_1^- = \sqrt{(0.06165 - 0.06165)^2 + (0.10365 - 0.07405)^2 + (0.15417 - 0.05137)^2 + (0.01424 - 0.01424)^2} = 0.10698$$
$$S_2^- = \sqrt{(0.18501 - 0.06165)^2 + (0.13327 - 0.07405)^2 + (0.11990 - 0.05137)^2 + (0.04274 - 0.01424)^2} = 0.15567$$
$$S_3^- = \sqrt{(0.10278 - 0.06165)^2 + (0.10365 - 0.07405)^2 + (0.08565 - 0.05137)^2 + (0.12824 - 0.01424)^2} = 0.12938$$
$$S_4^- = \sqrt{(0.14388 - 0.06165)^2 + (0.07405 - 0.07405)^2 + (0.11990 - 0.05137)^2 + (0.12824 - 0.01424)^2} = 0.15638$$
$$S_5^- = \sqrt{(0.14388 - 0.06165)^2 + (0.13327 - 0.07405)^2 + (0.05137 - 0.05137)^2 + (0.07124 - 0.01424)^2} = 0.11627$$

Step 5. Calculating the distance from the ideal (best) solution

The distance of the action ai from the ideal (best) solution is determined by the expression:

$$C_i^* = \frac{S_i^-}{S_i^* + S_i^-}\ , \quad i = 1,2,..., m\ , \tag{6}$$

Based on the previous expression, it's valid:

$1 \geq C_i^* \geq 0$
$a_i = A^* \Rightarrow S_i^* = 0 \Rightarrow C_i^* = 1$
$a_i = A^- \Rightarrow S_i^- = 0 \Rightarrow C_i^* = 0$

Therefore, the higher the value C_i^*, this action is closer to the ideal (best) solution, and thus it is better. Thus, the actions are ranked according to the size of the value C_i^*.

Relative closeness to the ideal solution amounts:

$$C_1^* = \frac{S_1^-}{S_1^* + S_1^-} = \frac{0.10698}{0.17057 + 0.10698} = 0.3854$$
$$C_2^* = \frac{S_2^-}{S_2^* + S_2^-} = \frac{0.15567}{0.09211 + 0.15567} = 0.6283$$
$$C_3^* = \frac{S_3^-}{S_3^* + S_3^-} = \frac{0.12938}{0.11110 + 0.12938} = 0.5380$$
$$C_4^* = \frac{S_4^-}{S_4^* + S_4^-} = \frac{0.15638}{0.07983 + 0.15638} = 0.6620$$

$$C_5^* = \frac{S_5^-}{S_5^* + S_5^-} = \frac{0.11627}{0.12453 + 0.11627} = 0.4828$$

Step 6. Determining the ranks of the actions

The TOPSIS method allows the ranking of actions in the full order, according to the size of the value C_i^*. In the given example, the ranks of the actions are the following:

1. rank: action a_4 - Organization 4

2. rank: action a_2 - Organization 2

3. rank: action a_3 - Organization 3

4. rank: action a_5 - Organization 5

5. rank: action a_1 - Organization 1

CONSLUSION

With the TOPSIS method, the shares are ranked in the full order. As it is planned to conduct research into the elements of production cycle time in two organizations, in this case, the choice of falling into two first-ranked organizations: a4 - Organization 4 and a2 - Organization 2. The TOPSIS method proved to be extremely convenient and practical for solving the given multi-criteria analysis problem. The method has enabled the selection of representative companies in which, based on the observed criteria and attributes, a developed model will be developed for the purpose of monitoring and recording the production cycle, with the ultimate goal of optimizing non-production time in the observed enterprises, eliminating loss and stagnation.

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THE ROLE OF IMPLEMENTATION CONCEPT TQM AND SIX SIGMA IN ORGANIZATIONS

Nikola Petrović*
Ph. D. student, University of Novi Sad, Technical Faculty "Mihajlo Pupin" in Zrenjanin, Republica of Serbia
E-mail: petrovic.n26@gmail.com
Dragana Sajfert
College Dositej, 11000 Belgrade, Bulevar vojvode Pitnika 7, Republic of Serbia
Danka Joksimović
University of Novi Sad, Technical Faculty "Mihajlo Pupin" in Zrenjanin, Republica of Serbia
Tamara Golubović
University of Belgrade, Faculty of Mechanical Engineering, Belgrade, Republica of Serbia
Velibor Premčevski
University of Novi Sad, Technical Faculty "Mihajlo Pupin" in Zrenjanin, Republica of Serbia

ABSTRACT

Total Quality Management (TQM) represents a continuous satisfaction of consumer needs, wishes and demands. Advancement quality business becomes imperative of modern market and global flows. Quality was and still is the key aspect in the process competitiveness in the global market. It is necessary for management to ensure permanence advancement of the quality of products and services with minimal operating costs business. The Six Sigma represents an advanced function of the level of knowledge for advancement in managing the organization's business, with the aim of avoiding mistakes and malfunctions in technological and business processes. The Six Sigma introduces tools and techniques to improve the organization's process in terms of quality systems and reduce the number of defect products. Implementation concept of Six Sigma and appropriate techniques and tools for quality management contribute to the efficiency and effectiveness of the business is an approach that influences the increase in the level of quality and profit of the organization as a whole. This paper presents the criteria for the successful implementation and use of two concepts, TQM and Six Sigma in different areas of the organization.

Key words: Quality, TQM, Six Sigma, Organization.

INTRODUCTION

For any business enterprise it is important to achieve business excellence, which is based on meeting customers´ demands, improving the business productivity and corporative social responsibility (Ćoćkalo et al., 2015). Totola quality management (TQM) represents a multidimensional, dynamic model of business process management and human resources in order to increase productivity and the quality of products and services. The TQM concept is focused on constantly advancement of business performance. The implementation of this quality concept requires changes in the organizational structure, employee culture, and changes in business policy and procedures of the company. The Final goal TQM concept is to achieve a competitive positions via superior quality products and services (Đorđević & Ćoćkalo, 2007; Bakator et al., 2017). Total Quality Management (TQM), as a kind of philosophy, requires the necessary satisfaction of the needs of all users of services, improving internal processes that increase the profit of the organization and creating conditions for the production of new products and services, and thus increase market share at the global level (Petrović et al., 2018). The base philosophy of this concept is the utilization in companies regardless of their size, and industry. TQM tools and techniques can improve knowledge gathering from the internal and external environment of the organization (Love et al., 2010).

With the support of Lean philosophy, Six Sigma today presents a modern quality advancement technique. Suffice it to say that more than two-thirds of the global companies in the 500 largest group are applying Six Sigma. The idea behind Six Sigma is to improve overall business performance and increase customer satisfaction in the following way. The organization measures the number of errors in the process, systematically focuses on their elimination, and thus constantly approaches the ideal goal zero defect. Applying this concept to reduce costs of scrap with 20 - 30% to less than 0.1%, the need for control, shortening the cyclical times, lowering the price and increasing the quality of the product (Nastasić et al., 2011). Successful implementation of Six Sigma concepts requires inclusion of all employees and implies an appropriate level of training, depending on the position and work they perform (Nastasić et al., 2013). The Six Sigma has been embraced as a guide to improving organizational productivity (Dubeya et al., 2016). The Six Sigma is an improvement methodology in the field of Total Quality Management (TQM). It is defined as 'a methodology for pursuing continuous improvement in customer satisfaction and profit that goes beyond defect reduction and emphasizes business process improvement in general (Moosa & Sajid, 2010). Today companies need to constantly develop their competitiveness in order to respond to market changes (Đorđević & Bogetić, 2009).

In this paper, one of the successful factors of model implementation will be presented Six Sigma and Total quality management (TQM). Represented important factors for the success of these two concepts.

TOTAL QUALITY MANAGEMENT (TQM) AND SIX SIGMA

Implementation TQM

The success of every quality management concept depends on its successful implementation within the company (Hietschold et al., 2014). In practice, however, the implementation of TQM is a complex and difficult process and the advantages are not easily achieved (Rad, 2006). The concept of TQM consists of three components. First, the term 'total' assumes that all individuals associated with an organization contribute to quality management (employees, customers and suppliers). Second, 'quality' is the integral part of the corporate philosophy. Third, the term 'management' refers to the executive responsibility and relevance of managerial commitment (Hietschold et al., 2014). Successful implementation of TQM is influenced by a lot of factors. These factors are top management role in defining quality policies; role of the quality department; employee training, and new skills development; product, and service design, and development; quality management of suppliers; process management; product, and service quality reporting; employee relationships; developing good relationships with suppliers; improved communication throughout the organization; customer satisfaction orientation; strategic management; overall quality improvement; and increased productivity (José Tarí J, 2005).

In other articles, it was noted that the main success factors of TQM are systematic approach; process improvement; defining goals, and business strategies; quality measuring, and analysis; and corrective actions (Yusof & Aspinwall, 2000). It can be seen, that processes regarding product quality, and human resource management have a major impact of TQM success. If employees are aware of the importance of quality improvement, then TQM is more likely to bring better business performance (Bakator et al., 2018).

Changes in the environment of enterprises can be grouped into two aspects (Mihailović & Tanasković, 2017): customer requirements and competitiveness requirements of customers have rapidly changed, demanding a higher quality at a lower price. Development in the field of transport, distribution of products or services and the means of mass communication, has made that a customer can buy and get a product that is wanted at any time and at any location. With more opportunities, the buyer has become more demanding, both in relation to the quality of the product or service, as well as regarding the price. Products of poor quality or high price were out of the market. Quality has become an

important factor in sales, a company and top management, who did not understand the change, could no longer survive. Philosophy: „It is important to produce items that meet the technical specifications and adhere to the standards“, it became dangerous and led many companies into a snooker.

The intensifying competitive is affected focusing efficiency bussines. Due to the increased and clear requirements ie. customer expectations, the company had to become more efficient in terms of accurate and timely recognition of customers' demands and expectations (quality custom buyers): quick response to customer requests, better mastering and connecting their own internal processes. Successful companies have systematized and developed a variety of approaches and methods for these purposes, which we find under different names, the most famous is certainly Total Quality Management (TQM).

Quality should be developed starting from the customer's perspective and that is transferred as a written policy. Taking the customer and its demands for a primary aim of the process being observed, as an end result, it must have a product that has adequate performance, competitive price and to distribute it in the competitive intervals. The value for the customer is in combination with all three elements: quality, price and time.

Implementation SIX SIGMA

The Six Sigma is a set of techniques and tools used to improve the process, at the advanced level of knowledge in mathematics, probability, statistics and organization management (Popović & Miletić, 2016). Successful implementation of the Six Sigma concept includes quality integration in the company' main functions; spreading and utilization of the concept in all business processes; management support for putting quality as a top priority; and focus on well defined, and measureable goals (Shah & Ward, 2003). In order to successfully implement the six sigma concept, companies have to focus on process variation reduction, and to view projects ass tools through which cost reductions can be made, and higher customer satisfaction can be achieved (Bakator et al., 2018). The goal of Six Sigma is value creation through quality improvement (Van Iwaarden et al., 2008). Many organizations worldwide have implemented Six Sigma and achieved remarkable improvements in their market share, customer satisfaction, reliability and performance of products and services with impressive financial savings (Gijo & Rao, 2005).

The concept of Six Sigma is a strategy of business development, which aims to identify and eliminate possible errors and deficiencies in business processes directing the activities that are reliable for customers. The key components to the success of implementing Six Sigma are related to the commitment of top management, the supporting infrastructure, training and statistical tools (Drohomeretski et al., 2014; Petrović et al., 2018).

Six Sigma implementation involves the following characteristics (Drohomeretski et al., 2014):
- An understanding of project expectations from the shop floor,
- Leadership of top management,
- Disciplined application of DMAIC,
- Fast application of the project (3–6 months),
- Clear definition of results to be reached,
- Supplying of infrastructure to implement improvements,
- Focus on the consumer and the process,
- Focus on the statistical approach to improvement

Six concepts or constructs related to Six Sigma
- Top management leadership,
- Customer requirements,
- Focus on financial and non-financial results,
- Structured method of process improvement,
- Strategic process selection, and

- Full-time specialist, (Schroeder et al., 2008).

In fact, the term 'Six Sigma' refers to a performance target of operating within 3.4 defects per million opportunities (Shah et al., 2008). It is normal that this minimal error cannot be achieved immediately, it takes many years, but it is very important to achieve a certain goal (Petrović et al., 2018).

Common to most organizations that have successfully implemented Six Sigma was that previously had established a management system based on ISO 9000, TQM or BPR (Business process reengineering), established a culture of quality, characterized by an increase in customer satisfaction through continuous improvements in which all employees participate. Appropriate assumptions, beliefs, values, and norms of behavior help employees to, without significant resistance to change, accept and successfully apply complex concepts such as Six Sigma (Nastasić et al., 2011). Significant changes in the way the organization works can lead to a fundamental transformation of the organizational culture, which is recognized as one of the key factors or challenges for the successful implementation of Six Sigma (Zu et al., 2006).

CONCLUSION

After conducting the theoretical analysis in the domain Six Sigma and the TQM concept, it can be concluded that the goal is to improve the organization's business performance. In order to improve the organization must achieve various business objectives such as finance, reducing costs, reducing errors, customer satisfaction, product and service quality, and productivity. Six sigma is directed to the minimum quantity of production errors. The TQM concept is based on increasing product quality, reducing production costs, increasing organizational profits and customer satisfaction. Six Sigma and TQM has a significant role in the management and employee engagement in order advancement and perfecting performance, in these concepts of the nature of engagement in the organization is significantly different. Six sigma is an upgrade of existing models of quality management. One of the biggest problems with the concept of implementing the Six Sigma training employees, requiring the investment of significant resources, both financial and weather conditions. For this reason, it is expected that with the implementation of the concept of Six Sigma begins first in large companies, and then in medium and small organizations.

In the future, we should not be guided by the idea that quality in organization is a matter of "quality experts" but that quality depends on the performance of each employess in the organization. With the understanding of those elements and applying the principles of total quality menadžmnenta, quality must become a "way of life" of each employee, and eventually every individual (Mihailović & Tanasković, 2017). The modern economy requires flexible organizations that can be confronted with constant and frequent changes in the global market. A company with this way of thinking has no competition in the market, it has only opportunities for advancement (Stajić et al., 2017).

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CORE CORPORATE GOVERNANCE THEORIES – A MULTICRITERIAL COMPARISON

Ioana Pop*
"Lucian Blaga" University of Sibiu, Romania
E-mail: ioana.pop@ulbsibiu.ro

ABSTRACT

Corporate governance is a centre of interest for modern economics, with an undisputed impact in various areas, from accounting, corporate finance, management, business ethics, commercial law, sociology, and psychology. Since it involves interdependence, the belief is that the essence of corporate governance issues is reduced to shaping the prolific and efficient interaction between stakeholders in order to act together on the basis of shared viable values for the ultimate goal of welfare of the entity and the community in which it operates. Moreover, corporate governance has emerged as a result of the intense confrontation between the theories applicable to endogenous and exogenous relations established by the activity of companies that have shaped their evolution. At the same time, the last decade has been a true revival of the interest shown in corporate governance, largely due to abuses, failures and conflicts of interests, but especially their ineffective responses to visible insufficiencies. The summarizing conclusion is that there is a continuous and endless evolution of theories or models of corporate governance intersecting and assuming specific aspects of management, finance and legal fields.

Key words: corporate governance, agency theory, interest groups, market myopia, managerial hegemony

INTRODUCTION

Corporate governance has emerged as a result of the intense confrontation between the theories applicable to relations established by the activity of companies that have shaped their evolution. At the same time, the last decade has been a true revival of the interest shown in corporate governance, largely due to abuses, failures and conflicts of interests, but especially their ineffective responses. We admit that there is a continuous and endless evolution of theories or models of corporate governance intersecting and assuming specific aspects of management, finance and legal fields.

One of the reasons for this evolution is the minimal social consciousness and in the last few decades profit has become the central element of modern business. At the global level, the companies strive to instil the correct meaning of good governance into their corporate structure. It is unanimously accepted that once capitalism grew, corporations strengthened their power hence states began to make them concessions.

CORE CORPORATE GOVERNANCE THEORIES

Agency theory (also called agent theory) marks the onset of the development of fundamental theories of corporate governance, followed by developments in comprehensive directions through theories: administration, stakeholders, resource dependence, transaction costs, managerial hegemony, political and ethics theory. We noticed that subsequent theories do not address the regulatory framework of the subject, with the aim of studying the variables involved (the composition of the board of directors, the audit committee, independent directors, the role of senior management), seeking to quantify their impact and establish causation relationships over the various company-specific performance categories.

Developed around the ownership delimitation view of company control, based on the analysis of the heterogeneous group of interests generated by this separation, Berle and Means laid the foundations for the agency theory in 1932, later developed by Jensen and Meckling in 1976, identifying a first conflict between shareholders and managers, plus that between shareholders and creditors. Starting from the premise that the goal of each person is to maximize the usefulness of their own function, the economic reality establishes agent relations between the principal, the person who delegates the responsibility and the agent, that person who is entrusted with the responsibility and the authority to adequately represent the interests of the agent. This type of relationship can be established between: shareholders (principals) and managers (agents), shareholders and creditors, different categories of managers, majority and minority shareholders or other stakeholders. The imminent conflicts of interest between the parties involved in the company's activity can generate tensions that reduce efficiency.

At the level of a company, owners choose and mandate managers to represent them and make a profit to maximize shareholders' wealth. However, managers should maintain their own independence in order to be able to effectively pursue the interest of the company, not the various categories of shareholders, in exercising their authority over current operational decisions. Instead, shareholders should be responsible for controlling the company over the long term by building sustainable policies and objectives. Tensions may also arise from diverging views on dividend policy, as shareholders will prefer to distribute dividends, instead of reinvesting profits for self-financing investment projects, backed by managers. At the root of this dichotomy are the conflicting economic objectives and the impartiality of the principals and the agents (Năchescu, 2015, p. 14): the increase of the financial profitability, pursued by the shareholders and the operational stability, the freedom of decision, the increase of the company, the high level of remuneration, targeted by managers.

Agency theory implies an adverse selection if the shareholders cannot definitely appreciate the complete fulfilment of the agent's obligations set out in the mandate contract. At the same time, the moral hazard is inherent in the situation where the principal believes that since the agent does not bear the liability, he takes risks above the admissible, classified as opportunistic actions resulting from the exploitation of the information asymmetry. Thus, the level of self-agent risk is difficult to estimate and quantify. The solution comes in the form of rigorous and clear provisioning, contained in corporate governance codes, capital market regulations or practices that promote full transparency in the operational, decision-making and strategic activity of companies (Tricker, 2012, p. 6).

In the context of the above exposed, we believe that the alignment of the interests of all stakeholders on the axis of sustaining the prosperity of the company generates benefits for all the categories of actors involved or affected by its activity. At the same time, we admit that it is impossible that all situations and events that can occur in practice can be formally covered and formalized in a mandate contract, code or other document.

Providing an alternative perspective to agent theory, management theory has a source in the perspective of leading the company's owners, being marked predominantly by the psychological and sociological aspects of the issue. The shareholders, motivated by the company profitability, which enhances the return on investment in its capital, empowers and trusts administrators to protect and maximize their wealth, motivated by the success and satisfaction generated by the increase of the usefulness of their own function. Owners realize that managers will look for ways to increase their own benefits and interests. In this context, it is certain that the performance of management is conditioned by the concrete and coherent setting of its mission and liability.

Interest Groups theory (interested parties or factors) originates in administrators' theory and claims that companies have a (more or less significant) impact on the prosperity of a wide range of interested people. In the view of this theory, the company is a structural element of the community in which it operates, which implies a series of related social rights and obligations. As a consequence, corporate responsibility involves protecting the interests of all these typologies: shareholders, investors, employees, commercial partners (suppliers, customers), associations (commercial, professional, non-

governmental organizations), competition, political groups, members of the local community, the general public, capital markets, creditors (financial, commercial). By fulfilling the interests of all the factors involved, the value generated will be notably higher than the individual's potential (Năchescu, 2015). Moreover, in the theory's view, the company is dependent on the resources of the primary stakeholders, which provide its vital means in activity and for this purpose must establish relationships of trust with stakeholders: shareholders and clients ensure cash flows, suppliers facilitate the obtaining of raw materials, and employees provide the labour.

Although, at the beginning, the term stakeholder has been limited to the shareholders, according to Table 1, it is used in the sense of identifying the groups essential to business success, in the absence of which the company would cease activity (Năchescu, 2015). Therefore, the management has the difficult task of harmonizing the vast, divergent, notably contrasting interests of these groups, in order to guarantee the long-term prosperity of the company and obtain the expected results of the owners. They are conditioned by the existence of a structure of moral values that are viable and the respect of fundamental ethical principles by managers, to the detriment of their own financial interests, on the short term.

Table 1: Parties interested in company activity

Interested parties	Shown interest
Shareholders, investors	Investment recovery, dividends, net profit, decision control, notoriety and recognition
Financial creditors	Business and credit worthiness, solvency, liquidity, profitability, interest, fees
Employees	Job security, good working conditions, attractive salary, incentives, bonuses, promotions, health insurance
Clients	Quality, low prices, fair treatment, timely and accurate information, transparency
Commercial creditors	Observance of maturities and negotiated trading conditions, contractual terms, orders, fair competition, trust, transparency, debts payment at maturity
Local community	Area development, protect environment, sponsorship, jobs development
State and its institutions	Collecting taxes and duties, complying with regulations, investing, creating jobs, protecting the environment, protecting employees

Source: Author's projection

Consequently, diminishing conflicts of interest and enhancing the efficiency of a company may be favoured by considering the contributions of stakeholder groups in the process of substantiating the company's decisions. We believe that in this context, by promoting social responsibility, damaging the interests of any type of partner of the company will result in damaging the interests of the shareholders themselves.

Efficient markets hypothesis addresses the issue from the perspective of the investor. The company as a participant in the capital market must disseminate relevant information relevant to its activity through effective communication channels. Numerous studies have demonstrated that the efficiency of corporate governance guarantees the transparency of internal organization, which will result in a market value close to the company real value, plus a premium justified by the implementation of good governance practices.

MULTICRITERIAL COMPARISON BETWEEN CORE CORPORATE GOVERNANCE THEORIES

The need for a multicriterial analysis is met by the summarized comparison of Table 2 which briefly describes the core characteristics of the most notable theories in the field of corporate governance by analysing none fundamental criteria.

Table 2: Multicriterial comparison between core corporate governance theories

Analysis criteria	Agent theory	Interest groups theory	Market myopia theory	Managerial hegemony theory
Main theoretician	Berle and Means (1932); Jensen and Meckling (1976);	Mitroff (1983); Freeman (1984);	Blair (1995); Charkham and Sykes (1994);	Hutton, Kay, Silberston (1995); Keasey (1997);
Premise	Control property delimitation	Different variants of capitalism	Hostile takeover ideology in the USA of the `80s	Management, ideology and expansion, triad managerialism
Company scope	Maximize shareholders' profits	Maximize stakeholders' profits	Maximize shareholder's profits	Maximize company's profits
Problem identified in theory	Agency's problem	Lack of stakeholders' engagement	Concerns too accentuated on short-term market value	Misuse of management authority, to fuel its own interests
Causes that establish theory vision	Insufficient ownership control	Failure to represent every individual's interests	Inefficient market forces	Bad institutional arrangements
Casualty hypothesis	Behavior to satisfy their own interests	Traditional mentality of private property	Market inaccuracy	Authoritarian governance
Theory disputes	External interventions	Agent theory	Market governance	Agent theory
Theory propose	Market efficiency	Economy social efficiency	Long-term relationships importance	Manager's guardianship
Theory recommended solutions	Strengthen the reward system; Removal of market restrictions; Voluntary introduction of codes of governance.	Employees participation; Promoting durable contractual relationships based on trust; Companies cooperation; Business ethics.	Strengthening shareholders' importance and loyalty; Encouraging investments.	Statutory changes; Enhanced power for non-executive directors; Independent nomination of directors; Quadrant fixed mandates for senior executives.

Source: Author's projection

Based on the above table, we argue that the most serious issue of corporate governance is currently being encouraged by managers to focus on short-term profitability by sacrificing the company's competitive capacity and future values in the form of capital investment and research and development costs (Letza, Sun, Kirkbride, 2004, p. 8). It is believed that marketing myopia is pushing managers, though otherwise diligent, to make decisions by considering current quoted on exchange. At the same time, the issue of corporate governance is reduced to creating an environment that supports long-term performance engaging all parties appropriately.

CONCLUSIONS AND IMPLICATIONS

Taking into account all that is presented, in our opinion, good corporate governance implies the implementation of a combination of theories of the issue, which anyway intersects, develops and stimulates each other. Many authors such as Abdullah, Valentine (2009) and Williamson (2009) support the pluralism of theories, arguing that the cause of the multitude of possible issues encountered in the economic reality and which cannot always be expressly included in the field literature. We express our opinion that the transition from corporate governance to effective corporate governance can be achieved by respecting all the principles of good corporate governance contained in codes of good practices.

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Session B: HUMAN RESOURCE MANAGEMENT

Papers (pp. 93-130):

OVERVIEW OF STUDIES REGARDING THE INFLUENCE OF NON-VERBAL COMMUNICATION IN BUSINESS

Verica Gluvakov
Student, University of Novi Sad, Technical Faculty "Mihajlo Pupin" in Zrenjanin, Republica of Serbia
E-mail: vekagluvakov@gmail.com

ABSTRACT

This overview has aim to show how different signs of non-verbal communication affect business and relationships among employees. Conclusions are based on previously conducted researches with different methodologies and goals. Different researches and authors consider the effects of non-verbal communication in business and this overview had goal to make such connection between them that some universal conclusions can be made. Since practical meaning of non-verbal signs is mostly in business environment, conclusions will be focused on that, mainly on how they affect employees and business partners.

Key words: communication, non-verbal signs, business

INTRODUCTION

Non-verbal communication is the way people communicate without a word, intentionally or unintentionally. Non-verbal behavior and communication are used to express different emotions, show attitudes , reflecting personality traits, etc. Non-verbal communication includes certain signs that include facial expressions, gestures, various body positions and movements, as well as touches and views. Non-verbal signals show thoughts, emotions, attitudes and traits. They are also support for verbal communication or replacement for it. Movements present moods and states, they allow expressing agreement or disagreement, acceptance or refusal. Through non-verbal communication, based on the psychological meanings of its indicators, there are instincts and intuition, a sense of other people develops, sensitivity and flexibility. Most contemporary research in the field of communicology shows that non-verbal communication is crucial in the first contact. More than 50% of the complete impression, especially when getting to know (the first impression), is formed on the basis of non-verbal communication. This moment is in the domain of intuitive, unconscious (Piz, 2013). Other say that there are inference of attitudes from non-verbal communication in two channels. Three degrees of attitude (positive, neutral and negative) in facial expression were each combined with three degrees of attitude communicated vocally. The vocal communications of attitude were superimposed on a neutral word. In preparing the 2-component communications, the components were selected so that the degree of positive attitude communicated facially was equivalent to that communicated vocally. The independent effects of the two components were comparable. It was found that attitudes inferred from combined facial-vocal communications are a linear function of the attitudes communicated in each component, with the facial component receiving approximately 3/2 the weight received by the vocal component (Mehrabian, 1967). One of the most popular communication model is the one by Albert Mehrabian, who have become known best by his publications on the relative importance of verbal and non-verbal messages. He have also become known for the "7%-38%-55% Rule", for the relatve impacts of words, tone of voice, and body language when speaking (Mehrabian A. , 1970). Visual representation of communication model by Albert Mehrabian is shown on Figure 1 and it will be important for some of the following analysis. The purpose of this overview is to analyze papers with different conclusions and consider the impact of non-verbal signs in business and organizations.

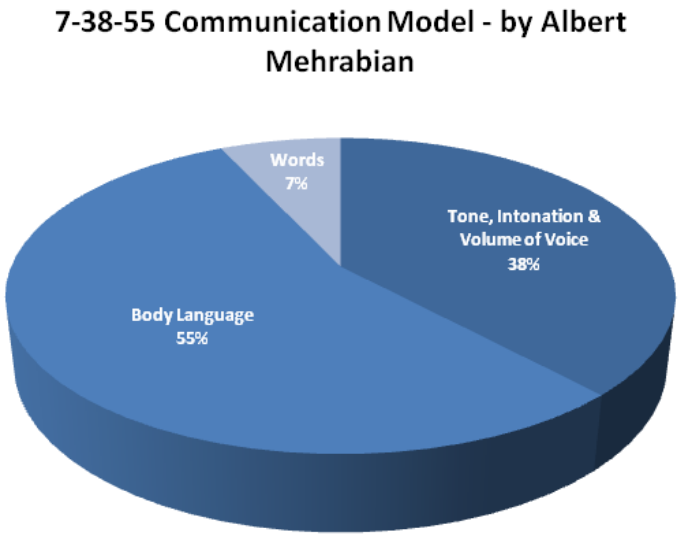

Figure 1. Communication model by Albert Mehrabian

METHODOLOGY

The subject and The Problem of Research

This paper will deal with considering how different signs of non-verbal communication affect people in the field of business and how they are recognized and interpreted. Also, this overview won't be focusing on specific aspect, rather try to observe as many different studies as possible. Overview will also try to answer how business partners interpret this type of communication in cooperation with others.

Research Goals

The main goal of this paper is to determine the impact of non-verbal communication on the choice of partners for business cooperation as well as to show how different characteristics are perceived in companies. It also aims to respond to which are the most commonly used and expressive signs of non-verbal communication, expressed on a conscious or unconscious level.

Research Question

Based on analyzed theories I shall try to answer following questions:

- Which are the most remarkable signs of non-verbal communication in business?
- How they are interpreted in business relationships?
- How they affect business cooperation?

Research Method

This is a form of theoretical research in which conclusions are based on previous researches and their comparison with one another. Research will consider their methodologies as well as analyze results and compare them with results of some seemingly unconnected studies, all in hope of revealing information that were previously concealed.

RESULTS AND DISCUSSION

The first reviewed study aimed to determine the types of non-verbal communication codes and behavior. A significant part of communication that takes place between people is non-verbal. It was

established that even when people stop speaking, they do not cease to communicate, because their bodies are constantly sending information about themselves (Stajčić, 2013). According to this study, these signals may indicate the current emotional state of the speaker, but they can be misunderstood. Therefore, understanding non-verbal communication can and should be a key of effective communication. It was established that verbal code used in appropriate syntax, has a denotative meaning. On the other hand, for interpreting non-verbal communication dictionary does not exist. Non-verbal language can be interwined with verbal language, and may complement it, accent, substitute, repeat or even contradict it. According to Stajčić, understanding of non-verbal codes is, therefore, a key factor in the process of communication, both among members of the same culture, and between members of different cultures, and as a result it is expected to achieve intentional didactic, economical or business goal.

Another study shows that non-verbal communication such as gestures, eye movements or psychical distance is an essential aspect of any interpersonal communication (Šapić, 2018). For example, body movement skills are necessary in order for the seller to be succesfull in selling and professionally delivering services while also emphasizing the importace of personal space insight in communication. This need is particularly prominent in international marketing because many sellers often do not know the body language that is considered appropriate in the cultures in which they work. The non-verbal communication of the seller affects the consumer's perception of the seller and the evaluation of the sales presentation. The first impression that the seller leaves on the consumer can significantly influence his purchasing decision because sellers communicate their personality, influence and motivation in the first few seconds of interaction (Ambady, 2006). According to Ambady, estimates that consumers receive in the first few seconds affect their behaviour, decisions and infuence, and they not only have a significant impact, but in most cases prove that they are correct. The first impression is primarity based on the look of the seller, why he must look clean, neat, must be wearing proffesional clothes etc. At the end of this study, a test was conducted to examine the median effect of satisfaction between the communication skills of the sellers and consumer loyalty. In order to arrive at the relevant results of the research on the basis of which the hypotheses are to be tested, primary data were collected by the survey method, questionnaire techniques. The questionnaire includes 15 scaled seven-month Likert findings and 3 questions related to demographic data on respondents. On the scale from 1 to 7 respondents showed their degree of agreement with the stated findings, whereby grade 1 denotes absolute disagreement, and grade 7 is absolutely consistent with the statement. The first five statements relate to the skills of verbal communication of the sellers, while the next six conclusions of the measure of the skill of non-verbal communication of the sellers. These two variables are formed from SERVQUAL models for measuring the quality of services that include dimensions: tangibility, reliability, responsibility, empathy and security (Parasuraman, 1988). 229 questionnaires were answered by personal questionnaire, 229 respondents were surveyed. The sample of respondents is segmented by sex, age and education. In a sample of 229 respondents, 154 respondents (67.2%) were female and 75 (32.8%) male. The highest number of respondents (196 or 85.6%) has between 18 and 35 years, 23 examinees (10%) have between 36 and 55 years, while 10 respondents (4.4%) have 56 or more years. The most reliable variable is non-verbal communication, followed by the satisfaction variable, followed by loyalty, while the least reliable variable is verbal communication. It is concluded that non-verbal communication has a statistically significant impact on loyalty, and this regression model explains 32.7% of libel variables.

Communication presents the openness of the peoples toward each other, it is a way of human survival. Shaking hands is the most common non-verbal communication signal used in the business environmet and relationships. Corporate culture becomes global and more uniform. Business and communication skills are essential for actors in the international market, and hands shaking is a universal greeting in many cultures (Lukač-Zoranić, 2013). The method of greetings when getting to know people reveals much about the interlocutor, especially in the domain of non-verbal communication.

When handling, care must be taken to ensure that the handshake itself and the way we get to know them are much about us (Piz, 2013). According to Piz, examples of hand-giving reveal a lot about the interlocutor: if he/she gives you an open hand, it means that the person is not scared and is ready, if the

hand is open, but the handshake is hand-in-hand, then the person shows that he does not want to over-hire, but leaves it to others etc. Piz also explained how to recognize a fake smile. According to Piz, many psychologists have studied smiling techniques to conclude that a false smile is a smile that only provokes the cheek muscles, creating the impression that a smile is formed on the face. However, if the eyes do not move and do not follow the movement of the face muscles, one can know that the smile is false. An honest smile spreads the mouth and eyes and makes the forehead and face get a different, happy appearance. A pleasant expression of the face and a friendly smile is very suitable for the realization of new business partnerships, as well as for achieving better relations among the employees in the working environment.

Another study shows that service behaviour combined with positive signs of non-verbal communication significantly affect the achievement of better business results. The subject of the research in this paper is the empirical examination of the relationship between employee service behavior (expected service behavior and service behavior above expectations) and the quality of tourist services (key dimensions of service quality: tangibility, reliability, readiness for response, security, empathy) (Vučković, 2015). According to Vučković, expected "role-prescribed service behavior" refers to the expected behavior of an employee who is based on implied, implicit norms that apply in the workplace, or in the explicit obligations contained in organizational documents, such as for example job descriptions and service-level behavior above the expected ("extra-role service behavior") involves discretionary behavior of employees who come in direct contact with the guest, which pre-validates the scope of the formal requirements of the specific job. In other words, it includes special service actions in which guest employees make additional efforts or perform and what they are otherwise not charged with. The collection of data from employees on the first service line (receptionists, staff in the spa and wellness center, room laundry, etc.) and their direct managers at the hotel in Serbia was done using the questionnaire method. The questionnaires were filled out by 80 employees in the first line of service and their direct managers, which is 72.73% of the total number of these employees. The sample of employees consisted of 40 women (50%) and 40 men (50%). As for the age structure of the respondents, "under the age of 30" there were 32 (40% of the sample tested), "between 30 and 50" 42 (52.5% of the examined sample), while 6 employees were older than 50 (7.5% of the tested sample). Also, the questionnaires were filled in by 80 guests. In the sample there were 45 (56.25%) male guests and 35 (43.75%) guests of female sex. As for the age structure, the most respondents (48, i.e. 60%) were between 30 and 50 years old, in the second place (20, i.e. 25%) were older than 50 years, and under the age of 30 there were 12 (15%). An empirical study of the relationship between service employee behavior and service quality has confirmed that both "expected service behavior" and "service behavior above the expected" positively influenced "reliability", "willingness to respond / respond", "security" and "empathy ", As the dimension of the quality of the service, or their perception. In other words, through positive service behavior in combination with positive nonverbal communication achieved primarily through the adequate application of human resources management tools, the quality of the services perceived by guests could be enhanced.

Here is another example of work showing how courtesy influences non-verbal communication. In non-verbal communication, there are certain rules of behavior that, if violated, violate our ethics, causing discomfort and damage to the environment. The only difference is that we are more aware of courtesy in verbal communication, while (mainly because of insufficient knowledge of body language) we understand nonverbal behavior most often on the subconscious level. Knowing the rules of non-verbal communication in certain situations, we can send a picture of ourselves in the environment as a confident and reliable person, but also to easily assess the person with whom we communicate (Marot, 2005). Studying intercultural communication Edward T. Hall (pointing out that culture is communication) concludes that sentences themselves can be devoid of meaning, and that other (non-verbal) characters can be much more eloquent than them, adding that nonverbal communication is a long-lasting process because none of them a person can not, in a short time, show the way it is, and it takes years to get to know each other. As in verbal, in nonverbal communication, expression of courtesy can be traced in a series of situations, from private to public (Hall, 1976).

CONCLUSION

Taking in consideration all previously mentioned researches and paper works following conclusions were made. Signs of non-verbal communication can certainly have an impact on business and relationships among people in the business environment, but their control and understanding is necessary in order to avoid discomfort in business (RQ:1). Good business relationships refer not only to the satisfaction of business associates and consumers, but also to the good communication skills between them (RQ:2). The quality of interaction between employers and consumers significantly determines not only the current satisfaction but also the long-term intentions of the consumer towards the enterprise. The results of the research show that the assumptions about the influence of the skills of verbal and non-verbal communication of the sellers on the observed aspects of consumer behavior are proven, with the influence of non-verbal communication in both cases stronger (RQ:3). Recommendations to companies are to adequately manage their work service as well as to work on improving the communication skills of their employees through training or skills development training, as the research confirms that they are significant from the point of view of consumer satisfaction and loyalty (RQ:4). Knowing the techniques of non-verbal communication, controlling its symbols, and combining colors as psychological influences makes the negotiating power in the business environment and the construction of a position reach a higher level, and consequently, progress in business fields.

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PREVENTION OF CIRCADIAN DESTRUCTION, RHYTHM AND REGIME OF LIFE AND WORK OF A SAILOR ON A "NAVY VESSEL" IN THE WORK OF MARITIME ERGOSOPHOLOGY

Danilo A. Đurović
University of Montenegro, Maritime Faculty of Kotor, Kotor, Montenegro

ABSTRACT

There are many written, proposed and adopted articles on board and maritime profession so far, not a small number of rules and laws aimed at safe sailing of ships and boats with alluvial seas and oceans, rivers and lakes. Much has been said about this and about safe loading- unloading of cargo regardless of its type (bulk, container, piece, liquid, gas, etc.). Apart from the adopted laws and regulations and in many cases of undeniable incidence, we believe that the prevention of overall seafarers' health on "long-haul boats" has its current legitimate priority. This issue has been dealt with and is still being dealt with by many professions and professionals from the field of psychology, sociology, health care, medicine, work and maritime law, occupational safety, meteoropathology.

Key words: maritime ergosophology, destruction, prevention.

INTRODUCTION

More than twenty years ago at the (then) Faculty of Maritime Studies Kotor prof.dr sci. Danilo A. Đurović suggests introducing Maritime Ergosophology as a compulsory subject (which is also accepted). It is the first maritime field faculty in the region and beyond which has valued and accepted the introduction of Maritime Ergosophology as a professional educative teaching material. Maritime ergosophology has the task and the goal, the educational vitality of candidates for professional maritime professions (sailors and boatmasters), as well as other professions belonging to the classification of "white auxiliary staff" (seafarers) and maritime management. Under the term "ship crew" has always, and still today, meant the total number of engaged persons on a "long-haul ship" to perform professional and other service-auxiliary activities.

Maritime ergosophology as a multidisciplinary science (or scientific area) is subordinate to all active (embattled) members of the ship's collective on the "long-sailing" boat in order to provide a healthy collective, undisturbed and safe operation of the steering-propulsion, techno-informational, and service transport predictability. On the other hand, Maritime Ergosophology offers a much more powerful and dispassionately promising educational edifice related to the preservation of seafarers' health, which very often disrupt the specific conditions in navigation. Maritime Ergosophology as a professionally wise science, the problem of seafaring health of a sailor on a "vessel of long sailing" is observed through circadian destruction, which is often "defined" in the opus of "illness or disturbance without diagnosis".

Not a small number of curious people are asking, "How can a disease be diagnosed or" defined "as a" disease without a diagnosis "if a" diagnosis "has already been established. It is true that a very common circadian disorder is attributed to a "diagnosis" that is symptomatic for a health condition or behavior, but it is also evident that the cause of the disease is pervading two or more disturbances. That disturbance factor that contributes more to the actual circadian disorder is taken for diagnosis.

Even in the time before Hippocrates it is known that "doctors" primarily treated the soul rather than the body, because they believed that every illness was created precisely because of the psychological

imbalance, and that the current disorder must primarily be influenced by the effect on the restoration of the spiritual-mental balance. Maritime ergosophology as a wise science has recognized the causes of a large number of illnesses and injuries to sailors of "long sailing" precisely because of the actual circadian destruction, which has its influence on one side on the occurrence of psychosomatic pain at the seafarer and on the other hand on its sociophysiological alteration.

Evidence of psychosomatic suffering and sociophysiological alterations give a picture of an unusual health condition that we rightly call "disease without diagnosis". Those who deal with the naval profession in terms of health, injuries and illnesses in "long sailing" seafarers often indicate that the cause of injuries and illness in seafarers is human error in work, fatigue, and the like. Our twenty-nine-dimensional research on "long sailing ships" is in favor of the hypothesis that the life and work of seafarers alongside a professional specificity, compared it with the land-based professions (very difficult, it would be impossible) is daily "attacked" by stressing effects by creating a kind of stressful ambience stressor fields). We do not use the term stress here, because stress and despite the fact that it is a regular occurrence in almost all life, work and out-of-work activities, both in the land and in the maritime professions, has its own "driving phenomenon".

Stressive effect as a term interprets a disturbance event, ie active circadian dysfunction, which requires urgent application of adaptable mechanisms and processes (depreciating factors, systems and processes). The term "stress field" states that the established circadian process is strongly attacked by external and / or internal disturbance factors, causing the circadian rhythm and the life and work regime of a sailor on a "long sailing ship" brought to an unidentified and very dangerous, risky health status. Precisely the presence of a "stress field" on circadian harmony justifies the setting of a diagnosis for current injury or pathogenesis under the term "disease without diagnosis". To make the readers of this report more explicitly explain the difference between stress, stressor effect, and stressor field, we are free to make one comparison. If we hold an explosive device in our hands, then we still have time to consider what can be destroyed or destroyed by any eventual activation. Thus, stress as a driving energy promptly gives and warns of any dangers or driving impulses that can manifest itself in the timely and adequately taking over the corresponding preventive actions.

The stress effect is manifested when we have already made the decision and retracted the fuse on that "explosive device". So, in this situation, we still have the ability to move away as quickly as possible and move away from this device so that any injury and danger to our health and the overall ecosystems are minimized, and if it is undeniable that the "stressor effect" evidently as an event that influenced the emergence of church destruction. Stress field is a flawed factum in which we can point out certain disturbances and dangers arising from the so-called "Explosive devices". Thus, this situation has a strong impact on the creation of the circadian destruction of the rhythm and regime of life and work of a sailor on a "long sailing ship" requiring much more powerful "medications" that could help in an adequate curative but not a primitive way in a longer period of time, recover recovery ie reliability of circadian vitality.

WHAT DOES MARITIME ERGOSPHOLOGY STUDY?

Maritime ergosophology in the professional educational material offers wise and valid vital graders, implemented in the maritime professional specification, with the aim of accepting maritime profession as a proper professional orientation and therefore a reliable and healthy motivational choice. Maritime ergosophology emphasizes this in particular because in its multi-decennial research material, a person engaged in a "long sailing" boat was recognized, which was replaced by a real professional motive with a faster work engagement and motivation for greater earnings. With this statement you can add the desire for a "free" tour of the ports, cities of the World. In the last ten years, the opaque approach to the study of Maritime Ergosophology, among the many destructions that the engaged sailor is carrying on a "long sailing ship", is not a negligible fact that a small number of "seafarers" (engaged on a ship) were detained and taken to foreign prisons (state) by port and border services due to unauthorized invasion (smuggling-illegal) of "goods".

Because of this "inconvenient and irresponsible" approach to seafaring, on the other hand, there have been increased and much more powerful circadian destructions that have the effect of creating and developing health, social and operational undesirable consequences. What effect does maritime ergosofology have? By studying Maritime Ergosophology in Maritime Schools, a premature correction is achieved in the continuing education of candidates, who understood and understood the significance and importance, as well as everything a boat requires and offers to the engaged individual and crew of "long sailing". Those educators, future candidates for naval vocations who, in addition to the educational material offered to them by Maritime Ergosophology as an obligatory teaching subject, want to continue their initial education in the maritime profession, helps to carry out "in themselves and themselves" certain corrections in terms of adaptive values , which will alleviate, not always, desirable "maritime situations" that impose conditions on navigation, work tasks, multi-dimensional distance and separation from the family, nostalgic effects, nautical illness, meteorological inclination and its "aggressive" variables, space, conditions in navigation, short stay in the harbor and many other things that make the maritime specific.

More multidisciplinarity Maritime ergosophology is integrated through historical and current knowledge that offers Prakseology, Ergonomics, Ergology, Ergososology, Ecosyphology, Ecosystemology, Urbosozology and Urbosophology. In order to justify the correct scientific multidisciplinary cooperation of the mentioned scientific fields, we believe that it is necessary to point out in the defense and justifiability of the study of Maritime Ergosophology, that among the basic educational constructions it is implemented: Maritime Psychology, Psychosociology of Workers and Seafarers' Behavior, Sociopsiology of Labor and Maritime Behavior, Psychoanalogy, Medicine Labor, Meteoropathology, Moral Mental Vitality, Moral and Mental Contamination, Ecology and Religion, Technophysics of Work and Kinesiotherapy.

It can be concluded that Maritime Ergosophology in the creation of its scientific professional material uses the knowledge and results of research of many scientific disciplines that have helped to modernize or compare certain gaps in the educational dispersion of maritime professionalism. In addition to the abovementioned, Maritime Ergosophology suggests that in the domain of preventive-curative knowledge, further vocational candidates for professional maritime professions should be further promoted as well as vocations that may be engaged on a "long sea cruise ship" in the field of Maritime Ergososology (Occupational Safety and Protection from Piracy).

The contribution of the professional selection-selection of "candidates for engagement in ship services" is very often questionable when it comes to the "qualitative assessment" of staff in the engagement of professional sailors and seafarers on "long sailing" ships. In this article, we omit the text "candidate for maritime science", as the candidate for maritime science is a person who is professionally educated and certified to work professionally in organizational and operational informative tasks, which are in line with certain professional tasks (nautical and boatmasters). The aforementioned "candidate engaged in ship services" refers to the engaged maritime professional person as well as those persons who are not specifically (professionally) educated for maritime professions. These persons engaged on a "long-sailing" ship in the capacity of "white-auxiliary" personnel and their attitudes are not closely related to maritime professionalism, and are partially subject to and engage in the imperatives of the maritime profession.

Professional-moral codophage of doctors and / or health-care commissions is a very important factor in (non) harmonizing the ability of candidates for a maritime call.

Finally Maritime Ergosophology as a wise science seeks to point out that the quality and reliability of the behavior of the life and work of the members of the naval collective "long sailing", with the exception of the proper orientation of the candidates for the maritime profession, quality education and professional teaching staff, is very important for the socio, i.e. a seaman engaged on a "long sailing ship".

CONCLUSION

Under the full scientific and moral responsibility, we point to the professional justification of the study of Maritime Ergosophology as a science-teaching (maritime education) subject in maritime schools starting from the middle, high, to the studies that teach naval academic titles such as masters and doctors of science.

Maritime ergosophology, in addition to teaching science, maritime-professional vitality, offers socio-human values, which are particularly important in terms of specific working life constraints and contemporary conditions in navigation. The ship as an urban system on the one hand, and on the other hand as a urbo restrained system with all meteoro-temporal forces, distance travel by sea and oceans, multidimensional separation of members of the ship's collective from members of its primary family, imposes certain circular destruction that inevitably affect the occurrence and the state of psychosomatic suffering and sociophysiological alterations of current seafarers. All these acquaintances as a regular or extraordinary phenomenon give maritime professionalism a certain specificity that gradually but surely disrupts its health.

It is very important to note that, Maritime Ergosophology does not want to, or can dispute, not only the national, but also the global importance and the economic and service and transport significance of maritime affairs. Noting the above significance, Maritime Ergosophology wishes to point out to the understanding that the seafarer has always been observed through the capacity of the ship, intended for the ship, the value of the cargo, the time of sailing, the overhaul of the ship, the stay of the ship in the harbor and the anchorage as well as other techno- while the seafarer discussed very little in that martial that he, as a human being, will be needing and crippled, sincerely deserves it. For this reason Maritime ergosophology as a wise science puts an accent on the sailor and his behavior and health as the main participant in maritime transport-service and in general modern business activity.

MORNING: "By studying Maritime Ergosophology as a socio-human vocational science that elaborates in a very correct way the spiritual and sociomorphic variables evident in the opus of psychosomatic suffering and sociophysiological alteration, it can be preventively and correctively involved in mitigating circadian destructions."

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MEASURING STUDENT SATISFACTION AND SERVICE QUALITY IN HIGHER EDUCATION

Anja Janković*
University of Novi Sad, Faculty of Technical Sciences, Republic of Serbia
E-mail: anjajankovic@uns.ac.rs
Nenad Simeunović
University of Novi Sad, Faculty of Technical Sciences, Republic of Serbia
Anja Kostić-Zobenica
University of Novi Sad, Faculty of Technical Sciences, Republic of Serbia
Branko Markoski
University of Novi Sad, Technical Faculty "Mihajlo Pupin", Republic of Serbia
Slavko Rakić
University of Novi Sad, Faculty of Technical Sciences, Republic of Serbia

ABSTRACT

Evaluation of educational service quality is important for providing a feedback on the effectiveness of educational systems in order to create high quality systems. Institutions that decide to apply one of the instruments for measuring quality and satisfaction in return receive multiple benefits. One of these instruments to measure the satisfaction is SERPERF model. This instrument is designed for the measurement of service quality and customer satisfaction. This paper aims to examine student's satisfaction at the course of "Management in healthcare". Faculty management have the opportunity to efficiently plan future steps in order to prevent problems. By improving certain dimensions of service quality, multiple increases of student satisfaction is expected, which then spread positive „word-of-mouth", which consequently provides a competitive advantage on the higher education market for these institutions. The research was conducted at the Faculty of Technical Sciences, University of Novi Sad on Specialist vocational studies and provides an overview of the most important results on this subject.

Key words: Service quality, SERVPERF, higher education institutions, user experience.

INTRODUCTION

This paper presents the analysis and evaluation of educational service quality among students of Specialist vocational studies at the University of Novi Sad, Faculty of Technical Sciences. The aim of this paper is to examine the students' perception of service quality at the course of "Management in healthcare" as well as their satisfaction. Considering that faculties have seen the provision of higher education to become a product, they have been driven by competition to examine the quality of their services, to redefine their product and to measure customer satisfaction in different ways (Kotler, 1985). Universities have realized that their survival depends on service quality to differentiate one faculty from others (Aly and Akpovi, 2001). Some researchers, believed that it is service quality that leads to customer satisfaction, so it is necessary to analyze and evaluate the quality of service to improve it (Douglas, McClelland and Davies, 2008).

Significant number of authors proposed that there should be a specific instrument devised for the evaluation of service quality, beyond the more traditional questionnaires. SERVQUAL is a well-known and much used instrument for measuring customer perceptions of service quality (Oldfield and Baron, 2000; Rodrigues et al., 2011). Over time, a few variants of the scale have also been proposed. The SERVPERF scale is one such scale that has been put forward by Cronin and Taylor (1992) in the early nineties. This article presents the results of student surveys and evaluation of service elements that represent quality dimensions, using the SERVPERF scale.

LITERATURE REVIEW

The major contribution of Parasuraman, Zeithaml and Berry (1988) was to provide a definition of service quality. They defined service quality as 'a global judgment, or attitude, relating to the superiority of the service', and explicated it as involving evaluations of the outcome and process of service act. In line with the propositions put forward by Gronroos (1982) and Smith and Houston (1983), Parasuraman, Zeithaml and Berry (1988, 1991) posited and operationalized service quality as a difference between consumer expectations of 'what they want' and their perceptions of 'what they get.' Based on this conceptualization and operationalization, they proposed a service quality measurement scale called 'SERVQUAL.' SERVQUAL questionnaire was designed to measure both expectations (forecast) and perceptions (what actually happens) of a firm's service quality. Cronin and Taylor (1992) disputed the appropriateness of measuring the gap between expectations and perceptions. They developed and tested an alternative instrument which measured performance only (SERVPERF) based on the construct that 'service quality should be measured as an attitude'. Methodologically, the SERVPERF scale represents marked improvement over the SERVQUAL scale. Not only is the scale more efficient in reducing the number of items to be measured by 50 per cent, it has also been empirically found superior to the SERVQUAL scale for being able to explain greater variance in the overall service quality measured through the use of single-item scale (Sanjay K Jain and Garima Gupta, 2004).

Customers cannot see a service but they can see and experience various tangible elements associated with the service. They see service facilities, equipment, employees, uniforms, pamphlets, leaflets, and these are referred to by Zeithaml et al. (1992) as 'clues' and, as advocated, it is possible to 'manage the evidence' using the clues. SERVQUAL defines five dimensions for quality (Tsinidou, Gerogiannis and Fitsilis, 2010):

(1) Tangibility: The appearance of physical facilities, equipment, support services and service personnel.
(2) Reliability: The degree to which the knowledge, skills learned and services are offered accurately, dependably and on time without errors.
(3) Responsiveness: This refers to the willingness to help customers and meet their needs and wants. In difficult situations, it is also the ability to respond effectively.
(4) Assurance: The confidence and trust that the customers hold towards the institute and the feeling of safety in case of danger.
(5) Empathy: The attention and care that the institution may offer to customers. This part also refers to convenient operating hours.

PROPOSED RESEARCH MODEL

Based on the literature review the following research question was proposed to evaluate the service quality at the course of "Management in healthcare":

RQ1: Which quality dimension is best rated in higher education institutions?
RQ2: Which quality dimension is worst in higher education institutions?

The answers to the above research questions should give an overview of the strengths and weaknesses of the examined study program, in order for the faculty to turn weaknesses into the strengths.

METHODOLOGY

Given that the target student population had been at their university for at least six months at the time of the survey, it is unlikely that they would have been able to retrospectively rate their expectations in a way that was uncolored by their experiences. Consequently, we chose not to attempt to measure

expectations, and to use a version of SERVPERF to elicit the required information. This had the added advantage of reducing the length of the questionnaire.

Step 1 – student focus group
Before assigning a questionnaire, it was important to define who is in the focus of the research and who are the students to be questioned. As previously stated, the research was conducted at the Faculty of Technical Sciences, University of Novi Sad on Specialist vocational studies to examine student's satisfaction at the course of "Management in healthcare".

Step 2 – the student survey
Students completed a questionnaire which included the 22 statements to be answered on a five-point Likert scale, with 1 = strongly disagree, through to 5 = strongly agree. During the analysis, the statements are grouped into 5 dimensions of quality: tangibility, reliability, responsiveness, assurance, empathy.

RESULTS AND DISCUSSION

In accordance with early research, research question will be discussed via Keviat diagram which is shown in Figure 1.

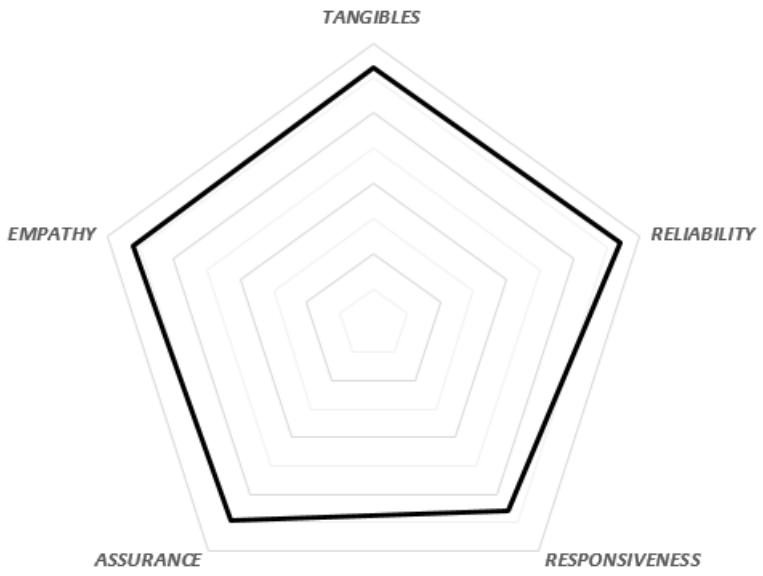

Figure 1: Students satisfaction with course "Management in healthcare"

Figure 1 shows students satisfaction with the course of "Management in healthcare". In assessing the quality of courses, there are presented average results of five dimensions. The dimension with the highest score is the reliability dimension - **4.71**, followed by tangibility - **4.65**, empathy - **4.61**, assurance - **4.46** and responsibility - **4.28**.

CONSLUSION

In this paper is presented an evaluation of educational service quality measured by students, through the questionnaire. The best rated quality dimension is reliability and the worst rated is responsiveness. It means that faculty has the knowledge, skills learned and services are offered accurately, dependably and on time without errors. Meanwhile, it has also weaker willingness to help customers and meet their needs and wants. In difficult situations, it missing the ability to respond effectively, what needs to

be improved? Nevertheless, our research has several limitations that need to be taken into account when interpreting our results. We are confined by a relatively small data set, and our core statements are derived from the qualitative assessment of earlies research rather than from hard, quantitative evidence. Further research is necessary to assess the student's satisfaction of higher education institutions with focus on one study program and to consider different challenges how to improve student satisfaction with higher education institutions.

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SOCIAL SKILLS IMPROVEMENT FOR ENCOURAGING ENTREPRENERIAL INITIATIVE OF YOUNG POPULATION

Mila Kavalić*
University of Novi Sad, Technical faculty "Mihajlo Pupin", 23000 Zrenjanin, Đure Đakovića bb, Republic of Serbia
E-mail: mila@tfzr.uns.ac.rs
Dragana Milosavljev
University of Novi Sad, Technical faculty "Mihajlo Pupin", 23000 Zrenjanin, Đure Đakovića bb, Republic of Serbia
Nadežda Ljubojev
University of Novi Sad, Technical faculty "Mihajlo Pupin", 23000 Zrenjanin, Đure Đakovića bb, Republic of Serbia
Melita Ćoćkalo-Hronjec
High school "Laza Kostić", Novi Sad, Republic of Serbia

ABSTRACT

This paper deals with entreprenerial spirit of young population observed through their initiative related to entrepreneurship. The subject of the work represents the observation of their social skills and abilities. The issue of this research is based on insufficient initiative of the young related to entrepreneurship. The focus is on social skills that the young already possess but these skills should be directed towards creating entreprenerial spirit. The research was carried out in the form of questionnaire in which the sample of examinees represents a group of students who attended the course Human Resource Management.

Key words: entrepreneurship, social skills, student population, human resources management

INTRODUCTION

In transitional countries young population represents insufficiently used resource for developing national economies. Entrepreneurial culture improvement through business starups is one of the ways for reducing unemployment and revival of national economies. It is crucial to understand that young population represents the potential and resource which is insufficiently used both for the development of entrepreneurship and national economy growth. Entrepreneurial spirit and the education of young entrepreneurs with knowledge and skills necessary for business success are of high importance for initiating economic growth and employment reduction in Serbia. (www.nirapress.com). According to European Commission data, the information and education on entrepreneurship can affect positively the local labour market and economy. Investments in entrepreneuship education is one of the most cost-effective investments in Europe, according to the research. Moreover, the research shows that the students who possess this knowledge have three to six times better chance to start their own business in the future (Stanisavljev et.al., 2019). On the grounds of a series of researches it has been confirmed that entrepreneurship represents a key generator of innovation, employment and economic development (Audretsch and Keilbach, 2004).

Entrepreneurship of the young population in the Republic of Serbia

The majority of young population in Serbia is not motivated to deal with entrepreneurship and they do not plan to pursue their professional career in this field. Only 44% of the examined students tend to make their own business after graduation (Markov i Stanković, 2008). According to the research whose aim was to map the obstacles related to the attitude of young population towards entrepreneurship in Serbia (Bobić, 2017), the access to financial funds represents a key "bottle neck'. The young are seen as exceptionally risky category and are therefore out of reach of most traditional financial institutions. On the other hand, the alternatives for traditional financing, such as micro-

financing and risky capital are still insufficiently developed. The crucial missing elemens are alternative (non-financial) mechanisms which could increase chances for financing from the current sources. These mechanisms could include providing mentorships and support to young entrepeneurs who could help in alleviating the risky nature of new startups.

The results of the research carried out in 16 cities and municipalities in Serbia have shown that private business represents the following to the examined students: risk and uncertainty (23.53%), possibilities (21.93%), satisfaction (14.90%). The examined students mostly agree (44.90%) with a statement that private business is more successful than the one in other forms of ownership and also that people here still do not know about real business opportunities of private companies (32.92%). Most young people do not trust banks and other financial institutions that offer funds for business startups, they think that startup loans of commercial banks have high interest rates (80.38%) and also that the process of getting loans is long (14.42%). The young have expressed their satisfaction (78.70%) with the ambience for encouraging the young population for business startup. The most important factors which in fact represent the obstacles are the following: unstable political and economic situation (36.54%), long and complicated registration procedure (13.75%), as well as too high taxes (1.02%) (Đorđević et.al., 2011). The unemployment rate related to young population is high, and the chance for a young person to find a job are three times lower. In the same time, the quality of jobs of those who have managed to find them often do not satisfy even a definition of a "decent job". Totally, 47.4% of the employed young people are informally employed (Marjanovic, 2016).

Although young people have much better educational conditions than adults and also higher degree of interest in entrepreneurship, the share of those who actually start their business is less than at adults (Schøtt, 2015). A recent study of GEM on entrepreneurship among the young has shown that : "The young, as a group, show much greater extent of entrepreneurial intention than adults (1.6 times greater). In the category of those young people who are older this intention is transformed in relatively high degree of real entrepreneurial activity while those who are younger show a significant fall between the entrepreneurial intention and activity (Bobić, 2017) ".

Educational development of entrepreneurship

A very important factor which contributs to development of entrepreneurial potential and successful entrepreneurship is education. The young often lack information, knowledge and skills in order to start their own business and successfully compete with numerous competitors on the market. They should be provided with training and access to entrepreneurial information. Elective subjects from the field of entrepreneurship would contribute to encouriging entrepreneurial intentions and potential better than compulsory subjects.

A group of authors (Karimi et. Al., 2016), based on the research results, say in their work that entrepreneurial education significantly affects the development of students' potential for entrepreneurship. Also, they suggest improving and enhancing the content from this field in order to provide students with adequate knowledge and enable them to notice and use the given chances and therefore become successful entrepreneurs in the future. According to the research results of the Institute for international politics, students are generally poorly informed about entrepreneurship (62.7%), while 24.6% of examinees said that they did not know anything about it. A certain number of students (12%) stated that they were well informed about entrepreneurship and the related programmes and 0.7% of them did not give the answer to this question. The research results show that students generally do not think about this way of earning a salary. There are numerous reasons for this and it is not possible to focus only on one of them: insufficient promotion of this field of work, demotivation by general economic situation in the country, lack of initial capital and discouragement, as well as lack of interest for working in private sector (Somer et all, 2018). Lindh i Thorgren (2016) claim in their researches that educational programmes from this field increase the level of entrepreneurial potential, strenghten entrepreneurial intentions of students and represent a foundation for entrepreneurship development. A great range of relevant subjects as well as improved education are of crucial importance and the necessary factor in the modern world of business (Bellotti et al., 2012).

METHODOLOGY

The Subject and the Problem of Research

The subject of this research is the analysis of possibilities for improving the entrepreneurial concept application related to young population in the Middle Banat Region. The subject is also the observation of social skills and abilities which the young possess. The problem of the research is based on insufficient initiative of the young regarding entrepreneurship. The focus is on those social skills which they already have but that should be directed towards creating an entrepreneurial spirit.

Research Goals

Technical faculty "Mihajlo Pupin" in Zrejanin is a realizer of a long-term project whose aim is to identify the factors which affect a decision of young people to be incorporated in entrepreneurial activities, in other words, in business startup. Within the project a research is carried out that involves examining social skills and abilities of the young which they consider necessary for successful business performance.

Research Question

Research questions are the following:

1) What business position as a future work position is most desired by the young?
2) In what extent are the examinees able to estimate their own skills, abilities and the knowledge they have achieved?
3) What skills, abilities and knowledge do the examinees have?
4) What skills, abilities and knowledge do the examinees consider important for the job?
5) What skills, abilities and knowledge necessary for job do the examinees have?

Research Method

The research method is based on carrying out the research on the sample which involves a group of students (N=27) at Technical faculty "Mihajlo Pupin" Zrenjanin, University of Novi Sad, study program Management and Management of IT within a subject Human Resource Management. The research was carried out in the form of questionnaire in February 2019. A modified version of the National Employment Office's questionnaire was used which is created with the aim to give insight into a desired working position and in the same time to observe the important skills and abilities that are considered necessary for being successful in finding job on the labour market.

RESULTS AND DISCUSSION

Socialization is of high importance in the business environment regarding a positive business result no matter the young decide to become entrepeneurs or to work for an employer. The skills they possess represent a driving power for their future business development. By improving and developing their skills and knowledge they increase their chances to be competent on the labour market. Depending on their innate abilities the young make decisions on their future business activities. However, a business climate in a certain counrty also affects their decisions. This climate involves standards, laws and regulations as well as an education system typical for every country. Schools, especially universities have a crucial role in further motivation and training for building a future business career. An ability is a notion which is first of all related to a person's precondition for successful performance of a certain activity apart from their motivation or experience. In psychology, this notion is understood as an inherited anatomical physiological structure which is shaped under the influence of social environment, training and personal activities. There are various types of abilities: sensory, motorical, mechanical, intellectual.

Skills represent learned or acquired behaviour. It is considered that skills are learned abilities which enable the achievement of results beforehand with maximum certainty and minimum time and energy consumption. Skills are also seen as ways which enable an individual to perform a series of activities fast and accurately in order to complete the task easily and successfully. We can differentiate psychomotorical skills where motorical component and also verbal and symbolic components are very important. In order to acquire a certain skill it is not enough for an individual to have a gift but to practice that skill, to be motivated and to use previously acquired knowledge, skills and experience. Entrepreneurship has been recently represented in our schools but the focus was put on economic and management issues. However, enterpreneurship should be present in other fields, too because the young have great chances and possibilities for development in this field. Observing the abilities that the young have can provide clues and guidelines for future activities and the direction in which they should be oriented. Also, the observation of their abilities can affect the further development and improvement of these abilities and skills. The role of school is to estimate their abilities and to encourage the young to acquire skills and knowledge which are crucial for futher entrepreneurial activities. The aim of this research was to determine the working positions popular with the young population as well as the number of them who were willing to become entrepeneurs. Table 1. shows the list of these working positions. It is interesting that majority of the examined students were interested in entrepreneurship and also that all IT students said that a certain type of entrepreneurship is what they wished for the future.

Table 1: List of future working positions

Wish for the future working position	N
Manager	5
Quality control	1
Entrepreneur	**5**
Office job	5
Sales job	1
Accountant	1
economist	1
Marketing expert	1
IT jobs*	7
Σ	27

* signifies that some examinees wished to become entrepreneurs although they specified a working position

The estimation of students' own abilities, skills and knowledge is also significant. The students who are aware of their possibilities can also notice their weaknesses and try to diminish them and even improve themselves. Table 2. shows in what extent the students are able to estimate their abilities, skills and knowledge. Majority of them found themselves capable to a certain extent, while minority thought they were incapable. It is necessary that school makes an impact on young population and enable them to estimate their qualities so they could know what to improve.

Table 2: Estimation of students' own abilities, skills and knowledge

I can estimate my abilities, skills and knowledge and the extent of what I learned	N
Yes	9
To a certain extent	16
No	2
Σ	27

Table 3. shows in what extent the young people are able to estimate their abilities, skills and knowledge necessary for a specific job. According to the results, majority of them are able to estimate their abilities, skills and knowledge necessary for a specific job. It is positive, because they are able to improve themselves in regards to business.

Table 3: Estimation of students' abilities, skills and knowledge necessary for a specific job

I can estimate what abilities, skills and knowledge could be necessary for a specific job	N
Yes	14
To a certain extent	10
No	3
Σ	27

The research is created and organized in the way that first students' attitudes on their ability to estimate their abilities, skills and knowledge in general and specifically for a concrete job were examined. Then, through questionnaire, the abilities which the sudents themselves stated they had and considerd important for business were examined (See Table 4). After the abilities were determined, the further analysis was carried out through the research regarding the skills and knowledge that the examinees had and considered necessary for a specific job (See Table 5).

Table 4: Students' abilities

Students' abilities	**Abilities students' consider important for business**
Resourcefulness *	Resourcefulness *
Creativity	Courage
Persistence*	Resourcefulness*
Imagination	Selfconfidence
Being witty *	Sociability *
Sociability	
Shrewdness	
Memory	

* signifies that certain abilities were repeated because they were considered important

Table 5: Presentation of skills and knowledge

Skills and knowledge that examinees possess	**Skills and knowledge that examinees consider important for business**
IExperience	Eloquence
Kindness*	Physical abilities
Fitting in	Collegiality
Knowing the language *	Communication *
Motivation	Kindness
Skills	Interpersonal relations
Business Psychology	Motivation
Team work	Responsibility
Professional knowledge (languages, computer skills, etc.)*	Accuracy
Time management skills	Planning skills
Wisdom *	Professional skills (languages, computer skills, etc.)*
Tidiness *	Team work *
Communication	Fitting in
Selfconfidence*	Delegating skills
Hard-working *	Management skills *
	Hard-working

* signifies that certain skills and knowledge were repeated many times as important

Based on the analysis of abilities and skills it can be concluded that the examinees are in great extent aware what skills, abilities and knowledge they possess. Matching between the skills, abilities and knowledge they possess and those they consider important for business performance is noticeable.

CONCLUSION

One of the ways how to motivate future generations to think about their business future which depends on their initiative is a systematic work with young people at all levels of education, from primary to high education. It can be seen from the examples from foreign countries that the creation of entrepreneurial ambience requires the engagement of all participants. It is of high importance to educate future entrepeneurs , encourage entrepeneurial potential, provide an adequate training and development as well as to inform the young population. For all these reasons it is necessary to educate the young about entrepeneurship in schools with a special accent on their abilities, skills and knowledge. In this way the students would build selfconfidence necessary for their future work. Future researches in this field should be based on enhancing the sample of examinees and comparison of the results related to different generations. Also, it is needed to point at those skills and abilities that are missing. School system should encourage the young to achieve and develop what they lack and what is crucial for their entrepreneurial career.

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THE IMPORTANCE OF ORGANIZATIONAL CULTURE FOR ENTREPRENEURSHIP AMONG YOUNG PEOPLE

Dragana Milosavljev*
University of Novi Sad, Technical faculty „Mihajlo Pupin“ Zrenjanin, Zrenjanin, Serbia
E-mail: dragana.milosavljev@tfzr.rs
Milan Nikolić
University of Novi Sad, Technical faculty „Mihajlo Pupin“ Zrenjanin, Zrenjanin, Serbia
Dušanka Milanov
University of Novi Sad, Technical faculty „Mihajlo Pupin“ Zrenjanin, Zrenjanin, Serbia
Ivan Palinkaš
University of Novi Sad, Technical faculty „Mihajlo Pupin“ Zrenjanin, Zrenjanin, Serbia

ABSTRACT

This paper will present the impact of organizational culture on conducting business, especially on entrepreneurship among young people. In order to achieve competitive lead organizations turn inwards, by actually dedicating their focus to their internal relationships and the emphasis is therefore put on the importance of organisational culture. When entering the job market young people face numerous challenges. In order to become entrepreneurs, to start their own businesses, besides their necessary knowledge, ideas and monetary means needed, the impact of organizational culture for conducting business is also highly important.

Key words: organizational culture, entrepreneurship, young people

INTRODUCTION

Organizational culture has an important role in the life of each organization and in the recent years it has presented one of the most researched organizational elements within the management. Surely, successful functioning and advancement of an organization is a product of its organizational culture. Each organization has its own organizational culture, which presents its character, its core and distinction, which further on make it uniqe and different from other organizations, in other words it imprints personal character, modus operandi on the market, towards the clients and in internal relations (Lukasik, 2014.).

Several apprehensions may be connected to organizational culture, these are: organizational culture is a human mind programme, it is a collective mind of the company and organizational culture has been shown as an advantage for the development of a company so a great attention should be paid to it. This is best seen on the example of successful companies that next to distinctive systems of managing apply organizational culture as well: Google, IBM, Sony, GaspromNeft. Organizational culture influences all employees. Each organization wants to implement such culture which will provide hard and secure market position. In order to succeed and to survive the market turbulences, organizations usually apply entrepreneurial managing style. Entrepreneurial behavior, innovations and flexibility surface the culture characterized by knowledge, beliefs, norms that encourage ideas of creativity where innovations greatly impact the entrepreneurship.

With global financial crisis, young people have come into the focus of the attention due to emphasized unemployment rate, that is significantly higher from the overall population. In these conditions promoting the entrepreneurship among young people became of the key issue, with the aim of lowering the unemployment and creating new jobs. Besides expressed positive aspirations and popularity that the profession of entrepreneurship enjoys within the society, the number of young

people that choose this endeavour of selfemployment is small. The cause for this are probably various limitations young people face when starting their own businesses and deciding to enter entrepreneurial world as their career (Radević, 2017.).

THE NOTION AND CHARACTERISTICS OF ORGANIZATIONAL CULTURE

Culture is a social category that exists only within the frameworks of social groups like nations, professions, social groups, organizations and so on. The notion of culture includes a number of elements and some are especially made distinctive: customs, tradition, habits, beliefs, attitudes, value system, apprehensions, norms of behavior… Thanks to these elements we can talk about different peoples, ethnic communities, societies, civilizations and similar. Organizations as well, as smaller groups of people, have their own culture according to which they are recognizable and distinctive. (Lojić, 2010.).

Organizational culture presents one of the key variables of organizational behavior. With the strategy and leadership, the culture of the organization makes a foundation stone of business success. Culture is a basic dimension of organizational environment. Organizational culture is achieved knowledge and experience that individuals use for the development of their organizational behavior. Its characteristics are (Stavrić & Vasić, 2015.):

- it is achieved (it does not have genetical, biological origin),
- it is sharable (culture is not a specific feature of an individual, it is shared and mixed among the members of an organization),
- it is transgenerational (passed from generation to generation)
- symbolic (based on human feature of presenting one issue, with the help of others),
- adaptive (based on human capability to adapt to the environment and events).

The employees apprehend organizational culture on the grounds of what they see, hear and experience within the organization. There are seven dimensions that create the core of the organizational culture and they are shown on Figure 1.

Figure 1: Dimensions of organizational culture (Robins & Coulter, 2005.)

Organizational culture in many ways can influence the success of the organization and the most important are (Janićijević, 1997.):

- organizational culture influences bringing strategic decisions (starts from the assumption, values, beliefs),
- organizational culture influences adaption to the surroundings (encourages changes or can block them),

- organizational culture influences the coordination within the organization (smoothens and speeds up the process of coordination),
- organizational culture influences employees' behavior control mechanism (when the majority of employees accepts certain values, beliefs and norms of behavior, their control is much easier),
- organizational culture influences lessening conflicts within the organization (leads to enhancing understanding between bosses and subordinates),
- Organizational culture influences the motivation (encourages identification of the members with the organization itself).
- The most common element division of organizational culture is on (Schein, 2004.):
- cognitive elements of organizational culture (assumptions, values, beliefs, attitudes, norms of behavior). These are actually common categories in the minds of employees that create common oppinions and behavior of employees in the organization. It is not easy to discover and alter them because employees accepted them as a part of their personalities, often not even aware of them and
- symbolic elements of organizational culture (semantic, behavioristic and material symbols). These are the visible part of organizational culture and here we have established forms of behavior and conduct, specific terminology, the language of the organization, logo of the company, appearance of official documentation, interior and exterior of bussiness space, dress code of the employees, anecdotes and stories which circle the organization, celebrations, ceremonies and similar.

Organizational culture is generated during the process of solving problems that members of group or organization face as a group. Managing organizational culture also means the process of constant questioning of established value system and dominant rules of conduct so that the needs and requests of time could be monitored. The system of values should not be changed as long as it provides successful functioning and development of the organization.

ENTREPRENEURSHIP AND YOUNG PEOPLE

The process of transition, privatization, extinction of industrial giants that once employed thousands of workers have been the cause of Serbian economy degradation which was followed by high rate of unemployment. As one of the elements of recovery, but also as one of the push button for lessening the unemployment rate, the development of entrepreneurship is quoted, especially when young people are concerned.

Entrepreneurship is a social function of creating and making new values by creative combining of business resources. It is expressed as a readiness to take over initiative, activating social-economic mechanisms and aware exposure to risks while transferring ideas into new business endeavors (Milićević & Ilić, 2005.). In contemporary conditions, when security of jobs in long run in bigger companies is lost, many people see entrepreneurship as an ideal way to create their own security and achieve success by themselves. Entrepreneurship is best reflected in areas which provide the most innovative chances and possibilities.

The foundation of successful entrepreneurship is based on three things:

1. being familiar with: the market, demand, technology, some professions (in order to succeed in some professions knowledge is needed, therefore education is important, market research as well, but also constant enhancement and learning);
2. entrepreneur him/herself needs: experience, passion, persistence, endurance and hard work (relates to the enterpreneur hi/herself, to his/her wish, persistence and dedication to work in order to achieve his/her goals);
3. idea: dream, goal, unused market chance (idea is actually the start, it is the basis of a success and the first step leading to it)

The fact is that the entrepreneurs move through the unknown and that their road is full of risks. It is considered that the young people are less aware of these risks, in other words they care less for them, so in the end they achieve better results. Seven reasons why young people have the advantage in dealing with entrepreneurship can be listed (Zwilling, 2011.):

- resistance – young people have greater capability of recovering after being defeated. Entrepreneurial road is full of obstacles and traps, so it is necessary to be able to resist and continually come back to the right track;
- no false pretenses - young young people have entire life in front of them, and this means more options;
- pressure and responsibility – majority of young people don't have kids or spouses, so from this aspect they do not have pressure and responsibilities, and they can't entirely dedicate themselves to work;
- energy and passion – no doubt that a young person has more energy to deal with work if compared with an older person;
- no prejudice – young people are mainly more ready to try out something new, and with starting a new business this is really important;
- money is not a big thing – having in mind that young people still have not experienced what it is like to have a lot of money, the lack of it is not felt as such a hardship.

In order to become successful young entrepreneurs have to be really persistant. Everybody has ideas, creativity and skills but the question is how they use them in accomplishing their goals. Rich people can lose money but geniuses are the ones who crack. It is significant that entrepreneurship started being taught as separate subject in secondary schools and faculties as a support for the development entrepreneurship among young people and that the government began with creating programmes of stimulation for encouraging entrepreneurship among young people.

THE IMPACT OF ORGANIZATIONAL CULTURE ON THE ENTREPRENEURSHIP AMONG YOUNG PEOPLE

An organization can have the most perfect tools, techniques and strategies, but its attempts to enhance organizational performances will remain futile if the basic organization culture (values, beliefs, way of thinking, managing style and similar) does not change. Organizational culture shapes the way of employees' conduct and its influence is felt in all aspects of business dealings and reflects the end results.

Organizational culture is a crucial factor of organization advantage and accomplishing their performances. The relation towards employees, values maintained, ways of thinking and attitudes will shape the way of conduct of people and their attitude towards work, and it is well known that people are the carriers of success or failure of companies.

Corporative entrepreneurship is focused on enhancing the ability of an organization to adopt innovative capabilities. The role of organizational culture is in speeding up the innovation process and affirmation of entrepreneurial spirit (Kontić, 2011.). Entrepreneurship presents a dynamic process of constant increase of wealth through activities of individuals who take over various risks, meaning money, time, dedication and similar. Simply put, entrepreneurship is readiness to start initiatives, activate various socio-economic mechanisms and awareness when being exposed to risks while transferring ideas into new business endeavors (Avlijaš & Avlijaš, 2013.).

The significance of organizational culture comes from its impact on business dealings and business results of the organization, as well as on entrepreneurship itself. Organizational culture can, however, influence the business of organization positively or negatively. It can be "the secret of success", but also a "silent killer". It all depends on whether the culture suits the situation in which the organization is or not.

Surely it can be said that the entrepreneurship could be a part of the solution for the rate of unemployment among the young population. For this reason "cultivation" of good organizational culture is really important. It is necessary to emphasize the role of organizational culture in determining the ability of the organization to adapt to changes. Organizational culture that creates the climate where creativity, creation and exchange of ideas, where collective as well as individual knowledge is used in the right way, is a culture of innovative organization that builds internal atmosphere for generating and support for innovations, which lead to successful business dealings on a turbulent market.

CONSLUSION

Consequences of the latest global financial crisis is still felt worldwide. Although recovering, the world faces significant decrease of global economy activities. New participants on job market - the young – mostly carry the weight of sluggish global economy, the great majority of them being unemployed (Schott, Kew & Cheraghi , 2015.). The entrepreneurship could be a part of the solution for the unemployment rate among young people. Entrepreneurship in modern sense presents continual creative process of innovation implementation within the organization with the function of successful business dealings. In order for a company to be capable of systematic innovation undertaking, it has to create a suitable organizational structure, as well as to build suitable organizational culture which could provide entrepreneurial behavior. Such behavior is connected to team work and transformational management more and more, rather than to an individual and his/her abilities and experiences.

Organizational culture is a usual way of thinking or a way in which things are done, which is more or less common for all members of the organization; it has to be learned to at least partly accepted by new members if they want to become a part of the team. In other words, organizational culture is a framework that directs everyday behavior and decisions of the employees and leads their activities towards organizational goals. The culture is actually what generates and defines goals (Arsenijević, Dimić & Bulatović, 2017.). Surely it can be concluded that the real organizational culture is a force that keeps the members of organization together and leads them towards success.

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THE EFFECT OF LEADER'S LIFE STYLE AND THE ETHICAL BEHAVIOR OF LEADERS ON MANAGEMENT STYLES

Dragana Sajfert*
University of Novi Sad, Tehnical fakulty „Mihajlo Pupin“, Zrenjanin, Republic of Serbia
E-mail:sdragana77@hotmail.com
Jesa Kreiner
California State University, Fullerton, Los Angeles, California, USA.
Jelena Rajković
Faculty of Engineering management, Belgrade, Republic of Serbia
Nikola Petrović
Ph.D. dtudent at University of Novi Sad, Tehnical faculty “Mihajlo Pupin” in Zrenjanin, Republic of Serbia
Marko Vulović
Ph.D. dtudent at University of Novi Sad, Tehnical faculty “Mihajlo Pupin” in Zrenjanin, Republic of Serbia

ABSTRACT

In their research, the authors point to factors that make the lifestyles of the leaders, and their application in modern business. Leadership is one of the processes in which the leader realizes the organization's life goals by acting on the followers. In a modern business environment, emphasized market dynamics and difficult business conditions, the professional life of leaders is often considered more important than private. The main goal of the research is the orientation to examine relationships between the preferences of certain lifestyles of leaders and the ethical behavior of leaders on management styles. The survey was conducted in 2018 on a sample of 102 respondents from both sexes (46 female respondents and 56 male respondents), aged 20 to 60 years, and various educational structures, in different leadership positions, from the territory of the entire Republic of Serbia. The structure of the styling style management style based on the lifestyle of the leader was examined. In other words, management styles contribute to the prediction of lifestyles. The findings of the research raise additional questions about the direction of the influence of other internal and external factors of dealing with the capacity of the leader as well as the connection of the lifestyle with the ethical behavior of the leader.

Key words: Lifestyle, Ethics of Leadership, Leadership, Styles of Management

INTRODUCTION

Organizations have a need to be competitive and successfully operate in the conditions of transit put more and more demands on their employees. At the center of events, organizations put leaders and find new and more effective ways of using resources, and their skills. Certainly one of the most important challenges is the development of those leaders who achieve high results and which become the key drivers of change. Sajfert, Z., et. al. (2007) state that during his lifetime a person goes through various stages of behavior and during his existence sets himself a different life goal of the eve. According to Sajfert, Z., (1994) for creative and determined people, there has never been so many opportunities to fulfill more of their life goals than it is today. The concept of lifestyle according to Luković, S. and Čizmić, S. (2012) is determined by the way of spending free time, the way of meeting the needs, the way of consumption, the characteristic interpersonal and social relations that an individual establishes. Torrington, Hall, & Taylor, (2004) state that a career can also be defined as "the development of an individual in learning and working throughout life" and therefore includes training, training, volunteer work, and other life experiences. In the study of lifestyles, the leaders will be tested by a modified Alport-Vernon-Lindy (1960) a scale of values that measures the intensity of ten lifestyles on a five-step scale: ultralight style, family-sentimental style, egoistic orientation, orientation to popularity, hedonistic orientation, , Prometheus activism, altruistic orientation, cognitive style and religious traditional style. According to Stewart & Jones, (1987), a life script (a script is a personal

plan that an individual makes in his life) is an unconscious or preconceived life plan, which determines life choices and thus limits and directs the life flow of an individual. The script is based on early scripting decisions, parental influences, acknowledgments in events that culminate in the selected alternative, which is a scripted choice. Scripting imperatives or behavior drivers rely on prohibitions, which are formed in the verbal period, while the contra-folds are formed later, between 3 and 12 years of the child's life. According to Kahler & Caspers (1974), most people have one, two or more motivational drivers characteristic of that person, but it is always one of the most dominant. The structure of the leaders' lifestyles represents an indispensable area of governance in the contemporary circumstances of scientific and technical progress and is an essential condition for increasing the success of the business. In order to make an introduction to the topic - ethical behavior of the leader, it is considered why ethics is important for leadership and describes the discussions of scientists dealing with this issue. Here, first of all, is the work of Burns (1978), Heifetz (1994), Ciulla (1998). In their works, five principles of ethical leadership are presented: respect, service, justice, honesty and communion. In a study by Berns (1978), a leader who ignores moral components can be remembered as a nitk, or even worse. Moral leadership concerns the values and demands that the followers be well acquainted with alternatives so that they can intelligently respond at the time of making a decision on the offer of leadership leaders. Ciulla, Joana, B. (1996) states that the need for leadership in our society comes at the time of the perceived chaos. People want leaders who will bring companies into line, however, the complexity of today's world requires a different type of leader. Since leaders have limited power to secure order in an outside environment, it is crucial that they provide order in human relations. The earliest of the earliest research papers on this subject appeared only in the appearance of the work of Ciulla, Joana, B. (1996). According to Peter Northus (2008), this is a small number of working materials of a small group of scientists in the field of leadership, founded by the W. K. Kellog Foundation Foundation. This small group of scientists questioned how theory and practice of leadership can be used to build a more caring and just society. Ciulla (1998) presents a unique collection of leadership lessons, scientific experience applicable to industry as well as organizational psychology. She was exploring wide-ranging questions, for example: how do leaders encourage followers to achieve their goals? Her study puts in focus the ethics of leadership and ethical challenges that are different for leaders and leadership. The research is a topic such as the power of the public and private morality leaders. Ciulla (1998) explores ethical leadership issues in various contexts, including work, non-governmental organizations and governments.

Brown, M. E. et. al. (2005) created a convenient tool, Ethical Leadership Scale (ELS), which can be used to measure in other similar research. The ELS includes 10 dimensions that influence the ethical behavior: reliability, fairness, showing care for employees, setting ethical standards and disciplining those who violate these standards. Hersey, P. & Blanchard, K. H. (1969), a situational guideline for determining style management style, a four-dimensional symptom questionnaire (4DSQ), was used. Sajfert, D. (2018) states that ethics is not taught by people who preach or morale talking about ethics; We teach ethics from people we value and respect, from people who have power over us. They are the true teachers of ethics. It is very important to give support to the ideals, if they are honest. According to Seifert, D. (2018) it is very important that leaders and role models, whether sports stars or politicians, give positive statements of ethics, unless they are hypocritical. Sajfert, D. and Todorovic, J. (2018) state that material on ethics and leadership is integrated from large Eastern and Western philosophers with leading literary and case studies.

SUBJECT AND PROBLEM OF RESEARCH

The subject of the research is the influence of the leader's lifestyles on the ethical behavior of the leaders and their preference and their connection with the organization's management styles. In this paper, the subject of study is one of the management segments within a specific type of large group, such as enterprises, in which there is a clear hierarchical structure and formally defined roles of leaders. The main problem of research in this paper is the connection between the dimensions of lifestyles and ethical behavior of the leaders and their influence on the application of management style in the organization. The subject of this research is the connection of lifestyles with the ethical behavior of the leader and the management process. The research problem can be determined in the following way: the subject of research involves an analysis of the relationship between the effective management of the organization and

the life style of the leader. Given that our society is in transition and that we live in a time that in some way marks a split between old and new values, the important question is on what values are founded today's leaders of Serbia.

OBJECTIVES OF RESEARCH

The main aim of the research is to examine the relationships between the preferences of certain management styles and lifestyles of the leader. The research is conducted with the aim of determining the degree of alignment of the leaders' lifestyles and the ethical behavior of the leaders. The scientific goal is to improve the theoretical framework, seen through the organizational behavior of the lifestyle of leaders' leaders, the ethical behavior of leaders and their influence on management styles.

HIPOTHER RESEARCH

H1: There are statistically significant relationships with the socio-demographic professional characteristics of the leader.
H2: There is a significant correlation between the leaders' lifestyles and the ethical behavior of the leader.
H3: There is a significant link between lifestyles and ethical leadership with management styles.

WORK PLAN

- The first phase: A review of the literature related to the research problem.
- Second Phase: Selection of questionnaires and research. To measure the different structure of the leaders' life and professional styles, the lifestyle questionnaire Alport-Vernon-Lindy (1960) was used. Braun's scale with collaborators was used (Brown, et al 2005), with management styles being seen from the standpoint of the theoretical model of Hersey and Blanchard (1969).
- Phase 3: Realization of experimental research through expert methods of scientific research.
- Fourth phase: Statistical data processing.
- Fifth Phase: Determining the relationships between the leader's lifestyles and the leader's ethical behavior and their influence on management style.
- Sixth phase: Discussion of the results obtained.
- Seventh Phase: Conclusion

METHODS OF RESEARCH

The methods used were:
- expert methods of scientific research (data collection survey),
- methods of statistical data processing,
- IBM SPSS Statistics was used to process all collected data.

RESEARCH RESULTS

In order to obtain the results of the research, an electronic database of all relevant data on respondents and variables was created. For the purpose of describing the sample of research, descriptive data are presented. In order to determine the effects of lifestyles on the different structures of the leader. The correlation of all criterion variables was investigated by calculating the Pirson linear correlation coefficients. In order to examine the different structure of the relationship between the leader's lifestyles, a canonical correlation analysis was applied. In order to examine the prediction of the lifestyles of the leaders, a set of linear regression analyzes was carried out.

In order to examine the effects of socio-demographic (gender, level, education, marital status) and other professional characteristics (work experience, field of work, position, focus on people) on lifestyles, a set of

universal variance analysis was applied. The results show that the sex produces the greatest number of effects on the lifestyles of the leader, and then the working time and orientation towards people, while education, marital status, work area and position do not achieve significant independent effects.

Lifestyles and relationships with the socio-demographic characteristics of the leader

The results of the survey confirm that the majority of respondents (46 leaders 45.12%) live in accordance with the family-sentimental style of life, and then in accordance with the egoistic orientation (16 leaders 15.68%) of the leader (Table no.1).

Table 1: Current lifestyles

Lifestyle	**now lives in such a way**	
	number of leaders	**%**
Family-sentimental style	46	45,12
Altruistic orientation	6	5,88
Cognitive style	4	3,92
Utilitarian style	7	6,86
Orientation popularity	3	2,94
Egoistic orientation	16	15,68
Orientation prometheus activism	12	11,76
Hedonistic orientation	5	4,90
Religius-traditional atyle	2	1,96
Orientation to power	1	0,98
In total	102	100

Descriptive data of the pronouns of certain lifestyles of the leaders are shown in Table 2. The first place is a family-sentimental style, in the 2nd place is a utilitarian style, in the 3rd place is a cognitive style.

Table 2: Descriptive data for life styles

Lifestyle	**AS**	**DS**	**Rank**
Family-sentimental style	**4.35**	0.65	**1**
Altruistic orientation	3.46	0.86	6
Cognitive style	**3.78**	0.79	**3**
Utilitarian style	**4.12**	0.58	**2**
Orientation popularity	2.15	1.01	10
Egoistic orientation	3.75	0.97	4
Orientation prometheus activism	3.75	0.82	5
Hedonistic orientation	3.11	1.07	8
Religius-traditional atyle	3.24	1.08	7
Orientation to power	2.76	1.01	9

By serving the effects of gender, we get men more oriented towards popularity and characterized by higher promotional activism, while women leaders are more egoistically oriented are shown in Table 3. The work experience has an effect on the power orientation, with significant differences only between those with a working experience of up to 10 years and those with a working experience between 11 and 20 years in favor of leaders up to 10 years.

Table 3: Effects of socio-demographic characteristics on life style

Predictors	**The criteria**	**F(df1, df2)**	**p**
Pole	Orientation popularity	9.50 (1,523)	.00
Pole	Egoistic orientation	4.82 (1,542)	.023
Pole	Orientation prometheus activism	4.56 (2,434)	.023
Length of service	Orientation to power	4.32 (2,421)	.009
Human dignity	Family-sentimental style	2.83 (2,421)	.057
Pol x education	Cognitive style	3.32 (2,421)	.028
Pol x level of leadership	Utilitarian style	4.23(1,452)	.037
Education x marriage status	Altruistic orientation	4.75 (2.432)	.008
Education x Persuasion to People	Family-sentimental style	4.21 (4,436)	.00
Area of Work x Orientat. to People	Altruistic orientation	2.76 (2.432)	.058

The link between the leader's lifestyles and the ethical conduct of the leader

The correlation between life and professional styles was examined by calculating the correlation coefficient. First, the correlations between 10 lifestyles and 5 items of ethical behavior of the leader are calculated. Based on the correlations, it can be seen that the general connection between lifestyles and the ethical behavior of the leader is low (Table 4).

Tabela 4: Coefficient of Lifestyles Correlation and Ethical Behavior of Leaders

	Ethical scale leader	Orientation to people	Care for Sustainability	Ethical guidance	Integrity
Family-sentimental style	-.025	.06	.14**	.035	.035
Altruistic orientation	.045	.018	.19**	.12**	.035
Cognitive style	-.035	.085*	-.019	.095*	.00
Utilitarian style	-.58	.067	-.019	-.019	.028
Orientation popularity	.018	.078*	.038	.12**	.087*
Egoistic orientation	.11**	.088	.038	.01	.038
Orientation prometheus activism	.01	.9*	.9*	.11**	-.028
Hedonistic orientation	.11**	.03	.10**	.05	.045
Religius-traditional style	-.058	.048	.10*	.00	.019
Orientation to power	.00	.089*	-.058	.11**	.079

** p < .01, * p < .05.

Linkage of lifestyles and ethical behavior of leaders with management styles

The relationship between lifestyles and the ethical behavior of the leader was first investigated by calculating the correlation coefficients. Generally, correlations with management styles are low. In addition, it can be noticed that the correlations between management styles and lifestyles are somewhat higher, and that there are increased correlations, in relation to the correlations of management styles and ethical behavior of the leader, and bearing in mind the number of variables. More precisely, while management styles significantly correlate several lifestyles, the correlation of management styles with the ethical behavior of the leaders relates only to people's orientation (Table 5).

Table 5. Connectivity of life styles and ethical behavior of leaders

	Stilovi upravljanja			
	directive	**hearsay**	**partaking**	**delegating**
Lifestyle				
Family-sentimental style	**.10****	-.028	-.067	-.057
Altruistic orientation	-.059	.01	**.089***	-.049
Cognitive style	.028	-.029	.01	-.038
Utilitarian style	**.179****	**-,139****	-.038	-.028
Orientation popularity	**.128****	**-.10****	-.019	-.009
Egoistic orientation	-059	-.069	-.00	.028
Orientation prometheus activism	**.129****	**-.078***	-.28	-.068
Hedonistic orientation	.00	-.038	.008	.058
Religius-traditional atyle	.038	-.029	.029	-.018
Orientation to power	**.168****	**-.088***	**-.079***	.018
Ethical conduct of the leader				
Ethical scale leader	-.029	.038	-.018	.028
Orientation to people	**-139****	.049	**-.158****	**-.198****
Care for Sustainability	-.009	.048	-.019	-.068
Ethical guidance	.058	-.018	-.038	-.0189
Integrity	.039	-.018	-.039	.029

** p < .01, * p < .05.

DISCUSSION

The aim of this study is to illustrate the relationship between management's lifestyles and the ethical behavior of the leaders, with management styles being seen from the standpoint of the theoretical model of Hersey and Blanchard (1969). The main goal of the conducted research is to examine the relationships between the preferences of certain life styles of management, and the ethical behavior of the leader. The results have confirmed that leaders prefer management lifestyles that ensure better integration into the work environment and compliance with the values on which the organization is based. The relationship between socio-demographic and other characteristics of the leaders related to the orientation to people and work has

been established. The study did not confirm the existence of a significant correlation between the leader's lifestyles and the ethical behavior of the leader.

H1 hypothesis was confirmed that the most preferred lifestyle of the leader is family-sentimental (45.12%) and ego-oriented orientation (15.68%), while the least preferred orientation to power (0.98).
H2 is not confirmed, the expectation that there is a significant correlation between certain lifestyles and the ethical behavior of the leader is not confirmed, as we see that the general connection of lifestyles and the ethical behavior of the leader is low.
H3 is not confirmed, the relationship between lifestyles with the ethical behavior of the leaders is generally low, with coralities between the management's lifestyles and the ethical behavior of leaders more than the correlations of lifestyles and the ethical behavior of the leader.

CONCLUSION

The obtained results show that the basic settings defined in the starting assumptions are partially verified. Findings say that in support of this, leaders prefer lifestyles that provide them with better fit in the work environment and compliance with the values on which the modern organization is based. The family-sentimental style is the most important value orientation of the leader, then the utilitarian style. The findings of this research represent an empirical contribution to understanding the way in which the value orientations of a leader with lifestyle management are linked. The survey was conducted with the aim of determining the degree of compliance of the leadership styles of organization and lifestyles, as well as the degree of alignment of lifestyles and ethical behavior of leaders.

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THE IMPORTANCE OF KNOWLEDGE MANAGEMENT IN ENTREPRENEURSHIP

Edit Terek*
University of Novi Sad, Technical Faculty "Mihajlo Pupin", Zrenjanin, Serbia
E-mail: terekedita@gmail.com
Predrag Mali
University of Belgrade, Faculty of Economics, Belgrade, Serbia
Siniša Mitić
University of Novi Sad, Faculty of Technical Science, Novi Sad, Serbia
Jelena Rajković
Faculty of Engineering Management, Belgrade, Republic of Serbia

ABSTRACT

Contemporary business requires constant progress and innovation. One of the predispositions of innovation is knowledge. The problem in most of today's organizations is largely not lacking in knowledge, but in ignoring the structure and characteristics of knowledge that exists in the organization. Knowledge success factors are vital in diffusing knowledge from individuals to the entire organization which strengthens the organizational knowledge culture. The basic objective of the study is to reconcile the literature on knowledge management and its connection with entrepreneurship.

Key words: knowledge management, strategic factor, knowledge sharing, entrepreneurship

INTRODUCTION

Knowledge represents our beliefs and evaluations based on organized information that we experience, communication or conclusions. The existence of knowledge for itself is of great importance, but if it is not applied it is nothing more than a dead capital. Sharing valuable knowledge in entrepreneurship and business in an efficient and effective ways is a crucial means of innovation, problem solving and continual improvement. In business, this is a fundamental strategic resource and can create a sustainable competitive advantage in new, challenging markets as well as in existing markets facing turbulent changes or stagnation. Knowledge is, therefore, a crucial organizational asset.

Organizations use knowledge management programs to improve, among other things, the quality of existing products and services, reduce costs, strengthen competencies through the management of intellectual property, accelerate and improve the process of disseminating knowledge in the organization, accelerate innovation and develop new products (Bhatt, 2001). Competition is strong today, consumer expectations are growing, and time is less for the development and placement of new products and services that are outdated in the short term. In order to succeed in a turbulent environment, organizations at all levels need employees that are focused on learning and continuous development (Yukl, 2013).

According to Millar, Lockett and Mahon (2016) three main aspects of knowledge management for any organization are:

- How the knowledge is obtained.
- How it is stored and organized.
- How that knowledge is accessed and shared when needed.

In order to successfully implement a knowledge management program in an organization, firstly it is necessary to identify all knowledge sources that one organization has at its disposal. Generally speaking, two sources of knowledge can be identified: internal and external sources. Internal knowledge sources are located in the minds of the employees of the organization's members and are expressed in the behavior of employees, procedures, software and equipment. Internal knowledge sources can be recorded in different documents or stored in databases. External knowledge sources include publications, universities, government agencies, consulting firms, professional associations, personal relationships, suppliers, and the like.

Knowledge management includes the following categories of knowledge (Nikolić, 2007):
- Explicitly written knowledge - information management,
- Implemented knowledge - process management,
- Implicit knowledge – management of human resources,
- Renewed knowledge - innovation management,
- Property management - Intellectual management.

Explicit knowledge is the easiest to describe and understand. It is the knowledge that can be spoken, communicated, transmitted, processed and stored relatively easily. It embodies information that is interpreted, put in context and anchored in beliefs and commitments of individuals (Nonaka et al., 2000) and, as such, subject to easy codification, storage and retrieval.

According to Kikoski and Kikoski (2004), it is tacit knowledge that creates the learning curve for others to follow and ultimately provides the competitive advantage for long-term success. Transforming tacit knowledge into explicit knowledge is a major challenge, addressed, for example, by the "after action reviews" done in the military or identifying "lessons learned" in commercial projects.

ORIENTATION OF KNOWLEDGE MANAGEMENT

In companies knowledge has become the most important strategic factor (Spender, 1996). Knowledge is associated with company's capabilities to achieve a competitive advantage (Teece, 2001). There are three scales to measure behaviours and practices for each of component of knowledge management: (Darroch, 2003)
- developed knowledge acquisition,
- knowledge dissemination,
- responsiveness to knowledge.

Knowledge acquisition is captured by six factors: valuing employees attitudes and opinions and encouraging employees to up-skill; having a well-developed financial reporting system; being market focused by actively obtaining customer and industry information; being sensitive to information about changes in the marketplace; employing and retaining a large number of people trained in science, engineering or math; working in partnership with international customers; and getting information from market surveys (Darroch, 2003).

Five factors describe the knowledge dissemination construct: readily disseminating market information around the organization; disseminating knowledge on-the-job; using techniques such as quality circles, case notes, mentoring and coaching to disseminate knowledge; using technology to facilitate communication; and preferring written communication to disseminate knowledge.

Lastly, responsiveness to knowledge was described by five factors: responding to knowledge about customers, competitors and technology; being flexible and opportunistic by readily changing products, processes and strategies; and having a well-developed marketing function.

In the KPMG Consulting survey respondents were asked to express their views on the potential role that knowledge management can have in achieving specific organizational goals. Respondents believe that knowledge management can have an extremely important or important role in achieving competitive advantage (79%), in terms of marketing (75%), in proving consumer focus (72%), in fostering employee development (57%), innovating products (64%), revenue growth (63%) and profits increase (63%). The data show that respondents consider that knowledge management plays a key role in achieving many important organizational goals. (KPMG, 2018)

Acording to TSIA's fifth annual knowledge management survey with over 300 responses received from across eight service disciplines. 43% of respondents said that improving knowledge management (KM) would boost productivity by 30% or more, with 14% saying an improvement of 50% or more was possible. This is why interest and planned spending for KM and related technologies has been high for the last decade: firms see it as a lever they can pull to dramatically accelerate employee and customer processes. Companies with stronger knowledge-sharing cultures have knowledge management and collaboration programs that rate higher than companies with poorer KM cultures. These overall ratings are based on many aspects across people, process, and technology (TSIA, 2017).

TSIA has found over the years that the single biggest determinant of knowledge management success is having a culture that encourages and rewards knowledge sharing. Unfortunately, the average culture score dropped significantly this year, indicating executives are not taking the lead in encouraging and rewarding knowledge sharing and collaboration (TSIA, 2018). The opening question in the 2018 Knowledge Management Survey asked, "If your organization was sharing knowledge as well as it possibly could, it would improve the productivity of your team by what percent?" A total of 41% of respondents said the productivity gain would be 30% or higher, with 16% saying a 50% or greater improvement would be possible (TSIA, 2018).

THE LINK BETWEEN KNOWLEDGE MANAGEMENT AND ENTREPRENEURSHIP

Starting up a firm can also be similar to a project, where the founders, and primarily employed staff, assemble together to find a market segment to conquer and therefore must find a competitive advantage by creating specific knowledge.

Aldrich and Ruef (2006) referred to three types of entrepreneurial knowledge:
- previous work experience
- advice from experts
- copying and imitation

According to Miller (1983) three components were adopted as entrepreneurial factors:
- innovativeness
- risk-taking
- proactiveness

The actual link between entrepreneurial factors and knowledge management can be seen in Table 1. (Fong & Dettwiler, 2009)

Table 1: Linking between entrepreneurial factors and KM tranfer (Fong & Dettwiler, 2009)

Entrepreneurial factors	**KM transfer**
Inovativeness	– Tacit knowledge: earlier business cycles influence lifelong learning – Explicit knowledge: literal acquisiton
Risk taking	– Tacit knowledge: protecting from imitators – Explicit knowledge: protection of intellectual property
Proactiveness	– Tacit knowledge: focus of knowledge base through experienced staff – Explicit knowledge: finding source of information/knowledge at cutting edge of the business specialty

A framework that can be used as a guide to develop a KM strategy for each phase in the life cycle of the entrepreneurial venture can be seen in Table 2 developed by Gaimon & Bailey (2013). The framework identifies knowledge based capabilities that can enhance the venture's success. The critical objectives for each phase in the life cycle are highlighted, which include the maximization of innovation and novelty, minimization of technical uncertainty, minimization of time to market, and maximization of the probability of survival.

Table 2: Knowledge Management Framework for the Entrepreneurial Life Cycle (Gaimon & Bailey, 2013)

Entrepreneurial Process	Entrepreneurial Objective	Entrepreneurial Capability
Phase 1: Discover		
(1) Discover opportunity	Maximize quantity and quality of opportunities	Alertness
(2) Create opportunity	Maximize quantity and quality of opportunities	Creativity
Phase 2: Evaluate		
Evaluate opportunity	Evaluate expected value of opportunity subject to projected risks and costs	Decision making under uncertainty
Phase 3: Develop Product and Technology		
(1) Develop feasible prototype or other knowledge asset	Maximize novelty while minimizing uncertainty of the technological innovation	Exploration and exploitation
(2) Manage development teams	Enhance efficiency and effectiveness of product and technology development teams	Knowledge development and transfer
(3) Manage development environment	Enhance efficiency and effectiveness of the knowledge management processes	Develop technical support system
(4) Manage development project	Maximize performance under uncertainty in a complex environment	Managing the project under uncertainty
Phase 4: Commercialize		
(1) Market entry strategy	Minimize time to market and maximize survival probability	Survival
(2) Execute exit strategy	Maximize IPO/acquisition probability and valuation	Value capture

CONCLUSION

The benefits from the concept of knowledge management are numerous, but the biggest problem is the quantification of all the benefits that are conditioned by the application of the concept. Generally, knowledge management leads to a reduction in errors and redundancy, faster problem resolution, better decision making, lowering research and development costs, increasing employee autonomy, improving relationships with employees, and improving products and services.

At a time when unpredictability is the only foreseeable thing, entrepreneurs are forced to deal with the issues of competitiveness more than ever. The increase in the market and the number of competitors leads to the need for organizations to change and adapt to the news that the market brings. As one of the main factors influencing the change of organization, the knowledge is emphasized. The great problem of today is that knowledge is becoming obsolete at an increasing rate every day. Therefore,

there is a need for entrepreneurs to foster creativity, adaptability, that is, it is necessary to turn that organization into a "learning organization". Replacing the traditional type of organization with the concept of "learning organization" represents a significant organizational change, primarily in the field of human resources and organizational culture. The implementation of such an organizational change may require considerable investment and great efforts, but the results of a successful implementation will be equally significant.

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HANDLING WORK FORCE PARTICIPION IN SERBIA BY NEW PERSPECTIVE

Bulent Tutmez*
School of Engineering, Inonu University, Malatya, Turkey
E mail: bulent.tutmez@inonu.edu.tr
Edit Terek
University of Novi Sad, Technical faculty "Mihajlo Pupin", Zrenjanin, Republic of Serbia
Milan Nikolic
University of Novi Sad, Technical faculty "Mihajlo Pupin", Zrenjanin, Republic of Serbia
Branka Janković
Preschool Teaching College, Novi Sad, Republic of Serbia

ABSTRACT

Unemployment brings problems both of social and individual sence. First of all, unemployed resources indicate that production is less than potentially possible. In addition, there is a lack of utilization of knowledge, skills and other different abilities of the unemployed.In this paper, the determination of the influence of female labour force is focused. To appraise the labour force participation, a mathematical framework is suggested.

Key words: Labour force, Complex number, Employment.

INTRODUCTION

Small and medium enterprises in Serbia are faced with many problems, such as low productivity and very small exports (Ostojić, Petrović, 2018). Therefore, SMEs in Serbia are based on the domestic market, where there is no high purchasing power of customers, and there comes to fall in demand, as well as the establishment of an insufficiently stimulating business environment and gray economy (Paunović, 2017).

The employment equality is received broad acceptance to the accomplishment of gender equality. In despite of the lengthy commitment to gender balance in employment, the achievement of real balance in the workplace is still one of the principal purposes of both the European Union (Boll et al. 2010) and its member state Serbia (Dokmanovic 2016).

The labour force participation was considered primarily in a parametric and non-parametric framework in applied economics (Martins 2001). To analyse the balance between the genders in workload participation, a mathematical tool, complex-number-based evaluation is suggested by this paper. In the next section, the theory of problem and basics of the theory will be presented. After that, the new perspective will be introduced.

PROBLEM AND METHODOLOGY

Young people in Serbia are not sufficiently stimulated for self-employment: there is a wish, but there are numerous obstacles such as: lack of initial financial resources, lack of entrepreneurial knowledge and experience, but also real ideas (Ćoćkalo, Đorđević, Nikolić, Stanisavljev, Terek, 2017). There is no enough adequate environment for encouraging entrepreneurship among young people. It is positive that there is awareness of the need to improve the situation in this area. The beginning of the SME Development Strategy and Action Plan 2015-2020 it is stated that the development of SMEs is "of

vital importance for the recovery and development of Serbian economy, increase of employment and the improvement of living standards of citizens."

The importance of the problem requires some strong tools to handle the relationships. In addition, the gender roles in the pool include some uncertainties. As a conventional mathematics tool, the complex number theory can provide a new perspective to appraise the labour force participation problem. A complex number can be depicted in a real/imaginary plane as in Figure 1. The point Z in the complex plane and P denotes the magnitude of the complex number (Kreyszig 2011).

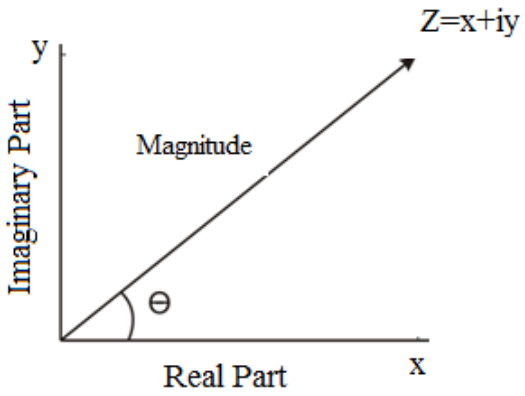

Figure 1: Complex number representation

IMPLEMENTATION

From the representation given in Figure 1, the modulus of Z and can be provided as follows:

$$|z| = r = \sqrt{x^2 + y^2}. \quad (1)$$

Another critical parameter in complex number is θ, is calculated by:

$$\theta = \arg Z = arc\ tan \frac{y}{x}. \quad (2)$$

In the suggested algorithm, first the real and imaginary parts addressed as men and women. After that, an uncertainty ellipse can be constructed by using the parameters. Figure 2 illustrates the potential uncertainty ellipse which describes the roles of the genders.

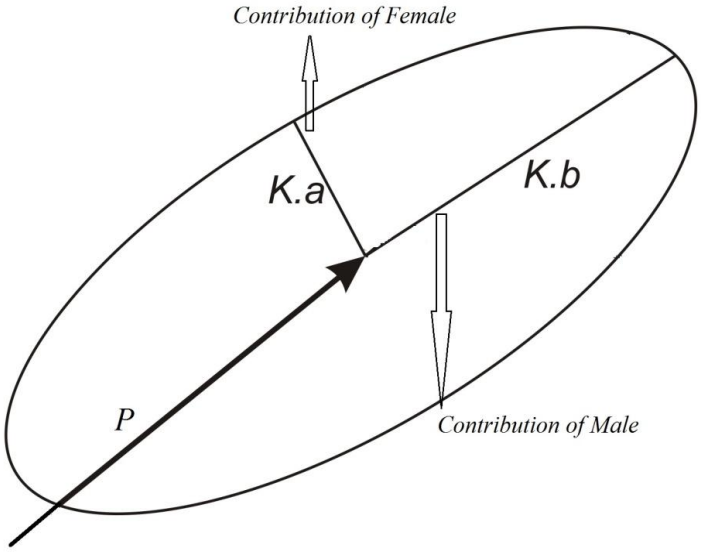

Figure 2: Contributions of genders

CONSLUSION

The determination of the contributions of female and male labour forces can be handled. To that and, first the youth employment can be taken into consideration as a complex number. After that, a covariance-matrix-based uncertainty analysis can be performed and the parameters can be assessed. Along with the young men (major-real part), the contribution of young women is treated as the imaginary (minor) component. By this way, the relationships can be provided illustrative based and on a strong mathematical framework.

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Session C: MARKETING MANAGEMENT

Papers (pp. 133-156):

THE MODEL FOR THE IMPLEMENTATION OF NEW MARKETING CONCEPT IN SERBIAN COMPANIES

Snežana Bešić
High railway school of professional studies, Belgrade, Republic of Serbia
Cariša Bešić*
University of Kragujevac, Faculty of technical scienses Čačak, Čačak, Republic of Serbia
E-mail: carisa.besic@sbb.rs
Suljo Suljić
International University Travnik, Travnik, Bosnia and Herzegovina
Azra Suljić
Elementary School „Otoka“, Bosanska Otoka, Bosnia and Herzegovina

ABSTRACT

Global market and establishing new competitive relations require a new approach to business organization management, both in the conceptional and organizational sense. Modern organizations that are actively and continually applying modern management methods and techniques have significantly better chances to strenghten their competitive ability on the global market and to take a stable market position with the perspective for further market growth. Implementation of modern management techniques is an essential precondition for a successful business performance of domestic enterprises. Misunderstanding of marketing is typical for transition economies. Domestic business organizations have to use foreign business experiences in the process of business internationalization, which means that they have to apply actively the concept of integrated marketing.

Key words: marketing, model, globalization, management, competitiveness.

INTRODUCTION

Modern business conditions, characterized by the process of business globalization and by changed competitive relations, require the change of existing postulates of managing business organizations, especially from the business practice point of view. According to Kotler and Caslione (2009), globalization and technology are the two main forces that had an influence on creating the new level of intertwined fragility in the world economy. Globalization for manufacturers in a certain country means that they import resources from other countries more often, but they also export their final products more. Technology, in the sense of computers, the Internet and mobile phones, allows streaming of information around the world at incredible speed.

Business organization cannot operate successfully unless it applies modern management methods and techniques. Global business, which starts resembling business in conditions of market turbulence, requires making business decisions related to the real adaptation to the current market situation. The most important consequence of the market globalization is the global competition. Competition in the international context existed even before the establishment of the globalization process, but it was not noticeable nor strong. However, global competition is becoming more and more intense. It is considered that as the competitive forces are stronger, it is getting more difficult for industry members to earn attractive profits. The competition in the majority of industries have become internationalized and the enterprises appear on the market through global strategies.

Domestic enterprises are not competitive on the global market because of the fact that they are not productive enough, which results in higher selling prices and inadequate product quality. The issue of the domestic economy’s uncompetitiveness in the international framework has been evident since the

late 80s, but it became specifically noticeable with the beginning of transition in 2001. Negative effects of the world economic crisis have had even bigger influence on the decrease in domestic economy's competitiveness. Global competitiveness indicators, published by the World Economic Forum, point out the fact that the domestic economy is facing the issue of uncompetitiveness for over a decade – the economy of the Republic of Serbia is lagging behind in the terms of competitiveness in comparison with all the Western Balkan countries, except BiH, as well as with all the countries from southestern Europe. During 2017, Serbia improved its global competitiveness position (78th place in the world), but the biggest issue of domestic economy is still a really low level of innovation (95th place) (Đorđević at all 2018). New business conditions require from enterprises to change their ways of doing business, meaning that the outdated business models have to be replaced with new management models based on knowledge.

NEW MARKETING MODEL

Global competitiveness is moving from the price level and technical innovations towards knowledge management and innovations in the field of management and marketing . Brooks and Little (1997) defined a new model of market performance marked as relationship marketing while they were studying market appearance of enterprises in new, global circumstances. This model is based on:

1) Database Management,
2) Interactive Marketing Communication and
3) Network Marketing.

Marketing based on Database represents an organized set of data on individual customers, current or potential ones, including geographical, demografic, psycho-graphic data, as well as the data related to behaviour during the consumption process. Database is used for locating potential customers or clients, as well as for creating targeted marketing communication and sale efforts. Interactive marketing represents a set of interactive relations, mostly at the level of personal communication, aided by Information Technology. Network marketing represents a set of connections and relations, mostly of strategic nature both at personal level and the relationship level among enterprises. It is most often about making strategic alliances and partnerships among the enterprises belonging to a particular branch.

This model starts from a strategic focus on customers and the relations and links originated from customers' requirements in relation to an organization, and it finishes by the analysis of customers' loyalty and satisfaction as an integral part of permanent mutual relationship building up. The clue for understanding this pattern is in creating a set of relationships between an enterprise and its environment.

Relationship Marketing signifies an important paradigmatic step forward in marketing approach, going exclusively from thinking in competition and conflict categories towards thinking in the categories of interdependence and collaboration, (Đorđević at all, 2016). It recognizes the importance of different partcipants – suppliers, employees, distributors, dealers, retailers, who collaborate in order to deliver the best value to targeted customers.

Global market, burdened by fast changes, creates a strong competitive activity. Kotler adn Caslione (2009) speaks about the phenomenon of hypercompetitiveness,that assumes such market conditions in which technologies and offer are totally new, the standards and rules are becoming fluid and they cause competitive progress that is impossible to be stopped. Hypercompetitiveness is characterized by fast competitive progress and therefore competitors have to build new advantages in a short period of time in order to be better than their rivals. In hypercompetitive conditions the application of standard marketing methods and techniques cannot give appropriate business results. This is even more significant in big and inert international corporations burdened by unnecessary administration and bureaucracy whose productivity is not able to follow global trends.

Traditional strategic approach implies a hypothesis according to which managers can predict future market trends precisely enough to choose a clear strategic direction just by using the set of analytical tools. In order to avoid the influence of market turbulences Kotler suggests the application of a management system called Chaotic, (Kotler and Caslione, 2009). According to Martinović (2009), the Management System Chaotic helps managers to reconsider the whole approach to management and marketing during recession and similar turbulent periods. Moreover, managers have to find a way to develop the system for early warning and identification of the first signs of changes, especially disastrous innovations and shocks. Then, it is important to make detailed, the worst, best and most expected scenarios by using the strategies for facing each of them, to cut costs strategically or to increase productivity, to secure market share in the fundamental consumer segment, to comprise strategic planning in shorter, three-monthly cycles in order to monitor the company's pulse better and easier so as to prevent potential disastrous consequences of leaving fundamental principles.

Taking into consideration the new marketing horizon oriented by further technological development and permanent changes in the environment, marketing model born in the new millenium is consisted of three dimensions of marketing comprehension: subphenomenon, phenomenon and superphenomenon (Acharol and Kotler, 2012). A paradigm for the third millenium is 3 dimension marketing model. Marketing seen as subphenomenon assumes customers' experiences and observation system. Customers feel products and services through their senses and the understanding of sensual experiences is transferred to the level of neurophysiology. In order to be able to follow this trend marketing will have to develop considerably wider basis of theoretical and methodological tools. When we talk about marketing as a phenomenon we must observe that the days of vertical integration between producers and distributors have gone into the past and that nowadays distribution is performed through customers' networks, marketing networks, innovation and production networks. This means that we need rationalization and innovation outsourcing. In the future, the focus will be on micro production systems which will make products to satisfy demand near the very place of consumption. Finally, when we talk about marketing as a superphenomenon we must stresss that marketing ought to establish a sustainable model of consumers' society. New business approach implies giving advantage to welfare of the society and customers in relation to welfare of marketing management. The key issues of global marketing will be the issues of sustainability and poverty reduction.

According to Kotler at all (2017), marketing is moving from traditional marketing to digital marketing.. Marketing must evolve as the marketplace and consumers change. Kotler explains the marketing 4.0 is a marketing approach thet combines online and offline interaction between companies and customers. Marketing 4.0 is an effort to look at marketing along a different dimension. "We arte not dropping traditional marketing. We are blending tradiotional and digital" says Kotler. Kotler believes that technological convergence will ultimately lead to the convergence between digital marketing and traditional marketing. The role of marketers is to guide customers throughout their journey from awareness to ultimately advolcacy. Kotler encoutage marketers to focus both externally on the customer and the competition and internally on the enterprise.

Marketers need to adopt to this nwe reality and to create brands thet behave like humans – approachable and likeable, but also vulnerable. Brands should become authentic and honest, admit their flows and stop trying to seem perfect.

PRESENTATION OF THE MODEL FOR IMPLEMENTATION OF NEW MARKETING CONCEPT IN SERBIAN COMPANIES

Research on the opinions of managers in domestic enterprises related to the marketing attributes which determine the competitiveness of enterprises was realized in order to determine possibilities for improving marketing practice in domestic enterprises. The research was carried out in the period between December 2017 and April 2018 on the territory of the Republic of Serbia with the purpose of collecting opinions from company managers about the possibilities for creating a new business model

based on the application of modern marketing management methods and techniques, in order to improve business efficience and competitiveness. The research sample was designed to a size of 250 units (company managers), while the research results include 249 units. According to the answers of company managers to the survey questions, some main assumptions can be made which have a creative impact on the process of improving business quality of the business organization and of marketing management. The goal of the research was to identify all the factors which determine the new model of marketing management in order to improve company's competitiveness.

The most important factors for improving business of domestic enterprises are the following: improving business quality (20,49%), training of employees (20,22%), increasing business productivity (13,11%), improving technical and technological base of business (11,61%), development and application of Information Technologies (11,48%). As **main obstacles in developing competitiveness of domestic enterprises**, the following can be selected: lack of financial capital (27,34%), lack of resources (20,05%), lack of knowledge (17,72%), outdated equipment and technology (17,31%) and inadequate use of modern management methods and techniques (6,87%). Analyzed managers defined some **main characteristics which a modern organization** should have and they are: efficiency (20,08%), innovativeness (19,39%), productivity (14,37%), creativity (11,99%) and flexibility (9,9%).

As the most important **marketing goals**, analyzed managers point out the following: improving business quality (38%), achieving value for customer (22%), developing competitive ability (18%), achieving business excellence (13%) and appearing on the global market (7%). Analyzed managers also point out the following **marketing methods and techniques** used in order to establish competitiveness: analyzing customer satisfaction (16,83%), improving sales (16,40%), public relations (11,08%), direct marketing (10,93%) and branding (10,07%), (Bešić and Bešić, 2018).

On the basis of presented research results, assumptions for creating the management model were made. The model for improving business efficiency of domestic enterprises incorporates all the elements which define business excellence, taking into consideration characteristics of domestic enterprises and transitional economies. Having in mind the accomplishments of the international theory and practice in achieving business excellence, as well as in establishing a standardized way of doing business and managing business processes, the model for improving business efficiency of domestic enterprises is consisted of important elements which are giving a theoretical framework and those are:

- ***process approach,***
- ***market focusing,***
- ***collecting and analyzing information,***
- ***constant improvement.***

Model for implementing marketing attributes which determine competitiveness of domestic enterprises includes the following elements:

1) ***analyzing market demands,***
2) ***the most important factors for improving business of domestic enterprises,***
3) ***main obstacles in developing competitiveness of domestic enterprises,***
4) ***the most important characteristics of modern organizations,***
5) ***process of marketing management,***
6) ***marketing goals,***
7) ***implementing marketing management methods and techniques,***
8) ***directions for improving business,***
9) ***analyzing interest group satisfaction,***
10) ***constant business improving.***

This model starts from the strategic focus on costumers, as well as on relations and connections which derive from customer demands related to the organization and it ends with analyzing satisfaction of interest groups. The presented model should improve competitive advantage of domestic enterprises,

especially from the point of view of marketing attributes and application of modern marketing methods and techniques in the business practice. Regarding previously analyzed research results, main directions of business improvement in domestic enterprises are the following:

- ***adequate application of modern management methods and techniques,***
- ***wider and more comprehensive application of quality and integrated management systems with the goal of improving business quality,***
- ***business based on improving knowledge productivity,***
- ***development of innovative performance in domestic enterprises.***

When it comes to the presented model, following facts can be noticed:

- Analyzed managers of domestic business organizations were good in **noticing main issues in domestic economy** which have an impact on less successful business performance and competitive ability,
- There is awareness of the **need to apply modern management methods and techniques** which have an influence on the enterprise development, business efficiency and competitive ability,
- Analyzed managers **recognize the need for constant development of themselves and their employees**. That is extremely important because, in the time of crisis, the biggest asset of an organization are its employees while their knowledge and skills are the key resource for the future.

Model takes into consideration the following facts as well:

1) ***respecting the economic reality of domestic economy,***
2) ***respecting the reality of transitional flows and negative effects of the economic crisis from 2008,***
3) ***accepting the facts that foreign partners of domestic companies from the EU are insisting on the application of international managment standards and on the standardization of business quality.***

The business practice of enterprises coming from the most developed world countries points to the fact that the innovativeness and productivity are the key factors for improving modern organization's business. Business events on the global economic scene in the last decade are showing that newly industruialized countries also accepted the business model based on constant improvement of business productivity and on the development of quality, innovation, products and the organization itself. Productivity, quality and innovation are in the focus of considering all strategic variants for improving competitive ability of business organizations and competitiveness of nations.

Main directions for improvement related to the results of the presented model are:

1) ***relationship marketing development,***
2) ***constant improvement of business quality and***
3) ***permanent knowledge improvement of domestic managers.***

Main directions in marketing improvement in domestic enterprises are the following:

- ***application of the integral marketing concept,***
- ***more adequate formation of the organizational marketing unit in domestic enterprises,***
- ***methodical approach to marketing planning with the purpose of successful marketing function management,***
- ***more adequate and faster application of modern marketing methods and techniques.***

The application of modern marketing techniques is the essential precondition for a successful business of domestic enterprises. Misunderstanding of marketing is typical for transitional economies. Domestic business organizations have to use foreign business experiences in the process of business internationalization, which means that they have to actively apply the integrated marketing concept and modern marketing techniques, taking into consideration the need to apply also other modern

management methods and techniques, like integrated management systems, benchmarking, reengineering, etc. Most of modern methods and techniques are based on knowledge.

CONSLUSION

Implementing global experiences and internationally accepted business practice, as well as modern management methods and techniques, is the basis of improving business efficiency of domestic enterprises and developing competitive ability on the global market. The special emphasis here is on the wider acceptance of the relationship marketing concept, quality management systems and integrated management systems, which represent a basis for strenghtening competitive ability of domestic business organizations in the international framework.

Main directions of marketing improvement in domestic enterprises are the following: application of the integrated marketing concept, more adequate creation of the organizational marketing unit in domestic enterprises, methodical approach to marketing planning with the purpose of successful marketing function management, more adequate and faster application of modern marketing methods and techniques.

The presented model for improving business efficiency of domestic enterprises points out the necessity for the application of the modern marketing concept – relationship marketing. Relationship marketing represents a new model of thinking based on information, innovation interaction and connection. Implementation and development of integrated management systems represents a basis for achieving business excellence and organization competitiveness goals. The presented model can be implemented considering the following facts: respecting the domestic economic reality, respecting the reality of transitional flows and negative effects of the economic crisis from 2008, accepting the fact that the foreign partners of domestic enterprises from the EU are insisting on the application of international management standards and on the standardization of business quality

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TERRITORIAL MARKETING IN THE CONTEXT OF REGIONAL DEVELOPMENT

Aleksandar Grubor
University of Novi Sad, Faculty of Economics in Subotica, Republic of Serbia
Nikola Milićević*
University of Novi Sad, Faculty of Economics in Subotica, Republic of Serbia
E-mail: milicevic.nikola@ef.uns.ac.rs
Nenad Đokić
University of Novi Sad, Faculty of Economics in Subotica, Republic of Serbia

ABSTRACT

Initially, the concept of regional development was focused on the improvement of the economy. The attention was dedicated to monitoring and improving certain economic indicators. However, with the development of society, followed by the raising awareness of citizens, regional development gets a multidisciplinary character. Therefore, besides the economic themes, the emphasis is put on other issues related to social development and the improvement of the quality of life. In this context, special place belongs to territorial marketing. By its application, the attractiveness of a certain area can be increased, which positively influences the development of tourism and attracting investments. Also, in order to provide more efficient promotion of cities, as special entities, and to improve their position on the global market, a narrow discipline of territorial marketing, city marketing has been developed.

Key words: regional development, territorial marketing, city marketing

INTRODUCTION

At the middle of the last century, regional development has occurred as a special discipline, primarily focused on economy improvement. In the following decades, it overcomes the economic character and orientates on other social spheres. Thus, regional development, as a multidisciplinary concept, refers to economic and other issues related to society improvement. The improvement of living standard, the development of infrastructure and the increase of the quality of public services in certain regions, are just some of the fields of interest of this concept. From territorial aspect, this approach can be realized on local level, as well. In that case, local development concerns economic and social requirements of the inhabitants of micro-area.

In the context of the development of a certain area, special attention should be dedicated to territorial marketing. Bearing in mind the increasing effects of globalization process, the importance of the implementation of this marketing discipline becomes even greater. Through the application of adequate marketing strategy, certain territory should be made more attractive for tourists and potential investors. Those strategies can be developed for different areas, including cities, whereby, large efforts should be invested in developing and maintaining positive image.

This paper analyses the main characteristics of regional and local development. In addition, different explanations and specificities of territorial marketing have been presented. Its narrow discipline, city marketing, was examined as well. Hereby, besides different visions of this term, the emphasis was on its main goals, including the development of city image.

REGIONAL AND LOCAL DEVELOPMENT

Regional development, as a special discipline, comes to the fore in the 1950s (McCall and Coast, 2010). In the next two decades, it becomes very important activity, both at national as well as at local and regional levels around the world (Pike et al. 2006). At the beginning, it was primarily economic in nature, with a particular focus on regional business ventures. Accordingly, attention was paid to economic indicators, such as employment, profit, gross domestic product and growth (McCall and Coast, 2010).

At the end of the twentieth century, regional development was getting a multidisciplinary approach, where in addition to economics, other disciplines (political science, sociology, etc.) were occurring as well. In this way, besides economic issues, other factors that "shape the idea of a region" became the subject of the analysis (McCall and Coast, 2010). In the twenty-first century, with the inclusion of economic geography in the given concept, regional development focuses more on the spatial dimension, percipating the region as a place to live, work and invest. The emphasis is on people, their knowledge, as well as on its application (McCall and Coast, 2010).

The evolution of the concept of regional development has led to changes, first of all, in the sphere of economics. According to Pike et al. (2006), they include:

- establishing more reflexive capitalism, characterized by higher levels of complexity, uncertainty, risk and accelerated economic, social, political and cultural changes; the economic system is "more globalized", more competitive and more knowledgeable;
- government structures and management systems are directed at several levels: local, regional, national and supranational; existing institutions are reorganized and new institutions and relationships are formed on partnership principles;
- "redesigned" regional conditions stimulate new interventions through different instruments and public policies, with the aim of fostering internal and external forms of growth and development;
- focus is shifted from the quantitative dimension of development to qualitative; the attention is paid to the impact of economic development on the natural environment in the context of potential constraints and issues related to the quality of life.

According to Apostolache (2014), regional development represents a new concept oriented towards creating an adequate framework in order to significantly and sustainably improve the living standard of citizens, reduce unemployment, diversify economic activity, stimulate investments in public and private sector and increase the attractiveness of the local and regional economic environment. McCall and Coast (2010) state that regional development concerns certain issues of economic and social progress, such as better infrastructure, the improvement of public services, more diversified production, lower unemployment, growing number of jobs, growth in average wealth and improvement of quality of life.

Regional development is often associated with the concept of sustainability. Pike et al. (2006) highlight the definition of the "Brundtland Commission" on sustainable development, according to which this approach represents the aspiration towards "meeting the needs of the present without compromising the ability of future generations to meet their own needs". Clement et al. (2003) describe in their work the concept of sustainable regional development (SRD), which refers to the integration of the principles of sustainable development into the practice of regional development. It encompasses all activities and instruments that promote sustainable development within regional economic initiatives. According to Clement et al. (2003), the SRD concept rests on the significant role of regions as intermediaries between national and local levels, as well as on the growing consensus that sustainability is a key criterion for future development.

Closely related to regional development, development at the local level rests on a "flexible society", adequate institutional mechanisms and on interactive cooperation at the local level. In addition to this explanation, Apostolache (2014) has mentioned the definition from 1983 (Guigou, 1983), according to

which local development represents "the expression of local solidarity that generates new social relations and embodies the will of the inhabitants of the micro-area to value local wealth, leading to economic development".

Kisman and Tasar (2014) see the purpose of local development in capacity building in a particular territory, most often in the area of the municipality or region, with the aim of improving the economic future and quality of life for its inhabitants. This view came from the consensus of several international institutions, the academic and professional public. In the most important factors of the local development, the mentioned authors (2014) classify knowledge and experience, academic foundation and internationalization. Market knowledge and experience are necessary, especially in the private sector, which is a key driver of development in a particular area. Hereby, it is desirable that every business enterprise has an adequate scientific basis, which is provided through research studies and projects. Also, local development should be considered in the context of internationalization, i.e. from the aspect of applying successful models of development from other countries, as well as through stimulating import and export activities.

Due to the interweaving of two development concepts (regional and local), Apostolache (2014) uses the generic term "regional and local development". Under it, this author implies a process of increasing capacity in relation to the use of production factors (capital, labor, land and technology) available in a particular region or local economy. Bearing in mind the changes of economic, social and administrative nature, regional and local development can be defined as a process based on innovation, entrepreneurship, internal growth and structural changes, directed to the increase of the living standard of the local community (Apostolache, 2014).

TERRITORIAL AND CITY MARKETING

The process of globalization has greatly contributed to competition increase between, not only adjacent, but also between geographically distant territories (regions). In order to achieve economic growth, different regions are struggling to attract as much investment as possible. Besides investors, they try to attract tourists as well, which can also positively affect their economies. In such circumstances, great attention is paid to territorial marketing (Amajid et al. 2016). Nevertheless, the concept of territorial marketing has informally existed since the colonial period, when governments tried to convince people to move to new, "conquered" territories, in European literature it became popular in the 1980s (Avraham and Ketter, 2008).

Different authors define the concept of territorial marketing in different ways, whereby, for the number of them, one of its main goals is to increase the competitiveness of a particular territory. In this context, territorial marketing is related to marketing, as well as to management, as a special area of public management. It includes strategic and operational activities directed to generating cash flows, creating additional value, positioning the territory, increasing market share and meeting the needs of target segments (Amajid et al. 2016). It can also be analyzed from the aspect of service-dominant and/or good-dominant logic (Eletxigerra et al. 2018).

According to Kotler and Gertner (2002), the main goal of strategic territorial marketing is to improve the position of the state on the global market. For its successful realization, it is necessary to examine in detail all the factors (internal and external), which influence the competitiveness of the country (Kotler and Gertner, 2002). Among internal factors, attention should be paid to the size of the domestic market, access to regional trade areas, population's education level, tax reliefs, labor, security, etc. Depending on the situation in the country, they can be characterized as strengths or weaknesses. On the other hand, external factors, which may pose an opportunity or a threat to the country, should not be neglected neither. It is desirable to involve all stakeholders (government, citizens and the economy) in this process, following the same vision, with the focus on (Kotler and Gertner, 2002):

- managing the image of the territory - within the branding strategy, it is necessary to create a real, convincing, simple, attractive and recognizable image of a particular territory; it can be promoted through slogans, pictures, symbols, events and acts related to that territory;
- attracting tourists - bearing in mind that different places attract different tourists, the market can be segmented based on the attractions (natural beauties, adventures, sports, artistic or historical events, etc.), areas (region or location), seasons, tourist characteristics or certain benefits; it is necessary to understand what are the real values for tourists, as users, customers and payers, and to adjust the offer to them;
- attracting factories and foreign companies - it is necessary to understand how companies are selecting the area in which they will invest; in this regard, information concerning the development of infrastructure, labor market, quality of life, business climate, capital access, taxes, laws, etc. can be of a great importance.

According to Hospers (2004), territorial marketing represents a "powerful strategy" that complements government efforts in increasing the physical attractiveness of a particular area. The same author points to the significance of territory branding, through which the emphasis is put on those specific features that make the certain area (region) "proud". In order to reduce the differences between the current situation (identity) and the perception of the viewer (image) on the one hand, and the desired reputation of the territory (brand), on the other, it is necessary to pay more attention to promoting the area and its recognizable advantages (Hospers, 2004).

For Bagautdinova et al. (2012), territorial marketing is a "tool" for managing the territory, as a special, economically active entity. Its role is particularly emphasized in the process of creating (developing) the value of a certain geographical area, through the promotion of products, services and activities of people and organizations from the given territory. However, as in the case of other marketing disciplines, the concept of "4P" is applicable to territorial marketing, as well (Bagautdinova et al., 2012, p. 182):

- product as a territory ("territorial product") includes all the resources attractive to consumers (users), their diversity, quantity and quality; it can be raw materials, human resources, infrastructure, sights, the level of business activity, business support, etc.
- price includes the costs with which the consumer is facing when purchasing a territorial product, as well as the cost of living and carrying out activities in a particular territory; while for residents, it includes the prices of products and services, income, social benefits and costs of living in a particular territory, for tourists, hotel and residence expenses, for investors, it refers to the effort and time needed to obtain appropriate information, project costs, tax facilities etc.
- place represents the geo-economic position of the area in relation to the neighboring regions, including the allocation of certain types of resources on a given territory;
- promotion relates to different marketing communication tools through which users are informed about the "territorial product" and encouraged to its use; in territorial marketing, the use of personal selling is of a particular importance, for example, in the organization of meetings with potential investors; in addition, other forms of promotion should not be neglected, all in order to create a positive publicity of a certain territory.

When analyzing territorial marketing, Parker et al. (2015) have started from previously defined three interpretations of this term: promotion, planning and branding. Hereby, the first one (promotion) refers to sale and the other two (planning and branding) are more related to the application of holistic marketing. According to these authors, territorial marketing in practice is much more focused on promotion, rather than on other instruments of marketing mix.

Due to their characteristics and role in the economic, cultural and tourist spheres of a country, special attention is paid to cities and their promotion. Thus, a number of authors (Smyth, 2005; Laaksonen et al. 2006; Navarro and Martinez-Martinez, 2011; Balencourt and Zafra, 2012; Liu, 2014) dedicated their attention to city marketing as a special discipline of territorial marketing. By building a positive

and "charming" image, the city can be made more attractive not only to residents (existing and potential), but also to businessmen, media and tourists (Liu, 2014).

Following Balencourt and Zafra (2012), city marketing most often refers to promotion, focused on the realization of certain activities, with the aim of developing tourism, economy and attracting new residents. The same authors cite the definition of the American Marketing Association, according to which city marketing is related to the coordinated application of marketing tools, based on the marketing philosophy of customer orientation, for creating, communicating, delivering and exchanging urban values to the city's clients and community.

Special place within city marketing belongs to city image. By examining this topic, Laaksonen et al. (2006) identified four interrelated dimensions: nature, built environment, culture and industry. Consequently, the way in which the city will be perceived depends on its picture as a whole.

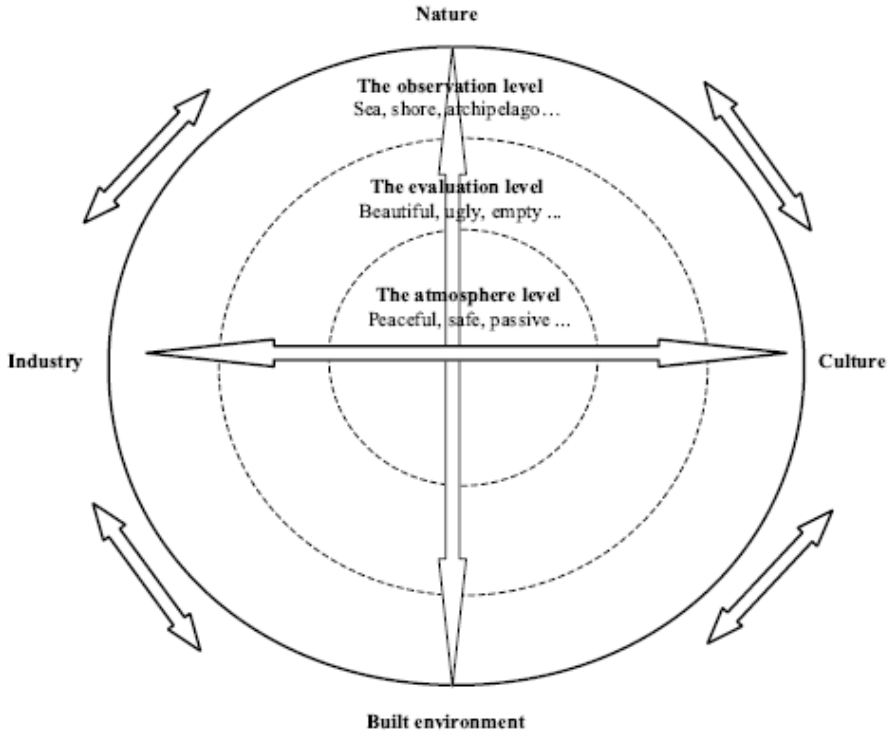

Figure 1: The construction of interconnected perception levels in the context of city image (Laaksonen et al. 2006)

In addition to the dimensions, they distinguished three perceptive levels in the structure of the image of the city: the observation, the evaluation and the atmosphere level. The level of observation includes topics directly related to perception (nature, urbanism, culture and industry). The evaluation level rests on a relational aspect, where the city is compared with other cities or places. The image of the city is rarely only positive or only negative, but is usually a combination of both sides. The third, atmosphere level, refers to the subjective impression of the city. In this case, certain emotions and frustrations can be manifested. Tables and figures need to be included in the body of the paper.

CONSLUSION

In recent decades, large attention has been paid to regional development, both in theoretical and practical terms. Various activities are realized, aimed at increasing the quality of life and improving the economy of a particular region. The concept of regional development has also been viewed in the context of sustainability. In relation to this, the approach of sustainable regional development has

evolved, integrating the principles of sustainable and practice of regional development. In addition to regional, the term local development is also often present in literature. Through this level of development, social relations and the will of the inhabitants of a particular micro-area are generated.

The development of a particular area may also be conditioned by marketing activities. By adopting and implementing adequate marketing strategies, certain territories can become more attractive not only for residents, but also for tourists and foreign companies. The development of tourism and the increase in investments are the basis for economic and for social progress, as well. Therefore, when managing a particular area, special emphasis is placed on territorial marketing. Despite the fact that territorial marketing is often associated with promotion, like other types of marketing, it is also based on the concept of "4P". In addition, its application requires a strategic approach, starting from a detailed analysis of the environment (internal and external) and creating the value of a particular geographic area, adapted to the needs of the target segments.

From a spatial point of view, marketing activities can also be realized at the city level. In this case, a narrow discipline of territorial marketing is applied, i.e. the city marketing. One of its basic tasks refres to the image improvement and the promotion of a city, as a separate entity. Accordingly, a special structure of the city's image, including four basic dimensions (nature, culture, built environment and industry) and three levels of perception (the observation, the evaluation and the atmosphere level), has been defined. Thus, the perception of the city appears as a result of its overall picture, and not by its individual elements.

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OVERVIEW OF STUDIES REGARDING PSYCHOLOGY OF COLORS IN MARKETING

Dejan Veljković*
Student at University of Novi Sad, Technical faculty "Mihajlo Pupin", Zrenjanin, Serbia
E-mail: 0veljkovcdejan0@gmail.com
Nikola Dizija
Student at University of Novi Sad, Technical faculty "Mihajlo Pupin", Zrenjanin, Serbia

ABSTRACT

This overview has aim to show how different colors effect people and how those effects differ among population as well how it can be used to affect their behavior. Conclusions are based on previously conducted researches with different methodologies and goals. Although researches are done on different groups and considering colors in different manner, this overview had goal to make such connections between them that some universal conclusions, on psychology of colors and their potential use in advertising and logo creation, can be made. Since practical meaning of psychology of colors is mostly in marketing, conclusions will be focused on that, mainly on how different groups of costumers can be attracted to certain product.

Key words: colors, psychology, preference, marketing

INTRODUCTION

Psychology of colors became widely popular during last century, in some extent because of its theoretical value and also because of its potential to apply that theoretical knowledge to influence and manipulate people behavior. Over the years there were many theories about how exactly colors influence our mind. Some theorist imply that the colors effects are residuals of evolutionary response on color stimuli or that those responses have great influence on associative learning (Mollon, 1989.). Other say that most of the effects come from either personal experience or cultural differences as well as age and gender (Singh, 2006.). Color is actually a sensation that originate when light either emitted or reflected by an object comes in contact with receptors in eye. There are many systems used to define individual colors. One of more popular and precise is Munsell Color System. This system describes each color with three attributes: hue, value or brightness and chroma or saturation. Hue is actually attribute upon which we distinguish colors from one another. Brightness describes the degree of lightness or darkness of a color in relation to white and black. Saturation represents the degree of vividness of the hue in comparison with a neutral gray of same brightness (Ballast, 2002.). Visual representation of Munsell color system is shown on Figure 1 and it will be important for some of the following analysis. The purpose of this overview is to analyze papers with different conclusions, indicate on potential mistakes and consider potential appliance of colors in different branches.

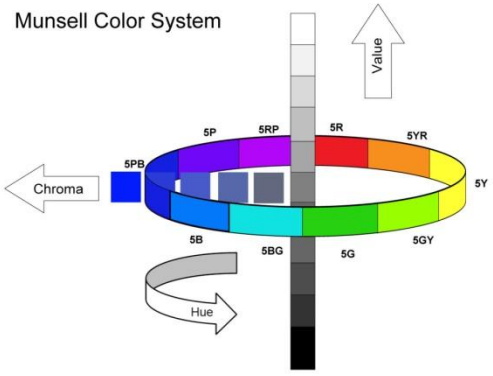

Figure 1. Munsell System of Colors

METHODOLOGY

The Subject and The Problem of Research

This overview will inspect wide array of aspects that define how we perceive colors and how it effects our decision making and emotional state. This paper won't be focusing on specific aspect, rather try to observe as many different studies as possible. Except to clarify effects, overview will also try to answer in what branches of science and business can color be used and with what purpose.

Research Goals

Main goal of this research is to break some widely accepted beliefs on the ways that people perceive colors as well as how that perception influence our minds and emotions. Also, it has a goal to give an answer on questions regarding usage of color in design, advertising, logo and brand creation and by doing that it will provide information on how colors are used to promote business as well as social causes and political agendas.

Research Question

Based on analyzed theories we shall try to answer following questions:

1) What type of emotional response do colors evoke?
2) What attributes affect our perception of color and in what degree?
3) Do responses and associations with the colors differ across the cultures, ages and gender?
4) Where and how this knowledge can be applied?

Research Method

This is a form of theoretical research in which conclusions are based on previous researches and their comparison with one another. Research will consider their methodologies as well as analyze results and compare them with results of some seemingly unconnected studies, all in hope of revealing information that were previously concealed.

RESULTS AND DISCUSSION

First reviewed study had goal to connect specific color to specific emotion and investigate effect of preference and age difference (Terwogt & Hoeksma, 1995.). It was conducted on 3 groups at age 7, 11 and group consisted of adults. Used colors where primaries: red, blue, yellow, green and neutral black and white. According to Osgood all of these colors should have a high affective value (Osgood, May, & Miron, 1975.). Emotions used in experiment were six basic emotions as defined by Ekman and Friesen: anger, happiness, sadness, fear, surprise and aversion (Ekman & Frisen W., 1975.). Probabilities of preferences where calculated with Bradley-Terry model (Fienberg, 1977.). Results showed that older groups where far more consistent in their preferences than older. So 7 year olds were less consistent in their choices than 11 year olds and they were less consistent in comparison to adults. It turns out that preference for yellow decreases with age and increases for green this was consistent with some previous researches on this subject (Choungourian, 1969.) (Birren, 1978.). Apart from green blue color showed increase in preference with age. They were also asked to choose emotions by preference in which adults choose anger over fear in difference to children. The study showed that although most of the participants paired colors and emotions with similar preferences there where some exceptions. Adults showed less consistency in pairing colors and emotions by most of them paired yellow with happiness while happiness was preferred and yellow was not. Most of the associations between color and emotions differed very much between age groups which imply that age has a role in the way we experience colors. Arguably the biggest difference is degree of cultural knowledge and experience. For example only in the youngest group black wasn't connected with sadness which is cultural appropriate color for funerals around the world.

Here is another example of research that came across conclusion that some previous experience and knowledge about colors may affect ways that we perceive them (Schloss & Plamer, 2010.). The study was trying to conclude what colors are harmonious when paired with each other, does it have anything

to do with preferences for these colors and does it matter if color of figure and background is switched. Some studies before this one suggested that harmony preference rises with contrast of the hue between a figure and a background (Granger, 1995.). Recent ones on the other hand suggest that people think that more harmonious combinations are between colors of similar hue (Ou & Lou, 2006.). To make matters worse there are also empirical studies that imply there is no particular connection between difference in hue and harmony with conclusion that people rather chose either more similar or more different hues and least moderately different ones (Allen & Guliford, 1936.). Research by Schloss and Palmer (2010.) exposed that previous color training hugely affected preference for harmony. Subjects were asked to evaluate their previous knowledge about colors from 1 to 5. Those how gave 3 had most predictable results and they were probably familiar with some color theories about color harmony. Those below how weren't familiar with those theories as well as those above how were professional artists and designers often choose pairs that were believed are disharmonious. Interestingly, in one experiment which was questioning if with rise in color contrast of the hue also rise harmony of figure and background, results showed that isn't correct with exception for blue and yellow. This phenomenon was attributed to the fact that those colors were official school colors for University of California, Berkley where the experiment was conducted, so this is possibly why results for that specific combination of colors differed.

Different approach on description of colors can be seen in another research that had a goal to connect certain emotion with a color by presenting every emotion through three attributes: pleasure, arousal and dominance (Valdez & Mehrabian, 1994.) Colors were presented with Munsell system using all three attributes to define each color. This kind of system was inspired by identification of three basic dimensions of meaning by Osgood, Suci and Tannenbaum which are evaluation, activity and potency (Osgood, Suci, & Tannenbaum, 1957.). Based on this Mehrabian and Rusell suggested that every emotion can be described through PAD (i.e. pleasure, arousal, dominance) where pleasure account for evaluation, arousal for activity and dominance for potency. This study is interesting not just because it assess emotion on more objective way then other studies because it removes subjective understanding of words by which are emotions usually described, but also because it consider other two dimensions of color rather than just hue. This research found far greater predictability in relations regarding color brightness and saturation with emotional response than with effects of hue especially on arousal and dominance. Brightness had the greatest influence on pleasure while saturation impacted arousal the most. In this research there is also mention of difference in recognition between artist and designers in comparison with people without any knowledge of color theories. Mehrabian and Rusell showed that warmth of color is very reliable parameter in color judgment, cool colors were product of low saturation and high brightness while warm colors were represented as colors with high saturation and low brightness. Dominance was slowly increasing with increase of saturation and sharply falling down with increase of brightness until some point when it became steady. Although hue hasn't showed impact of great importance on arousal and dominance it showed some effects on pleasure. Colors that were evaluated as more pleasant were: blue, blue-green, green, purple-blue, red-purple, and purple it showed that red had an intermediate level of pleasantness and least pleasant were hues of yellow. Most of the participants were adults so these findings about pleasantness in regard with hue have great similarity with some previously analyzed studies. Predictions would suggest that blue will be most favorable and when we consider age, affinity towards red and yellow should be decreasing. There were also slight difference across genders, it showed that women had stronger emotional response on small changes of brightness and saturation than men (Mehrabian, Russell, & J., 1974.). One study that researched impact of cultural differences on response to color came to the similar conclusion. It also stated that most of the color effects come from difference in brightness and saturation rather than hue. Study on 240 people in seven countries across Asia and Europe hasn't found evidence that cultural differences have big impact on perception and response to color (Gao, et al., 2006.). While that study hasn't found cultural impact on emotional reaction different study found that ethnicity affect color preference. One study done on American students, who were approximately same age but different ethnicity, with the goal to see what type of color do teenagers prefer for commonly used products came to conclusion that cultural differences play a role in preference for color. The purpose of the study was really to see how some products can be presented and advertised to attract young people.

Results showed that gender and ethnicity have significant impact on what color do teenagers prefer for their commonly used items (Akcay, 2012.)

Importance of a brand was never bigger than in the recent years. Few of important traits that characterize good brand are logo and advertising. Because of this there were a lot of studies lately that tried to answer the question how can colors be effectively used to create stronger connection with brands. Research, done on few groups of students who have knowledge of color theories as well as few groups of office workers, showed that colors really effect how we perceive brand and that for different branches of industries may be appropriate different colors. For example, it was found that participants associated red with passion, orange with happiness and yellow with joy. Green was associated with concepts like health and nature while blue represented intelligence for the most. It was concluded that right combination of color can have positive impact on creation of brand identity through associations between colors and values they are believed to represent (Chang & Lin, 2010.).

Another study about use of colors in marketing was done in Sweden, but rather than to analyze effects of many different colors they tried to check some of the universal associations with blue and black and see how do they change when colors are presented in specific context. Since we don't perceive colors independently form objects, it differs what color should be used from product category we are using it on. Positive or negative response is based on previous experiences, this is what creates color preference for specific product. (Grossman & Wisenbilt, 1999.). Previously mentioned study came to the similar conclusions. They checked what has bigger influence, universal or contextual meaning, by putting blue and black in specific context. Presenting same product in blue and then in black showed that there is more influence coming from contextual meaning (Amsteus, Al-Shaaban, Wallin, & Sjoqvist, 2015.).

Something a bit different was tried in Germany. Experiment conducted had aim to see what kind of unconscious effects does color red have. While other researches aimed to make connection between certain colors and effects caused by them, this one had a goal to answer why this kind of connections occur. They were testing assumption that red evokes avoidance motivation and undermines intellectual performance without awareness. One part of participants were given anagrams and IQ tests marked in red while others were given green, black or gray. Those who got red scored less than participants from other groups. Upon this they concluded that red undermines intellectual capabilities. Furthermore they asked participants to choose items with different difficulties for test, those shown red colored chose far easier tasks then others. Conclusion that red evokes avoidance motivation was brought based on this experiment as well as by doing electroencephalography when participants were exposed to different colors which showed more activity in parts of the brain connected to avoidance motivation (Eliot & Maier, 2007.)

CONSLUSION

Taking in consideration all previously mentioned researches following conclusions were made. Most of people have an emotional response to color which is usually based on their previous experience with same color used in similar context (RQ:1). Our perception of a color and response to it is far more influenced by brightness and saturation then hue of the color (RQ:2). Attributes like age, gender and culture have an impact on our preference for colors as well as to response on them. While preference for some colors rise with age for other it falls down. Colors have different degree of representation between genders. Cultural differences on color preference are attributed to different meanings and associations to certain colors in certain cultures (RQ:3). Although it can be concluded that color has a big role in marketing and design it is shown that contextual meanings of colors have far greater influence than universal (RQ:4). To effectively be used, further studies on color impact in specific context as well as on ways certain connections are made based on previous experience are needed. It should be also studied if gender, age and culture make difference only in universal experience of colors or does it have impact on contextual meanings as well.

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ONLINE SHOPPING OF SLOVENIAN CONSUMERS

Bruno Završnik*
University of Maribor, Faculty of Economics and Business, Slovenia
E-mail: bruno.zavrsnik@um.si

ABSTRACT

We can not say that online shopping will replace classical shopping in physical stores and shopping centers, but nevertheless we can say that in the coming years we expect more online stores and increased growth of online consumers. Online stores have many advantages, as they can comfortably from the armchair anytime and anywhere (as long as we have an internet connection) buy the product we want, without imposing the seller's opinion, without waiting at the cash desk, without finding the parking space and care about of how we will transport the goods to our home. All of this is at your fingertips and with just a few clicks; we can have an ordered product the next day at home. Shopping has never been so comfortable and easy. The main goal of this paper is to determine how often Slovenian consumers are shopping online and which products are most frequently purchased. We tried to describe, research and present the real situation of Slovenian consumers who shopping online. Research has shown that Slovenian online consumers often purchase clothing, sports equipment or footwear and still have the most confidence in domestic online stores.

Key words: online consumer, consumer behaviour, buying behaviour, online shopping, online stores

INTRODUCTION

Globalization, technology and internet connectivity have advanced online shopping, which has become a global consumer trend in the last decades (Van Dang & Pham 2018).

Today, Internet is not only a networking media, but also as a means of transaction for consumers at a global market. Online shopping has become the third most popular internet activity, immediately following e-mail using or instant messaging and web browsing (Cai, Cude 2008). As the world adapts itself to the technological advances that have brought us into the next century, people are growing more and more comfortable with searching for products on the net and shopping online. Hence, the shopping industry is growing in number as the years progressed, as it is gaining acceptance to people throughout the world (Mariammal 2017).

Internet shopping is a phenomenon that is growing rapidly nowadays. A peep into the exponential growth of the main players in this industry indicates there is still a large reservoir of market potential for e-commerce. The convenience of online shopping rendering it an emerging trend among consumers, especially the Gen Y. The prevalence of online shopping has raised the interest of the retailers to focus on this area (Yi Jin Lim et al. 2016).

Internet marketing is conceptually different from other marketing channels and internet promotes a one to one communication between the seller and the end user with round the clock customer service. Today, business internet marketing is the fastest growing segment of online commerce. (Shanthi & Desti Kannaiah 2015).

Most of the companies of today customize their products and services largely because they are aware that their clients are more and more informed and pretentious. They can get any kind of information from the Internet. Therefore, to satisfy their clients at the highest level possible, organizations aim at building long-term relations with them, by implementing electronic customer relationship

management systems and by practicing interactive marketing specific for the digital world (Cetina et al. 2012).
The Internet has become an indispensable tool for international business as it does not recognize physical borders between countries and gives buyers access to online sellers from all continents. Being so far and yet so close, how does one know if a seller is genuine? With the ease of creating a commercial website and relatively affordable cost, the number of online stores has skyrocketed (Bauman & Bachmann 2017).

ONLINE SHOPPING

Online shopping or online retailing is a form of electronic commerce, which allows consumers to directly buy goods or services from a seller over the Internet, using a web browser. Alternative names are: e - shop, e - store, Internet shop, web - shop, web - store, online store, and virtual store. An online shop evokes the physical analogy of buying products or services at a bricks – and – mortar retailer or shopping center; the process is called business – to - consumer (B2C) online shopping. In the case where a business buys from another business, the process is called business – to - business (B2B) online shopping. The largest of these online retailing corporations are eBay and Amazon.com (Pratiksinh 2014).

Online shopping is the process of buying goods and services from merchants who sell on the Internet. Since the emergence of the World Wide Web, merchants have sought to sell their products to people who surf the Internet. Shoppers can visit web stores from the comfort of their homes and shop as they sit in front of the computer.

Consumers buy a variety of items from online stores. In fact, people can purchase just about anything from companies that provide their products online. Books, clothing, household appliances, toys, hardware, software, and health insurance are just some of the hundreds of products consumers can buy from an online store.

Many people choose to conduct shopping online because of the convenience. For example, when a person shops at a brick-and-mortar store, she has to drive to the store, find a parking place, and walk throughout the store until she locates the products she needs. After finding the items she wants to purchase, she may often need to stand in long lines at the cash register.

In contrast, online shopping helps consumers avoid these disadvantages. With online shopping, a person logs onto the Internet, visits the store's website, and chooses the items she desires. The items are held in a virtual shopping cart until she is ready to make her purchase. The shopper can remain in her pyjamas as she does her shopping, and the process can be conducted in the wee hours of the morning or late into the night. Online stores never close – they are open 24 hours a day (Essays 2018).

Online shopping has become extremely popular over the last decade. Utilized mostly by the "Net-Generation", this service is extremely convenient. Although online shopping can be very convenient and beneficial there are also some potential problems that can arise. Consumers have been seen to exhibit different buying behaviors when shopping online than when they are shopping in a physical store (Corc 2010).

EMPIRICAL FINDINGS

The survey questionnaire was published on the Facebook via a personal profile and in larger public groups and on some online forums from Slovenia. The survey questionnaire was viewed by 197 people, 106 of whom were interviewing them. 12 analyses were excluded because they were only partially fulfilled. 92 respondents were surveyed, out of which 81 active online shoppers were analysed for online consumer analysis.

The purpose of the survey was to obtain the demographic data of the respondents and information on their online shopping habits. We want to know also the value of online purchases in the last 12 months and what and what they buy most often online.

A sample of online shoppers, who have made at least one purchase in the past year or later, however, consisted of 81 respondents, of whom there were 59 women and 22 men.

As regards age, the majority of respondents are from 25 to 34 years old, which is 59% of all respondents. They are followed by age groups of 34 to 44 years (20%), followed by age groups 16 to 25 (16%), 45 to 54 years (4%), 55 to 64 years (1%) . There were no respondents aged 65 or over. Nevertheless, despite the fact that there are age groups up to 25 to 34 years old, we have somehow expected most internet buyers, as this generation, which already has its own income and uses the Internet daily.

Table 1: Frequency of Internet use - e-shoppers

Answers	**Frequency**	**Percent**
Everyday	**76**	**94 %**
Several times a year	**5**	**6 %**
Few times a month	**0**	**0 %**
Several times a week	**0**	**0 %**
Total	**81**	**100 %**

Today, the most people are almost unable to "survive the day" without using the Internet, because we need it for work, studies, for viewing news, for entertainment, etc. Therefore, we were not surprised that 95% of all respondents use the Internet every day. Only 5% of respondents use the Internet several times a week.

In the next question, we were interested in how often-Slovenian consumers are shopping online. We have concluded that most online purchasers buy a few times a year, as answered by 64% of respondents. 32% of respondents buy online at least once a month, only 4% buy them once a week. No respondent buys online every day.

Table 2: Frequency of online purchases of respondent's e-shoppers

Answers	**Frequency**	**Percent**
A few times a year	52	64 %
At least once a month	26	32 %
At least once a week	3	4 %
Everyday	0	0 %
Total	**81**	**100 %**

Figure 1 shown the data, where respondents with 7 marked an answer to their opinion on the purchase of the most affected, with 1 being labelled an answer to their online purchase at least influence. The results showed that the price of the product is most affected by the online purchase, with an average score of 4.9. It is followed by time savings with an average score of 4.7. The following factors that influence the online purchase are a varied choice and ease of purchase, both with an average score of 4.0. Factors that have less impact on online purchases are low postage and delivery speed, which reached an average score of 3.6. With an average score of 3.2, direct shopping is least affected by Slovenian online consumers.

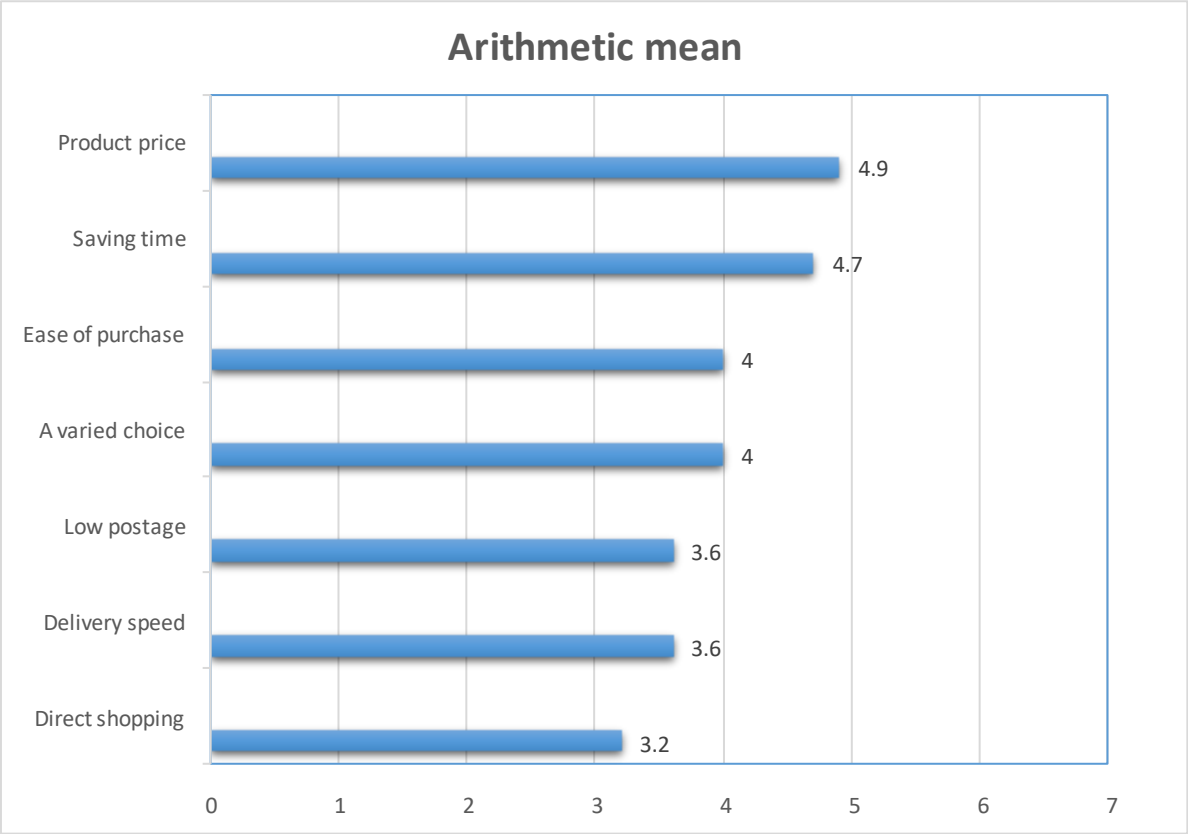

Figure 1: Opinion of respondents about factors influencing on-line purchase

In table 3, we wanted to find out from which country the Slovenian online consumers are most often shopping.

We found that 23% of all respondents are mostly shopping in Slovenia. It is followed by the fact that 21% of respondents shop from China and 20% of the respondents buy from Great Britain. They buy 19% from Germany, 19% from the USA, 6% from Hong Kong and 4% from other countries, such as Austria, Spain and Croatia.

Table 3: Country of the most common online purchase

Answers	**Frequency**	**Percent**
Slovenia	19	23 %
China	17	21%
United Kingdom	16	20%
Germany	15	19%
USA	6	7%
Hong Kong	5	6%
Other	3	4%
Total	**81**	**100 %**

We also wanted to know how much the Slovenian online shoppers spent last year on online shopping. 42% of Slovenian shoppers spent EUR 100 to 500 EUR for online purchases. A slightly lower percentage of shoppers (32%) used only up to 100 euros for online shopping. In the last year, 21% of online shoppers spend from 500 euros to 1000 euros for online purchases. Only 5% of respondents spent between 1000 and 5000 euros in the last year for online purchases. No respondent spent more than 5000 euros for online purchases in the last year. The results are shown in table 4.

Table 4: The value of online purchases in the last year

Answers	**Frequency**	**Percent**
To 100 euros	26	32%
From € 100 to € 500	34	42%
From € 500 to € 1000	17	21%
From € 1000 to € 5000	4	5%
More than 5000 euros	0	0%
Total	**81**	**100 %**

With the next question, we wanted to find out which products were purchased by Slovenian consumers in the last year. There were several possible answers. The results are given in table 5.

Table 5: Frequency of online purchases of respondent's e-shoppers

Clothing, sports equipment, shoes	77 %
Tourist accommodation facilities (travel, holiday accommodation)	48%
Household goods (toys, furniture, car, Kitchen & household appliances)	30 %
Tickets for events	28 %
Computer equipment	25%
Goods for everyday use (food, cosmetics)	23%
Electronic equipment	23%
Other services in connection with the organization of trips (purchase of airplane tickets, car rental)	17%
Books, magazines, newspapers	6%
Other (services)	1%

In the last year, as many as 77% of all online shoppers bought clothes, sports equipment and shoes. We somehow expected this, because the Slovenia's statistics rank this category at the very top. Followed by tourist accommodation with 48%, household goods 30%, tickets for events with with 28%, computer equipment with 25%, electronic equipment and goods for everyday with the same percentages (23%). Slovenian online shoppers decide at least of purchases of other services in connection with the organization of trips (17%), books, magazines and newspapers (6%) and for services (1%), which one respondent referred to as "other".

CONSLUSION

It is about 15 years from the first Slovenian online stores. At that time, there were only two, and there were electronics stores. Today, 15 years later, we find them in the directory of Slovenian online stores over 2,000 (www.trgovine.net). The online store, unlike classic stores, does not take as much cost. To start an online store, you only need a product store and well-designed website, and at least one employee. Starting a new store has never been so easy, so more and more retailers are choosing to shop online

From the analysis of the answers, we found that the majority of respondents were buying from sellers from Slovenia, which is 70% of all in the sample of online shoppers. 47% of online purchasers purchased from EU customers in the last year, and 43% of respondents bought in non-EU countries. According to these results, we come to the conclusion that Slovenian online consumers were mostly shopping in the home country. The reasons are the following: shorter delivery time, lower cost of postage, increased trust in home online shops, lack of knowledge of foreign languages, support for the growth of their own economy, etc.

Online shopping from China is becoming increasingly widespread in Slovenia. The purchase is easy, the goods are much cheaper than with us, and the quality can sometimes be very good. Buying from

Chinese online stores may also have disadvantages such as poor product quality, long delivery time - if we do not want to pay for astronomical shipping costs, this can be very long, as the average product is expected to last from 15 to 60 days. However, we do not forget about the customs that we have to pay if we go beyond the certain amount of the purchase. Nevertheless, Slovenian consumers most often use the Chinese online market where they can find almost everything.

The analysis showed that 77% of all online shoppers bought clothes, sports equipment and shoes in the last year. As we have already said in the analysis, we have somehow expected this information, as according to the Statistical Office of Slovenia, clothing, sports equipment and shoes are the most common products that are purchased online. In today's flood of online stores with clothing, sports equipment and shoes, this kind of shopping for many has become an established practice. The biggest disadvantage of online shopping for clothing and footwear is that we cannot try the product, but the trade is also trying in this direction and in the case of swapping or reclamation, the money is refunded without additional questions.

Despite the fact that online shopping in Slovenia has been rising in recent years, it is still below the European average. Many people are still discouraged by online stores.

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Session D: ECONOMY

Papers (pp. 159-176):

THE ROLE OF SMALL AND MEDIUM-SIZED ENTERPRISES IN MODERN BUSINESS

Sanja Stanisavljev*
University of Novi Sad, Technical faculty "Mihajlo Pupin" Zrenjanin, Republic of Serbia
E-mail: sanja.stanisavljev@tfzr.rs
Borivoj Novaković
University of Novi Sad, Technical faculty "Mihajlo Pupin" Zrenjanin, Republic of Serbia
Dragica Radosav
University of Novi Sad, Technical faculty "Mihajlo Pupin" Zrenjanin, Republic of Serbia

ABSTRACT

The authors analyze the role and significance of small-sized companies for the development of innovations and achieving competitiveness in modern business. Modern business requires a new approach to managing organizations, a high degree of creativity, flexibility and innovation. Rapid, dynamic and increasingly frequent changes have established new rules for companies in the modern market, characterized by the presence of numerous competitors and consumers who are aware of their needs, demands and desires. Businesses can respond to these demands and achieve competitive advantage by innovating their products and services, flexibility and timely response to changes within the company and in the environment. Companies that are ready to respond to the requirements of the modern market, consumers, and modern business have the power of high adaptability and stability. Small and medium-sized enterprises are a generator of ideas, creativity and innovation; with their flexibility, they can contribute to improving their business with the goal of achieving competitiveness.

Key words: Small and medium enterprises, innovation, competitiveness, contemporary business.

INTRODUCTION

One of the ways of achieving competitiveness is small and medium enterprises, as a generator of ideas, innovation and encouraging entrepreneurship. With their characteristics, flexibility and high level of adaptability, they are able to respond to market demands. Of course, there are numerous problems that this group of companies is facing, but their advantage lies in innovation, creativity and flexibility, which are the success factors. The trend of globalization or creating a uniform market dictates the need for the organizations to change their activities, implement new ways, methods, concepts of work and overcome traditional practices. The rise in competition globally on the one hand, and the rapid development of information and communication technologies on the other hand, are forcing the organizations to change the way they operate. The modern business world dictates the pace of operation. All the organizations that wish to be competitive need to follow modern business practices. Such trends give indications to the management of an organization of all necessities arising from new developments in the overall situation of the organization, and they effectively initiate changes leading to access in international flows of operation. The dynamic environment and complexity mean hyperchange, hipercompetition,and hyperturbulence (Karevska&Davčev, 2008).

Innovation of small and medium enterprises can be focused on the development and introduction of completely new or improving existing products, on the development of new business processes, on finding ways for more efficient organization of work, different marketing approach, etc.

It can be said that innovation has multiple relevance since they (Berry, 2007):
1. are one of the key factors for improving productivity
2. may help boost business through the introduction of a completely new way of working;

3. may reduce production costs by increasing work efficiency;
4. are the source of the real competitive advantage of an individual business and one of the more effective ways for a sustainable prosperity of the industry and the economy as a whole (Ravić & Gavrić, 2015).

CONTEMPORARY BUSINESS AND COMPETITIVENESS

New business conditions dictate new market demands and establish new competitive relationships in the market. The struggle for survival on the market becomes inevitable. In order to persevere in this struggle, companies must accept and adapt to new business conditions. Changes are the basis of modern business.

The focus is on small and medium enterprises precisely because of their flexibility, innovation and the ability to adapt to turbulent market events. Small and medium-sized enterprises are considered to be the development potential of Serbia. Such enterprises are practically the most numerous in each European country and represent a foundation for the large part of the economy. They are easily adapted to changes and adopt technological advances, enabling the development of an entrepreneurial climate, which is a prerequisite for progress in the modern world economy (Drucker, 1996).

The competitive advantage is mostly a rational way in which a particular organization can appear or compete in the selected market in order to achieve some of its specifically defined goals - market share, and thus profit. Organizations need to create each and every competitive advantage as an advantage for the consumer, i.e. those must be based on what consumers consider valuable and meaningful (Kotler& Keler, 2006; Vukajlović & Ćurčić, 2017).

In order to be innovative (Duglas 1996), companies must meet certain conditions. There must be a visionary management prone to change. They release employee potential creating climate focused on consumers. They invest in people, through training and good communication. Such companies are oriented to customers with special requirements and are ready to learn from others, which is the basis for innovation. Businesses continually introduce new and differentiated products and services, drawing on the essence of competence, expanding it by the involvement in strategic alliances. Businesses are very innovative if their new products and services exceed customer expectations.

Looking at the changes in contemporary society, several characteristic trends are evident: Loss of the middle - the importance of extremes (mass production as opposed to single one, young workforce as opposed to the old, extremely wealthy versus extremely poor, etc.); The importance of customers; The high degree of development of certain areas; Networking, Internet, mobile telephony ("the world is a global village"); Population growth in cities; A large number of entrepreneurial ventures (increasing the number of enterprises, self-employment); Dominance of services; The emergence of new businesses, activities, interests, etc.; Outsourcing – even at the national level (Grant, 2008).

Changes in the business environment that have taken place over the past two decades had hugely influenced the change of companies' attitudes towards the environment in which they exist. The company carries out its activity in macro environment in which there are six forces that affect the behavior of the company (Kotler, 1996). According to the same author, those are: technology, nature, economy, population, politics and culture. Technological environment causes major changes for the company. Technological environment is characterized by a rapid rate of technological change, high budget for research and development activities, concentrated efforts in small improvements of existing solutions and increased state regulation in the field of new technologies.

THE IMPORTANCE OF SMALL AND MEDIUM SIZED ENTERPRISES FOR THE DEVELOPMENT OF INNOVATION AND COMPETITIVENESS

The major challenge of modern management in the modern business world is gaining competitive advantage which basically means the ability of an organization to exceed another organization because it produces desirable goods and services more efficient and effective than its competitors. There are four specific forms to create competitive advantage, such as: - Superior efficiency; - Quality; - Speed, flexibility and innovation - Responsiveness to customers (Jelonek &Stępniak, 2013).

Micro, small and medium Enterprises (SMEs) are the engine of the European economy. They are the main source of jobs, the driver of entrepreneurial spirit and innovation in the European Union, a key element in the development of competitiveness and employment. The new definition of SMEs, which is effective from 1 January 2005, aims to improve the business environment for SMEs, as well as the promotion of entrepreneurship, investment and growth (Commission, 2003).

There are several definitions of small and medium-sized enterprises in the literature. Before adopting a common definition at the European Union level, there were several different definitions of SMEs. Thus in the United Kingdom small enterprises were defined as subjects with up to 200 employees, in France the number of employees in small enterprises ranged from 6 to 50 workers, and in the medium ones 51 to 500 employees. In Germany, in defining small and medium-sized enterprises, the total annual income is taken into account besides the number of employees (Vukajlović & Ćurčić, 2017).

The most important advantages of small and medium enterprises are (WIPO, 2008):
- flexibility, dynamics, sense of initiative,
- the absence of inertia characteristic of large enterprises,
- the inclination to introduce innovations and the development of new technologies,
- the absence of bureaucracy and formalism,
- high level of ability in the development of diversified products,
- quick return of the investments.

Small and medium enterprises are the most vital and flexible part of the national economy. The advantages of small and medium-sized enterprises, such as: high level of flexibility, developed entrepreneurial spirit, precisely defined core of competencies and ease of management come to the fore in terms of discontinuities, frequent changes and sharp competition. The ability to adapt to change is one of the biggest problems and challenges that economic operators face in modern economic conditions, and this ability is one of the basic characteristics of small and medium enterprises (Ravić & Gavrić, 2015).

Unlike large companies, which naturally strive to achieve a monopolistic or duopoly position on the market, SMEs contribute to the creation of a competitive economic structure as a prerequisite for increasing the efficiency of the economy. The presence of a large number of SMEs leads to lower prices and improvement of the quality of products and services. Starting from the fact that there is a scarcity of capital in each economy, large enterprises achieve a lower level of overall productivity factors compared to SMEs, and even if not, it would be highly probable that large companies with their monopolistic tendencies would cause a reduction in the gross national products and social welfare (Berry, 2007).

It should be emphasized that enterprises which want to maintain competitive position among other entities or improve this position must be constantly innovative in different domains of their business activity. Nowakowska-Grunt (2014) noted that a variety of concepts of innovations reflect market demand. Therefore, one cannot determine concrete barriers that set the framework for innovativeness in enterprises. Building competitive advantage can be achieved through implementation of new solutions in the area of products, technologies and work organization. Therefore, operation of organizations is immanently connected with the concept of innovation viewed as transformation of creative idea into a product, service or method of operation. Innovations should also concern the logics of enterprise's operation and organization of enterprise's management. In order to effectively respond to market needs, enterprises must improve the previously manufactured goods and work on creation of entirely new products or technological solutions. Undoubtedly, a useful factor in these activities is IT tools for business modelling that help managers visualize or simulate particular events, behaviours and predict achievement of the goal of

business. As emphasized by Jelonek & Stępniak (2013), these tools should be of dynamic character. This dynamics should consist in both opportunities for designing business processes and for introduction of corrections and constant modification that result from variability of market conditions.

Authors Tidd, Bessant and Pavitt (Tidd et.al., 2005) came to the conclusion that continuous innovation is common to all successful companies. New products maintain or even increase market share and profit of the enterprises. Depending on the degree of new knowledge there are incremental and radical innovations on the market (Figure 1). Radical innovations are revolutionary and essential innovations, and they imply a completely new product, service or business processes that did not exist on the market until now. Incremental innovations represent small improvements in existing products, services or business processes, but some authors claim that incremental innovations include continuous improvement of existing processes (Pullen, 2009).

Small and Medium sized enterprises in Serbia

In Republic of Serbia, small and medium- sized enterprises are the most profitable segment of economy. This sector realizes about 46% of exports and 60% of imports and employs over 67% of total number of employees. Also, balanced regional development of Serbia largely depends on the success of small and medium-sized enterprises and their equitable distribution.

Figure 1 shows that out of 100,488 companies in the Republic of Serbia in 2017 there were 87,012 micro (86,6%), 10,583 small (10,5%), 2,372 medium (2,4%) and 521 large enterprise (0.5%) .

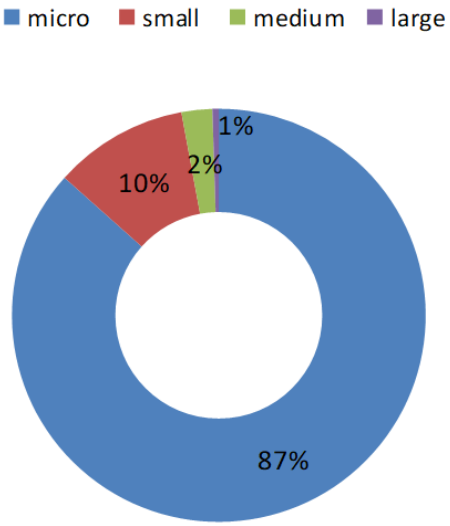

Figure1: Companies of Serbia

The big problem that Serbia faces is high unemployment, and a group of young people is particularly affected by this problem. It is disturbing that the Statistical Office of the Republic statistics show that the unemployment rate in Serbia for the fourth quarter of 2018 is 47.4%, while the unemployment rate for young people (15-24 years) is as high as 32%. Small and medium-sized enterprises with state support are a chance to reduce unemployment rates (Stanisavljev et.al. 2019).

In March 2015, a new strategy was adopted to support the development of SME entrepreneurship and competitiveness for 2015-2020 periods (Serbia, 2015). Strengthening of Serbian enterprises to adequately respond to the pressure of competition in the common EU market and contributing to the improvement of living standards, is based on the development of entrepreneurship and competitiveness, arising from private entrepreneurial initiative, knowledge and innovation. The expected number of SMEs by 2020 is 350,000, and in 2013 it amounted to 315,412. The Strategy sets out a framework of measures to improve SMEs and competitiveness in the next medium-term period, which is presented through six pillars, as follows: 1) Improving the business environment; 2)

Improving access to funding sources; 3) Continuous development of human resources; 4) Strengthening the sustainability and competitiveness of SMEs; 5) Improving access to new markets; and 6) Developing and promoting the entrepreneurial spirit and encouraging the entrepreneurship of women, youth and social entrepreneurship.

Despite a number of new institutions established in Belgrade, Novi Sad, Nis and Kragujevac in the past five years (eight business and technological incubators, four scientific and technological park and four technology transfer centers), there is still a lack of infrastructure support for innovation in Serbia. Institutions that provide institutional support to innovative activities often lack sufficient capacity, either human or financial. A large number of business and technology incubators have been established to support spin-off and startup companies, but they are often part of donor initiatives without secured long-term and sustainable funding. These institutions promote the emergence of new competitive companies that promise high added value and balanced regional development. Incubators support the realization of entrepreneurial ideas, the establishment and development of a company, an incentive environment, subsidized lease of premises and administrative, intellectual and other services for its tenants. Technology parks combine business development, research and operation of new technology companies and offer consulting services in a supportive environment, easy exchange of information, knowledge transfer and necessary infrastructure (Culkin & Simmons, 2018).

Serbian small and medium-sized enterprises (SMEs) will have a chance to improve their competitiveness thanks to the newly launched "EU for Serbia – EBRD SME advisory support" program launched in Belgrade today. The program will help boost competitiveness and build the capacity of Serbian SMEs with tailored advisory support and coaching by local consultants and international advisors. It is supported by the European Union (EU) with €2 million from the national Instrument for Pre-Accession Assistance in cooperation with the Ministry of Economy of the Republic of Serbia. Enterprises will have an opportunity to receive a wide range of advisory services, including in quality standards implementation, marketing strategy, financial analysis, business plan development and management information system introduction. This will enable SMEs to improve competitiveness, efficiency and improve their export performance. The EU funds will partly cover the cost firms incur for these advisory services (Gajić, 2019).

In 2019 year The Ministry of Economy has launched three public calls for allocation of 1.7 billion dinars worth of grants for small and medium-sized enterprises and small business owners.

The Ministry of Economy grants will be available through three support programs – development projects, beginners in business and procurement of equipment. The program for promotion of entrepreneurship through development projects will have a grant budget of 500 million dinars for grants and SMEs and small business owners can already apply for it. This program entails financial support that is 20% grant and 80% a favorable loan from the Development Fund. In order to facilitate a more balanced development in all parts of the country, the Ministry of Economy has made 30% of the grants available to the most undeveloped areas in Serbia (Bjelotomić, 2019).

CONCLUSION

Modern companies, if they want to survive in a dynamic, global market, should constantly innovate; apply existing knowledge and techniques, and master new ones. The key to success lies in the innovation of existing products and conditions, the introduction of new unique, innovative products that the competition will find difficult to copy. The new organization must be flexible and adapt to changes in the market. In order to keep up with competition, the organization must be innovative and adopt new solutions. The modern organization must be knowledge-based and build its competitive advantage on the market through continuous process of improvement and improvement of the workforce. Rapid technological development is one of the features of modern business, and it is necessary for the modern organization to monitor technological achievements and its business, to a greater extent, based on them. At the heart of the modern organization must be quality, while

achieving a high level of quality and business excellence, the goal to which all employees need to strive. Small and medium enterprises are the key to success in modern business. They offer the opportunity to self-employment, innovate, generate ideas, open the way to competitiveness. It is therefore of great importance to invest in this sector, to provide support at all levels through strategies, programs, laws.

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GREY ECONOMY IN SERBIA: CAUSES, SCOPE AND ACTION PLAN SUPPRESSION

Ljiljana Stošić Mihajlović*
High School of Applied Studies in Vranje, Republic of Serbia
stosicmihajlovicljiljana@gmail.com

ABSTRACT

The grey economy is a set of economic affairs over which the state has no control and is on the brink of law in the "grey zone". Consequently, the emergence and growth of the grey economy is directly related to the development of the economic power of the state, and these relations are in mutual reversed proportions: the state is more regulated from the standpoint of the legislation of individual areas, the mechanisms of the grey economy are more and more complex, but it certainly exists. It is commonly considered that the grey economy is at the margins of the economic milieu and is linked to crime and corruption, which, together, are shown to show greater or lesser force of the state in the regulation of the economic system and social ordering. This is an economic part that is not covered by official statistics, and therefore is difficult to measure and determined. Therefore, the grey economy is not subject to taxation, and thus does not contribute to GDP. In this paper we will talk about the grey economy in Serbia and about the mechanisms with which the Republic of Serbia opposes emerging forms of the grey economy, from the point of view of economic policy measures taken in the struggle with this great monstrosity of society.

Key words: grey economy, Serbia, regulation, tax policy

INTRODUCTION

The goal is to analyses the causes and manifestations of the grey economy, stressing the importance of controlling and control, primarily by the competent state authorities. Illegal or semi-gigantic grey economy mechanisms are manifested in the non-payment of fiscal obligations, such as taxes and contributions, non-compliance and/or avoidance of compliance with regulations, leading to the emergence of market disturbances and structural problems. Also, the work will be exposed to the problem of measuring the grey economy, using different direct and indirect methods. Factors that trigger this phenomenon will be exposed and systematization of advantages and disadvantages will be carried out, based on the review of the grey economy data in European countries. On the measures will also be announced in the fight against the grey economy, primarily at the level of the Republic of Serbia. Namely, the Government of Serbia has decided to address the problem of grey economy and unfair competition with all measures, which is evidenced by the fact that at the end of 2014 a coordinating body for the suppression of the grey economy was formed and the National Program and Action Plan for combating these negative economic phenomena, was adopted. In the second half of March 2019, the line ministry of finance, together with ministries of state administration and local self-government, the Ministry of Justice, the Ministry of Labor and the Ministry of Agriculture, proposed to the Serbian government a new action plan to combat the grey economy in Serbia.

The gray economy endangers the very essence of loyalty between the state and its inhabitants, both citizens and the economy. The notion of a gray economy itself denotes disloyalty not only with legal provisions and good business practices protecting the market, but also with the dislike of the principle that the regulations apply to all and apply equally to all. Even when citizens have an understanding of the gray economy, this does not relieve the state of the obligation to protect the economic operators from the gray economy from the gray economy, in accordance with the regulations, to the citizens from the harmful consequences that the gray economy leaves on the quality of their lives, or how

much the illegitimate benefit of the gray actors economies realize. Businesses that operate in accordance with regulations, and are exposed to unfair competition, sometimes to the extent that they cannot survive on the market, are the economic entities that the state has failed. The state of Serbia is determined not to disappoint any business entity that operates in accordance with the regulations and not to deny the right to compete in a market game in which those who subjugate the community are not rewarded for this reason.

In the fight against the gray economy, states cannot win without the active participation of citizens. Every time a citizen achieves a small profit by purchasing "gray" goods or "gray" services, in the long run, he is at a loss as he risks his money, security and health, while at the same time contributing to the reduction of the funds available to provide services and infrastructure provided by the state from paid taxes.

An employee, who agrees to informal employment for the payment of cash earnings, as well as an unregistered entrepreneur, loses more than they receive in the long run - they do not have social security, safety and health at work, labor rights, adequate visibility on the market, access to funding sources, etc.

As the complex and profound reasons that lead to the gray economy and such as the great benefits enjoyed by some of its actors, the state's activities to suppress the gray economy must be comprehensive, powerful and uncompromising. The resources that the state will define to fight the gray economy are a small price given the damage that the gray economy inflicts on Serbia's development, as well as the benefits that will be achieved by its suppression for the business environment and the society as a whole.

CAUSES OF GREY ECONOMY

The growth of the grey economy is caused by the emergence of various factors, among which are the growth of tax burden and contributions for compulsory social security, strengthening regulations related to the economy and the labor market, forced reduction of working hours, early retirement, unemployment, and weakening civic awareness, devotion to public institutions and tax morality. Given that economic factors can only partially explain the growth of the gray economy, it is necessary to include an interdisciplinary approach in the analysis.

Micro-sociological and psychological approaches can provide additional insight into the decision-making process on black at the individual level. Within the interdisciplinary approach, considerable attention is paid to variables such as tax ethics or the perception of equity of a certain tax system. Below is a more detailed analysis of the economic causes of the growth of the gray economy.

We analyzed the causes of the gray economy using, where appropriate and appropriate, elementary theoretical analysis, comparative data, the views of the social partners on the functioning of institutions, as well as the results of the Survey on business conditions in Serbia.

The relatively high fiscal burden of labor, complicated and expensive taxation procedures, the complicated and non-transparent tax system, inadequately organized, insufficiently trained and equipped tax administration, low quality of public sector services and a high level of tolerance towards the gray economy are relevant to the fiscal causes of the gray economy.

In the domain of labor market institutions, among a broad group of factors, several key factors are maintained that maintain and stimulate the gray economy - a high fiscal burden on lower wages, a system of social benefits that practically does not allow formal employees to continue to receive social assistance and other transfers , high minimum wages, as well as certain rules within the framework of legislative protection of employment, working time regulations, unemployment benefits, and the pension system.

There are also a number of other institutional and economic factors that contribute to the high participation of the informal economy. Due to low productivity, the business model of a significant number of companies implies profitable business only in the event of a default of tax liabilities.

The economic crisis and the high level of illiquidity are also the more productive companies forced to transfer part of their business to the informal sector. Due to an inefficient mechanism for exiting the market, business entities that carry out all or part of their activities in the informal sector are encouraged to stay there. Other causes that significantly affecting the participation in the gray economy are high administrative burden on business, low quality regulatory environment and legal uncertainty.

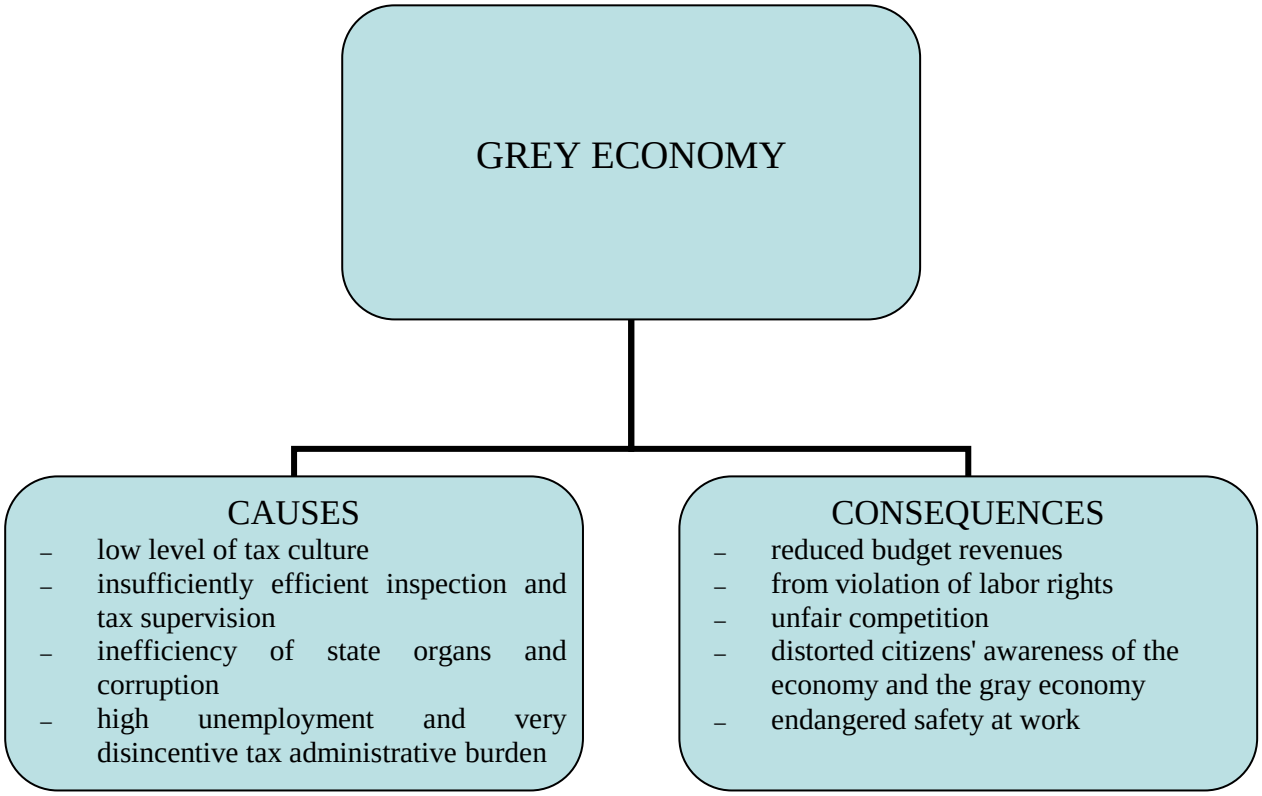

Figure 1: Gray economy - causes and consequences

In addition to the aforementioned regulatory causes, the gray economy is also affected by a high level of corruption and a low level of tax morality. Among the most important factors in the financial area are significant share of cash transactions in total payments, informal sources of financing and unregistered remittances of migrants from abroad.

THE SCOPE OF GREY ECONOMY IN SERBIA

The gray economy includes economic activities that circumvent or otherwise avoid regulations, taxation or monitoring by the competent authorities and authorities. From a statistical point of view, the gray economy is classified into a registered and unregistered, from a legal point of view to a legal and illegal one, from a fiscal angle to a taxable, taxable (but the tax authorities cover the entire income or part thereof) and the rest (for which there is no clear tax regulations and which is done in accordance with gaps in legal regulations). A particularly big problem is the black economy, which is related to criminal activities, which is also covered by this strategic document.

The size of the gray economy is lower today than it was five years ago. Regarding registered businesses, in terms of product turnover and wages, the gray economy was reduced from 21.2% in 2012 to 15.4% of GDP in 2017. Improving the business environment and macroeconomic stability,

registering GDP growth, labor market recovery, as well as improved inspection, sharper penal policy and more efficient collection of tax revenues contributed to the reduction of the informal economy in this five-year period.

In 2017, 16.9% of registered businesses dealt with some kind of gray economy, compared to 2012, when such enterprises accounted for 28.4%. Observed by forms of informal business, approximately one tenth of business entities (10.8%) have informal employees, while 6.9% perform cash payments, although they are taxpayers. On the other hand, according to the estimation of the economy, the share of unregistered companies in their activity amounts to 17.2%, and it can be concluded that almost every third company operates in the gray zone.

Regarding the structure of the informal economy, informal employment, ie partial or complete payment of wages in cash, accounts for a much larger part of the gray economy than the undeclared business surplus (profit). Business in the gray economy is largely linked to the survival strategy, since the likelihood that loss-making enterprises will be found in the gray economy is twice as large as in the case of successful businesses. This finding also confirms that the improvement of the macroeconomic and regulatory environment is of great importance for the transition of business entities from the gray to the formal business zone. As the failure to report employees, or partial or complete payment of cash in cash, is the dominant form of the gray economy in our country, the focus of public policy measures should continue to be on reducing informal employment.

According to the NALED study from 2017, the size of the gray economy in registered businesses, in terms of product sales and wage payments, is estimated at 15.4% of GDP, using the survey method of assessment. The data show that there was a significant reduction in the gray economy, which in 2012 amounted to 21.2% of GDP. The gray economy was also evaluated for the first time by applying a new survey method called the "Gray Economy Index" used to evaluate the gray economy of the three Baltic countries and Montenegro, and according to this method, the size of the gray economy in Serbia in 2017 was estimated to 14.9% of GDP. This assessment represents the lower margin of the gray economy, since the survey covered only registered companies and entrepreneurs.

Compared to other countries where this method is applied, the gray economy of Serbia (as a percentage of GDP) is lower than in Montenegro (24.5%) and Latvia (20.3%), and the approximate level in Estonia (15.4 %) and Lithuania (16.5%). However, one should not lose sight of the fact that the share of unregistered companies in Serbia is significantly higher compared to the Baltic countries.

Table 1: Evaluation of the gray economy in Serbia and the selected countries using the direct survey method of assessment ("gray economy index")

Country	Year	Grey economy in % of GDP
Serbia	2017.	14,9
Montenegro	2014.	24,5
Estonia	2016.	15,4
Letonia	2016.	20,3
Lithuania	2016.	16,5

Source: Survey on business conditions of enterprises (companies and entrepreneurs) in Serbia, 2017. Ipsos and NALED.

Estimates according to the MIMIC method give somewhat greater scope of the gray economy than according to the direct method, as can be seen on the example of Serbia, Estonia, Latvia and Lithuania, for which it is possible to compare the gray economy by both methods. This is, among other things, because the MIMIC method includes the gray economy of unregistered economic entities, in contrast to the direct method of assessment used here. However, although it gives a significantly larger scope of the gray economy in relation to direct methods, the MIMIC method can be used to examine

the dynamics of the gray economy, since there are no comparable estimates based on the same method for a long period of time.

Estimates based on this method indicate that there has been a slight decrease in the gray economy in Serbia in the period from 2009 to 2013, from 31.6% to 27.9% of GDP, while estimates for the later period are not available.

ACTION PLAN FOR SUSPENSION OF GREY ECONOMY

The overall objective of the National Program for the Suppression of the Low Economy is to reduce the size of the gray economy by 30.1% of GDP by the year 2020 (the last figure that was available during the development of the original Program) to 26.7% of the share in the GDP of the Republic Serbia (MIMIC method), ie from 21.2% (data from 2012) to 15% (measured on the basis of the direct survey method), and that the share of unregistered economic entities in the total number of business entities decreased from 17 to 15% .

Activities to reduce the participation of the gray economy in the gross domestic product can have one of the following three directions:

1) Ensuring that business entities that are still entering the market start their business with full compliance with the regulations, and that they are legal entities that are legally staying in that status (preventing the entry of businesses in the gray zone).
2) Creating conditions that legal entities operating in the gray zone legalize their business activities (translating business entities from the gray to the legal zone).
3) Increase in the total volume of economic activity, while keeping the existing size of the gray economy, thus reducing the share of the gray economy in the gross domestic product. As a special focus of the National Program for Fighting the Negative Economy, activities focusing on reducing the share of unregistered entities in the total number of businesses, as well as continuously reducing the participation of these entities in the total volume of the Serbian economy are highlighted The first and most important step in the sanctioning of the emergence of the gray economy was made by determining the legal authority of the state authorities for exercising control over unregistered entities and establishing special measures for suppressing the existence of unregistered economic entities that did not exist before. In the next steps, it is necessary to strengthen the organizational, personnel, technical and other capacities of the state authorities to effectively apply the powers to unregistered economic entities.

In order to ensure that activities aimed at eliminating the existence of unregistered economic entities give the necessary results, it is necessary to build public support for these measures, which primarily involves the delimitation of unregistered business. Equally important, on the side of preventing the entry of business entities or potential economic entities into the gray zone, numerous measures have been implemented and implemented aimed at the fiscal and administrative discharge of economic entities aimed at encouraging potential economic entities to enter the market the status of registered economic entities, and entities that operate unregistered to encourage registration. As an additional benefit of implementing these measures, there should be an increase in the total number of business entities active in the market (Stošić Mihajlović, Lj., 2017).

The general goal will be achieved through the following specific goals:

1) More efficient monitoring of the gray economy flows;
2) Improving the functioning of the Tax Administration
3) Improving the functioning of the fiscal system;
4) Reduction of administrative and non-fiscal burden for the economy and citizens;
5) Raising awareness of citizens and economy about the importance of suppressing the gray economy and motivation for compliance with regulations.

The proposed measures will affect the causes of the gray economy, which will lead to:

1) Establish clear competencies and improve the coordination of the work of public administration bodies in combating the gray economy, with the establishment of a balanced system of sanctions;
2) Increasing public awareness of the undesirable consequences of the informal economy, including the way it affects responsible economic entities, the rights of workers and consumer rights, and the active involvement of citizens in the fight against the gray economy;
3) Reducing the gray economy by applying a set of tax and non-tax policy and public procurement policies and through the institutional evaluation of responsible business.

The government body, called the Coordination Commission, has established a draft act that contains the required scope of harmonization of special laws (147 specific laws are analyzed, which regulate inspection supervision in certain areas; for each of these laws, statements and tables on compliance were made, and for 88 special the law has been established that they need to be amended and / or amended and proposals for amendments to these laws have been drafted).

CONCLUSION

Fighting the gray economy implies synergy, or active involvement of all state bodies, organizations, businesses and citizens. This is exactly what Serbia has accomplished to a great extent, so today the suppression of the gray economy as a term is widespread and comprehensible. This is primarily the result of the campaign, but also the implementation and promotion of reforms in the field of inspection, the more proactive attitude of the Tax Administration in relation to taxpayers and the progress made in the introduction of e-Government services, which achieve large and easily visible results in simplifying administrative procedures and narrowing space for the gray economy and corruption. Active participation of economy and citizens in the suppression of the gray economy produces and effects positive pressure of citizens and economy on the public administration bodies to perform their tasks more efficiently and more resolutely by using the mechanisms for preventing the gray economy. In order to achieve the effect of actively involving the economy and citizens in the struggle against the gray economy, it is primarily necessary to make additional efforts to raise tax culture and awareness of the negative consequences of the gray economy. Inspections and other competent supervisory and control bodies to information on the gray economy come with operational fieldwork and office work, analytical examination of critical control points and other ways. But one of the very important sources of knowledge about the gray economy is information provided to citizens by authorities and businesses. The difficult legacy of the 1990s was that Serbia was burdened with challenges that other countries in transition did not have to bear. One of them is the social legitimization of phenomena such as non-payment of tax obligations, non-disclosure of workers and non-registration of business entities. In conditions where productive activity has stagnated and strengthened the commercial sector based on resale in the gray zone, emerging forms of the informal economy are perceived as part of the survival strategy rather than the enrichment at the expense of market actors operating in accordance with regulations. It is not surprising that in that period both society and the state became too tolerant towards such a mode of business, mainly in order to maintain social peace.

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DIGITAL PLATFORMS - THE NEW INFRASTRUCTURE FOR SHARING ECONOMY

Marijana Vidas-Bubanja*
Belgrade Business Academy for Applied Studies and Faculty for Finance, Banking and Auditing, Alpha University, Belgrade, Republic of Serbia
E-mail: marijana.vidas. bubanja@gmail.com
Srđan Bogetić
Belgrade Business Academy for Applied Studies, Belgrade, Republic of Serbia
Iva Bubanja
Belgrade Business Academy for Applied Studies, Belgrade, Republic of Serbia

ABSTRACT

In today's business environment companies are required to make changes in their traditional business practices. The intensive use of ICT in business has resulted not only in the emergence of a new business model - the digital platform, but has also had an impact on users who are increasingly insisting on using the Internet, smart phones, and tablets when purchasing products or services. The application of digital platforms as a business model is significantly contributing to the changes in the ways business operations are being conducted as well as in the functioning of certain branches of the industry. As a business model, digital platforms are highly applicable regardless of the size of a company and they give rise to diverse benefits such as innovativeness, lower transport costs, improved welfare effects, market openness and a better value for customers.

Key words: business model, digital platforms, sharing economy, customer satisfaction, efficiency

INTRODUCTION

The business environment is undergoing profound shifts under the influence of intense technological developments, changes in competition relationships in the late 1990s and the effects of the 2008 global economic crisis. The world is entering a new level of economic globalization in which national economies have become tightly connected and faced with the need to monitor and respond to the challenges and dynamics of the new business environment. At the micro-level of their activities, business organizations need to develop new models of behavior, consistent with the observed and expected changes in order to maintain long-term competitive ability and ensure a constant growth dynamics (Đorđević at al, 2016, p. 120).

Therefore, today's enterprises reinforce their strategies and business models with an intensive use of information and communications technologies (ICTs), which, through the process of digital transformation of the entire business operations, enable them to adapt quickly to new trends in the marketplace, develop new ways to approach their demanding customers and offer them differentiated and personalized products (Vidas-Bubanja, M and Bubanja I., 2017). Digital platforms are a new business model that allows companies to find new opportunities for the global exchange of goods and services through the adoption of new digital technologies.

WHAT DIGITAL PLATFORMS ARE

Decades of technological development have provided mankind with sophisticated digital technologies, such as mobile smart phones applications, mobile payment platforms, GPS and mapping technologies, social authentication, all of which have been used to create the infrastructure for the new platform economy. From a technological point of view, this infrastructure is known as the technology stack, the essence of which is to support the exchange and coordination of astounding amounts of data. The term "technology stacks" refers to the fact that the platform is composed of several layers/sheaths that comprise hardware, software, network connectivity, and the data analytics capability. A platform constructed in such a way provides a link for carrying out various transactions such as ordering, tracking, user authentication, payment, etc. (Turban et al., 2018).

Today, digital platforms are considered to be one of the most dynamic segments in the development of the new digital economy. They may vary in size and shape and may cover a wide range of activities. Digital platforms encompass: internet advertising platforms, online store sites, search engines, social networks, creative content platforms, application distribution platforms, communications services, payment systems, and collaborative economy platforms.

From a managerial standpoint, the most important aspect of platforms as a business model, brought about by the emergence and application of new digital technologies, is that they enable the creation of new value by facilitating exchanges between two or more independent groups of participants. According to Morvan, L. et al., (2016), platforms most often bring together end-users and producers to enable them to carry out different transactions. At the same time, platforms facilitate information sharing among the companies involved, as well as support and enhancement of their collaboration, and hence the innovation process that results in new products and services. Thereby, the platform ecosystem, by connecting two or more sides, creates a powerful network effect that results in more successful work and higher profit margins. Digital platforms share some important and specific characteristics, such as follows (European Commisson, 2016):

- the ability to create and shape new markets established by organizing new forms of participation or conducting business based on the collection, processing and editing of large amounts of data;
- they operate in multisided markets and activities, but with varying degrees of control over direct interactions between groups of users;
- they benefit from "network effects", meaning that the value of the service increases with the number of users;
- they use and rely on ICT to reach their users instantly and effortlessly;
- they play a key role in creating digital value by capturing significant value through data accumulation, as well as by facilitating new business ventures.

THE PLATFORM ECONOMY

As a new infrastructure linking the supply and demand of individuals in real-time with a broad scope coverage, digital platforms are increasingly shaping the modern digital economy. They are revolutionizing the ways in which jobs are performed and the ways in which certain industry branches operate. That is why new concepts, aimed at distinguishing these shifts, are being introduced, such as *"platform economy"*, *"sharing economy"*, *"collaborative economy"*, *"as-a-service economy"*, *"on demand economy"* (Vidas-Bubanja, M., 2019).

According to Ross (2016), the sharing economy uses a combination of technology platforms integrated as mobile apps and based on the science of consumer behavior and location data from mobile phones, all with the aim of creating a peer-to-peer market that connects unused resources (such as vacant flats, free places in cars, unused knowledge, etc.) with users who need the specific knowledge, spare rooms or carpooling rides.

Economic theorists also point out that the platform infrastructure, which is characterized by the compatibility and integration of multiple technologies (cloud, automation, analytics, artificial intelligence, mobile communications, the Internet of Things), creates a new *"as-a-service economy"* – economy as a service, where the system service becomes dynamic, *on-demand*, targeted (personalized) at each consumer individually. In fact, we may distinguish the following three major factors underlying the business model of

the contemporary *on-demand* economy, which are the ones creating the added value for the demanding consumers (Turban et al., 2018): the focus is on the time of the demand and it is on-demand – right now, when there is an actual demand/need, convenience for the consumer (tap the app - just press the app button), personalized services (my way - the way I want it).

The platform economy generates numerous benefits, from lower costs, new products and services, greater customer convenience, to rational allocation of resources (Table 1), but it also creates new challenges in many areas such as transaction taxation, competition policy, privacy, insurance, financing, including changes it instigates in the labour market (Hamilton, D., 2017).

Table 1. Advantages of digital platforms

Innovation	**Value for customers**	**Open markets**	**Reduced transportation costs**	**Enhanced welfare effects**
Customized products and services	Increased choice	Aggregate supply and demand	Lower information and logistics costs	Overcoming market imbalances
Building new product types	Convenience	Better market access for small and medium-sized enterprises	Better risk control	Improved resource allocation efficiency
Innovative business models	Increased market and price transparency	Global export opportunities	Increased production flexibility<	Standardisation
Flexible organisational structure	Sharing resources and financial assets	Optimized marketing activities		Greater trust

Source: Internet Economy Foundation (2016) *Fair Play in der digitalen Welt. Wie Europa fur Plaformen den richtigen rechmen setzt.*

In terms of the regional development of platform economies, Europe lags behind Northern America and Asia. Asia is a global leader in the development of platform companies, and among Asian countries, China is the most active in the introduction of business platforms. The largest urban hubs for platform companies have been set up in cities such as San Francisco, Beijing, London, New York and New Delhi.

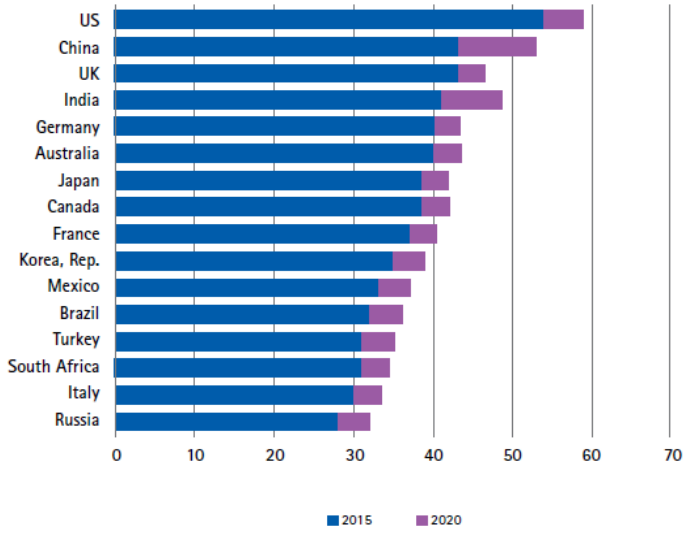

Figure 1.Platform Readiness Index—2015 and Future State
Source: Accenture research in: Morvan. L., Hintermann, F. and Vazirani, M., (2016). *Five ways to win with digital platforms*, Accenture and G20 Young Entrepreneurs' Alliance, p. 24.

The Accenture company, assessing the digitalisation maturity across countries, has found that not all countries provide an environment conducive to the development and success of the platform business model. Based on indicators such as: 1) digital user size and savviness, as well as readiness to use the network; 2) the existence of digital talents and educated entrepreneurs; 3) technological readiness in terms of infrastructure development and investment levels in the next generation networks; 4) existence of an open innovation system and innovation culture; 5) adaptive policies and regulations for new business

models, Accenture creates a platform readiness index. In 2015, the top rankings on the index list were held by the United States, China, Great Britain, India and Germany, and the predictions are that these countries will retain their positions among the top five by 2020 as well. Countries such as Italy, South Africa and Russia are currently at the bottom of the table and need to introduce ambitious policies that will boost the development of digital platforms in order to narrow the existing gap with leading countries by 2020 (Morvan, L. et al., 2016).

E-COMMERCE AND PLATFORMS

The platform model revolution began in the B2C segment of electronic cross-border retailing through business models such as eCommerce, FinTech, and models that advocated the circular economy of environmental conservation. Later on, platforms started expanding into the B2B area of e-commerce, where they present the basis for creating business ecosystems. These ecosystems are based on innovation and business models that support the exchange of information (such as the industrial Internet of Things - IoT), which contributes to higher quality business decision-making and more successful B2B ecosystem operations as a whole. Companies most involved in B2B ecosystems are those that are shifting their focus from selling products to upgrading their offer through services provided by means of digital platforms (Morvan, L. et al., 2016).

The platform companies are those that are most dynamically boosting C2C e-commerce by changing it in completely new ways. PWC data show that the five key sectors of the global C2C platform e-commerce are financing, remote work, renting houses and flats, taxi services and carpooling, online music and video streaming. Sales revenues in these sectors reached $15 billion in 2013, with estimates that by 2025, they will rise up to 22 times to reach $335 billion (Hamilton, D., 2017).

The C2C e-transaction platform model is promoted by sites offering free classified advertisements, auctions, forums and individual sites for beginners. American companies (Etsi, eBay, Craigslist, Amazon, Uber, Airbnb, Couchsurfing and Kickstarter), European companies (JustPark, Peerbi, Gumtree, Snappcar, BlaBlaCar, Iummber, Spotify) and Chinese companies (Taobao and JD) are becoming the medium through which their users bid, sell, and/or buy goods (Table 2).

Table 2. Examples of platform services

Business area	Companies
Social and business networking	Facebook, Xing, LinkedIn, Snapchat, Pinterest
Internet auctions and retail	Amazon, eBay, Angie's List, Snapdeal, Flipkart
Music and video streaming	Spotify, iTunes
Online financial and human resource functions	Workday, Elance-oDesk, Freelancer, WorkFusion
Transportation	Didi Chuxing, Ola, BlaBlaCar, JustPark, Uber, Lyft
Mobile payment	Mahala, Square
Clean energy	Sungevity, SolarCity, EnerNOC
Peer-to-Peer- and Micro-lending	Zopa, Kiva
Crowd-funding	Kickstarter
Charity fundraising	GlobalGiving
Government services	UK Government's G-Cloud

Source: Hamilton, D. (2017). *The Transatlantic Digital Economy 2017, How and Why it Matters for the United States, Europe and the World*, Center for Transatlantic Relations John Hopkins University, Washington, p. 43

MODERN COMPANIES AND PLATFORMS

In today's business environment, companies that do not have IPhone or Android applications or technology platforms that support the exchange of goods and services, no matter how useful and successful web-sites they run, are losing their competitive advantage (Turban, 2018). The platform business model is not only suitable for digital start-ups, but this business model is being adopted by many traditional TNCs. For large companies, the market leaders, the platform business model is the way to break into new market segments or re-invent themselves in the digital era. Phillips, for example, uses a platform model to enter the medical technology market, Daimler uses a platform to make its presence felt in the area of urban transport, whereas

Siemens has designed Mindsphere as an open operating system for the Internet of Things (Lund, S. and Manyika, J., 2016).

Through careful consideration of their strategy, adopting new capabilities and transforming their operating model and culture, big companies can gradually adapt their legacy businesses to be platform ready. In this way they can not only take the advantage of new avenues of profitability and growth (such as higher revenue, reduced costs, innovate products and services, or gain speed to market), but also they can be part of the next wave of transformation within industries and countries worldwide (Morvan. L. et al., 2016).

The opportunity for digital platforms is perhaps most exciting for the small businesses that most countries rely on for economic and employment growth. To small and medium-sized enterprises the business platform model opens up significant opportunities for the internationalization of their business. Although today the platform economy is dominated by large digital brands, big companies offer to small and medium entrepreneurs' access to large-scale markets through participation. Also big companies are ready to invite small businesses to co-create innovations with other parties in platform enabled ecosystems. Final opportunity for small businesses is to create new platforms themselves. After all, some of the most successful platform businesses today were start-ups just a decade ago. A recent survey of Chinese SMEs suggests that additional revenues and cost reduction are the main benefits to SMEs from platform businesses (Figure 2).

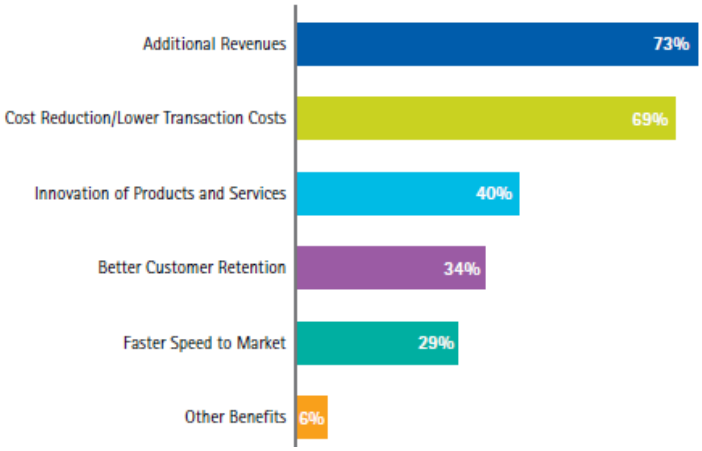

Figure 2. Platform effect on revenue and costs of China's SME

Source: Accenture research in: Morvan. L., Hintermann, F. and Vazirani, M., (2016). *Five ways to win with digital platforms*, Accenture and G20 Young Entrepreneurs' Alliance, p.10

The market value of platform companies was estimated at $ 4.3 billion in 2015 and they employ millions of people worldwide. More than $ 20 billion was invested in digital platforms in the 2010-2015 period, through 1,053 publicly announced business deals. In the year 2016, less than 15% of the Fortune 500 companies developed a platform business model whereas the percentage of the listed companies that created platforms or became partners with some industry platforms in 2018 showed a rise to 50% (Evans, C.P., and Gawer, A., 2016).

CONSLUSION

The platform economy is emerging as one of the most powerful manifestations of the digital revolution. Thanks to rapid advances in cloud, mobile and analytics, and the falling cost of these new technologies, digital platforms are creating the next wave of disruption, growth and breakthrough innovation (Morvan. L. et al., 2016).

Digital platforms bring together vast communities of customers and partners and create markets of enormous scale and efficiency. In this way they enable new levels of collaboration between companies from different industry sectors that can result in the conception of entirely new products and services. As a business model, platforms provide companies with a great opportunity regardless of their size (platforms can be set up by both individuals as well as clusters), geographic position, company age or type of industry. A significant role in the new business model is also played by the end users who can

thereby fulfil their needs: faster and cheaper transportation, more affordable accommodation, easier access to finance, work, etc.

This is the reason why the platform business model is equally important for developed and developing countries, for big and small companies and for different industry sectors. Business success will also depend on the wider enabling environment in which platforms can flourish and as a result different government policies will be required to support platforms. By educating entrepreneurs and spearheading strategically important regulatory and ethical issues, the public sector can help entrepreneurs to manage the highly complex, multiple stakeholder environment of the platform business. According to Accenture research the following five dimensions are critical to enable the development of platforms (Morvan. L. et al., 2016):

1. Ensure the interoperability of standards and mutual recognition of rules on data protection. Today, effort is needed to harmonize data privacy and data security legislation as disparity over data regulations is limiting consumer choice and driving up the cost for platforms to operate globally;
2. Foster platform innovation through new regulations that should balance the protection of consumers, risk control and the development of innovative solutions by entrepreneurs and small businesses. Future regulations need to encourage experimentation with new technologies and business models in order to give industry the freedom to break new ground and encourage creative solutions with reduced investment risks;
3. Support public-private dialog in order to create more effective rules and business environment for cross-border electronic trade. Platforms open an opportunity for entrepreneurs and SMEs to access international markets, but require greater harmonization of taxes and standards, consumer protection, contract laws and the development of an internet and logistics infrastructure to grow;
4. Invest in digital infrastructure. For platform business model reliable, low-cost, high speed broadband infrastructure is needed, as well as high level of consumer trust in transacting online;
5. Initiate user education and protection and capacity building programs for small businesses to benefit from global platforms. Governments should consider programs for educating users on crowd-funding and peer-to-peer and marketplace lending platforms to enable adoption and growth.

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Session E: IT MANAGEMENT

Papers (pp. 179-194):

INFORMATION TECHNOLOGY RISKS: MANAGEMENT, STANDARDS, AND METHODS

Goran Janaćković
University of Niš, Faculty of Occupational Safety, Niš, Serbia
Stevan Mušicki
Ministry of Defense, Secondary Military School, Belgrade, Serbia
Dejan Vasović*
University of Niš, Faculty of Occupational Safety, Niš, Serbia
E-mail: djnvasovic@gmail.com

ABSTRACT

Modern business cannot be imagined without the use of information technology (IT). It significantly increases business efficiency, but also introduces a number of new and unconventional risks. These risks are related to different aspects of business, and can significantly impair the credibility of organization itself. Therefore, it is important that organizational entities identify and minimize the effects of adverse events on the functioning of information systems, and hence on the organization as a whole. In this paper, basic characteristics of the IT risk management and their application possibilities are analyzed.

Key words: information technology (IT), risk, methodology, risk assessment

INTRODUCTION

Risk is significant and inevitable factor in human daily life, given the fact that every decision, private or business, carries with it a certain risk. Risks are also present in all spheres of social activity: economic, economic, social, legal, medical, or educational. Intuitively, the risk involves the possibility of emerging an unpleasant event that has different types of consequences (e.g. physical trauma, loss of property, income lower than expected, lack of resources). The essence of risk is the selection among alternatives, the possibility of deviation from proposed goal and the probability of its achievement, as well as the possibility (material, human, ecological and other) of losses associated with the realization of the chosen alternative under conditions of uncertainty (Savic, Stankovic, 2012).

The World Economic Forum (WEF) defines global risk as an uncertain event or condition that, if it happens, can cause a significant negative impact on several countries or industries over the next 10 years. According to them, global risks are divided into five categories, where technological risks are associated with unwanted consequences of technological progress (cyber-attacks, theft or unauthorized data modification, destruction of critical infrastructure data etc.) have very significant potential impact (WEF, 2018). Risks connected to information technology (IT) have a prominent place in relation to both the likelihood of occurrence and the consequences.

The application of IT leads to the emergence of new risks, which relate only to the application of technologies, but also to the security of user data and stored and/or processed data. More and more often, the data collected and stored by various companies is not used safely. Often, there is unauthorized use of such data. There are several situations in which databases that contained a large number of user's personal data, including residence address data and credit cards, were compromised. Therefore, the risks associated with IT need to be thoroughly analyzed.

Risk Assessment (RA) is a structured or semi-structured approach of analyzing the security of a system, identifying weak elements, and selecting corresponding measures for risk reduction and/or

elimination (Savic, Stankovic, 2012; Ionita, 2013). There are different methodologies of generic nature, but also those that are more technology-oriented. Due to the dynamic nature of the environment in which the systems operate, as well as dynamic characteristics of modern risks identified in integrated systems, the need for creating a risk management system based on dynamic analysis and performance evaluation has increasingly become important (Janackovic, 2013; ISO, 2018; Mušicki et al., 2018).

RISK MANAGEMENT

Risks in the IT field are numerous, and they significantly affect the operation of an IT system. Risk management in the IT field, common to risk management, is a comprehensive process of identifying, controlling and reducing the impact of adverse events on IT systems (Behnia et al., 2012). The process facilitates the management of security risks, for which it is necessary to achieve significant coordination of all stakeholders in the iterative process of mitigating or eliminating risks in IT systems.

Generic risk management

Various definitions of risk management are present in the literature. Risk management involves coordinated organization and risk management activities (ISO Guide 73, 2009). The structuring of the generic risk management process according to the international standard ISO 31000: 2018 (Risk Management – Guidelines) is done as follows. The risk management process, according to this standard, consists of six steps (Figure 1): (1) Communication and consultation; (2) Scope, context and criteria; (3) Risk assessment; (4) Risk treatment; (5) Monitoring and review; (6) Recording and reporting. Within the risk assessment step, activities of identification, analysis and evaluation of risks are defined.

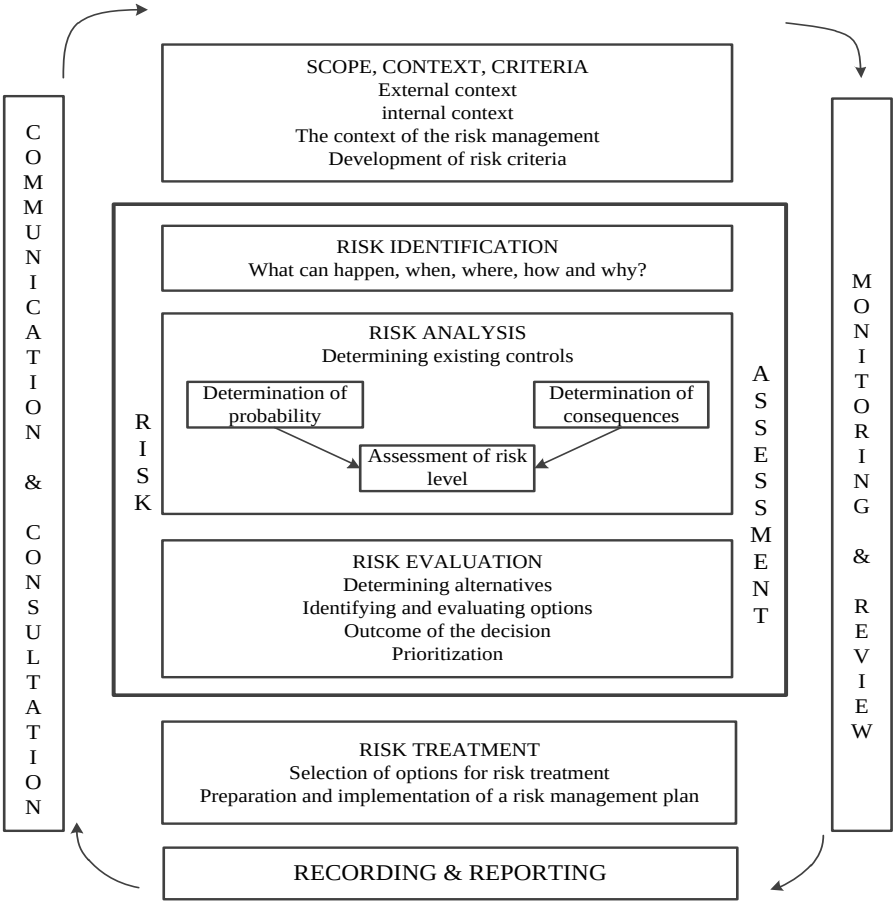

Figure 1: The process of risk management (ISO 31000:2018)

When considering the context, the external and internal aspects are taken into account. Also, the context of risk management is very important, and it is necessary to define corresponding criteria for describing potential risks. This is very important to enable effective identification of IT risks in the observed system.

Risk analysis involves defining appropriate control mechanisms based on determining the probability and consequences of occurrence of adverse events, which determine the level of risk. Risk assessment involves identifying potential alternatives, identifying and evaluating these alternatives, defining the outcome of decisions, and identifying an optimal alternative based on the ranking of all available alternatives. After defining priorities, an option for risk treatment is selected and a risk management plan is defined. Finally, the defined plan is implemented.

Risk management techniques and tools, or for certain of its activities (identification, analysis and risk assessment), are recommended by the IEC/ISO 31010 (Risk Management techniques) standard.

Risk management and information technology

Information technology (IT) risk management (RM) is the application of risk management methods to information technology to manage different risks connected to IT. The ITRM is a component of overall organizational risk management system.

The IT risk management process is based on the ISO 31000 standard. This process is shown in Figure 2 (ISO 27005:2018). The stages in the risk management process correspond to the general risk management standard, with two specificities.

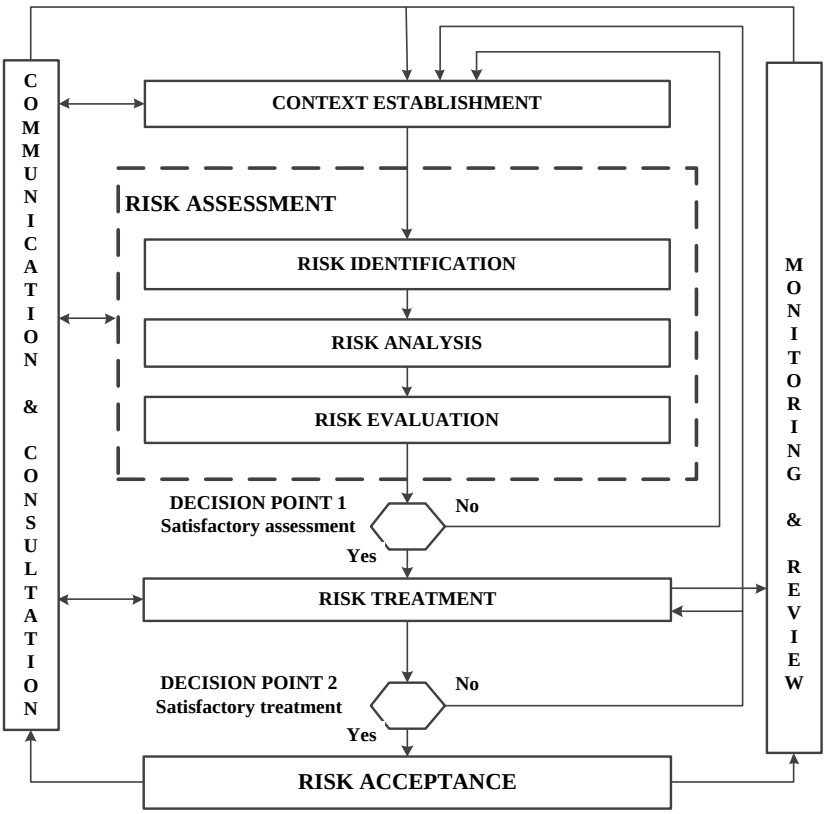

Figure 2: IT risk management (ISO 27005:2018)

Namely, there are two decision points (decision point 1 and decision point 2). The first point of decision-making considers whether the risk assessment is satisfactory. If it is satisfactory, the risk treatment starts. Otherwise, the context of the review changes (expanding existing context or establishing a new one). At the second decision point, it is considered whether the treatment of risk is satisfactory. If it is not satisfactory, it is proposed to improve the process of risk treatment or to establish a new context. The entire management process is constantly monitored and controlled. Adequate decision-making in this complex management system involves continuous communication and consultation among various actors in the management system.

Standards concerning the information technology risks

Significant aspects in the process of IT risk management are standards. Table 1 shows some representative standards related to IT risks in Serbia and corresponding international standards. They define recommended personal and organizational behaviors from the point of view of competencies, service management, and security techniques.

Table 1: Some representative standards related to IT risks in Serbia and corresponding international standards

Serbian standard	International standard	Description
SRPS ISO/IEC 2382:2019	ISO/IEC 2382:2015	IT - Vocabulary
SRPS CEN/TR 16234-2:2017	CEN/TR 16234-2:2016	e-Competence Framework (e-CF) - A common European Framework for ICT Professionals in all industry sectors
SRPS ISO/IEC 20000-1:2018	ISO/IEC 20000-1:2018	IT - Service management - Part 1: Service management system requirements
SRPS ISO/IEC 20000-2:2015	ISO/IEC 20000-2:2012	IT - Service management - Part 2: Guidance on the application of service management systems
SRPS ISO/IEC 21827:2018	ISO/IEC 21827:2008	IT - Security techniques - Systems Security Engineering - Capability Maturity Model (SSE-CMM)
SRPS ISO/IEC 27001:2014	ISO/IEC 27001:2013	IT - Security techniques - Information security management systems - Requirements
SRPS ISO/IEC 27002:2015	ISO/IEC 27002:2013	IT - Security techniques - Code of practice for information security controls (+ corrections)
SRPS ISO/IEC 27004:2017	ISO/IEC 27004:2016	IT - Security techniques - Information security management - Monitoring, measurement, analysis and evaluation
SRPS ISO/IEC 27005:2017	ISO/IEC 27005:2018	IT - Security techniques - Information security risk management

In order to consider the risks, it is necessary to define basic IT concepts, and then identify the risks associated with the identified elements of the IT system. Also, a significant aspect of risk is human factor. Human competences are considered a significant factor that has a significant risk reduction in every system that is characterized by iterative work, which is particularly characteristic for IT systems. Monitoring, measurement, analysis and evaluation are the basis for efficient and effective IT risk management.

The aforementioned standards define the recommended behavior or performance in the context of defining key IT concepts, basic competencies, service management, and security techniques. Security is especially emphasized, because it is necessary to incorporate security aspects into the development and use of IT in organizations. Therefore, different methods for managing IT risks have been developed.

Information technology risk assessment methods

The specificities of IT require the introduction of specific methods for managing IT risks. Like classical methods, these methods have a qualitative or quantitative character in describing and

evaluating potential risks. Risk assessment is based on the evaluation of hazards and vulnerabilities in the IT systems, which requires considerable attention and high level of details.

Table 2 presents representative methods and their main characteristics (Behnia et al., 2012; Ionita, 2013; ISO 27005:2018).

Table 2: Representative methods related to IT risks (Behnia et al., 2012; Ionita, 2013; ISO 27005:2018)

Method	**Type**	**Application**
CORAS	Qualitative & quantitative	Context establishment, risk identification, analysis, and evaluation; all types of organizations (small & large scale)
Cramm	Qualitative	Risk identification, analysis, and evaluation in large organizations
Ebios	Qualitative	Context establishment, risk identification, analysis, and evaluation; all types of organizations (small & large scale)
FAIR	Qualitative & quantitative	Context establishment, risk identification, analysis, and evaluation; all types of organizations (small & large scale)
Magerit	Qualitative & quantitative	Risk identification, analysis, and evaluation; all types of organizations (small & large scale)
Mehari	Qualitative	Context establishment, risk identification, analysis, and evaluation in large organizations
Octave	Qualitative	Risk identification, analysis, and evaluation in all types of organizations (small & large scale)
Risk IT	Qualitative	Context establishment, risk identification, and evaluation in all types of organizations (small & large scale)

Qualitative risk analysis is dominant in the methods outlined in the previous table. There are methods that enable the application of both qualitative and quantitative approach to IT risk analysis. Mainly all stages of the IT risk management process are supported, although often the methods do not take into account the context-setting step, which in the development of the IT system can be a very important cause of various risks if the appropriate context is not defined at the beginning of the development of a system. It is also important to note that the methods are generally applicable to all types of organizations, although the authors of some methods emphasize that they are exclusively proposed to large scale IT systems.

DISCUSSION

IT risk management is primarily based on the existence of security architectures and templates that determine controls. Controls protect the elements of the IT system and data, or prevent the occurrence of risks. They are based on policies, principles and goals, as well as legal constraints. The level of control is determined by mechanisms of verification, validation and standardization.

Each element of the IT system and data has certain vulnerabilities and is exposed to dangers. This determines the risk, manifested by the occurrence of adverse events, which affect business processes. Security architecture and templates are based on organizational architecture and specific solutions that are implemented in IT systems and data. Solutions are based on a business strategy defining a framework for proposing an IT strategy. The IT strategy is the basis for defining IT systems and data.

Based on the errors shown in Table 1, almost all of the latest IT standards are used in Serbia. However, there is a time lag between adoption at the international level and in Serbia. For example, some standards were adopted after almost five years, which is very long period for the IT domain. This is not acceptable, especially if the dynamics of IT development is taken into consideration. Due to the delay, some standards are used in a form that is no longer effective at the international level, which can lead to problems in certain forms of international cooperation.

The qualitative or qualitative-quantitative character of IT risk-related methods allows their simple application to consider risk in IT systems. However, there are few organizations that apply these methods when analyzing the threats and vulnerabilities of IT systems, as well as the danger that confidential data is available to unauthorized persons or organizations. Therefore, more attention needs to be paid to the security aspects of risk analysis in IT systems and bring them closer to a larger number of potential users.

CONCLUSION

The main goal of the risk management process is to identify, manage and minimize the impact of unwanted events in the IT system. The essence of the risk management program is to reduce or eliminate risk, or achieve the desired level of risk. In order to maintain the risk at the desired level, it is necessary to apply iterative risk management process, with the possibility of continuously expanding the context due to the emergence of new, previously unidentified risks. Deciding at two levels, which involves analyzing the IT risk assessment method itself, and then the results of the risk assessment, significantly improves the performance of the management process itself. Efficient coordination of individuals' activities is necessary to be able to achieve best possible results.

More precise tools are needed to identify risks specific to IT systems. The tools are needed to identify the dynamic risks, and to quantify them in the best way, in order to assess the significance of consequences for the functioning of an IT system. Therefore, more attention should be paid to the development of tools that will enable IT risk management to be even more successful. Artificial Intelligence methods can be used to identify vulnerabilities, especially in network systems, which would significantly improve their security in the near future.

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IMPLEMENTING QUALITY ASPECTS OF WEB PORTAL FOR PRESCHOOL RESOURCES STRATEGIC PLANNING

Ljubica Kazi*
University of Novi Sad, Technical Faculty "Mihajlo Pupin" Zrenjanin, Republic of Serbia
E-mail: ljubica.kazi@gmail.com
Dragica Radosav
University of Novi Sad, Technical Faculty "Mihajlo Pupin" Zrenjanin, Republic of Serbia
Dijana Karuovic
University of Novi Sad, Technical Faculty "Mihajlo Pupin" Zrenjanin, Republic of Serbia
Tatjana Lojovic
Preschool institution, Zrenjanin, Republic of Serbia
Aleksandra Kalezic Vignjevic
Center for interactive pedagogy CIP, Belgrade, Republic of Serbia
Olga Lakicevic
Center for interactive pedagogy CIP, Belgrade, Republic of Serbia

ABSTRACT

Strategic planning is very important aspect in institutions and companies. It enables improvements that affect overall organization and quality of services and products, with long-term benefits. This paper briefly presents a developed web portal for preschool resources strategic planning. Special focus of this paper is on software quality aspects - how are they supported in the developed solution.

Key words: strategic planning, preschool resources management, web portal, software quality

INTRODUCTION

Strategic planning positively influences organizational performances (Miller and Cardinal, 1994) and it is closely related to establishment of quality management, which is implemented via key processes, suitable resource management and establishment of alliances with suppliers and partners (Suarez et al, 2016). Success of total quality management in organizations depends on integration of quality values, objectives and practices into the strategic planning process (Suarez et al, 2016). The process of planning starts with setting goals which should be transformed in actions, in aim to improve organizational performance (Smith et al, 1990). Improvement directions and activities in organizations are often related to including new or improvement of existing software support to business processes, such as integrated ERP (Enterprise Resource Planning) software solutions. Effectiveness of their usage, intangible and tangible advantages could be measured with critical success factor analysis (Amid and Kohansal, 2014).

This paper presents partial results of a project (implemented in 2017-2018) which was conducted in aim to improve the level of preschool-aged children inclusion in formal educational process in Serbia. The key factors that affect that level were determined and one of possible directions towards improvement is grounded in integrating necessary data from all relevant institutions. After collecting, analysis and synthesis of data, strategic planning could be performed and strategic goals could be met by long-term investments and implementation in educational capacities extension.

The main focus of this paper is to present the project and the developed web portal briefly, but to emphasize the importance of software quality and to present how particular quality aspects were implemented within the provided software solution. The rest of the paper is organized as follows: next

section describes related work, the third section presents the problem and issues in development of the solution, fourth section briefly presents the developed web portal, fifth section presents quality issues that were addressed during the development of the web portal and the final section describes conclusions.

BACKGROUND AND RELATED WORK

Strategic planning in educational institutions

Importance of planning as cognitive development area is recognized as an important segment of preschool education (McCormak and Atance, 2011). "A strategic plan in the education sector is the physical product of the strategic planning process that embodies the guiding orientations on how to run an education system within a larger national development perspective, which is evolving by nature and often involves constraints…and offers education institutions opportunity to identify how it will commit resources over the long term in order to accomplish its mission." (Judah and Paul, 2014)

Important elements of strategic planning include definition of core values, mission, vision (Ozdem, 2011), goals and objectives, analysis of external and internal environment (using SWOT analysis), courses of action (action programs). Among research related to strategical issues in educational institutions, majority of available papers are related to higher education institutions and they mostly consider success in particular strategic goals accomplishment, such as internationalization (Rudzki, 1996), knowledge management (Bhusry and Ranjan 2011), integration with business environments (Pišova, 1999) etc.

Software quality

Software Quality Engineering is the application of continuous, systematic, disciplined, quantifiable approach to the development and maintenance of software products and systems.

There are different perspectives in software quality:
1. user perspective - appropriateness of the product for a given context of use
2. manufacturing perspective – conformance with requirements and standards, quality of engineering process influence quality of the product,
3. product perspective – measuring software inherent characteristics attributes
4. value perspective – different stakeholders find different quality perspectives and measurements.

Software quality could be considered from three aspects:
1. software development process,
2. software as product – internal aspect of quality,
3. software in use – external aspect of quality (Cote et al, 2007).

THE PROPOSED SOLUTION

The problem statement and development issues

One of the problems that were tackled within the project was based on the fact that in Serbia some groups of citizens do not use services of preschools, particularly for the children 3-5 years of age. Including early-aged children in preschools institutions is closely related to their appropriate early-age education, with formally-based knowledge and skills development. One of the goals of previously mentioned project was to improve including young children into the preschool programmes. Figure 1. presents the business process model for activities that are included in the process of children enrollment in preschools for two cases – regular enrollment and not-included children treatment.

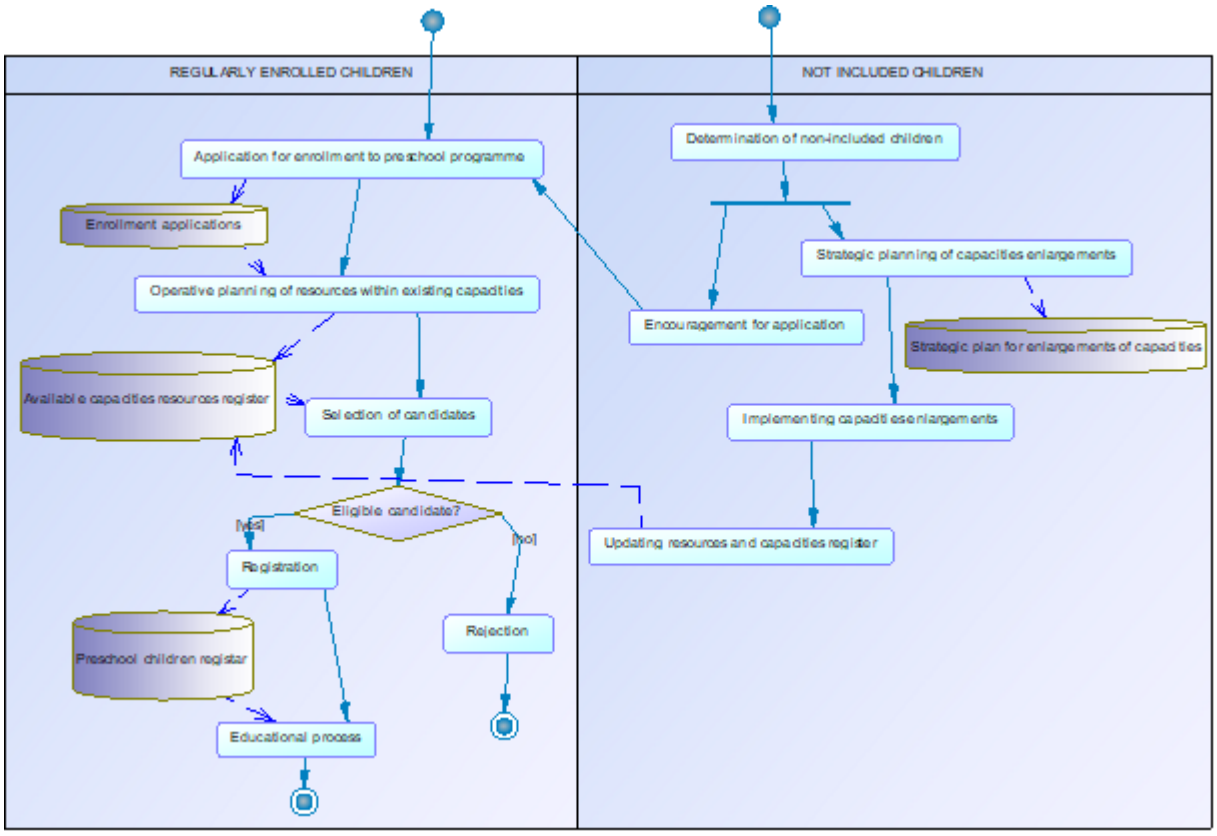

Figure 1: Business process model of children enrollment in preschools with regular enrolment case and not-included case

The increase of the number of included children in preschools as a goal could be reached by determining which are the categories of children and their parents/families that are affected, how many children are affected and which are these families. Second step is to encourage them to apply for entering preschool and to help them overcome obstacles that keep them from application. In expectation of the increasing number of enrolled children, it is important to plan and provide enlargements in capacities and resources.

Creation of web portal was initiated with the need for collecting and integrating data from diversity of sources, i.e. from multiple institutions, each responsible for particular aspect data. These data are collected in aim to determine what are categories of families that do not include their children in preschool programme and how many children are affected. These data are the basis for strategic planning of resources enlargements, so additional requirements for the software are related to integration of collected data, statistical computations by using specific formulas, predictions and visualization of trends.

The developed solution of web portal

The web portal was implemented as a PHP/MySQL application (available at: http://www.predskolskazr.edu.rs/projekat/) and it was designed for several types of users:

1. Administrator – defines the basic data (in coding tables), registers institutions and users, assigns the data items to institutions that are responsible for them.
2. Institution representative – gets the list of data items that the institution is assigned and responsible for and enters data for each year
3. Data analyst – monitors data entry (Figure 2), define formulas for computations, perform computations, performs archiving of data, starts computing projections as future trends presentations (Figure 3), starts presenting graphs and reports.

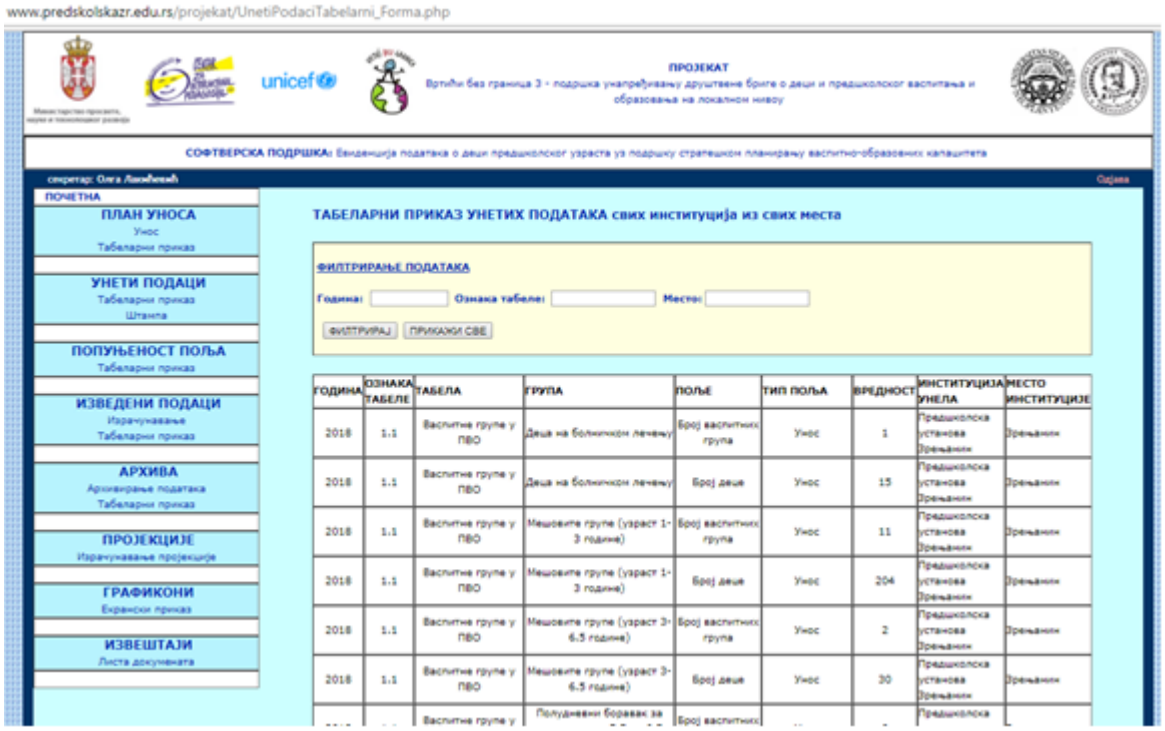

Figure 2: List of entered data with the assigned particular institution

Figure 3: Projections of data for future trends, based on entered data for previous period

SOFTWARE QUALITY ASPECTS AND IMPLEMENTATION

One of the most important aspects in design and implementation is quality of the software solution. There were many particular details in implementation that were addressed and supported in implementation:

1. Hosting portability – the solution is suitable to be used at local computer, within Local Area Network and within the Internet – with hosting at particular server.
2. ISO standards compliance

3. Adaptability to changes – the solution has object-oriented background and separation of semantics and technology support to database operations
4. Technology-related portability – the solution is adaptable to diversity of technology support at the hosting server, i.e. it supports old (deprecated) commands related to mysql as well as new with mysqli.
5. Data validation support
6. Optimization of database connections and data load
7. Optimization of user workload
8. Optimization of software working speed
9. Scalability support
10. Responsive design of user interface – support to diversity of software presenting devices
11. Safety aspects of using software
12. Data backup support
13. Interoperability support.

Special concern in quality related area is related to ISO standards compliance. Particularly important are aspects of quality of software as a product, as defined in ISO 9126 and ISO /IEC 25010:2011.

Table 1: Compliance with ISO 23010 standard requirements for software product quality

CHARACTERISTICS	IMPLEMENTATION IN DEVELOPED SOFTWARE
Functionality	Functional requirements included in software Safety of access with login Interoperability by importing and exporting to diversity of data formats
Reliability	Verification of entered data for insert, update, delete, tabular presentation with filtering, printing; data backup, system recovery support
Applicability	User interface in Cyrillic letters, simple and intuitive user interface, simplicity and uniformity in organization of menus and user interface elements
Efficiency	Automatization in some functions, application of transactions for multiple data manipulation, master detail type of screen support
Maintainability	Possibility of adapting user interface colors, using coding tables for general data – possibility to create (by administrator) list of required data items for particular data entry purpose, ease of maintenance supported by object-oriented programming, parametrization
Portability	Parametrization of data connections (only in one parametric file), adjustable to diversity of working environments (diversity of technologies), simple installing, coexisting with other software

Table 2: Compliance with quality requirements for software in use

CHARACTERISTICS	IMPLEMENTATION IN DEVELOPED SOFTWARE
Efectiveness	Compliance with functional requirements
Eficiency	Speed of software supported by multiple databases
User satisfaction	Comfort in using software – easily changeable in the aspect of user interface (colors), automatisms, simplicity of using
Safety	Automatisms and user interface adjustments support low user engagements and efforts, which is user-centered feature
Usability	Flexibility – possibility of defining data items for data entry for the particular purpose, possibility to define computational formulas by administrator (so computation could be adjusted to particular needs).

CONCLUSION

Strategic management in organizations is commonly supported with software tools that are part of organizational information systems. They are used to collect, integrate and transform data needed for decision support.

This paper presents partial results in creating a web application that is intended to be used as a web portal for integration of data from various institutions, regarding preschool-aged children. The need for development of such a web portal emerged from the fact that diverse institutions are responsible for the data about different aspects of preschool-aged children, their families and living conditions. The goal of the web application was to enable increase of preschool-aged children inclusion in formal preschool education process.

This paper contributes with brief presentation of the developed web portal. The focus of this paper is to present elements and techniques that are included in the developed solution related to compliance with ISO 25010 standards. The developed solution is in use in Preschool institution Zrenjanin, but it is planned to be used within the whole region of Serbia. The solution could be improved in some parts, but the solution is already applicable in Serbian preschool institutions and the related institutions.

ACKNOWLEDGEMENTS

This paper presents part of results in the project "Preschool without Frontiers 3 – support to improvement of social care about preschool-aged children at local level". The project was implemented in 2017-2018 year period, by partners: Ministry of education, science and Technology development of Republic of Serbia, UNICEF, CIP center for interactive pedagogy Belgrade and the web portal was one of the result within this project that was created in year 2018 by team from Technical Faculty "Mihajlo Pupin", Zrenjanin, Serbia.

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APPLICATION OF DIGITAL SOLUTIONS IN MANUFACTURING FIRMS: A RESEARCH PROPOSAL

Slavko Rakić*
University of Novi Sad, Faculty of Technical Sciences, Republic of Serbia
E-mail: slavkorakic@uns.ac.rs
Nenad Simeunović
University of Novi Sad, Faculty of Technical Sciences, Republic of Serbia
Anja Kostić-Zobenica
University of Novi Sad, Faculty of Technical Sciences, Republic of Serbia
Branko Markoski
University of Novi Sad, Technical Faculty "Mihajlo Pupin", Republic of Serbia
Uglješa Marjanović
University of Novi Sad, Faculty of Technical Sciences, Republic of Serbia

ABSTRACT

Manufacturing firms increasingly produce and provide product-related and digital solutions along with or instead of their traditional physical products. In a focus on the consumer's needs, the limits between tangible and intangible offer are challenged through new kind of offers merging products and service under one common offer. This paper presents the research proposal and analyzes the means by which digital solutions can be employed in order to improve the manufacturing sector. The research is going to be performed among the manufacturing firms in Serbia. This study is going to measure the relationships between use of digital solutions and firm performance.

Key words: Digital solutions, product-related services, manufacturing, firm performance

INTRODUCTION

In recent years, the concept of servitization is a term which often uses in the manufacturing industry and consequently deals with the process of creating additional value by adding services to products (Kryvinska et al. 2014). Servitization was first mentioned by Vandermerwe and Rada (1988) to delineate the tendency of manufacturing firms to offer fuller market packages for their customers. The transformation of product-oriented companies towards service-oriented business has flourished in recent years (Marjanovic et al. 2018). In support of this is the transformation from Product-Service System to the Digitalized Product-Service System (Lerch and Gotsch 2015). The emerging trends of servitization and digitalization in one conceptual structure are not sufficiently investigated (Lerch and Gotsch 2015). The aim of this study is to provide a research proposal for the application of digital solutions in the manufacturing companies in transition countries (e.g. Serbia). The survey is going to be performed under the international project European Manufacturing Survey (EMS), which is coordinated by Fraunhofer ISI Institute from Germany. Manufacturing companies (NACE Rev 2 codes from 10 to 33) having at least 20 employees in Serbia. This study is going to measure the relationships among the firm's performance and the use of learning digital solutions.

LITERATURE REVIEW

Manufacturing industries have undergone radical change throughout history, categorized into industrial revolutions from the Steam powered machinery to the Industry 4.0 (Charro and Schaefer 2018). Industry 4.0 represented a radical industry-wide technological change based on digitization that affects all business activity (Charro and Schaefer 2018). In recent years, servitization has been

described as growing service orientation in manufacturing (Lerch and Gotsch 2015). Servitizationmreflected in the changing structure of manufacturing companies with big influence on national economies, where services now account for the majority of national output (Marjanovic et al. 2018). Moreover, the application of digital service is in increase in last few years with immense engagement and interest of scientific community (Ardolino et al. 2018). Figure 1 depicts expansion of existing servitization models through digitalization (Lerch and Gotsch 2014).

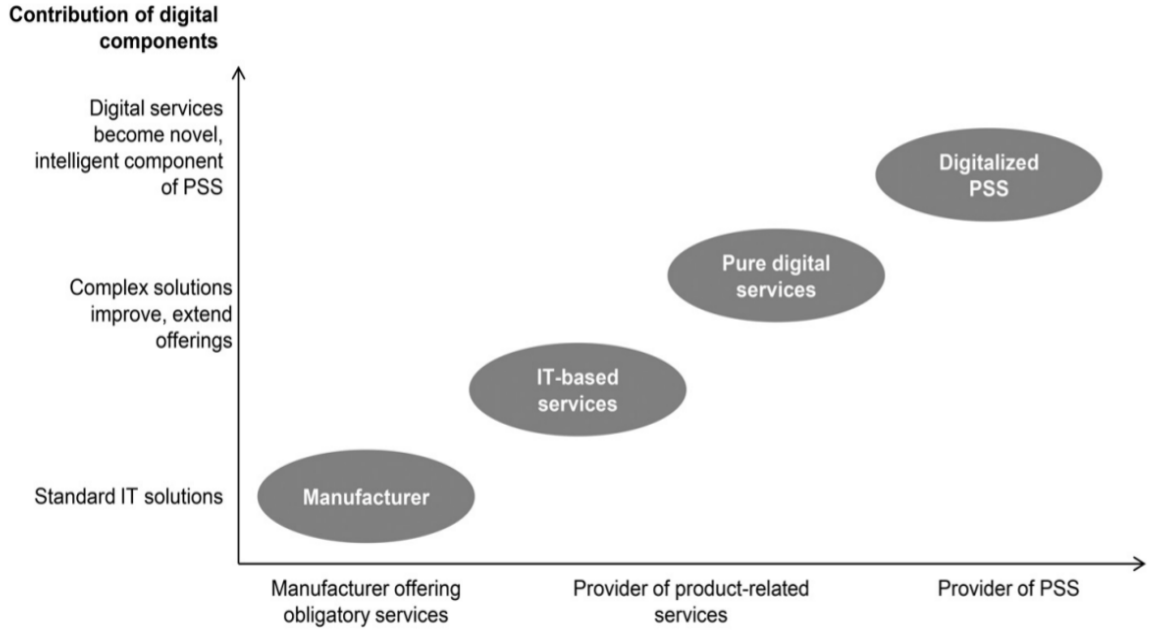

Figure 1: Servitization models through digitalization

Digital manufacturing is defined as the ability to describe every aspect of the design-to-manufacturing process digitally – using tools that include digital design, office documents, Product lifecycle management systems, analysis software, simulation, Computer-aided manufacturing software and so on (Jin et al. 2012). Furthermore, to achieve long-term effects, the sustainability issues need to be integrated with many other subject areas, and implemented simultaneously as digital solutions and value creating networks are being built up (Isaksson, Hallstedt, and Öhrwall Rönnbäck 2018). The manufacturing firms will become a central location to deliver capacity building and learning environment as well as a test base for piloting and scaling-up new digital solutions (Küsters, Praß, and Gloy 2017). In addition to that, developed economies continue to debate about understanding the organizations that are servitizing and what they offer in markets is foundational to the transformation debate (Baines and Shi 2015). Debate about understanding the organizations that are servitizing in developing countries are being neglected (Marjanovic et al. 2018). In addition, prior research has pointed out the importance of smart or digital services , and thus this represents a fruitful area for further examinations (Marjanovic et al. 2018).

PROPOSED RESEARCH MODEL

Based on the literature review the following research question was proposed to evaluate the use of digital solutions in manufacturing companies:

RQ1: How digital solutions are affecting firm performance?

To address this question, following model is proposed in Figure 1.

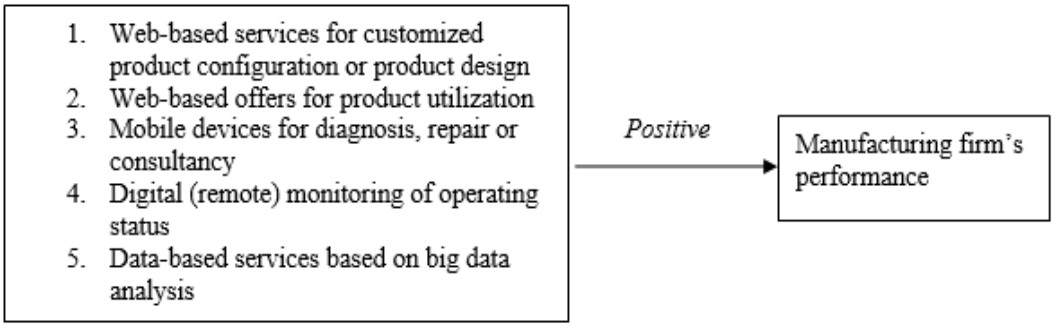

Figure 2. Proposed research model

To identify the relevant effect of digital solutions on firm performances (i.e. share of revenue) we will test regression model presented on Figure 2.

METHODOLOGY

Digital solutions presented in the model are identified based on exploratory interviews with practitioners and group discussions with experts in the field. All EMS consortium members were involved in this process, which resulted with a universal list of services which is transversal so that all manufacturing sectors can apply it indifferently of the product offered (Lalic et al., 2017). Each survey will be carried out based on a proportionally size- and industry- based stratified random sample. In the Serbia, for sampling technique, Cochran's (1977) method will be used. Moreover, data will be collected with Dillman's (2006) method. All in order to obtain relevant data and avoid the bias effects. For the data analysis linear regression will be used.

PRELIMINARY RESULTS AND DISCUSSION

Expected results will be discussed in regard to the theoretical framework that underpins the research, since early studies in application of digital based service show that digital service have positive influence on cost reduction (Mahut et al. 2017). Cambridge Service Alliance provided research regarding servitization with the participants from Capital Equipment Manufacturers and academics (Dinges et al. n.d.). They identified top five service technologies and all of them are digital based services: predictive analysis, remote communications, consumption monitoring, and two aspects of mobile communication platforms (Dinges et al. n.d.). This confirms the importance of services in the manufacturing sector in the future. Moreover, expected results should be in correlation with early studies, which showed positive impact of digital based service on manufacturing such as: cloud-monitoring service (Caggiano, 2018), the service-oriented architecture (Alexopoulos et al., 2013), digital architectures to deliver novel digitized Product Service System (Lerch and Gotsch, 2015).

CONSLUSION

In this paper is presented a proposal for research on the application of digital solutions in manufacturing firms. With a review on history, background, research methods, as well as research question and model which are the center of this paper. Moreover, this study will provide practical implications for managers in the manufacturing firms. Consequently, this proposal will provide theoretical and practical implications on how and in what way digital solutions impact a manufacturing firm's share of revenue structure. The contribution of this research, proposal is the ability to offer recent, international and relevant empirical figures about traditional and digital based service in different manufacturing sectors. The next paper would be answer to the research question. On this way, you can see the situation of manufacturing firms in Serbia and you can compare it with

other countries from EMS consortium. Together with all this, you can work on increasing the quality of application of digital solutions in manufacturing firms.

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Session F: ABSTRACTS

Abstracts (pp. 197-198):

AN MCDM APPROACH TO ASSESSING NPD PROBLEMS

Sanja Puzović*
University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
E-mail: sanja.puzovic@ftn.kg.ac.rs
Jasmina Vesić Vasović
University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Vladan Paunović
University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia
Zoran Nešić
University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia

ABSTRACT

Developing new products is an essential strategy tool in achieving a company's comparative advantages and its sustainable development. The problems that may occur during this process may lead to inefficiency and failure in the market, and thus also to poorer organizational performance. Accordingly, recognizing and analyzing NPD problems in a proper way is of exceptional importance for sustaining a company's growth and increasing its profitability. The paper proposes a Multi-Criteria Decision-Making (MCDM) methodology for recognizing and prioritizing the problems that may occur during the process of a New Product Development (NPD). The proposed approach is based on the Analytic Hierarchy Process (AHP) methodology, which enables the assessment of the impact of these problems on the success of the NPD; the AHP method is also integrated with the fuzzy set theory, which is aimed at avoiding the problem of uncertainties and ambiguities. The possibilities of the application of proposed methodology are illustrated on the case of a company manufacturing corrugated paper and special cardboard packaging.

Key words: NPD problems, MCDM, fuzzy AHP.

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MAKING ENGINEERING DEPARTMENTS ENTREPRENEURIAL: A DISCUSSION!

Zelimir William Todorovic*
Purdue University Fort Wayne, Indiana, USA
E-mail: todorovz@pfw.edu
Jun Ma Todorovic
Purdue University Fort Wayne, Indiana, USA

ABSTRACT

The concept of an "entrepreneurial orientation" is well established in the literature on the strategic posture of firms. Increasingly, large organizations are also turning to entrepreneurship in their efforts to become flexible and respond to pressures to "do more with less". To understand what it means for engineering departments to be "entrepreneurial", interviews with forty faculty members explored this issue. Transcripts of the interviews were analysed using content analysis software. Next, focus groups were employed to identify and establish face validity for the items developed. The results suggest risk-taking is the most important dimension in developing an entrepreneurial engineering department, and a strong requirement for its continued competitiveness. Further, study also supports the notion that entrepreneurial engineering faculty will develop higher levels of Industry collaboration, funding and reputation – leading to higher success for internal university stakeholders.

Key words: University Entrepreneurship, Entrepreneurial orientation, University department

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