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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 2022, published by the University of Business Engineering and Management. The second issue in 2022 includes 8 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 DOAJ, CEEOL, INDEX COPERNICUS, GOOGLE SCHOLAR, CiteFactor, Scientific Journal Impact Factor, ROAD & OAJI citation databases.

On the last pages of the journal, there is also the bibliography of papers published in first issue in 2022.

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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DENTAL IMPLANT MATERIAL (POLYETHERETHERKETONE, TITANIUM AND ITS ALLOYS, ZIRCONIA)

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ABSTRACT

The goal of this article is to inform the reader of three distinct types of biomedical materials applied in the production of dental implants, focusing on characteristics and categorizations of biomaterials based on: titanium (Ti + its alloys), commercially manufactured synthetic polymers (polyetheretherketone) and ceramic materials (zirconium dioxide). Considering the development and construction of implants, specific material requirements are named (mechanical properties), corrosion resistance, compatibility, morphology, etc.

Each of these materials represents a specific group of biomedical materials and has a number of advantages. However, in relation to the differences in their nature (metal, plastic, ceramic base), it is necessary to approach the choice of material for dental implants with respect to the specific implant design and the patient's health limitations.

Keywords: dental implants, PEEK, Zirconia, Titanium

INTRODUCTION

The medical field of dentistry, or stomatology, and maxillofacial surgery has a close relationship with materials and the technology of their production. The replacement of missing hard and soft tissues in the oral cavity is primarily dependent on the prosthetic materials from which crowns, dentures and fillings are made. The emphasis in selection is on the following: biological tolerance, aesthetics, mechanical/physical properties, and durability under multiple circumstances in oral conditions (variable conditions). Materials of dental implants should have a direct contact with the bone → a phenomenon known as osseointegration (the process during which the implant is integrated into the human bone and thus becomes its rigid component and part). In order to improve the osseointegration, a variety of modifications in the implant surface have been investigated, such as surface treatments and coatings (Hubálková, & Krňoulová, 2009; Riznič, 2020; Zafar, & Khurshid, 2020). During the last decades, significant progress has been made in basic and applied research on dental restorative materials. Prosthetic dentistry uses a large variety of materials of organic and inorganic origin - metals and their alloys, ceramic materials, and plastics (graphical representation below, breakdown by: *Dental Implants: Materials, Coatings, Surface Modifications and Interfaces with Oral Tissues*).

PEEK (POLYETHERETHERKETONE)

The introduction of Ti dental implants, despite their considerable advantages, can be associated with various risks such as: allergies, occasional metal hypersensitivity. As an alternative, polyetheretherketone (chemical nomenclature, abbreviated: PEEK) is introduced. PEEK is a semi-crystalline engineering thermoplastic used since 1980 (invented in 1978) in industry as a substitute for metals and alloys. It is also possible to encounter the designation biocompatible polymer. The term biocompatible refers to a material intended for medical purposes, physiologically harmless, meeting prescribed standards (Ensinger, 2022; Mishra, & Chowdhary, 2022). The chemical structure of PEEK is shown in Fig. 1.

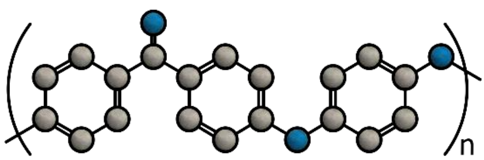

Figure 1. Chemical structure of PEEK

PEEK belongs to the group of PEAK polymers (for exmple: PEK - Polyetherketone, PEKEKK - Polyetherketonetherketoneketone, etc.) containing low-flexible ketogroups and benzene cores, which ensures the rigidity of the chains; on the other hand, ether linkage reduces the rigidity of the chains (its number, order, ratio of oxygen and CO bonds of benzene cores affects the mechanical and thermal properties of individual PEAK polymers) (Horák, et al., 2010). PEEK, as the most important representative of this group, has a density of 1.32 g.cm^{-3} (DIN EN ISO 1183-1) but insolubility, as polymers possess hydrophobic surfaces with low surface energy reducing the cellular adhesion (Geetha, Prabhu, & Nivas Sundar, 2020). This is often neutralized by surface modification, coating or blending with bioactive particles. Melting temperature is about 334 °C (crystallization peak: 343 °C and glass transition temperature: 145 °C) (Panayotov, Orti, Cuisinier, & Yachouh, 2016). Tensile strength ultimate is in the interval 90-100 MPa, tensile modulus is equal to 4000 MPa (DIN EN ISO 527). The tensile modulus can be increased several times by applying suitable fibres (carbon reinforcing fibres in PEEK matrix: E = 18 GPa, glass reinforcing fibres in PEEK matrix: E = 12 GPa) (Lee, et al., 2012; Najeeb, et al., 2015) - comparison of the tensile modulus of selected materials - Fig. 2. Study (Schwitalla, Spintig, Kallage, & Müller, 2015) compares the flexural behaviour of PEEK materials for dental application. The results of the publication show that by adding carbon fibers to the base polymer matrix the flexural strength and flexural modulus values can be increased (see Table). Other PEEK material properties:

- sensitive to the notch effect (compared to Polymethyl methacrylate, however, PEEK shows a higher resistance to notch concentration) (Muhsin, Hatton, Johnson, Sereno, & Wood, 2019). Notched Izod fracture toughness min for PEEK is 4 KJ.m^{-2}. Based on the available data, it can be argued that the toughness of the material increases with increasing molecular weight. On the contrary: an increase in crystallinity decreases toughness values. Similarly, polymer aging has a similar effect on toughness (Kemmish, & Hay,1985; Kurtz, 2019);
- good resistance to fatigue (study Ferguson, Visser, & Polikeit, 2006: "*In practice, the total non-recoverable deformation of PEEK-OPTIMA would be negligible, with maximum 0.1% strain after 2000 hours at a stress level of 10 MPa, vanishingly small, compared to the time-dependent*

changes which could be expected in the surrounding bone due to remodelling effects.");

- good abrasion resistance (pin-on-disk test method, weight loss of PEEK material 0.004 g, weight loss of PEEK composite material + 30% glass reinforcement → 0.001 g, under the conditions determined in the study by Hanumantharaju, Shivananda, Hadimani, Kumar, & Jagadish, 2000);
- high resistance to organic/inorganic reagents;
- resistance to the effect of ionizing radiation (compared to Ultra High Molecular Weight PE, PEEK is highly resistant to the effect of ionizing radiation) (Ferguson, et al., 2006);
- exhibits long-term stability in aqueous environments (data shown that PEEK will not be affected by a repeated exposure to steam, in relation to the fact that PEEK implants must be sterilized) (Godara, Raabe, & Green, 2007);
- biocompatibility (results based on long-term contact with cell cultures as well as animal tests have confirmed that PEEK and composites with PEEK are bioinert and biocompatible in their bulk form. Bioactivity - bonding to bone, can be improved by adding hydroxyapatite - HA) (Kurtz, 2019; Medical PEEK Lexicon, 2022);
- bacterial adhesion to PEEK: attachment - adhesion of bacteria to the surface of PEEK (or any biomaterial in general) presents a difficult, complex issue. Changes in the chemical, physical and topographical properties of biomaterials result in changes in bacterial adhesion to the surface (and subsequent biofilm formation/growth) (Renner, & Weibel, 2011). Similarly, the mode of testing (in vivo, in vitro) plays an important role in the relationship of bacterial colonization onto the observed surface area. There are initial investigations hinting at the application of antimicrobial coating-agents produced to reduce the adhesion of the underlying biomaterial (however, there are a number of unanswered questions related to the issue with regards to effective functioning in the variable implant environment) (Kurtz, 2019; Lynch, & Robertson, 2008).

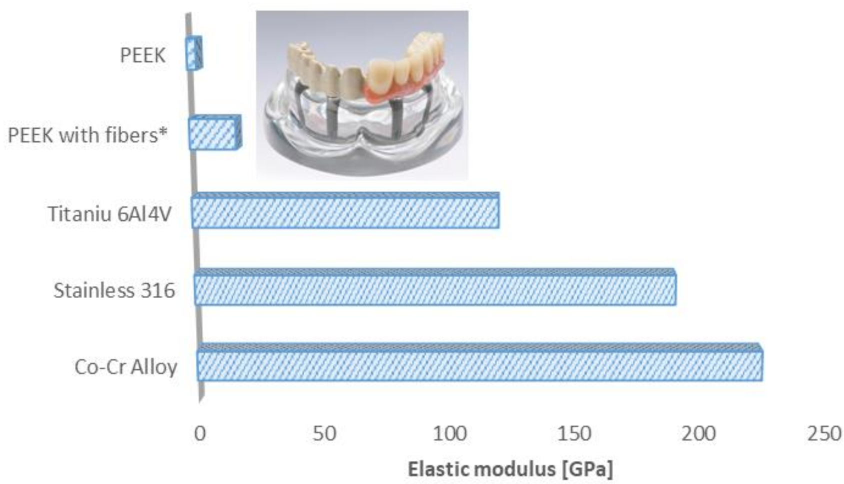

Figure 2. Elastic modulus of different kind of materials (manufacturer of PEEK: *Invibio*, Ltd.) *PEEK with carbon reinforced fibres + PEEK prosthetic framework (Horák, et al., 2010; Jarman-Smith, 2017)

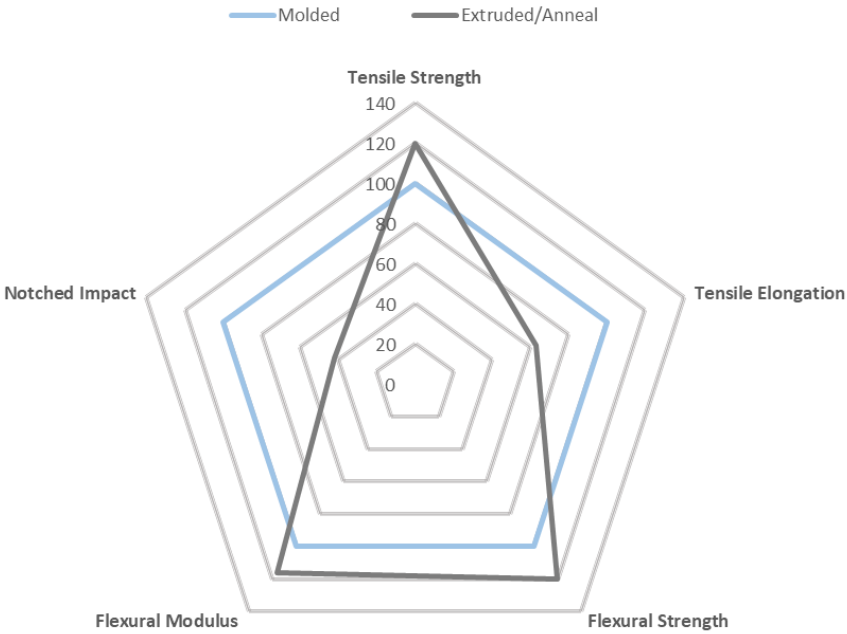

Figure 3. Differences between properties of injected-molded and machined PEEK (Kurtz, 2019)

Table1. Bending modulus and bending strength of PEEK without / with fibers (Schwitalla, et al., 2015)

Sample (without / with fibers)	**Bending modulus [GPa]**	**Bending strength [MPa]**
PEEK-OPTIMA LT1 (*Invibio* Ltd.) without fibers	2.73±0.26	182.91±19.31
PEEK-OPTIMA LT1CA30 (*Invibio* Ltd.) 30 % multi-directional chopped carbon fibers	4.09±0.8	188.53±34.45
PEEK-OPTIMA Ultra Reinforced (*Invibio* Ltd.) more than 50 % uni-directional continuous carbon fibers	47.27±10.3	1009.63±107.33

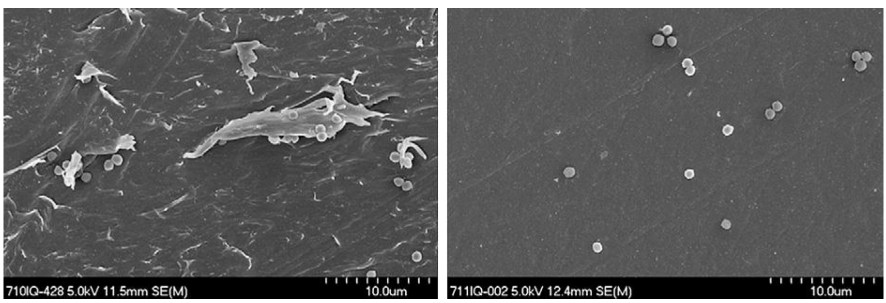

Figure 4. SEM images of PEEK surface: production by machining and injection molding (adherent-bacteria *S. aureus*) (Kurtz, 2019)

Applications of PEEK: PEEK for bone replacement, PEEK for spine surgery-spinal cages, PEEK for orthopedic surgery, PEEK for dental implants, PEEK for cardiac surgery (pump, heart valves).

TITANIUM AND ITS ALLOYS

Titanium is highly resistant to corrosion (it forms a stable, insoluble oxide layer on the surface with an ability to recover when damaged - the so-called passivation layer with a thickness of about 2-10 ηm), a non-toxic excellent biocompatibility material (due to its low level of electrical conductivity, high corrosion resistance and thermodynamically stable state at physiological pH values). Commercially, titanium and its alloys were first applied in dental (and conventional) prosthodontics in 1977. These metals (and alloys) can be used for: dental crowns, dental bridges, root inlays, and composite restoration designs (Anusavice, Shen, & Rawls, 2012; Hubálková, & Krňoulová, 2009; Vavřičková, Dostálová, & Vahalová, 2008).

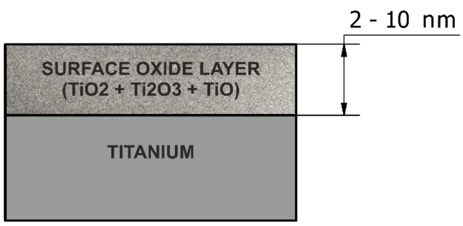

Figure 5. Schematic illustration of native oxide layer on Ti (Pisarek, Roguska, Marcon, & Andrzejczuk, 2012)

Titanium has a high melting point - about 1668 °C, high rate of oxidation (above 900 °C), density 4.5 $g.cm^{-3}$ (for comparison: nickel-chrome: 8 $g.cm^{-3}$ / gold alloys 15 $g.cm^{-3}$), modulus of elasticity 100 GPa, yield strength is in the interval 170-480 MPa, hardness (according to Vickers) in the interval 126-263, elongation 24-15 %. Based on the concentration of impurities, pure titanium can be divided into four groups (grade 1 to grade 4, according to ASTM F-67) with different physical properties (the reason for the ranges of values in the properties above).

Pure titanium exists in two allotropic modifications (the presence of impurities affects the crystallization temperature and phase transformations - see Fig. 6):

- at temperatures up to 883 °C, its atoms form a hexagonal lattice (referred to as the α phase),
- above 883 °C, recrystallization occurs (phase β), the atoms forming a cubic area-centred lattice (Dierk-Raabe, 2022).

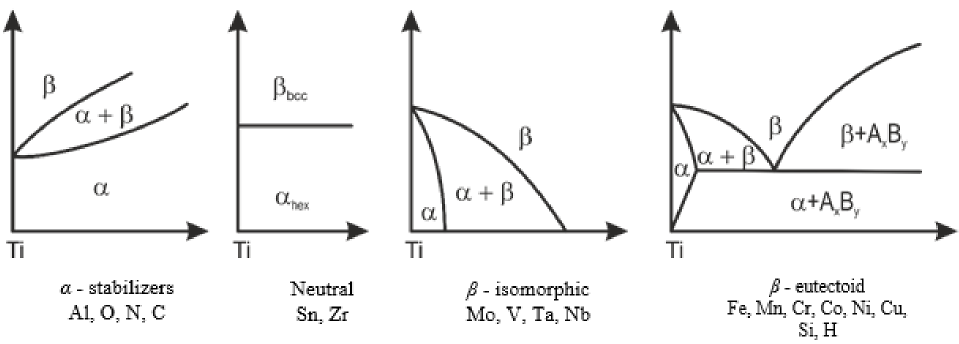

Figure 6. The effect of the presence of elements on the phase transformation (Dierk-Raabe, 2022)

The current trend in the development of dental implants is towards shorter healing times, which is ensured by chemical modification of the inert Ti surface (to increase its bioactivity and reduce the risk of infection). The main methods of surface modification of implants include the following: modification with fluoride ions, hydrophilization of the original inactive/hydrophobic surface and coating with a layer of porous titanium dioxide. The intraosseous part of the implant (the part inserted into the bone) can be modified in the following ways:

- Abrasive blasting/sandblasting (suitable for high-quality dense bones): the surface of the Ti implant is roughened by abrasive particles (e.g. TiO_2, Al_2O_3, sand particles) carried by compressed air or liquid through the nozzle. The resulting surface topography depends on the properties/sizes/shapes of the abrasive particles used,
- Coating with hydroxyapatite $Ca_{10}(PO_4)_6(OH)_2$ (suitable for low density bones)/ glass ceramics/ peptides, a typical example of coating is plasma spraying of the surface,
- Chemical etching: removal of the Ti passivation layer of the implant (application of HNO_3 + HF or HCl + H_2SO_4),
- Anodization: by increasing the surface layer of titanium dioxide → increasing the area required for cell adhesion (Hrazdira, 1990; Elias, Fernandes, Galiza, dos Santos Monteiro, & de Almeida, 2019; Schupbach, Glauser, & Bauer, 2019; Antala, 2021).

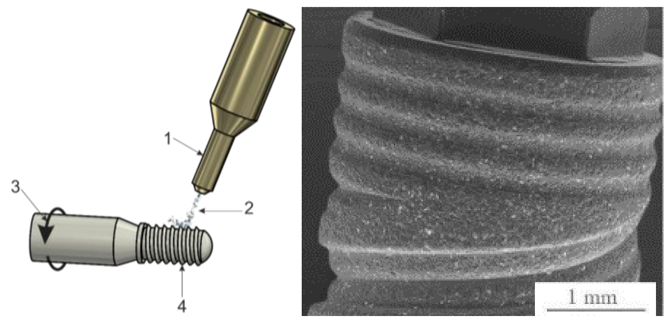

Figure 7. Left side: Illustration of the abrasive blasting process 1 - noozle, 2 - abrasive particles, 3 - implant holder, 4 - dental implant (Elias, et al., 2019), right side: dental implant (Schupbach, et al., 2019)

The most widely used titanium alloy in dentistry is Ti-6Al-4V (which is an *α-β* alloy), the aluminium in the alloy stabilises the *α* phase and vanadium the *β* phase. By heat treatment of the alloy, it is possible to modify the strength. The strength value is higher compared to pure Ti, but there is a risk of gradual release of Al/V into the body (vanadium is highly toxic both in elemental state and in oxide form; aluminium has been reported to cause potential neurological disorders) (Liu, & Shin, 2019).

In contrast, niobium does not cause toxic reactions in the body. Replacing vanadium with niobium in the original Ti-6Al-4V alloy yields the → Ti-6Al-7Nb alloy. Both of the described Ti alloys are acceptable for biomedical applications. The mechanical properties of the two alloys are similar (Fig. 8) and their corrosion resistance is akin to that of pure titanium 7.

Ti-6Al-7Nb	**Ti-6Al-4V**
Elastic modulus [GPa] = 105	Elastic modulus [GPa] = 117
Yield strength [MPa] = 795	Yield strength [MPa] = 560
Hardness (Vickers) = 330	Hardness (Vickers) = 320
Elongation [%] = 10	Elongation [%] = 10-15

Figure 8. Properties of two α-β Ti-based alloys for dental prostheses (for comparison) (Anusavice, et al., 2012; Constantinescu, 2019)

ZIRCONIA

Atoms of ceramic materials are bonded by covalent/ionic bonds or a combination of the two (the type of bond affects the resulting properties). The properties of ceramics intended for dental applications depend on: the amount of individual components used, the melting temperature, the production technology and the indication. Ceramics are resistant in several ways: they do not react with liquids, gases, alkalis (acids), they are stable, corrosion-resistant, wear-resistant and temperature-resistant (apart from conditions of a so-called thermal shock, where they crack when suddenly heated/cooled), with high hardness and strength. It lacks the properties typical of metals: ductility (ability to deform plastically) / toughness (absorption of energy on breaking). Its mechanical properties depend on the specific type of ceramic material, e.g.: Zirconia-based ceramics (ZrO_2) have flexural strengths reaching the flexural strength of steel, but fracture toughness values are lower compared to steel. The chemical stability of ZrO_2 (ZIRCONIA) is comparable to Al_2O_3 (ALUMINUM), the modulus of elasticity of ZrO_2 reaches half the value of the modulus of elasticity of Al_2O_3 (in abrasion resistance it is possible to reach 5 times the value compared to Al_2O_3), the material is bioinert (the cytotoxicity of zirconia ceramics is less than the cytotoxicity of Lithium disilicate). In dentistry, ceramics formed by combining oxygen with metals, semi-metals (metalloids) are used for producing ceramic restorations: all-ceramic or metal-ceramic crowns and bridges, inlays, on lays, veneers and implants, or teeth produced as removable restorations/implants. Zirconium dioxide is an alternative substitute for Al_2O_3 (for crowns and implant abutments) (Anusavice, et al., 2012; Ptáček, 2002; Hubálková, & Krňoulová, 2009; Özkurt, & Kazazoğlu, 2010; Zhang, & Kelly, 2017; Vavřičková, Dostálová, & Ulrichová, 2011).

Types of zircon ceramics (Kovalský, et al., 2022; Zhang, & Lawn, 2018):

- 1st generation: contains 0.25% (w/w) alumina + a three-molecule concentration (3 mol%) of yttria oxide, resulting in the yttrium-stabilized tetragonal polycrystalline zirconia 3Y-TZP (achieves a flexural strength in the range of 0.8 to 1 GPa, grain size 0.2-0.5 µm). First generation zirconia ceramics are transparent (opaque), for this reason they are used only in applications with zero aesthetic requirements. Based on the ISO standard it is (ISO 6872:2015) in the fifth class of ceramics,

- 2nd generation: change of composition - in relation to modification of translucency (to increase it) → reduced alumina content, change of production technology, increased sintering temperature, minimized formation of porosity. In relation to the colour of the material when light hits it (characteristic pearlescence), second generation zirconia is usable monolithically - in most cases only in the lateral section,
- 3rd generation (in two available variants): addition of 5 mol% yttria stabilized tetragonal zirconia polycrystal (5Y-TZP) - the aesthetic, least resistant variant of zirconia / compromise designed 4Y-TZP (addition of 4 mol% yttria stabilized tetragonal zirconia polycrystal).

Table 2. Selected manufacturers of ceramic materials (Schwitall, et al., 2015)

	Oxide cermics (ZrO_2)
Selected manufacturers	LAVA™ ZrO_2 (3M ESPE, Nemecko) Procera® ZrO_2 (Nobel Biocare™, Švédsko) Zirkon-Zahn 3Y-TZP (Upcera Dental, Čína) ZERAMEX® ZrO2 (Dentalpoint AG, švajčiarsko) BoneTrust® balance ZrO_2 (Dentmia Medikl Sağlik, Turecko)

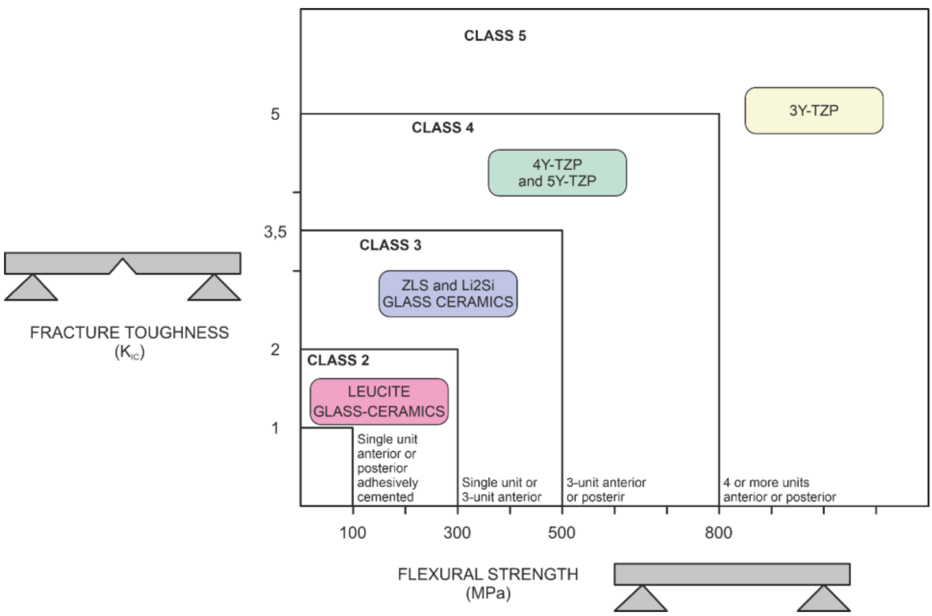

Figure 9. An overview ceramics classification according to ISO 6872:2015

CONCLUSIONS

When choosing a dental implant material, emphasis should be placed on mechanical resistance, physical properties, biocompatibility, bioactivity, and biomechanics. Each of the materials described meets the demanding requirements for this group of biomaterials. Titanium is the most commonly used "tooth replacement" material, but its disadvantage is its exposure to various risks, such as allergies and occasional metal hypersensitivity. Suitable alternatives appear to be the plastics group - polyaryletherketones - namely PEEK (including reinforced composite materials) and zirconia ceramic materials.

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TESTING OF SMALL HOUSEHOLD BIOMASS BOILERS FROM THE ASPECT OF WASTE GAS EMISSIONS

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ABSTRACT

The use of biomass for energetic purposes is actual issue from different aspect of views, such as economy, used technologies, combustion specifications, environmental issues, etc. Different types of biomass are available on the market today. During the combustion process in furnaces, these types of biomass behave differently due to their specific physicochemical properties. In this research, used biomass types were wood biomass, soybean straw and chamomile waste from medicinal herbs processing. Pellet combustion was performed in a commercial furnace that was designed to heat the living space by burning wood pellets. Furnace was installed with measurement system for emissions of combustion products. The current law regulation of the Republic of Srpska in the field of environmental protection does not include testing of emissions of combustion products for plants with power less than 100 kW. In this research, the influence of pellet type on concentrations of carbon monoxide and nitrogen oxides was investigated, as well as the volume content of oxygen in the waste gas for plants with power less than 100 kW. Also, it was investigated whether the addition of additives (clay, kaolinite, bentonite), used to improve the melting characteristics of ash, has an effect on reducing the emission of combustion products. The results obtained by measuring the gas emissions are compared with the standard EN 14785 which is related to the emission of carbon monoxide and nitrogen oxides.

During this research, characteristic of ash left after combustion of tested pellets was examined. According to these examinations, it can be pointed out that potential problems can occur when burning these types of pellets in small household heating furnaces.

Keywords: biomass combustion, pellet, gas emission, ash melting

INTRODUCTION

The use of various forms of bioenergy has been on a constant upward trend in recent decades, both in Europe and in other parts of the world. One of the most claimed types of biomass used for energy production is wood pellet. Wood pellet became an important energy source for furnaces and boilers for household heating, industrial boilers and energy plants for the production of electricity and heat, but it also became an important factor in international trade. The role of wood pellets in international trade in bioenergy products was insignificant (10% in 2004), but its share rose to 36% in 2015 (Schipfer, Kranzl, Olsson, & Lamers, 2020). Due to the limited availability of wood as a material for pellet production, as well as high standards for pellets on the European and international market and efforts to meet the growing needs for bioenergy in a sustainable way, were the reasons that increased use of lignocellulosic biomass of poor quality, agricultural and industrial waste, herbaceous plants and more. The great potential of using biomass lies in the fact that it is a renewable energy source and is considered a "CO_2 neutral" fuel with low nitrogen and sulfur content. However, there are some limitations to the use of raw biomass such as low energy density, so biomass is processed to obtain a more convenient form for transport and storage (Chen, et al., 2021). Biomass processing can be based on the thermal treatment of biomass, such as processes of carbonization, hydrothermal carbonization and torrefaction, or more simple technological processes of pelleting and briquetting, which are much simpler and more common in practice (Ljubojević, 2016).

The most important category of pellet consumers are households that use furnaces or boilers on solid fuel with lower thermal power. This category of combustion plants is not covered by the law regulations of the Republic of Srpska in the field of environmental protection and air quality. The conversion of the chemical energy of biomass into thermal energy is always followed by the formation of combustion products, which leave the process in the form of flue gases. Some of them, such as carbon monoxide (CO) and nitrogen oxides (NO_x) are harmful to the environment. Therefore, it is very important to know the specific physicochemical characteristics of different types of biomass pellets and their behavior in the combustion process in boilers for domestic use.

According to the data of the Republic Bureau of Statistics, emissions of photochemically active gases in the Republic of Srpska, such as carbon monoxide and nitrogen oxides, have grown constantly, in the period from 2002 to 2018, which indirectly contributed to the greenhouse effect. In the period, a drop in emissions of 1.29% was recorded for nitrogen oxides, and an increase in emissions of 2.19% for carbon monoxide (Zavod za statistiku Republike Srpske [ZSRS], 2021). However, these measurements did not take into account the emissions from numerous individual domestic fireplaces, whose share in the total emissions of flue gases is not negligible. Therefore, special importance should be given to monitoring and controlling the emission of flue gases and particles from small plants that burn solid fuels such as pellets, and which have less developed purification systems.

The complex chemical structure of the biomass from which the pellet is made has a significant impact on the thermal value of the pellet, its behavior during combustion, as well as the amount and properties of the ash produced. It is known in general that elements that form the biomass ash are Al, Ca, Cl, Fe, K, Mg, P, Na, S, Mn, Si and Ti, and they contribute to various technological and environmental aspects of biomass combustion (Vassilev, 2017; Bostroom, et al., 2012). Some types of biomass, such as agricultural and herbaceous residues, as well as some parts of wood such as bark, have a high content of alkaline oxides and salts. Alkali metals form fewer stable oxides than Ca, Mg, Si and P, so it can be said that these elements are mainly responsible for the formation of ash (Davidsson, Korsgren, Pettersson, & Jäglid, 2002). Their presence in the ash affects unwanted processes, such as lowering the melting temperature, agglomeration, and sintering, which can lead to various problems during combustion (Werther, Saengar, Hartge, Ogada, & Siagi, 2000;

Mlonka-Mędrala, Magdziarz, Gajek, & Nowińska, 2020).

Some of the most interesting and challenging problems are related to the characteristics of sintering and melting ash, which is directly related to operational problems in the combustion process, as well as process efficiency, emission problems, and especially particle emissions. The paper points out the potential problems that can occur during the combustion of wood pellets, soybean straw and chamomile waste in small household heating boilers, due to the complexity of the chemical composition of these types of biomass. The chemical structure of the fuel is responsible for the emission of gases, aerosols and solid pollutants into the environment, as well as the corrosion of the walls of the combustion furnace (Obernberger, Brunner, & Bärnthaler, 2006). It is a known fact that modifying the chemical composition of biomass can affect the way of combustion and the properties of residual ash. Modification of the biomass composition can be performed by chemical pretreatment with acids, which reduces the concentration of alkali metals and alleviates the adhesion of ash and the tendency to form slag (Yu, et al., 2014, Namkung, et al., 2019). The second method is based on the idea of using cheap, safe and available additives, such as different types of clay, which can affect alkali metals in biomass ash during combustion (Wang, Husteda, Skreiberg, Skjervraka, & Grønlia, 2012; Mack, Kuptz, Schön, & Hartmann, 2019). Numerous experimental studies have been conducted on this topic, however, due to the variability of biomass types and combustion conditions, solutions that have proven effective under certain conditions may not be effective for other fuels or other combustion conditions. In addition to the effect on ash melting temperatures, the addition of inorganic additives to the wood mass before pelleting makes the process of pelleting much easier to perform (Holm, Henriksen, Hustad & Sørensen, 2006).

The aim of this study was to examine how the type of biomass, from which the pellet is made, affects the emission of CO and NO_x during combustion in low-power boilers up to 18 kW and whether the use of additives, used for improving the melting characteristics of ash, has the effect of reducing emissions.

MATERIALS AND METHODS

Three types of pellets prepared from different types of biomass, without the addition of additives, were used in pellet combustion experiments:

- Pellet made of wood, with ENplus certificate. The producer is the company ENSA BH - Srbac, and this pellet is available on the market of Bosnia and Herzegovina, as well as the EU market;
- Pellet made of soybean straw (CRO Pellet);
- Pellet made of chamomile waste from medical herbs processing plant *Prirodno bilje* – Banja Luka. Pellet was produced in the company ENSA BH – Srbac for the purposes of these experiments, and it is not available on the market.

Table 1 gives basic data on the types of biomass from which the tested pellets were made.

Table 1 Biomass composition of selected pellet types

Type of pellet	Producer	Biomass specific
Industrial pellet	ENSA BH	spruce 80% (wood pieces with bark), 20% oak
Pellet made of soybean straw	CRO Pellet	soybean straw, dust < 2%
Pellets made of the chamomile waste	ENSA BH	chamomile waste

Locally available additives were used to improve the melting characteristics of the ash:

- Kaolinite,
- Clay for making refractory bricks,
- Natural zeolite (bentonite).

Additives are mixed into the finished pellet in the amount of 1% w/w in relation to the dry matter of the pellet.

Determination of moisture content in pellet samples was performed according to the procedure described in the standard method for determination of moisture in solid biofuels EN ISO 18134. Determination of ash was performed according to the procedure described in the standard method ISO 18122. Measurement of the high heating value of the pellet was performed using an adiabatic calorimeter *Parr*, Model 6200, in accordance with the procedure described in standard EN 14918.

Pellet combustion experiments were performed on the experimental setup shown in Figure 1. The experimental installation consists of:

- A furnace designed for heating households on wood pellets, manufacturer "*Termoflux*" Jajce;
- Flue gas exhaust system, which consists of two exhaust channels and a flue gas fan;
- Flue gas composition measurement system.

According to the manufacturer, the furnace is designed to meet the requirements of EU standards that are relevant to this type of equipment, without specifying parameters related to the environmental characteristics of its operation. The basic characteristics of the furnace are given in Table 2.

Table 2. Characteristics of pellet combustion furnaces

Manufacturer	***Thermoflux***
Model	Interio 20
Dimensions (LxWxH)	650 x 630 x 1080 mm
Weight	214 kg
Thermal power	4 – 18 kW
Fuel consumption	1 – 4 kg/h
Fuel tank capacity	30 kg

Measurements of mass concentrations of oxygen (O_2), carbon monoxide (CO) and nitrogen oxides (NO_x) in flue gases were performed using a *Horiba VA 5000* gas analyzer, with thermocouples placed in positions where the measures of flue gas temperature and temperature inside the furnace were performed. The measuring device consists of two systems: a flue gas sampling system and a system for analyzing the concentration of individual gases. Gas sampling is performed through a joint system, after which the samples are led to measuring cells for the detection of individual gases. The operating principle of measuring cells is in accordance with the standards and methods prescribed for measuring stationary sources emissions:

- EN 14792 – Determination of mass concentration of NO_x – Chemiluminescence method,
- EN 15058 – Determination of mass concentration of CO – Non-dispersive infrared spectrometry (ND-IR) method,
- EN 12039 – Determination of CO, CO_2 and O_2 - Electrochemical cell method.

The duration of each experiment, in stationary conditions, was 10 minutes, for each sample.

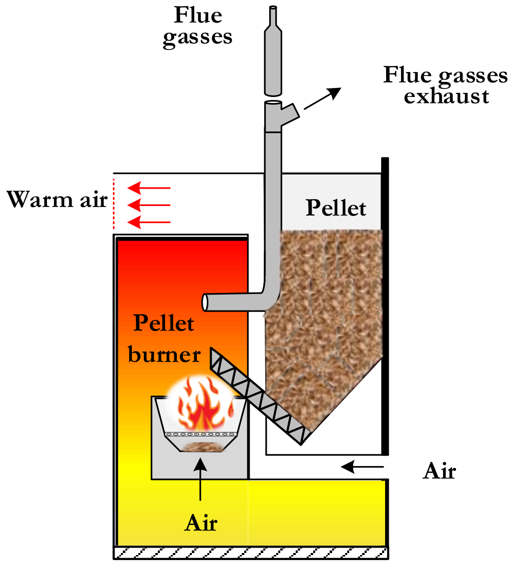

Figure 1. Scheme of experimental setup

RESULTS AND DISCUSSION

The quality of the pellets indisputably affects combustion. Problems that occur in the furnace during the combustion of pellets, especially pellets of poorer quality, do not necessarily occur due to the large amount of ash, but when the melting temperature of the ash is too low. However, the large amount of ash still complicates the problem, in terms of the difficult removal of ash from the furnace, which creates the preconditions for the formation of slag. Therefore, the first step of the research was to determine the percentage of ash produced by burning pellets of different raw material compositions (Table 3).

Table 3. Characteristics of biomass pellets

Type of pellet	Moisture (%)	Ash (%)	HHV (MJ/kg)
Industrial pellet (Producer ENSA B&H)	5.82	1.62	19.19
Pellet made of soya straw	7.71	6.62	19.50
Pellets made of the chamomile waste	10.22	5.58	14.75

By observing the condition of burners and furnaces after the combustion experiment, it can be noticed that small agglomeration effects appeared during wood pellet combustion, as well as sticking of ash in small segments along the edges of the burner surface, which is a consequence of bark content in this wood pellet sample. Combustion of soybean straw pellets and chamomile processing residues, in the same furnace hearth, leaves a much larger amount of ash, which is expected given the high content of inorganic substances in this sample of pellets (Table 3). By prolonging the burning time of pellets made from chamomile processing residue, after only 13 minutes, the furnace hearth was overloaded and the entire combustion process was blocked. Figure 2 illustrates these situations and shows photographs of pellet furnace hearths after 10 minutes of combustion under the conditions described in the experiment, in the case of industrial wood pellets (a), soybean straw pellets (b) and chamomile waste pellets (c).

(a) **(b)** **(c)**

Figure 2. Pellet burner look after 10 minutes of the combustion experiments with wood pellet (a) soya straw pellet (b) and chamomile waste pellet (c).

According to relevant literature data, the use of various forms of waste biomass for energy production is often limited due to problems: ash sticking on the surfaces of combustion plants, corrosion processes on the grate due to high alkalinity of ash and sintering of ash. These problems are due to the presence of numerous inorganic elements in the biomass, which form complex gaseous, liquid and solid compounds during the thermal conversion of fuels. One way to solve these problems is to add additives with a high content of calcium (Ca) and magnesium (Mg), in other words elements that increase the melting temperature of ash. Based on the results of chemical analysis of ash, shown in Table 3, it can be concluded that when burning these types of pellets in small furnaces for household heating, all the previously mentioned problems can occur.

Figure 3 shows the results of measuring the concentration of carbon monoxide in flue gases during the combustion of the tested pellets, with and without additives. Considering the fact that the law regulations in BiH and Republic of Srpska did not define the limit values for carbon monoxide (CO) emissions in the exhaust gases for plants with ~~a~~ thermal power of less than 50 kW, the regulations of the EU member states were used to evaluate the obtained results. The EN 14785 standard defines the energy and environmental characteristics of flue gases from small domestic pellet boilers with a nominal power not exceeding 50 kW. According to the requirement of this standard, the CO emission at the oxygen reference value of 13% v/v, when testing the reduced thermal power, must be below 750 mg/m^3.

From the results of measuring carbon monoxide emissions, whose average values are shown in Figure 3, it is first noticed that there is a large difference in carbon monoxide emissions between the three tested types of pellets, without the addition of additives and that none meets the prescribed value of 750 mg/m^3. In the case of wood pellets, the use of additives reduced the emission of carbon monoxide, by 50% when using clay and 44% when using kaolinite, which reduced the emission below the prescribed value. In the case of pellets from chamomile processing waste, all three types of additives led to a reduction in carbon monoxide emissions by approximately 50%, but the measured values are still above the prescribed ones. In the case of soybean straw pellets, mixing all three types of additives led to an increase in carbon monoxide emissions by 14.6% for bentonite and over 70% for clay and kaolinite.

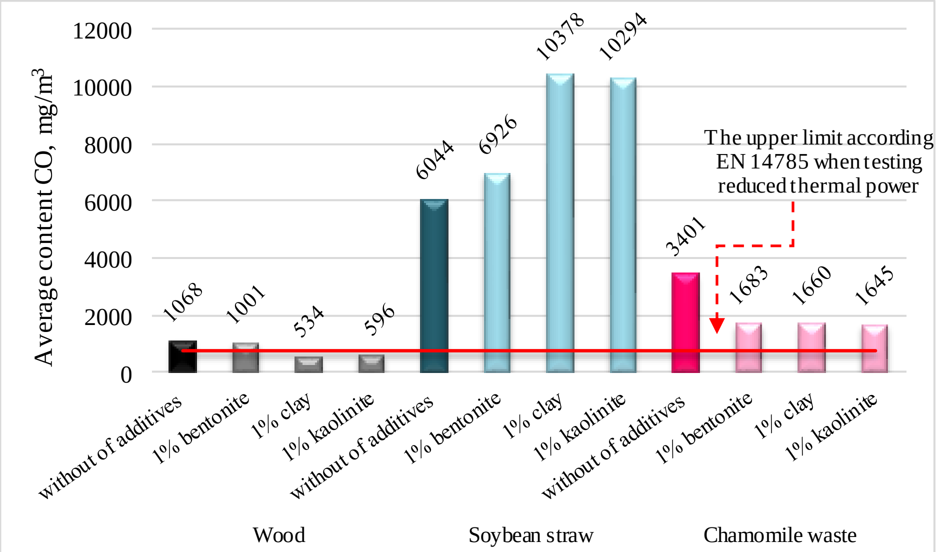

Figure 3. Average values of CO concentration in flue gases reduced to the reference oxygen content

Figure 4 shows the results of measuring the concentration of nitrogen oxides (NO_x) in the flue gases during the combustion of the tested pellets with and without additives. Considering the fact that the law regulations in BiH and Republika Srpska did not define the limit values of nitrogen oxide emissions from solid fuel combustion plants with a power of less than 100 kW, EU regulations were used to evaluate the obtained results. According to the EU directive from 2020, *EkoDesigne Directive 2015/1185* and *2015/1189*, from January 1, 2022. NO_x emissions from furnaces and boilers for local space heating, with thermal power of 50 kW or less, which burn biomass, shall not exceed 200 mg/m^3 at an oxygen reference value of 13% v/v (Ozgen, Cernuschi & Caserini, 2021).

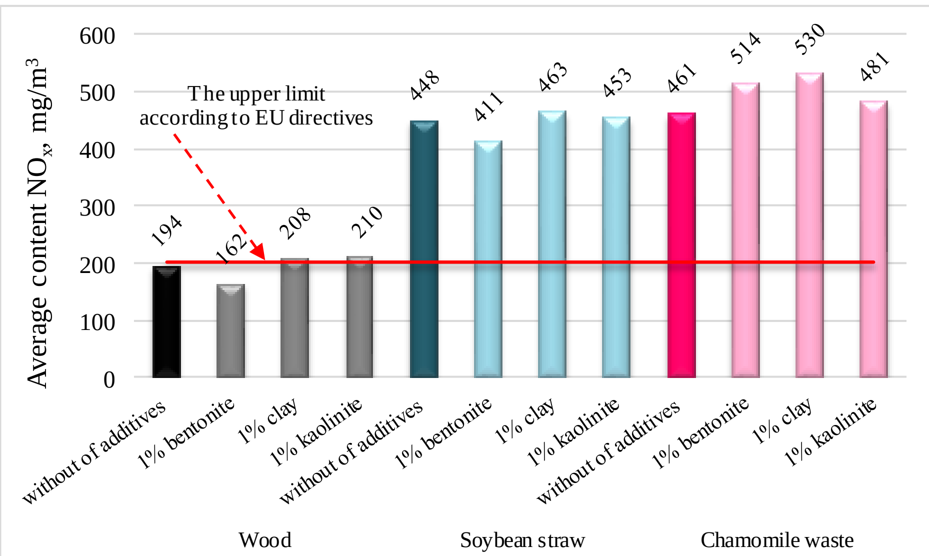

Figure 4. Average values of NOx concentration in flue gases reduced to the reference oxygen content

Based on the presented results, it can be concluded that the type of biomass from which the pellet is made has an impact on NO_x emissions during combustion. The lowest emission of nitrogen oxides was measured during the combustion of wood pellets, which is an expected result considering that the nitrogen content in agricultural biomass is higher than in wood. It is important to mention that the temperature in the combustion chamber was constantly measured during the combustion experiments. The temperature never exceeded 550 °C, so it can be said with certainty that nitrogen oxides in flue gases are formed by the oxidation of nitrogen compounds from biomass. The average value of NO_x concentration in flue gases during wood pellet combustion is slightly below the limit value of 200 mg/m^3, which is prescribed by Directives 2015/1185 and 2015/1189. The addition of 1% w/w bentonite reduced NO_x emissions by approximately 16%, while the emissions after other additives additions were approximately the same as for pure wood pellets. The mixing of additives in soybean straw pellets and chamomile processing waste mainly led to an increase in NO_x emissions in flue gases in the amount of 1.11% to 14.96%. Only the combination of soybean straw pellet and bentonite resulted in a small emission reduction, about 8%. All combinations of agricultural pellets and additives exceeded twice the mentioned limit value of 200 mg/m^3.

CONCLUSION

The obtained results show that the values of emissions of carbon monoxide and nitrogen oxides, for the type of furnace for low power households, meet the regulations of the European Union, if they burn wood pellets, for which the furnace is designed. While the emissions of these gases, when burning biomass containing a higher percentage of nitrogen, such as soybean straw pellets or chamomile processing waste, are far above the prescribed values. Certain additives to improve the melting characteristics of ash can reduce the emission of photochemically active gases, carbon monoxide and nitrogen oxides, which indirectly contribute to the greenhouse effect. All types of additives led to a reduction in carbon monoxide emissions during the combustion of wood pellets and chamomile waste pellets, while soybean straw pellets increased their emissions. Nitrogen oxide emission values, after the addition of anti-sintering ash additives, did not change significantly in wood pellets compared to the combustion of pure wood pellets, and in pellets from agricultural residues they increased mainly. The results of these researches show that for each pellet, additive and firebox it is necessary to perform additional, more detailed research, especially for pellets from agricultural biomass, which have so far been less used and researched than wood pellets.

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OFFERING SERVICES BASED ON DATA WAREHOUSE AS A NEW TREND IN THE WORK OF PUBLIC ADMINISTRATION

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ABSTRACT

The subject of the research is the analysis of services that should be offered by public administration toward legal entities and natural persons. We will suggest that it uses real-time intelligent IT systems based on data storage based on the data warehouse. Our opinion is that such systems implemented in the public administration of Bosnia and Herzegovina could offer an appropriate service to each user at a time when they need the service in a form that suits them, on the spot where he is in the moment of delivery and in the quantity that he needs. In order for a public administration to be able to offer an appropriate service, it must know its users much better and know which service they need at what time. In this paper, we analyze self-service as well as the necessary activities for all that. These are all activities that should be carried out in the future, and this work could contribute to the implementation of these processes.

Keywords: Public administration, data warehouses, self-service, service provision, digitalization.

INTRODUCTION

We live in a time when new and rapid changes in the environment occur every day, to which we need to adapt as soon as possible, often on the go. There are already existing, and new companies that offer tools (Information technology) to help with all the work, are emerging. Among these tools are Business Intelligence tools to. The modern world of business today operates in an environment of high degree of uncertainty and inability to predict the future. Currently on the market, supply far exceeds demand, and in a dynamic and turbulent business environment, as well as competition on the one hand and growing expectations of customers and service users on the other, there is a growing need for more efficient work of public administration also.

In this paper, public administration will imply: a system of bodies, organizations and bodies and an interdependent set of competencies, tasks and duties, specifically related and guided by the application of legal norms, organizational instruments, management methods, processes and procedures to fulfill the mandate of the elected government. By public service, we imply services delivered by public administration (administrations, administrative organizations, and local self-government units, (municipalities and cities) or the public sector, to legal and individual persons).

Knowledge and potentials established on the knowledge form the basis of intelligent real-time IT systems of any organization or public administration. In these areas, due to inadequate treatment, knowledge often stagnates or is lost in terms of further learning and increased competencies. Knowledge is lost when an individual leaves public administration as well as due to insufficient cooperation and documentation of work procedures. The transition of developed and some developing countries from an “industrial society” to a “knowledge society” (Dzwigol, Dzwigol-Barosz, & Kwilinski, 2020) has resulted in increased awareness of the importance of, knowledge which is a key lever for growth, development and more efficient service.

Identical tasks are not set in front of the public administration institution as in the front of the production and other service organization, and respectively business entity in the economy, at least not in the area of gaining a competitive advantage (Kwilinski, 2019). Public administration is confronting with almost the same dynamic environment, with constant demands for simplification of procedures, and with more efficient mutual communication and efficient provision of services to legal and individual persons (Ubaldi, Gonzalez-Zapata, & Barbieri, 2020). When communicating with the public administration (management), due to its static nature, legal and individual persons spend a large part of their time, and today it has become a particularly expensive "goods".

The problem is that the requirements for the improvement of public administration services must be carry out within the limited budget, and no significant improvement of services are not expected in the coming years. If we want to enable domestic business systems equal competition in the domestic and easier access to the world market, the public administration is obliged to simplify and unify its business processes, improve management programs, complete investments in the necessary information and communication infrastructure (Hagendorff, & Wezel, 2020) with the ultimate goal of implementing the practice of electronic and mobile administration (e-m-Government).

SERVICE BASED ON NEW TECHNOLOGICAL SOLUTIONS

Digitization of public administration can help increase its efficiency and new technologies are becoming, not only a tool for the implementation of modern public administration, but also significantly determine the direction of change. We can assume that a high degree of digitalization of public administration will provide a higher level of quality of its services, increase the efficiency of its work, and ultimately offer services to users (Suray et al., 2019). Full digitalization of public administration will lead to the possibility of using self-service and offering services in real time.

The implementation of real-time intelligent IT systems in public administration presents a challenge, uncertainty, inconvenience, and sometimes results with resistance of certain interest groups. Resistance most often arises due to a lack of understanding of the usefulness of introducing the concept of Business Intelligence. Here we want to emphasize the advantages brought by the application of new technologies and service tools if they applied in public administration, which are studied and developed by modern IT science.

The current service environment is characterized by rapid and radical changes, and emphasizes the delivery of cheaper, more efficient and user-friendly services.

Necessary changes in the service environment require new service models in relation to current practice. There is a need to use such technologies that enable comprehensive, fast and efficient service or self-service based on all available data, information and knowledge, inside and outside public administration. The process of obtaining services from administrations, administrative organizations and local self-government units are shown in Figure 1.

The user requests certain services from the public administration as a service: Decisions, Rescript, Certificates, Excerpts and other services. Administrations, administrative organizations, and local self-government units provide about 170 different services to their users (data refer to services provided by public administration in Bosnia and Herzegovina).

In order for the service to be cheaper and more efficient and for services to be offered, service providers need to connect much more than currently is the case.

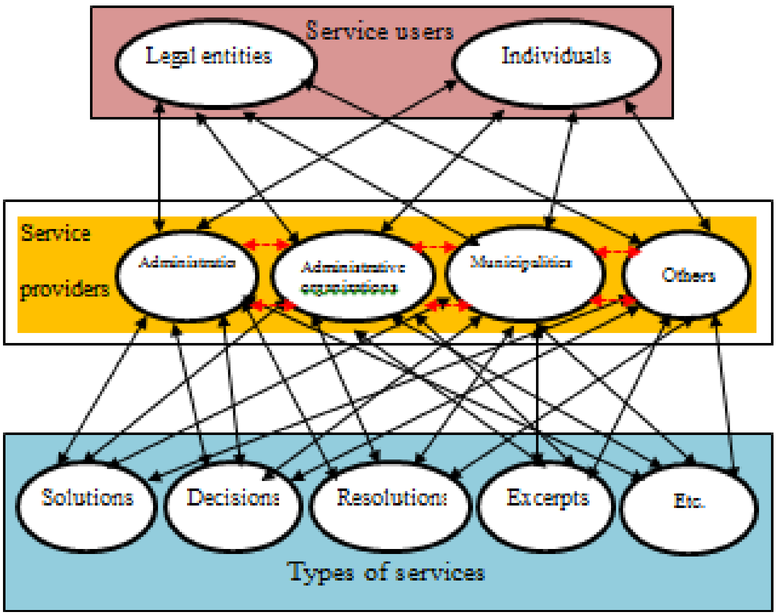

Figure 1. The process of obtaining services

Now the public administration provides a service to its users, and until the process of transferring to the new service, it should provide users with a transitional period of self-servicing.

Why would not the public administration allow a prospective student or High school student not to be able to forward their “Birth Certificate” in digital form to the appropriate High school or college? Why could not every owner of a Cadastral parcel pick up or forward to the necessary place the "Ownership List" in digital form.

What the user must have, and what the public administration must have in order to provide self-service, presented in Figure 2 without much detail. Could a High School or a particular College accept a “Birth Certificate” in digital form and does the current legislation allow it? An issue that we will not deal with, because that would go beyond the scope of this research.

The user can access the service in digital form using his computer, tablet or mobile phone. In order for the public administration to be able to self-serve the user, it must be able positively identify him in the authentication process. The authentication process can be carried out: by recognizing with certain identification documents (e-Signature), identification according to their face shape, identification according to fingerprint, identification according to palm geometry, identification according to pupil of the eye, ear shape, handwriting, voice and the like.

Identification of users in the process of self-service through fingerprint would be the cheapest solution because in the Agency for Identification Documents of Bosnia and Herzegovina, they are already in digital form.

After the positive identification, the user could access one of the services offered by the unique public administration service portal, shown in Figure 3. Each user of the self-service portal could access a certain digital service using a computer, tablet or smartphone.

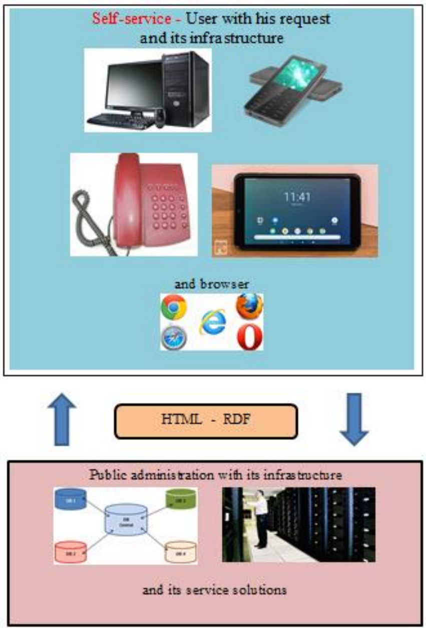

Figure 2. Self-service

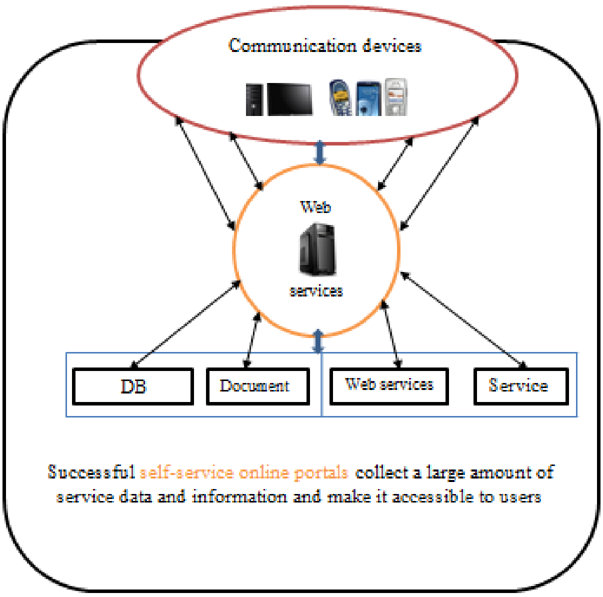

Figure 3. Public administration service portal

HOW ACHIEVE TO OFFER SERVICES

When creating a new service strategy of a successful administration, administrative organization and local self-government unit, elements that significantly contribute to providing and offering better services must be analyzed and determined, as well as providing better service and providing satisfaction to the user (his ardor). Their work and service they should establish on the advantages of common knowledge and skills of all employees in the entire public administration. This means that knowledge as the strongest weapon today in creating service advantage and offering services should be given much greater importance.

The registry offices of Municipalities and Cities could already offer "Excerpts from the birth register - Birth certificate" to all parents whose children are starting school, by sending them in paper form to the appropriate address of the parents. It is a classic service, and local self-government units do not use them. In order to be able to offer such a service in digital form, many other preconditions need to be met, related to both public administration and schools, which should be able to accept the document in digital form.

The first of the problems that arising when creating the preconditions and the necessary infrastructure for offering services is insufficient cooperation between the participants in the service chain. The development of information and communication technologies enables the successful solution of this problem because it provides better and more functional connections. The first step towards a “service-offering administration” is a set of methods, tools and applications that enable the operation of an intelligent real-time information system.

Real-time intelligent systems today considered as a special discipline that includes elements of strategy, service process, and service analysis and Information technology. They enable the collection, analysis, distribution and operation of service information between administrations, administrative organizations and local self-government units (public administration), all with the aim of better knowing the users, easier solving of service problems and offering appropriate services.

Already, an intelligent real-time public administration IT system, based on knowledge, could recognize the user's need and offer him the appropriate service ("SOLUTION - SERVICE WITHOUT REQUIREMENTS").

If we look at the problem from a technical point of view, the setting of an intelligent public administration IT system in real time is a public administration IT system, but in essence completely different. The data sources of such a system are different, they come from administrations and administrative organizations, but also from the environment, and from service users, from social networks and the like, and the presentation of information is complete and unambiguous. The new system implies an intelligent system of planning and analysis of events in public administration, reduced to the language of numbers (binary notation). The intelligent IT system in public administration does not currently exist as a finished product, but its manufacturers offer technological platforms and knowledge for installation and upgrading to an intelligent IT system in real time. In such a system, the availability of data, information and knowledge about service users, service providers, service processes and their interrelationships is easy. Such a system enables a view of the entire public administration, whereby each user can be offered exactly the service he needs at a certain moment.

The first step that the public administration must take is to create a unified public administration Data warehouse.

PUBLIC ADMINISTRATION DATA WAREHOUSE

Employees in public administration (administrations, administrative organizations and local self-government units) now need easily accessible and consistent data and information presented in such a way that at the same time, accurately and concisely give an overview of all their own services as well as necessary data on service needs. However, complex working and service conditions generate an increasing number of service events within and outside the public administration, and the data obtained are most often stored in operational databases. Due to the size of such databases, it is not possible to search them in real time. Those who work in the service process need the right data in the right form and in the right place to be able to work more efficiently and serve better. The current information system should provide not only data but also information and knowledge whose content, speed of access and manner of presentation corresponds to the current needs of both employees and service users.

For the needs of operational services, classic databases are used, most often based on a relational model, and they reflect an up-to-date, real state. With some data, every trace is lost during the update, and in order to serve the users and make the correct service decisions, it is necessary to have an insight into the time sequence of service events, so such databases are not a satisfactory solution.

As a result, new forms of organizing data in computer memory are now increasingly being used. A new generation of computer systems has been developed based on the concept of Data warehouse. The Data warehouse contains data collected from various sources, historical data on the work and service of public administration as well as data on service needs. It designed to enable data retrieval, online analytical processing, reporting and support for the real-time service process. Problems related to the single Data warehouse of public administration may relate to data management, data quality and problems that may arise in the use and sharing of data, and their privacy (Fredriksson, Mubarak, Tuohimaa, & Zhan, 2017).

In terms of technical requirements and content, the unique databases of the Public Administration in Bosnia and Herzegovina are completely different from traditional databases and transaction systems. Classical (operational) databases are their premise, but unique public administration data warehouses must rely on a multidimensional concept in their design. An important feature of a Data warehouse is its purpose. Data in a unified public administration data warehouse must be collected and organized in such a way that they are easily accessible and that they can be used in a quick and easy way for the purposes of service or analysis of the service process itself.

The Data warehouse is a user-oriented, integrated, time and content-stable data set, in the first phase with the aim of helping to provide services. User orientation of data means that they organized around the service process, in a way that provides data, information and knowledge about specific service processes (Wirtz, Weyerer & Geyer, 2019).

Data collected in the Data warehouse are from different sources and always stored in the same format - they are integrated, consistent and displayed in a standardized way.

Building data warehousing is a continuous process of planning, building and collecting data and information on services and service needs, and collected from various sources and their use, maintenance, management and continuous improvement. In such a complex construction process, it is important to have a vision of what is to be achieved by creating a unified public administration Data warehouse. An important role of the warehouse is to develop and use knowledge based on the collected and processed data and information.

It must be in mind that the implementation of a unified data warehouse is an expensive investment and that it must be a continuous process. Therefore, the decision to introduce a unified public administration data warehouse is primarily a strategic issue and an issue of better service and service provision, not a matter of technology (Radivojević, Filipović i Kremenović, 2012). Therefore, during the decision-making process on the creation and implementation of a unified data warehouse of public administration, it is necessary to harmonize a number of issues important for the establishment of a single warehouse. Prior to implementation, it is necessary to identify service interest in the construction and use of data warehouses for service purposes, develop criteria for determining the service usability of data warehouses, identify data sources for filling the warehouse, decide on size, determine type from the aspect of content, determine physical location, make decisions on the construction or purchase of data warehouses, to make the selection of the most favorable tools and systems for database management, to solve the issue of hiring the necessary new personnel, etc. At the end of the implementation follows the commissioning of the system, training of users in order to completely use the installed tools. Figure 4 shows the role of the data warehouse in offering services.

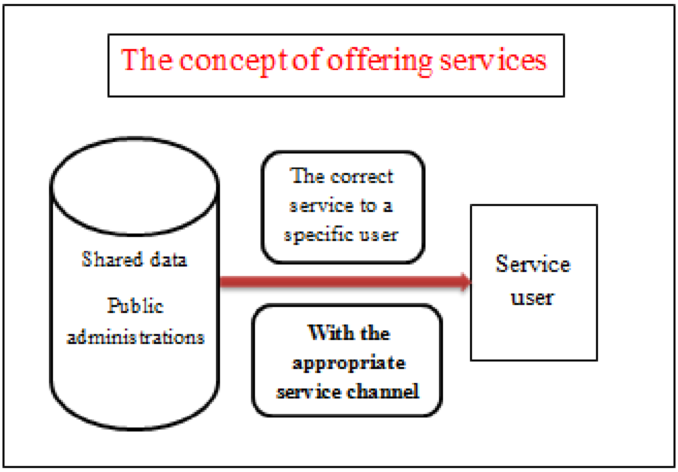

Figure 4. The role of the data warehouse

If we want a unique public administration data warehouse to fulfill its goal and purpose of existence, it must meet the following preconditions:

- ensure access to data and information for all employees and service users;
- It must contain a large amount of detailed information about the service, the service provider, and the service user;
- All service transactions relevant to efficient service, self-service and service provision must be recorded in the data warehouse;
- updating the data warehouse should be an ongoing process;
- It must always be available and designed in such a way that it can serve any purpose that sometimes cannot be foreseen;
- must be expandable;
- must meet appropriate measures to protect the confidentiality of sensitive data.

In this paper, we listed some of the issues that may lead to different thoughts about the work and role of public administration. Will it happen that by offering the services of an individual administration and administrative organization, they simply "shut down"?

Can it happen that all jobs taken over by a "NEW PUBLIC ADMINISTRATION" based on new technological solutions and knowledge? Management without employees.

Can new technologies lead to a single and unified public administration?

Let these and similar questions remain unanswered now, because that's certainly what there's a lot of work to be done.

CONCLUSIONS

Guided by the conducted analyses, we propose the concept of self-service and offering services by the Public Administration to its users based on Data Warehouses. The modern world of business today operates in an environment of a high degree of uncertainty and the impossibility of predicting the future. In the conditions of a dynamic and turbulent business environment, as well as competition on the one hand and increasing expectations of customers and users of services on the other hand, the need for more efficient work of Public Administration is growing.

Based on the considerations carried out, we propose that the future direction of development in Public Administration should be directed towards "administration that offers services" as a set of methods, tools and applications that enable the functioning of an Intelligent Information System in real time. Real-time Intelligent Systems include elements of strategy, service process, service analysis and information technology. They should enable the Public Administration to collect, analyze, distribute and operate service information between administrations, administrative organizations and local self-government units (Public Administration), all with the aim of better knowing users, easier solving of service problems and offering appropriate services. We also propose a single repository of Public Administration data. The complete digitization of Public Administration will lead to the possibility of using self-service and offering services in real time.

We propose the implementation of appropriate infrastructure that could ensure this. We believe that the next period should be marked by a greater connection of all administrations, administrative organizations and local self-government units, and that the proposed concept could be implemented.

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POLNE RAZLIKE SOCIOSEKSUALNE ORIJENTACIJE U KONTEKSTU OSOBINA LIČNOSTI

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SAŽETAK

Socioseksualnost je pojam koji objašnjava razlike u spremnosti pojedinaca da se upuste u seksualnu vezu bez bliskosti, vjernosti i drugih odrednica emocionalne povezanosti. Cilj ovog istraživanja bio je provjeriti na koji način su dimenzije osobina ličnosti povezane sa socioseksualnom orijentacijom kod žena i muškaraca u Bosni i Hercegovini. Istraživanje je sprovedeno na uzorku od 430 ispitanika, uzrasta od 18 do 71 godine iz BiH. Podaci su prikupljeni pomoću tri instrumenta: Sociodemografskog upitnika, upitnika osobina ličnosti Velikih pet plus dva (VP+2) i upitnika Socioseksualne orijentacije (SOI). Za obradu rezultata korištene su adekvatne statističke metode za procjenu razlika između grupa i računanje korelacija. Rezultati su djelomično potvrdili postavljene hipoteze. Muškarci su manje restriktivni od žena i njihovoj liberalnosti doprinose agresivnost, negativna i pozitivna valenca. Žene su osjetno restriktivnije, dimenzije ličnosti koje su povezane sa tim su savjesnost i negativna valenca.

Ključne riječi: socioseksualnost, dimenzije ličnosti, polne razlike.

UVOD

Socioseksualnost je pojam koji objašnjava razlike u spremnosti pojedinaca da se upuste u seksualnu vezu bez bliskosti, vjernosti i drugih odrednica emocionalne povezanosti. U odsutnosti takvih indikatora emocionalne vezanosti, pojedinci nerestriktivne socioseksualnosti često stupaju u polne odnose, dok pojedinci restriktivne orijentacije to najčešće ne čine (Simpson, Gangestad, Christensen, & Leck, 1999). U odnosu na restriktivne pojedince, nerestriktivni su skloniji seksualnim odnosima s više partnera u istom vremenskom periodu. Njihovu vezu karakteriše nisko ulaganje, manja privrženost, ljubav i vezanost uz partnera. Nerestriktivni partneri preferiraju i češće imaju partnere koji su fizički atraktivniji, istaknutiji i koji imaju viši socijalni status, dok restriktivni pojedinci preferiraju partnere koji su ljubazni, odani, odgovorni i vjerni. Osobe kod kojih je utvrđena nerestriktivna socioseksualna orijentacija (kratkoročna seksualna strategija) imaju tendenciju ulaska u seksualne odnose u odsutnosti prethodno navedenih indikatora, dok je osobama restriktivne socioseksualne orijentacije (dugoročne seksualne strategije) potrebno više vezanosti i emocionalne bliskosti s partnerom prije stupanja u seksualni odnos (Sekso, 2020). Prema dominantnim teoretičarima ovog područja socioseksualnu orijentaciju čini:

socioseksualno ponašanje, socioseksualni stavovi kao i socioseksualne želje (Penke, & Asendorpf, 2008). Pritom se socioseksualno ponašanje odnosi na ukupnu raspodjelu resursa kao što su vrijeme i novac na kratkoročne, odnosno dugoročne reproduktivne strategije, a odražava i ponašajne navike u domenu seksualnosti. Socioseksualni stavovi predstavljaju dispozicijske tendencije pojedinca pri evaluaciji neobavezujućih seksualnih odnosa generalno, a obuhvata i vlastitu želju za emocionalnom bliskošću prije stupanja u takav odnos. Posljednje, socioseksualne želje predstavljaju motivacionu dispoziciju za pojedinčev izbor raspodjele resursa na dugoročne ili kratkoročne odnose. Riječ je o motivacionom stanju kojeg karakteriše povećani seksualni interes, a samim tim i subjektivna seksualna pobuđenost i maštanja (Penke, & Asendorpf, 2008).

Kad je riječ o faktorima koji utiču na smjer socioseksualne orijentacije kod pojedinca, uzrok se često može pripisati polu, budući da su muškarci češće nego žene nerestriktivne socioseksualne orijentacije, ali i mnogim drugim faktorima. Naime, pojedine osobine ličnosti, poput ekstraverzije, u pozitivnoj su korelaciji upravo s nerestriktivnom socioseksualnom orijentacijom. Evolucijska objašnjenja ženske socioseksualnosti govore o dvije različite reproduktivne strategije koje su bimodalno raspoređene u populaciji dok mušku socioseksualnost objašnjavaju putem stepena fizičke simetrije. Takođe, iz evolucijske perspektive gledano, postoji razlika u omjeru polova potomaka zavisno o socioseksualnoj orijentaciji roditelja, drugim riječima, žene nerestriktivne socioseksualne orijentacije rađaju u prosjeku više sinova od žena restriktivne orijentacije koje rađaju više ženskih potomaka.

Teorijska osnova socioseksualnosti

Teorija diferencijalnog roditeljskog ulaganja govori da stepen izbirljivosti pri izboru polnog partnera zavisi o stepenu ulaganja u zajedničko potomstvo. Kod većine vrsta, uključujući i ljude, ženski pol više ulaže u potomstvo nego muški, pa su zato ženke/žene znatno izbirljivije u pogledu polnog partnera nego mužjaci/muškarci. Ako su svi ostali faktori jednaki, ženski pol je skloniji biranju onog partnera koji može i spreman je investirati u nju i njeno potomstvo, jer se time povećava vjerojatnoća njihovog preživljavanja.

Preferencija prema određenim obilježjima je teorija koja ukazuje da postoje i neki drugi faktori koji su uključeni u izbor partnera. Jedan takav jeste njegova prikladnost, odnosno posjedovanje karakteristika koje ga čine privlačnim suprotnom polu, bez obzira na njegovu sposobnost i spremnost za ulaganje u potomstvo. Naime, još je od tridesetih godina prošlog vijeka poznat selekcijski proces koji se zasniva na pretpostavci da ženke mogu imati nasljednu preferenciju prema nekim nasljednim obilježjima mužjaka, vjerovatno zbog toga jer preferirano obilježje govori o njegovoj boljoj genetskoj kvaliteti, odnosno o većoj vjerojatnoći preživljavanja. Sparivanje s takvim mužjakom dovesće do brojnog potomstva koje će takođe imati to obilježje, pa će i ono biti privlačno ženkama, odnosno dio ženskog potomstva koje će takođe preferirati to obilježje kod mužjaka. Taj se kružni selekcijski proces može nastaviti sve dok preferirano obilježje ne postane toliko pretjeran teret za mužjaka da mu ono počinje smanjivati vjerovatnoću preživljavanja.

Treća teorijska koncepcija važna za razumijevanje interindividualnih razlika u socioseksualnosti je biološka sigurnost roditeljstva. Naime, kod svih 4000 vrsta sisavaca i 257 vrsta primata, uključujući i ljude, oplodnja se događa u tijelu ženke/žene, a ne u tijelu mužjaka, muškarca. Ta elementarna činjenica reproduktivne biologije proizvela je jedan od najvažnijih problema s kojim su se susretali naši muški preci, problem sigurnosti očeva. Ako su svi ostali faktori jednaki, mužjak/muškarac će pri izboru reproduktivne partnerice preferirati onu koja će mu u većoj mjeri garantovati sigurnost očeva. Iz navedenih teorijskih koncepcija slijedi da žene i muškarci pri izboru partnera moraju rješavati različite probleme. Dok je muškarcima primaran problem povećanje sigurnosti očinstva, ženama je važnije riješiti probleme vezane uz izbor partnera koji može i koji je spreman ulagati u potomstvo, te koji ima takve genetske kvalitete koje mogu osigurati reproduktivnu prednost svom potomstvu (Hrgović i Polšek, 2004).

Teorija socijalne strukture i dalje se ubraja u jednu od evolucijskih teorija pa su se tako muškarci koji su snažniji, veći i brži smatrali potrebniji kao lovci i ratnici, dok je primarna uloga žena povezana s brigom za porodicu i potomke (Pavlović, 2020). U današnje vrijeme, najveće razlike u socioseksualnosti muškaraca i žena možemo vidjeti u patrijarhalnim kulturama koje su obilježene tradicionalnom podjelom rodnih uloga pri čemu žene uživaju manje političke, ekonomske i reproduktivne slobode u odnosu na muškarce. Manje razlike mogu se pronaći u liberalnijim kulturama obilježenim naprednom, odnosno fleksibilnom podjelom rodnih uloga. U takvim kulturama teži se izjednačavanju sloboda i obaveza muškaraca i žena pa tako dolazi i do sličnijih seksualnih obrazaca i ponašanja (Wood i Eagly, 2002; prema Pavlović, 2020). Zanimljiv nalaz, u skladu s evolucijskom teorijom socioseksualnosti, je da žene sa nerestriktivnom orijentacijom rađaju više sinova. U istoriji evolucije muško i žensko potomstvo imalo je različitu reproduktivnu vrijednost za restriktivne i nerestriktivne žene. Žene s nerestriktivnom socioseksualnošću su na većem dobitku ako imaju potomstvo s partnerom koji je reproduktivno vrijedan, jer će one karakteristike koje njemu omogućuju veću reproduktivnu vrijednost preći i u njegovo potomstvo. Međutim, te su karakteristike vrednije za njegove sinove nego za kćeri jer su tokom evolucijske istorije muškarci varirali više od žena u ukupnoj veličini potomstva, što znači da je reproduktivno uspješan muškarac imao više potomstva nego reproduktivno uspješna žena. Kao rezultat toga, nerestriktivne žene bile su selektovane da imaju više sinova. Restriktivne žene naprotiv bile su na većem dobitku ako su imale relativno više potomstva ženskog pola jer bi im eventualni sinovi bili u kompetenciji s reproduktivno uspješnijim sinovima nerestriktivnih žena. Nova analiza originalnih Kinzeyevih podataka otkrila je da broj predbračnih seksualnih partnera značajan prediktor omjera polova potomstva. Žene koje su se upuštale u polne odnose s većim brojem partnera prije braka najčešće imaju više sinova u poređenju sa svojim restriktivnim vršnjakinjama. Suprotno tome, žene koje su imale manje partnera prije braka imaju veći broj ženskih potomaka u poređenju sa nerestriktivnim ženama. Dakle, u onoj mjeri u kojoj evolucijski pritisci mogu uticati na omjer polova, može se očekivati da će žene sa nerestriktivnom socioseksualnošću rađati više sinova, a žene s restriktivnom socioseksualnošću više kćerki (Hrgović i Polšek, 2004; Simpson, & Gangestad, 1992).

Nerestriktivna socioseksualna orijentacija u korelaciji je sa nepoželjnim crtama ličnosti i s nepoželjnim ponašanjima češće kod muškaraca nego kod žena. Kod oba pola nerestriktivna socioseksualna orijentacija u korelaciji je s određenim ponašanjima koja upućuju na prijašnje iskustvo sa seksom s većim brojem polnih partnera te čestim polnim odnosima. Što se tiče muškaraca, nerestriktivna socioseksualna orijentacija povezana je s višim nivoom prihvatanja mitova o silovanju te iskrivljenih i štetnih seksualnih uvjerenja, višim nivoom konzervativnih stavova prema ženama, visokom motivacijom za posjedovanjem moći i niskom motivacijom za pripadanjem i intimnosti, a takođe je povezana s upotrebom seksualne agresije u prošlosti. Kod žena, nerestriktivna socioseksualna orijentacija povezana je sa seksualnim fantazijama o dominatnosti i sa nižim nivoom seksualnog konzervatizma (Yost, & Zurbriggen, 2006).

CRTE LIČNOSTI I SOCIOSEKSUALNOST

Sve dimenzije petofaktorskog modela ličnosti povezane su sa seksualnošću i strategijama koje ljudi koriste pri izboru partnera. Međutim, u mnogim istraživanjima i kulturama pokazano je da su ekstraverzija i prijatnost pouzdano povezane sa socioseksualnošću. Naime, ljudi koji su visoko na skali ekstraverzije, a nisko na skali prijatnosti obično su nerestriktivne socioseksualne orijentacije. Međutim, socioseksualnost se najčešće može povezati sa crtama prijatnosti i ekstraverzijom kod muškaraca, ali ne i kod žena. Asertivnost i prijateljsko ponašanje može koristiti muškarcima više nego ženama jer ženina ličnost i komunikacija mogu biti manje važni u kontekstu sparivanja, odnosno stupanja u vezu. Prijatnost je crta ličnosti koja je vjerovatno bila vrlo korisna za napredovanje muškaraca na hijerarhiji dominantnosti te je tako ujedno muškarcima olakšala pristup kratkoročnim vezama. Psihotocizam u formi mračne trijade takođe utiče na razlike u socioseksualnosti (Schmitt, & Shackelford, 2008). Jonason, Valentine, Li, & Harbeson, (2011) navode da su te veze značajno drugačije kad se uvede varijabla pola. Naime, kad je riječ o polu on navodi da postoji pozitivna korelacija između ekstraverzije i socioseksualnosti kao i između otvorenosti i socioseksualnosti i kod muškaraca i kod žena. Takođe, postoji negativna korelacija između prijatnosti i socioseksualnosti kod muškaraca, ali ne i kod žena. Negativna korelacija između neuroticizma i socioseksualnosti postoji kod žena, ali ne kod muškaraca. Objašnjenje vjerojatno leži u činjenici da ekstraverzija pomaže očuvanju samopoštovanja kod oba pola. Moguće objašnjenje navedenih korelacija je da crte ličnosti poput ekstraverzije, otvorenosti i psihoticizma vjerovatnije mogu pomoći više muškarcima nego ženama prilikom traženja odgovarajućeg partnera. Postoji vjerojatnost da su žene koje se nalaze visoko na crti neuroticizma najčešće neraspoložene za spolni odnos. Ovo je možda povezano s činjenicom da su neurotični ljudi u većoj mjeri zabrinuti za posljedice svojih postupaka, fokusirajući se na negativne aspekte te će se zbog toga rjeđe upuštati u polno rizična ponašanja (Jonason, Valentine, Li, & Harbeson, 2011).

Do sada je provedeno vrlo malo istraživanja koja su ispitivala odnos socioseksualnosti sa dimenzijama petofaktorskog modela ličnosti, pogotovo sa svih pet njegovih dimenzija. Budući da je petofaktorski model vrlo širok i sveobuhvatan okvir za opis individualnih razlika, jedno od najvažnijih pitanja je u kojoj mjeri dimenzije petofaktorskog modela objašnjavaju interindividualne razlike u socioseksualnosti. Međutim, postoje i određeni razlozi zbog kojih se može pretpostaviti da socioseksualnost nije visoko povezana s dimenzijama petofaktorskog modela. Naime, leksički pristup, u okviru kojeg je nastala ova klasifikacija ličnosti, uglavnom nije uzimao u obzir termine koji se odnose na razne aspekte seksualnosti. Na taj način u većini operacionalizacija petofaktorskog modela nisu zastupljene čestice koje su od interesa za evolucijsku psihologiju ličnosti. Upravo zbog toga može se očekivati da socioseksualnost nije redundantna u odnosu na dimenzije petofaktorskog modela, nego da je s njima povezana relativno nisko. Takođe, na osnovu evolucijske teorije može se očekivati da je socioseksualnost nešto više povezana s osobinama ličnosti kod žena nego kod muškaraca. Kratkoročna strategija ima veću reproduktivnu vrijednost za muškarce nego za žene, pa su je oni spremniji iskoristiti ako im to uslovi dopuštaju. Nerestriktivna socioseksualnost muškaraca u većoj je mjeri određena obilježjima koja govore o kvaliteti genotipa (npr. tjelesna simetričnost). I situacijski uslovi koji olakšavaju nerestriktivnu socioseksualnost i fizička obilježja koja govore o kvaliteti genotipa mogu biti relativno nezavisni od dimenzija ličnosti. S druge strane, žene su sklonije restriktivnijoj socioseksualnosti, odnosno predanosti vezi, potrebi za intimnošću i bliskim odnosima s partnerom, a ta su obilježja u većoj mjeri povezana i s osobinama ličnosti (Trogrlić, Oljača, Mitrović, & Marčeta, 2020; Zentner, 2005). Prilikom ispitivanja odnosa religioznosti i socioseksualnosti utvrđeno je da učesnici koji su postizali više rezultate na Upitniku religioznosti, tj. religiozniji pojedinci su imali negativnije stavove prema kratkoročnoj strategiji odabira partnera i niže rezultate na prijašnjem seksualnom ponašanju, dok su manje religiozni pojedinci imaju manje negativne stavove prema nerestriktivnoj sociosekualnosti (Tolj, 2018).

METOD

Cilj i zadaci rada

Cilj ovog rada je provjeriti na koji način su dimenzije osobina ličnosti povezane sa socioseksualnom orijentacijom kod žena i muškaraca u Bosni i Hercegovini. Zadaci istraživanju su da se, adekvatnom analizom prikupljenih podataka, pruže odgovori o relaciji navedena tri konstukta.

Hipoteze istraživanja

H1: Žene su restriktivnije socioseksualne orijentacije od muškaraca.

H2: Visok skor ekstraverzije i nizak skor savjesnosti su korelirane sa nerestriktivnom socioseksualnom orijentacijom kod muškaraca.

H3: Visoki skorovi neuroticizma i savjesnosti su u negativnoj korelaciji sa socioseksualnošću žena.

Uzorak istraživanja

Istraživanje je sprovedeno na uzorku od 430 ispitanika (281 ispitnice i 149 ispitanika), uzrasta od 18 do 71 godina, iz Bosne i Hercegovine. Učestvovanje u istraživanju je bilo na dobrovoljnoj osnovi i potpuno anonimno.

Mjerni instrumenti

U istraživanju je konstruisan i korišten upitnik za prikupljanje podataka o odabranim sociodemografskim karakteristikama ispitanika. Upitnikom su prikupljeni podaci o varijablama kao što su: godine starosti ispitanica, obrazovanje, zaposlenost, mjesto stanovanja, partnerski status, odnos prema religiji i nacionalna pripadnost. Upitnik je obuhvatao i pitanja o konzumiranju alkohola i cigareta, kao i o učestalosti seksualnih odnosa.

Kao rezultat psiholeksičkih istraživanja ličnosti u Srbiji nastao je instrument Velikih pet plus dva (VP+2) (Čolović, Smederevac i Mitrović, 2014), koji je namjenjen procjeni sedam dimenzija ličnosti najvišeg nivoa hijerarhije, od kojih svaka obuhvata dvije ili tri dimenzije užeg obima. Osnovne dimenzije ličnosti dobijene upitnikom Velikih pet plus dva (VP+2) su: Neuroticizam, Ekstraverzija, Savjesnost, Agresivnost, Otvorenost prema iskustvu, Negativna valenca i Pozitivna valenca. Neuroticizam je dimenzija individualnih razlika u stepenu reaktivnosti na potencijalno ugrožavajuće stimuluse i predstavlja sklonost da se doživljavaju neprijatne i uznemirujuće emocije, sklonost uznemirenosti u mislima i akcijama. Ekstraverzija određuje broj međuljudskih odnosa sa kojima se osoba oseća lagodno. Savjesnost je dimenzija individualnih razlika koja se odnosi na stav prema obavezama, odnosno broj ciljeva na koje je neko usmjeren kao i samokontrolu, sistematičnost i istrajnost u njihovom ostvarivanju. Agresivnost je dimenzija koja podrazumijeva individualne razlike u učestalosti i intenzitetu agresivnih impulsa, kao i razlike u kontroli i intenzitetu same agresivne reakcije. Otvorenost prema iskustvu se odnosi na prihvatanje novih ideja, pristupa i iskustava. Ova dimenzija predstavlja osobinu koja obuhvata intelektualnu radoznalost, širok krug interesovanja i otvorenost za promjene. Pozitivna valenca je dimenzija samoevaluacije koja podrazumijeva pozitivan stav prema sebi i pozitivnu procjenu sebe. Negativna valenca je dimenzija samoevaluacije koja podrazumijeva negativan stav prema sebi i negativnu procjenu sebe (Čolović i sar., 2014). McCrae, & Costa Jr (1995) u rezultatima svog istraživanja pokazuju da su deskriptori ekstraverzije i otvorenosti prema iskustvu zasićeni pozitivnom valencom, dok su indikatori prijatnosti, neuroticizma, ekstraverzije i savjesnosti zasićeni faktorom negativne valence. Primjenom ovog instrumenta proširuje se mogućnost interpretacije rezultata zbog dodatih dimenzija pozitivne i negativne valence. Upitnik ličnosti Velikih 5+2, koji se sastoji od 70 ajtema i opisuje sedam dimenzija ličnosti najvišeg nivoa hijerarhije: Neuroticizam, Ekstraverzija, Savjesnost, Agresivnost, Otvorenost prema iskustvu, Negativna valenca i Pozitivna valenca (Čolović i sar., 2014).

Inventar socio - seksualne orijentacije (SOI) (Simpson, & Gangestad, 1992) razvijen je za merenje razlike među pojedncima u spremnosti da se upuste u neobavezne seksualne odnose. SOI procenjuje prošlo seksualno ponašanje pojedinaca, očekivano (buduće) seksualno ponašanje, sadržaj njihovih seksualnih fantazija i njihov stav prema upuštanju u neobavezan seks bez posvećenosti i emocionalnih investicija. Pojedinci koji postižu visoke rezultate na SOI imaju nerestriktivnu socioseksualna orijentaciju. Pojedinci koji imaju nizak skor na SOI imaju ograničenu socioseksualnu orijentaciju. Sastoji se od 7 ajtema od kojih su prva tri otvorenog tipa odgovaranja, jedan ajtem je sa ponuđenim odgovorima i posljednja tri ajtema su u formatu petostepene Likertove skale.

Postupak istraživanja

Učešće u istraživanju je bilo dobrovoljno. Upitnici su popunjavani online (pomoću Google Forms upitnika), a procedurom je obezbjeđena anonimnost. Pristupanjem popunjavanju upitnika ispitanici su dali saglasnost za učešće u istraživanju. Prikupljeni podaci su analizirani odgovarajućim ststističkim metodama u programu SPSS for Widnows.

REZULTATI

Radi provjere opravdanosti provođenja parametrijskih analiza na podacima, testirana je normalnost distribucija. Kolmogorov i Smirnov test pokazao je da pretpostavka o normalnosti nije zadovoljena ni na jednoj od analiziranih skala (Sig.=,000), te su se za obradu rezultata koristile neparametrijske statističke metode. Deskriptivni pokazatelji uzorka istraživanja prikazani su u Tabeli 1. Rezultati statističke obrade su procentualno izraženi. Godine ispitanika su podijeljene u pet kategorija, te se na osnovu rezultata može zaključiti da najveći broj ispitanika pripada starosnoj grupi od 18 do 29 godina (71,4%), dok je najmanji broj u grupi 60 do 71 godina (2,1%). Najveći postotak ispitanika ima završenu srednju školu (58,6%), i najveći broj njih je u stalnom radnom odnosu (40,2%). 53,3% ispitanika živi u velikom gradu (kategorija definisana kao naseljeno mjesto sa više od 50 000 ispitanika). Odnos prema religiji je formulisan u tri kategorije koje indukuju *gnostičke teiste* (uvjeren/a sam da Bog postoji), *agnostike* (nisam siguran/na da li Bog postoji ili ne) i *gnostičke ateiste* (uvjeren/a sam da Bog ne postoji), te se najveći broj ispitanika svrstava u kategoriju gnostičkih teista (61,6%). Prema nacionalnoj strukturi najviše ispitanika se nalazi u grupama Srpske nacionalnosti (75,3%), dok najveći broj ispitanika trenutno nije u ljubavnoj vezi (36,9%).

Tabela 1. Deskriptivni opis uzorka istraživanja.
Table 1. Descriptive layout of the research sample.

Godine		**Obrazovanje**		**Radni status**		**Mjesto stanovanja**		**Religija**		**Nacionalnost**		**Ljubavni status**	
18-29	71,4	Osnovna škola	0,7	Stalni RO	42,2	Veliki grad	53,3	Gnostički teista	61,6	Hrvat	3,0	U vezi	35,9
30-39	12,3	Srednja škola	58,6	Honorarno	8,4	Manji grad	14,9	Agnostici	28,1	Srbin	75,3	U braku	24,3
40-49	11,9	Završen fakultet	17,9	Studentica	40,0	Naseljeno mjesto	22,6	Gnostički ateista	10,2	Bošnjak	17,7	Nije u vezi	36,9
50-59	2,3	Mr/dr	22,8	Nezaposlena	8,7	Ruralno područje	9,3			drugo	4,0	razveden	1,9
60-71	2,1			Penzija/ drugo	0,2							drugo	0,9

Mann-Whitney U test otkrio je značajnu razliku u nivou socioseksualne orijentacije muškaraca (Md=42, N=135) i žena (Md=25, N=258), U=8881, z=-7,987, Sig.=,000. Na osnovu dobijenih parametara izračunata je veličina uticaja čija je vrijednost srednje jačine (r=0,4) (Kohen, 1988; prema Pallant, 2011) (Tabela 2). Takođe, ovaj test je otkrio i značajnu razliku u skorovima žena i muškaraca na tri dimenzije ličnosti VP+2, dok su ostale četiri dimenzije bile ispod statistički značajnog nivoa (Sig.>,05). Neuroticizam kod žena (Md=23, N=281) i muškaraca (Md=21, N=149), U=17116, z=-3,116, Sig.=,002; negativna valenca kod žena (Md=15, N=281) i muškaraca (Md=18, N=149), U=17544, z=-2,770, Sig.=,006 i pozitivna valenca kod žena (Md=31, N=281) i muškaraca (Md=34, N=149), U=17843, z=-2,5233, Sig.=,012. Sve veličine uticaja su male (r=0,15; 0,13; 0,12) (Tabela 3).

Tabela 2. Razlike ukupnog rezultata SOI na uzorku muškaraca i žena.
Table 2. Differences in the total score of SOI in the sample of men and women.

	N	Md	Mann-Whitney U	Z	Sig.
Žene	258	25,0	8881,5	-7,987	,000
Muškarci	135	42,0	8881,5	-7,987	,000

Tabela 3. Razlike ukupnih rezultata VP+2 na uzorku muškaraca i žena.
Table 3. Differences in total results of VP+2 in the sample of men and women.

	Dimenzije	N	Md	Mann-Whitney U	Z	Sig.
Žene	Agresivnost	281	24	19378	-1,270	,204
	Ekstraverzija		38	20166	-0,627	,530
	Neuroticizam		23	17116	-3,116	**,002**
	Negativna valenca		15	17544	-2,770	**,006**
	Otvorenost		39	20020	-,746	,456
	Pozitivna valenca		31	17843	-2,523	**,012**
	Savjesnost		39	20727	-0,169	,866
Muškarci	Agresivnost	149	23	19378	-1,270	,204
	Ekstraverzija		39	20166	-0,627	,530
	Neuroticizam		21	17116	-3,116	**,002**
	Negativna valenca		18	17544	-2,770	**,006**
	Otvorenost		40	20020	-,746	,456
	Pozitivna valenca		34	17843	-2,523	**,012**
	Savjesnost		37	20727	-0,169	,866

Sa ciljem odgovora na druge dvije hipoteze o povezanosti osobina ličnosti i socioseksualne orijentacije muškaraca i žena, provedena je korelacijska analiza. U Tabeli 4 prikazani su koeficijenti korelacije ukupnog uzorka istraživanja (N=430) između socioseksualnosti i osobina ličnosti. Negativna valenca ima najveći pojedinačni doprinos u objašnjenju varijanse socioseksualnosti na ukupnom uzorku. Visoke koeficijente korelacije imaju i dimenzije agresivnosti i pozitivne valence (Tabela 4).

Tabela 4. Koeficijenti korelacije dimenzija ličnosti Velikih 5+2 i socioseksualne orijentacije ukupnog uzorka.
Table 4. Correlation coefficients of Big 5+2 personality dimensions and sociosexual orientation of the total sample.

	Agresivnost	Ekstraverzija	Neuroticizam	Negativna valenca	Otvorenost	Pozitivna valenca	Savjesnost
Rho	,146**	-,032	,054	,289**	,076	,126*	-,146**
Sig.	,004	,533	,283	,000	,135	,012	,004

Skorovi u Tabeli 5 pokazuju korelacijsku analizu rezultata socioseksualne orijentacije i osobina ličnosti posebno kod ženskih i muških ispitanika. Osobina ličnosti agresivnost na uzorku muških ispitanika, pokazuje visoku pozitivnu povezanost sa nerestriktivnom socioseksulanom orijentacijom, dok kod suprotnog pola, ova dimenzija ličnosti nema značajne povezanosti. Slični rezultati su dobijeni i za dimenziju pozitivne valence, koja je pozitivno povezana sa socioseksualnom orijentacijom kod muškaraca, dok kod žena nema povezanosti. Jedina dimenzija ličnosti koja diferencira žene u odnosu na muškarce, jeste dimenzija savjesnosti koja je u negativnoj korelaciji sa socioseksualnom orijentacijom kod žena. Negativna valenca pozitivno je povezana sa nerestriktivnom orijentacijom kod oba pola (Tabela 5).

Tabela 5. Koeficijenti korelacije dimenzija ličnosti Velikih 5+2 i skora socioseksualne orijentacije kod ženskih i muških ispitanika.
Table 5. Correlation coefficients of the Big 5+2 personality dimensions and the sociosexual orientation score in female and male respondents.

		Agresivnost	Ekstraverzija	Neuroticizam	Negativna valenca	Otvorenost	Pozitivna valenca	Savjesnost
Žene	Rho	,114	-,069	,080	,190**	,059	,066	-,167**
	Sig.	,069	,270	,199	,002	,343	,288	,007
Muškarci	Rho	,306**	,098	,179	,369**	,135	,236**	-,141
	Sig.	,000	,257	,038	,000	,119	,006	,102

Rezultati iz prethodne tabele ukazuju na to da su dimenzije ličnosti negativna valenca i savjesnost jedine dimenzije koje su u korelaciji na aspektima socioseksualne orijentacije kod žena (Tabela 5). Obe dimenzije imaju značajnu korelaciju sa ajtemom SOI vezanim za maštanje o drugom partneru i pitanju o tome da li je seks bez ljubavi u redu. Najveću korelaciju obe dimenzije ostvaruju za ajtem o uživanju u seksualnim odnosima sa različitim partnerima. Navedena tri ajtema se mogu opisati kao grupa ajtema kognitivne socioseksualnosti (maštanje, stavovi). Negativna valenca je takođe u negativnoj korelaciji i sa ajtemom o emocionalnoj povezanosti sa partnerom, koja prethodi seksualnom odnosu (Tabela 6).

Iz Tabele 5 takođe proizlazi da su sa socioseksualnošću muškaraca povezane četiri dimenzije ličnosti: agresivnost, ekstraverzija, negativna valenca i pozitivna valenca. Da bi se dobio konkretniji uvid u strukture ovih povezanosti, izračunati su koeficijenti korelacije svih ajtema iz SOI upitnika sa navedenim dimenzijama (Tabela 7). Najveći koeficijent korelacije, na muškom uzorku, ima dimenzija ličnosti negativna valenca sa ajtemom o emotivnoj povezanosti koja prethodi seksualnom odnosu (r=-,408; Sig.=,000). Negativna valenca je dimenzija ličnosti koja je u statistički značajnoj korelaciji i sa ostalim ajtemima iz grupe kognitivne socioseksualnosti (Ajtemi 4, 5, 6 i 7). Dimenzije ekstraverzija i pozitivna valenca su u većoj mjeri povezane sa ajtemima SOI koje se odnose predviđanje seksualnih odnosa i broj partnera u jednoj prilici (Ajtemi 1, 2 i 3). Agresivnost je statistički značajno povezana sa ajtemima iz grupe kognitivne socioseksualnosti i to najviše sa ajtemom koji se odnosi na stav o seksu bez ljubavi (Tabela 7).

Tabela 6. Korelacije ajtema iz upitnika SOI sa negativnom valencom i savjesnosti kod žena.

Table 6. Correlations of items from the SOI questionnaire with negative valence and conscientiousness in women.

Ajtemi		Negativna valenca	Savjesnost
Sa koliko partnera ste imali seksualni odnos u proteklih godinu dana?	Rho	-,038	,002
	Sig.	,528	,978
Sa koliko partnera predviđate da ćete imati seks u sljedećih pet godina?	Rho	,001	-,131
	Sig.	,984	,031
Sa koliko partnera ste imali seks u samo jednoj prilici?	Rho	,047	,011
	Sig.	,444	,855
Koliko često maštate o seksu sa nekim drugim, a ne sa vašim trenutnim partnerom (kada ste u vezi)?	Rho	,225**	-,162*
	Sig.	,000	,006
Seks bez ljubavi je uredu.	Rho	,197**	-,181*
	Sig.	,001	,002
Mogu zamisliti da mi je ugodno i da uživam u "ležernom" seksu s različitim partnerima.	Rho	,278**	-,208**
	Sig.	,000	,000
Morao/la bih prvo osjetiti jaku povezanost sa osobom (i emocionalnu i psihološku) prije nego što bih se osjećao/la slobodno da u potpunosti uživam u seksu s njim ili njom.	Rho	-,200*	,107
	Sig.	,001	,074

Tabela 7. Korelacije ajtema iz upitnika SOI sa agresivnošću, ekstraverzijom, negativnom i pozitivnom valencom kod muškaraca.

Table 7. Correlations of items from the SOI questionnaire with aggressiveness, extraversion, negative and positive valence in men.

Ajtemi		Agresivnost	Ekstraverzija	Negativna valenca	Pozitivna valenca
Sa koliko partnera ste imali seksualni odnos u proteklih godinu dana?	Rho	,132	,324**	,088	,228**
	Sig.	,113	,000	,294	,006
Sa koliko partnera predviđate da ćete imati seks u sljedećih pet godina?	Rho	,102	,170*	,165	,275**
	Sig.	,232	,045	,052	,001
Sa koliko partnera ste imali seks u samo jednoj prilici?	Rho	,123	,274**	,082	,148
	Sig.	,148	,001	,337	,081
Koliko često maštate o seksu sa nekim drugim, a ne sa vašim trenutnim partnerom (kada ste u vezi)?	Rho	,168*	-,049	,279**	,193*
	Sig.	,041	,553	,001	,018
Seks bez ljubavi je uredu.	Rho	,306**	-,119	,359**	-,033
	Sig.	,000	,148	,000	,689
Mogu zamisliti da mi je ugodno i da uživam u "ležernom" seksu s različitim partnerima.	Rho	,291**	,032	,395**	,160
	Sig.	,000	,695	,000	,051
Morao/la bih prvo osjetiti jaku povezanost sa osobom (i emocionalnu i psihološku) prije nego što bih se osjećao/la slobodno da u potpunosti uživam u seksu s njim ili njom.	Rho	-,279**	,113	**-,408****	,055
	Sig.	,001	,169	,000	,503

DISKUSIJA

Cilj ovog istraživanja bio je identifikovati na koji način su osobine ličnosti povezane sa socioseksualnom orijentacijom žena i muškaca u Bosni i Hercegovini. Ukupan uzorak činilo je 430 ispitanika, 281 ženskog i 149 muškog pola. Uzorak su većim dijelom sačinjavali ljudi mlađe i srednje životne dobi (71,4% u grupi od 18 do 29 godina), koji imaju završenu srednju školu (58,6%). Većina ispitanika živi u većem gradskom području sa više od 50 000 stanovnika i 60,6% njih su u grupi gnostičkih teista (uvjereni da Bog postoji). Najveći postotak ispitanika nije u vezi (36,9%), neznatno manji dio (35,9%) trenutno jeste u ljubavnoj vezi, dok je 24,3% ispitanika u braku.

Na osnovu pregleda dostupne literature i rezultata istraživanja o povezanosti osobina ličnosti i socioseksualne orijentacije, u ovom istraživanju su postavljene tri hipoteze. Prva hipoteza se odnosi na generalnu pretpostavku da su žene restriktivnije socioseksualne orijentacije od muškaraca. Prema ovoj pretpostavci, žene su manje sklone da stupaju u seksualne odnose bez bliskosti, vjernosti i drugih odrednica emocionalne povezanosti. Da bi se navedena hipoteza provjerila, korišten je Mann-Whitney U test za poređenje grupa, koji je otkrio značajnu razliku u nivou socioseksualne orijentacije muškaraca i žena. Veličina uticaja je srednje jačine, što govori o tome da su muškarci zaista liberalniji u pogledu socioseksualnosti od žena, ali da razlika nije previse izražena (Md_m=42; $Md_ž$=25). Na osnovu navedenih rezultata, može se zaključiti da su muškarci statistički značajno skloniji da stupaju u seksualne odnose bez emocionalne bliskosti, što potvrđuje prvu hipotezu kao i rezultate prethodnih istraživanja na ovu temu.

Druga hipoteza se odnosi na povezanost između nerestriktivne socioseksualne orijentacije sa izraženom ekstraverzijom i niskom savjesnošću kod muškaraca (Schmitt, & Shackelford, 2008; Jonason, et al., 2011). Da bi se navedena hipoteza provjerila, proveden je niz korelacijskih analiza, koje su pokazale da se rezultati prethodnih istraživanja ne podudaraju sa rezultatima ovog istraživanja. Naime, skorovi ekstraverzije i savjesnosti nisu statistički značajno povezane sa skorom SOI kod muškaraca. Dimenzije koje su drastično više povezane sa nerestriktivnom socioseksualnošću muškaraca su agresivnost, negativna valenca i pozitivna valenca. Sve navedene korelacije su pozitivnog smjera, što govori da visoki skorovi agresivnosti, pozitivne i negativne valence prate povećan broj socioseksualnosti kod velikog broja muških ispitanika u ovom istraživanju. Dakle, muškarce koje odlikuje slaba kontrola agresivnih impulsa i koji sebe procjenjuju u negativnom kontekstu i imaju negativan stav prema sebi, ali i muškarci koji imaju izraženu pozitivnu samoprocjenu su, u ovom istraživanju, pokazali liberarnost u pogledu stupanja u seksualne odnose bez emocija. Ovaj rezultat daje zanimljiv podatak o interakciji osobina pozitivne i negativne valence sa skorovima SOI, koji se može posmatrati kao poseban istraživački dobrinos obzirom da se skorovi SOI prvi put upoređuju sa skorovima VP+2 u ovom istraživanju. Posljedni ajtem upitnika SOI odnosi se na značaj emocionalne i psihološke povezanosti sa partnerom koja prethodi stupanju u seksualne odnose (*"Morao/la bih prvo osjetiti jaku povezanost sa osobom (i emocionalnu i psihološku) prije nego što bih se osjećao/la slobodno da u potpunosti uživam u seksu s njim ili njom*"). Najveću pojedinačnu korelaciju od svih ajtema SOI, na uzorku muškaraca postiže dimenzija negativna valenca sa posljednjim ajtemom SOI. Dakle, muškarci koji sebe procenjuju u negativnom kontekstu često pridaju manji značaj emocionalnoj povezanosti koja prethodi seksualnom odnosu.

Treća hipoteza postavljena je na osnovu istraživanja stranih autora, čiji rezultati govore o povezanosti visokih skorova neuroticizma i savjesnosti sa restriktivnom socioseksualnošću kod žena (Jonason, et al., 2011; Zentner, 2005). Ova hipoteza je djelomično potvrđena, obzirom da dimenzija neuroticizma na uzorku žena ne pokazuje statistički značajnu povezanost sa skorovima SOI. Savjesnost je umjereno povezana sa skorovima SOI i to u negativnom smjeru. Negativna valenca je dimenzija koja ima najjaču korelaciju sa skorovima SOI, kao i kod muškog uzorka ispitanika. Dakle, žene koje odlikuje visoka odgovornost, sistematičnost i istrajnost u pogledu obaveza i ciljeva, ali takođe i izražena negativna samoprocjena, sklonije su da više ulažu u emocionalnu i psihičku povezanost sa partnerom prije stupanja u seksualne odnose, tj. restriktivnije su socioseksualne orijentacije. Ajtemi SOI koji su najviše povezani sa ovim dimenzijama su ajtemi o kognitivnim aspektima socioseksualnosti (maštanje o drugom partneru i stav o tome da li je seks bez ljubavi u redu).

ZAKLJUČCI

Cilj ovog istraživanja bio je provjeriti kako su osobine ličnosti Velikih 5+2 povezane sa socioseksualnošću kod muškaraca i žena. Rezultati su potvrdili očekivanu pretpostavku o generalno restriktivijoj socioseksualnosti žena nego muškaraca. Muškarci su, kao i u prethodnim istraživanjima, pokazali dosljedno veću sklonost ka stupanju u seksualne odnose bez emocionalne involviranosti sa partnericom. Dimenzije ličnosti koje su korelirane sa liberarnim stavom muškaraca jesu agresivnost, pozitivna i negativna valenca. Dakle, što su muškarci agresivniji i sebe posmatraju na izraženo pozitivan ili negativan način, više su skloni stupanju u seksualne odnose bez emocija. Sa druge strane, žene statistički značajno više važnosti pridaju emocionalnoj povezanosti, a dimenzije ličnosti koje su u korelaciji sa tim stavom su savjesnost i negativna valenca. Visoko odgovorne žene, ali i one koje se negativno samoprocjenjuju i koje su sklone samokriticizmu, u ovom istraživanju su pokazale veću restriktivnost u pogledu socioseksualnosti. Na osnovu navedenih rezultata, može se zaključiti da se muškarci i žene iz Bosne i Hercegovine statistički značajno razlikuju u pogledu socioseksualne orijentacije. Muškarci su manje restriktivni od žena i njihovoj liberalnosti doprinose agresivnost, negativna i pozitivna valenca. Žene su osjetno restriktivnije, dimenzije ličnosti koje su povezane sa tim su savjesnost i negativna valenca.

Poseban značaj ovog istraživanja ima činjenica da se upitnik Velikih 5+2 (Smederevac i sar., 2014) prvi put koristi u svrhu procjene povezanosti sa socioseksualnom orijentacijom u ovom istraživanju. Praktična primjena dobijenih rezultata ogleda se u boljem razumijevanju koncepta socioseksualne orijentacije u teorijskom kontekstu osobina ličnosti. Nedostaci ovog istraživanja su relativno mlad uzorak ispitanika, kao i tema koja je nedovoljno istražena i djelomično ulazi u intimu ispitanika. Prednost ovog istraživanja je eksploatacija saznanja o neistraženoim pojavama kao što su aspekti seksualnosti, posebno na geografskom području koje odlikuje specifičan mentalitet i patrijarhalno vaspitanje, kao što je područje Bosne i Hercegovine.

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GENDER DIFFERENCES OF SOCIOSEXUAL ORIENTATION IN THE CONTEXT OF PERSONALITY TRAITS

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ABSTRACT

Sociosexuality is a term that explains differences in individuals ’willingness to engage in sexual intercourse without intimacy, fidelity, and other determinants of emotional connection. The aim of this study was to examine how the dimensions of personality traits are related to sociosexual orientation in women and men in Bosnia and Herzegovina. The research was conducted on a sample of 430 respondents, aged 18 to 71 from BiH. Data were collected using three instruments: the Socio-Demographic Questionnaire, the Big Five Plus Two Personality Trait Questionnaire (VP + 2) and the Sociosexual Orientation (SOI) Questionnaire. Adequate statistical methods were used to estimate the difference between the group and the computational correlation. The results partially confirmed the hypotheses. Men are less restrictive than women and their liberality contributes to aggression, negative and positive valence. Women are noticeably restrictive, the personality dimensions associated with it are conscientiousness and negative valence.

Keywords: sociosexuality, personality dimensions, gender differences.

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PERCEPCIJA I STAVOVI GRAĐANA BIH O KORUPCIJI NA RADNOM MESTU

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SAŽETAK

Korupcija je nesumnjivo svuda prisutna u Bosni i Hercegovini, u svim porama društva i u sve većem obimu. Borba protiv korupcije predstavlja veliki izazov i za najrazvijenije zemlje sveta. Zbog toga ne iznenađuje da Bosna i Hercegovina, opterećena političkim problemima i siromaštvom, teško pronalazi efikasne mehanizme borbe protiv ove izrazito negativne pojave. Razlozi za loše rezultate u procesuiranju koruptivnih krivičnih dela kreću se od same prirode fenomena korupcije, koja je obavijena velom tajne zbog interesa učesnika, zbog čega se teško otkriva, do nedovoljno dobrih institucionalnih i pravnih rešenja. Cilj istraživanja ovog rada predstavlja utvđivanje svesnosti građana BiH o korupciji na radnom mestu i načina na koji se odnose sa korupcijom u svakodnevnom životu, ali i analiziranje učinka državnih institucija u prevenciji i borbi protiv korupcije. Na osnovu definisanog problema koji se želi istražiti i postavljenih ciljeva, određena je metodologija koja se koristila tokom istraživanja. Naučno-istraživački karakter ovog rada počiva na analizi relevantne naučne literature i savremenih izvora korišćenjem metode ispitivanja, metode analize, metode komparacije, metode deskripcije i metode dedukcije.

Ključne reči: korupcija, prevencija, suzbijanje.

UVOD

Problem korupcije je u savremenom društvu široko rasprostranjen i ozbiljan. Pojam korupcija potiče od latinske reči „corrumpere”, što znači pokvariti, iskvariti, moralno pokvariti, podmititi, potkupiti nekoga novcem ili drugim materijalnim dobrima (Anand, Ashforth, Joshi, 2005). Majstorović (2012) definiše korupciju kao proces u kojem najmanje dve osobe nedopuštenom razmenom u cilju ostvarivanja vlastitih dobitaka postupaju na štetu javnog interesa i kršeći moralnu i pravnu normu povređuju osnove demokratskog razvoja, pravnu državu i vladavinu prava. Pod korupcijom se podrazumeva zloupotreba javne službe radi lične koristi, što uključuje radnje kao što su podmićivanje, nepotizam i zloupotreba položaja za ličnu korist (Pejanović, 2002).

Iako je terminološki novijeg datuma, kao društvena pojava korupcija nije nov fenomen.Vodi porijeklo još iz antičkog doba kada je Aristotel govorio „Najveći zločini nisu izvršeni radi pribavljanja nužnog nego suvišnog'', a ugrožavala je sve poznate imperije u istoriji (Solomon, 2004). Iako među zemljama u svetu postoje razlike u kulturi, stepenu razvijenosti, itd., ipak je jedan ljudski motiv univerzalan: lični interes (Rabl, 2011). Razumevanje razvojnih neuspeha pojedinih društava može se postići shvatanjem na koji način se ličnim interesom može dobro ili loše upravljati.

Korupcija se u tranzicijskim društvima pojavila kao masovna pojava koja ozbiljno koči razvoj tih društava u pravcu modernih demokratskih društava (Stojiljković, 2013). Uzrok tolike proširenosti korupcije u pojedinim zemljama treba tražiti u nekim nedemokratskim obeležjima bivših socijalističkih poredaka, zatim nekim elementima tradicije u tim zemljama, nerazvijenosti institucija civilnog društva, kao i veliki raskorak između potražnje za nekim uslugama i mogućnosti da one budu zadovoljene (Bjelajac, 2015). Takođe, treba istaći i način regrutovanja pojedinih novih političkih elita nakon brzog urušavanja socijalističkih poredaka, kao i njihovo preferiranje vlastitih i grupnih interesa u odnosu na opšte društvene interese i javno dobro (Pejanović, 2012).

Pored ovih zajedničkih uzroka razmaha korupcije u tranzicijskim zemljama, pojedine zemlje su bile suočeno s još nekim specifičnim uzrocima, kao što su svojevrsna repatrijarhalizacija društvenog života i neformalna lustracija. Pod prvim pojmom podrazumeva se veliki uticaj širih porodičnih veza na ljude koji imaju (visoke) političke i državne funkcije, što utiče na pojavu nepotizma i drugih oblika neprihvatljivog društvenog ponašanja (Albornoz, & Cabrales, 2013). Neformalna lustracija (politička nepodobnost) je dovela do odstranjivanja iz pravosuđa i državne uprave velikog broja stručnih ljudi, koji su često bili zamenjeni novim, manje sposobnim ljudima sklonijim koruptivnom ponašanju (Fiorino, Galli, & Padovano, 2015). Mada su prema zakonu svi građani jednaki, prisustvo korupcije to pravo suštinski negira. Jedan od pravnih pokazatelja korupcije u društvu je visok nivo nepoverenja građana u državnu upravu što može dovesti do destabilizacije društva. Prema Indeksu percepcije korupcije (Transparency International [TI], 2022) za 2021.godinu, Bosna i Hercegovina je zauzela treće najgore mesto u Evropi sa ocenom 35, na skali od nula do 100, što je ukupno pozicionira na 110. mesto od 180 država, a lošiji rezultat imaju samo Ukrajina i Rusija. Ocena je ista kao i prošle godine i najgora je u poslednjoj deceniji, jer BiH, za razliku od država okruženja, nije ostvarila nikakav napredak na polju borbe protiv korupcije, pre svega zbog političke opstrukcije ključnih reformi.

U tom smislu, predmet istraživanja od koga se polazi u radu jeste analiza stavova građana o rasprostranjenosti korupcije u BiH. Cilj istraživanja ovog rada je usmeren na utvđivanje svesnosti građana BiH o korupciji na radnom mestu i načina na koji se odnose sa korupcijom u svakodnevnom životu, ali i analiziranje učinka državnih institucija u prevenciji i borbi protiv korupcije. Na osnovu predmeta i ciljeva istraživanja, postavljena je sledeća hipoteza:

H1: Strategija koja se zasniva na istrazi i kriminalizaciji korupcije, prevenciji kroz reorganizaciju, deregulaciju i transparentnost postupka, kao i obrazovanju i širenju saznanja o pogubnim posledicama korupcije predstavlja najefikasniji način borbe protiv korupcije.

METODE ISTRAŽIVANJA

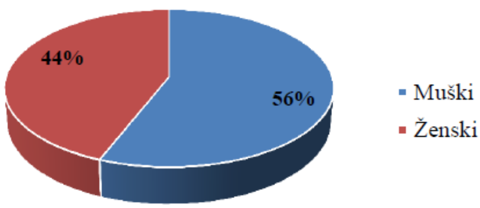
Naučno-istraživački karakter ovog rada počiva na analizi relevantne naučne literature i savremenih izvora korišćenjem metode ispitivanja, metode analize, metode komparacije, metode deskripcije i metode dedukcije. Svrha istraživanja jeste da se više produbi razumevanje načina nastanka korupcije na radnom mestu i utvrdi metod za efikasniju prevenciju i suzbijanje korupcije. Kao glavni metod prikupljanja podataka u ovom radu korišćena je metoda ispitivanja koja je sprovedena popunjavanjem anketnog upitnika tokom aprila 2021. godine. Anketa je bila anonimna i sprovedena je na 1000 građana iz različitih gradova na teritoriji BiH. Upitnik se sastojao od 12 pitanja, od kojih se tri odnosilo na demografske karakteristike ispitanika, a ostalih devet pitanja su se odnosila na temu ispitivanja. Upitnika se sastojao od devet pitanja otvorenog tipa koja se odnose na temu istraživanja.

REZULTATI I DISKUSIJA

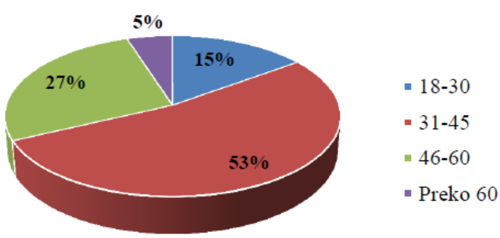
Istraživanjem je obuhvaćeno 56% ispitanika koji pripadaju muškoj populaciji, dok je 44% ispitanika u grupi ženske populacije (Slika 1).

Kod starosne stukture ispitanika, najdominantnija je grupa ispitanika od 31 do 45 godina starosti 53%, dok najmanji procenat ispitanika 5% pripada dobi od preko 60 godina. Takođe, 27% ispitanika je u dobi 46-60 godina, a 15% ispitanika je u dobi 18-30 godina (Slika 2).

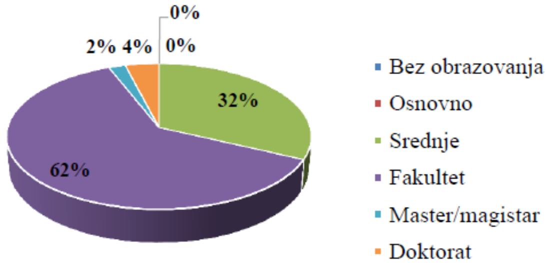
Podaci iz grafikona 3 ukazuju da najveći procenat ispitanika ima fakultet 62%, dok manji procenat ispitanika 32% ima srednju školu. Ispitanika sa magistarskom diplomom ima 2%, dok sa doktorskom diplomom ima 4% (Slika 3)



Slika 1. Zastušljenost ispitanika prema polu
Figure 1. Sex of the respondents

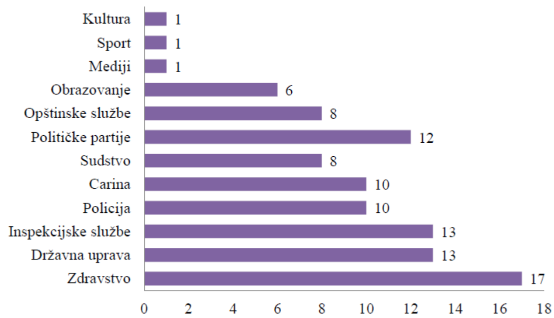


Slika 2. Podjela ispitanika prema starosnoj dobi
Figure 2. Age of respondents



Slika 3. Nivo obrazovanja ispitanika
Figure 3. Level of education

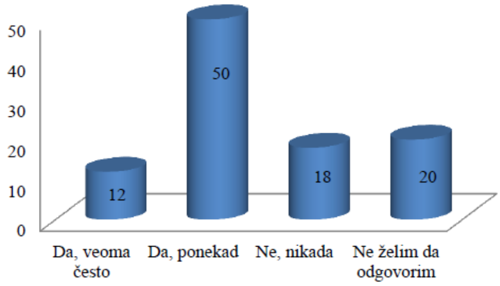
Na slici 4 su grafiči prikazani rezultati ispitivanja prisutnosti korupcije u različitim oblastima i državnim institucijama.



Slika 4. U kojim oblastima/institucijama je korupcija najzastupljenija?
Figure 4. In which areas/institutions is corruption most prevalent?

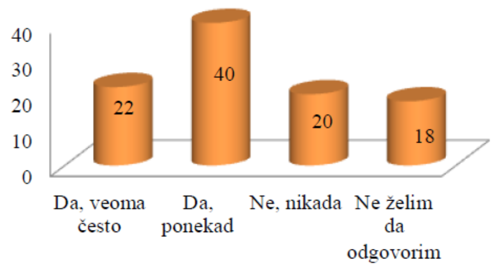
Analizirajući podatke grafički prikazane na slici 4 uočava se da najveći procenat ispitanika 17% smatra kako je korupcija najviše prisutna u zdravstvu. Na drugom mestu se nalaze državna uprava sa 13% i inspekcijske službe 13%, dok su na trećem mestu političke partije 12%. Prema mišljenju građana korupcija je najmanje zastupljena u kulturi 1%, sportu 1%, medijima 1% i obrazovanju 1%. Ovi podaci pokazuju da zdravstvo predstavlja jedno od žarišta korupcije, pre svega zbog netransparentnog poslovanja zdravstvenih ustanova i neefikasnog mehanizma kontrole u tom sektoru.

Rezultati ispitivanja prikazani na slici 5 pokazuju da je najveći procenat ispitanika 50% ponekad bio uslovljen za davanje poklona/novca da bi ostvario svoja prava, dok je 12% ispitanika veoma često bilo uslovljeno.



Slika 5. Da li ste nekada bili uslovljeni za davanje poklona/novca da biste ostvarili svoja prava?
Figure 5. Have you ever been conditioned to give gifts/money to exercise your rights?

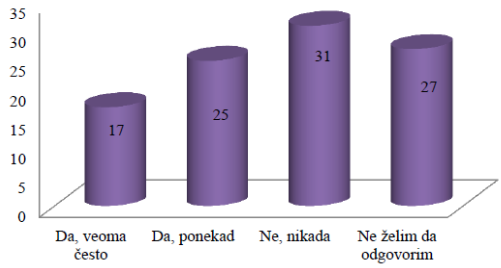
Podaci prikupljeni ispitivanjrm, prikazani grafički na slici 6 ukazuju da je najveći procenat ispitanika 40% ponekad čuo da je neko iz njegove neposredne okoline bio uslovljen za davanje poklona/novca kako bi ostvario svoja prava. Navedeni podaci, kao i podaci prikazani na slici 5 potvrđuje da je korupcija, na žalost, svakodnevno prisutna u životima građana BiH. Sa druge strane 31% ispitanika nikada nije ponudio poklon/novac da bi ostvario svoja prava (Slika 7).



Slika 6. Da li ste čuli da je neko iz Vaše neposredne okoline prilikom ostvarivanja svojih prava bio uslovljen zahtjevom za davanje poklona/novca?

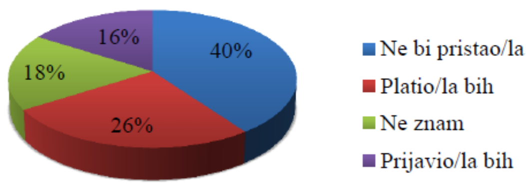
Figure 6. Have you heard that someone from your immediate environment, when exercising their rights, was conditioned by a request to give a gift/money?

Najveći procent ispitanika 40% ne bi pristao da plati traženi mito, 26% ispitanika bi platilo, a samo 16% ispitanika bi prijavio korupciju (Slika 8). Ovaj podatak ukazuje da je većina građana svesna negativnog uticaja koji korupcija ima, zbog čega ne bi učestvovali u koruptivnim aktivnostima.

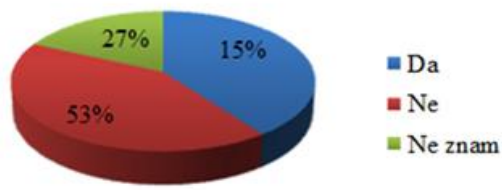


Slika 7. Da li ste nekada nekome ponudili poklon/novac da biste ostvarili svoja prava?
Figure 7. Have you ever offered someone a gift/money to exercise your rights?

Čak 53% ispitanika ne bi prijavio korupciju, dok bi najmanji broj ispitanika 15% prijavio korupciju (Slika 9). Ovaj podatak je zanimljiv, jer ukazuje da treba istražiti razloge zašto je to tako.



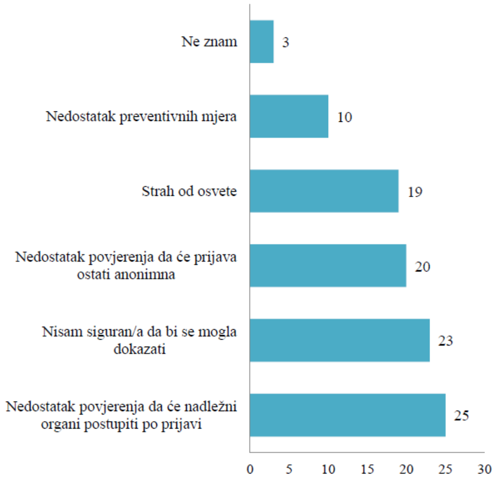
Slika 8. Ukoliko bi Vam službenik tražio mito, šta biste uradili?
Figure 8. If an official asked you for a bribe, what would you do



Slika 9. Da li biste prijavili korupciju?
Figure 9. Would you report corruption?

Rezultati istraživanja prikazani na slici 10, uočava se da su glavni razlozi zbog kojih građani ne bi prijavili korupciju: nedostatak poverenja da će nadležni organi postupiti po prijavi 25%; nesigurnost u mogućnost dokazivanja korupcije 23%;

nedostatak poverenja da će prijava ostati anonimna 20% i strah od osvete 19%. Ovi podaci pokazuju nepoverenje u rad i loš imidž državnih institucija koje se bore protiv korupcije.



Slika 10. Razlozi zbog kojih ne biste prijavili korupciju?

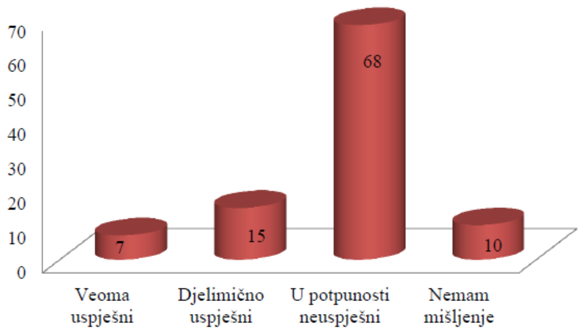
Figure 10. Reasons why you would not report corruption?

Kao osnovne uzroke nastanka korupcije, najveći procenat ispitanika navodi: favorizovanje rođaka ili prijatelja 25%, neefikasnost organa zaduženih za borbu protiv korupcije 21% i duge i komplikovane administrativne procedure 18% (Slika 11). Iako ovi podaci dodatno doprinose lošem imidžu državnih institucija za borbu protiv korupcije, dobra stana ogleda se u činjenici da se sva tri najdominantnija razloga mogu rešiti ako se izvrši reforma dosadašnjeg sistema, a korupcija u institucijama koje treba da sankcionišu i spreče istu, svede na minimum.

Najveći procenat ispitanika, njih 68% smatra da su dosadašnji napori nadležnih institucija u borbi protiv korupcije bili u potpunosti neuspešni (Slika 12). Ovaj podatak još jednom potvrđuje da treba promeniti strategiju i način prevencije i borbe protiv korupcije.

Slika 11. Koji su osnovni uzroci nastanka korupcije?

Figure 11. What are the main causes of corruption?



Slika 12. Koliko su dosadašnji napori nadležnih institucija bili uspešni u borbi protiv korupcije?

Figure 12. How successful have the efforts of competent institutions been so far in the fight against corruption?

ZAKLJUČCI

Korupcija narušava osnovne vrednosti društvenih odnosa, jer ugrožava vladavinu prava, poverenje u javne institucije i državu, a time i pravednost, poštenje, ravnopravnost i sigurnost građana. Podstiče nastajanje moralno nestabilnih pojedinaca da na nepošten i pre svega nezakonit način osiguraju sebi život iznad svojih objektivnih mogućnosti čime omalovažavaju vrednosti onih koji su svojim radom i poštenjem postigli ono što imaju. Zbog takvih delovanja, korupcija sputava uspostavljanje preduzetničke klime i političke kulture, ugrožava moral i tradicionalne vrednosti kao osnovu svakog stabilnog društva i vode ga u siromaštvo i propadanje, jer se stiče utisak da nije vredno pošteno raditi, već da se i drugim načinima može uspešno prosperirati u poslovnom svetu. Korupcija niti iz jednog društva ne može biti potpuno uklonjena, već samo ograničena. Korupcija može biti reducirana samo ukoliko država pridobije naklonost čitave javnosti; tako što će se javnost informisati o tome o kakvom se zlu radi, kakve štete nanosi društvu i njima lično, kao i na koji način je moguće prepoznati, predvideti i sprečiti. Imajući u vidu prethodno navedeno, može se zaključiti da je generalna hipoteza koja glasi strategija koja se zasniva na istrazi i kriminalizaciji korupcije, prevenciji kroz reorganizaciju, deregulaciju i transparentnost postupka, kao i obrazovanju i širenju saznanja o pogubnim posledicama korupcije predstavlja najefikasniji način borbe protiv korupcije, dokazana.

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B&H CITIZENS' PERCEPTION AND ATTITUDES ABOUT CORRUPTION IN THE WORKPLACE

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ABSTRACT

Corruption is undoubtedly present everywhere in Bosnia and Herzegovina, in all pores of society and on an increasing scale. The fight against corruption is a great challenge for the most developed countries in the world. Therefore, it is not surprising that Bosnia and Herzegovina, burdened by political problems and poverty, finds it difficult to find effective mechanisms to combat this extremely negative phenomenon. The reasons for poor results in the prosecution of corrupt crimes range from the very nature of the phenomenon of corruption, which is shrouded in secrecy due to the interests of participants, which makes it difficult to disclose, to insufficiently good institutional and legal solutions. The aim of this paper is to determine the awareness of B&H citizens about corruption in the workplace and the way they relate to corruption in everyday life, but also to analyse the performance of state institutions in preventing and combating corruption. Based on the defined problem to be investigated and the set goals, the methodology used during the research was determined. The scientific-research character of this paper is based on the analysis of relevant scientific literature and modern sources using the methods of examination, methods of analysis, methods of comparison, methods of description and methods of deduction.

Key words: corruption, prevention, suppression.

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ANALIZA INOZEMNIH IZRAVNIH INVESTICIJSKIH AKTIVNOSTI U REPUBLICI HRVATSKOJ

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SAŽETAK

Inozemna izravna ulaganja u Republici Hrvatskoj sustavno se prate od 1993. godine. Tijekom ratnih godina priljev stranog kapitala, kako u obliku direktnih, tako i u obliku portfeljnih inozemnih investicija bio je neznatan. Znatnija inozemna investicijska aktivnost prisutna je od 1996. godine. Svjesna značaja što ga FDI (*Foreign Direct Investment*) mogu imati na državu primateljicu, i kao čimbenik ubrzanog ekonomskog razvoja, ali i kao izvor za financiranje manjka na tekućem računu platne bilance, Hrvatska je deklarativno promovirala politiku privlačenja stranog kapitala. Iako je u prvih nekoliko godina nakon rata ta promocija bila većinom sračunata na hrvatsku dijasporu, pod pritiskom međunarodne zajednice počela je privatizacija u sektoru bankarstva i telekomunikacija i tu je, od poratnih godina, bio usmjeren najveći iznos stranog kapitala. Tako je u drugom dijelu 1990-ih, nakon normalizacije stanja u državi, Hrvatska ukupno prikupila nominalno oko 4,5 milijardi USD inozemnih izravnih ulaganja, najviše pomoću privatizacije, a najveći priljev deviznih sredstava ostvaren je u 1999. godini, u iznosu od 1,2 milijarde USD (prvi krug privatizacije HT-a). U ovome radu se analiziraju čimbenici koji utječu na inozemna izravna ulaganja tesnage, slabosti, prijetnje i prilike za poticanje priljeva inozemnih izravnih ulaganja u gospodarski okvir Republike Hrvatske, prezentirase indeks konkurentnosti struktura i aktivnosti inozemnih direktnih ulaganja u Republici Hrvatskoj. Zaključno se može naglasiti kako Republika Hrvatska od svog osamostaljenja ulaže napore kako bi privukla što je više moguće inozemnih ulaganja pri čemu postiže ograničene rezultate.

Ključne riječi: inozemna izravna ulaganja, indeks konkurentnosti, Republika Hrvatska.

UVOD

Inozemna izravna ulaganja sastavni su dio slobodnog globalnog tržišta u kojem dominiraju temeljni ekonomski interesi, a to su nastojanja za ostvarivanjem profita, povećanjem temeljnog kapitala i reinvestiranjem u nove poslove za ostvarenje opće dobrobiti. Opredjeljenjem za tržišnu ekonomiju Republika Hrvatska je nakon osamostaljenja postala je dio globalnog tržišta otvorenog za priljev inozemnog kapitala što se u početku 1990-ih godina nije dogodilo budući je u sferi inozemnih izravnih ulaganja, bila zaobiđena zbog rata i nesigurnosti. Tek od 2000. godine slijedile su različite zakonske mjere na poticanju stranih ulaganja, reguliranju pravne sigurnosti inozemnih investitora, omogućavanju transfera dobiti u inozemstvo, potpisivanje bilateralnih sporazuma o izbjegavanju dvostrukog oporezivanja itd.

Hrvatskim Ustavom je propisano da se prava stranih ulagača neće umanjivati zakonima ili drugim pravnim aktima te je garantirano slobodno iznošenje kapitala iz Hrvatske po prestanku ulaganja. Društva u djelomičnom ili potpunom stranom vlasništvu uživaju nacionalni tretman što znači da imaju ista prava i obveze kao i društva u potpunom hrvatskom vlasništvu. Prvi pravni akt koji je u cijelosti regulirao institut inozemnih izravnih ulaganja bio je Zakon o deviznom poslovanju iz 2003. godine (Zakon o deviznom poslovanju [ZDP], 2003). Tijekom vremena taj zakon je pretrpio znatne izmjene i dopune (ukupno 9 izmjena) a posljednje su bile 2021. godine (NN 52/21).

Zakon o deviznom poslovanju (ZDP, 2003) definira izravna ulaganja „kao sva ulaganja rezidenata u inozemstvu i nerezidenata u Hrvatskoj koja ulagač obavi s namjerom uspostavljanja trajnih ekonomskih odnosa i ostvarivanja znatnog utjecaja na upravljanje pravnom osobom" (čl.9).

Međutim, zbog složenosti materije u koju zadiru inozemna izravna ulaganja i pravnih subjekata na koje se odnosi uređuje se, pored Zakona o deviznom poslovanju i Zakonom o trgovačkim društvima, Zakonom o poticanju ulaganja te drugim zakonima. Hrvatsko zakonodavstvo ne razlikuje strane od domaćih ulagača nego preferira podjelu na rezidente i nerezidentne.

FAKTORI UTJECAJA NA INOZEMNA IZRAVNA ULAGANJA

U Republici Hrvatskoj je, u usporedbi s drugim državama članicama EU, obujam izravnih stranih ulaganja prilično nizak, posebice kada su u pitanju novije članice. Postavlja se pitanje u kojoj mjeri to ovisi o objektivnim čimbenicima (veličina tržišta, cijena i dostupnost čimbenika proizvodnje, mogućnosti učinkovitije proizvodnje itd.) te u kojoj mjeri investicijska klima uključuje ekonomsku politiku, regulatorni okvir i potpora poduzetništvu, uključujući promicanje mjera za privlačenje izravnih stranih ulaganja. Prema Sisek (2005) u „analizama i raspravama o stranim direktnim investicijama u Hrvatskoj često se ističe da FDI ni po veličini niti po učincima ne odgovara potrebama i očekivanjima u vezi s njihovom ulogom u tranzicijskom razvoju Hrvatske stoga je cilj ovog poglavlja da prezentira osnovne pokazatelje vezane uz FDI, njihov odnos u vezi sa željenim priljevom učinkovitošću, makroekonomsko okružje unutar kojeg se realiziraju FDI te da ukaže na čimbenike koji utječu na veću ili manju atraktivnost Hrvatske kao odredišta za strane direktne investicije."

Zapravo, pojedini elementi investicijske klime predstavljaju puno veći problem, jer još uvijek uvelike odstupaju od standarda razvijenijih država Europske unije.

Osnovni ekonomski čimbenici su od primarne važnosti kada je riječ o privlačnosti određene države za privlačenje izravnih stranih ulaganja. To uključuje: rast i veličinu BDP-a, rast stanovništva, troškove / dostupnost / kvalitetu čimbenika proizvodnje, veličinu tržišta, blizinu i dostupnost izvoznih tržišta. Tek tada slijede politički čimbenici, regulatorni čimbenici i poslovno okruženje u širem smislu. Ovdje se potencijalni investitori uglavnom fokusiraju na strukturu tržišta i porezne stope, regulativu i politiku rada, makroekonomsku stabilnost države i političku stabilnost. Zatim tu je politika inozemnih izravnih ulaganja države domaćina. To je važan čimbenik za investitore, jer ih zanima zakonodavni okvir za FDI, marketing odnosno promicanje države kao mjesta za izravna strana ulaganja i poticaje ulaganja koji bi olakšali njihovo djelovanje na inozemnim tržištima.

Koliko je važna ukupna strategija razvoja (ekonomskog i socijalno-političkog) neke države u privlačenju stranih investicija pokazuju i rezultati istraživanja koje je 2002. provela *Multilateral Investment Guaranty Agency* (MIGA), Agencija za garancije investicija u okviru Svjetske banke.

Tablica 1. Prvih 20 najutjecajnijih čimbenika pri izboru lokacije investiranja
Table 1. The first 20 most influential factors when choosing the location of investment

FAKTORI UTJECAJA/FACTORS OF INFLUENCE	%
Pristup kupcima/Access to customers	77
Stabilno socijalno i političko okruženje/Stable social and political environment	64
Lakoća poslovanja/Ease of doing business	54
Pouzdanost i kvaliteta infrastrukture i komunalnih usluga/Reliability and quality of infrastructure and communal services	50
Mogućnost zapošljavanja tehničkih stručnjaka/The possibility of employing technical experts	39
Mogućnost zapošljavanja rukovodećih radnika/The possibility of employing managerial workers	38
Razina korupcije/Level of corruption	36
Cijena rada/The price of work	33
Kriminal i sigurnost/Crime and security	33
Mogućnost zapošljavanja stručnih i obučenih radnika/The possibility of employing professional and trained workers	32
Visina poreza/Amount of taxes	29
Cijena komunalnih usluga/The price of communal services	28
Kvaliteta prometnica/Quality of traffic road	26
Pristup sirovinama/Access to raw materials	24
Kvaliteta visokog općeg i tehničkog obrazovanja/Quality of higher general and technical education	24
Raspoloživa zemlja sa svom infrastrukturom/Available and withal infrastructure	24
Lokalni porezi/Local taxes	24
Pristup dobavljačima/Access to suppliers	23
Odnosi s radnicima i sindikalna organiziranost/Relations with workers and trade union organization	23
Zračni promet/Air transport	23

Među 20 najznačajnijih čimbenika koji su okarakterizirani kao vrlo utjecajni za odluke kompanija o izboru lokacije za investicije, visina poreza bila je tek na jedanaestom mjestu. Uz pristup potrošačima, multinacionalne kompanije najznačajnijim čimbenicima smatraju stabilno socijalno i političko okruženje, lakoću poslovanja, kvalitetu i pouzdanost infrastrukture i komunalnih usluga te mogućnost zapošljavanja stručnih i obrazovanih tehničkih i rukovodnih radnika. Sve su to elementi koji bi trebali predstavljati i prioritete društvenog i ekonomskog razvoja pojedinih država, neovisno o pojedinačnim mjerama za privlačenje stranih investitora. Pojedinačne mjere, poput snižavanja stope poreza na dobit, mogu, pogotovo kod manje razvijenih država, zbog budžetskih problema dovesti u pitanje izgradnju prometne i komunikacijske infrastrukture, komunalnih djelatnosti i kvalitetnog obrazovnog sustava, čimbenika koji su i za gospodarski razvoj pojedine države, ali i za strane investitore, važniji od visine poreza. Prema Pavlović, Ćosić, Stojsavljević (2011) „mnoge zemlje su donijele brojne zakone i druge mjere kojima pokušavaju potaknuti inozemne ulagače da investiraju u poslovne aktivnosti upravo kod njih. S druge strane, brojna poduzeća, u želji za pristupom novim tržištima, jeftinijoj radnoj snazi, sirovinama i drugim inputima, upravo su putem inozemnih izravnih ulaganja proširile poslovanje i u zemlje izvan njihove matične.“

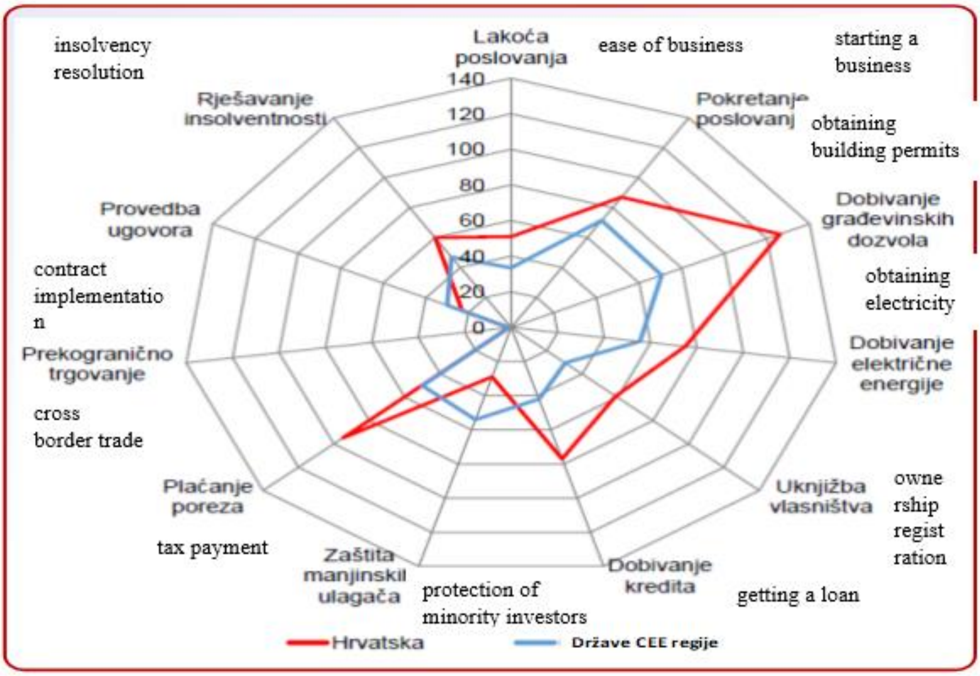
Najbolja strategija privlačenja stranog kapitala je svakako ona koja istovremeno razvija i domaće proizvodne kapacitete i ljudske potencijale (kroz obrazovni sustav) kako bi se mogle ostvariti poslovne veze domaćih i inozemnih proizvodnih poduzeća i kako bi strani investitori imali na raspolaganju i obučenu radnu snagu, i kvalitetnu i jeftinu prometnu i komunikacijsku infrastrukturu, i tehničko-tehnološki napredenu domaću industriju, i kao mogućeg dobavljača i kao mogućeg partnera u zajedničkoj proizvodnji i nastupu na stranim tržištima. U protivnom, čak i privlačenje izvozno orijentiranih investicija može za državu domaćina imati samo minimalne koristi. Naime, ako ne postoji domaća proizvodna baza sposobna snabdijevati stranog investitora, on će većinu inputa morati uvoziti i neto devizna dobit za državu domaćina bit će minimalna.

Naredna grupa mjera odnosi se na promociju države kao pogodne lokacije za strane investitore. Institucionalno, najčešća forma kroz koju se to radi jesu posebne agencije, uglavnom formirane pri vladama ili gospodarskim komorama, s isključivim zadatkom da potencijalnim stranim investitorima promoviraju državu, ali i da im pruže sve potrebne informacije te pravnu i drugu pomoć u realizaciji investicijskih projekata. Jensen (2008, str. 55) je ustvrdio kako je „praktički svaka OECD država snizila barijere za ulazak multinacionalnih kompanija ili unilateralno ili putem sklopljenih sporazuma. Većina OECD država ima bar jednu agenciju za privlačenje inozemnih izravnih ulaganja, osiguravajući informacije, kontakte i pravnu podršku za strane kompanije. Jednostavna ekonomska logika daje objašnjenje za taj povećani interes za privlačenje multinacionalnih investicija. Postoji rastuća suglasnost oko toga da inozemna izravna ulaganja imaju pozitivan učinak na makroekonomske pokazatelje.“

Mnoge, osobito zemlje u razvoju, bazirale su politiku privlačenja inozemnih izravnih ulaganja na komparativnim prednostima zasnovanim na statičkoj efikasnosti (engl. StaticEfficiency), niskim cijenama inputa, stabilnom potražnjom za određene proizvode, slobodnim zonama te poreznim pogodnostima. Međutim, takva komparativna prednost je često kratkoročna i druge države je lako mogu kopirati. Kako su multinacionalne kompanije pogotovo u radno intenzivnim djelatnostima, vrlo mobilne, one mogu proizvodnju premjestiti u drugu zemlju gdje su te pogodnosti, zasnovane na statičkoj efikasnosti, još veće.

Poslovna klima je ključna za poticanje inozemnih izravnih ulaganja. Prema podatcima World Bank, Doing Business (DB) 2020 Republika Hrvatska je bila rangirana na 51. mjesto od analiziranih 190 ekonomija Svijeta (World Bank, 2021). DB score iznosio je 73,6 a rezultat je procjene 11 ključnih pokazatelja poslovne klime kao mjerila za ulaganje u poslovne aktivnosti.

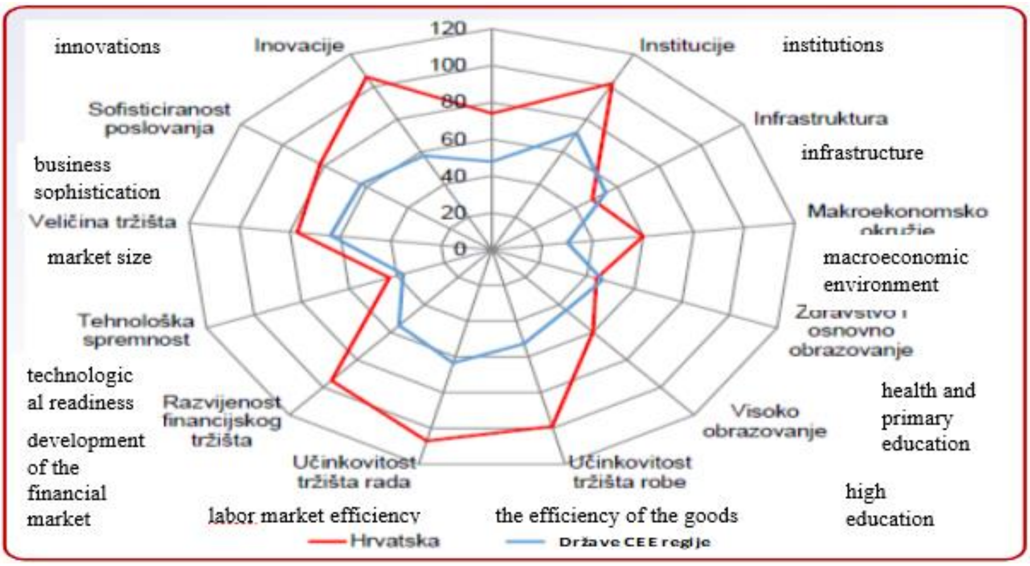
NA slici 1 prikazana je Usporedba indeksa DB Hrvatske i prosjeka država CEE regije (Bugarska, Češka, Estonija, Hrvatska, Latvija, Litva, Mađarska, Poljska, Rumunjska, Slovačka i Slovenija). Rezultati pojedinih područja izraženi su rangom zemlje. Viši rang označuje slabiji rezultat.



Slika 1. Usporedba indeksa DB Hrvatske i prosjeka država CEE regije
Figure 1. Comparison of the Croatian DB index and the average of the CEE region countries

INDEKS KONKURENTNOSTI

Svjetski indeks konkurentnosti (engl. Global Competitiveness Indeks -GCI) mjerilo je koje je adresirano na države ulagače pri odabiru države u kojoj žele ulagati. Prema podatcima objavljenim u Godišnjaka svjetske konkurentnosti 2020 (IMD, 2021), Hrvatska se nalazi na 60-tom mjestu od ukupno 63. svjetske ekonomije (Slika 2).



Slika 2. Usporedba indeksa GCI Hrvatske i prosjeka država CEE regije
Figure 2. Comparison of the Croatian GCI index and the average of the countries of the CEE region

Metodologija IMD-a zasniva se na analizi 4 čimbenika konkurentnosti, i to (IMD, 2021): „gospodarski rezultati, efikasnost javnog sektora, efikasnost poslovnog sektora i infrastruktura, koristeći pritom 20 indeksa, 5 za svako područje“. Izdvojeni su čimbenici poslovne učinkovitosti, a uočene prednosti i slabosti (prema IMD-u) kao i njihov rang predočavaju se narednom tablicom.

Tablica 2. Prednosti i nedostaci hrvatske poslovne učinkovitosti
Table 2. Advantages and disadvantages of Croatian business efficiency

POSLOVNA UČINKOVITOST/BUSINESS EFFICIENCY			
Prednosti/Advantages	**Rang/ Rank**	**Slabosti/Weaknesses**	**Rang/ Rank**
Nagrade menadžmentu/ Management awards	35	Ograničavanje rada korporacijama/ Restricting the work of corporations	64
Naknada u uslužnim profesijama/ Compensationin serviceprofessions	21	Fleksibilnost i prilagodljivost/ Flexibility and adaptability	64
Dugoročni rast radne snage/ Long-term labour force growth	24	Kredibilitet menadžera/ Credibility of the manager	64
Razine kompenzacije/ Compensation levels	26	Privlačenje i zadržavanje talenata/ Attracting and retaining talent	64
Pristup financijskim uslugama/ Access to financial services	34	Financijske vještine/ Financial skills	64
Ženska radna snaga/ Female workforce	36	Kompetentni viši menadžeri/ Competent senior managers	64
		Obuka zaposlenika/ Employee training	64
		Potreba za gospodarskim i društvenim reformama/ The need for economic and social reforms	63
		Agilnost poduzeća/ Agility of the company	63
		Prilike i prijetnje/ Opportunities and threats	63

Poslovna učinkovitost je imperativ poslovanja MNK i neposredno utječe na priljev inozemnih izravnih investicija. Naznačene slabosti koje su uočene svrstavaju Hrvatsku na samo dno analizom obuhvaćenih država. Tu valja naglasiti kako navedene slabosti proizlaze iz državne (Vladine) učinkovitosti, ekonomskih performansi države i poslovne infrastrukture. Na konkurentnost neke države svakako utječu i svi oblici inozemnih ulaganja koji je kao takvi označavaju poželjnom ili manje poželjnom za ulaganja. IMD rangira stanje inozemnih investicija za Republiku Hrvatsku kako je to prikazano daljnjom tablicom

Tablica 3. Inozemna ulaganja i rang Republike Hrvatske u 2020. godini
Table 3. Foreign investments and ranking of the Republic of Croatia in 2020

POKAZATELJ/INDICATOR	VRIJEDNOST/ VALUE	RANG/ RANK
Inozemna izravna ulaganja – odljev (milijarde SAD $)/ Foreign direct investment - outflow (US$ billion)	0,23	51
Inozemna izravna ulaganja – odljev (% BDP)/ Foreign direct investment - outflow (% GDP)	0,37	51
Inozemna izravna ulaganja – zalihe (milijarde SAD $)/Foreign Direct Investment - Stocks (Billions of US$)	1,1	61
Inozemna izravna ulaganja – zalihe (% BDP)/ Foreign direct investment - stocks (% of GDP)	1,83	62
Inozemna izravna ulaganja – priljev (milijarde SAD $)/ Foreign Direct Investment - Inflow (US$ Billions)	1,17	54
Inozemna izravna ulaganja – priljev (% BDP)/ Foreign direct investment - inflow (% GDP)	1,96	35
Inozemna izravna ulaganja – zalihe (milijarde SAD $)/ Foreign Direct Investment - Stocks (Billions of US$)	29,9	56
Inozemna izravna ulaganja – zalihe (% BDP)/ Foreign direct investment - stocks (% of GDP)	49,16	28
Bilanca inozemnih izravnih ulaganja (milijarde SAD $)/ Foreign direct investment balance (billions of US $)	-0,94	25
Bilanca inozemnih izravnih ulaganja (%)/Foreign direct investment balance (%)	-1,55	35
Neto zalihe inozemnih izravnih ulaganja (milijarde SAD $)/ Net stock of foreign direct investment (US$ billions)	-28,8	32
Neto zalihe inozemnih izravnih ulaganja (%)/ Net stock of foreign direct investment (%)	-47,33	54
Imovina potrefljenih ulaganja (milijarde SAD $)/Assets of leveraged investments (billions of US $)	1,32	44
Obveze potrefljenih ulaganja (milijarde SAD $)/ Capitalized investment liabilities (billions of US $)	0,74	42

Sustav bodovanja i sukladno time rangiranje određuje položaj Republike Hrvatske na ljestvici konkurentnosti privlačenje stranog kapitala. Može se zaključiti iz priložene tablice da Hrvatska još uvijek nije dovoljno konkurentna. Bilas (2006) navodi da su „u Republici Hrvatskoj poticaji ulaganjima uređeni Zakonom o poticanju ulaganja. Ovim se Zakonom uređuje poticanje ulaganja domaćih i stranih pravnih ili fizičkih osoba u cilju poticanja gospodarskog rasta, razvitka i ostvarenja gospodarske politike Hrvatske (Zakon o poticanju ulaganja [ZPU], 2022). Ulaganja se potiču sustavom poticajnih mjera te poreznih i carinskih povlastica"

SWOT ANALIZA PREDNOSTI, NEDOSTATAKA, MOGUĆNOSTI I PRILIKA ZA PRIVLAČENJE INOZEMNIH IZRAVNIH ULAGANJA U REPUBLIKU HRVATSKU

SWOT analiza, kako je prezentirana u Strategiji poticanja investicija u Republici Hrvatskoj za razdoblje 2014. – 2020. godine, realno je detektirala nedostatke i prednosti, ali i ukazala na cijeli niz mogućnosti koje bi se mogle iskoristiti u cilju privlačenja inozemnih izravnih ulaganja (Tablica 3). Izazovi odnosno prijetnje čine veliki i nepredvidivi događaji na koje je Republici Hrvatskoj kao maloj državi teško utjecati. Prijetnje koje dolaze iz bližeg ili daljeg okruženja poput kriza GFK, COVID 19 ili ratni sukobi (Rusija - Ukrajina) mogu katastrofično djelovati na najbolje osmišljene strategije i planove.

Tablica 4. SWOT analiza FDI
Table 4. SWOT analysis of FDI

SNAGE/STRENGTHS	**SLABOSTI/WEAKNESSES**
Povoljan geostrateški položaj i dobra prometna infrastruktura/Favourable geostrategic position and good transport infrastructure	Postojanje administrativnih prepreka za investicije/Existence of administrative obstacles for investments
Razvijena poslovna, prometna i telekomunikacijska infrastruktura/Developed business, transport and telecommunications infrastructure	Gospodarska struktura ovisna o tradicionalnim, nisko-tehnološkim sektorima/Economic structure dependent on traditional, low-tech sectors
Obrazovana radna snaga/An educated labour force	Dijelom zastarjela tehnologija i niska dodana vrijednost industrijske proizvodnje/Partly outdated technology and low added value of industrial production
Tradicija industrijske proizvodnje/The tradition of industrial production	Razmjerno visok trošak rada i niska produktivnost/Relatively high labour cost and low productivity
Prirodni uvjeti za proizvodnju energije iz obnovljivih izvora/Natural conditions for energy production from renewable sources	Nedovoljna primjena sustava upravljanja kvalitetom i standarda korporativnog upravljanja/Insufficient application of the quality management system and corporate governance standards
Izgrađen zakonodavni i institucionalni okvir za investicije/Built legislative and institutional framework for investments	Neusklađeno tržište rada s potrebama gospodarstva/Mismatched labour market with the needs of the economy
Razvijena poslovna infrastruktura i poslovne potporne institucije/Developed business infrastructure and business support institutions	Odljev mozgova/Emigration of highly skilled or well-educated individuals
Raznoliki prirodni resursi (šume, poljoprivredne površine, 5.800 km jadranske obale, vode i hrvatski dio Jadranskog mora)/Various natural resources (forests, agricultural areas, 5,800 km of Adriatic coast, waters and the Croatian part of the Adriatic Sea)	Nedovoljna umreženost javnog, privatnog i znanstveno- istraživačkog sektora/Insufficient networking of the public, private and scientific-research sector
Ulaskom u EU RH je postala dio tržišta od 500 milijuna stanovnika/By joining the EU, the Republic of Croatia became part of a market of 500 million inhabitants	Nepovoljna struktura investicija (koncentracija investicija u uslužnom sektoru)/Unfavourable structure of investments (concentration of investments in the service sector)
Usvojen pristup integriranoj zaštiti i upravljanju obalnim područjem i morskim okolišem/Adopted approach to integrated protection and management of the coastal area and marine environment	Nedostatak greenfield investicija u visoko-tehnološke i izvozno-orijentirane sektore/Lack of green field investments in high-tech and export-oriented sectors
	Nedefinirani industrijski lanci vrijednosti/Undefined industrial value chains
	Nedovoljna razvijenost tržišta rizičnog kapitala i visok trošak kapitala/Insufficient development of the venture capital market and high cost of capital
	Nedovoljno razvijena infrastruktura u potpomognutim područjima/Insufficiently developed infrastructure in assisted areas
	Neučinkovito stavljanje u funkciju državne imovine/Inefficient commissioning of state property
	Nedovoljno ulaganje u istraživanje i razvoj te niski stupanj komercijalizacije inovacija/Insufficient investment in research and development and low degree of

	commercialization of innovations
	Nedovoljna primjena KET tehnologija/Insufficient application of KET technologies
	Nedovoljno ulaganje u promociju RH kao prepoznatljive i poželjne investicijske destinacije/Insufficient investment in the promotion of the Republic of Croatia as a recognizable and desirable investment destination
PRILIKE/OPPORTUNITIES	**PRIJETNJE/THREATS**
Pametna sektorska specijalizacija RH/Smart sectoral specialization of the Republic of Croatia	
Mogućnost korištenja strukturnih instrumenata Kohezijske politike EU-a/The possibility of using the structural instruments of the EU Cohesion Policy	
Razvoj i internacionalizacija klastera konkurentnosti/Development and internationalization of competitive Enes clusters	Globalne promjene na svjetskom tržištu vezano uz privlačenje izravnih stranih investicija (Brazil, Indija, Kina)/Global changes in the world market related to attracting direct foreign investments (Brazil, India, China)
Transfer tehnologije kroz izravne strane investicije/Transfer of technology through direct foreign investment	Jačanje investicijske atraktivnosti drugih zemalja u Jugoistočnoj Europi/Strengthening the investment attractiveness of other countries in Southeast Europe
Jačanje izvrsnosti industrije putem razvoja tehnoloških platformi/Strengthening industry excellence through the development of technology platforms	Globalna financijska kriza/Global financial crisis
Promocija RH kao atraktivne investicijske destinacije/Promotion of the Republic of Croatia as an attractive investment destination	Nestabilna politička situacija u okruženju, odnosno u zemljama koje nisu članice EU-a/Unstable political situation in the environment, i.e. in countries that are not members of the EU
Mobilizacija investicijskog potencijala dijaspore/Mobilization of the investment potential of the diaspora	Narušavanje ravnoteže postojećih prirodnih resursa/Disruption of the balance of existing natural resources
Cjeloživotno obrazovanje i mogućnost brze prekvalifikacije radne snage/Lifelong education and the possibility of rapider training of the workforce	
Jačanje uloge gospodarske diplomacije u proaktivnom privlačenju investicija/Strengthening the role of economic diplomacy in proactive Ly attracting investments	

Sve poticajne mjere koje se odnose na privlačenje inozemnih izravnih ulaganja u Republici Hrvatskoj regulirane su Zakonom o poticanju ulaganja (ZPU, 2022), koji je krovni zakon u području poticanja ulaganja, čija je svrha izjednačavanje mjera za poticanje ulaganja, što se odnosi na strane i domaće ulagače. Prema Martišković, Vojak i Požega (2012) „Hrvatska se u pogledu iinozemnih izravnih ulaganja nije pokazalakao dobar primjer jer postoje mnogobrojne prepreke koje koče inozemne direktne investicije, prvenstveno administrativne prirode, što je velika šteta i neiskorišteni potencijal, jer su inozemne investicije najpotrebnije u vrijeme gospodarskog pada istagnacije uslijed financijske ili gospodarske krize. Poduzeća u Hrvatskoj imaju triosnovne mogućnosti eksternog financiranja razvoja: bankovni krediti, tržište kapitala te izravna strana ulaganja. Izravna strana ulaganja pokazala su se u mnogim tranzicijskim zemljama srednje i istočne Europe kao stabilniji, jeftiniji i kvalitetniji izvorfinanciranja u odnosu na ostale oblike priljeva stranog kapitala.“

Do 2019. godine postojale su Agencija za investicije i konkurentnost i Hrvatski centar za zadružno poduzetništvo, ali je, zbog racionalizacije njihove poslove preuzelo Ministarstvo gospodarstva i održivog razvoja odnosno Invest Croatia.

Zakon predviđa poticaje za ulaganja kako je to prikazano u Tablicama 5 do 8 (ZPU, 2022):

Tablica 5. Porezni poticaji
Table 5.Taxincentives

VISINA ULAGANJA/AMOUNT OF INVESTMENT	BROJ NOVIH RADNIH MJESTA/NUMBER OF NEW JOB POSITIONS	MAX.TRAJANJE/MAX. DURATION	UMANJENE STOPE POREZA NA DOBIT/REDUCED PROFIT TAX RATES
0,15-1 mil. €	5	10	50%
1-3 mil. €	10	10	75%
3+ mil. €	15	10	100%

Tablica 6. Poticaji za otvaranje novih radnih mjesta
Table 6. Incentives for the creation of new jobs

ŽUPANIJSKA STOPA NEZAPOSLENOSTI/COUNTY UNEMPLOYMENT RATE	VISINA POTPORE U ODNOSU NA OPRAVDANE TROŠKOVE OTVARANJA NOVIH RADNIH MJESTA/AMOUNT OF SUPPORT IN RELATION TO THE JUSTIFIED COSTS OF OPENING NEW JOBS
Do/To 10%	10%-do/to 3.000 €
10-20%	20%-do/to 6.000 €
Iznad/Above 20%	30%-do/to 9.000 €

Tablica 7. Potpore za kapitalne troškove projekta ulaganja
Table 7. Subsidies for the capital costs of the investment project

ŽUPANIJSKA STOPA NEZAPOSLENOSTI/COUNTY UNEMPLOYMENT RATE	POTPORA ZA KAPITALNE TROŠKOVE/SUPPORT FOR CAPITAL COSTS (Bespovratna novčana potpora za ulaganje u dugotrajnu imovinu-izgradnja proizvodnog objekta i kupnja opreme i strojeva)/ (Non-refundable financial support for investment in fixed assets - construction of a production facility and purchase of equipment and machinery)
10-20%	10% - max 0,5 mil.€
Iznad/above 20%	20% -max. 1 mil.€

Tablica 8. Poticaji prema aktivnosti
Table 8. Incentives towards activity

VRSTA PROJEKTA ULAGANJA/ TYPE OF INVESTMENT PROJECT	RAZVOJNO-INVESTICIJSKE AKTIVNOSTI/ DEVELOPMENT AND INVESTMENT ACTIVITIES	AKTIVNOSTI POSLOVNE PODRŠKE/ BUSINESS SUPPORT ACTIVITIES	AKTIVNOSTI USLUGA VISOKE DODANE VRIJEDNOST/ HIGH VALUE-ADDED SERVICE ACTIVITIES	RADNO INTENZIVNI PROJEKTI ULAGANJA/ WORK-INTENSIVE INVESTMENT PROJECTS
POTICAJI/ INCENTIVES				
POVEĆANJE POTPORE ZA OTVARANJE NOVIH RADNIH MJESTA/ INCREASE IN SUPPORT FOR THE OPENING OF NEW JOBS	+ 50%	+ 25%	+ 25%	100//300//500 Novih radnih mjesta/ New job positions +25%//+ 50%//+100%
BESPOVRATNA NOVČANA POTPORA/ NON-REFUNDABLE MONEY AID	20% za kupnju opreme i strojeva-max. 0,5 mil.€/ for the purchase of equipment and machines - max. 0.5 mil. €			

Poticajne mjere se odnose na projekte kojima se osigurava jedan ili više sljedećih ciljeva(ZPU, 2022): „unos nove opreme i suvremenih tehnologija; veća zaposlenost i izobrazba zaposlenika; razvoj proizvoda i usluga više dodane vrijednosti; povećanje poduzetničke konkurentnosti; ravnomjerni regionalni razvoj Republike Hrvatske“. Prema Perić i Nikšić Radić (2022) „kreatori hrvatske politike trebajuposebnu pažnju usmjeriti jačanju ukupne investicijske klime te imati u vidu problem deinvestiranjakao izravne posljedice poreznih poticaja.“ Nadalje, Pavlović (2007) rezimira da uz zadržavanje dostignute makroekonomske i političke stabilnosti i uzodlučniju borbu protiv korupcije, uz borbu za učinkovito i neovisno pravosuđe,za rješavanje vlasničkih odnosa i za podizanje ukupne, a osobito tehničke razineobrazovanja, Hrvatskoj je potrebna i smišljenija akcija na ciljanom privlačenjudvije ili tri poznate svjetske firme (elektronika, informatika, proizvodnja automobila) koje bi uložile kapital u osnivanje novih poduzeća usmjerenih na izvoz.“Hrvatska nema strategiju privlačenja stranih ulagača iz koje bi proizlazila adekvatna ekonomska politika. Postoji čitav niz institucionalnih i političkih zapreka: nedjelotvornost sudstva, relativiziranje obligacijskih odnosa i nedjelotvornost službi za utvrđivanje vlasničkih odnosa. Stalne promjene zakonodavnog okvira ne djeluju poticajno na strane ulagače, a oni traže poticajno i stabilno okruženje čije je najbitnije obilježje – predvidivost. Ovdje treba dodati i druge nepovoljne okolnosti: visok trošak radne snage po jedinici proizvoda, komplicirana procedura za pokretanje biznisa i percipiran visok stupanj korupcije što negativno utječe privlačenju kvalitetnih ulaganja (Buterin i Blečić, 2013).

STRUKTURA I KRETANJE FDI U REPUBLIKU HRVATSKU U RAZDOBLJU OD 2000. DO 2020. GODINE

Da bi se pobliže objasnio utjecaj inozemnih izravnih ulaganja na izvoznu komponentu domaće ekonomije, nužno je dati pregled strukture ulaganja i njegov vremenski tok. Konzistentna statistika za Republiku Hrvatsku vodi se od 1993. godine, a za njezino sastavljanje zadužena je Hrvatska narodna banka (HNB).

Tablica 9. Inozemna izravna ulaganja – imovina (u milijunima eura)
Table 9. Foreign direct investnents –assets (in millions of euros)

Godina/ Year	**Vlasničko ulaganje/ Proprietary investment**			**Zadržana dobit/ Retained profit**	**Dužnički instrumenti/ Debt instruments**			**Ukupno/ Total**
	U poduzeće izravnog ulaganja/ In the company of direct investment	U izravnog ulagača (obrnuto ulaganje)/ To the direct investor (reverse investment)	Između horizontalno povezanih poduzeća/ Between horizontally connected companies		U poduzeće izravnog ulaganja/ In the company of direct investment	U izravnog ulagača (obrnuto ulaganje)/ To the direct investor (reverse investment)	Između horizontalno povezanih poduzeća/ Between horizontally connected companies	
2000.	37,4	0,0	0,0	8,5	9,3	-0,2	0,0	**55,0**
2001.	125,9	0,0	0,0	19,8	18,0	-0,2	0,0	**163,5**
2002.	592,8	0,0	0,0	8,3	26,2	0,3	0,0	**627,6**
2003.	71,4	0,0	0,0	31,7	27,4	1,7	0,0	**132,2**
2004.	93,5	0,0	0,0	165,8	68,6	17,2	0,0	**345,1**
2005.	79,7	0,0	0,0	63,8	68,9	-1,8	0,0	**210,7**
2006.	150,0	0,0	0,0	63,5	56,4	-17,0	0,0	**252,9**
2007.	98,8	0,0	0,0	123,3	77,8	2,2	0,0	**302,1**
2008.	817,2	0,0	0,0	118,6	116,6	-1,7	1,3	**1.052,0**
2009.	1.069,3	0,0	0,0	-117,1	-62,2	19,1	-2,2	**906,9**
2010.	-280,8	0,0	119,8	7,3	104,6	13,0	379,7	**343,6**
2011.	-129,2	0,0	74,3	-7,4	89,1	-36,8	-27,6	**-37,7**
2012.	105,6	0,0	0,5	-70,8	18,2	16,1	-115,8	**-46,2**
2013.	56,0	0,0	6,4	-163,5	-3,2	30,5	59,9	**-13,9**
2014.	1.564,9	0,0	-0,4	-211,9	167,3	33,2	66,9	**1.620,1**
2015.	391,3	0,0	2,4	-446,0	114,9	-32,3	-208,7	**-178,3**
2016.	111,3	0,0	-192,7	-1.562,8	54,5	49,7	-89,1	**-1.629,1**
2017.	387,7	0,0	-0,7	-1.239,4	101,7	-16,7	95,6	**-671,8**
2018.	106,8	0,0	-0,5	24,8	-23,2	70,0	57,7	**235,5**
2019.	100,5	0,0	-0,7	79,8	-185,3	-15,8	101,7	**80,3**
2020.	-22,2	0,0	0,4	227,2	56,0	110,2	-0,1	**371,6**
Ukupno/ Total	**5528,0**	**0,0**	**9,0**	**-2876,5**	**901,5**	**240,7**	**319,3**	**4122,0**

Inozemna izravna ulaganja dijele se na vlasnička ulaganja (ulaganje u temeljni kapital poduzeća), zadržane zarade (dobit namijenjena reinvestiranju) i ostala ulaganja (Hrvatska narodna banka [HNB], 2022). U tablici 9 prikazana je struktura inozemnih izravnih ulaganja u imovinu u razdoblju 2000. – 2020. godine.

Podaci u tablici 9 pokazuju da su istaknuta vlasnička ulaganja bila u 2009. godini, a vežu se uz ulaganja MOL-a u INU te 2014. godine nakon ulaska RH u Europsku uniju, kada su realizirani brojni investicijski projekti. Prema Ministarstvu gospodarstva i održivog razvoja Republike Hrvatske (MINGOR, 2022) od 1993. godine do kraja trećeg kvartala 2021. godine u Hrvatskoj je evidentirano 37,9 milijardi € izravnih stranih ulaganja.

Hrvatska je relativno kasno započela aktivnosti na privlačenju inozemnih izravnih ulaganja. U devedesetim godinama prošlog stoljeća službena je politika zagovarala prodaju podržavljenih poduzeća domaćim poduzetnicima, podjelu dijela dionica različitim kategorijama stanovništva besplatno ili uz minimalne naknade (kuponska privatizacija), a očekivalo se i znatno učešće hrvatske dijaspore, kako u kupovini postojećih poduzeća, tako i u investicijama u osnivanje novih. Koliko je bilo odsustvo strategije privlačenja stranog kapitala pokazuje i činjenica da je prvi zakon o poticanju ulaganja donesen tek 2000. godine, a prva agencija za privlačenje stranih ulaganja osnovana je 2002. godine, s tim da se kadrovski osposobila i započela značajnije djelovati tek 2005. godine.

ZAKLJUČAK

Inozemna izravna ulaganja (FDI), strane investicije, investitori, investicijska klima i slični pojmovi nezaobilazna su tema većine znanstvenih, stručnih i političkih skupova, kongresa, tribina i okruglih stolova, na kojima se traže rješenja za prevladavanje aktualne gospodarske, društvene i socijalne krize. Iz čitavog konglomerata ideja i prijedloga koji dolaze od relevantnih domaćih i dobronamjernih stranih ekonomskih stručnjaka, kao i "dežurnih" analitičara moguće je razlučiti kako oporavak hrvatske ekonomije može započeti jedino povećanjem FDI-a. Inozemna izravna ulaganja u teoriji ekonomske misli smatraju se važnim čimbenikom rasta i razvoja neke države. Potičući multinacionalne kompanije na ulaganja, države domaćini se nadaju da će generirati prelijevanje jer inozemna izravna ulaganja prebacuju nematerijalnu imovinu na podružnicu, koja se potom može proširiti na lokalne tvrtke. Republika Hrvatska se sa zakašnjenjem u odnosu na druge tranzicijske države integrirala u europski gospodarski prostor.

Brojni zagovaratelji poticanja FDI-a, kao argumente navode statističke pokazatelje koji dokazuju međuzavisnost priljeva FDI i osnovnih makroekonomskih pokazatelja te za primjere navode Irsku, Češku, Mađarsku ili Estoniju. Istina je vjerojatno kompleksnija, naime inozemna izravna ulaganja utječu neposredno i posredno te pozitivno i negativno na zaposlenost. Neposredno djeluju kroz zapošljavanje radne snage zemlje domaćina tako što se investicijama iz inozemstva otvaraju nova radna mjesta. Posredno djeluju tako što se povećanjem obujma posla stvara potreba za dodatnim zapošljavanjem u djelatnostima koje surađuju s poduzećem u vlasništvu inozemnog investitora.

Inozemna izravna ulaganja, osim kapitala, u većini slučajeva, u državu u koju ulaze donose i novu tehnologiju, know-how i organizacijske vještine. Sve ovo pridonosi rastu produktivnosti rada i efikasnosti proizvodnje, a povećavaju i konkurentnu sposobnost domaćih proizvođača. Ove promjene dalje imaju pozitivne učinke na rast zaposlenosti, rast izvoza roba i uključenje u međunarodne tokove i na kraju jačanja ugleda zemlje primatelja inozemnih direktnih investicija u svijetu.

Najuspješnije tranzicijske zemlje uočile su važnost i doprinos inozemnih direktnih investicija te tako one zauzimaju istaknuto mjesto u njihovim gospodarskim strategijama. No u slučaju Republike Hrvatske analiza stanja kroz njene snage, slabosti, prilike i prijetnje inozemnih direktnih ulaganja je pokazala da Republika Hrvatska nije iskoristila svoje punopravno članstvo u Europskoj uniji na adekvatan način. Nadasve je izraženo nepostojanje dugoročne strategijske razvojne vizije te modela razvoja, razvojnih procedura te kriterija i standarda ulaganja kapitalašto je značajno utjecalo na smanjenje konkurentske sposobnosti Hrvatske u globalnim međunarodnim okvirima.

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ANALYSIS OF FOREIGN DIRECT INVESTMENT ACTIVITY IN THE REPUBLIC OF CROATIA

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ABSTRACT

Foreign direct investments in the Republic of Croatia has been systematically monitored since 1993. During the war years, the inflow of foreign capital, both in the form of direct and portfolio foreign investments, was insignificant. Significant foreign investment activity has been present since 1996. Aware of the importance that FDI (Foreign Direct Investment) can have on the recipient country, both as a factor in accelerated economic development, and as a source for financing the deficit on the current account of the balance of payments, Croatia has declaratively promoted a policy of attracting foreign capital. Although in the first few years after the war this promotion was mostly aimed at the Croatian diaspora, under the pressure of the international community, privatization began in the banking and telecommunications sector, and since the post-war years, the largest amount of foreign capital has been directed there. Thus, in the second part of the 1990s, after the normalization of the situation in the country, Croatia collected a total of nominally around USD 4.5 billion in foreign direct investment, mostly through privatization, and the largest inflow of foreign currency was realized in 1999, in the amount of 1, 2 billion USD (first round of privatization of HT). This paper analyses the factors affecting foreign direct investment and the strengths, weaknesses, threats and opportunities for encouraging the inflow of foreign direct investment into the economic framework of the Republic of Croatia and presents the competitiveness index of the structures and activities of foreign direct investment in the Republic of Croatia. In conclusion, it can be emphasized that since independence, the Republic of Croatia has been making efforts to attract as many foreign investments as possible, while achieving limited results.

Keywords: foreign direct investments, competitiveness index, Republic of Croatia.

Milovanović, M., Miljanović, I., & Novaković, V. (2022). The use of organic and paid advertising in order to increase reach and angagement on Instagram profile. *STED Journal, 4*(2), 64-77.

THE USE OF ORGANIC AND PAID ADVERTISING IN ORDER TO INCREASE REACH AND ENGAGEMENT ON INSTAGRAM PROFILE

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ABSTRACT

In order to determine the most effective method of advertising on Instagram and attract users of the application to become permanent followers of the site, for the purposes of this paper, we used primarily collected data through weekly testing of seven selected methods. Five organic (increasing the number of followers and interactions - removing inactive followers, tracking posting time, changing the number of "tags", "liking" other users' content and a combination of 4 "likes" and 1 comment) and two paid directly from the Instagram application (foreign advertising and advertising for the domestic market). The results of the research were processed by descriptive statistics. The paper represents the synergy of theoretical and empirical work. The first part will theoretically describe facts related to the second, empirical, part of the paper and the case study, which was designed and researched. The idea stemmed from the need to select the most successful methods from the large number of the ones used to organically increase the number of followers and the number of interactions on the site. There was also a need to check whether these methods were as good for advertising as they were paid for. Also, it was necessary to determine whether they bring results in relation to the invested engagement. Comparing the achieved results of organic and paid advertising methods, it was found that certain organic advertising methods give better results in some parameters than paid ones, while paid ones give better results in other parameters.

Keywords: Instagram, organic advertising methods, internet marketing

INTRODUCTION

The idea stemmed from the need to select the most successful methods from the large number of methods used to increase the number of followers and interactions on the site, as well as to check whether these methods are approximately good for advertising as well as highly paid. The research lasted 7 weeks (49 days), where each method was tested for exactly seven days. The site consists of photos of vegan food, as well as occasional recipes of sweet and savory dishes, with an emphasis on confectionery. Although new content was posted on the page, it was not advertised, nor were any methods of increasing interaction or followers used. The number of followers stagnated for several months, with occasional jumps and falls, and the number of interactions with photos gradually decreased. Thus, there was a need for some kind of advertising or attracting potential followers. The original idea of the site was to share cheap and affordable recipes without animal products. Over time the idea grew into making art from food, not only in appearance and taste but also in making the most beautiful photos, which would attract every fan of quality food.

SOCIAL MEDIA

The term social media refers to platforms, which provide users with the opportunity to interact with each other, as well as to create, share or exchange ideas or information. Simply put, it is a technology based on the use of computers, which through the Internet, gives people the ability to import and share content. It can include photos, text, graphics, videos, information, and documents. Most social media can be used via computers, mobile phones, tablets, applications, or even just websites. Most social media can be used via computers, mobile phones, tablets, or even just websites. It is constantly being improved with new applications, which appear very often. Some of them fail, while some become world-famous, such as TikTok. According to a survey conducted by the Pew Research Center in 2021, social media users are mostly young people aged 18 to 29. Social media was originally intended to interact with friends and family, even as a way to meet new users around us or from other parts of the world. For them, these media serve to stay in touch with close people but also to share thoughts, feelings as well as opinions with individuals who have similar interests. In addition, some social media have become a great platform for job searching, career advancement, and also for learning new skills. Companies later found that these media were a great way to expand their customer base. For many companies, but also for entrepreneurs, this has enabled them to expand their business to the whole world. Social media has quickly become an indispensable tool for any successful business. Companies have started to use these media to find and gain new customers, advertise their products, and thus increase sales. They wanted to follow trends and also to provide the customers with a place where they can always direct their criticism and praise, providing them with constant support. Social networks are categorized as a subspecies of social media.

According to the type, social media can be divided into: General social networks, specialized social networks and bookmarking social networks.

General social networks are those networks that do not have a specific group of users as the target group, have general topics and broad areas of interest. Their users belong to all age groups and very different personality profiles (Šarac, Jevremović, & Radovanović, 2015). Some examples would be Instagram, Facebook, Twitter, and others. Specialized social networks are related to an area or demographics, and they also connect them with certain hobbies, business groups, and for finding partners, shopping, and more. Such a social network is LinkedIn. Bookmarking social media aims to preserve content that interests the user and share it with followers. One such medium, which is the most popular today, is Pinterest.

In order to bring the topic of this paper closer to the readers, below will be explained the most important social networks.

LinkedIn

This is one of social networks that differs from others in its primary purpose, which is not entertainment but primarily finding a job. It is the global network of professionals who share their achievements in the field in which they work. As already mentioned, it can be used for finding a job, volunteer work, and also for creating connections with other professionals. It can also be used for the development of new skills and the organization of gatherings and events. It can also be used to write articles and upload videos or photos. Like other social networks, LinkedIn also has a built-in messaging system that allows you to communicate with other users. In addition, contact information, such as email addresses, is visible to people who want to contact other users in a more professional way, such as a job advertisement. Because LinkedIn can serve as a kind of resume, employers looking for new employees can easily find potential candidates and contact them to fill the vacancy.

Another interesting thing about LinkedIn is that in addition to the basic free account, it is possible to become the owner of a premium account that is paid, as follows:

- Premium Career – for users who want to find a job, from $ 29.99 per month,
- Premium Business – for businesses that want to grow, from $ 59.99 per month
- Sales Navigator Professional – for individuals and companies looking to boost sales, $ 79.99 per month
- Recruiter Lite – for professionals and businesses looking to hire someone, $ 119.99 a month.

In addition, it is possible to use LinkedIn Learning, also for $ 29.99 per month. This social network can be used through application on Android, iOS, and Windows.

TikTok

This is one of the newest social networks which has conquered the world with incredible speed. The application is used for sharing short videos with a maximum duration of up to 60 seconds. As for the content that is most often placed on this network, these are mostly amateur videos of an entertaining but also educational character. Within the application, there are various tools for editing videos, such as filters, a library of sounds that can be applied via video, as well as the ability to add your own to someone else's video. As with other social media, tags play a significant role in finding content that the user is interested in. For now, there are still no ads available like on other social networks. However, this does not mean that this application does not have huge potential when it comes to advertising a brand or product. Participating in existing ones, as well as inventing new ones, is a great way to advertise brands with this application. Also, as always, the use of relevant tags can lead users to look at the brand page and start following it. Currently, TikTok is still mostly used by the younger generation, and marketing strategies should be aimed at that target group. It provides advertisers with a fair-play field when it comes to reaching and interaction. Unlike social media like Instagram and Youtube, TikTok accounts with zero followers can get millions of views on the new video thanks to the viral nature of the algorithm. As long as users like the content, interactions will follow (Battisby, 2020). TikTok can be used on a computer, as well as through applications on the phone.

Twitter

It is the so-called microblogging medium, which allows users to post short text posts, with or without the addition of an image or video, and to exchange messages with other users. Posts are limited to 280 characters, 4 images, or one video, while messages are unlimited. Twitter is also allowed to post links to other sites in posts, unlike, say, Instagram. As with other networks, it is possible to follow other users, but it is also possible to see the content of users who are not tracked if someone has interacted with them in some way (for example, likes, comments, shares, etc.). When it comes to content that is shared on this social network, it is diverse. It can be anything from sharing a thought, over what is currently happening, to scientific papers. For every interest, there are so-called "subcategories" of Twitter which are not official, but are made up of a group of users, who gather around a certain topic, which can be anything from photography, through cooking, to political interests. It also has a paid advertising option. Advertising works as follows: it is necessary to determine the country and time zone, the goal of the ad (it can be awareness - in other words increase reach; consideration – i.e. increase video views, clicks on the website, increase engagement, get followers and more; and finally conversion - the option allows users to track the actions of people after viewing the ad, or interact with it. Once the goal is selected, the campaign name, payment method, budget, and duration are determined. After that, the demographic characteristics (gender, age, location, language) are determined. The devices to which the ad will be sent can also be selected (eg. only Android), and then keywords, interests, conversation topics, etc., should be selected. Twitter ads do not have a fixed price, and it depends on various factors such as the size of the target group, how many other advertisers do promotions for the same target group, etc.

YouTube

Represents a "website" for sharing videos with users. YouTube has no restrictions on the length of videos, which makes it more suitable for sharing more serious topics, but also music, documentaries, and other video content. It is currently the largest platform for sharing video content, with over 500 hours of video posted every minute (Statista, 2021). As with TikTok, it is possible to find any content. The four most popular categories of videos on YouTube are comedy, music, entertainment/ pop culture, and "How to" videos (Google/Ipsos Connect, 2016). Advertising is done in many different ways. One of these ways is sponsored content, where certain brands pay customers with a large number of followers to mention/ talk about their products in their videos, and to recommend them to their followers. Another way is for brands to create their own channel on which to share news about their products, or interesting videos, in which they use the same. And the third way is paid ads, which the platform places on the videos of users who decide to enable this option. The types of YouTube ads that can be used are:

- Skippable video ads – videos, which can be skipped after 5 seconds of video,
- Non-skippable video ads – Unable to skip video ads with a maximum duration of 15-20 seconds,
- Bumper ads – short video ads, up to 6 seconds, that cannot be skipped and must be viewed before starting the video that the user wants to watch,
- Overlay ads – text or images found on the bottom 20% of the video,
- Watch feed ads – ads that appear among the recommended videos, next to the video player on the desktop, cannot be controlled by the video creator,
- Back-to-Back ads – 2 ads that are broadcast one after the other, whether they can be skipped or not, are used on longer videos (Google support, 2021).

Facebook

Today, almost inevitable type of communication with 2.85 billion monthly users (PRNewswire, 2021). Facebook is also popular due to the fact that a person can use his own profile to log in to other sites and applications in a secure way. As a marketing platform, it has a huge potential. In addition to being one of the most visited social media on the planet, it also collects information from its users, such as age, gender, marital status, interests, etc. This data allows advertisers to invest in the specific target group their ads. One way to advertise a company is to simply create a business page on Facebook. After that, it is necessary to gain followers with the publication of relevant content that could interest them, especially content that has the potential to go viral, the content that followers will be happy to share with their acquaintances. The owners of the site also have the option to invite their friends to "follow" it. In addition to this kind of organic advertising, it is possible to pay for ads. This type of advertising brings far greater reach. A big advantage is also that it is one of the cheapest advertising platforms, despite the huge number of users. It is even 7 times cheaper than Twitter (Palmer, 2015).

Due to the excellent analytics, the campaign is very easy to follow. There are different types of ads on Facebook, and they are:

- Get more website visitors – the goal is to "take" users to the advertiser's website,
- Boost a post – the goal is to increase the number of users who have seen the post on Facebook,
- Boost an Instagram post – it is possible to make a promotion on Instagram via Facebook by downloading (buying) it (2012).
- Promote your page – the goal is to "bring" users to open and follow the page;
- Get more leads – the goal is to "bring users" to fill out the contact form and
- Get more messages – seeks to persuade users to contact the site via messages.

Facebook is a fantastic advertising platform, but success in bringing in new customers with minimal budget spending depends solely on well-chosen tactics (Red Brick, 2020).

Instagram

This social network allows users to share videos and photos with their followers. As with other social networks, it is possible to interact with other users' posts, via "likes", "comments" or "share" with other users. It is possible to exchange private messages with other users and keep other people's posts in order to find them later. The Instagram application is free and can be used on all smartphones and via the web browser (then it is not possible to use all the options offered by the application, such as sharing images and videos and sharing content with other users). When the application was created, it was only possible to share images created in the application. Today it is possible to share images that already exist on the phone, choosing whether the image will appear on the profile or within the "story" (story post). As for posts on the profile, it is allowed to select 10 photos or videos to which it is possible to add a description and share them as one post on your profile. Other users can see this post on their homepage in "tags" (tags, if used). If the post is popular enough, it will appear as a suggestion in the search or on the profile of the user who posted the post. The personal profile is organized in such a way that at the top is the profile name, and description, and below the network of posts posted by the user. And that network is what is most attractive about this application because it is possible to create a unique and recognizable aesthetic that is attractive to other users. In "stories", the story is somewhat different. Access to them is at the top of the home page, where it is allowed to view all posts posted in the past 24 hours. It applies to all followed users. After 24 hours, the post disappears unless the user who posted it decides to post it as a highlight on his profile. In the stories, it is also possible to share pictures and videos, posts of other users, set quizzes, ask for opinions of other users, "tag" other users, set location, add music, countdown, etc. There are two ways to gain followers on Instagram, organic and paid advertising. Organic "getting followers" is done by interacting with other users and using tags. When it comes to paid advertising, this social network offers two ways of advertising, through Facebook ads also directly from the Instagram application. Advertising prices depend entirely on the budget which the user chooses. Depending on the budget selected, the number of accounts reachable changes. Ads can be placed in posts on the home page, in stories, on the explore page, on IGTV, also Instagram shopping. They can be in video and photo format, as well as combined.

The first item to choose from when the Ads Manager starts is the ad goal, which can be:

- Increasing the number of profile visits
- Increasing the number of visits to the website
- More messages

Then the audience is chosen, and there can be selection generated automatically - this social network itself selects an audience similar to existing followers. It is possible to create your criteria and choose some previously used ones. Then the name, the locations of the ad are chosen, the interests of the group we are interested in, and finally, the age and gender. After the audience, they decide on the budget, the daily amount, which can start from $1, and the duration, which starts from one day. Finally, a "window" appears in which you can once again view the details and choose the payment method. Then the name, the locations of the ad are chosen, the interests of the group we are interested in, and finally, the age and gender. After the audience, they decide on the budget, the daily amount, which can start from $ 1, and the duration, which starts from one day. Finally, a "window" appears in which you can once again view the details and choose the payment method. At the end of 2019, Instagram started removing the visibility of the number of likes on posts, but they are still visible to the owner of the profile. The results of months of testing showed a positive impact on behavior, although Instagram did not publish what those effects were exactly. The intention was to hide likes to reduce the feeling of inadequacy that users feel when comparing their success with the success of others (Frier, 2020). This move could lead to the like option becoming irrelevant, which could mean that users will get less engagement on posts, and thus posts will be seen by fewer other users.

MATERIAL AND METHODS OF WORK

The research is divided into two parts. The first part is the research on the organic acquisition of companions and engagement and the monitoring of the influence of different parameters on the same. Implemented methods were found on the internet and advertised as the best. Five methods with the best reviews were selected. Those that would not lead to temporary bans on the profile or permanent deletion were also selected, as is often the case with the "follow for follow" method, whose purpose is to track a large number of users so that they can retaliate.

The second part of the research, referring to paid advertising methods, was divided into two parts, the foreign and domestic markets. When it comes to organic and paid advertising, each method has been tested for seven days exactly. During those seven days, five posts and five stories were posted, which emphasized that there was a new photo on the page if some followers missed the main post.

Parameters monitored were the following:

1. Number of interactions total, divided into likes, comments, preserves, and shares,
2. Number of followers, total, but also concerning the number in the previous week,
3. Number of accounts that saw the publication,
4. Impressions,
5. Profile activity,
6. Number of profile visits,
7. Reach of individual publications,
8. Locations from which escorts come, divided into cities and states,
9. Group to which they belong, divided by sex and age,
10. Number of interactions per post, divided into likes, comments, preserves, and shares.

They collected the above data for the last week before the start of the study. All collected data were compared with the mentioned week, likewise the week before the one in the current focus of the research.

Organic advertising

As previously explained, organic advertising did not use paid advertising methods, that is, methods where the reach comes directly from users who have seen this post either on their news feed or in hashtags. When it comes to this type of advertising, they tested five methods for five weeks, each method followed for one week. As for the ideas used to increase the reach organically, they found them on various websites as some of the most frequently recommended and those with the best feedback. The methods tested are as follows:

Removing inactive followers

The first tested method is the removal of inactive companions, so-called ghosts.

Instagram ghosts are inactive accounts that do not interact with your profile and posts (Instasize, 2018). All followers belonging to the following categories were removed from the profile: they have not been active since 2018; company/product profiles; look like "bots" (don't have their content, empty profile, or share someone else's content); profiles that follow over 3,000 users, as the chance of seeing posts is minimal. The idea behind this strategy is this: The Instagram algorithm randomly selects several followers to show the post. If some of these followers are inactive, they will not interact with the post, and the algorithm will conclude that the post is of poor quality and will not display it to many users, including those who could come from the tags. If such a trend on the profile continues in the long run, they mark it as a poor-quality profile. It is especially worrying if there is an advertisement engaged in it, because advertisers look at the best possible engagement rate (percentage of followers who interact with user posts). It is calculated by dividing the number of total likes by the number of followers and multiplying that by 100 to get the percentage of users who interact with the posts (Adam, 2020). If this percentage is small, the profile is of poor quality. Theoretically, removing inactive followers would lead not only to posts being shown to more users but also to a higher percentage of engagement rates.

Time of publication

The following method tested is to change the setup time to when most followers are active. With the use of Instagram business profiles, you get free analytics which makes it very easy to determine when the page followers are most active, and it is possible to divide by days and hours. The idea behind this method is this: Instagram's algorithm likes posts that generate a large number of interactions in a short time and will often put that post at the top of your followers' homepage (Canning, 2021). The greater the number of interactions (likes, comments, clicks) on the post, especially in the first hour, the greater the chance many followers will see the post. It also applies to tags, where posts with the highest number of interactions often end up in the top posts tag category, and are thus seen by many more users. Another possibility is that the post ends up on the discovery page, where the number of interactions is highest. The important thing to note is that the "lifespan" of one fast is a maximum of 2 days. The average lifespan of Instagram content is 48 hours, during which most posts reach 75% of their total comments (Sonnenberg, 2020). After those 48 hours, the number of interactions has decreased, with smaller accounts almost non-existent. Therefore, it is relevant to choose the right time of publishing in order to achieve the highest possible momentum and thus extend the lifespan. Looking at Instagram analytics, it is easy to conclude that the number of followers compared to the days is approximately the same every day, with about 30 followers that vary. When it comes to division by hours, there are many more variations. Thus, during one day, the number of followers varied between 130 and 400, depending on the day. Each day, the most followers were online between 6 and 9 p.m. so they chose this "time window" as the optimal time for publishing content. They posted the picture every day, except Saturday, at 6 p.m., and on Saturday at 9 o'clock, when the traffic was the highest. Like with the previous method, they posted five photographs and monitored the parameters.

Hashtag number

Another method tested was the number of "tags" used per post. Prior to the start of this week, they used 27-30 "tags" on each post, which is the maximum that Instagram allows. While some experts agree that this is a good strategy for getting maximum reach in tags, some are against this and believe that such posts look like spam to the Instagram algorithm. They think it will not be displayed as good within the tags. The recommended number of "tags" is between 3 and 15, but the most frequently cited numbers are 11 and 12. The peak of Instagram performance comes between 9 and 12 tags, which shows that it is good to use more tags to increase reach (Hutchinson, 2016). They chose number twelve for this research. The "tags" used remained the same, with a certain number removed, so that only the most relevant ones remained, from multimillion "tags" to those with a few tens of thousands of posts.

"Liking" the content of other users

Another tested method is "liking" the content of other users. Each day during this week, there was an hour spent going through the relevant tags, similar to the content of the page, and finding the users who had the best chance of retaliating. They made the selection based on the following criteria: the site should not have over 3000 followers because there is little chance that large accounts will reciprocate the interactions, and it should not be the site of a company, influencer, personal trainer, life coach, or bot for the stated reason. "Liked" is a total of 9 posts per page, no more than two pages per minute, to bypass a possible ban. The idea for this method was the following - interactions with the account kept, especially if it is personal, lead to the release of dopamine. Dopamine is a chemical produced by our brain that plays a significant role in motivating behavior. In the evolutionary context, it rewards us for beneficial behaviors and motivates us to repeat them (Haynes, & Clements, 2021). Science has shown that rewarding social stimuli, such as smiles and messages from people we know, lead to the release of dopamine (Krach, Paulus, Bodden, & Kircher, 2010). Social media has led to the fact that a person can feel such a stimulus constantly, thanks to interactions on social media, with the help of devices in your pocket, constantly. Multiple interactions on social media could lead to the release of dopamine in the user, and thus lead to the user reciprocating the same interactions or even start tracking the profile from which the interactions came, in the expectation that they will recur.

Four likes and one comment combination

The last organic method tested was a combination of four likes and one personalized comment. As with the previous method, they found accounts with which they interacted in the relevant tags. They set aside the same period during the day when they interacted - an hour. They applied the same site selection criteria, below 3000 followers, with no company pages, influencers, personal trainers, life coaches, or bots. There was no need to limit the number of accounts with which they interacted, as this method was noticeably slower due to the personalized commentary they had to design for each account. It also reduced the number of interactions they could perform in a given time. Not only because of the time they used for typing but also because of the design of comments that would not sound automatic, as it deters the user from interacting with the account. The idea behind this method was the same as for the previous ones. Users need to be interested in the account being advertised by interacting more with their profile. They also needed to check whether the personalized message would prompt the owners of the accounts with whom they interacted to return a higher percentage or even start following the page.

Paid advertising

Paid advertising was also divided into sections to check the difference between domestic and foreign markets. They placed two ads, each lasting six days. That's why they published other photos to see the impact on the page, as well as to keep the parameters the same. The target audience they selected was similar for both ads, with a difference in location. They selected it based on the data they gathered about the users who follow the advertised page. They chose: permanent and gender, interests, budget, and duration as constant parameters. The age of the respondents was between 18 and 62 years, as they recorded the most followers in that range. They chose only females because the number of female companions was constantly around 75%. All interests are related to veganism (vegan, veganism, vegan nutrition, vegan recipes, world vegan day). Both ads lasted for six days, and they set the budget at 2 US dollars per day, or 12 US dollars in total. They hypothesized that these methods would lead to more interactions and follow-up, if nothing else, because of the greater reach they should achieve compared to organic methods.

Foreign market

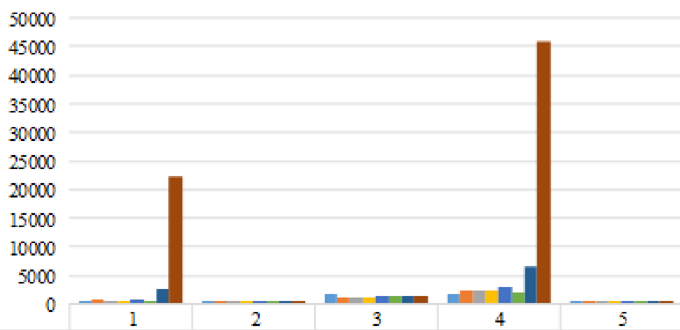
The first ad to be tested was the one in a foreign market. They chose cities and countries from which the most followers come: New York, London, United Kingdom, Los Angeles, California, Germany, Canada, Australia. Combined with other parameters, interests, and target groups, the potential that the ad needed to reach was 14 million accounts. When they included the budget, the final number of users to be reached was between 1900 and 5100. The goal of the ad is to increase the number of visits to the page.

Domestic market

As with the previous ad, the target group is next: ages 18 to 62, female. The interests they have chosen are identical to those of the foreign market, all about veganism. Selected locations were Serbia and Bosnia and Herzegovina. With the set parameters, the number of accounts to be reached with this ad was 930000. After setting a budget of 12 US dollars divided into six days, as in the previous ad, the potential reach was 21000-54000 accounts. The chosen goal was also the same - to increase the number of profile visits.

RESULTS AND DISCUSSION

As can be seen from graph1, after analyzing the reach and number of impressions, they achieved the biggest growth by advertising in the domestic market. However, in order to get a complete picture, it is necessary to compare all the methods on the complete statistics individually. Specifically, it is necessary to compare the reach, interactions, followers, impressions and number of activities on the profile.

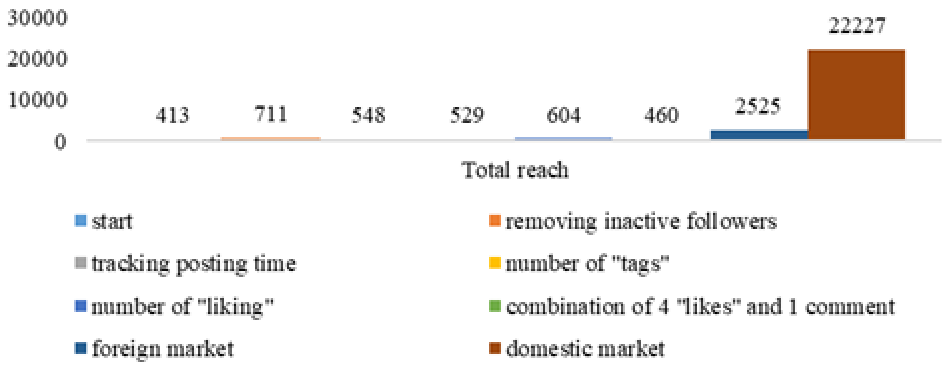


	1	2	3	4	5
start	413	104	1555	1681	64
removing inactive followers	711	352	1172	2169	70
tracking posting time	548	298	1176	2218	64
number of "tags"	529	216	1179	2380	55
number of "liking"	604	539	1239	2820	293
combination of 4 "likes" and 1 comment	460	314	1250	1839	171
foreign market	2525	348	1257	6725	203
domestic market	22227	335	1290	45850	513

Graph 1. The test results of all methods, five organic and two paid.

Reach

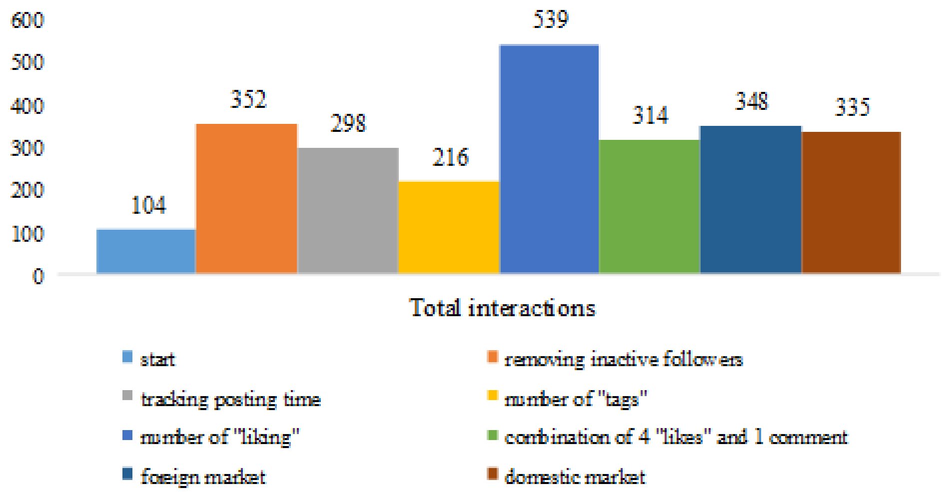
Graph 2. shows the range of each method individually, compared to the initial state. The method that gave the best result in reaching people is advertising on the domestic market, with 22227 accounts. After that, advertising on the foreign market with 2525 reached accounts. Of the organic advertising methods, the removal of inactive followers proved to be the best, followed by "liking" posts of other users. The worst result was achieved by the method of combining comments and likes. The best-paid method (advertising on the domestic market) was 3026% better than the best organic (removal of companions). It means that paid advertising gave better results with this parameter.



Graph 2. Comparison of reach

Total interactions

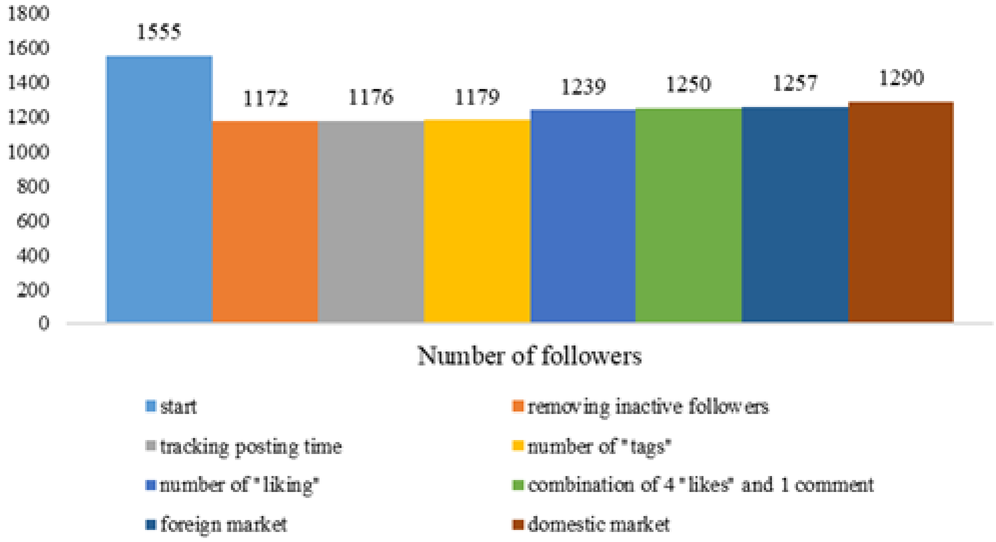
In total interactions, they achieved the best result with the liking the content of other users method with 539 interactions during the research week. The removal of inactive followers followed with 352 interactions, and later paid methods, foreign market with 348, and domestic with 335. The worst result was the reduction in the number of used tags. The best organic method (liking the content of other users) gave a 55% better result than the best paid (advertising on foreign markets). So, organic advertising gave a better result in this parameter (Graph 3).



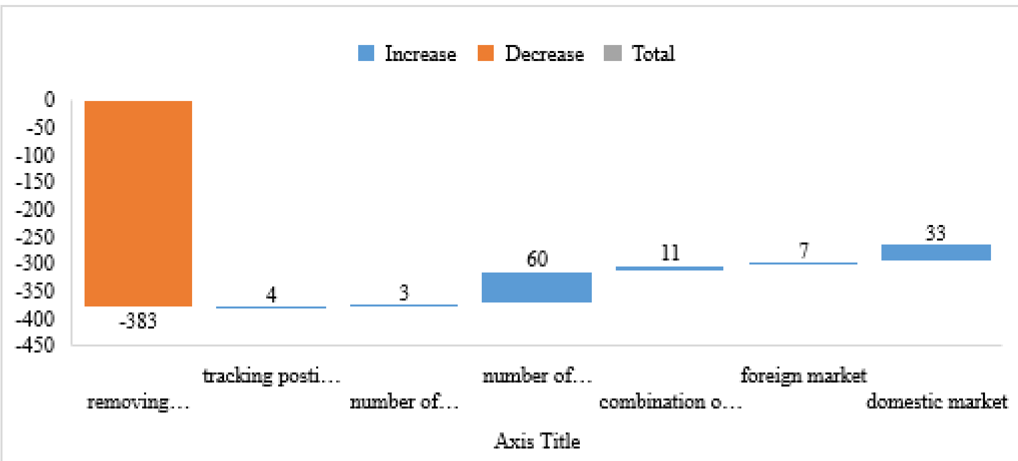
Graph 3. Comparison of total interactions

Number of followers

After the first method was tested, i.e., the removal of inactive followers, there was initially a drop of 383 followers, i.e., the number of followers was lower by 25% compared to the situation before the start. Graph 4 (number of followers) looked like this:



Graph 4. Comparison of the number of followers

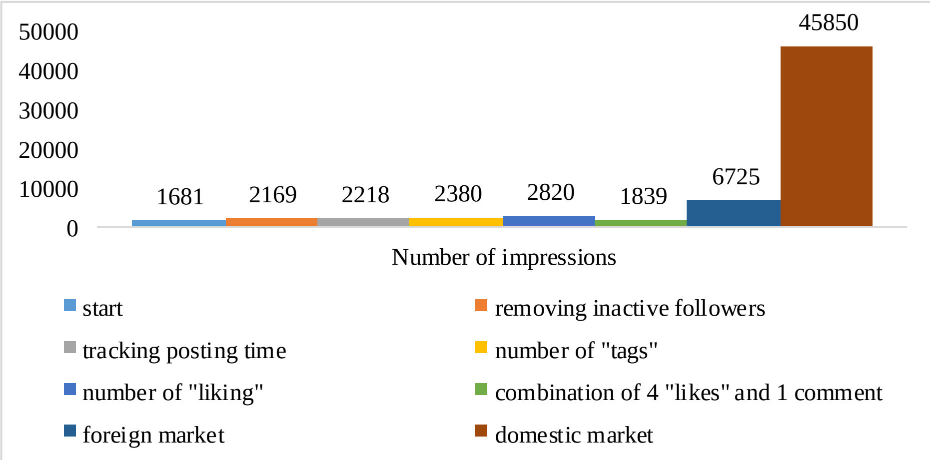


Graph 4a. Changing the number of followers

After this method, each remaining one gave significant increase in relation to the condition after the first method. So the method of changing the posting time led to four new followers, the method of changing the number of tags to 3 new followers, and the method of liking the content of other users led to the highest jump in the number of followers, as many as 60. companions. In terms of advertising, it led to 7 new followers in the foreign market and 33 in the domestic market, which was also the second most successful method in increasing the number of followers. The best organic method gave almost twice the best result compared to the best paid method. In order to gain new followers, organic methods (especially the method of liking the content of other users) achieved a better result in this research.

Number of impressions

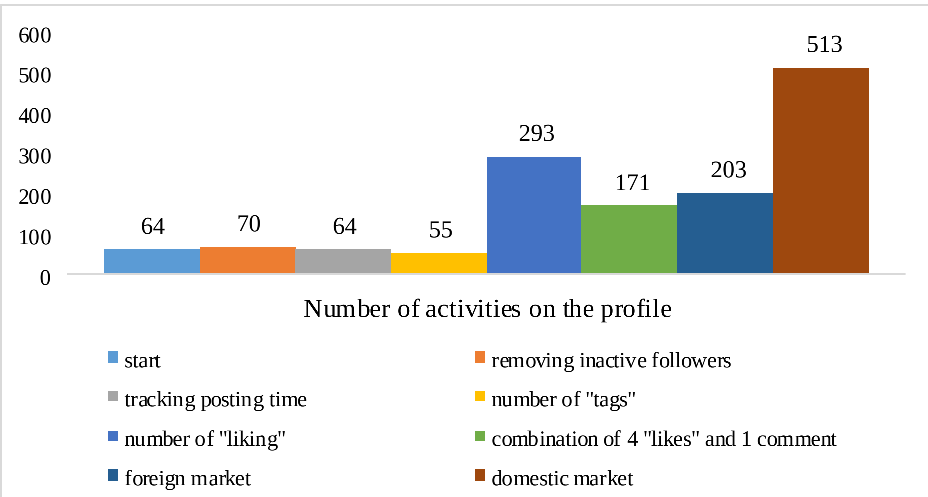
Graph 5. shows the results of impressions of all implementation methods. Paid advertising methods gave better results than organic methods. Each method gave some progress compared to the situation before the start. The lower-paid method was 300% better, and the better-paid method even 2628% better. Based on the obtained results, we can conclude that paid advertising is better in this respect than organic.



Graph 5. Comparison of the number of impressions

Number of profile activities

Most of the methods gave a significant increase compared to the initial state. However, reducing the number of tags led to a drop in activity, and setup time did not change. Liking posts of other users proved to be the best organic method, with a growth of 358%. Second in a row is a combined method of commenting and liking with an increase of 167%. The number of activities on the profile shown in Graph 6.



Graph 6. Comparison of the number of activities on the profile

In this parameter, the best result was achieved by the paid method, in the domestic market, with a growth of 702%. The second paid method performed worse than the best organic method, but the result was still better than all other organic methods. Compared to the beginning, this method takes the third best place with the total of 217% better results . The best result was achieved by the paid method, with the increase in the number of activities on the profile.

CONCLUSION

After comparing the achieved results of organic and paid advertising methods, they found that some methods of organic advertising give better results in some parameters than paid ones, where paid ones give better results in others. When looking at the methods individually, they achieved poor results in almost all analyzed parameters with the method of removing inactive companions. In addition, the number of followers reduced by 381, and during this research, that number did not return to baseline. Posting time and the change in the number of tags also did not have an impact. The method of combining comments and "likes" has already improved the result at the end of the week, and the method of likes gave the best results. This method, in terms of the number of activities on the profile, surpassed the method of paid advertising on the foreign market. In terms of obtained followers, it surpassed both paid methods. The same result was in the overall interactions, much higher than in the above methods. The same result was in the overall interactions, much higher than in the above methods. The second best organic method, despite the excellent results, could not be measured with the paid methods, except in the case of a change in the number of followers, where the number of followers was four times higher than the paid method in foreign markets. Other organic methods did not achieve such good results. As for paid methods, they expected the range and number of impressions to be many times higher than with any organic method. When advertising on the domestic market, the number of activities on the profile exceeded the best organic method, while the number of impressions was 2628% higher, and the reach was 3026% higher. In the overall interactions, this method was better than the second-best organic method (comment + like), but it did not surpass the method of liking. It was also better in terms of the number of followers it received. As for the second-best paid method, it was better than the best organic in terms of reach and impressions but much weaker in other parameters. In addition to the second-best organic method, it was better in the number of activities on the profile and in the overall interactions. When choosing the optimal method of advertising, it is important to know which results need to be obtained, i.e., which parameters need to be changed. For reach and number of impressions, it is better to choose paid advertising methods, while for other parameters, it is best to choose an organic method - liking.

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THE CITY DIPLOMACY TO PUSH AHEAD AN ECONOMIC GROWTH AND BUILDING RESILIENCE AGAINST DISASTER: CASE STUDY IN SEMARANG CITY

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ABSTRACT

Semarang, as the capital city of Central Java province, Indonesia, has been exercising its own diplomacy in pursuit of its interests related to economy and disaster. Under the leadership of mayor named Mr. Hendrar "Hendi" Prihadi, the city administration has been practicing city diplomacy as a means to attract both domestic and foreign investors by convening a business forum, called Semarang Business Forum (*Sembiz*), and to explore partnership in building the city's disaster resilience by joining a city network, called 100 Resilient Cities (100RC). According to the argument by Keating (1999) in explaining Para diplomacy, this paper argues that Hendi administration's strategies in exercising city diplomacy were shaped by its motives, as reflected in Regional Long Term Development Plan (RPJMD), and the opportunity structure in terms of existing regimes where the city could observe suitable cooperation. This paper finds that Hendi administration benefited from city diplomacy in solving local urban issues, such as the tidal and flash flooding problem in the coastal area of Semarang.

Keywords: City Diplomacy, Economic Growth, Semarang City, Semarang Business Forum.

INTRODUCTION

Various Cities have been more and more involved in international relations as they exercise their own diplomacy and city leaders engage both regional and international forum. Association of Southeast Asian Nations (ASEAN), for example, has been convening an annual meeting of mayors from across the region. International forum for local governments is mostly comprised of representatives from capital cities. However, city leaders outside the capital have started to take part in such international forum addressing global issues. Semarang, the fifth largest cities in Indonesia, illustrates an example of how city administration outside the capital exercises its own diplomacy in pursuit of its interests.

For Semarang, city diplomacy is neither new nor unique. Hendi administration and its predecessors had signed sister city agreements with some cities in Asia-Pacific and Europe. Under the leadership of the former mayor named Mr. Sukawi Sutarip, for example, the city administration signed in 2007 a letter of intention to form a sister city cooperation with Beihai, a Chinese port city in the Gulf of Tonkin. Hendi administration signed in 2018 a sister city agreement with another Chinese city, Nanjing, Jiangsu province. In addition, the administration works within Ter-governmental organizations (IGO), non-governmental organizations (NGO) and the private sector.

City diplomacy, as an academic subject, has yet to receive the attention it deserves from International Relations (IR) scholars despite the trend in practice. Some scholars began to publish exploratory works on the subject matter in the 1990s (Alger, 1990). According to this theory mentioned the growing body of literature on city diplomacy has yet to give sufficient attention to the Global South cities, especially non-capital cities like Semarang. Meanwhile, cities had practiced diplomacy far earlier than the Westphalian states, which have been the primary diplomatic actors only for less than two centuries (Acuto, Morissette, & Tsouros, 2017). Ancient Mesopotamian cities, for example, exchanged envoys under mutual recognition and trade missions with their Anatolian counterparts (Constantinou, Kerr, & Sharp, 2016).

What does it mean when a city administration exercises its own diplomacy? This paper follows the theory by Constantinou et al. (2016) because the reason in defining a city administration's external relations as diplomacy, which is based on three assumptions. First, cities take part in international negotiations on behalf of political constituencies. Second, city diplomacy involves traditional institutions such as embassies and envoys. Third, it also involves mediation and agreement by cities both between third party actors and on their own behalf.

City administrations are getting more involved in international relations as global issues have impacts on their regions and constituencies. Hendi administration, for example, has been involved in achieving the United Nations' (UN) Sustainable Development Goals (SDG) as part of the Central Java administration's action plan in particular and the Indonesian government in general. Climate change, an issue the UN is trying to address through the SDGs, constitutes a global issue that exacerbate the urban challenges facing Semarang. As a coastal city with 1.7 million inhabitants, Semarang has a difficult relationship with its ocean due to flooding issues. The UN's Intergovernmental Panel on Climate Change (IPCC) has called for more involvement of city administrations in addressing climate change issues.

Given the increasing importance of city administrations' roles in addressing global issues, analysts and scholars alike need to enrich the literature on city diplomacy. However, as Constantinou, et al., (2016), had pointed out, studying city diplomacy faces challenges from the "traditional views of international relations (as the domain of the 'international system')" and the "established diplomatic institutions (as the structure of mediated politics among nations)." To grow the literature on city diplomacy means challenging these traditional views of international relations and the diplomatic establishment by showing the evidence that city administrations' roles in addressing global issues is gaining more prominence.

This paper seeks explore the Semarang city administrations' diplomacy practice by focusing on why Hendi administrations — both his 2013–2015 term as successor to then mayor Soemarmo Hadi Saputro who was unseated due to corruption charges and his 2016–2020 term — utilize a business forum and a city network on urban resilience as a means to exercise its diplomacy. This paper is structured as follows. The second section delves deeper into the literature on city diplomacy. The third section shows how Hendi administration utilize its business forum, named Semarang Business Forum (*Sembiz*), as a means for diplomacy to attract Foreign Direct Investment (FDI).

The fourth section shows how the city administration utilize a city network on urban resilience, the 100RC, as a means for diplomacy to explore partnership which can help the administration solve the city's disaster-related issues, among other things. This paper concludes that the lesson learned from the study is that the city administration exercised its own diplomacy in order to address economic and disaster-related problems plaguing the city. It implies that the Indonesian government's one-size-fit-all diplomacy failed to accommodate regional problems.

MOTIVES, OPPORTUNITY STRUCTURE AND STRATEGIES: ANALYTICAL FRAMEWORK

Literature on city diplomacy is scattered across different fields, as the scholars appreciating the importance of city administrations' roles in international relations are found not only in IR, but also in urban studies. In IR, the literature on city diplomacy has benefited from the debate on so-called Para diplomacy in the 1990s. Since then, studies on the roles of city administrations in international relations began to proliferate. Furthermore, the literature on city diplomacy have been introduced to yet another concept, namely city networks (Acuto, 2016, 510-520).

According to the theory of Keating, andAldecoa (1999) that were participating in the 1990s Para diplomacy debate. They edited a book on para diplomacy which was published in 1999. According to Keating (1999) introduced an argument on the rise of Para diplomacy and explains how the motives of the regional administrations and the opportunity structure facing them shape their Para diplomacy strategies. As Para diplomacy and city diplomacy share many similar characteristics in terms of the aforementioned three assumptions, this paper follows Keating's argument, arguing that city administrations’ motives and their opportunity structure shape their diplomacy strategies.

City administrations have at least three different sets of motives. According to Gengler (2021) explained that there are economic, cultural and political motives driving regions diplomacy strategies. First, based on the economic motives, city administrations seek to attract "investment, markets for their products and technology for modernization" (Keating, 1999). Investment is important for city administrations to provide employment opportunities necessary to spur economic growth. Be that as it may, city administrations try to balance investment from foreign companies by building their local businesses. Second, city administrations want to penetrate overseas markets. In non-capital cities, much of their economies benefit from small and medium enterprises (SMEs). City administrations are supporting SMEs through export promotion. Third, city administrations seek investment for transfer of technology. The need for technology is not only present in large firms, but also in small firms. Fourth, city administrations rely on tourism and industrial districts, both of which need economic diplomacy to attract visitors and investment. It is important, however, to note that city administrations do not only seek inward investment, but also outward investment, encouraging local businesses to expand to overseas markets.

For diplomacy based on cultural motives, city administrations put emphasize on commonalities in language and culture (Keating, 1999). City administrations' culturally-motivated diplomacy aims at, as Keating explained, projecting and exporting their cultural products in overseas markets. This is in line with the city administrations' economic motives to boost their tourism industry, as it depends on the cultural products of local communities.

For diplomacy departing from political motives, it involves the desire for bigger autonomy. Keating (1999) said that city administrations might want to have a recognition and a legitimacy as something than mere regions. Political motives, more often than not, are identical to the city leaders' political agenda. They want to show their role and influence in international contexts. Some city leaders exercise diplomacy to build political influence among the diasporas and to mobilize their resources. Political motives may overlap with the cultural ones, as in the case of city administrations seeking, as Keating described, rediscovery and revitalization of old connections and identities. Furthermore, city administrations exercise diplomacy to influence public or elite opinion in other countries they consider as key partners. The world has seen more and more this kind of diplomacy due to the extensive reach of social media platforms.

City diplomacy strategies are also shaped by the city administrations' opportunity structures. According to Keating (1999) city administrations operate alongside other actors within the international political system, comprised of firms, trade unions, social movements and transnational organizations. As international politics have involved more multi-track diplomacy through, among other things, transnational regimes, ASEAN provide a point of access for city administrations to exercise its diplomacy. However, the opportunity structure depends on the nature of the regimes, for example, whether the regional organizations adopt an open regionalism or the closed one. Another opportunity for cities to exercise its own diplomacy is linkages to other national governments through the inter-state system.

Links and partnerships between city administrations in different countries are more common in city diplomacy. These links and partnerships take forms not only in multi-purpose or general association of city administrations, but also in a cooperation between specific cities, such as the Council of Local Authorities and Regions of Europe, a European political assembly consisted of 47 members. In addition, city networks based on narrower geographical and sectoral focus provide opportunity for city administrations to exercise diplomacy in a forum with clearer common interests, as seen in the case of Conference of Peripheral Maritime Regions.

Cross-border initiatives provide another opportunity. Keating (1999) explained that this was the most common type of cooperation between city administrations. There are two things to note from cross-border initiatives. First, cross-border initiative typically has "a functional basis, focused on common problems and opportunities, notably in economic development, promotion, infrastructure, environment or culture" (Keating, 1999, 1-16).

Second, complementary assets and resources on both sides, and common interests, will make cross-border initiative realize its full potential in helping city administrations address their problems.

City administrations develop its own strategies to pursue its interests. Keating (1999) remarked, "The strategies adopted by regions [or city administrations, for the purpose of this study] in their external relations are shaped by their motivations and the opportunity structures facing them." Furthermore, city diplomacy adopts strategies that are more functionally specific and targeted. Another characteristics of the strategies include opportunistic and experimental, both of which are found in the diplomacy of some city administrations with limited creativity and opportunity.

In the decision-making process of city diplomacy, political considerations play the main role in deciding which strategies to adopt. A city administration may see a strategy of building more industrial districts as the best way to attract more investment, but not necessarily favourable from the perspective of political considerations. Furthermore, as Keating noted, high degree of involvement of other actors such as civil society and the private sector characterizes city diplomacy. City diplomacy involves other actors as it is more decentralized and it provides an opening for multi-track diplomacy. However, the extent of the civil society and the private sector's involvements varies depending on political and institutional factors.

It is also important to note the relations between the city administration and the host state. The relations may vary based on constitutional and political factors (Keating, 1999). It is clear that the relations between city administrations exercising politically-motivated diplomacy, seeking recognition and greater status, and the host state will likely be hostile. City administrations without that kind of motive may face difficult relationship with the host state too, as their conduct of diplomacy challenges the diplomatic establishment. It sees city diplomacy to be, as Keating (1999) put it, "a breach of the united diplomatic front." It is unclear whether this argument holds in the context of Semarang administration's relations with the Indonesian government, as the central government appears to be supporting the city administration's diplomacy to address its urban challenges.

SEMARANG BUSINESS FORUM: CITY DIPLOMACY TO SPUR ECONOMIC GROWTH

The history of the Semarang administration's diplomacy goes as far back to the Dutch colonial era. As a major port city serving as a hub for trade, under the occupation of Dutch East India Company (VOC), the city was a melting pot where peoples of European, Chinese and the local descents met. Previous city administrations promoted slogan "The Port of Java" to attract investments and tourists to Semarang.

The Semarang administration's external relations extend beyond mere interactions with international actors. The city's Regional Development Planning Agency known as (Bappeda) said that the city administration has three types of cooperation (Dagilienė, Varaniūtė, & Bruneckienė, 2021). First, a cooperation with other city or regional administrations. Second, a cooperation with a third party such as an IGO, NGO as well as the private sector. Third, a cooperation with foreign central governments. The three types of cooperation largely define the opportunity structure, which partly shape the city administration's diplomacy strategies.

The city administration gets to decide what strategies to adopt for its city diplomacy. Mayor Hendi has been leading the city administration from 2013 to 2019. Hendi is carrying on much of the development agenda set by Saputro administration, namely to boost Semarang's economic growth through investment and trade. This paper defines the motives of Hendi administration's city diplomacy based on the RPJMD document. The motives are reflected in the visions and the directives in the development plan document.

Hendi administration has set a vision to make Semarang a services and trade city in the 2016–2020 development plan document. The administration has outlined the missions to realize the vision, such as to "strengthen people's prosperity based on local excellence" and "[develop] a good business climate." The development plan document also sets the objectives the city administration is trying to achieve, such as "improving the productivity of local economy." To that end, the city administration is seeking to grow the economy by 6.5 percent in 2021, up from 5.8 percent in 2015.

Hendi administration is planning to increase the value of trade and services. The indicator is attracting investment worth IDR. 21 trillion in 2021. In 2011, investment in Semarang was only close toRp1 trillion. It began to pick up in 2012 and the city administration booked a record high investment in 2018 at Rp 27.5 trillion, higher than the 2021 target (Budi, & Hadi, 2020). The fastest growth of investment to the city was seen in 2017, which was up by around 100 percent to Rp 20.5 trillion from Rp 10.5 trillion in 2016 (Handriani, & Robiyanto, 2018). But out of the total investment to the city, the foreign direct investment actually had been decreasing to Rp 1.2 trillion in 2017 from Rp 5.4 trillion in 2015. As of June 2019, the city administration has booked a total investment of Rp 15.9 trillion, Rp 14.3 trillion of which was from 911 domestic investors and Rp 1.58 from 25 foreign investors (Budi, & Hadi, 2020).

Hendi administration is seeking to improve the city's employment and growth outlook. The administration determines its mission is to "realize a civilized and quality life of the people" with an objective to "improve people's prosperity." This involves improving the competitiveness of the people. The indicators are comprised of reducing unemployment rate to 4.57 percent, increasing the labour force participation rate to 70.30 percent and increasing certified labours to reach 90 percent of the overall labour force.

Hendi administration is also seeking to boost the city's exports and trade and services sectors' contribution to the economy. First, the city administration seeks to source as much as 31.41 percent of the total gross regional domestic product (GRDP) from trade and services sectors. Trade sector, for example, accounted for 13.78 percent of the total GRDP in 2018, making it the third largest contributor of the city's economy — behind manufacturing and construction sectors — a continued trend at least since 2015 (Statistics Semarang 2019). However, services sectors accounted for a relatively small portion of the economy. Financial service sector, for example, contributed 4.43 percent to the total GRDP in 2018, the highest figure among the services sectors. Second, Mr. Hendi's administration has set a target of boosting export to$1.5 billion in 2021. In other words, Semarang's export was expected to increase by 20 percent or $304 million at the end of Hendi's second term in 2021 from $1.2 billion in 2016.

Tourism provides another means to spur Semarang's economic growth. Hendi administration seeks to increase the number of Semarang's tourists by 9 percent to 6.8 million in 2021 from 4.3 million in 2015. To put in perspective, Semarang's tourists reached 4.6 million in 2016, doubled than the 2.1-million figure in 2011. To reach the target, the city administration not only considers the cultural products that may lure tourists, but also considers the infrastructures such as the number of five-star hotels and tourist attractions. In terms of local tourist attractions, foreign tourists commonly visit Kota Lama (Old City of Semarang), a nineteenth-century styled complex, and Lawang Sewu (Thousand Doors), former headquarters of the Dutch East Indies Railway Company that turns intoa museum famously known for its Dutchwoman-ghost urban legend (Meytasari, & Tisnawati, 2018). Furthermore, Hendi administration introduces industrial districts to develop the manufacturing sector and to boost the growth of local products. There are nine industrial districts, namely: Bugangan Baru, Terboyo and Terboyo Megah in Genuk district, Guna Mekar Indonesia and Candi in Ngaliyan district, Sinar Centra Cipta and Tanjung mas Export Processing Zone (TEPZ) in North Semarang district, Bukit Semarang Baru (BSB) in Mijen district and Wijaya kusuma in Tugu district.

Based on the above economic motives, Hendi administration had little option of the means to exercise city diplomacy due to its opportunity structure. In terms of transnational regimes, for example, the city administration cannot rely on the ASEAN mayors' forumbecause, according to information provided by the United Cities and Local Governments Asia-Pacific (UCLG-ASPAC) (n.d.), it is a platform for discussion on how the stakeholders can work together to implement SDGs under the regional framework (Trifita, & Amaliyah, 2020).

Hendi administration, therefore, utilized the long-running *Sembizas* its diplomacy strategy. Since 2007, Semarang city administrations have continued to convene the *Sembizas* which they promoted investment opportunities to the private sector. In 2018, Hendi's administration convened the 12th *Sembizas* collaboration with the Semarang chamber of commerce (Kadin), offering investment opportunities in development of a lightrail transit (LRT) project worth Rp 200 billion per kilometre (km), an underpass through the Simpang Lima traffic circle worth Rp 1.4 trillion, an integrated convention and exhibition centre worth Rp 37.8 billion and a landfill in Jatibarang (Adielyani, & Mawardi, 2020). The LRT project, stretching as long as 5.9 km from traditional market Pasar Bulu to the Ahmad Yani airport, would be integrated with eight lines of the city's bus rapid transit (BRT), called Trans Semarang. The integrated convention and exhibition centre, called Expo Centre, would be located in Pedurungan district and, with an expected capacity of hosting up to 10,000 people, was expected to support meeting, incentive, conference and exhibition (MICE) activities in the city. For the Simpang Lima underpass, Hendi administration was expecting to ease the congestion in the downtown Semarang. The Jatibarang landfill, which was expected to host a waste-to-energy plant (PLTSA), had been managed by waste-management company PT Narpati and was expecting a grant from the Danish government (Putranti, Windiani, Farabi, Amaliyah, & Rosyidin, 2020).

Based on the city potentials, another investment opportunities include the development of housing in the BSB complex, infrastructure in Pedurungan district known as City Region V (or BWK V), waste management plant (IPLT), hazardous and toxic waste (B3) management facility, infrastructure at tourist attraction Goa Kreo, agrotourism, the 500-hectare (ha) Candi, the 250-ha Wijayakusuma and the 112-ha BSB industrial districts, as well as bonded logistics center in Tanjungmas seaport — in addition to other investment opportunities in infrastructure, housing, real estate, tourism and entertainment sectors (Kadin 2018). At least 250 representatives from the private sector attended the forum and Hendi's administration managed to secure letter of intent (LOI) worth Rp 17 trillion from 22investors, some were domestic and some others were foreign (Ruhen, & Gunawan, 2018).

However, in the 13th *Sembiz*, attended by at least 400 representatives both from governments and the private sector, the total investments fell sharply to only IDR. 3.02 trillion from 12 investors — six companies investing in the property sector, two in the manufacturing sector, one in the healthcare sector, one in the construction sector, one in the trade sector and one in the real estate sector (Budi, & Hadi, 2020). The investment dropped largely because not much new projects were offered. Instead, Hendi's administration offered investment opportunities in the ongoing projects with a new stage of development. The waste-to-power plant (PLTSA), for example, has progressed to detail engineering design (DED) stage in 2019 and amount IDR. 1.2 trillion LRT development project was also expected to finish its DED in 2019.

In 2017, Hendi's administration made agriculture, manufacturing and tourism asthe priority sectors to be promoted in the 11th *Sembiz*. The administration set agriculture as a priority because 52 percent of the total land in Semarang was a green space (Ruhen, & Gunawan, 2018). The administration put tourism as a priority because the number of tourists coming to the city increased by two-fold to 4.6 million in 2016 from 2.1 million in 2011. For investment opportunities in the manufacturing sector, Hendi's administration promoted the nine industrial districts.

100 RESILIENT CITIES: DIPLOMACY ON DISASTER RISK REDUCTION

In the 2010–2015 RPJMD, then mayor Saputro and Hendi outlined a policy objective related to the city's resilience against disasters, which reflected other motives for a city diplomacy. Soemarmo administration stressed the importance of, among other things, disaster mitigation in fulfilling people's basic needs and helping them to enjoy a decent life. More specifically, Soemarmo administration aimed at improving the city's mitigation efforts against potential disaster such as flooding by 75 percent. Hence, the administration sought to reform its management on disaster mitigation efforts. Soemarmo administration planned to make a development policy focusing on creating early disaster prevention, handling victims of disasters, rehabilitation and reconstruction of disaster victims, as well as developing a so-called people-based disaster mitigation management.

For disaster-related matters, the city administration actually had a wide range of opportunities in terms of international regimes to exercise its diplomacy. The UCLG, for example, provides an opportunity for cities to explore partnerships in implementing an international framework on disaster mitigation efforts such as the 2015 Sendai Framework for Disaster Risk Reduction. In the forum, cities can work together in encouraging the international community to provide support such as financial and technical assistance for their disaster mitigation efforts. The Rockefeller Foundation-backed regional network Asian Cities Climate Change Resilience Network (ACCCRN) and the 100RC provide other opportunities for the city administration to explore partnerships on city resilience in broad terms. The Bappeda said that ACCCRN was a cooperation between the city administration and an NGO to solve its flooding problem (Kristanti, et al., 2021).

Based on the given motives and the opportunity structure, Semarang joined 64 other cities from across the world in the 100RC in 2014. By joining the initiative, Hendi administration can collaborate with other cities and international organizations to enhance its knowledge and expertise in solving urban issues. In the mayor's letter expressing the background of Semarang's membership in the city network, Hendi highlighted the urgency of addressing tidal floods and flash floods, among other things, because the most vulnerable to these problems was the five-percent of the city’s total population who was living in poverty (Sukesti, & Budiman, 2018). Semarang is prone to tidal flooding, a seawater inundating the coastal area caused by, among other things, the increase of seawater level and land subsidence, and flash floods, a sudden flood due to high precipitation that increases the river’s water discharge. Tidal flooding, for example, is estimated to have an impact on around 300,000 people in the coastal area of the city comprising North Semarang, East Semarang sub-district and Gayamsari districts. In fact, 60 percent of the total member cities in the 100RC identified flooding as a major shock they're facing. For the lower parts of Semarang, the city faces challenges such as erosion, land subsidence and rising sea levels and for the upper parts, the development of housing and other kinds of residence has decreased the tree coverage in the area, which in turn worsens the risk of landslides and floods. Climate change further exacerbates the flooding risk facing the city. The city's coastline in the 6th century, for example, was in the Borgota area, which was around 4 km from today's coastline (Sugiyo, Supriatna, & Afdhalia, 2020). The expansion of the coastline was due to continuous sedimentation of the city's upper area.

In 2016, Hendi administration and the 100RC launched the so-called Semarang City's Resilience Strategy document. The document, developed by government officials, academics, businesses and community representatives, outlined 53 initiatives under six pillars as a guideline to make Semarang a resilient city, which can function, recover, grow and develop despite in the face of various urban challenges. The Resilience Strategy document was developed in parallel with the drafting of the 2016–2021 RPJMD — the development is expected to follow the five-year cycle of the drafting of the city's medium-term development plan — so the strategies and initiatives were expected to complement both the city's medium-term and long-term development plan in general. According to the document, cities are facing challenges in the form of acute shock, a sudden and dangerous event threatening the city such as flash flooding, and chronic stress, a situation that weakens the daily functions of a city such as tidal flooding. Readiness for disasters and diseases is one of the pillars — the other pillars are sustainable water and energy, new economic opportunities, integrated mobility, transparent public information and governance, as well as competitive human resources — which has seven initiatives aimed at improving "information sharing, innovation and collaboration in disaster and disease outbreak preparedness" (Sugiyo, Supriatna, & Afdhalia, 2020).

To develop Semarang's preparedness against disasters, the Resilience Strategy document suggested three strategies with seven initiatives. The first strategy is developing a technology for disaster management. The key initiative to support this strategy is raising public awareness on disaster-prone areas by providing updates on disasters, developing a messaging platform to deliver disaster-related information, called SMS gateway, providing signs for evacuation routes and emergency shelters in public areas and conducting participatory disaster mapping. Another initiative to support the first strategy is exploring new technology for disaster management by developing floating and stilted house in flood-prone areas, growing vetiver grass, building ponds, better manage the housing in disaster-prone area and applying new innovative technology. Hendi's administration worked with the Dutch Assen city administration to re-build a polder drainage system to mitigate both tidal and flash floods, called Polder Banger pilot project. In 2016, Hendi's met with then Assen mayor Roy Kraft van Ermel in Semarang to outline the plan. According to Van Ermel, the embankment was expected to ease the flooding risk facing East Semarang and Kemijen districts, as well as the Kota Lama (Prihanto, Koestoer, & Sutjiningsih, 2017).

The second strategy is enhancing the capacity of stakeholders in disaster management. The key initiative to support this strategy is increasing the number of the so- called disaster-prepared groups (KSB), whose members are representatives of local communities, in disaster-prone areas at the sub-district level. As of May 2016, Semarang had 22 KSB groups (Sugiyo, et al., 2020). As the groups are represented by local communities, they are expected to have better knowledge on local physical and social conditions. The initiative is aiming at establishing such groups in all sub-districts across the city and training the group members to develop disaster preparedness of their communities. Another initiative to support the second strategy is enhancing the capacity of the stakeholders by creating a forum for coordination on disaster preparedness and developing a disaster preparedness system.

The third strategy is improving coordination in disaster-risk reduction. The key initiative to support this strategy is preparing participatory contingency plan, which serves a function as standard operating procedure if disaster happen. The process of preparing the plan would involve representatives both from the city level and the community unit level. The plan would describe the responsibility of each city agency and office in the event of disaster, which was expected to improve coordination between them.

CONCLUSION

This paper has shown how the city administration's motives related to the economy and disaster risk reduction, as well as its opportunities structure for cooperation, shape its diplomacy strategies, which utilize a business forum and a city network. In so doing, this paper has presented the evidence of the Semarang city administration's diplomacy practice. Furthermore, this paper finds that city diplomacy, like other public policies, departs largely from the development agenda outlined in the city's medium-term development plan. Hence, this implies that city diplomacy is better suited in addressing urban challenges facing the region, compared with the central government's diplomacy.

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