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EDITORS' INTRODUCTION

Dear fellow authors, distinguished readers,

In the front of you is the second issue of the scientific journal of social and technological development - STED Journal in 2019, published by the University of Business Engineering and Management. The second issue in 2019 includes 9 papers. Published papers have got a positive review by two independent reviewers. Reviews are anonymous and reviewers do not know the authors identity. Reviewers have also suggested the sorting of papers into scientific and expert category. Reviewers have given their consent for publishing of paper based on their assessment of originality, novelty, used methodology and literature of paper.

Each paper is assigned COBISS, UDC and DOI number by the National and University Library of the Republic of Srpska. The journal has its analytically revised articles which are published in the current national bibliography, and it is included in the central electronic catalogue. All members of the editorial board have scientific or educational titles from the narrow scientific fields covered by the journal. The journal is included in the EBSCO, ROAD, CEEOL i GOOGLE SCHOLAR citation databases.

On the last pages of the journal, there is also the bibliography of papers published in first issue in 2019.

We thank the reviewers of papers whose professionalism and critical approach have greatly contributed to the quality of published papers.

With best wishes,

Dr Dejan Kojić, docent
Editor-in-Chief

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THE EFFECTS OF MODIFIED CLAY ON CONTROLLED DRUG RELEASE SYSTEMS

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ABSTRACT

Recently, controlled drug release systems have been garnering a lot of attention, due to more targeted and effective approach for delivering drugs to a specific tissue. Because of a specific structure and natural abundance, clays are being added to those systems in order to increase its efficiency and minimize costs. In this study, controlled release kinetics of the drug active substance 5-Fluorouracil was studied, using halloysite clay/polymer drug carriers. For this purpose, the halloysite clay was initially modified with cetyltrimethyl ammonium bromide (CTAB). Drug carriers were prepared by adding modified halloysite clays in the mixtures of polyvinyl alcohol (PVA) and sodium alginate. Firstly, the swelling behaviour of the prepared substances was studied in buffer solutions at different pH. The drug release kinetics from the drug carriers, loaded with 5- Fluorouracil, was observed under a UV-spectrophotometer at 266 nm. Release profiles of the active substance were obtained by studying its release in buffer solutions at different pH. The results showed that the prepared drug carriers with modified halloysite clay were suitable for carrying and releasing of the 5-Fluorouracil.

Keywords: Controlled drug release, halloysite, 5- Fluorouracil, polymer, clay.

INTRODUCTION

Materials for controlled drug release and drug delivery systems are being intensively researched by scientists all over the world (Hua, Ma, Li, Yang, & Wang, 2010; Hua, Yang, Li, Zhang, & Wang, 2012). The production of new drug formulas is very difficult, costly and time-consuming process as long studies are required. The drug delivery system minimizes the side effects of the drug taken into the body while ensuring that the drug reaches the target directly. This system provides the effective use of the drug and minimizes the necessary drug doses (Prabha & Raj, 2017). Biopolymers are preferred to be used as the drug carrier materials. In order to improve

efficiency and lower costs of production, inorganic compounds with porous characteristics, such as alumina, silica etc are usually added to drug carrier materials (García-Villén et al., 2019; Ge et al., 2019). Due to biocompatibility and natural abundance, as well as possibility for surface modification and nontoxicity toward humans, silica has important role in production of drug carriers. Furthermore, drugs can be easily attached to silica particles. Halloysite, the most important member of the kaolinite group of clay minerals has tubular morphology. Between two layers of halloysites there are water molecules as a single layer. Such structure greatly affects the physical properties of alginate composite hydrogels (Huang, Liu, Long, Shen, & Zhou, 2017). Therefore it is commonly used in controlled drug delivery systems.

Alginates have wide range of applications and are one of the most versatile biopolymers. They are commonly used in cosmetic and food products when it is necessary to achieve gel-structure, thickening and stabilizing properties. Sodium Alginate is extracted from brown seaweed, and can play an important role in the design of a controlled-release scaffolds (García-Villén et al., 2019; Ge et al., 2019; Huang et al., 2017; Prabha & Raj, 2017; Tønnesen & Karlsen, 2002). Due to biocompatibility, polyvinyl alcohol (PVA) based nanocomposites are preferred for some biomedical applications such as wound closures, contact lenses and implants.

In this study, the controlled release kinetics of the drug active substance 5-Fluorouracil was studied using modified halloysite clay/polymer drug carriers. The effect of the modified and unmodified halloysite was assessed. The swelling behaviour of the prepared materials was investigated, and release profile of the modified halloysite/NaAlg/PVA system was obtained in different pH solutions. The release kinetics of the drug was studied by using 1st order kinetic model (Mulye & Turco, 1995), Higuchi model (Nochos, Douroumis, & Bouropoulos, 2008) and Korsmeyer-Peppas kinetic models (Ritger & Peppas, 1987; Siepmann & Peppas, 2001).

EXPERIMENTAL

Materials

Alginic acid, sodium salt (NaAlg) were supplied from Aldrich Chemical Company Inc. N,N′-Methylenebis (acrylamide) (MBA) as a cross linking agent used in gel preparation and Cetyltrimethyl ammonium bromide (CTAB) were obtained from Sigma-Aldrich. All other chemicals such as phosphoric acid and hydrochloric acid at analytical grade were obtained from Aldrich Chemical Company Inc. Potassium persulfate (PPS) (as initiator) and Polyvinyl alcohol (PVA) were purchased from Merck; 5-Fluorouracil (5-Fl) was supplied from Alfa Aesar company. Buffer solutions were prepared by using Merck products. Halloysite was obtained from Biga, Soğucak village, in Turkey.

Methods

In this study, controlled release kinetics of the drug active substance 5-Fluorouracil was studied using halloysite/clay/polymer drug carriers. For this purpose, halloysite clay was initially modified with CTAB. Following the modification process, drug carriers were prepared by adding halloysite clays with different quantities in the mixtures of polyvinyl alcohol (PVA) and sodium alginate (1/1) (w/w) and mixed clay-polymer solution (1 and 5 wt % clay) using the ultrasonification technique. MBA (1 wt %) and PPS were added to this mixture. These crosslinked products were evaporated in the teflon petri dishes, until the concentrated gel was obtained. The resulting films were dried under reduced pressure at 80 °C until the films reached a constant weight. The swelling behaviour of the prepared substances was firstly studied in buffer solutions at different pH (2.0; 4.0; 6.0; 7.5; 8.5; 10) (Figure 1a). In order to compare the swelling behaviour of the samples prepared with modified clay, the swelling behaviour of the samples prepared from unmodified

clay was investigated (Figure 2b). The swelling (%) values of clay/polymer hydrogels were calculated using the following equation.

$$\text{Swelling } (\%) = \frac{m_t - m_0}{m_0} * 100 \quad (1)$$

where m_0 and m_t are weight of hydrogel before and after swelling (at time t), respectively. Each measurement has been repeated three times and the average values have been reported. 5-Fluorouracil release in buffer solutions pH (4.0; 8.5) at 37 °C was determined spectrophotometrically using a UV–visible spectrophotometer: T80 Double Beam UV Visible Spectrophotometer PG Instruments at 266 nm.

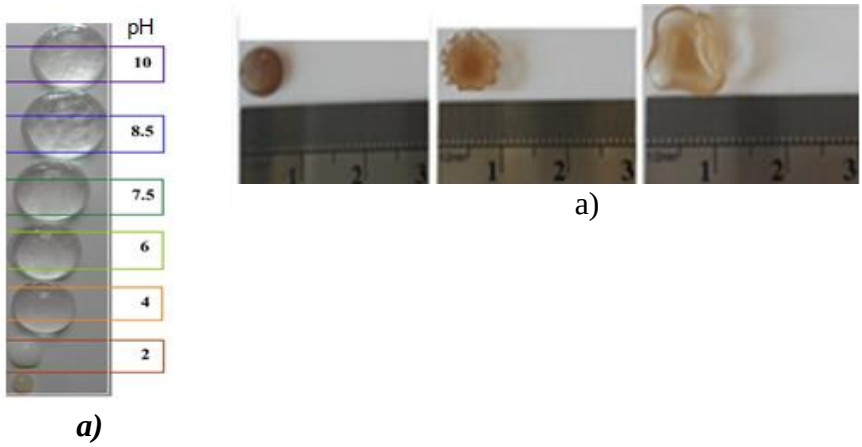

Figure 1. a) Swelling behaviour of the prepared material using modified halloysite in different pH solutions b) Swelling behaviour of the prepared material using unmodified halloysite (at pH=8.5)

RESULTS

In this study, the swelling behaviour of the clay/polymer drug carriers prepared in buffer solutions was examined. The swelling curves of prepared hydrogels obtained by plotting wt % of swelling as a function of time at different pH are given in Figure 2.

Some of the prepared samples were then used as blanks whereas the rest were loaded with 5-Fluorouracil and their drug release kinetics was observed under a UV-spectrophotometer at 266 nm. Release profiles of the drug active substance were obtained by studying in buffer solutions at different pH (4,0; 8,5) values at 37 °C (Figure 3).

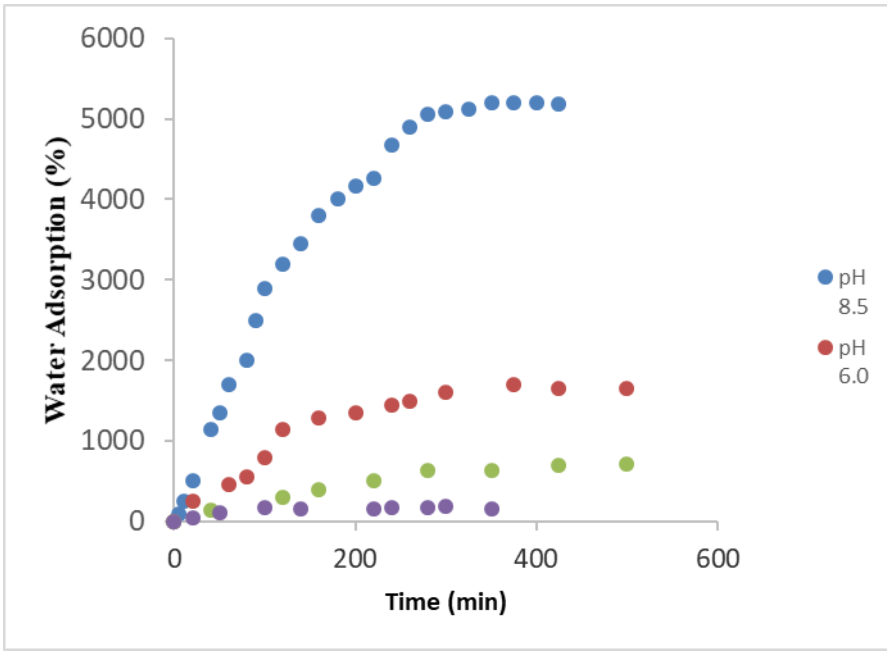

Figure 2. Swelling (wt %) of modified clay/polymer sample as a function of time at different pH

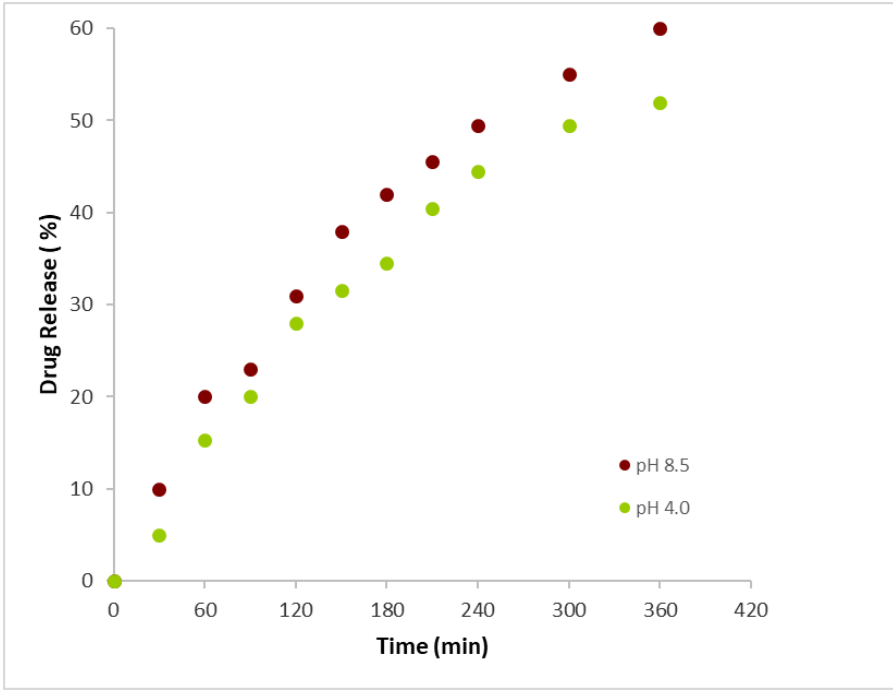

Figure 3. Release profiles of the 5- Fluorouracil in buffer solutions pH (4.0; 8.5) at 37 ^{0}C

To study the drug release kinetics, the experimental data were used for 1st order kinetic model, Higuchi model, and Korsmeyer-Peppas kinetic models. The formulas of these models are given below;

1st order kinetic model can be calculated by;

$$\ln Q_t = \ln Q_0 + k_1 t \quad (2)$$

Higuchi kinetic model can be calculated by;

$$f_t = K_H t^{1/2} \quad (3)$$

Korsmeyer-Peppas kinetic model can be calculated by;

$$\frac{M_t}{M_\infty} = k\ t^n \quad (4)$$

The symbols used in equations 2-4 are;

Q_o: the initial concentration of the drug solution (mg/L).

Q_t: the amount of cumulative drug released at time t.

k_1: first order rate constant.

K_H: Higuchi dissolution constant.

f_t: M_t / M_∞ = drug release rate.

n: coefficient due to drug release mechanism in Peppas model.

DISCUSION

In this study, swelling property of the drug holders prepared by modified halloysite and PVA/NaAlg polymers is more uniform and maximum swelling of sample was obtained at pH=8.5. The maximum swelling time was 5 hours. In the case of unmodified clay samples, the swelling at the same pH is not homogeneous and stable and the hydrogel disintegrates (or collapse) within the first 2 hours. The drug loading studies were completed in 6 hours. 50 % and 60% of drug released were observed at pH = 4.0 and pH = 8.5, respectively.

1st order kinetic model, Higuchi model, and Korsmeyer-Peppas kinetic models were applied to the experimental data. The best fitted model was selected from the adjusted correlation coefficient (R^2) obtained in each linear regression analysis. Comparison the R^2 values obtained from the linear regression analysis of the formulas show the applicability of the models. Drug release kinetics were found to be more appropriate to Higuchi kinetic model. R^2 values are higher output in this model comparing with the other kinetic models. This model showed that the release of the drug from the drug holder is controlled by diffusion and follows the Fick 1st law. This means that drug release occurs until a steady state and kinetic balance is reached between the drug concentration inside and outside the formulation. 1st order kinetic model also fits to the release behaviour of 5- Fluorouracil. This model shows the amount of drug released decreases over time.

CONCLUSION

Halloysite clay/polymer systems were prepared as drug carriers for controlled drug release. The swelling behaviour of the prepared clay/polymer drug carriers was examined in buffer solutions at different pH (2.0; 4.0; 6.0; 7.5; 8.5; 10). Swelling properties of the prepared drug carriers were

more uniform and maximum swelling of sample was obtained at pH=8.5. The maximum swelling time was 5 hours. In the case of unmodified clay samples, the swelling at the same pH is not homogeneous and stable and the hydrogel disintegrates (or collapse) within the first 2 hours. Drug release kinetics was observed under a UV-spectrophotometer, at 266 nm. Release profiles of the drug active substance were obtained by studying in buffer solutions at different pH (4.0; 8.5) values at 37 °C. Three mathematical models: 1st order kinetic model, Higuchi model, and Korsmeyer-Peppas kinetic models were applied to obtained experimental data. It was found that Higuchi kinetic model best describes drug release kinetics of obtained samples, which implies that drug release occurs until a steady state and kinetic balance is reached between the drug concentration inside and outside the formulation. From obtained results it was concluded that prepared drug carriers were suitable for carrying the 5-Fluorouracil drug active substance.

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POLYMERIC SCAFFOLDS FOR TISSUE ENGINEERING APPLICATIONS

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ABSTRACT

Polymeric materials are commonly used for many purposes in Tissue Engineering Applications. In particular, they are used as scaffolds which are specially prepared in cell growth studies as well as drug loading and release systems. In drug delivery and controlled release systems functional, scaffolds are widely used in order to send the drug to its target region. On the other hand, in cell growth systems patterned polymeric scaffolds are prepared and used to allow the cells to grow at a certain region with a particular form. For this purpose, different techniques are used for the adhesion of cells onto the material surfaces.

In this study, patterned scaffolds from various polymers as Polymethylacrylate (PAM), Polystyrene (PS) and polyvinylchloride (PVC) were prepared using micro contact printing with the soft Lithographic Technique. The prepared materials were morphologically analyzed and cell growth was followed by using electron scanning microscope (SEM). Poly (dimethylsiloxane) (PDMS) molds were prepared in different shapes and used as stamp materials to transfer the designed patterns. The cell growth on these patterned surfaces was followed after seeding L929 mouse fibroblasts cells. Neutral Red Uptake Assay was applied to observe cell growth. The cell growth experiments showed that the cells were attached to the patterned surfaces and a significant increase in cell growth on the surfaces were observed.

Keywords: patterned polymer, scaffold, biotechnology, cell growth, stamp.

INTRODUCTION

In cell growth systems, cells are grown in a certain order on the patterned surfaces. Therefore, various techniques are used for the proper adhesion of cells onto these pattern surfaces. Biomaterials as basic elements are commonly used for the enhancement of cell seeding, cell proliferation and cell deposition in the extra-cellular matrix (ECM). (Liedtke et al, 2019, Wolf et al., 2012). In most tissues, the migration of cells takes place within 3D environments. These environments are complex and have several challenges, because of the adaptation to the changing properties of the environment (Yamada and Sixt, 2019).

Extracellular matrix (ECM) materials derived from natural tissues exhibit superior

for the biocompatibility of cultured cells and for more favorable immune responses (Zhu, et al., 2019). It is known that scaffold-guided cell organization is an important criterion for the regeneration and maturation of the tissues (Higuchi et al., 2013, Li et al., 2017). In vivo tissue-forming cells on patterned scaffolds are closely regulated by their physicochemical properties such as porosity, pore size, stiffness, bio-activities, pore interconnectivity (Lane et al., 2014). These properties provide a homogenous distribution of the seeded cells. The transferring of the nutrients into the cells attached on the surface of the scaffold can thus be facilitated (Ludovica et al., 2018). Park and coworkers studied on the functional composite fabricated by biopolymer and they were used their materials for medical applications. Smith and Grande worked on the functionate scaffolds for the applications of musculoskeletal regenerative process (Smith and Grand, 2015). Biopolymer-based functional composites were prepared in the literature for medical applications (Park, 2017; Liu et al., 2009).

In this work, biopolymeric scaffolds were prepared and used for the cell growth systems. For this purpose, microscope lamellas were used as main holder materials and covered with different polymers as Polymethylacrylate (PAM), Polystyrene (PS) and polyvinylchloride (PVC) which are then followed by patterning process. The patterned surfaces were used for the cell proliferation and their results were compared. For the patterning process, poly(dimethylsiloxane) (PDMS) as molds were originally prepared and used for the transferring of the pattern. L929 mouse fibroblasts were used during the cell seeding process and observed using Neutral Red Uptake Assay.

MATERIALS AND METHODES

In this work, dimethoxy 2,2- phenyl-2 acetophenone (DMPA) as UV initiator and Poly (ethylene glycol dimetacrylate) (PEG-DMA) with M_w 550 $gmol^{-1}$ were purchased from Sigma Aldrich. Poly(dimethyl siloxane) (PDMS) used as stamp was obtained from Dow Corning Corporation. Hexadecanethiol ($C_{16}H_{34}S$) and 1-Octadecanethiol ($C_{18}H_{38}S$) (M_w = 286 $gmol^{-1}$) were supplied from Merck company. Neutral red and all the solvents used in this work were purchased from Merck.

Soft Lithography Process

Soft lithography is one of the common processes for the preparing pattern surfaces. In this technique elastomeric materials are used as stamps, molds or photomasks. Because elastomeric materials are used, this technique is named as soft lithography which was developed by Whitesides and his colleagues (Xia and Whitesides, 1998, Jiang et al., 2003; Jiang and Whitesides, 2003). PDMS is commonly used in patterning processes for the cell growth experiments. Micro-contact printing technique in soft lithography process is preferred for the fabrication of biomaterials as scaffold in tissue engineering studies. Molecular ink was prepared first and PDMS mold is immersed into the molecular ink and contact with the polymer surface the pattern is then transferred onto the polymer surface as seen in Figure 1.

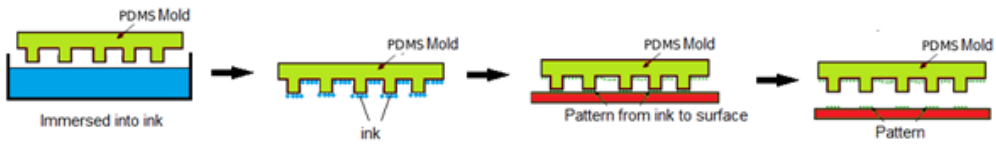

Figure 1. Pattern transfer from molecular ink onto the polymer surface.

In this work patterns were produced by using Auto-Cad computer program and printed out with a high-resolution printer. Then, the pattern is placed over the polymer

surface which was covered on the microscope glass and the photomask pattern is homogeneously transferred onto the photoresist surface. In this step, the polymer should be light-sensitive polymer which is called photoresist polymer. For this purpose, PEG-DMA was used as the photoresist polymer. The UV light (λ=365 nm) passed through the pattern in the bright area and reached onto the photoresist polymer surface. The bright area hardened after being exposed to the UV-light while the rest of the region remained in liquid phase. The polymer surface was washed, and the liquid parts were removed. After drying, the polymer patterned surface was obtained. PDMS solution was covered on the patterned surface and kept at 60°C for 24h. After drying PDMS was removed from the surface and the patterned stamp was obtained. These stamps were used for the patterning of the other polymers covered on the microscope glass.

Preparation of the patterned surface

The stamp PDMS was first immersed into the alkanethiole (undecanethiol) solution and contact with polymer surface. Alkanethiol which is absorbed by the cells is used as molecular ink. Therefore, by using PDMS stamp the polymer surface is covered with alkanethiole solution with a certain pattern after immersing ink. Figure 1 shows schematically the pattern transfer onto the polymer surface to make by cells visible.

Cell seeding on the Patterned polymer Surface

Neutral Red is used for the cell growth studies. Certain amount cells (approximately 100,000 cells) are seeded on the patterned polymer surface after sterilization. L929 mouse fibroblast cells were used for the cell growth studies. After seeding the cells, the patterned surfaces were incubated for 3 days in a CO_2 incubator at 37 °C. Then, neutral red dye was applied to the cells and adsorbed by the living cells. The concentration of adsorbed amount of dye is proportional to the number of living cells. The neutral red concentration was obtained by measuring the absorbance value of dye solution using a UV-spectrophotometer (at 550 nm).

RESULTS AND DISCUSSIONS

The results are comparatively given in the bar diagram in Figure 2 for the covered samples with different polymers as Polymethylacrylate (PAM), Polystyrene (PS) and polyvinylchloride (PVC), respectively. PEG-DMA covered surface was used to compare the cell proliferation results.

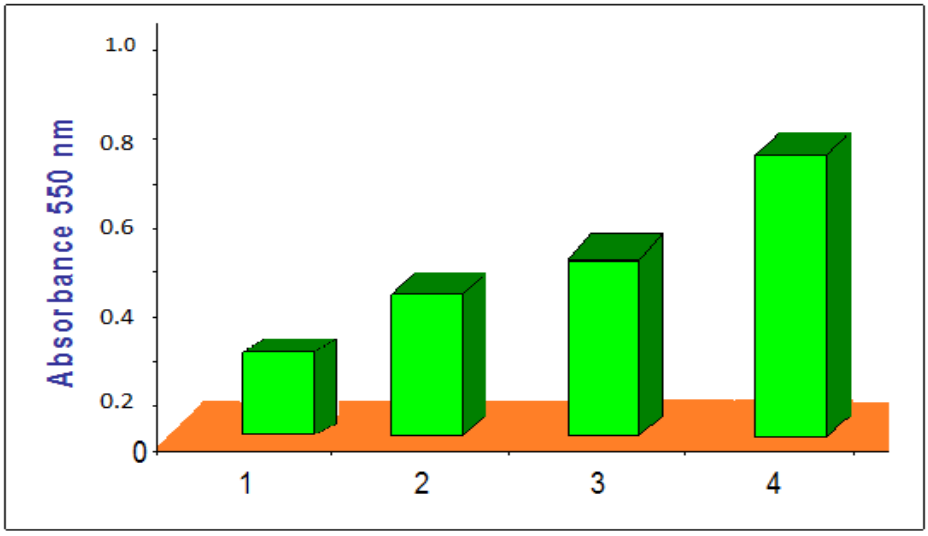

Figure 2. cell growth on different coated surfaces. Undecanethiole were used (1) Polystyrene, (2) PVC,

(3) Polymethylacrylate, (4) PEG-DMA

Figure 3 and Figure 4 show the scanning electron microscope results of the grown cells on the patterned polymer surfaces.

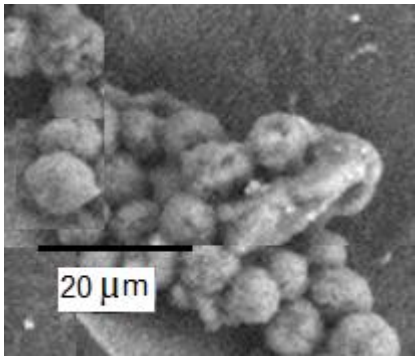

Figure 3. SEM micrograph of the grown cells.

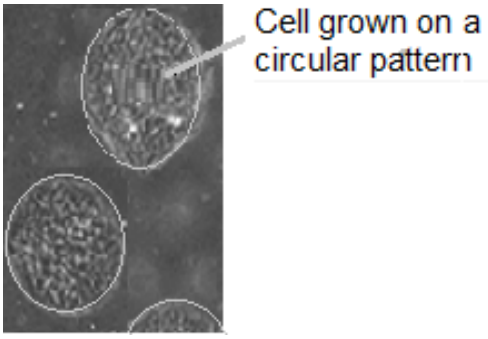

Figure 4. Growing Cells on the circular pattern regions

Cell Growth Studies

The results obtained from cell growth studies on polymer patterns were successful as shown in Fig.3 and Fig.4. As can be seen from the bar diagrams in Fig.2, the best cell growth results were obtained on the patterned PEG-DMA samples. Column 1 represents the cell growth on the glass coated with Polystyrene. Cell proliferation was also observed in the samples of PVC covered surfaces. However, these results were not as successful as PEG-DMA covered and patterned samples.

Compared to the PVC coated sample (column 2) with the Polymethylacrylate covered sample (column 3) less cell growth on PVC surface was observed (Figure 2). It can be seen that cell growth exists for all polymer covered surfaces prepared in this work. The maximum amount of cells was obtained on PEG-DMA coated surface which shows that this polymer is suitable for the cell growth systems. In all these experiments undecanethiole was used as alkanethiole.

CONCLUSIONS

The cell growth studies were performed on the prepared materials to investigate the adhesion of the cells on the patterned regions and grown on these regions. The polydimethylsiloxane (PDMS) as stamp material was originally fabricated and used to pattern transfer onto the polymeric surfaces. It was found that the prepared and patterned materials can effectively be used in engineering and biotechnological application in cell growth studies. The best result was obtained PEG-DMA covered scaffold.

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POLYMER CONCRETE MIXTURES – APPLICATION IN ENGINEERING INDUSTRY

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ABSTRACT

This article discusses the properties of concrete composite materials based on their contexture. Systematic and interactive approaches are required in order to achieve optimal material properties in the preparation of composite materials. In order to predict the physical and mechanical properties of each component of the composite material but also as a whole, its optimization, not only the mechanical but also the material properties under different working conditions, requires a combination of different methods and technologies. The advantage of each composite is its specific properties that cannot be achieved by any component of the composite material alone. The strength of the materials based on polymer concrete mixtures can be compared to the strength properties of metals. On the other hand, this material has elastic properties which give the material a high degree of flexibility. When compared to conventional materials, the value of polymer composites is assessed not only in terms of excellent mechanical properties but also in terms of their low weight and cost. The aim of the paper is to describe the advantages and disadvantages of composites based on polymer concrete mixtures.

Keywords: engineering industry, polymer concrete, manufacturing, concrete mixtures, polymer resins

INTRODUCTION

Today, a great deal of emphasis is placed on composite materials. In the last decades, they have become a subject of growing interest for all professions and industries. Without them, we can hardly count on technical progress (Hutyrova et al., 2016; Valicek, et al., 2012). Based on our experience, we try to construct new materials on different bases, which will have more and more special properties. Many composite materials are currently being invented. Progress depends mainly on the approach to the relationship between structure and properties of composite materials, which requires the involvement of different technologies. The investigation and development of these materials must be based on synergies between different disciplines. The polymer-concrete composite material itself brought even better and more

efficient properties to the market. The development of these materials is constantly progressing and the possibilities of their use are increasingly affecting the engineering industry as well as other industries. Even though their cost is often high, they are economically more advantageous than various non-composite materials that do not offer as many specific properties as composite materials. The aim of this paper is to point out new trends in the field of composite materials based on polymer-concrete mixtures, investigate their properties, production and possibilities of their use in industry.

POLYMER CONCRETE MATERIAL AND ITS PROPERTIES

Composite materials are artificially engineered technical materials made from two or more basic constituents with significantly different physical or chemical properties, which remain separate and different in the final structure. Each composite material consists of a matrix and reinforcement. Both components must be present in the mixture. The matrix material surrounds and supports reinforcing materials by maintaining their relative positions. The reinforcements impart their special mechanical and physical properties to enhance the properties of the matrix. Due to the wide range of available matrix and reinforced materials, the design potentials are incredible. One suitable example of composite material is concrete, which is mainly composed of cement and gravel. The cement forms a matrix and gravel is reinforcement (Campbell, 2010). Polymer concrete is the composite material made by fully replacing the cement hydrate binders of conventional cement concrete with polymer binders or liquid resins, and is a kind of concrete-polymer composite. For hardening of polymer concrete, most liquid resins such as thermosetting resins, methacrylic resins and tar-modified resins are polymerized at ambient or room temperature. The binder phase for polymer concrete consists only of polymers and does not contain any cement hydrates. The aggregates are strongly bound to each other by polymeric binders (Ohama, 2014). Liquid resins for polymer concrete include unsaturated polyesters (UP), epoxy (EP), vinyl esters (VE), polyurethanes (PUR) and polymethyl methacrylate (PMMA). The universal polymers used in structural applications are unsaturated polyesters and epoxides due to their excellent mechanical properties and cost-effectiveness (Asif & Ansari, 2013). Thanks to high performance, multifunctionality and sustainability, polymer concrete composites have become innovative 21st-century building materials. Among the great advantages of properties of polymer concrete materials are high strength and rigidity, low weight, corrosion resistance, good static and dynamic load properties and also good damping properties. Table 1 shows comparison of basic strength characteristics of polymer composites with metals. Polymer composite materials are the most widespread of all types of composite materials, their greatest advantage compared to metal and ceramic materials with low density and corrosion resistance (Wahby, 2003).

Table 1. Comparison of basic strength characteristics of polymer composites with metals

Material	Average density (g/cm^3)	Strength (MPa)	Specific strength (MPa. cm^3/g)	Normalized strength
Polypropylene / glass yarn	1.48	720	486	1
Steel	7.8	286-500	36-64	0.07-0.13
Copper alloys	8.3	60-960	7-116	0.01-0.24
Aluminum	2.6	40	15	0.03

The resulting properties of polymer concrete depend on the properties of individual components, their ratio as well as on preparation conditions. Figure 1 shows the cross-section of polymer-concrete product. The higher the polymer content, the higher the flexural strength and the flexural modulus, but its excess reduces the compressive strength. Other important properties of polymer-concrete include (Mráz & Talácko, 2006):

- Minimum stresses in polymer-concrete castings - when the casting is cooled from the casting temperature to the operating temperature, there is minimal shrinkage and cooling stress. High-quality polymer-concrete has a resulting shrinkage of 0.02-0.03%.
- Minimal impact of moisture on volume and dimensional changes - high-quality polymer-concrete is more hydrophobic than natural stone and is therefore used for the production of measuring instruments,
- Structural variability - a wide range of applications of polymer-concrete, where castings from several hundred grams up to several tons can be produced,
- Resistance to aggressive chemical influences - polymer-concrete with a suitable surface treatment is resistant to the effects of mineral oils, coolants, lubricants, hydraulic oils, cleaning agents,
- Dimensional accuracy of production - low internal stress and minimal shrinkage of polymer-concrete allow the production of castings with finite accuracy (so-called finished), which reduces machining costs. In practice, only working surfaces are used to achieve the required tolerances,
- Recycling - polymer-concrete is used as a building material after being crushed,
- Corrosion resistance,
- Possibility of integrating functional parts into castings - integration of distribution systems.

Figure 1. Cross-section of polymer-concrete product.

MANUFACTURING OF POLYMER CONCRETE MATERIALS

The polymer concrete is composed of three components: filler, binder and additives. The ratio of the individual components affects the resulting properties of this composite material. For the production of polymer-concrete products, demountable moulds are used, which are filled by casting technology. The whole process is carried out on vibration tables to improve compaction. Subsequently, the solidification process takes place, the exothermic reaction in which the material is heated to a maximum of 50 ° C to 55 ° C. (Yin, Zhang, Wang, Wang, & Ren, 2015)

Filler

Fillers of composite materials based on polymer-concrete mixtures are formed of natural minerals (SiO_2, Al_2O_3, TiO_2, Fe_2O_3, Cr_2O_3, CaO, MgO, Na_2O, etc.) or of artificial materials such as glass and metal fibres and balls or metal powder Inorganic fillers may have different structures. The filler constitutes 80% by volume of the mixture. The types of filler structures and their associated materials are shown in Table 2. On the basis of these components and their combination, the final properties of the polymer-concrete can be achieved (Mráz & Talácko, 2006):

- high compressive strength,
- good chemical resistance,
- low moisture absorption,
- good wettability to the binder.

Table 2. Filler structure

Filler structure	Material
Powdered	glass, quartz, dolomite, feldspar, basalt, limestone and others
Platelet	mica, graphite, talc, kaolin and others
Fibrous	carbon, glass, aramid fibres and others

The quality of polymer-concrete and especially its strength is given by low porosity (the lower porosity, the better strength). This means that the resulting cavities between the coarse grains are filled with finer particles and binder. The lower the proportion of resin in the mixture ensures the better the strength parameters. Despite the use of very fine fractions, zero porosity will never be achieved. To put it simply, even the smallest particles cannot fill the gaps without residue (Patočka, 2007).

Important properties in the polymer-concrete mix design shape (granulomorphism) and size (granulometry), filler distribution and filler weight fraction. Fillers for polymer-concrete adapted for engineering use consist of three to four components. The dimensions of the individual filler components range from 0.1 mm (stone meal) to 2 mm (sand) to 16 mm (gravel and stones) (Mráz and Talácko, 2006).

Figure 2. Fillers

Binder

The binder, also called the polymer-concrete matrix, consists of two components, which are resin and hardener. They make up approximately 20% of the total volume and their proportion in the mixture should be as low as possible in order to achieve ideal properties. Therefore, when selecting a resin, it is also necessary to take into account its properties, whether technological – (viscosity, volatile content, shelf life, etc.) or utility (flammability, heat resistance, strength and others). Epoxy resins are most commonly used, but we can also use:

- Polyester,
- Polyurethane,
- Poly-Acryl.
- Phenol-formaldehyde,
- Methyl methacrylate and others.

Epoxy resin

Epoxy resin is a liquid viscosity substance and hardeners in liquid or powder form are used to cure it. The hardener is a solution or mixture of inorganic (for example polyamines, isocyanate) or organic acids (carboxylic acid) in various concentrations. Curing usually takes place at room temperature. Compared to polyester resin, epoxy resin is characterized by less volumetric shrinkage and longer pot life. It has good mechanical, chemical and electrical properties. Materials with these resin matrices are not suitable for operations above 80 ° C (Chwala, 2012).

Ingredients

Additives are agents added to the matrix that affect the final properties of the polymer-concrete mixtures such as mechanical and fire properties or corrosion resistance. With the correct combination of all components of the binder system, precise casting parameters can be achieved.

Additives used in the production of polymer-concrete include (Chwala, 2012):

- Dyes,
- Viscosity-reducing agents,
- Mould leakage, deaeration and adhesion promoters,
- Substances to facilitate mould removal (mould release agents).

APPLICATION OF POLYMER CONCRETE MATERIAL IN MANUFACTURING INDUSTRY

Polymer concrete is one of the most commonly used materials and ranks among particulate composite materials. Polymer concrete is used to produce castings weighing several kilograms up to several tons, offering a wide range of applications. Nowadays, bases for machine tools and measuring machines are used mainly in the machine, electrical, food and chemical industries. The process of manufacturing castings based on polymer concrete mixes consists of individual steps (Figure 3), resulting in a final material that meets predetermined parameters (Kender, 2016).

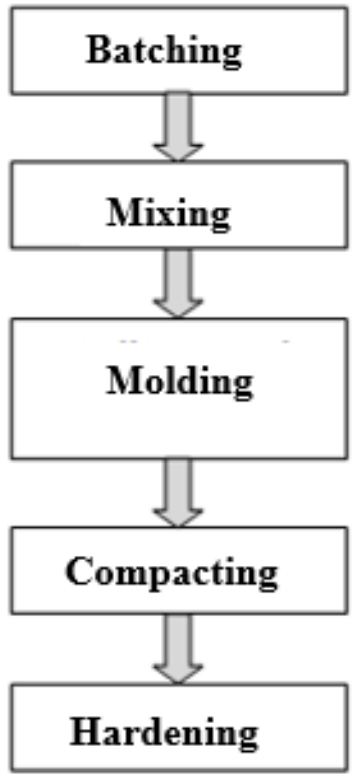

Figure 3. Casting production process

Batching

Batching is a process that is carried out by volume screw conveyors (loose materials), respectively, dosing pumps (liquid components), or weighing on precision scales. The exact weight fraction of filler and binder is derived from the manufacturer, application and recipe. Dosing is provided by automatic machines in order to achieve the exact ratio of the individual components (Figure 4). The advantage of automatic dosing machines is the speed that ensures that the individual components in the mixer become a homogeneous mixture. For batching they are used (Bratukhin, 1995):

- Screw conveyors – for bulk materials,
- Metering pumps – for liquid components,
- Accurate weight – gravimetric dosing.

Mixing

The mixing of polymer-concrete mixtures takes place in two phases (Bratukhin, 1995):

- The first phase – separate mixing of the filler of different fractions according to grain curve and type of resin with hardener
- The second phase – mixing of all components into the resulting mixture, in this phase, it is important that all grains are coated with a resin binder

Figure 4. Example of mixing and dosing machine

Figure 5. Molding

Moulding

The casting process takes place after the mixing phase by means of casting machines or the polymer-concrete mixture is poured directly from the mixer. From an economic point of view, it is advisable to cast several castings at once if they are not oversized, saving time - the machine is in operating mode and does not need to be cleaned. The casting is followed by a compaction process and vented (Buksa, 2008).

Compaction

Compaction is used to reduce the volume of air pores that can increase during previous steps. The two principles that work best have been used for compaction:

- Shaking tables
- Vibration motors mounted on the outer mould wall

As a general rule, large and heavy moulds use a low speed with high force, and light and table mould the opposite. When vibration is oversized, particle resonance can occur, turbulent flow occurs and the air is absorbed. In some cases, raising the temperature can help prevent it (Buksa, 2008).

Figure 6. Vibrating table (platform)

Hardening

During curing there is an exothermic heat escape reaching a temperature of up to 50 ° C, at least after 12 hours it is possible to remove the casting from the mould. After 24 hours, the casting has final properties and can be further machined. Hardened polymer-concrete should be seen as a synthetic stone. Accordingly, the polymer-concrete can be processed by natural stone processing methods: polishing, drilling, sandblasting, cutting and the like. However, further

processing is inefficient. It is more economical to achieve the desired moulding properties. Materials used in the manufacture of moulds (Snoeck et.al., 2015):

- Cast iron
- Aluminium
- Wood
- Foam plastics
- Steel

Processing of polymer-concrete after its wear

Polymer-concrete meets all the requirements for environmentally friendly material. The cured material is chemically inert and free of health risks. Unnecessary castings or parts of them can be stored in construction waste dumps. The concrete blocks can be processed by crushing into mixtures for road construction and other construction needs after separation of the other parts. Polymer-concrete can be recycled at the end of its useful life and is also called a modern unconventional material (Yin et al., 2015).

CONCLUSION

Quality, economic aspects, durability have a very important role to play in materials. In the context of industrial engineering practices, innovation, development and composition of materials are increasingly emphasized. Competition in the field of materials is very demanding, but there is still a need to market new materials that will have better properties and will not be expensive. Polymer concrete is one of the most commonly used materials and ranks among particulate composite materials. Polymer concrete is used to produce castings weighing several kilograms up to several tons, offering a wide range of applications. Nowadays, polymer concrete materials are used for the production of bases for machine tools and measuring machines, which are used in the engineering, electrical, food and chemical industries. The aim of this paper is to give the most comprehensive overview of the materials and technologies used for the production of polymer concrete and its use in construction practice.

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INTERCONNECTION OF MATERIALS SCIENCE, 3D PRINTING AND MATHEMATIC IN INTERDISCIPLINARY EDUCATION

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ABSTRACT

The substantial advantage of 3D printing is the ability to fabricate complex shapes objects from liquid molecules or powder grains which joins or solidifies using computer design files (CAD) to produce a three-dimensional object with material being added together layer by layer. This process is considered as an industrial technology. The most-commonly used 3D printing procedure is a material extrusion technique called fused deposition modelling. The producers of 3D printers have already developed prototypes for education purposes. The importance of the incorporation this printing method in schools is the fact. The learning experience for digital media is becoming a priority in school education. The practical application of this tecnique can be incorporated into a wide variety of school subjects to simplify the sophisticated theoretical concepts. 3D printing is the example of cooperation within material science and mathematics but this platform is very often not supported by the high school curriculum, but latest trends propose different approaches and make education close to the science achievements and contemporary life. Building lessons plans and project could help students to learn more contemporary achievement in this field. It is new trend to support enthusiastic teachers who want to implement this method of additive manufacturing in education. This paper provides an overview of 3D printing methods and highlights the possibility of their implementation in educational techniques.

Keywords: education, mathematics, polymers, additive manufacturing, materials.

INTRODUCTION

The whole process begins by virtually designing of object that should be printed. Virtual designing is performed in a CAD (Computer - Aided Design) file using a 3D program for modeling (to create a brand new object) or using a 3D scanner (to copying an

existing object). The 3D scanner performs three-dimensional digital copying object. These scanners use different technologies to generate the desired model. To prepare the object for printing, 3D software virtually cuts the final model into a large number of horizontal layers. Object proposed by software is created in succession applying layers of material until the final shape is obtained (Freedman et al., 2012). Typical layer thickness is 0.1 mm, although depending on the technology, it can range from a few microns to several centimeters. The first layer is applied to the substrate, then the desk is lowered (or the print head is raised) by the height of the layer, the next layer is applied and procedure is repeated until the entire item is printed. Printing time depends on the subject and technology. For smaller items, the crafting process will take several minutes, while for larger items the time will be measured in hours. Everything the mind can think of, at a simple and fast way, using 3D printing can be obtained, so there are no restrictions in terms of dimensions and shape of desired objects. Materials used in 3D printing can be in form of of powders, granules or fibers, divided into the following categories:

1. polymer materials – thermoplastic, thermosetting polymers polymer composites,
2. ceramic materials,
3. metals - aluminum, cobalt, gold, silver, tungsten, titanium, titanium beryllium and copper alloys, steel
4. wood, paper
5. food - ie. natural macromolecules such as carbohydrates (starch).

The selection of material type depends on the field of application and costumers' need. Use of polymers for consumer goods (bottles, toys, dishes, electronical components etc.) as well as for special applications (drug delivery, biomedical devices) makes those materials applicable for processing by 3D printing, which allows rapid manufacturing (Song et al., 2009, Wang et al. 2017). Plastic materials used in additive manufacturing can be divided into four categories: thermoplastic, thermosets and elastomers, polymer blends and polymer composites.

There are several different 3D printing technologies, depending on the printer working mode and material used to make the item, such as stereolithography, selective laser sintering (SLS), inkjet, Fused deposition method (FMD), production of laminated objects - LOM (Laminated object manufacturing). No matter which one applies, the entire process of manufacturing a 3D printing object can be divided into two stages:

1. designing an object in programs such as AutoCAD, Blender, Open- SCAD, etc., using a 3D modeling program,
2. printing the object.

Stereolithography is based on the use of UV light passing over a pool with a photosensitive polymer (Figure 1). During production, the model is formed in the pool layer by layer, until the final product is obtained. The advantages of this method are the rapid fabrication, detailed surface treatment, as well as the way of pulling objects out of the pool, after which there is no need to break excess structural parts (Song et al., 2009).

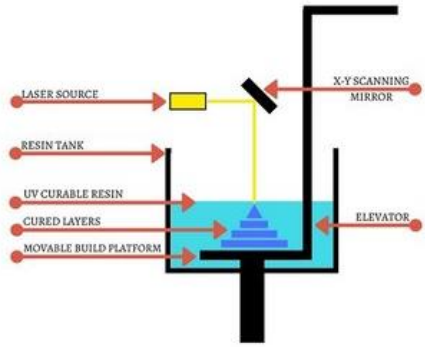

Figure 1. SLA method (https://all3dp.com/2/stereolithography-3d-printing-simply-explained/).

Selective laser sintering (SLS) (Figure 2) is very similar to stereolithography. It works on the principle of material exposure to laser beams. The polymer is in the form of

a compact powder. The main advantage of this method is that ceramic, plastic and metal products can be obtained. The resulting objects generally have very good strength, but the disadvantage of the SLS method is that the surface of the object often has imperfections (Decard et al., 1989).

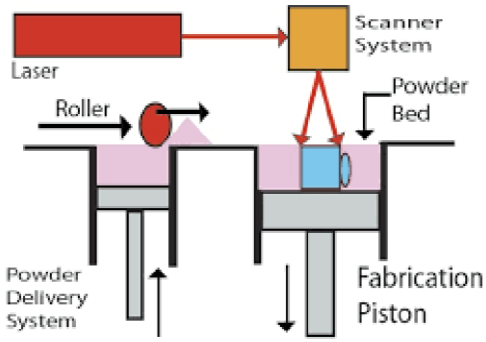

Figure 3. SLS method (Raja et al., 2006).

The inkjet method (Figure 4) is actually an upgrade to classic Inkjet printing. The model is made layer by layer, usually of plaster or resin, and the device disperses the binder to obtain the desired shape of the object. The advantage of this method is that a single object can be made of multiple types of material (Song et al., 2009). Fused deposition method (FDM) (Figure 5) is the most widely used 3D printing method. It works on the principle of material extrusion with an extruder, and the nozzle opening is adapted to extrude the used material. Thermoplastic polymers are used as material for this 3D printing method. Layers are obtained by extruding a thin nozzle of thermoplastic material onto a printing pad. They are formed crosswise, ie. each layer is extruded at an angle of 90° from the previous one. Today, in addition to the base material, water-soluble and easily removable material is often used as temporary support for certain parts of the item (Konta et al., 2017).

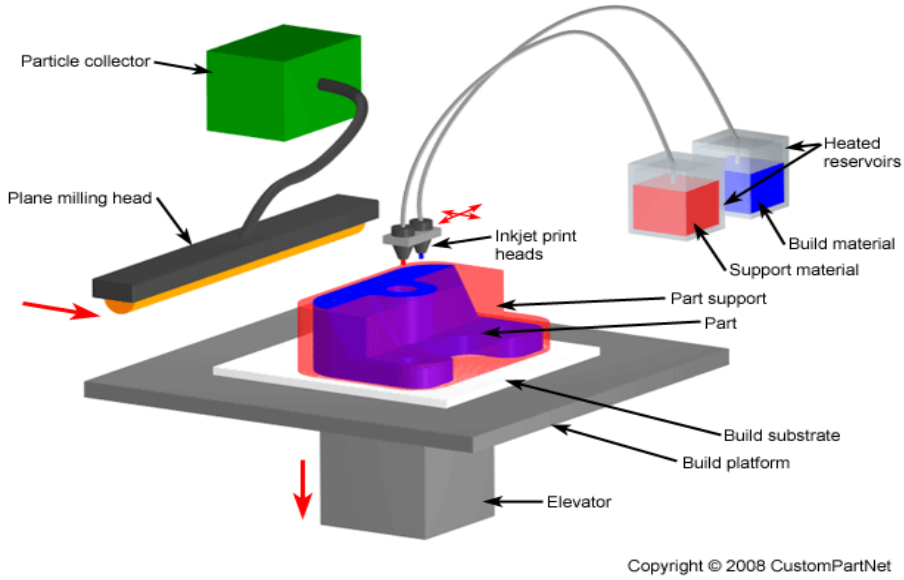

Figure 4. Inkjet method (https://www.custompartnet.com/wu/ink-jet-printing).

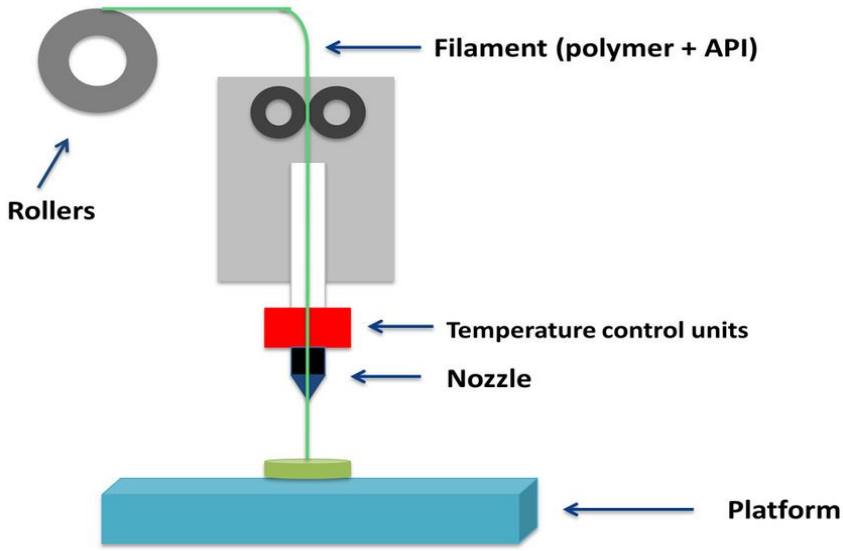

Figure 5. FDM method (Konta et al., 2017).

Laminated object manufacturing (LOM) method can use paper as a material, which is a great advantage because of the much lower cost of production and final price of the product. In tis method, layers of material that are laser-cut to specific dimensions are used and then bonded together (Figure 6). Today, A4 paper is often used as a water-based material and adhesive, which significantly decreases the cost and has no adverse effects on humans and the environment.

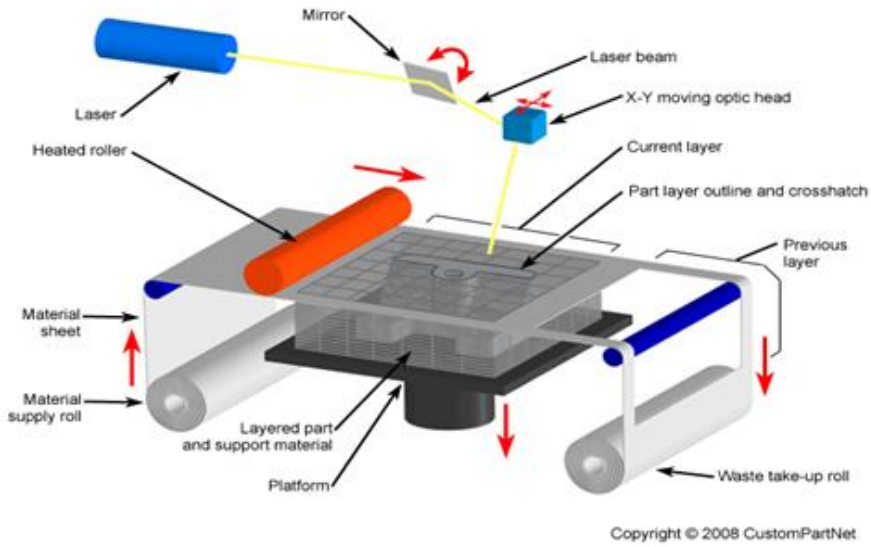

Figure 6. LOM method (https://www.makepartsfast.com/laminate-object-manufacturing-lom/).

POLIMER MATERIALS 3D PRINTING

There are several main materials used in 3D printing such as polymer, polymer composites, wood, metals, paper, ceramics, sandstone, wax. The selection of material type depends on the field of application and costumers' need. Use of polymers for consumer goods (bottles, toys, dishes, electronical components etc.) as well as for special applications (drug delivery, biomedical devices) makes those materials applicable for processing by 3D printing, which allows rapid manufacturing (Wang et al., 2016, Šafka et al., 2016). Plastic materials used in additive manufacturing can be divided into four categories: thermoplastic, thermosets, elastomers and polymer composites.

Thermoplastic polymers

Thermoplastic polymers have the great significant from te point of 3D technology, because of their widespread use and recyclability. Thermoplastic polymers used in 3D technology can be biodegradable and non-bioderadable. They are printed using mostly FDM method. Amorphous polymers are preferred over semicrystalline ones. The reason lies in the fact that printing temperature or amorphous polymers should be simply greater than glass transition temperature and for semicristaline polymers has to exceed melting point (Šafka et al., 2016). The most commonly used non-biodegradable thermoplastic polymers in 3D processing are acrylonitrile butadiene styrene (ABS), polypropylene (PP), polyethylene terephthalate (PET), polycarbonate (PC), polyamide (PA), acrylonitrile styrene acrylate (ASA), which are non-biodegradable. Biodegradable polymer with importance in 3D printing is on the first place polylactide (PLA). Besides PLA, the use of other biodegradable polyesters such as poly-(hydroxyalkanoates) (PHA) and poly-(ε-caprolactone) (PCL) are intensively considered Vaidya et al., 2019).

ABS is the most commonly used polymer in 3D printing. ABS is amorphous copolymer based on three monomers: acrylonitrile, butadiene and styrene. Different components for cars, cell phones, as well as toys can be produced by processing ABS using the additive technology. The good properties of this polymer result from the combination of three monomers, where the presence of acrylonitrile contributes to good resistance to aging, temperature and chemicals; the gloss and stiffness come from the presence of styrene, and also the strength and elasticity due to butadiene. During the processing of ABS using the 3D technology, ABS is heated to between 230 ºC and 260 ºC. It is tough, reusable material with high strength, which degrades from humidity in the surrounding air, so ABS filaments should be stored in containers and vacuum bags before processing. ABS is mainly used in fused deposition modeling technologies, the most affordable and accessible 3D printing technology. There is however also a liquid form of ABS which is sometimes used in stereolithography and PolyJet processes. Figure 7 shows the ABS printing filament with product of 3D processing (Ngo et al., 2018).

Figure 7. ABS printing filament and 3D printed toy.

PP is semicrystaline polymer widely used in automotive, packaging industry and in manufacturing of different everyday objects (Figure 8). Good properties of PP is resistance to abrasion, many chemicals, toughness, flexibility and ability to absorb shocks. PP is also cost-effective and suitable for food packaging. Drawbacks of PP include low temperature stability and UV sensitivity. Printing temperature of PP is

230-260 °C. PP filaments come in black, white and yellow colours and they are used in Fused Deposition Modeling (FDM) (Safka et al., 2016).

Figure 8. PP 3D printed objects.

PET is semicrystaline polymer useful for food and beverage packaging. It is rigid material, with good chemical resistance, 100% recyclable. Printing temperature for PET is between 75-90 ºC (Figure 9).

Figure 9. PET printed bottle.

Mixing PET with glycol gives PET-G filaments, more practical and useful for 3D printing. PET-G filaments exibit good temperature, chemical and stretch resistance, as well as good electrical properties. Optimal temperature for 3D printing of PET-G filament is 230-250 °C. PET-G printed objects are used in many fields, such as cases for electronic devices, containers etc. (Figure 10).

Figure 10. 3D printed cases for electronic devices based on PET-G.

Polycarbonate (PC) is durable, tough amorphous polymer with high strength and good temperature resistant. PC is resistant to any physical deformation until around 150 °C, but has tendency to absorb moisture from the air, which can affect its printing performance. The main fields of application of PC are engineering, electronics, any other fields where transparency and durability are required (Figure 11). Printing temperature is very high, between 290 and 300 °C (Safka et al., 2016).

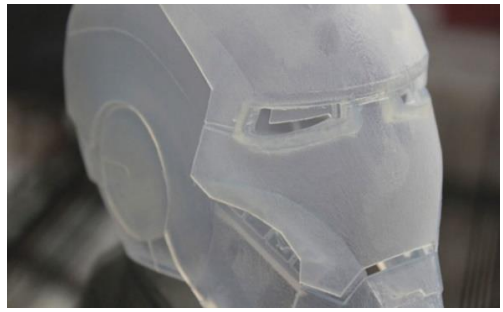

Figure 11. PC 3D printed object.

PA are semicrystalline polymers, tough, flexibile with good shock resistance, which provides many applications of theses polymers in automotive industry, robotics, aerospace market, manufacture of gears etc. (Figure 12). Polyamides usually comes in form of powder, therefore 3D printing is carried out by SLS method. However, nylon is also available in filaments, so the FDM is used for its processing. Printing temperature for polyamides is between 220 and 250 °C (Safka et al., 2016).

Figure 12. PA 3D printed object.

ASA is amorphous polymer that combines good mechanical strength, dimensional stability, UV and chemical resistance, making it suitable for outdoor applications and automotive industry (Figure 13). ASA comes in filaments and being printed at about 250 °C.

Figure 13. ASA 3D printed object.

PLA is fully biodegradable thermoplastic polymer. It is one of the easiest materials to print, with good strength; it is simple to use and comes in different coloured fillaments, suitable for FDM printing method (Figure 14). PLA is renewable, low cost, but with low heat resistant, which makes it inconvenient for outdoor applications. During the 3D printing, PLA is heated to between 190 ºC to 230 ºC and it is suitable for architectural mock-ups and complex educational models. High hardness and very low shrinkage make PLA suitable for 3D printing high-quality parts and consumer goods. PLA is suitable for fabrication of 3D prototypes and educational tools, because of low cost and printability (Gkartzou et al., 2017).

Figure 14. PLA 3D printed object.

Thermosets and elastomers

For processing of thermoset polymer materials via 3D printing method the most suitable method is the digital light processing (DLP) according to stereolitography. DLP method is modificated stereolithography metod, because they are both based on applying of photopolymerization principles (Melchels et al., 2010). DLP method uses a conventional DLP projector as a light source, which projects a two-dimensional (2D) image into a light-curable resin in a vat, in te first step. Epoxy and acrylate resins are the most used thermoset materials in 3D printing. Elastomer materials used in 3D technology are usually being processed by PolyJet printers. This 3D technology made parts by pouring out photopolymer droplets onto a build platform and solidifying them by UV light. This technique allows creation of complex parts using elastomer materials such as liquid silicone rubber.

Polymer composites

Different types of polymer matrix can be used for tailoring of composite materials. Micro and nano sized particles as well as fibers (natural and synthetic ones) are used as filler component in polymer composites. The composite materials based on iron particles and thermoplastic polymers such as nylon (Masood et al., 2004) and ABS (Sa'ude et al., 2004) were investigated.

ABS is also used as polymer matrix in composite materials with copper, carbon black, strontium titanate and alumina (Torrado et al., 2015). Senatov et al. prepared scaffold based on PLA and hydroxyapatite using FDM printing method which can be used as self-fitting implant for small bone replacement (2016). Group of authors have demonstrated the possibility of the use of jute fibers as reinforcement for thermoplastic composite filaments which can be processed by FDM printing method. As polymer matrix they have used well researched polymers in 3D printing technology such as ABS, PLA (Matsuzaki et al., 2016). Synthetic fibers which are investigated in combination with ABS, nylon and PLA are carbon, glass and Kevlar fibers (Tekinalp et al., 2014, Chen et al., 2017). Modeled on balsa wood, scientists from Harvard have created a new composite material based on epoxy resin containing nano clay particles, silicon carbide fillers and carbon fibers. The material is printed to looks like a honeycomb – small density and high mechanical strength due to epoxyde matrix.

3D PRINTING IN EDUCATION

Due to the accessibility and affordability on the market, 3D printers with its technological potential became available in the classrooms and in the process of improvement of teaching and learning. Whole 3D printing process from an idea to modeling and producing a model is helpful in conceptualization and visualization. Usage of 3D printers in the classroom combines science, technology, engineering, math but also has aesthetic and artistic aspect which makes 3D printer excellent tool for supporting STEAM concept which combines Science, Technology, Engineering, Art and Mathematics to empower students in the developing competences such as inquiry or critical thinking. 3D printing is certainly a tool that could be helpful in developing 21st century skills of students (Becker et al., 2018). Activities during 3D printing are close to the reality, usually based on solving real-world problems which solution requires compliance of various disciplines (Cross, 2001). Together with 3D printers in the classrooms, education needs development of 3D printing teaching strategies, planning lessons that fit into the curriculum and meaningful integration that connects science, mathematics and technology in creative and constructive way in order to achieve educational goals (Novak et al., 2016). There are limited resources that provide instructions for 3D printing integration into the classroom which is for now an obstacle of effective use of 3D printers in the classroom (Kolodner et al., 2003). One of the research of 3D printing in classroom summarizes several benefits, but also challenges about this new technology. One of the obstacle in usage of 3D printing technology was that teachers need to have additional knowledge in advanced technology, while the second observed problem was that even though students possess knowledge in technology, the engagement with new technologies was not that easy as expected (Thibaut et al., 2018). As a potentially benefits, 3D printing in the classroom supports different teaching and learning styles, encourage students to be active and to explore, even though they have not been previously interested in such activities. Design experience improves their ability to solve problems, to learn from mistakes and find solutions (Kostakis et al., 2017). Also this kind of activities and projects help to the conceptual understanding of different things and to self-guided inquiry (Vones at al., 2018). In Figure 15. it can be seen students (age 13) in the process of printing models of Lego brick in Petro Kuzmjak school in Serbia in October 2019. In this activities students had to apply their knowledge related to the proportions and make a model of prism that would resemble to the Lego brick. In this process students by their initiative explored more information about Lego bricks, from the interesting playful facts to the mathematical facts and proportions. Collaborating together, students got 3D printed models of Lego bricks as it is showed in Figure 16.

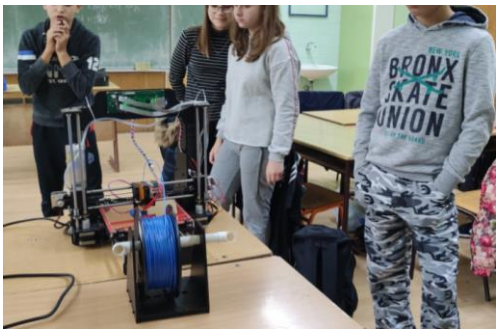

Figure 15. Students learn how to use 3D printer.

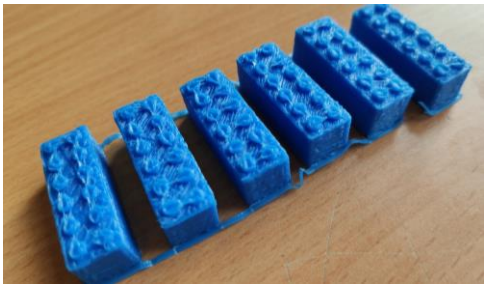
Figure 16. Final model of 3D printer Lego brick modeled by students.

CONCLUSION

From the previous it can could be concluded that the future of the 3D printing is positive in many aspects. It is evident that 3D printers are improving quality of life, making many things more assessable. Practical application of 3D printing and its technological advance impacts different fields from everyday life, from medicine, education to space research. Quick replication of objects has a possibility to change lives in the future for the better.

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THE INNOVATIVE APPROACH TO INTELLIGENT HELPDESK SYSTEMS DEVELOPMENT

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ABSTRACT

The paper examines the current state and the possibilities of using contemporary approaches and tools in HelpDesk systems development with the aim to examine its disadvantages. Disadvantages are accurately analyzed and the paper gives clear guidance how to eliminate them. It has been noticed that current design and development approaches have their own advantages and disadvantages. The application of the unified approach that combines the best individual characteristics of the existing approaches enables development of an automated HelpDesk system that is capable of expanding its own expertise. By combining unified aspect approach with the zero tolerance model driven approach, a new innovative approach to the development of a wide range of expert systems is obtained. This innovative approach is characterized by the highest possible degree of modularity.

The application of the aforementioned approaches has also enabled expansion and improvement of the existing expert systems used for servicing numerous companies operating in various fields of business.

Key words: HelpDesk systems development, object-oriented approach, aspect-oriented approach, intelligent information systems

INTRODUCTION

In today's business environment, the application of modern information technologies is crucial for each participant in the global market. Together with the products and services, the software solut/ions used for supporting businesses are becoming more and more complex. Therefore, modern tools and techniques for software development require constant expansion with the aim of designing and developing software solutions that will fully satisfy current customer requirements and give companies a strategic advantage in the market. The paper identifies service industries (e.g. insurance industry) as the key market place where these systems can be fully applied. HelpDesk system, integrated into information systems of the insurance companies, contributes to a large extent to quality of products and services and increases the level of general satisfaction of

employees and service users. For this purpose, tools and techniques for developing intelligent HelpDesk system have been identified through expansion of modern object-oriented technologies by tools that allow the dynamic manipulation of the new knowledge by the information system. Two well-known aspect-oriented approaches have been tested and their dominant characteristics have been combined, thus creating an original unified approach that helped to achieve the intended goals of the paper. In the paper, the implementation of the HelpDesk system in synergy with intelligent programs has been especially considered. The work of such a system is fully automated and expertise is greatly shifted from a man to a computer. By choosing the optimal algorithm for searching a database of questions, HelpDesk system is equipped with a powerful tool – neural network, which fully enables the aforesaid software functionalities.

In that context, the paper is organized in six sections. After introduction section, problem of development of contemporary intelligent information sytems with emphasis on HelpDesk systems is defined. Third section is dedicated to the previous researches of the problem and outline of a new software solution. Fourth section presents innovative development approach based on aspect-oriented software development that enables improvement of contemporary HelpDesk systems. Improvement of intelligent HelpDesk system in the case of insurance company achieved by the innovative development approach is analysed in fifth section. Final section presents conclusions regarding innovative development approach to building contemporary intelligent information systems like the HelpDesk system of insurance company that is taken as a case.

DEFINING THE PROBLEM OF INTELLIGENT HELPDESK SYSTEMS DEVELOPMENT

The last decade brought big changes in how to create and use business software. According to a number of authors (Ballou 2008), business software is the foundation of success in the competitive environment of the global economy. In contemporary industry software, development of software solution, and later its design and implementation, increasingly insist on the use of intelligent computing techniques. The application of these techniques can be found in the solutions to search large databases or Big Data (Curry, Kirda, Schwartz, Stuart, Yoran, 2013), predicting the movements of the major markets (Market Intelligence, 2016), and the transfer of certain management roles to such software systems (Sousa & Effy, 2014).

According to the group of the authors (Dunie, Schulte, Cantara, & Kerremans, 2015), business managers, and experts daily faced with the key challenge. They are expected faster and better decision making to support the modern concept of business - do more for a shorter period of time. Struggling with these challenges is crucial to the implementation of intelligent software solutions to support business operations. Modern information systems use more and more intelligent support for numerous business processes such as automation of hardware; production planning; planning and design of business processes; reducing system complexity; management of financial flows; inventory management; control of equipment and inventory; management of effective communication between employees, etc.

Of particular importance for this work is the identification of options for engagement of intelligent software tools and techniques to support communication between officers of the company and the management of different levels, and between service users and staff. Timely and prompt information in modern business is crucial to quality of this business. The component of information system that enables exchanging of information by scheme question-answer between the experts and other users of the system is called the HelpDesk.

Contemporary HelpDesk systems generally work on such way that the question posted on the page request is forwarded to the appropriate expert to

review and respond. From the moment of asking questions to get answers may take a long time, and this can result in a delay in the conduct of business, which is in modern business conditions unacceptable. When designing advanced software solutions developers often have tasks that have a common denominator - designed and implemented software must allow minimization of errors in operations caused by human activities and thereby ensure precise placement of current information. Thus, implemented software should provide a strategic advantage to the company that introduced it in its business. Guided by the above theses, this paper has focus on the analysis of the possible directions of improvement of modern HelpDesk system in service areas such as the insurance industry and creating their own solutions for the automation of their operation, relying on intelligent search techniques. Companies in the service areas lack such systems which would enable the identification of patterns of behavior of employees and service users, and therefore efficient management without the need for intervention by the various levels of management. In this way, it opens up a great field of study of intelligent information systems that can independently recognize new facts, create new knowledge based on the facts that automatically can be incorporated into its functionality without the intervention of a software development team. Therefore, it is necessary to innovate approach to the design and coding of application software for HelpDesk systems.

Of particular importance is the search for new tools and techniques which will enable dynamic knowledge management. Contemporary HelpDesk systems usually present the knowledge to users in the form of FAQ (Frequently Asked Questions) library. Enabling dynamic control of knowledge, HelpDesk system will be able to immediately respond to questions without human intervention – expert intervention. Also, by providing pattern - rule class obtained on the basis of existing expertise - knowledge base will be able to auto-expand with new specialized rules - rule objects. In this way intelligent information system capable of self-learning can be structured.

PREVIOUS RESEARCHES OF THE PROBLEM AND OUTLINE OF A NEW SOFTWARE SOLUTION

By the analysis of modern HelpDesk solutions, as well as the current object-oriented software tools, it is possible to reach the following conclusion: the knowledge base of this expert system, where HelpDesk system would find answers to customer questions, can not be created by default *if - then - else* scenario, because it is executable at the level of implementation of the software solution and can not result in the automatic building in of new knowledge into existing software solutions. Thus, the rules must take the form of class i.e. objects in a very loose connection with the class of existing software solutions that make it possible to think about their dynamic implementation in the existing software solution. As a possible direction in which to look for a solution, there is a young technique of designing and programming known as Aspect Oriented Software Development (AOSD), wherein of special relevance is works of the following group of authors:

1. The authors gathered around Gregor Kiczales (Kiczales et al. 1997; Kiczales et al. 2001) from Xerox - USA;
2. The authors gathered around Kiselev, 2003.
3. The authors gathered around Maja D'Hondt and Viviane Jonckers from Vrije University in Brussels, with special emphasis on the work by María Agustina Cibrán (Suvée, Vanderperren, Wagelaar, Jonckers, 2005.; Suvée, Vanderperren, & Jonckers, 2003; Cibrán, Suvée, D'Hondt, Vanderperren, & Jonckers, 2004; Cibrán, D'Hondt, & Jonckers, 2003; Cibran, 2007).

By research and analysis of works of the above-mentioned groups, it is possible to get a starting point for the development process of the planned software solution. The first two groups of authors have

experimented with the aspect-oriented tool known as AspectJ. Program code that is obtained by using this tool is almost identical to the Java code, extremely rapidly executed and linked, but had no ability of dynamically binding to an existing application. Detailed analysis of this tool is possible through the research works of the following authors: V.B. Griswold, E. Hilsdale, J. Hugunin, M., Kersten, J. Palm, G. Kiczales and the others from a Xerox Institute in the USA (Kiczales et al., 1997; Hilsdale, & Hugunin, 2004; Kiczales et al., 2001). In addition to these authors, this tool is studied by Hunt, 2006, and Kiselev, 2003. All these authors in their works represent a new form of software called *Council*, which is an innovative answer of the knowledge base on the request of the main control part of software solution. The authors from the Vrije University (Suvée, et al. 2005; Suvée, et al., 2003; Cibrán, et al., 2004; Cibrán et al., 2003; Cibran, 2007), experimented with a code which is known as a JasCo. Its features include: slower connections and execution, but the ability to dynamically binding to the existing software solution in scenarios: *before, around and after*, which are related to the time of application of the rules corresponding to the answer to question that is sent to HelpDesk system.

It is noted that each of these approaches has its advantages and disadvantages. Since it is based on the logic of open source, by additional development it is possible to combine the best individual characteristics and get the ideal tool for coding object rules. Thus, it is possible to use AspectJ as the basis for creating classes and objects rules in HelpDesk knowledge base that is expanded by the possibilities of dynamic application according to these scenarios. This would represent an original solution in the field of Aspect-oriented software development. This approach can obtain the name of the AspectJ + that was used in this paper. After selecting the optimal tool for the creation of a HelpDesk system knowledge base, it is necessary to define an innovative approach to the development of an information system that would be capable to dynamically manages its own knowledge. Innovation is reflected in the fact that modern object-oriented tools have not been able to independently cope with these problems, and it is necessary to use certain extensions such as Aspect-oriented tools. In this light, the path to the desired software solution is going in the following directions:

- Consideration of the author María Agustina Cibrán (2007), are respected and extended by introducing of a new domain language. At a high level, domain level, rules of HelpDesk knowledge base have been designed and coded by new domain language. By translating domain code in the implementation, we get the code of the highest possible degree of modularity, and this results in a possibility of dynamic integration of rules, tremendous speed of execution of software code and efficient removal of identified errors during testing;
- For searching objects of the knowledge base and discovering new knowledge, monotonic neural networks and optimal training algorithm are programmed. About this issue it is possible to make a detailed analysis on the basis of the work of the following authors: Rojas, 1996. and Cilimkovic, 2011. On the basis of the perceived shortcomings of their approaches and the shortcomings identified during the two years of exploitation of this new intelligent software solution (Milicevic, 2012), it is possible to find a better solution with optimal training algorithm;
- A software component called NDL/Generator that will code newfound knowledge by descriptive domain language is developed;
- A software component called Translator/AspectJ+ which will translate above described code into the objects rules and transfer it to the dynamic incorporation into the knowledge base is developed.

A particular challenge in creating this innovative software solution is to find an optimal algorithm for training of search

mechanism based on the monotonous mathematical function by which weighting factors of nodes in the hidden layer of neural network will be determined. Then, by using statistical tests (by mean square error) it should choose the ideal architecture of search mechanism which is reflected in the optimal number of nodes in the hidden layer of neural network. Of particular interest is the use of the selected search algorithm combined with the principle of recognition of natural languages (adjusted for new domain language rules), Zipf's law and the method of reserved words. Also, in the architecture of the neural network, software details known as *semaphores* (Zelenski, 2008) are built. It will have the task to synchronize processes of search mechanism. This is the way to eliminate the shortcomings identified in the two-year exploitation of this software solution on a large the number of search iterations. In addition, in this paper it is proposed the analysis of the model domain according to MDSD (Model Driven Software Development) approach which will be explained in the following section. All identified class rules from which subsequently objects are created, as well as appropriate links with part of software solutions for knowledge management are coded by domain language, which is very similar to the spoken language. In this way, it is possible the active participation of experts in various fields of software development, but they do not have to be familiar with the tools and programming techniques. This language is indicated as the NDL (New Domain Language) and represents a specialization of high-level language for the application in the coding of knowledge and its distribution through HelpDesk systems. As such, it also represents an original way of applying of high-level language in HelpDesk systems. On its basis, NDL/generator software component is developed. The component has the task to code discovered knowledge by NDL language from sample or set of questions forwarded via the HelpDesk system. The coding of knowledge is done by using the principle of reserved words and Zipf's law. Also, NDL/generator has the task to transfer this knowledge by translating into the code that corresponds to the programming language with appropriate aspect extensions. By creating NDL/generator it is set the basis for development of software components from the class of translator which directly translates new knowledge into executable program code. As we noted, this software component is called Translator/AspectJ+. With the support of this component, specific software transformation by which NDL code is translated directly into Java code expanded with AspectJ+ functionalities is created. In the research, transformation performances for translating relationships of object rules into Jasco and AspectJ+ aspects of the relationship are specifically tested. The test showed that the new AspectJ+ approach is dominant in terms of stability and speed of execution of software transformation.

IMPROVEMENT OF CONTEMPORARY HELPDESK SYSTEMS BY INNOVATIVE DEVELOPMENT APPROACH

Starting from the settings explained in the previous section, possible ways to improve intelligent HelpDesk systems considering their development based on contemporary and innovative approach has been identified and analyzed. As already mentioned, the improvement of these systems is achieved by the aspect-oriented software development (AOSD). The justification for the introduction of this approach to software development is found in inherited defects which refer to the degree of modularity of software and that the standard object-oriented approach has not been able to completely resolve. Therefore, it is shown that only software solution with a maximum degree of modularity and with minimal connections between their own modules can realize the dynamic expansion of the knowledge base without re-translation of software solutions. Thus, the knowledge base should be organized in the form of a set of classes (the pattern rules) from which it is

possible to create a large number of different objects rules. A particular problem is the realization of objects by which knowledge is connected with the central class of software solution. This is why it is necessary to choose the most suitable aspect-oriented approach that would enable dynamic linking of the new object rule with the application and keeping its pattern in the knowledge base. In this paper, in particular it is shown that the two-existing aspect-oriented approaches (AspectJ and JasCo) have disadvantages that can be eliminated by combining the best of their individual characteristics. In this way, the original, unified AspectJ + approach is obtained and the definition of object-oriented design pyramid is completed. Of particular importance is the evolution of the software design that relying on AspectJ + in combination with the analysis of the domain model. The evolution moves the object-oriented software development paradigm from MDE (Model Driven Engineering) approach to MDSD (Model Driven Software Development) approach, which can be illustrated as in Figure 1. However, in order to the definition of this unified approach would be fully completed, it is necessary to investigate the relevant advantages and disadvantages of AspectJ and JasCo approach. The criteria by which these approaches are tested is: performances and the ability of dynamic connection of object rules with the managerial part of software solution. Performances are directly linked to the speed of execution and stability of software solutions and related to the speed of response of a rule from the knowledge base, as well as the total duration of its engagement. It was observed that there is maintenance of proportionality between these quantities, for two different object rules by using a unified AspectJ+ approach. It has been proven that AspectJ aspects of the relationship are activated on average 18% faster than the JasCo aspects. That results in 24% less time on average of total duration of the engagement of object rules linked by AspectJ aspects in comparison to the identical object rules linked by JasCo aspects. On the other hand, by AspectJ aspects, dynamic linking of new knowledge is impossible to implement, as in the case with JasCo aspects. By redefining AspectJ aspects in a way that gives them the ability to manipulate patterns (classes of object rules) as in the case with JasCo aspects, mentioned disadvantages of AspectJ approach are eliminated. In this way, the original AspectJ+ approach that has negligible worse performance than the original AspectJ approach, but with the possibility of dynamic linking of newly discovered knowledge with part of software solution for knowledge management is obtained. Classes of the new approach are located in Java Web repository and can be freely used when developing various software solutions.

Innovative concept of software design derived from the domain model involves a two-way mode of software development: development of software code based on the model and reengineering model based on changes in the code. This is of particular importance for the development of quality software solutions, because during the process of domain analysis it is possible actively engage experts who better understand the business than programmers and software developers. By defining high-level language (domain language) on domain level in the form of programming language that is close to english language, the presentation of business rules and their relationship with the core of software solution is allowed. A precise definition of the grammar of the language enables linking of its instructions with instructions built into the appropriate object rules. The linking is achieved by special Java classes that support the software transformation related to translation of model code to executable code of the programming language. This is a key part of improving HelpDesk system, because it sets the basis on which an intelligent algorithm searches the text sample (set of questions) and by a pattern (a set of classes in knowledge base) gives the answer to the question asked via HelpDesk system.

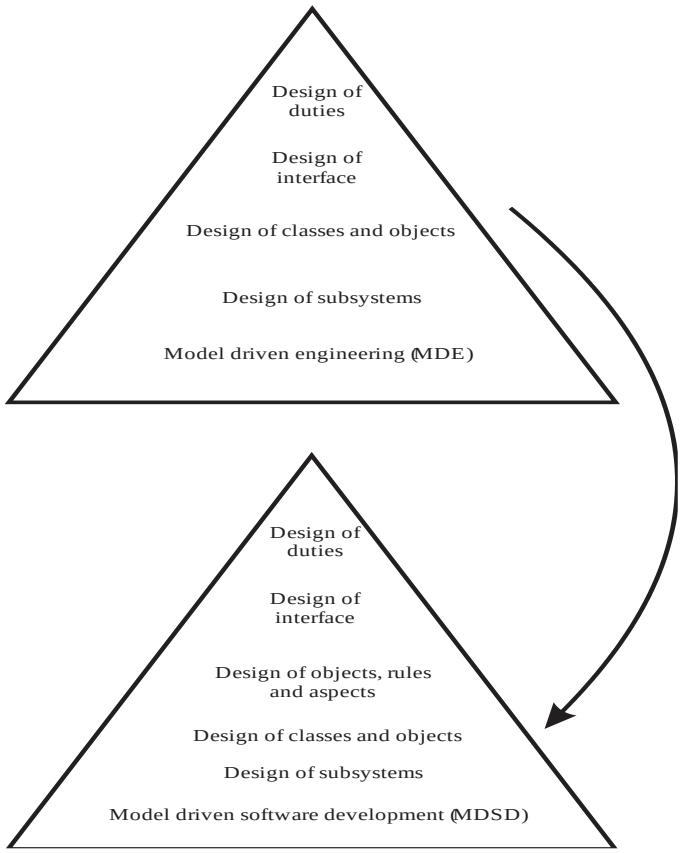

Figure 2. Evolution of the extended pyramid of object-oriented software development

In the development of innovative software solutions for HelpDesk systems, in addition to object rules and links, the concept of the event or a scenario under which the business rule is activated and comes to the application of its logic by central class of software solutions is introduced. To start rules apropos creation of an object rule from the appropriate pattern, the trigger class is used. The trigger class manipulates the following values: activation of the link, time of application of the rule and the time of joining the necessary information to rule. Especially, in order to a text sample (set of questions), through the code of high level, could be expressed as an executable knowledge (classes and rule objects), it is necessary to define quality and complete set of software transformations for translation of the language domain into the executable Java and AspectJ+ program code. A set of classes enables automatic translation of business rules and links, expressed by domain language, into the corresponding Java object rules and AspectJ+ link aspects. This set of classes builds a unique software component of HelpDesk system, called Translator/AspectJ+. Also, these classes are available to developers via Web Java repository in which are housed after testing. In proving the benefits of this software solution, of particular importance was the performance testing of translator with AspectJ+ functionalities in relation to the Translator/JasCo which was created on the basis of transformation proposed by Cibran, 2007. It was noted, and shown that AspectJ+ transformations use, on average, about 10% less processor time, which is another advancement in development of the mentioned classes of software solutions. It

should be noted that for each of the high-level NDL instruction, specific transformation is defined. The instructions received their own object-oriented or the aspect-oriented representation considering the instructions of object rules or aspect links, respectively. In particular, during the transformation of high-level code, it is insisted on the management of software exceptions. In the definition of the class of rules, and therefore objects of these classes, the logic of business rules is implemented through software blocks: *try ... catch*. On the basis of the trigger event, the logic of rules is executed with a permanent monitoring of system behavior by appropriate system classes called *listeners*. In this way, the cancellation of the building rules is avoided in the case of unexpected system events, and this results in the improvement of the degree of reliability of classes and appropriate objects of knowledge base. After the presentation of the transformations by which the business rules are translated into objects of rules, and their links to the correspondent aspects, translation of the specific rule by software component of Translator/AspectJ+ is demonstrated. The rule is taken as a question asked through HelpDesk system and analyzed as a text sample. Finally, a business rule is created in the domain language by using software components called NDL/Generator. The output from this set of classes takes a new set of classes (Translator/AspectJ+) that automatically creates executable program code for realizing the answer to this question.

IMPROVEMENT OF INTELLIGENT HELPDESK SYSTEM IN THE CASE OF INSURANCE COMPANY

Development of intelligent HelpDesk system based on described innovative aspect-oriented approach is demonstrated on the example of company in the field of insurance. In doing so, existing known intelligent software solutions with the perceived shortcomings of the search engine are taken into account. With the aim of eliminating the above drawbacks, competitive software concepts called *semaphores* are included. In addition, the architecture of software solution has the following components:

- the server side with the core of application, and databases and knowledge bases;
- PC and mobile client side;
- backup on the cloud server;
- improved search algorithm.

Testing of the functionality of the system is performed by taking concrete rules through HelpDesk system. Two questions are passed through the system with the aim of approving compensation claims from injuries incurred at the workplace and as a result of traffic accidents. The system generated two rules and then sent the answers to the address from which the questions were asked, in a very short period of time. After demonstration of the functionality of automated HelpDesk system, it was necessary to describe a key component of the system which enables search a set of questions and identifying existing and new knowledge. As the ideal solution it is imposed the backwards search algorithm for training a neural network that searches sample. At the outset, it is pointed out the shortcomings of this algorithm, which have been identified through a multi-year exploitation of the specific examples of searching. The main drawback of this algorithm is reflected in the high level of cancellations, after a number of iterations, due to congestion caused by software processes. By integrating the semaphores at key points in the algorithm, we get a complete synchronization of processes, and this results in the execution of the backwards search algorithm, smoothly and without interruption. The special quality to improved the backwards search algorithm gives the fact that after modification, requires 20% fewer neurons, and thus the software instructions, in the hidden layer of the network to perform the same tasks. This represents a significant shift in performance compared to a conventional backwards search algorithm whose implementation can be found in numerous scientific and professional literature and in various

examples. In order to provide the necessary maximum degree of modularity of this information system, a tool for object-relational mapping by which the data retrieved from the database is delivered directly to the objects of core software solution is used. In this way, the traditional relational database management is replaced by the object-relational tool (Hibernate ORM) to achieve the software functionalities. HelpDesk system in the mentioned insurance company has implemented by a prototype method. The first, the functionality of managerial part on the server side of information system was achieved, and subsequently two client components (PC and mobile clients) were implemented. Thus, developed system was tested under two scenarios: 1) the response time to questions asked via the HelpDesk system without intelligent support; 2) response time to questions asked via the HelpDesk system with intelligent support. Through the client software components, the 1000 different questions are sent to HelpDesk system. In the first case, without intelligent support, about 20% of the total number of questions is not resolved until the end of the current business day and longer. The system with intelligent support has solved all issues by processing which lasted less than 10 minutes. Obviously, the software solution with intelligent search proved dominant qualities that lead to: a higher degree of efficiency and effectiveness of business; lower operating costs; a higher degree of satisfaction of system's users based on higher speed of getting information and a short time of solving their requests etc. Finally, in the case of insurance company, the methodology of development of business software solutions by advanced object-oriented tools with the aspect extensions is demonstrated and the upgraded intelligent HelpDesk system is implemented. In addition, a unified approach to define rule objects through the combination of the dominant characteristics of existing approaches is developed. Therefore, it is possible to extend and improve the existing expert systems by proposed tools and techniques. Also, an innovative approach to the development of a wide range of expert systems is defined. Following figures are showing the process of including dependencies, developed in this approach, which are essential for this type of software solutions.

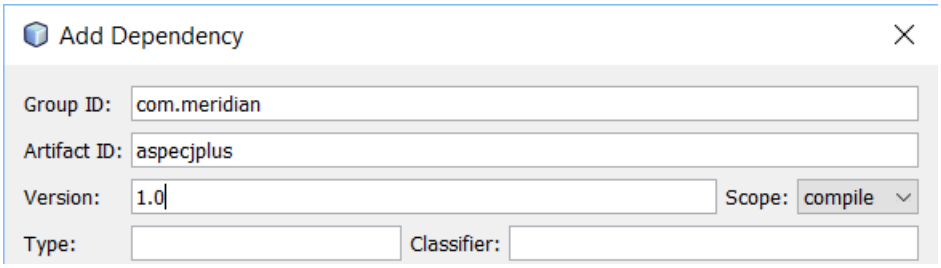

Figure 3. Adding of the AspectJ+ prototype dependency

```
<dependencies>

    <dependency>
        <groupId>org.hibernate.java-persistence</groupId>
        <artifactId>jpa-api</artifactId>
        <version>2</version>
    </dependency>
    <dependency>
        <groupId>com.meridian</groupId>
        <artifactId>aspectjplus</artifactId>
        <version>1.0</version>
    </dependency>
    <dependency>
        <groupId>javax</groupId>
        <artifactId>javaee-web-api</artifactId>
        <version>7.0</version>
        <scope>provided</scope>
    </dependency>
</dependencies>
```

Figure 4. List of essential dependencies, in code, for this type of software solutions

CONCLUSION

This paper deals with a hybrid intelligent information system capable to automatically recognize new knowledge from the relevant sample (set of questions), to code it and dynamically incorporate into the existing knowledge base (a set of possible answers). The paper is the search for an answer is it possible to provide a technique of designing and programming for the development of information system that from available domain automatically recognizes the new business rules and their relationship, codes them and automatically on the most flexible way, connects them with their own yet functional part for knowledge management.

In this context, of particular importance is the choice of technologies and tools for the development of intelligent HelpDesk system, where two approaches are compared: JasCo and AspectJ. For both approaches, performance of rule response and the duration of the process of rule execution were tested. It is shown that one approach provides better performance (AspectJ) while the second approach (JasCo) enabled dynamic incorporation of new rule objects in existing software solution. By combining the best individual characteristics of these approaches, the original approach called AspectJ+ is created. This approach also has been tested in the same way as the previous two approaches, with the comparison of performance in relation to JasCo approach. Its features associated with dynamic linking of new knowledge and operational software solutions are adopted.

This paper on the example of HelpDesk system of insurance company showed that it is possible to create intelligent information system that automatically recognizes the new business rules from the available domain and their connections, codes them, and automatically on the most flexible way, links them to its own component of knowledge management. By combining the dominant features of a representative aspect-oriented approaches to the development of information systems it is possible to develop improved tool for solving problem of connection of rules with the core of system. Design based on the latest MDSD approach provides expression of executable rules of

high level and the corresponding connections.

In addition, the paper has shown that an effective connection and the highest level of modularity can be provided through encapsulation of rules and connections in Java rule objects and AspectJ+ connection aspects. By backward search algorithm that is improved by application of semaphores, and the method of reserved words, it is possible to train a neural network to automatically identify the business rules from the relevant sample.

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BREGZIT - OPASNOST ILI ŠANSA ZA VELIKU BRITANIJU?

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SAŽETAK

Politički i ekonomski aspekti svake zemlje međusobno su isprepleteni i uslovljeni. Od njihovog balansa, kratkorčnih ciljeva i dugoročnih vizija, zavisi i raspodjela nacionalnog suvereniteta u svim njegovim aspektima. Priključivanje procesu evropske integracije za zemlju kao što je Velika Britanija bio je izazov koji se našao u direktnoj suprotnosti sa njenim jako izraženim osjećajem za nacionalni identitet. Ekonomski napredak zajedničkog tržišta na Starom kontinentu uticao je da početkom sedamdesetih godina prošlog vijeka nacionalni identitet bude djelimično žrtvovan u korist ekonomskog rasta i odluku da se Velika Britanija priključi Uniji.

Međutim, osjećaj posebnosti i okrenutost, u političkom i kulturnom smislu, ka anglosaksonskoj tradiciji uzrokovali su stalno tinjajući evroskepticizam. Globalna recesija i potreba za jačanjem međusobne solidarnosti u evropskom prostoru intenziviraće preispitivanje ispravnosti odluke o članstvu u Uniji. Unutrašnji politički odnosi su sa svoje strane doprinijeli jačanju kampanje protiv članstva. Desio se referendum i Britanci su odlučili da, ipak, žele da idu svojim putem. Sa stanovišta ekonomske dobrobiti, ovo ne izgleda kao racionalna odluka. Evidentno je da je nakon više od četiri decenije ponovo nađen balans između političkih i ekonomskih ciljeva, ovaj put u korist nacionalnog identiteta, iako posmatrač sa strane u ovom momentu ne vidi političku opravdanost takve odluke. Izgleda da je ne vidi ni dio britanskog društva, pa je poces izlaska spor i nepredvidljiv, a javljaju se i naznake ponovnog preispitivanja odluke o napuštanju EU.

Ključne riječi: Bregzit, Evropska unija, nacionalni identitet, političke posljedice, ekonomski efekti.

UVOD

Velika Britanija je, prije svega, zbog svoje političke kulture i vrednovanja nacionalnog suvereniteta, dosljednosti politici samo povremenog uključivanja u problematku u kontinentalnoj Evropi, te smatrajući sebe posrednikom između SAD i Evrope, od početka procesa evropskih integracija izbjegavala blisko uključivanje da ne bi ugrozila svoju ekonomsku orijentaciju ka Komonveltu (Milward, 2002). Ipak, ekonomski razlozi uzrokavaće već početkom šezdesetih godina prošlog vijeka promjenu

britanskog odnosa prema evrointegracijama. Dok je EEZ napredovala, Komonvelt i EFTA nisu zadovoljili britanske interese. „Kada su Britanci vidjeli da njihov dohodak u periodu 1958-1969. rastao za 38%, a u zemljama EEZ 75%, promijenili su svoj stav prema ulasku u EEZ“, (Prokopijević, 2009, str. 22). Velika Britanija, Danska i Irska su, do danas, jedine članice Unije koje su tri puta aplicirale za članstvo. De Gol je dva puta rekao „ne“ ističući da je Velika Britanija željela da pristupi pod njenim sopstvenim uslovima, te da bi njenim ulaskom EZ postala „kolosalna atlantska zajednica pod američkom dominacijom i upravljanjem“ (Dinan, 2009, str.69). Nakon De Golovog odlaska sa vlasti, na britansko članstvo u EZ će se sasvim suprotno gledati, ona će biti potrebna da bi se osigurala protivteža sve jačoj Njemačkoj (Nugent, 2004, str. 23).

Velika Britanija je imala ono što više nijedan kandidat u procesu proširenja neće imati; jaka demokratska tradicija i istorija bili su glavni britanski adut za prijem u Zajednicu (Barnes, 2010, str. 420). Tako su 1973. god. Velika Britanija, Danska i Irska ušle u EEZ, ali na potpuno „pogrešnoj pretpostavci, da je biznis u Zajednici samo stvar ekonomije, a ne politike“ (Jovanović, 2004, str. 712).

RAZLOZI BREGZITA

Kada se posmatra proces koji je doveo do Bregzita možemo izdvojiti nekoliko ključnih faktora:

- Jedan od primarnih razloga za Bregzit, sa političkog aspekta, je sam britanski pristup međunarodnim odnosima. Kao jedna od sila pobjednica iz Drugog svjetskog rata, Velika Britanija je sebe vidjela isključivo kao „globalnu silu čiji su spoljnopolitički prioriteti bili odnosi sa Sjedinjenim Američkim Državama i sa zemljama Komonvelta (Dinan, 2010, str. 32).
- Ekonomska integracija u okviru Unije je došla do tačke kada je morala biti praćena i tješnjom političkom integracijom. To je značilo gubljenje dijela nacionalnog suvereniteta, što je za nacionalni identitet Britanaca bilo nepojmljivo.
- Članstvo u Uniji je zahtijevalo usklađivanje sa EU zakonodavstvom što su Britanci doživljavali kao preobimno regulisanje i rušenje njihovog suvereniteta.
- Nije im bilo po volji ni doseljavanje velikog broja ljudi iz drugih zemalja, oko 500 hiljada godišnje i to najmanje polovina njih iz drugih članica EU.
- Velika Britanija je, budući da ima visok BDP, velike iznose sredstava uplaćivala u zajednički budžet Unije, a zahvaljujući, prije svega, poljoprivrednoj politici ta sredstva su odlazila ka članicama koje u imale veće poljoprivredne potencijale.
- Jedna od četiri slobode podrazumije-vala je i slobodu kretanja i istovjetna socijalna prava za sve stanovnike EU bez obzira u koju državu članicu odu. Ovakav status, posebno za nove članice iz Istočnog proširenja, nije blagonaklono prihvaćen u britanskom društvu. Ovo posebno zbog činjenice da su tradicionalno oslonjeni na migrante iz zemalja Komonvelta.
- Tokom 2007. i 2008. velika ekonomska kriza je zahtijevala da ekonomski jače države snose teret budžetskog deficita ekonomski slabijih članica. Ovo je značilo dalje zadiranje u sredstva UK.
- Nakon Blerovog odlaska, Kraljevstvo se u bezbjedonosnom smislu okreće tješnjoj sardanji sa SAD i NATO, a protivi se jačanju samostalne evropske odbrambene politike.
- Na parlamentarnim izborima 2010. godine pobjedu odnose konzervativci, a funkciju premijera preuzima vođa konzervativaca, Dejvid Kameron. U naredne četiri godine rejting konzervativaca drastično opada, pa Kameron odlučuje da igra na kartu evroskepticizma, te u januaru 2013. godine obećava da će, ako njegova Konzervativna stranka pobijedi na opštim izborima 2015. godine, prvo sprovesti nove pregovore o uslovima članstva u Uniji, a potom do kraja 2017. održati referendum o ostanku UK

u Evropskoj uniji, ali pod novim uslovima. Politički analitičari su ovakav Kameronov potez tumačili kao igranje evropskim statusom UK zarad unutrašnjih političkih poena.

Ovo su, barem deklarativno, razlozi za Bregzit. Njima je posvećena najveća pažnja u okviru ovog rada. Upravo to je korijen njihovog kasnijeg odustajanja od nekih ključnih projekata procesa evropskih integracija. Velika Britanija (VB) nije bila zainteresovana za učešće u Evropskoj zajednici za ugalj i čelik jer je imala vrlo razvijenu industriju uglja i čelika. Nije učestvovala ni u Evroatomu koji je doživljavala kao „ugrožavanje sopstvene atomske moći" (Prokopijević, 2009, str. 22), niti se uključila u projekat o evropskoj ekonomskoj zajednici. Dok su zemlje Šestorke uglavnom trgovale između sebe i odgovarala im je ideja EEZ-e, najveći dio britanske trgovine odvijao se sa neevropskim zemljama. Pored toga, imala je posebne trgovinske odnose sa zemljama Komonvelta koji su podrazumijevali i preferencijalne uslove koji nisu bili dostupni drugim trgovinskim partnerima. Odmah na početku članstva, 1975. godine, dolazi do ponovnog pregovaranja o uslovima članstva gdje su UK dati znajčajni ustupci. Međutim, i pored toga, u junu 1975. je održan prvi referendum u istoriji Ujedinjenog Kraljevstva na kome su građani glasali za ostanak u EEZ, 67,2% građana glasalo je „za", a 32,8%, protiv. Velika Britanija je do danas ostala jedina država članica koja je održala referendum o povlačenju iz Zajednice. Slijedilo je doba Margaret Tačer, period ekonomske i političke stabilnosti u Uniji i Velikoj Britaniji praćen snažnim privrednim rastom. 1997. godine, nakon osamnaest godina provedenih u opoziciji, na vlast dolaze laburisti predvođeni Tonijem Blerom koji je u svojoj destogodišnjoj vladavini u velikoj mjeri promijenio britansku poziciju u EU. Britanija je tada vodila aktivnu evropsku politiku, čak podržavajući nezavisnu bezbjednosnu ulogu EU, što je s obzirom na njenu vezanost za SAD bilo prilično neočekivano. Nakon Blerovog odlaska sa vlasti, nijedan lider više neće biti toliko okrenut ka EU, a uskoro će se osjetiti i prve posljedice ekonomske krize iz 2008.

TOK BREGZITA

Kameron je ušao u pregovore sa EU koji su rezultirali Zaključcima Evropskog savjeta, 18-19.02.2016. u kojima se ističe: da VB neće biti primoravana da uvodi evro, ali ni da finansira pomoć ostalim članicama Evrozone u slučaju krize („..krizne mjere osmišljene za očuvanje finansijske stabilnosti europodručja neće podrazumijevati budžetsku odgovornost za države članice čija valuta nije euro"). U području suverenosti data je potvrda VB da nacionalna sigurnost ostaje odgovornost svake članice posebno, potvrđeno je da VB ne mora biti predana daljoj i tješnjoj integraciji u EU, te da radnici iz ostalih zemalja članica prvih nekoliko godina nakon dolaska u VB neće imati pravo na socijalne naknade i dr. (Evropski savjet, 18-19.02.2016). Smatrajući da su dogovoreni uslovi dobri za nastavak britanskog učešća u EU i da joj garantuju „poseban status" unutar EU, Kameron je bio glavni zagovornik ostanka i vodeća ličnost kampanje „*Remain*" (16 članova njegovog kabineta uključujući i Terezu Mej su podržali ostanak). Vladajuća Konzervativna stranka bila je podijeljena oko ovog pitanja i zvanično je tokom kampanje ostala neutralna, dok su laburisti bili za ostanak. Najpoznatiju kampanju za napuštanje EU, zvanu „*Leave*", vodili su UKP, te dio laburista i konzervativaca, od kojih je, uz N. Faraža, najistaknutiji bio gradonačelnik Londona, Boris Džonson, jedna od najkontroverznijih ličnosti savremene britanske političke scene.

Na referendumu održanom 23. juna 2016. godine građanima UK postavljeno je pitanje: *„Should the United Kingdom remain a member of the European Union or leave the European Union?"* Od 46.500.001 registrovanih glasača na izbore je izašlo preko 30 miliona građana, što je najveći odziv u UK još od izbora 1992. godine. Od toga 51,89% glasalo je za za izlazak iz EU, dok je 48, 11% bilo za ostanak u EU. To je

razlika od 1.269.501 glas u korist izlaska iz EU (Results and turnout at the EU referendum, 2016). Ovakav ishod referenduma izazvao je isti dan Kameronovu ostavku na mjesto premijera i vođe konzervativaca. Njegova nasljednica, Tereza Mej, 29. marta 2017. godine pokrenula je aktiviranje člana 50. Ugovora o EU što je značilo da Velika Britanija mora da napusti EU do 29. marta 2019. godine.[1]

Pregovori o Bregzitu zvanično su započeli godinu dana nakon referenduma, 19. juna 2017. godine. Konačno, na vanrednom sastanku Evropskog savjeta, 25.11.2018. godine, lideri EU zvanično su prihvatili tj. potvrdili *Sporazum o povlačenju Ujedinjenog Kraljevstva Velike Britanije i Sjeverne Irske iz EU i Evropske zajednice za atomsku energiju* (kako su ga utvrdili pregovarači EU i UK-a) i odobrili *Političku izjavu kojom se uspostavlja okvir za buduće odnose EU i UK*, u kojima se kaže da u pogledu ekonomskih tj. privrednih odnosa Evropski savjet potvrđuje svoju spremnost da započne s radom na uravnoteženom i opsežnom sporazumu o slobodnoj trgovini pod uslovom da postoje garancije za osiguravanje jednakih uslova. Taj će se sporazum dovršiti i sklopiti kada UK više ne bude država članica. Takav sporazum, ipak ne može nuditi iste prednosti koje nudi članstvo i ne može se izjednačiti sa sudjelovanjem u jedinstvenom tržištu ili njegovim dijelovima. Pri tome je EU zauzela čvrst stav da „neće biti sporazuma o povlačenju bez čvrstog, operativnog i pravno obavezujućeg zaštitnog mehanizma za Irsku i objavit će zajedničku političku deklaraciju u kojoj će što jasnije odrediti buduće odnose sa VB“ (Zaključci Evropskog savjeta, 19-20.09.2018.) što se mora postići do kraja prelaznog perioda. Sporazumom je utvrđen je prelazni period koji počinje, kada se sporazum o povlačenju ratifikuje, na dan povlačenja Velike Britanije (tj. 30. marta 2019. – dan Bregzita) i načelno završava 31. decembra 2020. (predviđeno je produženje prelaznog razdoblja uz uzajamnu saglasnost EU-a i VB do najviše dvije godine, tj. do kraja 2022. godine). U ovom periodu bi došlo do postepenog isključivanja VB iz pravnog sistema EU. Dogovoreni sporazum je predviđao i tzv. *Backstop* – zaštitni mehanizam za izbjegavanje tvrde granice između Sjeverne Irske i Irske, to jest da Sjeverna Irska ostaje u carinskoj uniji sa EU ako se do kraja prelaznog perioda ne postigne sporazum o budućim odnosima UK i EU.

Nakon ovako dogovorenog sporazuma je trebao da uslijedi postupak ratifikacije sporazuma prvo u britanskom, pa u Evropskom parlamentu čime bi se omogućilo uređeno povlačenje VB iz EU. Ovdje treba dodati da Evropski sud pravde, prema odluci iz decembra 2018. koja je donijeta dan prije prvog planiranog glasanja u britanskom parlamentu o sporazumu o uslovima izlaska, smatra da VB može jednostrano povući svoju odluku o napuštanju EU sve dok se formalno ne zaključi sporazum o njenom izlasku. To znači da ona može povući aktiviranje člana 50. Ugovora o EU jer bi suprotno bilo ikompatibilno sa pravom i načelima EU, tj. da takve suverene odluke zavise od saglasnosti drugih država članica, pri čemu se ističe i da u slučaju opoziva odluke o Bregzitu, VB ne bi smjela biti kažnjena.

Za Britance je bila neprihvatljiva ideja da bi Sjeverna Irska mogla biti tretirana drugačije od ostatka UK, oni ne žele dijeljenje UK i narušavanje njegovog integriteta. Otpor je prvobitno izazivala i činjenica da Backstop nije vremenski ograničen što bi Veliku Britaniju moglo vezati za Uniju na duži period. Ovaj sporazum je u britanskom parlamentu odbijen tri puta, treći put čak i nakon dodatnih ustupaka Unije, što je rezultiralo unutrašnjim političkim previranjima u britanskom društvu i pripremanju na izlazak

[1]U članu 50. Ugovora o EU stoji da: „Svaka država članica može odlučiti da se, u skladu sa svojim ustavnim pravilima, povuče iz EU. Svoju namjeru saopštava Evropskom savjetu. U svetlu orijentacije Evropskog savjeta, Unija, pregovara i zaključuje sporazum sa tom državom, kojim se utvrđuje način njenog povlačenja, vodeći računa o okviru njenih budućih odnosa sa Unijom. ...Ugovori prestaju sa se primjenjuju na dotičnu državu počev od dana stupanja na snagu sporazuma o njenom povlačenju ili, ako to nije navedeno, dve godine posle dostave obavještenja iz tačke, osim ako Evropski savjet, u dogovoru sa dotičnom državom članicom, jednoglasno odluči da se taj rok produži.

iz EU 31.10.2019. bez sporazuma. U međuvremenu je novi britanski premijer Boris Džonson, iako nema većinu u Parlamentu, uspio dogovoriti revidirani sporazum o izlasku (i to samo nekoliko sati prije početka samita Evropskog savjeta 17. oktobra) u kome su obje strane popustile i postignut je dogovor koji bi omogućio uređen izlazak UK iz EU.

U vezi sa Sjevernom Irskom, ključnim pitanjem Bregzita, dogovoreno je da ona jednim dijelom ostaje u jedinstvnom tržištu EU, ali ostaje i dio carinske teritorije VB. Četiri godine nakon sprovođenja sporazuma, skupština Sjeverne Irske može odlučiti hoće li takav aranžman ostati na snazi (Zaključci Evropskog savjeta (član 50.) od 17.10.2019). Ključna razlika u odnosu na raniji sporazum (prijedlog Tereze Mej) je da Velika Britanija ima pravo samostalno da odstupi od nekih rješenja sporazuma nakon određenog vremena bez saglasnosti EU, što ranije nije bilo moguće. Džonson je pristao da plati britanske finansijske obaveze prema EU koje su procijenjene na 39 miljardi funti. Vanredna sjednica parlamenta održana je u subotu, 19. oktobra 2019.[2] Parlament je umjesto da prihvati sporazum, kako je Džonson očekivao, usvojio amandman kojim se odlaže glasanje o sporazumu dok se ne ostvare legalne pretpostavke za implementaciju svih tačaka sporazuma. Ovo znači i da je premijer ponovo morao od Evropskog savjeta da traži odlaganje Bregzita, što je Džonson doživio kao težak poraz. Rok za izlazak je ponovo pomjeren, ovaj put do 31. januara 2020. godine.

EKONOMSKI ASPEKTI BREGZITA

Bregzit znači da će Unija izgubiti drugu, poslije Njemačke, najjaču ekonomiju iz njenog sastava čiji je BDP oko 18% ukupnog BDP EU i zemlju u kojoj živi oko 13% stanovnika Unije. Dohodak po glavi stanovnika ove stalne članice Savjeta bezbjednosti veći je oko 39% od prosjeka ove veličine na novou E-28. Stopa realnog godišnjeg rasta iznosi 2,5%, dok je prosjek na novou Unije 1.9% (Berthold i Jürgen, 2016, str. 9).

S druge strane, VB više uplaćuje sredstava u budžet EU nego što njeni poslovni i javni subjekti posredstvom raznih projekata i programa povlače budžetskih transfera. Ukupan doprinos budžetu EU iznosi oko 0,5% GDP VB. Odgovorno vođenje politike podrazumijevalo je da se urade naučne studije koje će prednosti razdruživanja dokazati na naučnim premisama, a intersantno je da najpesimističnija studija predviđa dobrobit VB od izlaska iz EU čak od 11,5% BDP, dok je drugi ekstrem pokazivao da je dobrobit od ostanka u EU 20% BDP. Ovako veliki raspon u krajnjem ishodu, upućuje da su korišćeni modeli nepotpuni i da nisu u obzir uzete sve potencijalne koristi, odnosno štete (Berthold i Jürgen, 2016, str.57), a upućuju i na sumnju da su neki zaključci bili politički motivisani. Revizija zaključaka, većeg broja obuhvatnijih studija pokazala je da su za Veliku Britaniju od izlaska iz EU evidentne štete, ali da se one kreću u rasponu 1-3% BDP (Berthold & Jürgen, 2016, str.58).

Prema studiji OECD, kratkoročni gubitak (do 2020. godine) iznosio bi 3,3% BDP VB, dok bi dugoročno gledano (do 2030. godine) ovaj gubitak bio oko 5,1% BDP, pri čemu je u optimističkoj varijanti 2,7, a u pesimističkoj 7,7% BDP (Kierzenkowski, Pain, Rusticelli, & Zwart, 2016, str. 7).

Prema procjeni ekonomista u Goldman saksu, VB od referenduma do danas gubi sedmično oko 600 miliona funti ili ukupno 2,4% BDP i to prevashodno usljed smanjivanja investicija i privatne potrošnje (Financial Times, 2019). S druge strane, banka Engleske (eng. *Bank of England*) kako piše Bloomberg predviđa da će u slučaju izlaska bez sporazuma pad BDP u UK biti oko 5%, dok će za svaki 1% manjeg BDP u VB, u ostatku EU doći do pada od 0,2-0,25%. (Goodman, Stirling, & McCormick, 2019).

Isto tako očekuje se da negativni efekti budu nejednako raspoređeni, najveće

[2] Donji dom britanskog parlamenta je u posljednih osam decenija subotom zasjedao samo četiri puta. Od toga poslednji put 2. septembra ove godine zbog krize s Bregzitom, što nam samo potvrđuje da je Bregzit ispao kompleksno pitanje za britansko društvo u cjelini.

posljedice će trpiti oni koji imaju najveći obim robne razmjene sa VB, među njima najviše Irska. Interesantno je da će, isto prema Bloombergu, Bregzit najviše pogoditi VB, dok će, prema procjenama Evropske centralne banke, gubitak EU-27 biti samo u opsegu 10%-30% gubitka UK. Ostatak svijeta će, takođe, trpiti posljedice, ali one se moraju posmatrati u svjetlu globalnih interakcija, prije svega zategnutih trgovinskih odnosa između Kine i SAD (Goodman et al., 2019).

Može se izdvojiti nekoliko faktora koji su navedenim studijama identifikovani kao ključni za ekonomsku sliku VB (ali i ostatka Unije) nakon sve izvjesnijeg Bregzita. Najčešće pominjane su:

- Rast ekonomske nesigurnosti će uticati na smanjivanje povjerenja investitora što će usloviti rast premije rizika i shodno tome povećati cijenu finansijskih sredstava i smanjiti njihovu raspoloživost.
- Treba očekivati i veći odliv kapitala i smanjenje njegovog priliva može prouzrokovati deficit tekućeg računa i do 7% BDP.
- Trgovinski odnosi će biti otežani, a carinske i necarinske barijere povećane i to kako sa zemljama EU, tako i sa trećim zemljama.
- Pooštravanje imigracione politike, ali i oslabljena privreda nakon bregzita, mogu dodatno smanjiti privredni rast u Velikoj Britaniji.
- Slabljenje britanske funte može prouzrokovati spoljnotrgovinske neravnoteže i u drugim zemljama jer će doći do automatske apresijacije drugih valuta prema funti (Kierzenkowski et al., 2016, str. 6).

Svi pobrojani faktori se posmatraju kao kratkoročni, navode se kao kanali preko kojih će doći do usporavanja britanske privrede i srećemo ih manje-više u svim studijama koje se bave ovim pitanjem. OECD u svojoj studiji je otišao i korak dalje, navodeći potencijalne dugoročne efekte Bregzita po Veliku Britaniju:

- Ograničavanje pristupa jedinstvenom tržištu smanjiće strane direktne investicije, što će posljedično voditi smanjenoj akumulaciji kapitala i poslovnom investiranju, a i dalje, ka smanjivanju robne razmjene, inovacija i kvaliteta upravljanja.
- Bregzit će uticati na smanjivanje tehničkog progresa i inovativnosti britanske privrede.
- Smanjivanje privrednog rasta će dovesti do smanjenog priliva u budžet što može dovesti do njegovog deficita.
- Tržište radne snage i roba u VB spada među najfleksibilnije u OECD zemljama. Ovo upućuje da propisi EU nisu bili bitna barijera privrednom rastu, a dalja liberalizacija je moguća, ali su njeni efekti upitni budući da je već postignut visok nivo deregulacije na pomenutim tržištima.
- Pored pada proizvodnje, kumulativni efekti različitih šokova povezanih sa Bregzitom, uticaće na smanjivanje zaliha neto imovine kojom se mogu servisirati buduće obaveze i koja bi trebala da generiše privredni rast u budućnosti (Kierzenkowski at all, 2016, str. 6-7).

Među pobrojanim efektima i kanalima kojima će doći do poremećaja u privrednim kretanjima posebno mjesto zauzimaju trgovinski odnosi, budžetska potrošnja i imigraciona politika. Oni su istovremeno, kako smo već naveli, bili i glavni argumenti na kojima se zasnivala opravdanost Bregzita, pa će ovdje biti nešto podrobnije rasvijetljeni.

Istraživanja koja smo konsultovali su, kao što je već rečeno, rađena ili prije referenduma ili neposredno nakon njega, proces razdruživanja nije bio počeo i u tom momentu se nije znalo da li će dogovor biti postignut. Zbog toga su uglavnom uzete u obzir mogućnosti da dođe do razdruživanja uz dogovor, odnosno da se nađu modusi po kojima će Velika Britanija ostati na jedinstvenom tržištu. Pri ovome se ne smije gubiti iz vida da izvoz na EU područje iznosi oko 12% BDP, odnosno oko 45% ukupnog izvoza iz VB, dok je Unija još važnija kao teritorija iz koje se uvozi na ostrvo. VB bilježi deficit sa EU u trgovini

robama, ali je prisutan suficit u trgovinskom bilansu uslugama, posebno u finansijskim uslugama. Koliko je to značajno možemo vidjeti ako znamo da su finansijske usluge u 2015. godine učestovale sa 7% u ukupnom *outputu* VB, odnosno 4% u ukupnoj zaposlenosti, pri čemu oko 40% izvoza finansijskih usluga ide na tržište EU (Kierzenkowski et al., 2016). Ugovor o razdruživanju i nakon dvije godine nije definitivno usaglašen, opcije ostaju iste: ili stalno produživanje roka dok se konačni sporazum ne postigne, ili izlazak bez dogovora. Mnogo nepovoljniji ishod bi bio da VB, ipak, izađe bez sporazuma i da tek nakon razdruživanja započnu novi pregovori sa EU. U tom slučaju bi sami pregovori trajali relativno dugo i izazvali određene troškove. U ovom scenariju bi došlo do primjene kriterijuma najpovlašćenije nacije Svjetske trgovinske organizacije gdje bi se za izvoz u EU primjenjivale prosječne carinske stope od 2,5%. Necarinske barijere će svakako biti povećane jer, kada jednom napusti Uniju, VB nema obavezu da svoje propise usklađuje sa zakonodavstvom EU. Kolike će one biti zavisi od procesa deregulacije koji bi VB svakako morala provesti. U ovom scenariju bi status Sjeverne Irske koja je dio teritorije Velike Britanije, ali pod režimom posebnih odnosa sa Republikom Irskom, ostao kao neriješen problem. Pored trgovinskih odnosa sa Unijom, postavlja se i pitanje trgovinskih odnosa sa trećim zemljama, budući da bi VB izgubila preferencijalni status proizašao iz ugovora EU sa 53 nečlanice. Novi trgovinski ugovori bi morali biti postignuti što zahtijeva i određeni vremenski period. Nije teško doći do zaključka da to sa sobom povlači i troškove ako se ima u vidu da je prosječno vrijeme pregovaranja u okviru postojećih ugovora bilo oko tri godine, sa Kanadom pet, a sa Švajcarskom čitavih deset godina (Kierzenkowski et al., 2016). Pored toga, sasvim je sigurno da bi u određenim područjima pregovaračka pozicije Velike Britanije bila mnogo slabija nego što je bila pozicija EU, posebno kada se ima u vidu da ona mora istovremeno pregovarati sa više različitih zemalja, a da su troškovi veći ukoliko pregovori traju duže. Ovdje treba napomenuti da bi potencijalne koristi od novih trgovinskih ugovora sa nečlanicama mogle biti ostvarene u slučaju da budu dogovoreni bolji aranžmani u okviru trgovine poljoprivrednim proizvodima.

Sljedeći među argumenatima koji se čuo u kampanji za Bregzit, pored vraćanja političkog suvereniteta, su budžetske uštede. Građani su na referendumu glasali i za 350 miliona britanskih funti koje bi sedmično ostale zemlji na raspolaganju i koje bi se mogle uplatiti fondovima zdravstvenog osiguranja. Činjenica je da je Velika Britanija bila neto-kontributor evropskog budžeta. Njene uplate u budžet Unije iznosile su oko 0,5% BDP odnosno 17 milijardi evra godišnje. Budući da je godišnje iz zajedničkog budžeta Velikoj Britaniji po raznim osnovama (poljoprivreda, regionalni razvoj, nauka i istraživanje, itd.) isplaćivano 7 miliona evra, ukupni neto doprinos Kraljevstva zajedničkom budžetu je bio oko 10 miliona evra (Haas i Rubio, 2017). Međutim, da li stvari izgledaju tako jednostavno i hoće li sav ovaj novac biti ušteđen? Prvo, budžetski efekti će se svakako osjetiti, dovoljno je reći da je u prvoj nedjelji nakon Bregzita došlo da pada funte prema evru što je uticalo i da ukupni prihodi u evropski budžet iskazani u evrima budu manji. Ovakve negativne tendencije je osjetio evropski budžet, ali budući da je došlo do pada privredne aktivnosti i rasta nepovjerenja investitora kao posljedica očekivanih promjena, negativni efekti su se osjetili i u budžetima Velike Britanije. S druge strane, samo razdruživanje sa Unijom nosi nekoliko bitnih "budžetskih" pitanja.

Tabela br.1. Mogući trgovinski odnosi između Velike Britanije i EU nakon Bregzita (Kierzenkowski et al., 2016, pp. 16).

Dogovor	Primjer	Karakteristike
Evropski ekonomski prostor	Irska Norveška Lihtenštajn	-doprinos EU budžetu, -slobodan protok roba, usluga, ljudi i kapitala -prisutan vrlo nizak stepen regulacije, -izvan EU prisutna carinska unija
Dogovor o zoni slobodne trgovine	Švajcarska	-doprinos EU budžetu, -pojedinačni trgovinski dogovori u okviru industrijskog sektora sa EU članicama, - izvan EU prisutna carinska unija, - prisutan vrlo nizak stepen regulacije,
Carinska unija	Turska	-bescarinski pristup većini resursa na jedinstvenom tržištu, osim finansijskim uslugama -primjena EU carina prema trećim zemljama -prisutan vrlo nizak stepen regulacije,
Ugovor o slobodnoj trgovini		-većinski bescarinski pristup EU tržištu uz neophodno usklađivanje sa EU standardima i regulativom, -bez punog pristupa uslugama i bez automatskog prenosa rizika na banke
Primjena klauzule najpovlašćenije nacije STO		-trgovina sa EU se obavlja kao sa trećim zemljama članicama Svjetske trgovinske organizacije

Budžet Unije se pored jednogodišnjih budžeta, donosi i u okviru višegodišnjeg budžetskog okvira (eng. *Multiannual Financial Framework - MMF*). Važeći višegodišnji budžet donijet je za period 2014-2020., a u toku su pregovori za novi koji će se primjenjivati nakon isteka postojećeg. Postavlja se pitanje, šta će se desiti sa planiranim budžetskim uplatama i isplatama na relaciji Velika Britanija i EU. Ukoliko bi Britanija pod pritiskom domaćeg javnog mnjenja odmah po izlasku prekinula sve uplate u zajednički budžet, to bi moglo dovesti do automatskog prekida postojećih transfera po raznim osnovama iz budžeta EU ka Britaniji. Ove uplate bi trebalo nadoknaditi vlastitim sredstvima, a malo je vjerovatno da se sredstva mogu obezbijediti u razumnom roku. S druge strane, ovakav potez bi unutar EU 27 moga da se tretira kao drzak i izazivački što bi negativno uticalo na uslove i tok pregovora o budućim odnosima.

Ukupne obaveze koje je preuzela EU su veće od njene imovine. Prema konsolidovanom računu EU iz 2015, imovina EU iznosi 154, a obaveze 226 milijardi evra (Haas i Rubio, 2017, str. 4-5), pa je vrlo vjerovatno da će u okviru finansijskog razduživanja zbog ovoga doći do obaveze za uplatu dodatnih sredstava od strane VB u budžet EU,[3] prema procjenama *Financial Times* (Financial Times, 2016) ovi troškovi bi mogli da se kreću između 40 i 60 milijardi evra. S druge strane, uplate iz budžeta EU ka Vladi VB kasne godinu dana, pa bi i ova potraživanja mogla ući u ukupan račun razduživanja. Prema posljednjem pomenutom sporazumu, premijer Džonson je pristao da Velika Britanija plati 39 milijardi funti što je oko 45 milijardi evra. Pomatrajući statističke pokazatelje o imigraciji, a prema studiji OECD za period od 2006. godine pa do referenduma, možemo vidjeti da se godišnje u VB useljavalo oko 500 hiljada imigranata

[3] U engleskoj literaturi se ovi troškovi nazivaju *devorce bill*

(Kierzenkowski et al., 2016). Međutim, ovi radnici vrlo malo koriste socijalne transfere, stopa zaposlenosti među njima je veća od stope zaposlenosti među domaćim stanovništvom i stope zaposlenosti imigranata iz trećih zemalja. Pri ovome je nivo obrazovanja i stručnih sposobnosti veći nego u većini imigracione populacije u drugim EU zemljama, a nivo plata niži. Pored toga, od 2,5 miliona radnih mjesta koja su otvorena u Velikoj Britaniji u periodu 2005 - 2015, 2,2 miliona je popunjeno stranim radnicima, od kojih je 60% porijeklom iz drugih EU zemalja. Imigranti su doprineli ukupnom rastu BDP u ovom period sa oko 50%. Dugoročno gledano, migranti će doprinijeti i usporavanju starenja populacije. (Kierzenkowski et al., 2016, str. 26). Kada se posmatra uticaj imigracione populacije na javne finansije, i ako se uzme u obzir visoka stopa zaposlenosti, te niže plate nego među domaćom populacijom, podaci pokazuju da je imigraciona populacija neto-kontributor (više uplaćuje u budžete, nego što povlači sredstva iz njih) u Velikoj Britaniji. Ipak, oko 65.000 imigranata iz drugih EU zemalja prima naknadu za nezaposlene u Velikoj Britaniji, ali i 30.000 Britanaca prima ovu istu naknadu u drugim EU članicama. Međutim, već je proklamovan cilj da se broj imigranata smanji na 100.000 godišnje, a nakon Bregzita je očekivati da se politika useljavanja pooštri. Doseljenici uglavnom čine obrazovanu i obučenu radnu snagu, smanjivanjem njihovog broja smanjiće se i potencijal za tehnološki progres i inovacije što se može posmatrati kao dugoročni efekat smanjenja useljavanja (Kierzenkowski et al., 2016, str. 27).

POLITIČKI ASPEKTI BREGZITA

Zbog potresa i posljedica koje je izazvao, Bregzit se ocjenjuje kao „najjvažniji istorijski događaj od pada Berlinskog zida jer se po prvi put u Evropi nakon Drugog svetskog rata odvija proces razjedinjavanja u okviru kog iz Unije izlazi jedna od najvažnijih članica“ (Majstorović i Pribićević, 2019). Bregzit će imati veliki uticaj na britansko društvo u cjelini, a odluka o izlasku nije direktno povezana samo sa EU jer npr. Njemačka i Francuska pokazuju kako članstvo u EU nije nespojivo sa aktivnom politikom i snažnim prisustvom na spoljnom tržištu, ona je kristalizacija dubljeg nezadovoljstva britanskog društva. Ideja evrofederalizma bila je „anatema za Britaniju, državu koja je ponosna na svoje karakteristične političke institucije i kulturu, kao i nedavni ratni uspeh. Prenos nadležnosti bio je dobar za gubitnike sa kontinenta, a ne za Britance pobednike“ (Dinan, 2010, str. 32). Tokom četiri i po decenije članstva u EU, Britanija je bila polu-odvojena od Evrope i nikada nije prihvatila gubitak nacionalnog suvereniteta što je EU samom svojom prirodom tražila, zanimalo ih je tržište, više od toga ne. Glavno Bregzit pitanje, u stvari, jeste pitanje „odnosa Britanije i kontinentalnog dijela Evrope, i ono bezmalo traje gotovo 1000 godina“ (Dane, 2019). Odluka o izlasku predstavlja fundamentalnu promjenu u britanskom pristupu spoljnoj politici, referendum je ukazao da UK ponovo želi da bude samostalan globalni igrač (uz SAD), ali očekuje se da će imati mnogo manji uticaj s obzirom da su se SAD pod Trampom naglo povukle iz svjetske politike, porastao je i broj velesila u međ. odnosima (SAD, Rusija, Kina, Turska, Njemačka koja dominira EU i dr). Neki autori smatraju da je u korijenu Bregzita unutrašnja i spoljna kriza identiteta u Velikoj Britaniji. Ona je bila nezadovoljna i izvan EU integracionih procesa 1950-ih i 1960-ih; onda je i unutra postala nezadovoljna. Sve dok Velika Britanija ne definiše šta želi da postigne u svijetu, ali u sebi unutra, više je nego vjerovatno da će izvana jednostavno još jednom postati nesretna (Usherwood, 2018). Daleko dublju političku krizu Bregzit je izazvao u Velikoj Britaniji nego u EU, on je od nje napravio duboko podijeljeno društvo, doveo do brzih političkih promjena (smjene premijera) i raskola u strankama čiji je cilj bio izlazak, tako da se referendum može posmatrati i kao proizvod političkog diletantizma britanske političke elite.

S druge strane, Bregzit je najteži politički udarac sa kojim se suočio proces evropskih integracija od njegovog pokretanja zato što Uniju napušta jedna od tri najvažnije članice, on je poljuljao temelje EU. Odluka o izlasku Velike Britanije jeste bila politički šok za EU, ali nije izazvala krizu u njenom funkcionisanju. Bregzit je liderima EU ukazao da se moraju redefinisati ciljevi same EU, kuda ona ide i šta je konačni politički cilj procesa integracija. Ipak, postoje i pozitivni politički efekti Bregzita. On je jasno ukazao kolika je „kompleksnost avanture koja se zove izlazak iz EU", ali nije „raširio virus odlazaka iz EU", probudio je evropsku intelektualnu elitu koje je povela široku javnu raspravu o tome kako EU treba da izgleda u budućnosti (Majstorović i Pribićević, 2019). Najuočljiviji politički efekat Bregzita su promjene na političkoj mapi Evrope, uzrokovao je prekompoziciju odnosa na Starom kontinentu, a unutar Velike Britanije opet aktivirao dva problema: porast težnji za otcjepljenjem Škotske i irsko pitanje.

ZAKLJUČAK

Od početka svog evropskog puta, Velika Britanija je bila „čudan partner" (Nugent, 2004, str. 25) i imala je specifičan status, tako da u političkom smislu Bregzit nije bio neočekivana pojava već uspješna repriza ideje čija je realizacija pokušana 1975. godine, kada su britanski građani na prvom referenudmu glasali protiv izlaska iz EEZ. Jedino što u ovom momentu (novembar 2019), možemo tvrditi je da još ništa nije izvjesno. Prema odluci Evropskog suda pravde, Velika Britanija ima pravo i u svakom momentu može odustati od Bregzita što, po našem mišljenju, zavisi od budućih političkih dešavanja u Velikoj Britaniji. U slučaju da se izglasa nepovjerenje Džonsonovoj vladi mogući su novi parlamentarni izbori krajem 2019. godine, a poslije njih je moguće sve, pa i novi referendum. Bregzit je izazavao najdublju političku krizu u Velikoj Britaniji još od Drugog svjetskog rata i ukazao da ova zemlja ponovo mora rješavati pitanje svog odnosa sa Evropom. Ovakva odluka nakon četiri decenije članstva u EU, ipak, treba da bude predmet dubljih strateških analiza i planova, a ne proizvod kratkoročnih političkih ciljeva. Dosadašnji tok Bregzita i komplikacije koje on nosi a sobom, sa jedne strane, i demokratska tradicija, istorija, ekonomska moć zemlje kakva je Velika Britanija, sa druge strane, pokazuju nam koliki je njen značaj za Evropsku uniju, te da odluka da proces evropskih integracija napusti jedna od tri ključne članice znači da nešto nije u redu ni u samom evropskom projektu odnosno da Unija mora odlučiti koji je njen krajnji cilj i kuda ide.

Ako do Bregzita i dođe, pitanje je da li će on biti sa sporazumom ili ne. Ekonomske činjenice govore u prilog postizanju sporazuma jer suverenost i nacionalni identitet su bitni, ali je novac sredstvo kojim se plaća cijena političkog položaja na međunarodnoj sceni. Ipak, sa čisto ekonomskog aspekta posmatrano, najbolje rješenje za Veliku Britaniju je da odustane od izlaska iz Evropske unije.

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BREXIT – A THREAT OR AN OPPORTUNITY FOR THE UNITED KINGDOM?

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ABSTRACT

Political and economic aspects of every country are interconnected and conditioned by each other. The distribution of national sovereignty in all its aspects depends on their balance, short-term goals and long-term visions. Joining the processes of European integration for a country such as Great Britain was a challenge in direct contrast with a strong sense of national identity. Economic development in the single market in the Old Continent attracted the United Kingdom to join the European Communities in 1973 and thus partially sacrifice its national identity for the benefit of economic growth. However, the feeling of uniqueness and orientation toward the Anglo-Saxon tradition in a political and cultural sense caused the constantly lingering Euroscepticism. Global recession and the need for strengthening mutual solidarity in the European market will intensify the reconsideration whether joining the Union was the right decision. Internal political relations, on their own part, contributed to strengthening the campaign against the membership. A referendum was held in 2016 and the British decided that they still wanted to go their own way.

From the point of view of economic welfare, this does not seem to be a rational decision. It is evident that after more than four decades a balance between political and economic goals is regained, this time in favor of national identity, although at this moment, a bystander does not see the political justifiability of such decision. A part of British society appears not to see it as well, so the exit process is slow and unpredictable, and the signs of reconsidering the exit decision are also appearing. The only thing that we can claim, with certainty, at this moment (November, 2019) is that nothing is certain. According to the European Court of Justice, The UK can withdraw their decision about leaving the EU at any moment. Such decision should be the topic of deeper strategic analyses, and not short-term political goals. If we were to analyze the foreign policy relations of the Kingdom through history, we will conclude that such an important decision was not made only on the basis of domestic policy dissatisfaction, but that there are some strategic reasons behind it. It is important to know that if the withdrawal from the EU was really to happen, if it will be with or no deal. Economic facts argue for reaching a deal, because while sovereignty and national identity are important, the economic strength determines a political position on the international scene. However, from a purely

economic point of view, the best solution is that there is no withdrawal from the UK at all. The ultimate political and economic effects for both sides will depend on the final recomposition of geopolitical and economic relations which are in progress.

Keywords: Brexit, the European Union, national identity, political consequences, economic effects.

ЛИБЕРАЛИЗАЦИЈА ТАРИФА У ОСИГУРАЊУ ОД АУТО-ОДГОВОРНОСТИ РЕПУБЛИКЕ СРПСКЕ

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САЖЕТАК

У осигурању од ауто-одговорности према трећим лицима, добро постављање тарифа је од виталног значаја за опстанак осигуравача. Осигурање од аутоодговорности у Републици Српској (РС) је законски обавезно, премијски систем је административно одређен, а премија овог вида осигурања заузима највеће учешће у портфељу осигуравајућих друштава. Основни проблеми у функционисању сектора осигурања од аутоодговорности су: нелојална конкуренција, нарушавање премијског система, велики удио трансакција са повезаним лицима, недостатак транспарентности, неразвијени системи интерне контроле и ревизије и лоше управљање трошковима. Одређивање тарифа на либерализованим тржи-штима је посао који обавља свако осигуравајуће друштво самостално, уз примјену математичко-статистичких метода, како би се премије што адекватније одредиле и прилагодиле ризичности сваког осигураника. У процесу увођења система слободног одређивања цијена осигурања од ауто-одговорности, неопходно је обезбиједити бројне предуслове, а најважнији су: успостављање поуздане статистичке основе за формирање тарифа; унапређење надзора и усаглашавање са европским законодавством. Поједине земље су имале великих проблема након увођења либерализације тарифа, док су друге прошле са мањим потресима. Либерализација тарифа ствара одређене опасности, али и користи по тржиште осигурања од аутоодговорности РС. У тренутној политичкој, правној и економској ситуацији у којој се налази Република Српска, најприхватљивије рјешење је дјелимична и постепена либерализација тржишта осигурања од ауто-одговорности.

Кључне ријечи: осигурање, ауто-одговорност, либерализација, тарифа, Република Српска, реформе.

УВОДНА РАЗМАТРАЊА

У свим европским и бројним другим земљама осигурање од ауто-одговорности је обавезно, са намјером да се заштити јавни интерес, односно жртве саобраћајних незгода. Према подацима Европске (ре)осигуравајуће федерације (*European Insurance and Reinsurance Federation*),

број моторних возила у Европи је достигао цифру од 315 милиона, а ова врста осигурања представља око 30% од укупног обрачунате премије осигурања, а његов битан сегмент је и адекватно формирање цијена. Приликом формирања цијене осигурања треба нагласити да је тарифа осигурања орјенатациона, оквирна цијена, и то је полазна тачка за формирање тржишне цијене осигурања. Коначна цијена производа осигурања или премије се формира на тржишту под утицајем великог броја тржишних и нетржишних фактора (Кочовић, Шулејић и Ракоњац Атнић, 2010). Искуства појединих земаља са либерализацијом тржишта и система одређивања тарифа у осигурању од аутоодговорности су различита. У Мађарској, промјене су донијеле приватизацију осигурања, јачање конкуренције, диференцијацију премија и селекцију осигураника кроз бонус/малус систем, премија се смањила. У Аустрији, изузев почетног губитка премијског волумена, није било већих потреса, па су се због тога у Аустрији одвијали релативно правилни циклуси од мекших до тврђих премијских стопа, те није било осигуравача који су пропали. У Словенији, увођењем либерализације није дошло ни до колапса тржишта нити до раста цијена, због добре сарадње осигуравача, предвођених тржишним лидером. Увео се нови приступ маркетингу и неколико нових производа. Почела је селекција ризика, а друштва су посвећивала већу пажњу образовању кадрова и истраживањима. Грчка је доживјела крах, систем је заказао јер контрола и надзор осигуравајућих друштава нису перманентно вршени. У стечај отишло више од 30 осигуравача. Пред сам улазак Хрватске у Европску унију, иако је уведена либерализација на тржишту, она у пракси није заживјела. Осигуравајућа друштва нису промијенила навике, цијене нису пале, јер су их осигуравачи у договору одржали на високом нивоу. Уз то задржала се и пракса неконтролисаног давања попуста.

Преко 60% тржишта неживотног осигурања у Републици Српској се односи на осигурање од аутоодговорности према трећим лицима и обавезног је карактера, а тарифе осигурања су административно одређене. Због недовољне активности надзорних органа и удружења осигуравача, још увијек постоје многе неправилности које отежавају развој тржишта осигурања од аутоодговорности. Те неправилности се могу посматрати кроз следеће: нелојалну конкуренцију, неосигуране возаче и преваре у осигурању (Редактори, 2013). Тржишту осигурања Републике Српске неминовно предстоји процес либерализације цијена аутоосигурања, али ће то бити дуготрајан процес који ће захтијевати испуњење бројних предуслова.

ПРЕДУСЛОВИ ЗА ЛИБЕРАЛИЗАЦИЈУ ТАРИФА ОСИГУРАЊА ОД АУТООДГОВОРНОСТИ У РЕПУБЛИЦИ СРПСКОЈ

Да би се сачувала стабилност тржишта, обезбиједила тржишна конкуренција и заштита осигураника, у процесу увођења система слободног одређивања цијена осигурања од аутоодговорности, неопходно је обезбиједити одређене предуслове. Поједини предуслови подразумијевају измјену закона (не само из области осигурања), док се други могу обезбиједити уз сарадњу различитих институција и у дужем временском периоду. Либерализација не гарантује дугорочну стабилизацију и уређење тржишта осигурања од аутоодговорности. Могу се навести три области у којима треба извршити промјене: а) Успостављање поуздане статистичке основе за формирање тарифа у виду: унапређења и прилагођавања техничких основа осигурања и статистичке подлоге у друштвима; обезбјеђење јединствене базе података за тржиште у цијелини; и јачање актуарске функције у друштвима; б) Унапређење надзора и остали предуслови, везано за: развијање на ризику засноване супервизије; накнадног надзора довољности тарифа; повећања законом прописаних минималних капиталних захтијева; увођење модела директне услужне обраде и исплате штета; оријентационих медицинских и правних критери-

јума за процјену нематеријалне штете и развој других врста осигурања; в) Измјене закона у складу са директивом 2009/103/ЕС, у погледу: квалитативног и квантитативног покрића, најниже осигуране суме, институционалног оквира, виших казни за кашњење у обради и исплати одштетних захтјева и хармонизације прописа на нивоу Босне и Херцеговине.

Едукација тржишних учесника и јавна расправа

Битна карика у процесу либерализације тарифа је финансијско описмењавање тржишних учесника, јер често постоји и погрешна перцепција да ће либерализација цијена довести увијек и до смањења цијена. Код грађана се мора развити свијест о значају и улози осигурања од ауто-одговорности. У Републици Српској грађани осигурање од аутоодговорности изједначавају са регистрацијом возила и гледају на то као на опорезивање или плаћање обавезне таксе. Осигураник се мијења тако да од слабо обавјештеног постаје свјестан и добро обавијештен тражилац услуге. Све више се очекује ниво и квалитет услуге примјерен групи одређених корисника, па чак, у појединим случајевима и према појединачним потребама (Matthias, 1997). Размотрити могућност увођења обавезне континуиране едукације менаџера у друштвима за осигурање, ради повећања квалитета и одговорности у њиховом раду. У обуку актуара треба укључити високошколске институције као и струковна удружења, што показује и пракса земаља из окружења. Интензивирати додатну едукацију посредника и заступника у осигурању, као припрему за полагање стручних испита.

Унапређење рада Агенција за осигурање Републике Српске

Основни циљеви активности унапређења и стандардизације надзорних процеса је повећање квалитета и ефикасности надзорних активности Агенције за осигурање Републике Српске. У ту сврху је израђена Методологија за контролу ликвидности друштава за осигурање, извршено је тестирање (кроз појединачне контроле), и утврђено је да методологија задовољава задате критеријуме и да иста може бити усвојена. Развијена је и електронска база података из надзора, којом се обухватају све надзорне активности и сви субјекти над којима се врши надзор. Обавеза примјене концепта супервизије, заснованог на процјени ризика произилази из захтјева тзв. Режима Солвентност II, који је прописан Директивом 2009/138/ЕС, те усаглашавања са међународно прихваћеним принципима осигурања (*ICP*). Увођење система раног упозорења треба да се одвија паралелно са успостављањем система управљања ризицима којима су друштва за осигурање изложена у пословању. Како би се уредило тржиште обавезног осигурања од аутоодговорности, потребно је успоставити континуирану оперативну сарадњу са другим институцијама: МУП Републике Српске, Републички инспекторат и Пореска управа (Агенција за осигурање Републике Српске, 2013). У неким земљама, актуарски планови морају бити одобрени од стране регулаторног органа. У случају Чешке и Мађарске дозвољено је да актуарске прорачуне раде локални осигуравачи због одсуства статистике домаћинства. Јапан, Кореја, Мексико, Пољска, Швајцарска и Сједињене Америчке Државе захтијевају одобрење актуарске планова од регулаторног органа (Carvalho, 2011). Неопходно је донијети и прописе који би ријешили проблем избјегавања осигурања сувише ризичних осигураника или наплаћивања превисоке премије (које у крањем случају дестимулишу осигуранике на прибављање осигурања). Искуства Белгије и Италије говоре о ситуацијама када друштва за осигурање не желе уопште да осигуравају високоризичне осигуранике.

Успостављање јединствене базе података

Једна од најважнијих активности је успостављање јединствене базе података осигурања од аутоодговорности у којој ће се евидентирати полисе и штете, на

цијелом тржишту осигурања Републике Српске. База података треба да обезбиједи поуздане статистичке основе, које су неопходне за правилно формирање цијена. Примјер правилног формирања цијена би обухватао пондерисање обрачунатих премија малих друштава са ниском премијом осигурања и високим варијацијама у штетама, тј. одређивање "фактора кредибилитета". Сврха базе података би била и да спријечи преваре у осигурању, али и провјеру да ли је одређено возило осигурано или не. Оснивање информационог центра би представљало модеран и централизован систем са јединственим базама података као што су базе свих регистрованих возила, база штета, база полицијских записника, евиденција зелене карте, евиденције за одређивање и праћење зона бројева полиса и сл. Сва друштва (која се баве осигурањем од аутоодговорности) би била повезана преко својих информатичких система и достављала би различите типове података који се обрађују и смјештају у базе према својој намјени. Друштва за осигурање би могла ове податке користити зависно од пословних потреба. У друштвима за осигурање је неопходно јачати функције управљања ризицима и актуарску функцију, али и системе интерних контрола и ревизија. Друштва би морала обезбиједити статистичку основу неопходну за утврђивање властитих тарифа осигурања, у циљу унапређивања и прилагођавања техничких основа осигурања. У Републици Српској још увијек није заживио информациони систем који би објединио књигу штетника. Тиме се стварају додатни проблеми и трошкови у размјени иноформација између осигуравајућих друштава. Према изјавама представника осигуравајућих друштава, потпуно се подржава приједлог да наведену надлежност преузме Заштитни фонд РС, који би брзо, транспарентно и јавно стављао на располагање информације неопходне свима.

Рјешавање проблема исплате одштетних захтијева

Ликвидација штета се дефинише као поступак који обухвата све радње у циљу обезбјеђења провјере, оцјене и усаглашавања свих доказних докумената одштетног захтјева са закљученим уговором о осигурању, ради оцјене основаности исплате штете (дакле, утврђивања основа) и њеног коначног обима и висине (Мркшић, Петровић и Иванчевић, 2005). Потребно је преиспитати и тренутне законске рокове за рјешавање и исплату одштетних захтјева у складу са специфичностима нашег тржишта и додатно регулисање процеса рјешавања и исплате одштетних захтјева, који обухвата временски период од прикупљања документације потребне за рјешавање одштетног захтјева до саме исплате штете. Истраживања су показала да трошкови обраде одштетних захтјева обично износе 10-15%, а исплата саме штете 40-65% од нето зарађене премије (Fair Isaac Corporation, 2007). Само питање исплате штета треба да укључи и разматрање могућности увођења модела директне услужне обраде и исплате штета. У питању је модел који се заснива на споразуму друштава, према којем би се оштећени обраћао друштву у којем је осигуран, а не друштву код којег је осигуран штетник. Штетников осигуравач ријешава и исплаћује штету, а након тога тражи регрес исплаћених износа од осигуравача код којег је кривац осигуран. На тај начин би осигуравачи конкурисали сервисом, добрим односом према странкама, вријеме ликвидације и исплате штета би се скратило, а возачи би код склапања уговара добро пазили код кога ће се осигурати. Неки правни системи су такав начин рјешавања одштетних захтјева препознали као добар начин подстицаја осигуравачима да се труде око квалитета услуге у штетама и прописали га као обавезан поступак ријешавања одштетних захтјева. Одређена законодавстава су ову опцију уградила као добровољну или су је формализовали кроз саморегулаторне прописе удружења осигуравача, као што је урађено у Француској, Италији, Белгији итд. У скоро свим земљама Европске уније, и

тамо гдје није законски обавезно, осигуравачи добровољно прихватају такав начин обраде и исплате штета. Искуство директне обраде штета постоји, јер је у бившој Југославији одлично функционисало десетинама година, на задовољство оштећених који су штету ријешавали код свог осигуравача. С обзиром да су инспекцијске контроле уочиле кршења законских одредби, требало би преиспитати висину казни за кашњење у обради (достављању понуда или одговора) и самој исплати одштетних захтјева, укључивањем и виших стопа затезних камата. Уочена кршења закона употребом ван судске нагодбе требају се строго кажњавати, јер ван судско поравнање не може да замијени акт који је друштво за осигурање обавезно доставити подносиоцу одштетног захтјева. Образложена понуда, или детаљно образложен одговор је основна обавеза друштва за осигурање и потребна је како би се странка у потпуности обавјестила о ријешеном одштетном захтјеву и увјерила да је друштво исправно поступило.

Испуњавање капиталних захтјева

Да би се спријечила ситуација одређивања прениских премија ради очувања текућих ликвидности од стране друштава чија је финансијска стабилност угрожена, неопходно је потпуно испуњење захтјева солвентности и ликвидности већине друштава за осигурање. Под ликвидношћу се у данашње вријеме подразумијева способност друштва да измири све доспјеле обавезе, како у погледу рока тако и износа, према повјериоцима (Јеремић, 2008). Повећањем законом прописаних минималних капиталних захтјева постепено ојачати финансијски капацитет друштава за осигурање. Битно је успоставити адекватан надзор филијала из Федерације Босне и Херцеговине које послују на територији Републике Српске, чију контролу довољности премије, солвентности и капиталне адекватности врши Агенција за надзор осигурања Федерације Босне и Херцеговине. Постоји опасност од дампиншког понашања ових филијала, које би, без потпуне контроле од стране Агенције, узроковало негативан утицај на формирање цијена у условима либерализације. Друштва за осигурање из Републике Српске су дужна да одржавају висину капитала која одговара обиму и врстама послова осигурања које обављају, тј. ризицима којима су изложена у обављању пословања. Адекватност капитала друштва за осигурање се мјере у смислу испуњавања прописаних услова, који се односе на захтјев да капитал друштва за осигурање мора бити најмање једнак маргини солвентности (не смије бити мањи од износа прописаног законом), а гарантни фонд мора бити најмање једнак износу 1/3 маргине солвентности или минамално прописаном износу гарантног фонда. Као мјеродаван износ приликом утврђивања довољности гарантног фонда, узима се виши износ од 1/3 маргине солвентности или минимално прописан износ гарантног фонда (оснивачки капитал), који је утврђен Законом о друштвима за осигурање. Захтјев адекватности капитала полази од циља да се утврди капитал за измирење обавеза из уговора о осигурању, као крајња гаранција.

Безбједност саобраћаја, технички прегледи и регистрације возила

У погледу степена безбједности саобраћаја, требала би се израдити стратегија безбједности саобраћаја Републике Српске, а након тога учешћем и развијањем партнерстава релевантних институција и субјеката примјењивати разне превентивне мјере ка већој безбједности у саобраћају. Штете настале у саобраћајним незгодама (материјалне и нематеријалне), поред директног трошка друштвима за осигурање, стварају и посредне трошкове са већим социјалним и економским последицама који по неким процјенама годишње достижу око 2% БДП (Економски институт Бања Лука, 2012). Успостављењем повезаних јединствених Информационих система осигуравача и државаних органа, омогућиле би се детаљне анализе размјењених података, којима би се указивало на високо ризичне групе учесника у

саобраћају, што би свакако имало и значајан позитиван ефекат на повећање безбједности саобраћаја у Републици Српској. Ту је потребно размотрити и објективније правне и медицинске критеријуме у процјени нематеријлних штета, у циљу смањења могућности злоупотребе и веће правне сигурности у овој области. Судску праксу треба уједначити, како би се оштећени код истих или сличних посљедица душевних или тјелесних повреда добијали приближно једнаку накнаду. Оно што је битно, је раздвојити процес утврђивања техничке исправности возила на техничким прегледима и регистрације моторних возила у надлежном органу Министарства унутрашњих послова (МУП), од процеса осигурања од аутоодговорности. Досадашња пракса је показала да, иако су процеси техничког прегледа возила, регистрације моторних возила и осигурања регулисани посебним законима, цјелокупни поступак се обједињавао у фази регистрације возила. Индикативан је податак да Република Српска има релативно већи број станица за технички преглед према броју моторних возила у односу на нпр. Хрватску, Словенију, па и Федерацију Босне и Херцеговине. Уобичајено је да друштва за осигурање оснивају шалтере на станицама за технички преглед. У нашим условима то постаје извор злоупотребе. У циљу даљег унапређења сервисних функција (уз поштовање Закона о безбједности саобраћаја на путевима) треба омогућити грађанима да без одласка у полицијску станицу продуже регистрацију возила при овлашћеним субјектима. Развити свеобухватан „*e-governmant"* систем у Републици Српској који би повезао органе државне управе, привредне субјекте и грађане, како би стручне службе Удружења створиле технички основ да са развојем функционалности јединственог Информационог система, дозволи друштвима да могу преузимати и обављати послове продужења регистрације и издавања регистрационих наљепница. Тиме би се стекли технички и правни предуслови и за продају полиса путем Интернета.

Правни предуслови за либерализацију тарифа у осигурању од ауто-одговорности Републике Српске

С обзиром да најјачи импулс, за либерализацију тарифа на тржишту осигурања од аутоодговорности Републике Српске, долази од стране Свјетске Банке, која сличан процес подстиче у бројним земљама у транзицији, потребно је ускладити домаће законодавство са међународним. У овом случају упитању је усклађивање са европским директивама, јер је Босна и Херцеговина (па тиме и Републике Српске) потписала Споразум о стабилизацији и придруживању ЕУ, у оквиру којег се требају испунити обавезе утврђене Акционим планом за адресирање Мапе пута, а које се односи и на област осигурања. Потребно је у потпуности ускладити домаће прописе са кодификованом директивом Европске уније (Directive 2009/103/EC). С тим у вези, крајем 2015. године, донесен је нови закон који се највећим дијелом и тиче осигурања од аутоодговорности и којим се направио значајан корак ка усклађивању са међународним праксама и европским законодавством у овом виду осигурања (Закон о обавезним осигурањима у саобраћају, 2015). Треба размотрити могућност да се у нови Закон транспонују рачуноводствене директиве Европске уније, које се односе на друштва за осигурање: директива 91/674/EEC о годишњим и консолидованим обрачунима друштава за осигурање, директива 78/660/EEC о годишњим обрачунима одређених типова организација, директива 83/349/EEC о консолидованим обрачунима. Земље које су се ускладиле са наведеним рачуноводственим директивама, транспоновале су исте у прописе о осигурању, а не у рачуноводствене прописе. С тим у вези, уведена су и овла-штења надзорних регулаторних тијела из области осигурања да доносе подзаконске прописе из ове области. За праћење и

израчун ризико премије неопходно је праћење стандардизованог броја финансијских показатеља, по врстама послова осигурања за које друштва посједују дозволу за рад, а што захтјева, како нову структуру финансијских извјештаја друштава за осигурање, тако и задани контни план који, поред осталог усваја надзорни орган из области осигурања.

ПРЕДНОСТИ И НЕДОСТАЦИ ЛИБЕРАЛИЗАЦИЈЕ ТАРИФА ОСИГУРАЊА ОД АУТООДГОВОРНОСТИ У РЕПУБЛИЦИ СРПСКОЈ

Основне предности либерализације тржишта осигурања од аутоодговорности РС

Структура савршеног тржишта укључује продају хомогених производа од стране великог броја продаваца, великом броју купаца, гдје нико од њих нема значајан утицај на тржиште. Поред тога, мора постојати слобода уласка и изласка из бранше као и пуна свјесност о производима на обје стране, и понуде и тражње. Ако су горе наведени услови испуњени, онда не постоји потреба за регулацијом тржишта. Исто као и на другим тржиштима, нису испуњени услови за савршено тржиште на тржишту осигурања. Зато осигуравачи морају бити пажљиви у одлучивању код којих осигуравача ће се осигурати (Козаревић, 2012). Спровођењем концепта либерализације тржишта осигурања од аутоодговорности омогућило би се усклађивање са директивама Европске уније у којима се захтјева слободно формирање тарифа у осигурању. Консолидована директива *Motor Insurance Directive* 2009/103 и јединствене правне норме (хармонизација прописа) омогућују већу слободу кретања возила између земаља чланица и међусобно признавање. Досадашње директиве су допринјеле развоју конкуренције и успостављања слободног јединственог тржишта. Осигурање моторних возила обухвата све врсте моторних и прикључних копнених возила. Дијели се на добровољно каско осигурање моторних возила (које у основи покрива штете од уништења, оштећења и крађе возила) и обавезно осигурање од одговорности моторних возила (покривена је накнада штете због тјелесне повреде или смрти проузрокованих трећем лицу, односно штете нанијете његовој имовини). Данас оно у многим земљама спада у најзначајније врсте осигурања (Маровић и Жарковић, 2002). Либерализацијом тржишта осигурања од аутоодговорности, премија осигурања би се утврђивала на основу процјене ризика од стране осигуравача и прилагођавала би се осигураницима према степену ризика којег осигураници носе. Самим тим, осигураници би били у правичнијем положају, а и подстицало би се друштвено пожељно понашање осигураника на дугорочним основама. Осигурани случајеви су индивидуализовани. Из тог разлога се тарифе морају диференцирати према специфичним ризицима осигураника, па се у поступак куповине и продаје производа осигурања уводи систем попуста и доплатака на премију. Неопходност да прода производ осигурања тјера осигуравача да снижава цијену, а неопходност да оствари профит да је повећа. Све то мора да буде изнад актуарски фундиране граничне цијене, која је доња граница испод које се не смје ићи. Основни услов тачности обрачуна премије осигурања представља адекватна база статистичких података у довољно дугом временском периоду. Како би избјегле цјеновни притисак, осигуравајуће компаније могу активно управљати формирањем цијена путем: спровођења сегментације потрошача, управљања ризиком у цијени, изградњом дугорочних односа са кључним потрошачима, елиминисањем производа чији су трошкови за осигуравача већи од корисности за осигураника и преузимањем контроле над формирањем цијена. Под претпоставком рационалног понашања свих учесника на тржишту осигурања и присуством јаке конкуренције, слободно формирање цијена осигурања би довело до успостављања оптималног нивоа

цијена осигурања аутоодговорности. Умјесто сталног исцрпљивања са попустима, створиле би се претпоставке за развијање тржишта осигурања. Процес либерализације би дјеловао стимулирајуће у правцу пословних комбинација између осигуравача у виду спајања и припајања, све зарад ефикаснијег пословања. Неопходно је напоменути да величина осигуравајућег друштва није у сваком случају сама по себи довољна да се оствари бољи пословни успјех. Такође, истраживања угледне агенције „*Roland Berger & Partner*“ су показала да мали и средњи осигуравачи исто могу бити изузетно успјешни на појединим тржиштима. Могло би доћи и до релативног смањења трошкова спровођења осигурања (прије свега трошкова прибављања осигурања) уз оптимално искоришћавање интерних продајних канала осигуравача. То би значило повећање директне продаје, самим тим и смањење зависности осигуравача од посредника и посљедично свело заступничке провизије на тржишно прихватљив ниво. Продаја аутоосигурања може брзо да прихвати нове електронске канале продаје (Eberhart, 2000). Изградња препознатљивог квалитета услуге за осигуранике и управљање трошковима спровођења осигурања (нпр. примјеном Интернета као ефикасног канала дистрибуције) треба да буде основ за изградњу снажне тржишне позиције, чиме се постиже компромис између интереса актуарске и маркетиншке функције, као и интереса осигураника и осигуравача. Теоретичар Холгер Керн издвојио је као најважније следећих десет тачака у процесу дерегулације тржишта осигурања (Kern, 1999): нове информатичке технологије; глобализација, односно интернационализација пословања; либерализација; обрасци свефинансирања, односно банке-осигурања; измјене у вредновању запослених и њиховог рада; снажење тржишне утакмице и усредсређености; измјењени састав становништва, те захтјеви тржишта и осигураника који из тога проистичу; унапређења производа и услуга осигурања; развој кадрова, и развој устројства друштава. На основу свега наведеног, три кључне предности које доноси либерализација тарифа у осигурању од аутоодговорности су раст: а) Повјерење усљед: брже обраде одштетних захтјева; и ефикасније и брже исплате штета; б) Стабилности у погледу: повољнијег и правичнијег положаја потрошача, најбољих цијена за потрошаче на основу процјене ризика и сегментације ризика и подстицање пожељног понашања осигураника; в) Конкурентности у виду: боље селекције ризика, фер и транспарентне тржишне утакмице и раста и развоја тржишта.

Недостаци и могући проблеми либерализације тржишта осигурања од ауто-одговорности у РС

Либерализација носи и одређене реалне опасности. Искусили су то и осигуравачи у бројним европским земљама у поступку провођења либерализације, посебно тамо гдје се она претворила у цјеновни рат, односно дампинг, којим су се настојали задржати стари и привући нови клијенти. Тако су, на примјер, у прве двије, три године њемачки осигуравачи у цјеновном рату изгубили око двије милијарде евра, аустријски око 400 милиона евра, док је у Грчкој у стечај отишло 30 осигуравајућих друштава, оставивши своје клијенте без осигурања. Услов за улазак у Европску унију у виду либерализације тржишта осигурања, представља на неки начин и присилну либерализацију у многим земљама. О цијелом процесу ће морати водити рачуна надзорно тијело, али и сами осигуравачи кроз струковна удружења, будући да би по постојећим прописима морали солидарно покривати губитке које би неки неодговорни осигуравач могао починити. Не треба прескочити ни кориснике осигурања, који се такође морају прилагодити новонасталој ситуацији. За осигураника убудуће неће бити неважно коме ће поклонити своје повјерење, односно гдје ће склопити осигурање. Цијена премије у том избору не може бити једини фактор одлуке. Важни ће бити величина и снага друштва, односно

гаранције да ће оно моћи испунити обавезе у случају настанка штете. Утолико више што на снагу ступају и нове, европске минималне своте осигурања за штете настале у саобраћајним незгодама које су неколико пута веће од сада важећих, при чему само један штетан догађај може мањег осигуравача стајати више него што му износи цјелокупна премија аутоодговорности. Због свега тога, кључно је питање да ли су домаћи осигуравачи у стању одговорити на изазове које им доноси либерализација. Либерализација је природан слијед у развоју тржишта, али неприпремљена либерализација може довести до финансијске нестабилности и губитка повјерења на тржишту. Разлог томе лежи у ограниченим организационим, кадровским и финансијским капацитетима друштава за осигурање, затим у неадекватним статистичким основама. Постоји опасност и од смањења цијена мимо правила струке и актуарских начела, уз истовремено задржавање високих трошкова, односно домино ефекта. Присутна је и недовољна едукованост и свијест о значају осигурања код потрошача и других учесника на тржишту.

Потенцијални проблеми са висином премија

С обзиром да се цијена осигурања израчунава на сложеним актурским основама, коришћењем статистичких метода и предвиђања, саме тарифе су често међусобно тешко упоредиве и то додатно отежава позицију осигураника при избору осигуравача. Јавља се и опасност од велике флуктуације осигураника, чиме би се повећали административни трошкови друштава за осигурање. Пословање осигуравајућих компанија је јединствено по томе што у вријеме када се одређује цијена и када је производ продат, главни дио пословних расхода, кога чине исплате одштетних захтјева, није познат. Заправо, ови расходи су познати тек након неколико година. На неизвјесност у процјени одштетних захтјева утичу многи фактори (непрецизне прогнозе, промјене у закону или случајне варијације), који ограничавају способност да се унапријед израчунају ови трошкови са високим степеном сигурности. Од износа премије осигурања зависи финансијски положај осигуравача и његова солвентност. Врло је упитна адекватност и дугорочност досадашњих података који се тичу тржишта осигурања од аутоодговорности у Републици Српској. Имајући у виду да се адекватност тарифа утврђује након одређеног временског периода, то ствара опасност да Агенција за осигурање РС не би била у могућности да реагује у право вријеме када би одређена друштва (слабијег финансијског капацитета) прекомјерно прибављала премије аутоодговорности по цијенама које су недовољне за покриће исплата одштетних захтјева и покриће трошкова спровођења осигурања. Слични проблеми су се десили у Грчкој и Бугарској, гдје су поједина друштва неадекватно (на прениском нивоу) успостављале резерве за штете, иако је то тада било у складу са методолошки дозвољеним оквирима. Бугарска је проблем ријешила административним путем, у виду потпуне формализације обрачуна резервација штета, без могућности друштвима да одступе од стриктно прописаних модела. Постоји и реална опасност од великог смањења цијена осигурања, које не би имало адекватан актуарски обрачун довољности премије, уз задржавање високих трошкова спровођења осигурања који би пали на терет техничког дијела премије намјењеног исплати одштетних захтјева. Ипак највећи проблем у случају стечаја друштва која не посједују довољно средстава за измирење обавеза из осигурања (због премало наплаћене премије), би био у томе што све те обавезе падају на терет Заштитног фонда РС, а посредно посљедице стечаја падају на сва друштва која остају на тржишту (преко повећања доприноса који се уплаћују у Заштитни фонд). Из претходних излагања о начину утврђивања тарифа у осигурању од аутоодговорности, је сасвим јасно да цијена

осигурања одражава цијену ризика, да се израчунава актуарским методама базирајући се на статистици, предвиђањима, користећи стохастичка и друга моделирања. Ипак, након свега тога, готово увијек остаје у домену процјене, тешко је израчунљива и често не баш интуитивна. Разне класе или зоне ризика, прилагођен приступ појединим клијентима, велике разлике у појединим квотацијама, али и читав низ разних попуста и акција које осигуравачи примјењују, чине цијене полисе нетранспарентнима и често неупоредивима. Циљ либерализације је достићи такав степен пословног понашања учесника, који обезбјеђује саморегулисање осигуравајућег тржишта. Као и код других тржишта, у осигурању постоји одређени степен саморегулације, али се он отежано артикулира. Од изузетне важности су тијела за контролу друштава за осигурање и законска регулатива, али и квалитет и одговорност менаџмента осигуравајућих компанија. Треба напоменути да постоји и могућност, додуше мало вјероватна, да дође до договорено утврђених премија осигурања на вишем нивоу од реалног, у том случају би се осигураници изложили додатним трошковима и додатно угрозио већ незадовољавајући животни стандард.

Иностране осигуравајуће компаније

Имајући у виду да либерализација цијена без икакве сумње води ка већој конкуренцији и позиционирању (и селекцији) друштава на основу њихове финансијске снаге, очекује се притисак на слабије капитализована друштва у правцу њихове продаје или припајање другим друштвима. Издвајају се три начина удруживања и повећања усредсређености осигуравајућих предузећа (који се могу јављати и у мјешовитим облицима), а то су (Bernd, Henrik, & Christoph, 1998): припајање мањег осигуравача већем, односно спајање два осигуравача на равноправној основи; удруживања уз проширење врсте услуга; глобализација, односно укрупњавање и интернационализација осигуравајућих послова (Präve, 1999). Либерализација тржишта осигурања од аутоодговорности може подстаћи интензивнији долазак осигуравајућих компанија на домаће тржиште, која са својом финансијском, организационом и кадровском снагом и већ стеченим искуством функционисања у либерализованом пословању, могу лако преузети још већи дио тржишта. Неолиберални модел је заснован на либерализацији пословних процеса и отварању тржишта. Бројни аутори упозоравају да претјерана либерализација тржишта осигурања потенцијално доводи до доминације иностраних осигуравача, одлива капитала у иностранство и неравномјерног развоја тржишних сегмената (иностранн осигуравачи могу бити заинтересовани за најпрофитабилније, превасходно комерцијалне секторе и велике корпоративне клијенте, запостављајући сегменте у којима се као клијенти јављају физичка лица). Земље које воде рачуна о интересима националне економије (Словенија), нису имале дилему да ли треба продати државне осигуравајуће компаније (као што је највеће и најефикасније друштво за осигурање Триглав). Након потпуне либерализације тржишта осигурања, која је омогућила улазак осигуравача из Европске Уније, Триглав је задржао лидерску позицију, подижући квалитет услуга и својих перформанси.

Контрола продајне мреже

Начин на који осигуравач ступа у везу са могућим осигураником и којим касније прати ток закључених уговора о осигурању представља пут, или начин продаје осигурања (Бијелић, 2002). Велики број друштава за осигурање тренутно фактички не влада својом ни екстерном ни интерном продајном мрежом, тј. посредницима. Посредник у осигурању је лице које стручно посредује између осигураника и осигуравача приликом закључења, спровођења и испуњења уговора о осигурању (Маровић и Жарковић, 2002). Непотпуна контрола сопствене мреже посредника знатно отежава прибављање одговарајућих и

квалитетних информација о стању на тржишту, цијенама конкуренције и сл. До сада је сваки талас давања попуста долазио услијед непровјерених информација посредника о понашању конкуренције и тражњи коју су процјенили. Квалитетна продајна мрежа један је од најзначајнијих фактора успјеха у осигуравајућој дјелатности. Кључне су њена организација, успостављање механизама регрутовања, образовања, награђивања, али и дисциплиновања. Продавци желе продати полисе, остварити план и зарадити провизију, неки пут и прекорачујући лимите које су замислили они који су формирали цијену и правила за преузимање ризика. То чини цијене на тржишту осигурања додатно нетранспарентнима, а управљање портфолијом осигурања изузетно сложеним. Веома брз развој информатичких технологија унио је праву револуцију у области трговања финансијских и услуга осигурања. Према обављеним истраживањима, у неким земљама са веома високим степеном развоја осигурања, иако се очекивало велико учешће продаје електронским каналима, интернета, резултати су показали да мање од 2% купаца купује услуге осигурања на овај начин (Trembly, 2001 & Regan, 1997).

Хармонизација прописа Републике Српске и Федерације Босне и Херцеговине

Усаглашеност закона међу ентитетима је постигнута у одређеној мјери (око 90%). Ипак, постоје суштинске разлике које стварају сметње у раду осигуравајућих друштава. Проблем се тиче Закона о осигурању од одговорности за моторна возила и остале одредбе о обавезном осигурању од одговорности, гдје у ентитетима постоје различите казнене одредбе. На примјер, према поменутом закону у Федерацији Босне и Херцеговине лица која не посједују полису осигурања од аутоодговорности могу бити кажњена затворском казном (од 30 дана до 3 године), док је исто питање у Републици Српској ријешено прекршајним санкцијама и за исту врсту прекршаја лице у Републици Српској ће бити кажњено новчаном казном. Хармонизација прописа је један од услова у оквиру процеса европских интеграција. Постоји опасност да би филијале из Федерације Босне и Херцеговине могле започети дампинг, без адекватне контроле од стране Агенције за осигурање Републике Српске. Снижавањем критеријума и спуштањем премије испод сваког нивоа доводе у опасност основне критеријуме пословања и урушавају цијели систем осигурања у Републици Српској. Дампинг цијенама којима се не може легално конкурисати, а што се огледа „трком“ за клијентима и „отимању“ осигураника. На крају ће испаштати осигураници, јер је због нижих премија и исплата штета нижа.

ДЈЕЛИМИЧНА ЛИБЕРАЛИЗАЦИЈА ТАРИФА КАО ПРЕЛАЗНО РЈЕШЕЊЕ ЗА ТРЖИШТЕ ОСИГУРАЊА ОД АУТООДГОВОРНОСТИ РЕПУБЛИКЕ СРПСКЕ

Либерализација тржишта обавезних осигурања и неред на тржишту као посљедица погрешног схватања либерализације одвојени су уском границом на коју се треба добро пазити. При преласку на либерализацију тржишта осигурања од аутоодговорности, неопходни услови треба да буду подешени за заштиту осигураника, као и солвентност друштава за осигурање. У процесу дерегулације, приоритет треба да буду цијене (World Bank, 2009). Контрола и сарадња свих надзорних институција, осигуравача, удружења за заштиту потрошача, нужни су за адекватан прелазак на либерализацију. Надзорно тијело мора проводити редовне, исправне и строге контроле над друштвима за осигурање, без изузетака и уз помоћ квалификованих и искусних кадрова. Контрола се мора вршити и над резервама штета, над ризицима који нису истекли и над стопом солвентности. Надзорно тијело нипошто не смије директно или индиректно интервенисати при одређивању премија (јер и то може довести до стечаја неког

друштва и може уништити тржиште) и нипошто не смије обазирати на опште познате политичке разлоге. Конкуренција је прописан инструмент помоћу којег се премије одржавају на ниским цијенама или се са тржишта истискују друштва која не могу опстати. Друштва за осигурање морају исправно оцијенити своје неријешене штете и морају се побринути да имају довољно резерви. Приликом утврђивања премија у обзир треба узети само статистичке податке цјелокупног тржишта и сваког појединог друштва, и то непристрасно без обзира што друга друштва за осигурање раде. У земљама у развоју, нормална пракса су биле законски прописане премије, са условима које поставља влада. Како тржишта сазријевају, земље треба да се крећу ка већој слободи у одређивању премија, чиме се доводи до ефикасније расподјеле ризика и ресурса (World Bank, 2009). Велике реформе се не спроводе нагло, а имајући у виду ниво развијености тржишта осигурања, тренутно финансијско стање друштава за осигурање, структуру власништва друштава за осигурање, као и свијест, те мотиве власника и лица која управљају друштвима, за Републику Српску би у првој фази дерегулације био прихватљив модел дјелимичне, односно постепене либерализације цијена.

Тумачећи одредбе Закона о обавезним осигурањима у саобраћају евидентно је да су највеће измјене у односу на претходни закон учињене у дијелу који се односи на осигурање од ауто-одговорности. У том смислу предвиђена је постепена либерализација цијена обавезног осигурања од аутоодговорности кроз одређене прелазне периоде, као и давање већих овлашћења осигуравајућим кућама приликом креирања политике цијена осигурања. Осигуравајућа друштва стичу право да након 3 (три) године од дана ступања на снагу закона креирају сопствене тарифе премија осигурања, као и цјеновнике за осигурање од аутоодговорности. Без обзира на овакво право осигуравајућих друштава, које стичу након истека прелазног периода, односно када престаје обавеза примјене заједничке тарифе и цјеновника за осигурање од аутоодговорности, новим законом нису занемарене одредбе Закона о друштвима за осигурање Републике Српске којима је дефинисана надзорна функција Агенције за осигурање Републике Српске, односно осигуравајућа друштва ће на сопствене тарифе и цјеновнике за осигурање од ауто-одговорности морати добијати претходну сагласност Агенције за осигурање.

ЗАКЉУЧАК

У процесу увођења система слободног одређивања цијена осигурања од аутоодговорности у Републици Српској, неопходно је обезбједити бројне предуслове, а најважнији су: успостављање поуздане статистичке основе за формирање тарифа (успостављање јединствене базе података); унапређење надзора (рада Агенције за осигурање); и усаглашавање са европским законодавством у области осигурања од ауто-одговорности (ускладити домаће прописе са кодификованом директивом Европске уније, Directive 2009/103/EC). Уз то треба се спровести широка јавна расправа, подстаћи развитак свијести код грађана о значају осигурања од ауто-одговорности, те подстаћи усавршавање запослених у осигуравајућим друштвима. Основне предности које би либерализација тарифа могла донијети су: а) да се преко веће конкурентности боље селектирају ризици, подстакне фер и транспарентна тржишна утакмица и подстакне развој тржишта; б) раст повјерења, као евентуална последица брже и ефикасније исплате одштетних захтјева; ц) стабилизовање тржишта, преко правичнијег положаја потрошача, најбољих цијена за потрошаче на основу процјене ризика. Поређењем са проблемима које су имале и имају поједине земље, говоре да се процесу либерализације треба опрезно приступити. Оно од чега се највише страхује је рат цијенама, (нагли пад цијена), који може многе осигураваче одвести у пропаст. Затим ту је потенцијална немогућност овладавања

интерном и екстерном продајном мрежом (посредницима), питање хармонизације прописа Републике Српске са прописима Федерације БиХ (опасност од дампинга). Либерализација може подстаћи и интензивнији улазак страних осигурава-јућих компанија на домаће тржиште и њихово доминирање, преко тога одлива капитала у иностранство и гушења домаћих осигуравајућих кућа.

У тренутној политичкој и економској ситуацији у Републици Српској (зависност од Европске уније), разумно рјешење би била дјелимична и постепена либерализација тржишта осигурања од аутоодговорности, како би се сви учесници на тржишту припремили за неизбјежне промјене.

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LIBERALISATION OF TARIFFS ON MARKET MTPL INSURANCE OF REPUBLIC OF SRPSKA

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ABSTRACT

Good set price in MTPL(motor third part liability) insurance is vital to the survival of insurers. MTPL insurance in the Republic of Srpska is legal liability insurance, the premium system is determined administratively, and premium of this kind of insurance occupies the largest share in the portfolio of insurance companies. The main problems in the functioning of the sector MTPL insurance are: unfair competition, violation of the premium automobile liability insurance system, large proportion of transactions with related parties, the lack of transparency, underdeveloped systems of internal control and audit, and poor cost management. Determination of tariffs in liberalized markets, the work done by each insurance company individually, with the application of mathematical and statistical methods, in order to adequately determine what premiums and adjust the riskiness of each insured. In the process of introducing a system of free pricing of automobile insurance, it is necessary to provide a number of conditions, the most important are: to establish a reliable statistical basis for the formation of tariffs; improvement of controls; and compliance with European legislation. Some countries have had major problems after the introduction of liberalization of tariffs on MTPL insurance market, while others through the process of liberalization with minor problems. The liberalization of tariffs potentialy creates certain hazards, but also benefits for the market MTPL insurance Republic of Srpska. In the current political, legal and economic situation in which the Republic of Srpska, the most appropriate solution would be partial and gradual market liberalization MTPL insurance.

Keywords: *insurance, MTPL, liberalization, tariffs, Republic of Srpska, reforms.*

ULOGA MENADŽMENTA ZDRAVSTVENE USTANOVE U DAVANJU USLUGA NA OSNOVU MEĐUNARODNIH UGOVORA

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SAŽETAK

Postojanje međunarodnih ugovora o pravima iz socijalnog osiguranja reguliše prenos iz jedne države u drugu državu ugovornicu, prava iz oblasti zdravstvenog osiguranja i zaštite. Iako postoje već niz godina, primjena tzv. konvencija o socijalnoj sigurnosti, i iz njih izvedenih prava, još nije dovoljno zaživela u radu zdravstvenih ustanova, već predstavljaju nepoznanicu koja se ignoriše ili se njihova primjena izbjegava. Pojedine zdravstvene ustanove imaju veća iskustva u ostvarivanju koristi iz pružanja usluga po ugovorima, ali su i kod njih prisutne rezerve i neiskorišteni potencijali. Davanje usluga inostranim korisnicima zdravstvenog osiguranja može se izjednačiti sa izvozom zdravstvenih usluga, a koji se ostvaruje u domaćoj ustanovi. Koristi od davanja usluga po osnovu međunarodnih sporazuma imaju i inostrani osiguranik, kojem je usluga neophodna, i zdravstvena ustanova koja dobija novog korisnika usluga, kao i zdravstveno osiguranje, koje posredno a nekad i jeftinije može da pokrije osigurani slučaj. Cilj ovog rada je da ukaže na potrebu aktivnog pristupa davanju usluga inostarnim osiguranicima kao i da se primjena ugovora obavi na što efikasniji način, a iz toga postignu koristi za ustanovu i za korisnika usluga.

Ključne riječi: zdravstvena ustanova, menadžment, zdravstveno osiguranje, konvencije o socijalnoj sigurnosti, medicinske usluge.

UVOD

Ugovori o socijalnoj sigurnosti postoje od početka XX vijeka, a prvi oblici u današnjem smislu nastaju iz sporazuma o prenosu iz zemlje rada zarađenog i ušteđenog novca radnika u zemlju porijekla, kao i iz konvencije Svjetske organizacije za rad o izjednačavanju prava domaćih i stranih radnika. U početku, sporazumi su se odnosili samo na pomenutu štednju radnika iz jedne zemlje ugovornice, a kasnije su prošireni na korištenje tzv. davanja iz socijalnog osiguranja, te danas obuhvataju širok spektar prava koja spadaju u socijalnu sigurnost: pravo na liječenje, zdravstveno osiguranje lično i za članove porodice, materinski

dodatak, prava iz osiguranja za slučaj nezaposlenosti, isplate invalidnine, prenos penzije i prava uz penziju, pogrebne troškove i slično. U pitanju je slabo obrađena tema u domaćoj literaturi, a najčešće pomenuta samo kroz uputstva ili brošure za osiguranike, što nije dovoljno za korišćenje efekata koji se mogu posmatrati kao izvoz zdravstvenih usluga.Prvi korišćeni termin za ovu vrstu ugovora su tzv. konvencije o socijalnoj sigurnosti. Tokom razvoja oblika i obuhvata ugovora korišteni su i drugi termini kao npr. sporazum o socijalnom osiguranju, ugovor o socijalnom osiguranju, sporazum o socijalnoj bezbijednosti, a u zavisnosti od toga šta može da se uklopi u termine zakonodavstva država ugovornica. Noviji stav je da se koristi termin: sporazum o socijalnom osiguranju, jer uglavnom obuhvata područja prava koja se stiču osiguranjem. Ako se prava dobijaju po nekom drugom osnovu kao npr. po osnovu državljanstva ili stalnog boravišta, onda nije riječ o klasičnom principu osiguranja tj. plaćanja da bi se dobila naknada u slučaju nastanka osiguranog slučaja. Zato se u slučaju korištenja prava po osnovu državljanstva ili stalnog prebivališta koristi naziv: sporazum o socijalnoj sigurnosti ili sporazum o socijalnom obezbeđenju.

Primjena ove vrste sporazuma na području bivše Jugoslavije je počela za vrijeme Kraljevine Jugoslavije, čije sporazume su obnavljale sve države naslednice, pa i sadašnje države kroz sukcesiju ugovora u početku, a potom zaključivanjem novih ugovora, u istom ili promijenjenom obliku i obimu. Trenutno su na snazi ugovori o pravima iz zdravstvene zaštite sa sledećim državama: Austrija, Belgija, Njemačka, Hrvatska, Mađarska, Italija, Crna Gora, Makedonija, Rumunija, Srbija, Slovenija, Turska, Luksemburg, Češka, Poljska, Velika Britanija, Slovačka. Povremeno se javlja potreba izmjene ugovora zbog promjena političkog statusa država naslednica, kao što npr. pristupanjem države Evropskoj Uniji počinju da važe drugi sporazumi.

USLOVI I NAČIN PRIMJENE UGOVORA O SOCIJALNOJ SIGURNOSTI U ZDRAVSTVENIM USTANOVAMA

Zbog rastuće širine prava koja osiguranik ima kroz ugovore o socijalnom osiguranju, u ovom radu fokusirano je samo pružanje zdravstvenih usluga inostranom osiguraniku s privremenim boravkom na području druge države ugovornice, npr. turističkog proputovanja, a za vrijeme nastale potrebe za zdravstvenim uslugama. Suština sporazuma je da se prava iz socijalnog osiguranja koriste preko domaćih institucija iz oblasti socijalne sigurnosti, a na teret inostranog nosioca osiguranja. Zakonom o zdravstvenoj zaštiti u Republici Srpskoj je regulisano da „Strani državljanin ili lice bez državljanstva ima pravo na zdravstvenu zaštitu u skladu s odredbama ovog zakona, međunarodnih sporazuma i drugih propisa koji regulišu ovu oblast“ (Zakon o zdravstvenoj zaštiti, 2009). To znači, da se zdravstvene usluge mogu pružati i inostranim osiguranicima koji ispunjavaju uslove za korištenje, s tim da se usluge pružene u domaćim zdravstvenim ustanovama obračunavaju inostranim nosiocima osiguranja. Druga, često korištena mogućnost, je direktno plaćanje usluge u zdravstvenoj ustanovi uz naknadnu refundaciju troškova kod inostranog osiguranja. Ovo je čest slučaj za usluge manje vrednosti, dok se kod skupljih i obimnijih zdravstvenih usluga obavezno kontaktira nosilac osiguranja. Postoji problem izbjegavanja davanja usluga u zdravstvenoj ustanovi u mjestu nastanka osiguranog slučaja (bolesti, povrede, smrti) zbog duge procedure naplate za pruženu uslugu, kao i zbog nepoznavanja uslova i postupka davanja usluga, tako da direktna naplata računa od korisnika usluge ima prednost nad dužom i posrednom procedurom naplate od osiguranja preko posrednika, tzv. organa za vezu. Prvi problem koji se stvara inostranom osiguraniku je pristup zdravstvenom sistemu u državi u kojoj se desio osigurani slučaj. Inostrani osiguranik treba da uoči lokalnu zdravstvenu ustanovu kao mjesto u kojem će moći da dobije uslugu u skladu s polisom

osiguranja. Sve domaće zdravstvene ustanove nisu uključene u pružanje zdravstvenih usluga prema zdravstvenom osiguranju stranih država, te je preporučljivo da menadžment ustanove jasno označi svoju ustanovu kao ustanovu u kojoj stranci iz pojedinih zemalja mogu koristiti zdravstvene usluge bez ličnog plaćanja usluge, već na način kao i domaći osiguranici. Sledeći problem je postojanje dokaza o osiguranju koje korisnici usluge nose ili ne nose sa sobom, te je potrebno naknadno izdavanje dokaza ili utvrđivanje statusa osiguranja. Posebnost ovog osiguranja je da se dokaz o postojanju osiguranja može da dobije naknadno, što je i čest slučaj, bez umanjivanja prava ili obima pruženih usluga. Zadatak ustanove, koja će pružiti zdravstvenu uslugu, je da provjeri status osiguranja i po potrebi kontaktira osiguravajuću kuću zbog često potrebnog obavještenja o početku liječenja.

SPECIFIČNOSTI POLOŽAJA KORISNIKA I DAVALACA ZDRAVSTVENIH USLUGA U UGOVORIMA O SOCIJALNOJ SIGURNOSTI

U svrhu pružanja i korištenja zdravstvenih usluga kroz odredbe međunarodnih ugovora moguće je da se koriste i posrednici u osiguranju koji stupaju u kontakt s inostranim osiguranjima kao tzv. organi za vezu ili za sprovođenje sporazuma o osiguranju. Takvu ulogu su uglavnom imali državni nosioci zdravstvenog osiguranja, nasleđeni iz socijalističkog državnog uređenja. Odredbama Zakona o zdravstvenom osiguranju u Republici Srpskoj su obuhvaćena lica kojima se obezbeđuje zdravstvena zaštita na osnovu zaključenih međunarodnih ugovora u skladu sa odredbama zakona, gdje je navedeno da „Državljani zemalja sa kojima je zaključen međunarodni ugovor o socijalnom (zdravstvenom) osiguranju, ostvaruju zdravstvenu szaštitu u obimu koji je utvrđen ugovorom“ (Zakon o zdravstvenom osioguranju, 1999). Postoji neiskorišćen potencijal usluga kada menadžment zdravstvene ustanove treba da aktivno istupi u cilju pružanja što šireg spektra zdravstvenih usluga iz svog domena djelatnosti kako bi inostranog osiguranika bolje opskrbili i osposobili za nastavak putovanja. Nije ograničeno da se pružanje i naplata usluga kao i kontakt sa inostranim osiguranjem obavljaju preko privatnih agencija za osiguranje ili pružanje usluga posredovanja između osiguranja. Ovde se naročito ističe potreba posredovanja između nosioca osiguranja tj. osiguravajuće kuće i zdravstvene ustanove koja je pružla uslugu, jer je korisnik usluge često u takvom zdravstvenom stanju da nije u stanju da lično kontaktira svog nosioca osiguranja i od njega da dobije preciznija uputstva o daljem postupanju. Stoga je aktivni pristup za zdravstvenu ustanovu u ovakvoj situaciji koristan i treba da počne još prije putovanja u drugu zemlju, kako bi potencijalni kupac tj korisnik zdravstvene usluge znao gdje može na najlakši način da dobije kvalitetnu i kompletnu uslugu. „U principu, zdravstveni rukovodioci (menadžeri) moraju na bazi svog znanja, profesionalnog iskustva i odgovarajuće vještine da obavljaju sledeće funkcije:

- -planiraju rad svoje ustanove, odjeljenja, tima itd.
- -organizuju i sprovode rad ustanove i odgovarajućih programa,
- -kontrolišu realizaciju aktivnosti,
- -koordinišu rad osoblja, komuniciraju i rješevaju konflikte,
- -motivišu i vode svoje ljude,
- -kolaboriraju s drugim organizacijama, pružaju potporu participacije zajednice ljudi“ (Dragić, 2018).

Između davaoca i korisnika usluge se javlja niz prepreka koje treba savladati, od potrebne dokumentacije, jezičkih i lokacijskih barijera, te očekivanog i zadovoljavajućeg kvaliteta medicinske usluge. Stoga menadžment zdravstvene ustanove mora da bude pripremljen na situaciju u kojoj susreće korisnika usluge koji nije tipičan kupac i koji ima drugačije zahteve za uslugom od korisnika usluga s kojima se ustanova svakodnevno susreće.

Različitost inostranog korisnika usluge potiče iz više elemenata: vrste osiguranja koje koristi, načina obračuna usluge, načina

plaćanja usluge, postojećih navika korisnika medicinske usluge, uslova za pružanje adekvatne usluge, želje za nastavkom započetog liječenja, prekida započetog liječenja, eventualnim ponavljanjem usluge, naknadnog dokazivanja vrste i obima pruženih usluga itd.

PRIMJENA MEĐUNARODNIH UGOVORA O ZDRAVSTVENOJ ZAŠTITI U MENADŽMENTU ZDRAVSTVENE USTANOVE

Davanje potrebne zdravstvene usluge može biti jednokratno ili ponavljajuće, planirano ili neplanirano, te hitno ili odloživo. Upravo zbog činjenice da se pojedine vrste zdravstvenih usluga mogu ili pak ne mogu planirati, potrebno je imati takve unutrašnje kapacitete i sposobnosti kako bi se adekvatno odgovorilo na zahtjev korisnika usluge, često naviknutog na uslugu pruženu po višim standardima. Obim način davanja zdravstvenih usluga su također regulisani međudržavnim sporazumom, koji npr. nalaže da „Nosilac u mjestu boravišta odnosno prebivališta je dužan obezbijediti licu osiguranom prema pravnim propisima druge države ugovornice usluge kao da se radi o njegovom osiguraniku" (Sporazum o socijalnom osiguranju između BiH i Republike Slovenije, 2008). Neplanirane zdravstvene usluge su medicinske usluge za koje korisnik usluge ne može da očekuje da će ih zahtevati: povrede u saobraćaju, nezgode, povrede na radu radnika koji su upućeni na radilište u drugoj zemlji, iznenadni nastup bolesti, pogoršanja postojećih bolesti i stanja. Treba razlikovati zdravstvena stanja u kojima se usluge mogu odložiti i stanja u kojima se usluge moraju hitno pružiti. Uloga zdravstvene ustanove kao davaoca usluga je da procijeni minimalni obim potrebne usluge kako bi se očuvali život, zdravlje i vitalne funkcije i sposobnosti, kao i da istovremeno ponudi pružanje nadstandardne usluge, imajući u vidu pretpostavljeni obim sledećih potrebnih usluga, kao nastavka započetog liječenja. Davalac usluge mora dati uslugu na odgovarajući način, jer je teško pretpostaviti pružanje kvalitetne usluge u slučaju susreta pacijenta-stranca i medicinskog osoblja bez znanja jezika, ili eventualnog prevodioca, ili bez postojanja dvojezičke medicinske i prateće dokumentacije. I pored postojanja elektronskih prevodilaca stranog jezika, nije umanjen značaj pripremljenosti za komunikaciju lekara i novog klijenta, koja bitno utiče na utisak o kvalitetu medicinske usluge i izgradnju odnosa povjerenja prema davaocu usluge, s ciljem ponovnog davanja i druge vrste usluge. „Do sada se kvalitetu rada prilazilo deklarativno, međutim uvođenje metoda kvalitativnog liječenja značiće da neće biti finansiranja bez dokazanog kvaliteta. Kao garancija kvaliteta rada je ispunjenje propisanih uslova za obavljanje usluga" (Mastilo, 2013).

KORISTI I OGRANIČENJA U PRUŽANJU ZDRAVSTVENIH USLUGA STRANOM KORISNIKU

Ekonomski interes zdravstvene ustanove u susretu s inostranim pacijentom je drugačiji od interesa koji ima u odnosu sa pacijentima koji su redovni korisnici usluga. Iako su sporazumima izjednačeni načini davanja potrebnih usluga kroz tzv. izjednačenost teritorija, razlika potiče iz činjenice da se kod stalnih korisnika usluge pružaju u cilju očuvanja zdravlja na duži rok, dok je kod inostranih pacijenata često potrebno hitno zbrinjavanje i stabilizacija stanja do osposobljenosti za povratak u zemlju prebivališta, uglavnom uz prekid započetog liječenja zbog transporta bolesnika kući. Propagirane mjere očuvanja zdravlja i podizanja kvaliteta života ostaju po strani. Korisnici usluga su iz širokog profila populacije: turisti, članovi porodica koji žive u inostranstvu, radnici u predstavništvima, vozači i saputnici na proputovanju, izvođači radova stranih kompanija, diplomatsko osoblje, strani studenti kao i sve veći broj domaćeg stanovništva koje tražeći posao odlazi u inostranstvo i tamo stiče prava iz zdravstvenog osiguranja. Rizik koji ima zdravstvena ustanova u ulozi davaoca usluge inostranom pacijentu sastoji se u sporosti naplate potraživanja od posrednika u osiguranju, kao i prihvatanja plaćanja cene

pruženih usluga u postupku refundacije troškova od inostranog osiguranja. Pri tome se mora voditi računa o finansijskim ograničenjima koja postoje kod korisnika usluge kao i kod osiguranja koje treba da pokrije nastale troškove liječenja, a zbog postojanja limita vrednosti usluge.[4] Nepoznavanje cijene usluge i procedure koje su potrebne uz svako liječenje, kao i samo stanje korisnika usluge, ometaju procjenu očekivanih troškova te su korisnici usluge skloniji redukovanju potreba do stabilizacije stanja ili spremnosti za odlazak kući, svom lekaru. Nosilac osiguranja, odnosno osiguravajuća kuća, može zahtijevati da se oboljeli osiguranik samo oporavi za putovanje i da se na određenom obimu zaustavi dalje pružanje zdravstvenih usluga u zemlji privremenog boravišta. Međutim, ako osiguravajuća kuća procijeni da su obim i cijena očekivanih troškova liječenja niži nego u državi stalnog prebivališta i osiguranja, postoji interes da se odobri završetak kompletnog liječenja na privremenoj lokaciji, pretpostavljajući da je sa stanovišta osiguranja povoljnije da se plati manji trošak liječenja. Pomenuta situacija se pojavljuje kod osiguranika koji iz zemalja sa višim nivoom cijena zdravstvenih usluga odlaze u zemlje s jeftinijim uslugama, te tamo koriste i kompletnu ciljanu zdravstvenu uslugu kroz tzv. zdravstveni turizam, što je već predviđeno pojedinim odredbama sporazuma, kao npr. u članu 14. stav 1. još važećeg Sporazuma između SFRJ i SR Nemačke o socijalnom obezbeđenju u kojem se navodi da … „Član 4. Stav. 1. Važi za lice: a) koje, pošto je nastao osigurani slučaj, prenese svoje mesto boravka na područje druge države ugovornice, samo ako se nadležni nosilac prethodno saglasio sa promenom mesta boravka“ (Stojanović, Stošić, 1996).

ZAKLJUČAK

Menadžment zdravstvene ustanove mora biti upoznat s pretpostavkama za uspješno uključivanje u poslove pružanja zdravstvenih usluga stranim osiguranicima: od poznavanja jezika, prepoznatljivosti zdravstvene ustanove kao davaoca kvalitetnih usluga, adekvatnog kadra i opreme, pripremljenosti na situacije pružanja usluge inostranom osiguraniku, do poznavanja procedura naplate troškova i eventualnog obavještavanja inostranog osiguranja. Aktivan pristup znači obavještavanje potencijalnih korisnika usluga i prije polaska na put da se određenim davaocima zdravstvenih usluga mogu s povjerenjem obratiti u slučaju potrebe za određenim medicinskim uslugama. Korist od ovog imaju oni davaoci zdravstvenih usluga koji uspiju da privuku i ovaj segment korisnika usluga, čime proširuju broj korisnika usluga, podižu nivo usluge na nivo prilagođen kupcu naviknutom na viši kvalitet usluge, razvijaju sposobnost reagovanja na pružanje usluga i tom relativno malom segmentu kupaca, dobijaju kupce i za skuplje usluge, uz relativno jednostavne promjene potrebne u prilagođenosti usluge stranom kupcu. Makroekonomska korist je sadržana u prodaji zdravstvenih usluga stranom kupcu a na domaćem području, što u vremenu sve većeg broja odlazaka domaćeg stanovništava u inostranstvo, gdje postaju korisnici stranog zdravstvenog osiguranja, značajno povećava potencijal ovog segmenta uslužnih djelatnosti.

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THE ROLE OF HEALTH INSTITUTION MANAGEMENT IN THE PROVISION OF MEDICAL SERVICES THROUGH INTERNATIONAL AGREEMENTS

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ABSTRACT

The existence of international agreements of social security rights regulate the transfer, from one state to another contracting state, of health and social security rights. Although they have existed for many years, the application of the so called, the convention on social security, and the rights derived therefrom, have not yet sufficiently taken root in the work of medical insti-tutions, they represent ignorant and ignore their application. Some medical institutions have greater experience in obtaining benefits from service provision by contracts, but they also have reserves and unused potentials. The provision of services to foreign insurance consumer can be equated with the export of health services, which is given in a domestic institution. The benefits of providing services under international agreements also have a foreign insured person in need of the service, a health institution that receives a new consumer, and health insurance, which can indirectly and sometimes even cheaper, cover the insured event. The aim of this paper is to point out the need for an active approach to the provision of services to foreign policyholders, as well as to implement the contract in the most efficient way possible, and to achieve benefits for the institution and for the service user.

Keywords: medical institution, management, health insurance, agreements of social security, medical services.

CONDITIONS FOR EFFECTIVE INTERVENTION OF OMBUDSMEN IN ANTI-DISCRIMINATION COURT PROCEEDINGS

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ABSTRACT

It is beyond any doubt that victims of human rights violations are rarely in position to initiate court proceedings fighting systematic discrimination themselves, which makes the role of human rights institutions indispensable. This specific mandate gives rise to numerous questions, such as: to what extent state institution takes the role of the legal representative, what capacities should it possess, on what basis it selects the cases meriting court intervention, is court intervention equally suitable in all areas of human rights protection and which analyzed model from Europe or wider has proved to be the most effective? Article offers analysis of court interventions in federal states with complex government structure and multiple institutions mandated with human rights protection, be it Ombudsmen Institution or Equality Body, court interventions in states with single human rights institution, comparative practice present in various European states, as well as interventions of human rights bodies before European tribunals. Author outlines the legal framework, human resources, and administrative structure that need to be provided, so that court interventions would have the desired effect and generate positive changes. In this process, it is of paramount importance to respect existing legal traditions and intrinsic practices, which proved their practical applicability over time, while any attempt to use legal transplants, with a goal of hastily unification of national legal orders and imposing transnational jurisdiction, can only produce confusion and countereffects.

Keywords: Discrimination; Equality bodies; Judicial protection; Third party interventions.

INTRODUCTION

Duty of human rights institutions to intervene in court proceedings stems from the obligation to provide aid to victims of human rights abuse, but also from the obligation to enforce national laws and constitutional principles that protect basic rights and freedoms of citizens. It is established belief that modern concept of court intervention originates from the concept of the friend of the court (*Amicus*

Curiae), which existed in Roman law and was frequently used in the countries belonging to Anglo-Saxon legal tradition. In countries associated with continental European law, another similar ancient concept established itself in the form of collective action (*Actio Popularis*), which, according to its original meaning, refers to the possibility of an individual to initiate a court proceeding in public interest.

Today, these institutes or their derivatives are used in different legal systems across the world and in international tribunals, but there is no unique model that would be equally applicable in each context. Also, possibilities of institutions for protection of human rights to intervene in court proceedings are not equally compatible with various legal cultures and traditions. Presented research results clearly indicate that abovementioned institutes do not exist in all legal systems, as the level of their practical use and effectiveness is also influenced by linguistic dilemmas and that decision whether any institution may intervene on behalf of the victim sometimes depends on the court and not only on the institution for protection of human rights. It is beyond any doubt that victims rarely have the capacity to initiate court proceedings themselves, which makes the role of the human rights institutions indispensable. It is however necessary to clarify what exactly this role entails, should the state institution take on the role of legal representative, what kind of capacities it should possess, how it should select cases meriting intervention, whether court intervention is equally useful in all areas of human rights protection and, finally, which touches the very essence of this modest research, which of the existing models shows the best results.

Complexity and character of this research, content of the hypothesis and declared goals determine the combination of methods used in developing this work, such as legal (dogmatic or normative) method, analytical method applied to scientific and practical literature, case study, comparative method as well as general methods of logical reasoning such as synthesis, induction, abstraction and generalization when it comes to formulation of conclusion.

Mechanisms of court interventions in countries with complex or federal form of government are taken as starting research topic, where there are usually several institutions for protection of human rights, which includes specialized equality bodies. Further, the very essence of this competence is placed under scrutiny because there are different levels of engagement, which sometimes merely involve possibility of delivering expert opinion without formally acquiring the status of the party to the proceedings, while at other times they entail initiating and participating at court proceedings which also includes procedures on legal remedies as well as authority to represent parties before the court or other competent tribunal.

Finally, this Article points to the legal, administrative and financial framework that needs to be in place in order to have effective mechanism of court interventions which can produce real change. In process of applying different models and analyzing their effectiveness it is necessary to respect inherent legal traditions and authentic legal institutes which demonstrated their practical applicability during the course of years, while any attempt to use legal transplants thorough which national legal orders are hastily being unified and promoted above the boundaries of national jurisdictions can only create confusion and counter-effects. The purpose of this analysis is, in spite of substantial differences between different legal systems, to present conclusions, best practices and recommendations that can serve as guidance to the courts, legislatures, governments and independent institutions for protection of human rights, in case they have ambition to establish or utilize judicial interventions.

United States

Intervention in the court proceedings for protection from discrimination in the United States of America is conducted through administrative disputes, most frequently in the area of realization of voting rights, through strategic litigation in

discrimination cases regardless of discrimination basis, which is usually result of legal or by-legal act or practice of public authorities and through submissions in the form of Amicus Curiae briefs in all legal spheres, including criminal law, criminal procedure law, enforcement procedure in civil matters, conditions of execution of criminal sanctions and sentencing. Whole spectrum of government agencies is involved in court interventions, making the American system one of the most versatile and most complex, but also probably one of the most effective in terms of using this possibility.

Role of the equality body at the federal level is entrusted upon the U.S. Commission on Civil Rights with headquarters in Washington D.C. and six regional offices: Washington DC, Atlanta, Chicago, Kansas City, Denver and Los Angeles. Commission is established by the Civil Rights Act of 1957 and it reports to the U.S. Congress for its performance. Commission is established as an independent and politically neutral federal agency with mandate to conduct investigations, apply and enforce federal statutes and promote policies in the field of human rights protection, to conduct research and analysis of topics of outmost significance for the work of federal government and to present results of such analysis to the public and legislative bodies. Commission investigates allegations of voting rights infractions, allegations of discrimination based on race, color of the skin, religion, sex, age, disability, national origin and human rights abuse by the law enforcement agencies. This includes conduct of the police authorities and other security agencies, conduct of the administrative, judicial and other government institutions, as well as treatment of individuals deprived of liberty. In order to achieve its mission, the Commission is authorized to request access to the documents and databases, to question witnesses, to organize public hearings, to issue public statements, to forward citizens' complaints to the authorities competent for protection of human rights at federal and local level, to follow and enforce implementation of laws which guarantee equality of citizens and to publish reports and studies on human rights topics, which usually contain recommendations and advice to lawmakers.

Commission intervenes in the administrative and court proceedings through the Office of General Counsel, through participation in the civil proceedings by delivering expert opinions in the capacity of interested third party. In order to collect information about cases requiring court intervention, but also to conduct thorough investigation and collect necessary evidence, Commission has established Advisory Committees in each of 50 states and in District of Columbia. Committees are composed of residents of the state in question, who do not receive compensation for their work and their duty is to report to the Commission in writing, on allegations or findings related to voting rights infractions or discrimination on any of the abovementioned grounds, to deliver opinions in cases falling under the Commission's jurisdiction that have to do with the state of human rights protection in a given state during reporting to the President or the Congress, to receive complaints from the citizens, public officials and representatives of public and private organizations, to deliver their opinions and analysis upon the request of the Commission and to attend public hearings or gatherings relevant to the work of the Commission.

Based on such investigative mechanisms, Commission most often intervened in court proceedings related to general topics significant for the country as a whole, such as the questions of gender equality (United States Court of Appeals [USCA], 2017), questions of conditions for registration of national minorities in exercising their voting rights (United States Supreme Court [USSC], 2013; Appellate Court of the Fourth Circuit, 2016), questions of realization of rights of families whose members have different nationalities (USSC, 1950), as well as questions of affirmative action in the field of education (USSC, 2013).

Having in mind complex administrative system and the need for specialization

(geographical and thematic) for the specific areas which are susceptible to violation of principle of citizens' equality, Commission primarily has a coordinating role between institutions of different levels of government. In line with that, it has a duty to report to the central government at least once a year, on the state of human rights protection and results of undertaken activities, and, where applicable, to propose legislative change.

One of the federal institutions that most frequently uses possibility to take active role in court proceedings and to file anti-discrimination claims is the United Stated Department of Justice, which has specialized offices as part of its organizational structure, called Civil Rights Sections, which are divided by areas of protected rights: equal opportunities in education, workers' rights, housing, rights of immigrants, disabilities rights, rights of prisoners, persons in custody and minors deprived of liberty, and citizens' voting rights (United States Department of Justice [USDJ], 2018). The highest number of court interventions Department had in the field of education and particularly related to question of school desegregation, where the annual budget for these purposes was earmarked in the range of two to six million dollars (United State Commission on Civil Rights [USCCR], 2018), while the number of permanently employed staff was around 30 (USCCR, 2018), in the field of housing, where between 20 and 40 cases are opened on annual basis with one half resulting in strategic litigation or out of court settlement[5], as well as in the field of equal opportunities in employment where 229 court cases have been initiated between years 1998 and 2017 (USDJ, 2018).

It is worth noting that Civil Rights Sections takes active role in the court processes through organizing expert discussions and trainings for judges, related to the questions that bear direct significance on realization of fundamental human rights, such as conversion of monetary fine into prison sentence for the low-income defendants.

It is equally symptomatic that the term used to describe the tool which allows intervention in the court proceedings is "enforcement" of law, statute or any other act, which leads to the conclusion that the court intervention is daily, understood and regular activity and therefore at the very heart of the functioning of the national institutions for protection of human rights.

Complex federal system, with virtually unlimited number and types of practical needs for court intervention for the purpose of ensuring equality of citizens, in a country where the power of court ruling has a status not only of the source of law but also of the corrective of the legislative power, requires not only comprehensive, but also flexible and decentralized mechanism, which is adequately equipped and financed at the same time, and whose reactions are performed in timely manner. In context of globalization and close international cooperation, this system, regardless of its particularities, had profound effect on formation of best legal practices beyond its borders, together with another representative system of Anglo-Saxon legal tradition, where many of the mentioned institutes originate from.

England

Although for several decades equality protection in Great Britain was under mandate of several specialized bodies, Equality Act of 2006 established single Equality and Human Rights Commission as central and independent public institution with authority to promote and enforce equality and anti-discrimination legislation on the territory of England, Scotland and Wales (The Equality and Human Rights Commission [EHRC], 2018). Commission was established by overtaking and merging of Commission for racial equality, Commission on equal opportunities and

[5]For example, during 2016, there were 18 cases opened to address lack of equal opportunities to raise housing loans for the members coming from minorities' communities. Out of that number, seven cases resulted in strategic litigation and the total damages awarded amounted to 37 million dollars. United States Department of Justice, The Attorney General's 2016 Annual Report to Congress Pursuant to the Equal Credit Opportunity Act Amendments of 1976, last accessed on 11.01.2018. at: https://www.justice.gov/crt/page/file/996791/download

Commission for protection of persons with disabilities. Commission also covers other grounds of discrimination, such as age, sexual orientation, religion or belief. Seat of the Commission is in London, branch offices are located in Manchester, Glasgow and Cardiff and it is financed from public budget through Ministry of Education.

In its dealings with the courts, Commission has a mandate to provide legal aid to the victims of discrimination, to intervene in ongoing court proceedings or to initiate new ones, including the use of legal remedies and proceedings questioning constitutionality of legislation and to request issuing temporary measures from the courts (Equality Act, 2006).

These possibilities are most frequently used in cases referring to equal opportunity in employment, equal access to goods, institutions and services and in the field of housing and education (EHRC, 2018). Average annual budget of the Commission in the period between 2007 and 2017 ranges from 20 to 60 million Euros (EHRC, 2018), there are between 200 and 400 staff employed in the field of equality protection(EQUINET, Equality and Human Rights, 2018), small number of cases of general importance are selected annually for strategic litigation (EHRC, 2019), in accordance with adopted Strategic Litigation Policy (Equality and Human Rights Commission, 2015), with rate of success in the range of 60% to 80% (EHRC, 2018).

Out of large number of cases brought to the attention of the Commission, authority for court intervention is used when it is necessary to effectuate positive change of practice, when there is a need to clarify specific legal regulation, when it is desired to nominate the questions of significant importance for priority resolution or to challenge policies or practices which can result in significant inequalities within commercial or other public activity.

Work of the Commission attracted international attention in case where respondent was British National Party (BNP), which adopted a Statute defining that membership in party is open to individuals of "originally white and related ethnic groups." Commission sought revision of the Statute after which the respondent offered to reinterpret the term "white" on its official web page. Convinced that even after interpretation, the Statute would leave a possibility for discrimination of potential members based on race, Commission initiated the process for protection from discrimination against the president of the Party and two high ranking officials before the Central District Court in London. The Court accepted the Commission's stand and ordered that Statute be changed in accordance with Clause 4 of the Equality Act, which was duly implemented (The Guardian, 2018).

Europe

Although national institutions for protection of equality are performing their duties based on the same legal framework of the European Union, their work is organized differently, they have different mandate and their mission is fulfilled within different legal systems. European Union directives (Council Directive, 2000/78/EC; Council Directive, 2004/113/EC) request from the states to establish body or bodies for protection and promotion of the principle of equality, that these bodies have mandate to assist victims of discrimination, that they are authorized to conduct independent investigations, to issue recommendations and publish reports on discrimination. Nature and the scope of assistance that should be offered to victims of discrimination are not, however, specified. Recommendations of the European Commission against Racism and Intolerance (ECRI), although not binding, are an attempt of codification of the best practices of the equality bodies and interpretation of the aforementioned Directives. In ECRI General Policy Recommendation on specialized bodies for combating racism, xenophobia, anti-Semitism and intolerance at the national level, states are requested to allow equality bodies to „bring cases of individual and structural discrimination or intolerance in the equality body's own name before institutions, adjudicatory bodies and the

courts", (ERCI, 1997), in accordance with national legal system.

In interpretation of EU Directives, European Court of Justice stated in the case Rewe-Zentral finanz:

"In absence of the rules to the [European] Community on this question, it is up to domestic legal system of each member state to establish court jurisdiction and prescribe procedural requirements for initiation and participation in proceedings with a goal of protecting rights of citizens, which directly originate from the Community law." (European Court of Justice, 1976).

Using possibility of court intervention or Amicus Curiae briefs is not, however, widely spread phenomenon, for which there are several explanations. Some of the legal systems do not recognize this kind of competence in any form. Some equality bodies were only recently established and parameters of their mandates or the governing laws are not tested in practice. Generally, it appears that the concept of court intervention more strongly resonates in member states which are following common law system, although it is not exclusively reserved for those countries.

At the level of European Union, equality bodies may forward cases for decision to specialized tribunals[6] or initiate court proceedings in cases of discrimination.[7] Austrian Ombudsmen for Equality can ask the court to issue declaratory judgment in labor disputes or in civil cases when it disagrees with the decision of the Commission for Equal Treatment or when the responsible party does not agree with the findings of the Commission. Danish Institute for Human Rights as well as Public Attorney of Estonia (who also performs the role of Ombudsmen since 1999) provide support to victims of discrimination in the process of receiving legal aid, when they deem it necessary. In administrative and civil disputes in France, parties to the dispute or the court itself may request that Commission for Equality and Elimination of Discrimination intervenes by delivering the files containing results of the investigation and its findings on the subject matter of the complaint, or, if the case was not the subject of deliberation before the Commission, to deliver its own views on the factual basis and interpretation of law to the court. In criminal matters, French Commission may intervene on its own initiative. Other equality bodies issue legally binding decisions[8], impose fines that can be challenged at the court[9] or have explicitly defined advisory role in the capacity of Amicus Curiae.[10] Certain equality bodies that may initiate court proceedings also may represent victims of discrimination at the court.[11] When equality body initiates court proceeding on behalf of the victim, that turns him from neutral to interested party which undoubtedly represents the interests of only one side of the dispute i.e. victim of the alleged discrimination. This change is usually followed by reassignment of the case to the different official or different department within same equality body.

Although many equality bodies have authority to intervene in court proceedings in cases of discrimination, only few[12] adopted detailed criteria used to decide which cases require intervention. Some of the most quoted reasons are: potential benefit to the future victims of discrimination, enforcement of statute or other act, ensuring

[6]This is the case with Austrian Ombudsman for Equality, Ombudsman for Equality and Ombudsman for Minorities of Finland, Center for Gender Equality of Iceland and Equality Body of Ireland

[7]Belgium, Finland, France, Ireland, Malta, Slovakia, Sweden and United Kingdom

[8]Bulgaria (Commission for protection from discrimination); Cyprus (Ombudsmen); Estonia (Public Attorney and Commission for equality and equal treatment); Finland (National Tribunal for Discrimination); Hungary (Equal Treatment Body); Iceland (Committee for Appeals on gender equality); Ireland (Equality Tribunal); Norway (Tribunal for equality and anti-discrimination) and Romania (National Council for elimination of discrimination).

[9]Latvia, Romania, Slovenia, Bulgaria, Estonia, Ireland, Norway

[10]Bulgaria, Finland, France, Ireland, Latvia, Lithuania, Norway, Romania, Slovakia, Slovenia and United Kingdom

[11]Ireland (Equality Body), Portugal (High Commissioner for Immigration and Intercultural Dialogue), Slovakia, Sweden and United Kingdom

[12]Belgium, Ireland (Equality Body), Sweden and United Kingdom

practical equality, interpretation of existing legal provisions, interests of the victim or the grieving party and potentially corrective influence on their situation, striking adequate balance between different forms of discrimination and resources which are at disposal of equality bodies for such purposes and cooperation with other actors that represent victims of discrimination in the court. In applying these criteria an estimate is made what is the individual benefit for the victim, such as material compensation and on the other hand what is the general interest for improving legal certainty and preventing discrimination in particularly susceptible areas. These cases play a key role in the process of implementation of laws; they contribute to the positive developments concerning discriminatory practices and raise awareness about seriousness, damaging effect and the need for sanction. Those bodies that adopted guidelines for selection of cases meriting court intervention are usually the ones that most often engage in such activity.

It seems, however, that there is a substantial overlap or even confusion between concepts of intervening party, interested third party and friend of the court, depending on the legal culture, tradition and accepted legal terminology.[13] Due to different interpretations and ambiguities in applying mentioned concepts, but also not fully defined role of national institutions for protection of human rights, it is necessary to analyze practice of European courts in cases for protection from discrimination where those bodies have intervened.

INTERVENTION OF OMBUDSMEN BEFORE EUROPEAN COURT OF JUSTICE

Court of Justice of European Union (CJEU) is the highest judicial body mandated with interpretation of the agreements of the European Union and assessing legality of the acts of the European institutions. Court plays a key role in legal integration of European Union, through deliberating and deciding on limitations of the authorities of the Union, and in formation and interpretation of its core principles. By virtue of that, Court frequently addressed the question of the interpretation of Directives that treat the question of citizens' equality and indirectly the question of role and limitations of authority of the equality bodies in court proceedings.

In *Webb v Emo Air Cargo* case, while determining the obligation of state authorities, Court decided that Directive on gender equality should be interpreted with a goal of achieving practical and not only formal equality (CJEU, 1995), while in *Kalanke v Freie Hansestadt Bremen* case Court determined that system of positive obligations on the part of equality bodies is necessary step towards implementation of principle of equal opportunities, required by the Directive on gender equality (CJEU, 1993). Court therefore places duty on states to undertake positive measures towards implementation of the Directives, which undoubtedly encompasses possibility of court intervention before national courts. This, however, does not apply to the right of equality bodies to initiate procedure before the Court of Justice of the European Union.

Article 267 of the Treaty of the functioning of the European Union provides for the right of national courts or tribunals to seek interpretation of the agreement or acts of the institutions, bodies, services or agencies of the Union from the European Court, when the resolution of such question is needed in order to reach a decision. It is however clear that rules regulating the functioning of the Court do not leave the same possibility for the national equality bodies, even concerning questions of interpretation or implementation of the equality directives. Such reasoning is confirmed by the case law of the European Court in *Valeri Hariev Belov v CHEZ Elektro Balgaria AD and Others* (CJEU, 2013), where the request of Commission for protection from discrimination of Bulgaria

[13]For example, National Center for Human Rights of Slovakia can submit "expert opinion" to the court on the matters of equality. Judging by the content of this authority, it is strikingly similar to the concept of Amicus Curiae from common law jurisdictions.

for preliminary opinion was deemed unacceptable by the Court. In explanation, the Court reasoned that one of the key principles guiding the acceptability assessment is that the right of certain body to forward the case to the European Court of Justice for preliminary opinion is solely the question of European and not national law.

In that context, Court examines whether the body was established by law, whether it is permanent, whether it has compulsory jurisdiction, whether there is adversary procedure (*inter partes*), whether it applies laws in reaching the final decision and whether such body is independent. Besides all of the above-mentioned, it is necessary to determine whether there is ongoing court proceeding and that the raised question is the subject of the judicial deliberation (CJEU, 2013).

Situation is somewhat different when it comes to right to make submissions in the capacity of interested expert party, without participating in the process itself. Although existing rules of the Court do not explicitly allow this possibility for the equality bodies or any other third side for that matter, member states as well as European Commission have the right to submit written observations in ongoing proceedings. Intervention in the proceedings before the European Court can therefore be indirectly achieved in the cases where the national equality body previously participated at the national level. This opportunity was used by several European equality bodies (Belgium Center for Equal Opportunities and Combat against Racism, 2007; Equality and Human Rights Commission for Great Britain, 2006, 2007; Commission for Equality of Northern Ireland, 1984, 1993; Ombudsmen of Sweden, 1998), while some of these cases had profound effect on the development of the European anti-discrimination law.[14]

INTERVENTION OF OMBUDSMEN BEFORE EUROPEAN COURT OF HUMAN RIGHTS IN STRASBOURG

Unlike Court of Justice of the European Union, European Court of Human Rights (ECHR) in Strasbourg not only allows participation of the institutions for protection of human rights in the capacity of interested third party, but also calls for such intervention when it can be beneficial for reaching the decision.

Before all, it should be noted that national institutions for protection of human rights cannot initiate the process before the European Court of Human Rights on behalf of the victim, because they are prevented from doing so by the condition set in Article 34 of the European Convention of Human Rights. Although some authors advocate for such possibility (De Beco, 2009), recent meetings of the Council of Europe state representatives at the highest level indicate that there is no support for such changes in system of human rights protection set by the Convention (Buyse, 2012).

Furthermore, national institutions for protection of human rights, although established by the state and independent from other branches of government, cannot address the Court on their own behalf for the alleged violation of rights guaranteed by the Convention, that are committed by the state. Finally, practice of the Court is unambiguous with regard to acceptability of collective suits *(Actio Popularis)* where the appellant is organization or association whose interests are infringed, but who are not direct victims of the state action. In case *Aksu v. Turkey*, Court underlined that „therefore, existing of the victim who is directly affected by the alleged violation of the right from the Convention is necessary condition for setting the Convention protection mechanism in motion, although this condition should not be interpreted in rigid and inflexible way“, (European Court of human Rights [ECHR], 2012).

[14]In case C-222/84 (*Marguerite Johnston v. Chief Constable of the Royal Ulster Constabulary*), European Court of Justice determined that „depriving the appellant of the possibility to claim that he is the victim of discrimination because of the unequal treatment by the court represents violation of the law of the European Union“; in case C-303/06 *(Coleman v. Attridge Law)*, Court has established that prohibition of discrimination includes discrimination on the bases of the perceived association with a group, while in the case C-54/07 *(Centruum vor Gelijkheid van Kansen en voor Racismebestridjing v. Firma Feryn NV)*, Court has established that the act of discrimination without witnesses can still represent discrimination according to the principles that regulate proving of discrimination.

Unlike mentioned limitations, Article 36 of the European Convention of Human Rights allows participation of third parties in several ways:

1. High Contracting Party whose citizen appealed to the Court may submit written observations and take part in the deliberation of the cases before the Chamber or Grand Chamber.
2. In the interest of reaching the most informed decision, President of the Court may invite High Contracting Party which is not party to the dispute or any other interested party which is not the appellant, to make written submissions or to take part in the discussion.
3. Council of Europe Commissioner for Human Rights may send a written submission and take part in the discussion of cases.

Cited provision therefore allows interventions of Ombudsmen upon request from the Court or through delivering submissions to the High Commissioner for Human Rights of the Council of Europe. The advantage of the second option is that the Commissioner has a right to intervene in any case, while participation of Ombudsmen can be highly beneficial in order to have better understanding of the situation in the responding state. For that reason, Commissioner established liaison office with national institutions for protection of human rights, with the exact goal of strengthening cooperation and coordinating exchange of information (De Beco, 2009). First option, according to which national institutions seek permission from to Court to intervene, entails the risk that such request is denied having in mind that the Court receives more demands for intervention that it can approve and it makes selection based on their relevance for decision making in the case. In reality, however, national institutions for protection of human rights are usually granted permission to intervene, not only because the Court is generally open for interventions but also because the fact that national institutions are deeply involved in domestic system for protection of human rights whose functioning the Court is examining (Harris, O'Boyle, Beats & Buckley, 2009). Furthermore, it can be argued that the legitimacy of their interventions is greater due to their independence, when compared to non-governmental organizations which are usually guided by very specific interests.

Interventions of national institutions for protection of human rights before the European Court in Strasbourg in last few decades have not been numerous, but their number is greater every year and they certainly represent positive development of the practice in application of the Convention. These interventions helped the Court to reach some important decisions, such as the judgment related to the right of expression of confession in the context of wearing appropriate uniform for flight attendants employed by the private British carrier (ECHR, 2013), judgment establishing that the sexual molestation of the child amounts to torture, inhumane and degrading treatment or punishment, prohibited by Article 3 of the Convention (ECHR, 2014), judgment concerning the right of Iraqi citizens who were deported from one of the member states to Iraq, where they can be subjected to capital punishment (ECHR, 2010), judgment addressing the issue of sterilization without consent (ECHR, 2012), or judgment dealing with question of involuntary admission to psychiatric institution and unjust procedure of appointment of custodian (ECHR, 2012).

From the perspective of the Court, national institutions for protection of human rights are valuable source of evidence and information, while from the perspective of the states signatories of the Convention, activities of these institutions make significant contribution to raising awareness of importance and effectiveness of the human rights protection mechanisms in general. Described practice follows Paris principles which require that the national institutions for protection of human rights cooperate with regional mechanisms for protection of human rights. Supporting the work of the Court from the level of national jurisdiction, national institutions contribute to the effectiveness of the European system

for protection of human rights and increase legitimacy of the Court decisions, while offered assistance helps with reduction of backlog of cases at the same time.

CONCLUSION

Judicial proceedings generally represent one of the most important and most effective ways to promote and ensure application of legal norms, because court decision in particular case can have far-reaching legal and social consequences. Having in mind the fact that institutions mandated with human rights protection also have a duty to promote and enforce human rights law it is beyond any doubt that they should engage in activities that ensure full implementation of these laws, which includes possibility for judicial intervention. There is internationally recognized duty of national courts to interpret domestic legislation in light of international standards formulated in the conventions, directives and case law. On the other hand, it would hard to imagine that one institution which promotes protection of citizens' rights does not have an authority to seek implementation of the core human rights principles by judicial intervention. Intention of High Contracting Parties, presented comparative practice of the national human rights institutions and interpretation of international conventions and European directives by regional courts, unequivocally lead to such conclusion.

In order for institutions for protection of human rights to perform this function at all, it is necessary for the state not only to abstain from erecting barriers or administrative burdens that would limit such possibility, but to take proactive role including securing adequate capacities for the stated purpose. This primarily refers to financial and human resources, that need to be secured taking into account many factors such as the caseload, level of implementation and realization of citizens' rights even without intervention of competent bodies, state of human rights in specified fields which are particularly susceptible to discrimination or status of especially vulnerable groups in any given society or in particular period of time, possibilities of courts to influence positive changes in society through its decisions on selected topics, as well as neutral factors such as population size, budget and existing capacities for protection of human rights. Further, internal structure of human rights bodies must be modified to accommodate the mandate for judicial intervention since analyzed models point towards conclusion that it is usually necessary to establish separate department whose functioning is separated from functioning of the departments that investigate citizens' complaints. Such separate department should be primarily focused on monitoring state of human rights in selected fields, litigation, filing appeals and cooperation with other relevant institutions, mainly judicial and non-governmental organizations. Such division and specialization of functions is especially important because of the fact that institutions for protection of human rights by default act in neutral manner when investigating citizens' complaints, by according due attention to the arguments coming from both sides and reaching final decision in accordance with applicable laws, while judicial intervention entails completely different operation modality, representing the interests and arguments of only one side and having favorable outcome of the process as the only goal. Equally, judicial interventions of the bodies without adequate capacities can only cause counter-effects, not only because of the increased possibility for unfavorable outcome of judicial proceedings but also because of potentially aiding general culture of impunity, allowing for lack of sanctions for the responsible party and dissuading victims of human rights abuse from seeking material and moral satisfaction.

Finally, for efficient participation of bodies mandated with human rights protection in judicial proceedings, it is necessary for the courts to be open and informed to acknowledge this type of competence and to give due regard to such interventions insofar as they represent findings of competent authority on the questions of their expertise. Guiding

rationale for all responsible branches of government is the fact that citizens rarely decide to initiate court proceedings themselves, since they are time consuming, exhausting and financially demanding, while strategic focusing of resources on individual court case can effectuate substantial changes in general public interest.

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GUIDELINES TO AUTHORS FOR WRITING PAPERS

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ABSTRACT

Guidelines to authors on preparing articles is formed pursuant to the world's best publishing practice and the Rulebook on publication of scientific publications (Official Gazette of the Republic of Srpska, No. 77/16). Guidelines are issued to ensure a uniform style of publication of articles in all issues of the scientific and professional journal of "STED JOURNAL". The Journal is published half-yearly (May- November) in print, with a circulation of 200 copies, and an electronic version of the edition is published on the site of https://stedj-univerzitetpim.com/. All articles must be designed in accordance with these Guidelines and sent to the email address of the editor in chief, and then they go into the process of anonymous review by two reviewers. Only papers that have at least two positive reviews shall be published in the Journal. The Editorial Board has adopted the List of reviewers that has been confirmed by the Senate of the University. The identity of reviewers is not revealed to the authors, and vice versa.

Keywords: STED Journal, review, publishing, scientific publications.

GUIDELINES TO AUTHORS FOR WRITING PAPERS

When preparing these guidelines, the editorial board of the journal places an emphasis on the APA standards of the academic writing. It means that applying them consistently we also bring the papers of our authors closer to the global audience, that is, to readers. The guidelines to authors consist of two parts. The first part is related to the content aspect of the paper, that is, its necessary basic elements, based on which the reviewers evaluate the content adequacy of the paper. The second part of the guidelines is related to the technical aspect of formatting the paper based on which the editorial board, after receiving the paper, decides whether to send the paper to be reviewed or return it to the author to be finished before reviewing.

STED JOURNAL, the journal of the PIM University on social and technological development publishes the papers which are subject to review and which are classified into the following categories:

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Original scientific paper is a paper which is basically organised according to the IMRAD scheme (Introduction, Methods, Results And Discussion) for experimental research or in a descriptive way for descriptive scientific fields, in which one for the first time publishes the text on results of their own research carried out applying the scientific methods,

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The STED JOURNAL can include contributions from conferences, congresses, consultations and symposia.

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The speed of publishing the paper will depend on how much the manuscript (text) complies with the guidelines. The papers requiring major modifications and amendments shall be returned to the author to be revised before reviewing.

TECHNICAL GUIDELINES

The paper shall be sent to the Editorial Board of the journal by e-mail in the form of a text prepared specifically using the text processing program of Microsoft Word. The paper should include maximum 10 A4 pages and consist of the following elements in one of the official languages of Bosnia and Herzegovina or in English:

- Title of the paper;
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- Abstract;
- Key words;
- Introduction;
- Theoretical framework;
- Experimental part;
- Results and discussion;
- Conclusion;
- Literature overview;
- Title in English, list of authors and summary in English.

The title of the paper should be centred and written in upper case, Times New Roman, 14 pt, bold, Caps Lock;

The authors should be written in the centre, without titles, Times New Roman, 12pt, normal, and the names of institutions centred, Times New Roman, 10 pt, normal.

The titles of a part of the paper– of the first level, left alignment, Times New Roman, normal, 12 pt, bold, Caps Lock;

The subheading – of the second level, left alignment, lower case, Times New Roman, 12 pt, bold;

The subheading – of the third level, left alignment, lower case, Times New Roman, 12 pt, italic.

Other parts of the paper should be written using the alignment on both sides (Times New Roman, 12 pt), one-sided spacing with one empty row above, between the subheadings and paragraphs, with margins of 2.54 cm (1"). The beginning of the paragraph should be typed at the beginning of the row.

The abstract should have 100-250 words, and it is positioned between the paper heading (consisting of the paper title and information on authors) and key words, which are followed by the text of the paper.

If the paper is written in one of the official languages of Bosnia and Herzegovina, the summary in English is given in an extended form, as a so-called resume and it should consist of up to 500 words.

Tables and charts

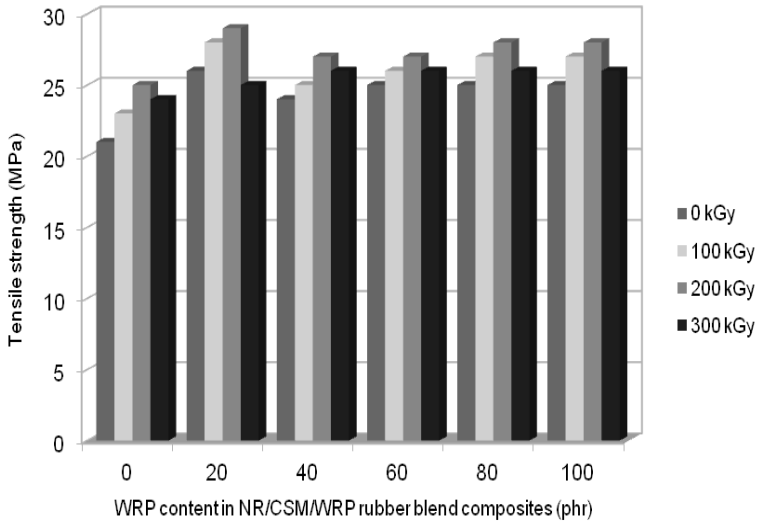
Tables should be prepared in the WORD, graphics in the EXCEL, except for some special cases when it is not possible technically. Tables and graphics should be clear, as simple as possible and transparent. The title, heading (text) and subtext in tables and graphics should be written in Times New Roman – normal, Font Size 10 pt. Tables should be placed at a certain place in the text. Tables should not include more than ten columns and more than fifteen rows. If the author assumes that data should be presented in a larger number of columns and rows, it is necessary to split the content of the table into two or more smaller tables or deliver it as a special attachment. They have to be drawn according to the computer template (Insert Table), and not using the spacing, dots and tabs. When citing tables and graphics, we write the title of the table or graphic in the initial capital letter and then we specify its ordinal number (e.g. as it is shown in Table 9 and Figure 6, the lowest value was...).

A table examples

Tabela 1. Karakteristike umrežavanja NR/CSM blendi sa različitim sadržajem recikliranog gumenog praha.

Sadržaj recikliranog gumenog praha WRP content (phr)	**Karakteristike umrežavanja/Curing characteristics**					
	M_l, dNm	M_h, dNm	ΔM, dNm	t_{s2}, min	t_{c90}, min	*CRI*
0	4	40	36	6	15	11.0
20	5	42	37	8	16	12.5
40	5	45	40	9	16	14.3
60	7	46	39	9	17	12.5
80	7	47	40	10	17	14.3
100	7	47	40	10	17	14.3

A chart examples



Slika 1. Uticaj različitog udjela recikliranog gumenog praha na prekidnu čvrstoću NR/CSM/WRP kompozita pod uticajem različitih doza zračenja
Figure 1 The effect of waste rubber powder content on tensile strength for the NR/CSM/WRP composites irradiated with different doses.

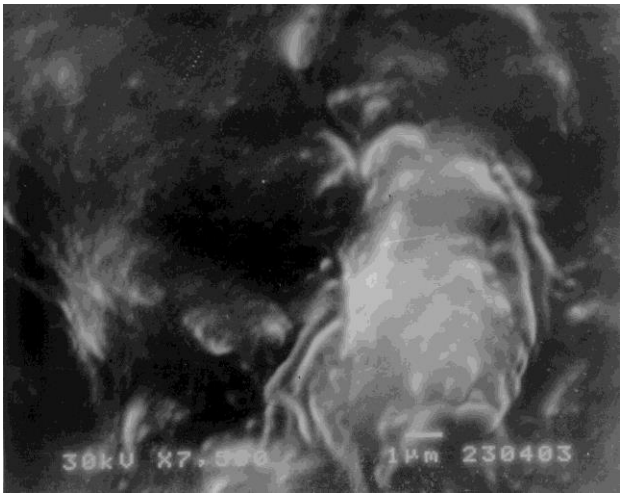
Equation

Equations should be written in the graphic editor for equations, specifically in the Microsoft Equation and they should be placed at the beginning of the text. On the right edge of the text in the row in which the equation is written one should indicate its number in parentheses beginning with number 1.

$$m_r = m_s\left(1 - e^{k_s t_{maks}}\right) - m_d\left(1 - e^{-k_d (t - t_{maks})}\right) \; za \;\; t > t_{maks} \qquad (1)$$

Figures

Figures have to be prepared for black-and-white printing, that is, if the original figure is in colors which cannot be distinguished in black-and-white printing, the colors have to be replaced by "raster", that is, different graphic signs which need to be explained in the legend. We insert in figures only the most essential text necessary for understanding, such as measure variables with their dimensions, short explanation on curves and similar. The rest is stated in the legend under the figure. The maximum size of a figure is 13 cm x 17 cm.



Slika 2. SEM mikrograf NR/CSM/ERP kompozita sa dodatkom 20 phr recikliranog gumenog praha pri uvećanju od 7500 puta
Figure 2. The SEM micrograph of NR/CSM/WRP composites filled with 20 phr waste rubber powder at 7500X magnification.

Other notes

In order to include successfully the papers published in one of the official languages of Bosnia and Herzegovina into international information flows, parts of the manuscript should be written both in the author's language and in English, including: text in tables, figures, diagrams and drawings, their titles and symbols.

About authors

When sending the paper one should give their full official address, telephone number and email of all authors and emphasize the author with who the Editorial Board shall cooperate. These notifications should be submitted on a separate sheet.

Experimental technique, symbols and units

Experimental technique and devices are described in detail only if they deviate significantly from the descriptions already published in the literature. If techniques and devices are familiar, only the source of necessary notifications is stated.

Symbols of the physical quantities should be written in Italic (Times New Roman, 12 pt. – italic), and units of measurement in upright letters, e.g. V, m, p, t, T, but m3 , kg, Pa, °C, K. Quantities and units of measurement have to be used pursuant to the International System of Units (SI).

REFERENCES

The reference list at the end of the article has to include only the sources which the author referred to in the article text. The used literature items are listed in alphabetical order.

Examples of citing

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Avramović, D. (2011). Metode i okviri rasta vrijednosti banke. Anali poslovne ekonomije, 5(1), 28-37.

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CONCLUSION

The papers not written strictly according to these guidelines shall not be accepted.

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