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ULOGA I ZNAČAJ REVIZIJSKOG UZORKOVANJA U SAVREMENOM PREDUZEĆU

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Apstrakt

Revizija je aktivnost koja je u današnjem svetu prisutna na svakom koraku i u svakoj grani privrede. Kada se misli na reviziju finansijskog poslovanja to znači da se revizija sprovodi na ukupno finansijsko poslovanje entiteta u određenom vremenskom periodu ili obuhvata reviziju određenog privrednog sektora. Revizija finansijskog poslovanja se sprovodi sa ciljem utvrđivanja stvarnog finansijskog stanja entiteta u određenom periodu. Ona se sprovodi i u situaciju postojanja sumnje zloupotrebe finansijskih dokumenata ili u drugim situacijama kada to organi upravljanja zahtevaju. Od drugih vrsta revizije se razlikuje, ne samo po tome što predemet revizije čine finansijski izveštaji, već je neophodno da njeni revizori poseduju stručne i etičke kvalitete. Revizija finansijskih izveštaja obuhvata prikupljanje i vrednovanje dokaza na sistematičan način, što stvara osnovu za validaciju finansijskih izveštaja i proveru njihove usklađenosti sa međunarodnim računovodstvenim standardima i međunarodnim standardima finansijskog izveštavanja.

***Ključne reči:** revizija, uzorkovanje, preduzeće.*

***JEL:** M41, M42.*

Uvod

Reviziji finansijskih izveštaja prethodi prikupljanje i vrednovanje dokaza, a radi revizorskog nezavisnog i kompetentnog izražavanja mišljenja. Da bi neki revizor izneo svoje mišljenje nepohodno je da postoje dokazi i drugi finansijski dokumenti. Svaki dokaz revizori pojedinačno vrednuju, prosuđuju, tumače i upoređuju sa definisanim međunarodnim standardima, pre izražavanja mišljenja revizora da li su finansijski izveštaji sastavljeni u skladu sa propisima i da li je finansijsko poslovanje entiteta regularno. Da bi revizor sve te aktivnosti mogao da sprovede neophodno je da poseduje određene analitičke sposobnosti, sposobnosti

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tumačenja i povezivanja. Bitno je da dokazi budu objektivne, a ne subjektine prirode, jer je na taj način stav revizora pri rasudjivanju dokaza nepristrasan. Kod svake revizije potrebno je da postoji njena strategija sprovođenja. Ona treba da bude na pravi način formulisana, kako bi se prilagodila određenoj situaciji odnosno modifikovala mogućoj situaciji u finansijskom izveštaju.

Prema revizorskim standardima SAS No.39, Audit Sampling (AICPA, 1985), kao i Međunarodnim računovodstvenim standardima – MRS, revizorska metoda uzoraka se definiše kao primena revizorskih postupaka nad manje od 100% stavki uključenih u saldo ili u skup poslovnih događaja, pri čemu su ti postupci primenjeni u svrhu vrednovanja nekih značajnih stavki tog salda ili skupa.

Što će dalje označavati da uzorkovanje u reviziji znači donošenje zaključaka o celini na osnovu reprezentativnog dela iz te celine.

Opšte je poznato iz klasične literature koja obrađuje postupke u reviziji kao i metode uzoraka (videti, npr.: Vance i Neter (1956.), Arkin (1984.), Robertson i Davis (1988.) te Guy et al. (2001.) ili drugi) da se koriste dva dva pristupa uzorkovanju: (1) statistički, tj. probabilistički uzorci, i (2) nestatistički uzorci, odnosno neprobabilistički uzorci.

Određivanje veličine uzorka

Bez obzira da li revizor koristi nestatističko ili statističko uzorkovanje, isti bazični faktori se određuju u postupku određivanja veličine uzorka (Boynton & Johnson, 2006). Na narednoj Tabeli 1. su prezentirani osnovni faktori koji utiču na veličinu uzorka. Međutim, kada revizor opredeli svoje profesionalno prosuđivanje u vezi prezentiranih faktora, koristi se formula koja sledi:

$$n = \frac{KV \times FO}{DG - \left(PG \times FE\right)}$$

gde je KV = knjigovodstvena vrednost populacije koja se testira, FO = faktor pouzdanosti za aisignirani rizik pogrešnog prihvatanja, DG = dopustiva - prihvatljiva greška, PG = očekivana greška, FE = faktor ekspanzije za očekivanu grešku.

Objasnimo ove parametre detaljnije

Knjigovodstvena vrednost populacije koja je predmet testiranja, se zasniva na osnovnoj premisa prilikom određivanja knjigovodstvene vrednosti u postupku određivanja obima uzorka (Ilić et al., 2022), a to je precizno definisanje populacije (MSR, 2006).

Tabela 1: Faktori koji utiču na veličinu uzorka

Veći uzorci	Faktor (odnos preme veličini uzorka)	Manji uzorci
Veća populacija sa većom knjigovodsvenom vrednošću uslovljava veći uzorak.	**Knjigovodstvene vrednost populacije (direktna relacija)**	Manja populacija sa manjom knjigovodsvenom vrednošću mora da se efektuira na manji uzorak.
Manji rizik uzorkovanja uslovljava veći uzorak.	**Rizik pogrešnog prihvatanja (obrnuta relacija)**	Veći rizik uzorkovanja uslovljava manji uzorak.
Manji iznos dopustive greške (koje opredeljuje revizor) uslovljava veći uzorak.	**Dopustiva greška (obrnuta relacija)**	Veći iznos dopustive greške (koje opredeljuje revizor) uslovljava manji uzorak.
Što su približnije vrednosti između dopustive i očekivane greške, veći je uzorak.	**Očekivana greška (direktna relacija)**	Što je veća razlika vrednosti između dopustive i očekivane greške, manji je uzorak.

Izvor: Ciarko & Paluch-Dybek (2022), Craig (2017) i Giuliani (2016)

Iznos knjigovodstvene vrednosti ima direktan uticaj na na obim uzorka – što je veća knjigovodstvena vrednost to je veći obim uzorka (Majstorović, 2021).

Faktor pouzdanosti za aisignirani rizik pogrešnog prihvatanja se određuje primenom modela revizijskog rizika (Bučalina & Pejović, 2022), kako sledi:

$$TD = \frac{RR}{IR \times KR \times AP}$$

gde je: TD – nivo detaljnog testiranja, RR- revizijski rizik, IR – inheretni rizik, KR–kontrolni rizik, AP–revizijske procedure.

Model revizijskog rizika, iskustvo, i profesionalno prosuđivanje su esencijalne za određivanje nivoa prihvatljivog rizika (Kostić, 2020). Naime, rizik od pogrešnog prihvatanja ima inverzni efekat na veličinu (obim) uzorka – što je niži nivo specificiranog rizika, to je veći nivo obima uzorka.

Faktor pouzdanosti je empirijski na narednoj Tabeli 2. i baziran je na *riziku od pogrešnog prihvatanja opredeljenog od strane revizora i nultog broja grešaka, u odnosu na predviđeni broj grešaka* (Vukša et al., 2020). Na primer revizor je opredelio 5% rizika za pogrešno prihvatanje. Referentni faktor pouzdanosti (pouzdanosti) jeste 3,0 na bazi Tabele 2.

Tabela 2. Proračun faktora pouzdanosti

	Faktori pouzdanosti (pouzdanosti) za nulto odstupanje							
	Rizik pogrešnog prihvatanja							
	1%	5%	10%	15%	20%	25%	30%	37%
Faktori pouzdanosti	4,61	3,00	2,31	1,90	1,61	1,39	1,21	1,00

Naravno ukoliko su prekoračenja nenulta, npr. 1,2,3,...n, onda se primenjuje (kao i za nultu opciju) Tablica data u *AICPA Auditi and Accounting Guide: Audit Sampling*.

Dopustiva (tolerabilna) greška (DG) je maksimalno moguća greška na računu pre nego što se odredi kao materijalne greška (Avakumović et al., 2021). U procesu specifikacije ovog faktora, revizor treba da greške na pojedinačnim računima, sagleda u kontekstu agregiranja (akumuliranja) sa greškama na ostalim računima, što sve (kumulativno) može usloviti da finansijski izveštaji u celini bude materijalno pogrešan. DG ima inverzni efekat na veličinu uzorka – što je manja DG, to je veći obim uzorka (Avakumović et al., 2021a).

Očekivane greške (OG) i faktor ekspanzije (FE) u postupku uzorkovanja, revizor ne kvantifikuje rizik pogrešnih odbacivanja (Ivanova & Ristić, 2020). Naime, ovaj rizik je kontrolisan indirektno i to: određivanjem očekivane greške (OG) koj je inverzno relirane sa rizikom od pogrešnih odbacivanja i direktno relirani sa obimom uzorka (Gold et al., 2015). **Očekivana greška (OG)** jeste iznos greške koju revizor očekuje u populaciji (Halkos & Nomikos, 2021). Revizor koristi prethodno stečeno iskustvo i poznavanje klijenta i profesionalno rasuđivanje da bi odredio veličinu OG (Luque-Vílchez & Larrinaga, 2016). Revizor mora da ima na umu da će preterano velika procena nepotrebno uvećati uzorak, dok će previše niska procena rezultovati velikim rizikom pogrešnog odbacivanja.

Faktor ekspanzije (FE) je neophodan samo kada se greške očekuju (Landman, 2020). On se dobija iz Tabele 3., koristeći rizik pogrešnog odbacivanja, koji je revizor odredio. Što je manji određeni rizik pogrešnog odbacivanja, to je veći FE (Stevanović et al., 2019). Kao i očekivana greška, FE ima direktan uticaj na veličinu uzorka (Larrinaga & Bebbington, 2021). Kombinovani efekat očekivane greške i FE se onda oduzima od tolerabilne greške u određivanju veličine uzorka.

Tabela 3. Ekspanzioni faktori

	Ekspanzioni faktori za očekivane greške							
	Rizik od pogrešnog prihvatanja							
	1%	5%	10%	15%	20%	25%	30%	'37%
Ekspanzioni faktori	1,90	1,60	1,50	1,40	1,30	1,25	1,20	1,15

Izračunavanje veličine uzorka

Ilustracije radi u slučaju kada je KV= €600.000; FO =3,0; DG = €30.000; OG = €6.000; EF=1,6. Tada se veličine uzorka, izračunava, kako sledi (Monciardini, Bernaz & Andhov, 2019):

$$n = \frac{€600.000 \times 3{,}0}{€30.000 \times (€6.000 \times 1{,}6)} = 88$$

Dobijeni rezultat nam ukazuje na činjenicu da su elementi za određivanje uzorka bazirani na iskustvu revizora, tj. njegovom ekspertskom potencijalu prosuđivanja. Tako recimo stvar je revizorskog prosuđivanja koliki iznos greške se očekuje u populaciji npr. €6.000, kao i koliko će biti predviđeni broj odstupanja, 0,1,2,...,n. U našem slučaju očekuje se nulto odstupanje.

Evaluacija rezultata uzorka

U postupku evaluacije rezultata uzorka revizor izračunava **gornju granicu greške (GGG)** na bazi uzorka i upoređuje ih sa dopustivom greškom (DG) specificiranom u postupku dizajniranja uzorka (Nadoveza, 2022). Ukoliko je GGG manja ili jednaka dopustivoj grešci, rezutata uzorka podržava zaključak da knjigovodstvena vrednost populacije nije pogrešna, preciznije nije veća od dopustive greške (DG) koja je određena na osnovu rizika od pogrešnog prihvatanja (Todorović, 2021).

Gornju granicu greške (GGG) se izračunava na osnovu formule (Galjak, 2022), koji sledi

$$GGG = PG + DRU$$

gde je

PG = total iznosa ukupno projektovana greška na populaciju

DRU = dopustiv rizik uzorkovanja.

Rezultati dobijeni na bazi uzorka služe da se odredi ukupna **projektovana greška (PG)** na nivou populacije. Ukoliko greška nije nađen u uzorku, PG faktor u napred datoj formuli je jedna nuli tj. nula €, Din, $, istl. (Milanović, 2022).

U slučaju kada nema greške, faktor **dopustivog rizika uzorkovanja (DRU)** sadrži samo jednu komponentu koja se referiše kao **bazična preciznost (BP),** i koja predstavlja iznos estimirane greške na nivou populacije, čak i u slučaju kada nije utvrđena greška na nivou uzorka. Iznos greške ne nivou populacije se dobija množenjem faktora pouzdanosti (FO) za nulto odstupanje na osnovu opredeljenog rizika iz Tablice za utvrđivanje rizika od pogrešnog prihvatanja putam intervala uzorkovanja (SI).

S obzirom da je vrednost PG nula (nisu nadjene greške u uzorku), DRU=€20.454, što je manje od €30.000 - dopustive greške, opredeljene od strane revizora. Tako, kada greške nisu nađene nego su očekivane, revizor može zaključiti, da knjigovodstvena vrednost populacije ne prelazi DG – prihvatljivu grešku.

Ukoliko su greške indetifikovane u uzorku, revizor mora da uvaži (izračuna), ukupnu vrednost (total) projektovanih grešaka populacije, i dopušteni nivo revizijskog rizika i da odredi gornji nivo greške odstupanja, što je osnova za uporedjivanje GGG sa DG.

Zaključak

Nezavisno i objektivno ispitivanje i izražavanje mišljenja o validnosti i usklađenosti finansijskih izveštaja sa međunarodnim standardima predstavlja eksternu reviziju. Za sprovođenje eksterne revizije neophodno je prikupiti i vrednovati dokaze na osnovu kojih revizori formiraju svoje mišljenje. Određeni dokazi se prikupljuju i vrednuju metodom uzorkovanja. Metoda uzorkovanja zasniva se na statističkom i nestatističkom pristupu. Za razliku od statističkog pristupa koje se zasniva na objektivnom rasuđivanju gde se rezultati prosuđuju matematički u skladu sa teorijom verovatnoće, nestatistički pristup je zasnovan na subjektivnom rasudjivanju. Revizori, u toku revizije finansijskog poslovanja entiteta, razmatraju da li postoji unutar entiteta i da li nesmetano funkcioniše sistem interne finansijske kontrole. Skup internih političkih aktivnosti i postupaka, usvojenih od strane menadžmenta entiteta, a radi ostvarenja definisanih ciljeva i zadataka su mere koje se preduzimaju u sistemu interne finansijske kontrole. Sistem interne finansijske kontrole obuhvata računovodstveni sistem, politiku kontrole i kontrolno okruženje. Za uspostavljanje sistema interne finansijske kontrole u entitetu i za njegovo funkcionisanje odgovoran je menadžment entiteta, dok je revizor odgovoran za njeno vrednovanje i prosuđivanje, kao i za procenu kontrolnog rizika. Funkcionisanje sistema interne finansijske kontrole kod određenog entiteta omogućuje se nesmetan rad revizorima pri reviziji finansijskih izveštaja, tako što smanjuje obim i vreme njihovog prikupljanja i vrednovanja dokaza.

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THE ROLE AND SIGNIFICANCE OF AUDIT SAMPLING IN THE MODERN ENTERPRISE

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Abstract

Auditing is an activity that is present in today's world at every step and in every branch of the economy. When we mean the audit of financial operations, it means that the audit is carried out on the total financial operations of the entity in a certain period of time or includes the audit of a specific economic sector. The audit of financial operations is carried out with the aim of determining the actual financial condition of the entity in a certain period. It is also carried out in situations where there is suspicion of misuse of financial documents or in other situations when management authorities require it. It differs from other types of audit, not only because the subject of the audit is financial statements, but it is necessary that its auditors possess professional and ethical qualities. The audit of financial statements includes the collection and evaluation of evidence in a systematic way, which creates a basis for validating financial statements and checking their compliance with international accounting standards and international financial reporting standards.

Key words: *audit, sampling, enterprise.*

JEL: *M41, M42.*

Introduction

The audit of financial statements is preceded by the collection and evaluation of evidence, and for the purpose of the auditor's independent and competent expression of opinion. In order for an auditor to express his opinion, it is necessary to have evidence and other financial documents. Each piece of evidence is individually evaluated, judged, interpreted and compared by the auditors with the defined international standards, before expressing the opinion of the auditor whether the financial statements have been prepared in accordance with the regulations and whether the entity's financial operations are regular. In order for the auditor to be able to carry out all these activities, it is necessary to have certain analytical, interpretation and connection skills. It is important that the evidence is objective and not subjective in nature, because in this way the auditor's position when judging the evidence is unbiased. Every audit needs to have its implementation strategy. It should be formulated in the right way, in order to

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adapt to a certain situation, that is, to modify a possible situation in the financial report.

According to auditing standards SAS No. 39, Audit Sampling (AICPA, 1985), as well as International Accounting Standards - IAS, the sampling audit method is defined as the application of audit procedures to less than 100% of the items included in the balance or in a set of business events, whereby those procedures were applied for the purpose of valuing some significant items of that balance or set.

Which will further mean that sampling in audit means drawing conclusions about the whole based on a representative part from that whole.

It is generally known from the classic literature dealing with audit procedures and sampling methods (see, for example: Vance and Neter (1956), Arkin (1984), Robertson and Davis (1988) and Guy et al. (2001).) or others) to use two sampling approaches: (1) statistical, ie. probabilistic samples, and (2) non-statistical samples, i.e. non-probabilistic samples.

Determining the sample size

Regardless of whether the auditor uses non-statistical or statistical sampling, the same basic factors are determined in the process of determining the sample size (Boynton & Johnson, 2006). The following Table 1 presents the basic factors that affect the sample size. However, when the auditor makes his professional judgment regarding the presented factors, the following formula is used:

$$n = \frac{KV \times FO}{DG - (PG \times FE)}$$

where KV = book value of the population being tested, FO = reliability factor for the assigned risk of wrong acceptance, DG = permissible - acceptable error, PG = expected error, FE = expansion factor for the expected error.

Let's explain these parameters in more detail

The accounting value of the population that is the subject of testing is based on the fundamental premise when determining the accounting value in the procedure of determining the volume of the sample (Ili ć et al., 2022), which is the precise definition of the population (MSR, 2006).

Table 1: Factors affecting sample size

Larger samples	Factor (ratio to sample size)	Smaller samples
A larger population with a higher book value requires a larger sample.	**Book value of the population (direct relationship)**	A smaller population with a lower book value must be effected on a smaller sample.
A smaller sampling risk results in a larger sample.	**Risk of false acceptance (inverse relationship)**	Higher sampling risk results in a smaller sample.
A smaller amount of permissible error (determined by the auditor) determines a larger sample.	**Tolerable error (inverse relationship)**	A larger amount of permissible error (determined by the auditor) results in a smaller sample.
The closer the values are between the allowable and expected error, the larger the sample.	**Expected error** **(direct relation)**	The larger the difference in value between the allowable and expected error, the smaller the sample.

Source: Ciarko & Paluch-Dybek (2022), Craig (2017) and Giuliani (2016)

The amount of the book value has a direct impact on the volume of the sample - the higher the book value, the larger the volume of the sample (Majstorović, 2021).

The reliability factor for the assigned risk of incorrect acceptance is determined by applying the audit risk model (Bučalina & Pejovi ć, 2022), as follows:

$$TD = \frac{RR}{IR \times KR \times AP}$$

where: TD – level of detailed testing, RR – audit risk, IR – inherent risk, KR – control risk, AP – audit procedures.

The audit risk model, experience, and professional judgment are essential for determining the level of acceptable risk (Kostić, 2020). Namely, the risk of wrong acceptance has an inverse effect on the sample size (volume) – the lower the level of the specified risk, the higher the level of the sample volume.

The reliability factor is empirical in the following Table 2 and is based on the risk of wrong acceptance determined by the auditor and the zero number of errors, in relation to the predicted number of errors (Vukša et al., 2020). For example, the auditor determined a 5% risk for wrong acceptance. The reference factor of reliability (reliability) is 3.0 based on Table 2.

Table 2. Calculation of the reliability factor

	Reliability factors (reliability) for zero deviation							
	Risk of wrong acceptance							
	1%	5%	10%	15%	20%	25%	30%	37%
Reliability factors	4.61	3.00	2.31	1.90	1.61	1.39	1.21	1.00

Of course, if the excesses are non-zero, e.g. 1,2,3,...n, then the table given in *the AICPA Audit and Accounting Guide: Audit Sampling* applies (as for the null option).

Allowable (tolerable) error (DG) is the maximum possible error in the account before it is determined as a material error (Avakumović et al., 2021). In the process of specifying this factor, the auditor should look at errors on individual accounts in the context of aggregation (accumulation) with errors on other accounts, all of which (cumulatively) can cause the financial statements as a whole to be materially wrong. DG has an inverse effect on the sample size – the smaller the DG, the larger the sample size (Avakumović et al., 2021a).

Expected errors (OG) and expansion factor (FE) in the sampling procedure, the auditor does not quantify the risk of wrong rejections (Ivanova & Ristić, 2020). Namely, this risk is controlled indirectly by determining the expected error (OG), which is inversely related to the risk of false rejections and directly related to the sample volume (Gold et al., 2015). **Expected error (EO)** is the amount of error that the auditor expects in the population (Halkos & Nomikos, 2021). The auditor uses prior experience and knowledge of the client and professional judgment to determine the size of the OG (Luque-Vílchez & Larrinaga, 2016). The auditor must bear in mind that an excessively large estimate will unnecessarily enlarge the sample, while an estimate that is too low will result in a high risk of erroneous rejection.

The expansion factor (FE) is only necessary when errors are expected (Landman, 2020). It is obtained from Table 3, using the risk of false rejection, determined by the auditor. The lower the specific risk of false rejection, the higher the FE (Stevanović et al., 2019). Like expected error, FE has a direct impact on sample size (Larrinaga & Bebbington, 2021). The combined effect of expected error and FE is then subtracted from the tolerable error in determining the sample size.

Table 3. Expansion factors

	Expansion factors for expected errors							
	Risk of wrong acceptance							
	1%	5%	10%	15%	20%	25%	30%	'37%
Expansion factors	1.90	1.60	1.50	1.40	1.30	1.25	1.20	1.15

Calculating the sample size

The illustration works in the case where KV= €600,000; FO = 3.0; DG = €30,000; OG = €6,000; EF=1.6. Then the sample size is calculated as follows (Monciardini, Bernaz & Andhov, 2019):

$$n = \frac{€600.000 \times 3{,}0}{€30.000 \times \left(€6.000 \times 1{,}6\right)} = 88$$

The obtained result indicates to us the fact that the elements for determining the sample are based on the auditor's experience, ie. his expert judgment potential. In other words, it is a matter of auditor's judgment how much error is expected in the population, for example. €6,000, as well as the expected number of deviations, 0,1,2,...,n. In our case zero deviation is expected.

Evaluation of sample results

In the process of evaluating the sample results, the auditor calculates **the upper limit of error (GGG)** on a sample basis and compares them with the tolerable error (DG) specified in the sample design procedure (Nadoveza, 2022). If the GGG is less than or equal to the permissible error, the sample result supports the conclusion that the book value of the population is not wrong, more precisely, it is not greater than the permissible error (DG) which is determined based on the risk of wrong acceptance (Todorović, 2021).

The upper limit of error (GGG) is calculated based on the formula (Galjak, 2022), which follows

$$GGG = PG + DRU$$

where in

PG = total amount of total projected error per population

DRU = tolerable sampling risk.

The results obtained on a sample basis are used to determine the total **projected error (PG)** at the population level. If the error is not found in the sample, the PG factor in the above formula is one zero, ie. zero €, Din, $, etc. (Milanović, 2022).

In the case where there is no error, the **Sampling Risk Factor (DRU)** contains only one component referred to as **the Basic Precision (BP),** which represents the amount of estimated error at the population level, even in the case where no error is found at the sample level. The amount of error at the population level is obtained by multiplying the confidence factor (FO) for zero deviation by the determined risk from the Table for determining the risk of false acceptance by the sampling interval (SI).

Given that the value of PG is zero (no errors were found in the sample), DRU=€20,454, which is less than €30,000 - permissible errors, determined by the auditor. Thus, when errors are not found but are expected, the auditor can conclude that the book value of the population does not exceed DG - acceptable error.

If the errors are identified in the sample, the auditor must consider (calculate) the total value (total) of projected errors of the population, and the permissible level of audit risk and determine the upper level of deviation error, which is the basis for comparing GGG with DG.

Conclusion

An independent and objective examination and expression of opinion on the validity and compliance of financial statements with international standards constitutes an external audit. To conduct an external audit, it is necessary to collect and evaluate evidence on the basis of which the auditors form their opinion. Certain evidence is collected and evaluated using a sampling method. The sampling method is based on a statistical and non-statistical approach. Unlike the statistical approach, which is based on objective reasoning, where the results are judged mathematically in accordance with the theory of probability, the non-statistical approach is based on subjective reasoning. The auditors, during the audit of the entity's financial operations, consider whether there is an internal financial control system within the entity and whether it functions smoothly. A set of internal political activities and procedures, adopted by the management of the entity, and in order to achieve the defined goals and tasks, are the measures taken in the system of internal financial control. The internal financial control system includes the accounting system, control policy and control environment. The management of the entity is responsible for establishing the system of internal financial control in the entity and for its functioning, while the auditor is responsible for its evaluation and judgment, as well as for the assessment of control risk. The functioning of the internal financial control system at a specific entity enables auditors to work smoothly when auditing financial statements, by reducing the scope and time of their collection and evaluation of evidence.

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PRAVNI ASPEKTI SUPROTSTAVLJANJA SAJBER KRIMINALU U EVROPSKOJ UNIJI

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Apstrakt

Razvoj informacionih tehnologija i interneta i vršenja krivičnih dela u tom novom okruženju dovodi do pojave transnacionalnog, visokotehnološkog kriminala. Nadležna tela za borbu protiv kriminala u postizanju rezultata sputava tradicionalna podela na nacionalne jurisdikcije dok za izvršioce dela tih ograničenja nema. Sajber aktivnostima nanose se velike štete i posledice fizičkim ili pravnim licima, protivpravno prisvajaju finansijska sredstva i zaštićeni podaci. Specifičnosti visokotehnološkog kriminala zahtevaju specijalizaciju državnih organa jer se u borbi protiv kriminala ne smeju ugroziti individualna prava, privatnost i slobode pojedinaca. Cilj ovog rada je da pokaže kako zakonodavstvo Evropske unije (EU) i aktivnosti njenih institucija unapređuju prevenciju, istragu i krivično gonjenje izvršilaca i grade kapacitete u pravosuđu. Harmonizacija domaćeg prava sa pravom EU u oblasti borbe protiv sajber kriminala predviđena je Poglavljem 24. pregovora „Pravda, sloboda, bezbednost“. U odgovaranju na pitanje koji su pravni aspekti suprotstavljanja sajber kriminalu u EU korišćeni su istorijsko-komparativni, metod analize sadržaja i deduktivni metod.

Ključni reči*: evropsko pravo, sajber kriminal, lični podaci.*

JEL: *K42, K49.*

Uvod

Visokotehnološki kriminal, poznat i kao e-kriminal, kibernetički ili sajber kriminal, obuhvata skup krivičnih dela koja podrazumevaju upotrebu interneta, računara ili nekih drugih elektronskih uređaja i pod taj pojam se mogu podvesti različiti oblici krivičnih dela. „U širem smislu, to je kriminalna djelatnost u kojoj su računar ili mreža izvor, sredstvo, predmet, cilj ili prostor krivičnog djela“

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(Romić et al, 2012). Pojedini oblici e-kriminala direktno su vezani za računare, kao što su širenje opasnih elektronskih virusa ili pokretanje DoS napada (engl. *Denial of Service Attack*) koji onesposobljavaju računarski sistem tako da on odbija da izvrši bilo koju uslugu ovlašćenog korisnika, kada računar postaje predmet napada, dok kod ostalih oblika e-kriminala koji čine prevare, govor mržnje, krivična dela protiv intelektualne svojine, kao i proizvodnja, posedovanje i distribucija spornog materijala, uređaji i internet su sredstvo napada. Kod ove vrste kriminala pored predmeta i sredstva napada, specifično je i mesto izvršenja, a to je paralelni, virtuelni prostor nastao povezivanjem više kompjutera u mreže pogodne za traženje informacija ili za elektronsko poslovanje koji nazivamo sajber prostorom, pri čemu je reč sajber (syber) grčkog porekla i znači nevidljivo, neupadljivo i neograničeno upravljanje. Upravo je ovaj skoro nevidljivi prostor i nepostojanje njegovih ograničenja ono što usložnjava borbu protiv kriminalnih aktivnosti koje se preduzimaju (Bjelajac, Filipović, 2021). Ove specifičnosti utiču na otežano pravno regulisanje materije i problem u procesuiranju izvršilaca, jer sajber kriminal najčešće prevazilazi granice jedne države, odnosno važećeg teritorijalnog zakonodavstva. Izvršiocima ove vrste protivpravnih delatnosti pogoduju slaba zaštita i generalno slaba svest korisnika na mrežama, ali i teškoće otkrivanju izvršenja dela i u prikupljanju dokaza. Iz tog razloga, poslednjih decenija uočljiva je namera najvećeg broja zemalja da kroz različite bilateralne i mutiratelarne sporazume preduzimaju zajedničke akcije kojim bi se udruženo suprotstavile sajber kriminalu. Regulisanje sajber bezbednosti na nacionalnom i međunarodnom nivou doprinosi efikasnijem radu nadležnih tela na otkrivanju izvršenih dela i učinilaca, ali i preventivnom delovanju i sprečavanju vršenja inkriminisanih radnji. Da bi se države adekvatno suprotstavile ovoj pretnji potrebno je njihovo povezivanje i jačenje saradanje i razmene informacija, ali i jačanje saradnje među različitim sektorima unutar države. Pri tome, važno je zaštiti prava pojedinaca na privatnost (Perović, 2018). Tek nakon toga može se pristupati otkrivanju izvršilaca krivičnih dela i izricanju adekvatnih sankcija za odgovorne, bez obzira da li se radi o fizičkim ili pravnim licima.

Prvi dokument kojim se sveobuhvatno nastojao rešiti problem sajber kriminala je Konvenciju o kibernetičkom kriminalu (Convention on Cybercrime, ETS 185), usvojena 23. novembra 2001. godine u Savetu Evrope. Donošenju Konvencije prethodilo je usvajanje većeg broja preporuka kojim su se članice upozoravale na nove pretnje i izazove i zahtevala se njihova zajednička akcija. Konvencija je propisala krivična dela usmerena protiv poverljivosti, integriteta i dostupnosti računarskih podataka i sistema, dajući precizne definicije krivičnih dela, koje omogućavaju vođenje krivičnih postupaka i uklanjaju opasnost od duplog gonjenja u više država. Prvi koraci u tom postupku su otkrivanje dela i prikupljanje i obezbeđenje dokaza (Bada & Nurse, 2019). Ovim je postavljen okvir za pojedina nacionalna zakonodavstva da preciznije odrede obeležja i karakteristike pojedinih krivičnih dela u vezi računara i sajber prostora, njihove osnovne, lakše ili teže oblike, te da propišu krivične sankcije za njihove učinioce, bez obzira da li se radi o fizičkim ili pravnim licima. Srbija je potpisala Konvenciju Saveta Evrope o sajber kriminalu. Uz Konvenciju je, u Strazburu 28. januara 2005. godine, usvojen Dopunski protokol o zabrani akata rasističke i ksenofobične prirode učinjenih posredstvom računarskih sistema. Njen značaj se ogleda i u činjenici da su joj pristupile i države koje nisu u Evropi, poput SAD, Kanade, Japana, Dominikanske Republike, Paname, Mauricijusa, Australije, Izraela, Šri Lanke i Južnafričke Republike (Bejatović, 2012).

Rad na povezivanju država imala je i Organizacija Ujedinjenih nacija. Različita tela ove organizacije su, u skladu sa svojim ovlašćenjima, delovala u pravcu podizanja svesti i povezivanja članica u suprotstavljanju pretnjama koje visokotehnološki kriminala predstavlja. Rezolucija br. 55/2 Generalne skupštine UN od 18. septembra 2000. godine, poznata i kao Milenijumska deklaracija, među ciljevima za nastupajući milenijum navodi bezbedno i dostupno koišćenje novih tehnologija. Pored toga, Generalna skupština usvojila je niz rezolucija koje se odnose na borbu protiv zloupotrebe informatičkih tehnologija i međunarodnu internet sigurnost.[10]

Zadatak usaglašavanja nacionalnih zakonodavstava u oblasti visokotehnološkog kriminala i bezbednosti u sajber prostoru Ujedinjene nacije dodeljuju Međunarodnoj telekomunikacionoj uniji (ITU), svojoj agenciji za pitanje informacionih i komunikacionih tehnologija (IKT). ITU je maja 2007. godine predstavila dokument pod nazivom Memorandum o globalnoj sajber bezbednosti (A Global Cybersecurity Agenda – GCA) u kom su navedeni osnovni problem i preporuke za poboljšanje bezbednosti (Newbury, 2017).

Rešavanju probelema visokotehnološkog kriminala i pretnji po savremeno društvo svojim unutrašnjim dokumentima su se bavile i mnoge druge organizacije, poput NATO, OSCD, OECD, ICANN, AU, ASEAN, OA (Pernik, 2014).

Cilja rada i korišćena metodologija

Cilj rada je davanje odgovora na pitanje koji su pravni aspekti borbe protiv visokotehnološkog kriminala u Evropskoj uniji (EU), jer suprotstavljanje visokotehnološkom kriminalu uključuje različite oblasti, činioce i aspekte. Da bi se odgovorilo na to pitanje, potrebno je bilo definisati osnovne pojmove, prikupiti podatke puterm istraživanja, klasifikovati ih i analizirati. U tom procesu nametnula su se tri osnovna pitanja:

[10] UN General Assembly Resolution A/res/55/63, 22. januar 2001;
UN General Assembly Resolution A/res/56/121, 23. januar 2002;
UN General Assembly Resolution A/63/385, 6 November 2008,
UN General Assembly Resolution A/63/385, 6 November 2008,
UN General Assembly Resolution A/65/201, 14 January 2010.

1. Koji su dokumenti Evropske unije koji uređuju pravne aspekte borbe protiv visokotehnološkog kriminala?
2. Na koji način je to uređeno?
3. U kojoj meri je domaći pravni sistem usklađen sa evropskim?

Naučno istraživanje početni je korak kojim se postojeća znanja verifikuju, a nova stiču, jer deskripcija dosadašnjih aktivnosti predstavlja prvi korak kojim se potpuno, objektivno i sistematično utvrđuje polazno stanje, odnosno utvrđuju se činjenice, dok je analitički metod korišćen za utvrđivanje njihove međusobne uslovljenosti i otkrivanje novih činjenica, njihovih relacija ili posledica. Analiza sadržaja podrazumeva istraživanje i razmatranje velikog broja pravnih izvora, imajući u vidu različita tela Unije i njihova ovlašćenja da donose obavezujuće akte ali i dokumenta koja, mada nisu obavezujuća, imaju značaj za kreiranje politike Unije i njenih članica. Pored akata koja usvajaju njeni organi, Evropska unija potpisuje i pristupa međunarodnim sporazumima koja se donose pod okriljem drugih međunarodnih organizacija, pre svega Organizacije Ujedinjenih nacija i Saveta Evrope (Woschke et al., 2017). Sva ova pravila formiraju pravni okvir za borbu protiv visokotehnološkog kriminala. U tom smislu, za potrebe pisanja ovog rada analizirani su sledeći tekstovi:

- Komunike o stvaranju bezbednijeg informacionog društva poboljšanjem bezbednosti informacione infrastrukture i borbom protiv kompjuterskog kriminala, (COM (2000) 890 final)
- Okvirna odluka o borbi protiv prevare i fasifikovanja bezgotovinskih sredstava plaćanja, 2001/413/JHA
- Saopštenje o bezbednosti mreže i informacija: Predlog pristupa politici EU (COM (2001)298 final)
- Komunikacija o strategiji za bezbedno informaciono društvo (COM (2006)251 final)
- Komunikacija o borbi protiv neželjene pošte, špijunskog softvera i zlonamernog softvera (COM (2006)688 final)
- Uredba EU/460/2004 o stvaranju Evropske agencije za bezbednost mreža i informacija (ENISA)
- Okvirna odluka EU 2005/222/JHA o napadima na informacione sisteme,
- Direktiva 2002/58/EZ o koja se odnosi na obradu ličnih podataka i zaštitu privatnosti u sektoru elektronskih komunikacija,
- Odluka 2001/413/JHA o borbi protiv prevare i falsifikovanja bezgotovinskih sredstava plaćanja,
- Okvirna odluka EU 2004/68/JHA o seksualnoj eksploataciji dece i dečijoj pornografiji u vezi sa dečjom pornografijom objavljenom korišćenjem informacionih sistema
- Okvirna odluka EU 2008/913/JHA Odluka o borbi protiv rasizma i ksenofobije,

- Direktiva 2006/24/EZ o zadržavanju podataka u vezi sa pružanjem javnih elektronskih komunikacionih usluga,
- Okvirna odluka 2005/222/JHA o napadima na informacione sisteme,
- Evropska bezbednosna strategija “Evropska unutrašnja strategija bezbednosti u akciji: pet koraka ka bezbednijoj Evropi“,
- Direktiva 2013/40/EU o napadima na informacione sisteme,
- Evropska bezbednosna strategija „Bezbednij Evropa u boljem svetu“
- Predlog Uredbe za obezbeđivanje pristupa i čuvanja dokaza COM(2018) 225 final- 2018/0108(COD) i
- Predlog Direktive o imenovanju pravnih zastupnika COM/2018/226 final - 2018/0107 (COD),
- Direktiva EU/019/713 o o borbi protiv prevare i fasifikovanja bezgotovinskih sredstava plaćanja
- Uredba EU/2019/881 o ENISA (Evropskoj Agenciji za sajber bezebdnost**)** i o informacionim i komunikacionim tehnologijama sertifikacije sajber bezbednosti i izmeni Uredbe EU/526/2013.

Nakon utvrđivanja polaznih osnova, pristupljeno je klasifikaciji podataka prema prirodi ili svojstvima. Sinteza prikupljenih znanja i iznošenje rezultata istraživanja dati su u fomi zaključka da Unija, u skladu sa svojim ovlašćenjima, radi na stvaranju koherentnog pravnog okvira koji obavezuje na delovanje različite aktere.

Rezultati rada sa diskusijom

Razvoj informacionog društva i novih tehnologija doprineli su konkurentnosti, privrednom rastu i lakšem zapošljavanju unutar Unije, ali su i izložili pravna i fizička lica riziku od sajber napada. I, dok su Savet Evrope i Ujedinjene nacije ubrzano radili na definisanju visokotehnološkog kriminala i izradi metodologije za borbu protiv njega, Evropska unija je nije pokazivala nikakvo interesovanje za ovu oblast, kao da je čekala da vidi ishod aktivnosti koje su se dešavale pod okriljem pomenute dve organizacije (Savić et al., 2021). Tek, naknadno, ona počinje da usvaja legislativu koja za temu ima borbu protiv visokotehnološkog kriminala. Vremenom, rad EU na uređenju okvira za bezbedno korišćenje računara i virtuelnog prostora postaje sve značajniji jer je siguran internet prostor od ključnog značaja za funkcionisanje i razvoj unutrašnjeg tržišta (De Hert et al, 2006). Osnov za to nalazi se u članu 16. Ugovora o formiranju EU (UFEU), poznatom još kao Lisabonski ugovor, koji uvodi poseban pravni osnov za donošenje pravila koja se odnose na zaštitu pojedinaca u pogledu obrade ličnih podataka od strane institucija Unije, od strane država članica kada obavljaju aktivnosti koje spadaju u delokrug prava Unije, i pravila koja se odnose na slobodno kretanje takvih podataka. Pošto Unija ima pre svega političko-ekonomski karakter, njene osnovne oblasti delovanja su saradnja policijskih i pravosudnih tela u toj borbi i razvoj međunarodne saradnje, ali i usvajanje domaćih pravnih normi u državama članicama koje će stvoriti adekvatne i efikasne pravne instrumente za suprotstavljanje sajber kriminalu, koje će biti primenjive, racionalne, efikasne i pravične (Bejatović, 2012).

Prvi dokument usvojen 2001. godine pod nazivom „Komunike o stvaranju bezbednijeg informacionog društva poboljšanjem bezbednosti informacione infrastrukture i borbom protiv kompjuterskog kriminala“ predlaže saradnju u mnogim oblastima, a posebno izmenu zakonodavstva kojim bi se obuhvatila dela visokotehnološkog kriminala i usaglasila kaznena politika članica u pogledu tih dela, kao i međusobno priznanje izrečenih presuda. Ovo je bio važan, prvi korak, jer do tada mnogim zemljama krivična dela vezana za visokotehnološki kriminal nisu postojala (Harris & Patten, 2014). Naveden je i značaj saradnje svih zainteresovanih u prikupljanju i očuvanju dokaza jer to nije pitanje koje se isključivo tiče pravosudnih organa, već i privrede i pojedinaca. Ovako postavljen komunike doveo je do pokretanja niza aktivnosti i usvajanja novih dokumenata, među kojim je prvi bila Okvirna odluka o borbi protiv prevare i fasifikovanja bezgotovinskih sredstava plaćanja kojom su se zaštitila sva plaćanja unutar Unije.

Agencija EU za saradnju pravosudnih institucija država članica u krivičnim stvarima (EUROJUST) osnovana je radi borbe protiv prekograničnog kriminala i organizovanih kriminalnih grupa. U sklopu mandat EUROJUST osnovana je jedinica za saradnju između tužilaštava za borbu protiv različitih oblika kriminala među kojim je bio i sajber kriminal. Postignut je dogovor o izdavanju Evropskog naloga za hapšenje (EAW). Mehanizam izdavanja i reagovanja po evropskom nalogu za hapšenje jedan je od od najznačajnih instrumenata koji evropsku pravosudnu saradnju ubrzava i pospešuje. Među krivičnim delima za koja je moguće izdati EAW, navedeni su sajber kriminal, prevare tokom bezgotovinskog plaćanja i falsifikovanje (Wennerström, 2010).

Saopštenje o bezbednosti mreže i informacija (COM (2001)298 final) prvi je formulisani predlog za politiku EU. Politika sajber bezbednosti je od tada razvijena kroz niz akcija, kojima se predstavlja strategiji za bezbedno informaciono društvo, bori protiv neželjene pošte, špijunskog softvera i zlonamernog softvera i koji dovode do stvaranja Evropske agencije za sigurnost na mreži (ENISA) 2004. godine. Pored konkretnih rešenja koja su ponuđena za uočene probleme, značaj ovih aktivnosti je bio u podizanju svesti o značaju problema sigurnosti na internetu, saradnji i odgovornijem korišćenju informacionih tehnologija. Komunikacije su bile osnov za usvajanje novih dokumenata kojima se nastalo predupprediti izvršenje dela ili sprečiti nastajanje značajnih posledica.

Okvirna odluka EU 2005/222/JHA o napadima na informacione sisteme od 24. februara 2005. godine kao osnovni cilj postavlja unapređenje saradnje između pravosudnih i drugih nadležnih organa, uključujući policiju i druge specijalizovane službe za provođenje zakona, kroz približavanje nacionalnih pravila krivičnog prava u oblasti napada na informacione sisteme. Odluka je predvidela rok od dve godine za svoju implementaciju, ističući time hitnost u postupanju nadležnih organa članica da bi unapredile saradnju i počele da razmenjuju sve relevantne informacije i uspostavljaju operativne kontaktne tačke koje rade bez prestanka. Predstavlja pokušaj prevazilaženja značajnih praznina i razlika u nacionalnim zakonima, koje su otežavale policijsku i pravosudnu saradnju u borbi protiv organizovanog kriminala i terorizma. Odluka sledi pristup koji ima Konvencija Saveta Evrope, i zahteva od država članica EU da kriminalizuju namerni, nezakonit pristup informacionim sistemima, nezakonito mešanje u sistem i nezakonito preuzimanje podataka. Takva dela moraju biti kažnjena delotvornim, srazmernim i odvraćajućim krivičnim kaznama, a krivično delo u kontekstu kriminalne organizacije, koje prouzrokuje značajan gubitak ili utiče na bitne interese, se mora smatrati otežavajućom okolnosti.

EU se prvi put pozabavila neželjenom e-poštom u svojoj Direktivi 2002/58/EZ o privatnosti i elektronskim komunikacijama koja se odnosi na obradu ličnih podataka i zaštitu privatnosti u sektoru elektronskih komunikacija, navodeći da jedinstveno tržište zahteva usklađen pristup u ovoj oblasti jer obim neželjene pošte može izazvati poteškoće za elektronske komunikacione mreže i opremu. Pri tome nije relevantno da li se pretplatnicima veb-sajtova ili elektronskih oglasnih tabli narušavanje privatnosti neželjenom komunikacijom u svrhe direktnog marketinga, vrši putem sredstava automatizovanih mašina za pozivanje, faksova i e-pošte, ili SMS poruka. Paralelno sa zaštitom podataka i borbom protiv prevare i falsifikovanja bezgotovinskih sredstava plaćanja, Evropska unija se bori protiv seksualne eksploatacije dece i dečije pornografije objavljene korišćenjem informacionih sistema i protiv bilo kog oblika rasizma i ksenofobije.

Usledilo je usvajanje nekoliko preporuka članicama u različitim formama, od kojih je najznačajnija bila Direktiva 2006/24/EZ o zadržavanju podataka u vezi sa pružanjem javnih elektronskih komunikacionih usluga i izmeni Direktive 2002/58/EZ, što je bio važan korak ka uspostavljanju harmonizovanog sistema za prikupljanje i skladištenje podatke o saobraćaju u EU, i Okvirna odluka 2005/222/JHA o napadima na informacione sisteme. Direktiva je usvojena na osnovu zaključaka Saveta za pravosuđe i unutrašnje poslove od 19. decembra 2002. godine, u kojima je posebno istaknuto da, zbog značajnog rasta mogućnosti koje pružaju elektronske komunikacije, podaci koji se odnose na korišćenje elektronskih komunikacija su dragoceno sredstvo u prevenciji, istrazi, otkrivanju i krivičnom gonjenju krivičnih dela, posebno organizovanog kriminala. Okvirna odluka, s druge strane, bila je pokušaj Evropske unije da postigne minimalni nivo približavanja u pogledu tri kompjuterska krivična dela (nezakonit pristup informacionim sistemima, nezakonito ometanje sistema, nezakonito ometanje podataka), čije se definicije u velikoj meri zasnivaju na onim iz Konvencije Saveta Evrope o sajber kriminalu. Međutim, iznenađujuće je da Okvirna odluka nije dostigla viši nivo približavanja nego što je postigla Konvencija Saveta Evrope u pogledu primenljivih sankcija (Branicki, 2018). Član 6. Okvirne odluke predviđa niz „minimalnih-maksimalnih“ sankcija, koje za nezakonito ometanje sistema i nezakonito ometanje podataka moraju biti između 1 i 3 godine zatvora. Od država članica je zatraženo da implementiraju ove odredbe do kraja 2007. godine. Uprkos različitim dokumentima i pokušajima stvaranja koherentnog sistema koji bi olakšao članicama povezivanje, saradnju i usglašavanje aktivnosti u zaštiti pojedinaca, kompanija i institutcija od sajber napada, značajniji rezultati su izostali zbog strukture i organizacije Evropske zajednice. Usvajanjem Ugovora o funkcionisanju Evropke unije (Lisabonski ugovor - UFEU), Uniji su data nova ovlašćenja i mogućnosti za delovanje na polju unutrašnje bezbednosti. Odmah po stupanju na snagu Lisabonskog ugovora usvojeni su Stokholmski program 2009. godine i Strategija unutrašnje bezbednosti početkom 2010. godine (Nikodinovska-Stefanovska, Đurovski, 2012). Krajem 2010. godine, Evropska komisija je u saradnji sa Evropskim parlamentom i Savetom Evropske unije izradila dokument pod nazivom "Evropska unutrašnja strategija bezbednosti u akciji: pet koraka ka bezbednijoj Evropi“.

Najambiciozniji instrument EU usvojen u tom periodu je Direktiva o napadima na informacione sisteme (2013/40/EU) od 12. avgusta 2013. godine kojom se potencira bezbednosti mreža i informacija (NIS) i uvodi obaveza izveštavanja o incidentima za privatni sektor (uključujući operatere osnovnih usluga i digitalnih usluga). Direktiva propisuje mere za osiguranje visokog zajedničkog nivoa mrežne i informacione bezbednosti širom Unije, kojim se od zemalja članica zahteva izrada nacionalne strategije za mrežnu i informacionu bezbednost (NIS), kao i kooperacioni plan kojima se omogućava sprovođenje NIS. Članice su u obavezi da formiraju stručne nacionalne timove, pre svega tim nadležan za kompjuterske incidente (Computer Emergency Response Team – CERT) koji po uspostavljanju sarađuju sa policijskim agencijama na prevenciji, otkrivanju i odgovoru na sajber napade, ali i zadatkom da razviju nacionalne planove za nepredviđene situacije. Za institucije EU, 2012. godine, uspostavljen je CERT-EU. Razvija se Evropski sistem za razmenu informacija i upozorenja (European information sharing and alert system - EISAS) kao mreža kontakata među članicama i drugim relevantnim telima. U državama članicama formiraju se Nacionalni kompetentni autoriteti, kao najznačajnije domaće institucije sa zadatkom da prate primenu Direktive na nacionalnom nivou i sarađuju sa istim telima drugih država članica, bezbednosnim službama i telima za zaštitu podataka, kao i da postupaju po primljenim obaveštenjima o incidentima koje im upute javna administracija i javni operateri telekomunikacionih i informacionih usluga. Pored osnovna dva tela, svaka država članica može da formira: telo za informacionu bezbednost (IAA), telo za TEMPEST (TA), telo za odobravanje kriptografskih rešenja (CAA) i telo za distribuciju kriptografskih materijala (CDA).

Strategija nacionalne bezbednosti predstavlja opšte programsko stanovište jedne države u oblasti njene bezbednosti (Nedeljković, Forca, 2018). EU je usvojila Evropsku strategiju bezbednosti „Bezbednija Evropa u boljem svetu“ (A safer Europe in a better world, European security strategy) 2013. godine sa ciljem jačanja sajber bezbednosti javne administracije i kritične infrastrukture u kojoj ističe potrebu za razvitkom strateške kulture radi rane i brze intervencije u situacijama kada je bezbednost na bilo koji način ugrožena. Strategija ima tri poglavlja: analizu bezbednosnog okruženja, u kojem su predstavljeni globalni izazovi i ključne pretnje; definisanje strateških ciljeva i procena političkih implikacija za Evropu i usmerena na borbu protiv visokotehnološkog kriminala kroz fokusiranje na partnerstvo sa privredom i izgradnju kapaciteta unutar država članica za suprotstavljanje sajber napadima (Carrapico, Barinha, 2018). U okviru postojećih struktura EUROPOL, Unija je 2013. godine, osnovala Kriminalistički centar za visoke tehnologije (E/C3), putem kog države članice i institutcije Unije izgrađuju i unapređuju operativne i analitičke kapaciteta za sprovođenje istraga i saradnju sa međunarodnim partnerima. Centar sarađuje sa Evropskom agencijom za bezbednost mreža i informacija (European Network and Information Security Agency - ENISA) kao i mrežom nacionalnih timova za računarske incidente (CERTs). Evropska agencija za mrežnu i informacionu bezbednost (ENISA) formirana je 2004. godine Uredbom Evropske komisije i Saveta broj EZ/460/2004 sa ograničenim mandatom koji se od tog dana produžavao. U aprilu 2019. godine doneta je nova Uredba kojom je ENISA preimenovana u Evropsku agenciju za sajber bezbednost i data su joj nova ovlašćenja i dodata nova tela. Sedište Agencije je u Atini, ima status pravnog lica, a finansira se od sredstava iz budžeta Evropske unije, sredstava trećih zemalja koje učestvuju u radu Agencije, kao i donacija država članica u novcu ili naturi. Prvobitni zadatak ENISA da vrši poslove radi uspostavljanja visokog nivoa bezbednosti mreža i podataka u Evropskoj uniji, podizanja svesti o informacionoj bezbednosti i razvoja i promovisanja kulture bezbednosti mreža i podataka za dobrobit građana, potrošača, preduzeća i organa javne vlasti Evropske unije proširen je pogledu sertifikacije sajber bezbednosti. Od 2019. godine postoji i stalno telo koje čine nacionalni oficiri za vezu, a ENISA je odgovrna za šemu sertifikacije za sajber bezbednost za proizvode, usluge i procese za podršku jedinstvenom digitalnom tržištu.

Savet Evropske unije, u junu 2017. godine, odobrio je Set alata za sajber diplomatiju sa krajnjim ciljem da ojača aktivnosti EU i potencira koordinisan odgovor u slučaju sajber napada protiv evropskih ciljeva. Najvažniji akteri u ovoj oblasti, u skladu sa tim setom su: Evropska agencija za bezbednost mreža i informacija (ENISA), Evropska policijska kancelarija (EUROPOL) uključujući Evropski centar za sajber kriminal (E/C3) i Evropska odbrambena agencija (EDA). Evropska komisija, izvršno telo EU, uključena je u formulisanje politike sajber bezbednosti Unije, prioriteta i ciljeva preko Generalnog direktorata za unutrašnje poslove (DG Home) koji je odgovoran za saradnju policije i krivičnog pravosuđa i nadgleda aktivnosti Evropola, dok je njegov deo DG Connect zadužen za zaštitu kritične infrastrukture i nadgleda aktivnosti ENISA. EDA je zadužena za dalji razvoj sajber sposobnosti EU zajedno sa Vojnim štabom EU (EUMS). Jedinica za pravosudnu saradnju (EUROJUST) ima ulogu u borbi protiv sajber-kriminala olakšavajući saradnju među tužiocima. Dvogodišnji projekat COURAGE (Cibercrime and Ciberterrorism European Research Agenda) iz Sedmog okvirnog programa EU isporučio je sveobuhvatnu agendu istraživanja i usklađenu mapu puta na osnovu saradnje sa 17 organizacija iz 12 evropskih zemalja na terenu. Konačni rezultati projekta objavljeni u maju 2016. godine identifikovali su nedostajuća rešenja za bolju primenu postojećih pravila i preporučili njihovu korekciju (Jerman-Blažič et al, 2016).

Zbog potrebe pvezivanja Unije sa drugim akterima u borbi protiv visokotehnološkog kriminala Evropska komisija je 2018. godine predstavila osnove za dva seta pregovora, sa Sjedinjenim Državama (SAD) i za Drugi dodatni protokol uz „Budimpeštansku“ konvenciju Saveta Evrope o sajber kriminalu. Oba dokumenta predviđaju snažne mere zaštite podataka i privatnosti, a tiču se obezbeđenja prekograničnog pristupa elektronskim dokazima u krivičnim istragama. U pregovorima sa SAD predlaže se uvođenje obavezujućeg evropskog naloga za dostavljanje i evropskog naloga za čuvanje dokaza.[11] Oba naloga mora izdati ili overiti pravosudno telo države članice. Može se izdati nalog kojim se traži čuvanje ili dostavljanje podataka koje pohranjuje pružalac usluga koji se nalazi u drugoj državi, a koji su potrebni kao dokaz u kriminalnim istragama ili postupcima. Drugim aktom, uvodi se obaveza da pružaoci usluga imenuju pravnog zastupnika u Uniji koji će osigurati prijem, poštovanje i izvršavanje odluka kako bi nadležna nacionalna tela mogla prikupiti dokaze u krivičnim postupcima.[12] Smanjenjem prepreka koje proizlazi iz toga osiguralo bi se bolje funkcioniranje unutrašnjeg tržišta na način koji je dosledan s razvojem zajedničkog područja slobode, sigurnosti i pravde.

Značajan iskorak u borbi protiv sajber kriminala je Direktiva 2019/713/EU o prevarama pri bezgotovinskom plaćanju, kojom se ažurira pravni okvir, uklanjaju prepreke za operativnu saradnju i povećava prevencija i pomoć žrtvama, kako bi radnje za sprovođenje zakona protiv prevara i falsifikovanja bezgotovinskih sredstava plaćanja bile efikasnije. Poslednji u nizu akata koji su vezani za sigurnost na internetu je Privremeni propis za regulisanje obrade ličnih i drugih podataka sa ciljem borbe protiv seksualne zloupotrebe dece od 10. septembra 2020. godine nastao na osnovu Direktive 2002/58/EZ.

Republika Srbija usvojila je Zakon o organizaciji i nadležnosti državnih organa za borbu protiv visokotehnološkog kriminala (VTK Zakon) 2005. godine, kojim je

[11] Predlog je formulisan u dokumentu COM(2018)225 final - 2018/0108(COD)
[12] Predlog je formulisan u dokumentu COM(2018)226 final - 2018/0107 (COD)

uspostavljen institucionalni okvir za borbu protiv sajber kriminala jer je Zakon predvideo formiranje specijalizovane jedinice MUP, kao i posebnih sudskih i tužilačkih tela za borbu protiv visokotehnološkog kriminala, Posebno tužilaštvo za visokotehnološki kriminal kao deo Višeg javnog tužilaštva u Beogradu, Viši sud kao prvostepeni sud, i Apelacioni sud u Beogradu kao drugostepeni sudski organ. Zakon je donet posle usvajanja Budimpeštanske konvencije i Dodatnog protokola bio je usklađen sa njima, čime je počela primena međunarodnih standarda važnih za ovu oblast. Krivičnim zakonik Republike Srbije usvojen 2005 godine, u pravni sistem uvodi kompjuterska krivična dela. Narodna skupština Republike Srbije početkom 2009. godine posebnim zakonima ratifikovala Budipeštansku konvenciju i Dodatni protokol, ali i usvojila nove i dopunila postojeće zakonske i podzakonske akte od značaja. U skrining izveštaju za Poglavlje 24 „Pravda, sloboda, bezbednost“ koji je urađen 2014. godine nalaz Evropske komisije je bio da se Srbija nalazi među zemljama u kojim je rizik od sajber napada veći zbog čega je neophodno nastaviti rad na osposobljavanju nadležnih tela za porbu protiv tih napada, ali i na podizanju svesti korisnika o rizicima kojim su izloženi (Krivokapić, Petrovski, 2016).

Zakonom o elektronskim komunikacijama prvi put su uređuni uslovi i način za obavljanje delatnosti u oblasti elektronskih komunikacija, nadležnosti državnih organa, kao i zaštitu prava korisnika i pretplatnika, bezbednost i integritet elektronskih komunikacionih mreža i usluga, tajnost elektronskih komunikacija, zakonito presretanje i zadržavanje podataka, kao i druga pitanja od značaja za funkcionisanje i razvoj elektronskih komunikacija u Republici Srbiji. Zakon je usvojen sa namerom da se zaštiti privatnost korisnika od nedozvoljenog pristupa njihovim digitalnim zapisima i podacima sa njihovih profila (Darijević, 2021).

Pored zakonskih i podzakonskuih akata, usvojena je Strategija razvoja informacionog društva 2010 - 2020. godine i urađena procena pretnje od teškog i organizovanog kriminala u Srbiji (Serious and Organised Crime Threat Assessment - SOCTA) 2015. godine. Procena je strateški dokument koji razmatra različite oblike teškog i organizovanog kriminala, uključujući i sajber kriminal, koji daje osnovu za operativni rad policija u skladu sa postojećim trendovima (Krivokapić, Petrovski, 2016; Đukić, 2018).

Zaključak

Informaciona bezbednost je definisana kao skup mera koje omogućavaju da podaci kojima se rukuje putem kompjuterskih sistema budu zaštićeni od neovlašćenog pristupa, kao i da se zaštiti integritet, raspoloživost, autentičnost i neporecivost tih podataka, da bi taj sistem funkcionisao kako je predviđeno, kada je predviđeno i pod kontrolom ovlašćenih lica. Pošto EU, za razliku od nekih drugih organizacija, nema kapacitet da pruži direktnu pomoć članicama koje su pod sajber napadom, ona deluje kao posrednik koji pomaže u razmeni znanja i iskustva i podržava usvajanje najbolje prakse za pojedinačne probleme. Uloga koju EU ima u pogledu obuke, saradnje i povezivanja članica u borbi protiv visokotehnološkog kriminala, kao i privatno-javno partnerstvo koje se pokazuje neizostavnim u uspešnom otkrivanju, prikupljanju i čuvanju dokaza, koje je u Uniji osnovni način delovanja povećava značaj EU u borbi protiv sajber kriminala. Oslanjanjući se na ovlašćenja koja je dobila Lisabonskim ugovorom (UFEU) Unija sistematično stvara jedinstven pravni okvir kojim se u potpunosti identifikuju odgovorni za suprotstavljanje sajber napadima, usaglašava i dopunjuje materijalno i procesno krivično pravo članica, i tako pojačava sistem unutrašnje bezbednosti Unije kao celine.

Srbija je potpisala Konvenciju Saveta Evrope o sajber kriminalu i u velikoj meri je uskladila svoje zakonodavstvo sa Direktivom o napadima na informacione sisteme iz 2013. godine. Potrebne su izmene i dopune zakona, posebno u delu koji se odnosi na obezbeđenje i prikupljanje dokaza i na sankcije, kako bi u potpunosti zakonodavstvo bilo usklađeno sa regulativom EU. U Izveštaju o napretku Srbije u 2014 i 2015, Komisija EU je istakla da je neophodno da se dodatno uskladi pravni okvir koji se odnosi na dečju pornografiju. Jedan od zahteva je bilo i usvajanje strategije o visokotehnološkom kriminalu. Vlada Srbije je Akcionim planom za Poglavlje 24 obezbedila mere kojim će uskladiti svoje zakone sa zakonodavstvom i standardima Evropske unije za borbu protiv visokotehnološkog kriminala kroz analizu postojećeg zakonskog okvira, izradu nacrta zakona i drugih propisa na osnovu analize u cilju poboljšanja organizacionih, ljudskih i tehničkih kapaciteta organa zaduženih za borbu protiv visokotehnološkog kriminala, a pre svega obuka zaposlenih u Posebnom javnom tužilaštvu i policijskoj jedinici za visokotehnološki kriminal. Akcionim planom za Poglavlje 24 predviđena je i dodatna specijalizovana obuka u cilju jačanja kapaciteta državnih organa odgovornih za borbu protiv visokotehnološkog kriminala. Unutar Odeljenja za visokotehnološki kriminal MUP uspostavljene su specijalizovane jedinice za istrage zloupotreba kreditnih kartica, internet trgovine i internet bankarstva i jedinica za suzbijanje ilegalnog i štetnog sadržaja na internetu što bi trebalo doprineti kvalitetnijem vođenju istraga i prikupljanju dokaza. Navedenim izmenama zakonodavstva i osnivanjem nacionalnih tela, Srbija je ispunila minimum uslova predviđen pravnim okvirom Unije za suprotstavljanje sajber napadima.

Pored stručnih tela koja se bave otkrivanjem i gonjenjem učinilaca krivičnih dela, neophodna je saradnja između privatnog i javnog sektora, organizacija civilnog društva koja se bave visokotehnološkom bezbednosti i borbom protiv visokotehnološkog kriminala i akademske zajednice. Mnoge države su izuzetno spore i neadekvatno obučene za odgovor na ove pretnje, što se može popraviti boljom međunarodnom razmenom iskustava i dosadašnje prakse u polju bezbednosti u sajber prostoru, a što je olakšano usvajanjem velikog broja multilateralnih sporazuma.

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LEGAL ASPECTS OF FIGHTING CYBER CRIME IN THE EUROPEAN UNION

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Abstract

The development of information technologies and the Internet and the commission of criminal acts in this new environment leads to the emergence of transnational, high-tech crime. Competent bodies for the fight against crime are hindered in achieving results by the traditional division into national jurisdictions, while there are no such restrictions for perpetrators. Cyber activities cause great damage and consequences to natural or legal persons, illegally appropriate financial resources and protected data. The specificities of high-tech crime require the specialization of state authorities because in the fight against crime, individual rights, privacy and freedoms of individuals must not be jeopardized. The aim of this paper is to show how the legislation of the European Union (EU) and the activities of its institutions improve the prevention, investigation and prosecution of perpetrators and build capacities in the judiciary. Harmonization of domestic law with EU law in the field of combating cybercrime is provided for in Chapter 24 of the "Justice, Freedom, Security" negotiations. In answering the question of what are the legal aspects of combating cybercrime in the EU, historical-comparative, content analysis and deductive methods were used.

Key words*: European law, cybercrime, personal data.*

JEL: *K42, K49.*

Introduction

High-tech crime, also known as e-crime, cybernetic or cybercrime, includes a set of criminal acts that involve the use of the Internet, computers or some other electronic devices, and various forms of criminal acts can be subsumed under this term. "In a broader sense, it is a criminal activity in which a computer or a network is the source, means, object, goal or space of a criminal act" (Romi ć et al, 2012). Certain forms of e-crime are directly related to computers, such as the spread of dangerous electronic viruses or the launch of DoS attacks (*Denial of Service Attacks)* that disable the computer system so that it refuses to perform any

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service of the authorized user, when the computer becomes the object attacks, while in other forms of e-crime that include fraud, hate speech, crimes against intellectual property, as well as the production, possession and distribution of disputed material, devices and the Internet are a means of attack. In this type of crime, in addition to the object and the means of attack, the place of execution is also specific, which is a parallel, virtual space created by connecting several computers in networks suitable for searching for information or for electronic business, which we call cyber space, where the word is cyber (syber). of Greek origin and means invisible, inconspicuous and unlimited management. It is this almost invisible space and the absence of its limitations that complicates the fight against criminal activities that are undertaken (Bjelajac, Filipović, 2021). These specificities affect the difficult legal regulation of the matter and the problem in prosecuting the perpetrators, because cybercrime most often exceeds the borders of one country, that is, the valid territorial legislation. Perpetrators of this type of illegal activities benefit from weak protection and generally low awareness of users on the networks, but also difficulties in detecting the commission of the act and in gathering evidence. For this reason, in recent decades, the intention of the largest number of countries to undertake joint actions through various bilateral and multilateral agreements to jointly oppose cybercrime is noticeable. The regulation of cyber security at the national and international level contributes to the more efficient work of competent bodies in the detection of committed acts and perpetrators, but also to preventive action and prevention of incriminated acts. In order for states to adequately oppose this threat, it is necessary to connect them and strengthen cooperation and exchange of information, but also to strengthen cooperation between different sectors within the state. At the same time, it is important to protect the rights of individuals to privacy (Perović, 2018). Only after that can one approach the discovery of perpetrators of criminal acts and the imposition of adequate sanctions for those responsible, regardless of whether they are natural or legal persons.

The first document that comprehensively attempted to solve the problem of cybercrime was the Convention on Cybercrime (ETS 185), adopted on November 23, 2001 by the Council of Europe. The adoption of the Convention was preceded by the adoption of a number of recommendations warning the members of new threats and challenges and demanding their joint action. The Convention has prescribed criminal offenses directed against the confidentiality, integrity and availability of computer data and systems, providing precise definitions of criminal offences, which enable the conduct of criminal proceedings and eliminate the danger of double prosecution in several countries. The first steps in that procedure are the discovery of the act and the collection and securing of evidence (Bada & Nurse, 2019). This sets the framework for individual national legislations to more precisely determine the features and characteristics of individual criminal acts related to computers and cyberspace, their basic, lighter or more serious forms, and to prescribe criminal sanctions for their perpetrators, regardless of whether they are physical or legal entities. Serbia has signed the Council of Europe Convention on Cybercrime. Along with the Convention, in Strasbourg on January 28, 2005, the Supplementary Protocol on the prohibition of acts of a racist and xenophobic nature committed through computer systems was adopted. Its importance is also reflected in the fact that countries that are not in Europe joined it, such as the USA, Canada, Japan, the Dominican Republic, Panama, Mauritius, Australia, Israel, Sri Lanka and the Republic of South Africa (Bejatović, 2012).

The United Nations also worked to connect countries. The various bodies of this organization, in accordance with their powers, acted in the direction of raising awareness and connecting members in opposing the threats posed by high-tech crime. Resolution no. 55/2 of the UN General Assembly of September 18, 2000, also known as the Millennium Declaration, lists the safe and accessible sharing of new technologies among the goals for the coming millennium. In addition, the General Assembly adopted a number of resolutions related to the fight against misuse of information technologies and international Internet security.[16]

the task of passing national legislation in the field of high-tech crime and cyber security to the International Telecommunication Union (ITU), its agency for the issue of information and communication technologies (ICT). In May 2007, the ITU presented a document called A Global Cybersecurity Agenda (GCA), which listed the main problem and recommendations for improving security (Newbury, 2017).

Many other organizations, such as N ATO, OSCD, OECD, ICANN, AU, ASEAN, OA, have dealt with solving the problems of high-tech crime and threats to modern society with their internal documents (Pernik, 2014).

The objectives of the work and the methodology used

The aim of the paper is to answer the question of what are the legal aspects of the fight against high-tech crime in the European Union (EU), because the fight against high-tech crime includes various areas, factors and aspects. In order to answer that question, it was necessary to define the basic terms, collect data through research, classify and analyze them. In that process, three basic questions arose:

1. What are the documents of the European Union that govern the legal aspects of the fight against high-tech crime?

[16]UN General Assembly Resolution A/res/55/63, January 22, 2001;
UN General Assembly Resolution A/res/56/121, January 23, 2002;
UN General Assembly Resolution A/63/385, 6 November 2008,
UN General Assembly Resolution A/63/385, 6 November 2008,
UN General Assembly Resolution A/65/201, 14 January 2010.

2. How is it arranged?
3. To what extent is the domestic legal system harmonized with the European one?

Scientific research is the initial step by which existing knowledge is verified and new knowledge is acquired, because the description of previous activities is the first step in which the initial state is completely, objectively and systematically determined, that is, the facts are established, while the analytical method was used to determine their mutual conditioning and reveal new facts, their relations or consequences. Content analysis implies research and consideration of a large number of legal sources, bearing in mind the various bodies of the Union and their powers to enact binding acts as well as documents which, although not binding, have significance for the creation of the policy of the Union and its members. In addition to acts adopted by its bodies, the European Union signs and accedes to international agreements that are adopted under the auspices of other international organizations, primarily the United Nations and the Council of Europe (Woschke et al., 2017). All these rules form the legal framework for the fight against high-tech crime. In this sense, for the purposes of writing this paper, the following texts were analyzed:

- Communiqué on creating a safer information society by improving the security of information infrastructure and combating computer crime, (COM (2000) 890 final)
- Framework Decision on combating fraud and counterfeiting of non-cash means of payment, 2001/413/JHA
- Communication on Network and Information Security: Proposal for an EU Policy Approach (COM (2001)298 final)
- Communication on a strategy for a secure information society (COM (2006)251 final)
- Communication on combating spam, spyware and malware (COM (2006)688 final)
- Regulation EU/460/2004 establishing the European Network and Information Security Agency (ENISA)
- EU Framework Decision 2005/222/JHA on attacks on information systems,
- Directive 2002/58/EC on the processing of personal data and protection of privacy in the electronic communications sector,
- Decision 2001/413/JHA on the fight against fraud and counterfeiting of non-cash means of payment,

- EU Framework Decision 2004/68/JHA on the sexual exploitation of children and child pornography in relation to child pornography published using information systems
- EU Framework Decision 2008/913/JHA Decision on the fight against racism and xenophobia,
- Directive 2006/24/EC on the retention of data in connection with the provision of public electronic communication services,
- Framework Decision 2005/222/JHA on attacks on information systems,
- European Security Strategy "The European Internal Security Strategy in Action: Five Steps to a Safer Europe",
- Directive 2013/40/EU on attacks on information systems,
- European Security Strategy "A Safer Europe in a Better World"
- Proposal for a Regulation on ensuring access to and preservation of evidence COM(2018) 225 final- 2018/0108(COD) and
- Proposal for the Directive on the appointment of legal representatives COM/2018/226 final - 2018/0107 (COD),
- Directive EU/ 019/713 about the fight against fraud and the facsification of non-cash means of payment
- Regulation EU/2019/881 on ENISA (European Agency for Cyber Security) and information and communication technologies on cyber security certification and amendments to Regulation EU/526/2013.

After determining the starting points, classification of data according to nature or properties was started. The synthesis of the collected knowledge and the presentation of the research results are given in the form of the conclusion that the Union, in accordance with its powers, is working to create a coherent legal framework that obliges various actors to act.

Results of work with discussion

The development of the information society and new technologies have contributed to competitiveness, economic growth and easier employment within the Union, but they have also exposed legal and natural persons to the risk of cyber attacks. And, while the Council of Europe and the United Nations worked rapidly to define high-tech crime and develop a methodology to combat it, the European Union did not show any interest in this area, as if it was waiting to see the outcome of the activities that took place under the auspices of the aforementioned two organizations (Savić et al., 2021). It is only later that it begins to adopt legislation that has as its theme the fight against high-tech crime. Over time, the work of the EU to regulate the framework for the safe use of computers and virtual space is becoming more and more important because a safe Internet space is of key importance for the functioning and development of the internal market (De Hert et al, 2006). The basis for this is found in Article 16 of the Treaty on the Formation of the EU (TFEU), also known as the Treaty of Lisbon, which introduces a special legal basis for the adoption of rules related to the protection of individuals with regard to the processing of personal data by the institutions of the Union, by the states member states when performing activities that fall within the scope of Union law, and the rules relating to the free movement of such data. Since the Union has above all a political-economic character, its basic areas of action are the cooperation of police and judicial bodies in that fight and the development of international cooperation, but also the adoption of domestic legal norms in the member states that will create adequate and effective legal instruments for combating cybercrime, which will be applicable, rational, efficient and fair (Bejatović, 2012).

The first document adopted in 2001, entitled "Communiqué on the creation of a safer information society by improving the security of information infrastructure and combating computer crime", proposes cooperation in many areas, and in particular the amendment of the legislation, which would cover high-tech crimes and harmonize the criminal policy of the members regarding those actions, as well as mutual recognition of pronounced judgments. This was an important, first step, because until then in many countries crimes related to high-tech crime did not exist (Harris & Patten, 2014). The importance of the cooperation of all interested parties in the collection and preservation of evidence was also mentioned, because it is not an issue that only concerns the judicial authorities, but also the economy and individuals. The communiqué set in this way led to the initiation of a series of activities and the adoption of new documents, the first of which was the Framework Decision on the fight against fraud and the fasification of non-cash means of payment, which protected all payments within the Union.

The EU Agency for the Cooperation of Judicial Institutions of the Member States in Criminal Matters (EUROJUST) was established to fight against cross-border crime and organized criminal groups. As part of the mandate of EUROJUST, a unit for cooperation between prosecutor's offices was established to combat various forms of crime, including cybercrime. An agreement was reached on the issuance of the European Arrest Warrant (EAW). The mechanism for issuing and responding to the European arrest warrant is one of the most important instruments that accelerates and enhances European judicial cooperation. Among the crimes for which an EAW can be issued are cybercrime, fraud during non-cash payments and forgery (Wennerström, 2010).

The Communication on Network and Information Security (COM (2001)298 final) is the first formulated proposal for EU policy. Cybersecurity policy has since been developed through a series of actions, representing a strategy for a secure information society, combating spam, spyware and malware and leading to the creation of the European Network Security Agency (ENISA) in 2004. In addition to the concrete solutions that were offered for the observed problems, the importance of these activities was in raising awareness of the importance of Internet security problems, cooperation and more responsible use of information technologies. The communications were the basis for the adoption of new documents that were created to prevent the commission of the act or to prevent the occurrence of significant consequences.

EU Framework Decision 2005/222/JHA on attacks on information systems of February 24, 2005 sets as its main goal the improvement of cooperation between judicial and other competent authorities, including the police and other specialized law enforcement services, through the convergence of national rules of criminal law in areas of attacks on information systems. The decision provided for a deadline of two years for its implementation, thus highlighting the urgency in the actions of the competent authorities of the member states in order to improve cooperation and begin to exchange all relevant information and establish operational contact points that work non-stop. It represents an attempt to overcome significant gaps and differences in national laws, which hindered police and judicial cooperation in the fight against organized crime and terrorism. The decision follows the approach taken by the Council of Europe Convention, and requires EU member states to criminalize intentional, illegal access to information systems, illegal interference with the system and illegal downloading of data. Such acts must be punished by effective, proportionate and dissuasive criminal penalties, and a criminal offense in the context of a criminal organization, which causes significant loss or affects important interests, must be considered an aggravating circumstance.

The EU addressed spam for the first time in its Directive 2002/58/EC on privacy and electronic communications relating to the processing of personal data and the protection of privacy in the electronic communications sector, stating that the single market requires a harmonized approach in this area because the volume of spam mail can cause difficulties for electronic communication networks and equipment. In doing so, it is not relevant whether subscribers of websites or electronic bulletin boards are violated by unsolicited communication for direct marketing purposes, by means of automated calling machines, faxes and e-mails, or SMS messages. In parallel with data protection and the fight against fraud and counterfeiting of non-cash means of payment, the European Union fights against sexual exploitation of children and child pornography published using information systems and against any form of racism and xenophobia.

This was followed by the adoption of several recommendations to the members in different forms, the most significant of which was Directive 2006/24/EC on the retention of data in connection with the provision of public electronic communication services and amendments to Directive 2002/58/EC, which was an important step towards the establishment of a harmonized system for the collection and storage of traffic data in the EU, and Framework Decision 2005/222/JHA on attacks on information systems. The directive was adopted on the basis of the conclusions of the Council for Justice and Internal Affairs of December 19, 2002, in which it was particularly emphasized that, due to the significant growth of opportunities provided by electronic communications, data related to the use of electronic communications is a valuable tool in prevention, investigation, detection and prosecution of criminal acts, especially organized crime. The Framework Decision, on the other hand, was an attempt by the European Union to achieve a minimum level of convergence with regard to three computer crimes (illegal access to information systems, illegal interference of systems, illegal interference of data), the definitions of which are largely based on those of the Council Convention of Europe on cybercrime. However, it is surprising that the Framework Decision did not reach a higher level of convergence than the Council of Europe Convention in terms of applicable sanctions (Branicki, 2018). Article 6 of the Framework Decision foresees a series of "minimum-maximum" sanctions, which for illegal interference of the system and illegal interference of data must be between 1 and 3 years in prison. Member States were asked to implement these provisions by the end of 2007. Despite various documents and attempts to create a coherent system that would make it easier for members to connect, cooperate and harmonize activities in protecting individuals, companies and institutions from cyber attacks, significant results were absent due to the structure and organization of the European Community. With the adoption of the Treaty on the Functioning of the European Union (Lisbon Treaty - UFEU), the Union was given new powers and opportunities to act in the field of internal security. Immediately after the entry into force of the Lisbon Treaty, the Stockholm Program was adopted in 2009 and the Internal Security Strategy in early 2010 (Nikodinovska-Stefanovska, Đurovski, 2012). At the end of 2010, the European Commission, in cooperation with the European Parliament and the Council of the European Union, produced a document entitled "The European Internal Security Strategy in Action: Five Steps to a Safer Europe".

The most ambitious EU instrument adopted during that period is the Directive on attacks on information systems (2013/40/EU) of August 12, 2013, which strengthens network and information security (NIS) and introduces the obligation to report incidents for the private sector (including operators basic services and digital services). The directive prescribes measures to ensure a high common level of network and information security throughout the Union, which requires member states to develop a national strategy for network and information security (NIS), as well as a cooperation plan that enables the implementation of NIS. The members are obliged to form expert national teams, first of all a team responsible for computer incidents (Computer Emergency Response Team - CERT), which upon establishment cooperate with police agencies on the prevention, detection and response to cyber attacks, but also with the task of developing national plans for unforeseen situations. CERT-EU was established for EU institutions in 2012. The European information sharing and alert system (EISAS) is being developed as a network of contacts between members and other relevant bodies. In the member states, National Competent Authorities are formed, as the most important domestic institutions with the task of monitoring the implementation of the Directive at the national level and cooperating with the same bodies of other member states, security services and data protection bodies, as well as to act on received notifications of incidents that they are instructed by the public administration and public operators of telecommunication and information services. In addition to the two basic bodies, each member state can form: the Information Security Authority (IAA), the TEMPEST Authority (TA), the Cryptographic Solution Approval Authority (CAA) and the Cryptographic Material Distribution Authority (CDA).

The national security strategy represents the general programmatic standpoint of a state in the area of its security (Nedeljković, Forca, 2018). The EU adopted the European security strategy "A safer Europe in a better world" (A safer Europe in a better world, European security strategy) in 2013 with the aim of strengthening the cyber security of public administration and critical infrastructure, in which it emphasizes the need for the development of a strategic culture for early and quick interventions in situations where security is threatened in any way. The strategy has three chapters: analysis of the security environment, in which global challenges and key threats are presented; defining strategic goals and assessing political implications for Europe and aimed at fighting high-tech crime by focusing on partnership with the economy and building capacity within member states to counter cyber attacks (Carrapico, Barinha, 2018). In 2013, within the framework of the existing structures of EUROPOL, the Union established the Criminal Center for High Technologies (E/C3), through which member states and institutions of the Union build and improve operational and analytical capacities for conducting investigations and cooperation with international partners. The center cooperates with the European Network and Information Security Agency (ENISA) as well as the network of national teams for computer incidents (CERTs). The European Agency for Network and Information Security (ENISA) was established in 2004 by Regulation of the European Commission and the Council No. EC/460/2004 with a limited mandate that has been extended since that day. In April 2019, a new Regulation was adopted renaming ENISA to the European Cyber Security Agency and giving it new powers and adding new bodies. The headquarters of the Agency is in Athens, it has the status of a legal entity, and it is financed from funds from the European Union budget, funds from third countries that participate in the work of the Agency, as well as donations from member states in money or in kind. The original task of ENISA to carry out tasks for the purpose of establishing a high level of network and data security in the European Union, raising awareness of information security and developing and promoting a culture of network and data security for the benefit of citizens, consumers, businesses and public authorities of the European Union has been expanded in terms of cyber certification security. Since 2019, there is also a permanent body of National Liaison Officers, and ENISA is responsible for the cybersecurity certification scheme for products, services and processes to support the Digital Single Market.

The Council of the European Union, in June 2017, approved the Cyber Diplomacy Toolkit with the ultimate goal of strengthening EU activities and enhancing a coordinated response in case of cyber attacks against European targets. The most important actors in this area, according to that set, are: the European Network and Information Security Agency (ENISA), the European Police Office (EUROPOL) including the European Cybercrime Center (E/C3) and the European Defense Agency (EDA). The European Commission, the EU's executive body, is involved in the formulation of the Union's cyber security policy, priorities and objectives through the Directorate General for Home Affairs (DG Home) which is responsible for police and criminal justice cooperation and oversees the activities of Europol, while its part is in charge of DG Connect for the protection of critical infrastructure and supervises the activities of ENISA. The EDA is in charge of further developing the EU's cyber capabilities together with the EU Military Staff (EUMS). The Judicial Cooperation Unit (EUROJUST) has a role in the fight against cybercrime by facilitating cooperation between prosecutors. The two-year project COURAGE (Cybercrime and Cyberterrorism European Research Agenda) from the EU's Seventh Framework Program delivered a comprehensive research agenda and coordinated roadmap based on collaboration with 17 organizations from 12 European countries on the ground. The final results of the project published in May 2016 identified missing solutions for better application of existing rules and recommended their correction (Jerman-Blažič et al, 2016).

In 2018 the European Commission presented the basis for two sets of negotiations, with the United States (USA) and for the Second Additional Protocol to the "Budapest" Convention of the Council of Europe on cybercrime. Both documents provide for strong data protection and privacy measures, and concern the provision of cross-border access to electronic evidence in criminal investigations. In the negotiations with the USA, it is proposed to introduce a binding European production order and a European evidence preservation order.[17] Both orders must be issued or certified by a judicial authority of the Member State. An order may be issued to request the retention or production of data stored

[17] The proposal is formulated in document COM(2018)225 final - 2018/0108(COD)

by a service provider located in another country, which is required as evidence in criminal investigations or proceedings. The second act introduces the obligation for service providers to appoint a legal representative in the Union who will ensure the reception, compliance and execution of decisions so that competent national bodies can collect evidence in criminal proceedings. [18]The resulting reduction of obstacles would ensure better functioning of the internal market in a manner consistent with the development of the common area of freedom, security and justice.

A significant step forward in the fight against cybercrime is Directive 2019/713/EU on fraud in non-cash payments, which updates the legal framework, removes obstacles to operational cooperation and increases prevention and assistance to victims, in order to actions to enforce the law against fraud and forgery of non-cash means of payment were more effective. The last in a series of acts related to internet security is the Temporary Regulation for regulating the processing of personal and other data with the aim of combating sexual abuse of children from September 10, 2020, created on the basis of Directive 2002/58/ EC.

The Republic of Serbia adopted the Law on the Organization and Competence of State Authorities for the Fight against High-Tech Crime (VTK Law) in 2005, which established an institutional framework for the fight against cybercrime, as the Law provided for the formation of a specialized unit of the Ministry of Interior, as well as special judicial and prosecutorial bodies. for the fight against high-tech crime, the Special Prosecutor's Office for high-tech crime as part of the Higher Public Prosecutor's Office in Belgrade, the High Court as a first-instance court, and the Court of Appeal in Belgrade as a second-instance judicial body. The law was passed after the adoption of the Budapest Convention and the Additional Protocol was harmonized with them, which started the application of international standards important for this area. The Criminal Code of the Republic of Serbia, adopted in 2005, introduces computer crimes into the legal system. At the beginning of 2009, the National Assembly of the Republic of Serbia ratified the Budapest Convention and the Additional Protocol by means of special laws, but also adopted new and supplemented the existing legal and by-laws of importance. In the screening report for Chapter 24 "Justice, Freedom, Security" which was done in 2014, the European Commission found that Serbia is among the countries where the risk of cyber attacks is higher, which is why it is necessary to continue work on training competent bodies for combat against those attacks, but also on raising users' awareness of the risks they are exposed to (Krivokapić, Petrovski, 2016).

The Law on Electronic Communications regulates for the first time the conditions and manner of performing activities in the field of electronic communications, the competence of state authorities, as well as the protection of the rights of users and

[18] The proposal is formulated in document COM(2018)226 final - 2018/0107 (COD)

subscribers, the security and integrity of electronic communication networks and services, the secrecy of electronic communications, the lawful interception and retention of data, as well as other issues of importance for the functioning and development of electronic communications in the Republic of Serbia. The law was adopted with the intention of protecting users' privacy from unauthorized access to their digital records and data from their profiles (Darijević, 2021).

In addition to legal and by-laws, the Information Society Development Strategy 2010 - 2020 was adopted and the Serious and Organized Crime Threat Assessment (SOCTA) was carried out in 2015. The assessment is a strategic document that considers various forms of serious and organized crime, including cybercrime, which provides the basis for the operational work of the police in accordance with existing trends (Krivokapić, Petrovski, 2016; Đukić, 2018).

Conclusion

Information security is defined as a set of measures that enable data handled through computer systems to be protected from unauthorized access, as well as to protect the integrity, availability, authenticity and non-repudiation of that data, so that the system functions as intended, when intended. and under the control of authorized persons. Since the EU, unlike some other organizations, does not have the capacity to provide direct assistance to members under cyber attack, it acts as an intermediary to help share knowledge and experience and support the adoption of best practices for individual problems. The role that the EU has in terms of training, cooperation and connecting members in the fight against high-tech crime, as well as the private-public partnership that proves to be indispensable in the successful discovery, collection and preservation of evidence, which is the basic mode of action in the Union, increases the importance of the EU in the fight against cyber crime. Relying on the powers granted by the Treaty of Lisbon (TFEU), the Union systematically creates a unique legal framework that fully identifies those responsible for countering cyber attacks, harmonizes and complements the substantive and procedural criminal law of the members, and thus strengthens the internal security system of the Union as a whole.

Serbia has signed the Council of Europe Convention on Cybercrime and has largely harmonized its legislation with the 2013 Directive on Attacks on Information Systems. Amendments to the law are needed, especially in the part related to securing and collecting evidence and sanctions, so that the legislation is fully harmonized with EU regulations. In the Report on Serbia's progress in 2014 and 2015, the EU Commission pointed out that it is necessary to further harmonize the legal framework related to child pornography. One of the demands was the adoption of a strategy on high-tech crime. With the Action Plan for Chapter 24, the Government of Serbia has provided measures that will harmonize its laws with the legislation and standards of the European Union for the fight against high-tech crime through the analysis of the existing legal framework, the drafting of laws and other regulations based on the analysis in order to improve organizational, human and technical capacities authorities in charge of combating high-tech crime, and above all training of employees in the Special Public Prosecutor's Office and the police unit for high-tech crime. The action plan for Chapter 24 foresees additional specialized training in order to strengthen the capacities of state bodies responsible for the fight against high-tech crime. Within the High-tech Crime Department of the Ministry of Interior, specialized units for investigations of credit card abuse, internet commerce and internet banking and a unit for suppressing illegal and harmful content on the internet were established, which should contribute to better conducting investigations and gathering evidence. With the mentioned amendments to the legislation and the establishment of national bodies, Serbia has fulfilled the minimum conditions stipulated by the legal framework of the Union for combating cyber attacks.

In addition to expert bodies dealing with the detection and prosecution of perpetrators of criminal acts, cooperation between the private and public sectors, civil society organizations dealing with high-tech security and the fight against high-tech crime, and the academic community is necessary. Many countries are extremely slow and inadequately trained to respond to these threats, which can be remedied by better international exchange of experience and best practice in the field of cyber security, which is facilitated by the adoption of a large number of multilateral agreements.

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DIMENZIJE INTERNOG ZELENOG MARKETINGA, ZADOVOLJSTVO ZAPOSLENIH, I ORGANIZACIONA IDENTIFIKACIJA ZAPOSLENIH

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Apstrakt

Ispitivanje uticaja zelene orijentacije i drugih sličnih praksi u organizaciji na organizacionu identifikaciju zaposlenih postaje sve važnije. Istovremeno, interni zeleni marketing sve više privlači pažnju istraživača. Međutim, nedostaju studije u kojima je primarni cilj bio ispitivanje veze između internog zelenog marketinga, zadovoljstva zaposlenih u njegovom kontekstu, i organizacione identifikacije zaposlenih. Otuda je cilj ovog rada bio da se utvrdi da li postoji veza između svih dimenzija internog zelenog marketinga i organizacione identifikacije zaposlenih, kao i između zadovoljstva zaposlenih i organizacione identifikacije zaposlenih. Sprovedena je onlajn anketa među zaposlenima u različitim organizacijama u Republici Srbiji. Za proveru hipoteza korišćena je regresiona i korelaciona analiza. Dobijeni rezultati su pokazali statistički značajnu pozitivnu vezu između svake dimenzije internog zelenog marketinga i organizacione identifikacije zaposlenih, kao i između zadovoljstva zaposlenih i organizacione identifikacije. Za buduća istraživanja preporučuje se longitudinalna studija, testiranje odnosa između ovih varijabli na većem uzorku i testiranje na uzorku menadžera.

Ključne reči: *interni zeleni marketing, zadovoljstvo zaposlenih, organizaciona identifikacija*

JEL: *M31, M12*

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Uvod

Raste interesovanje među istraživačima za ispitivanje efekata zelenih (ekoloških) strategija ili aktivnosti na rezultate i zaposlenih i organizacije. Istovremeno, ispituje se uloga organizacione identifikacije u odnosu između ekološke orijentacije organizacije, i napora i učešća zaposlenih (Gabler et al., 2014). Utvrđeno je da zaposleni, koji su identifikovani s organizacijom, mogu doprineti njenom suočavanju sa zelenim izazovima iz okruženja (prilagođeno prema Chen, 2011). Shodno tome, organizacionu identifikaciju treba stalno poboljšavati.

Neki od efekata organizacione identifikacije na individualnom nivou su efekti na radno angažovanje i zadovoljstvo zaposlenih poslom (Karanika-Murray et al., 2015), organizacionu posvećenost (Hernández-Diaz et al., 2017), zadržavanje zaposlenih (Bharadwaj et al., 2021), ponašanje zaposlenih orijentisano na kupca (Ferdous, Polonsky, 2014). Osim toga, organizaciona identifikacija je jedan od načina da se zaposleni motivišu za postizanje boljih performansi (Bjerregaard et al., 2017; Miao et al., 2019; Wieseke et al., 2009). Stoga je važno da je zaposleni visoko identifikovan s njegovom/njenom organizacijom.

Prethodne empirijske studije su potvrdile da se organizaciona identifikacija zaposlenih može poboljšati internim marketingom (Bailey et al., 2016; Boukis et al., 2015; Ferdous, Polonsky, 2014; Hernández-Díaz et al., 2017; Wieseke et al., 2009), kao i zadovoljstvom zaposlenih (npr. Bailey et al., 2016). Međutim, nedostaju studije u kojima je primarni cilj bio ispitivanje veze između internog zelenog marketinga i organizacione identifikacije zaposlenih, za razliku od studija u kojima je primarni cilj bio ispitivanje veze između internog marketinga i organizacione identifikacije zaposlenih. Osim toga, nedostaju studije koje ispituju vezu između zadovoljstva zaposlenih i organizacijske identifikacije u kontekstu internog zelenog marketinga za razliku od konteksta internog marketinga. S obzirom da raste potreba za implementacijom zelenih strategija i za usklađivanjem zelene marketinške strategije organizacije „sa ponašanjem njenih zaposlenih od kojih se očekuje da joj služe i da je implementiraju“ (Papadas et al., 2019, p. 636), postavlja se pitanje da li postoji veza između internog zelenog marketinga (strategije internog zelenog marketinga - Papadas et al., 2019), kao i zadovoljstva zaposlenih u kontekstu internog zelenog marketinga, i organizacione identifikacije zaposlenih. Prema gore navedenom, cilj ovog rada bio je da utvrdi da li postoji veza između svih dimenzija internog zelenog marketinga (zelena interna komunikacija, razvoj zelenih veština, zeleno nagrađivanje) i organizacione identifikacije zaposlenih, kao i između zadovoljstva zaposlenih i organizacione identifikacije zaposlenih.

Nalazi ovog istraživanja mogu doprineti boljem razumevanju značaja internog zelenog marketinga u današnjem poslovnom okruženju. Takođe, rezultati mogu biti korisni istraživačima u oblasti internog zelenog marketinga i zelenog upravljanja ljudskim resursima. Budući da nedostaju empirijska istraživanja u ovoj oblasti, nalazi mogu podstaći menadžment da primenjuje interni zeleni marketing i koristi njegov potencijal u smislu dizajniranja programa za poboljšanje organizacione identifikacije zaposlenih kroz dimenzije internog zelenog marketinga. Ovo posebno važi za menadžere organizacija u manje razvijenim zemljama kao što je Republika Srbija.

Rad se sastoji iz nekoliko delova: konceptualni okvir istraživanja, metodološki okvir istraživanja, rezultati i diskusija, zaključak, teorijske i menadžerske implikacije, ograničenja i pravci budućih istraživanja. Slede zahvalnica i popis literature.

Konceptualni okvir istraživanja

Prema Kureši-u i Mehradž-u (Qureshy, Mehraj, 2021, p. 6 od 19), interni zeleni marketing je „mera u kojoj organizacija uključuje podržavanje ekoloških vrednosti i razvija širu korporativnu zelenu kulturu u celoj organizaciji“. Interni zeleni marketing (orijentacija) odražava meru u kojoj su zaposleni i drugi interni stejkholderi asimilirali ekološke vrednosti organizacije (Papadas et al., 2017). Zadovoljstvo zaposlenih u kontekstu internog marketinga postiže se zadovoljavanjem njihovih potreba, odnosno ponudom internih proizvoda – poslova (Berry, 1981). Iz perspektive teorije društvenog identiteta (Tajfel, Turner, 1979), organizaciona identifikacija odražava stav zaposlenog prema njenoj/njegovoj organizaciji kao kolektivu. Veza između internog zelenog marketinga, zadovoljstva zaposlenih, i organizacione identifikacije je podržana teorijom društvenog identiteta. Ova teorija objašnjava da se pojedinci (zaposleni) pod uticajem programa internog (zelenog) marketinga identifikuju s njihovom organizacijom i posledično teže ostvarivanju (zelenih) organizacionih ciljeva.

Prethodne empirijske studije o internom marketingu potvrdile su: indirektan efekat internog marketinga na organizacionu identifikaciju zaposlenih kroz zadovoljstvo poslom (Bailey et al., 2016); indirektan efekat iskustva zaposlenih na prvoj liniji sa programima internog marketinga na organizacionu identifikaciju zaposlenih kroz njihovu percepciju interne marketinške orijentacije (Ferdous, Polonsky, 2014); direktan uticaj internih marketinških inicijativa na organizacionu identifikaciju zaposlenih koji su u direktnom kontaktu s kupcima (Hernández-Díaz et al., 2017); pozitivan efekat individualnih percepcija internog marketinga na organizacionu identifikaciju zaposlenih (Boukis et al., 2015).

U oskudnim empirijskim studijama o internom zelenom marketingu kao što je studija Papadasa i saradnika (Papadas et al., 2019), ispitan je njegov uticaj, u interakciji sa strateškom zelenom marketinškom orijentacijom, na konkurentsku prednost. Interni zeleni marketing je posmatran kroz nekoliko pitanja (Papadas et al., 2017, Tabela 7, p. 241). Prema Kureši-u i Mehradž-u (Qureshi, Mehraj, 2021, Tabela 3), interni zeleni marketing uključuje zelenu internu komunikaciju, razvoj zelenih veština, i zelene nagrade. Ove dimenzije internog zelenog marketinga prihvaćene su i u ovom radu. Međutim, u ovom radu, zelena interna komunikacija, razvoj zelenih veština i zelene nagrade se ispituju pojedinačno, a ne iz perspektive globalne mere internog zelenog marketinga. Ovim dimenzijama je dodata dimenzija – zadovoljstvo zaposlenih na osnovu nalaza da zadovoljstvo zaposlenih poslom u kontekstu internog marketinga utiče na organizacionu identifikaciju zaposlenih (Bailey et al., 2016).

Svrha zelene interne komunikacije je informisanje zaposlenih o zelenim vrednostima organizacije, kako bi se ove vrednosti proširile među zaposlenima (Wells et al. 2015); promovisanje ekološke svesti u organizaciji (Papadas et al., 2019; Qureshi, Mehraj, 2021), i razvoj ekološke dimenzije korporativne kulture (McDonagh, Prothero, 2014; Qureshi, Mehraj, 2021), odnosno širenje zelene kulture u organizaciji (Chaudhary, 2020). U ovom radu zelena interna komunikacija je posmatrana kao komunikacija čija je svrha promocija zelene svesti u organizaciji i širenje zelenih vrednosti i kulture.

Razvoj zelenih veština uključuje aktivnosti kao što su zeleno obrazovanje i zelena obuka u organizaciji kako bi se podigla ekološka svest svih zaposlenih (McDonagh, Prothero, 2014; Qureshi, Mehraj, 2021). U ovom radu, razvoj zelenih veština posmatran je na ovaj način, jer „ugrađivanje znanja o okolini i zelene organizacione kulture podstiče zaposlene da razviju veštine i sposobnosti za implementaciju uspešnih ekoloških strategija“ (Qureshi, Mehraj, 2021, p 6 od 19).

Kao komponenta internog zelenog marketinga – zelene nagrade uključuju nagrade za zaposlene koje doprinose zaštiti okoline (Chen et al., 2015; Fraj et al., 2015; Menguc et al., 2010 citirano u Qureshi, Mehraj, 2021).

Budući da su zadovoljni zaposleni jedan od ciljeva internog marketinga, zadovoljstvo zaposlenih je rezultat brige o njima i njihovim potrebama koje se zadovoljavaju ponudom internih proizvoda (Berry, 1981). U vezi s tim, zadovoljstvo zaposlenih je u ovom radu posmatrano u kontekstu internog zelenog marketinga, što ne isključuje činjenicu da je ono njegov cilj.

Organizaciona identifikacija zaposlenih je „percipirano jedinstvo s organizacijom i iskustvo uspeha i neuspeha organizacije kao sopstvenih” (Mael, Ashforth, 1992, p. 103). U prethodnim studijama, organizaciona identifikacija je posmatrana prema Mael-u i Ešfort-u (Mael, Ashworth, 1992). Posmatranje organizacione identifikacije prema Mael-u i Ešfort-u (1992) prihvaćeno je u ovom radu.

Prema saznanjima autora, nijedno prethodno istraživanje o internom (zelenom) marketingu ili organizacionoj identifikaciji nije ispitivalo vezu između dimenzija internog zelenog marketinga i organizacione identifikacije zaposlenih. Imajući u vidu značaj organizacione identifikacije zaposlenih u odgovoru organizacije na izazove okoline, s jedne strane, i potrebu da se brine o zaposlenima i okolini, s druge, u ovom radu je testirana veza između dimenzija internog zelenog marketinga, zadovoljstva zaposlenih, i organizacione identifikacije zaposlenih koja je zasnovana na rezultatima studija o organizacionoj identifikaciji u kontekstu internog marketinga (Bailey et al., 2016), u kontekstu internih komunikacija (Milanović i Radosavljević Njegić, 2019), i u kontekstu zelenog upravljanja ljudskim resursima (Chaudhary, 2020). Sva ova istraživanja potvrdila su pozitivan uticaj dimenzija, programa ili aktivnosti internog marketinga, zadovoljstva zaposlenih i dimenzija zelenog upravljanja ljudskim resursima (koje se preklapaju sa dimenzijama internog zelenog marketinga) na organizacionu identifikaciju zaposlenih.

Prema svemu navedenom, pretpostavljeno je da:
H1: Postoji značajna pozitivna veza između zelene interne komunikacije i organizacione identifikacije zaposlenih
H2: Postoji značajna pozitivna veza između razvoja zelenih veština i organizacione identifikacije zaposlenih
H3: Postoji značajna pozitivna veza između zelenih nagrada i organizacione identifikacije zaposlenih
H4: Postoji značajna pozitivna veza između zadovoljstva zaposlenih i organizacione identifikacije zaposlenih.

Metodološki okvir istraživanja

Prikupljanje podataka za testiranje hipoteza obavljeno je kroz strukturirani upitnik. Sprovedena je anketa (gugl forma) u različitim organizacijama koje posluju u Republici Srbiji u periodu mart – jun 2022. Od 695 distribuiranih upitnika metodom slučajnog uzorka, vraćena su 173 popunjena upitnika (stopa odgovora 24,8%). Upitnike su popunjavali zaposleni.

Što se tiče demografije uzorka: 66% ispitanika su bile žene, dok su 34% bili muškarci. Starosna distribucija ispitanika je sledeća: 18% ispitanika je u dobi ispod 31 godine, 30% ispitanika je u dobi od 31 do 40 godina, 28% ispitanika je u dobi od 41 do 50 godina, 14% ispitanika je u dobi od 51 do 60 godina, a 10% ispitanika ima više od 60 godina. Obrazovna distribucija ispitanika je sledeća: 14% ispitanika ima srednju stručnu spremu, 83% ispitanika ima visoko obrazovanje, a 3% je u kategoriji „ostalo“. Što se tiče radnog iskustva ispitanika, njih 35% ima <10 godina radnog iskustva, 35% ima 11-20 godina radnog iskustva, 20% ima 21-30 godina, 7% ima 31-40 godina, a 3% >40 godina radnog iskustva. Od ukupnog broja ispitanika, 39% je na rukovodećim pozicijama, a 61% na nerukovodećim pozicijama. Većina ispitanika je zaposlena u organizacijama uslužnog sektora (90%).

Zelena interna komunikacija, razvoj zelenih veština i zelene nagrade, kao dimenzije internog zelenog marketinga, opisani su sa po 5 pitanja (skala: Qureshi, Mehraj, 2021). Zadovoljstvo zaposlenih je opisano sa 5 pitanja (skala: Huang et al., 2019). Organizaciona identifikacija zaposlenih opisana je sa 7 pitanja. Za merenje organizacijske identifikacije korišćena je skala koju su razvili Mael i Ešfort (Mael, Ashforth, 1992). Ovoj skali je dodata izjava o nivou svesti zaposlenih o pripadnosti organizaciji (kognitivni aspekt organizacione identifikacije). Ispitanici su ocenjivali u kojoj meri se slažu sa ponuđenim izjavama u anketi (skala od 1 do 5; 1 - ne slažu se uopšte ili u vrlo maloj meri; 5 - potpuno se slažu ili u velikoj meri).

Podaci su analizirani korišćenjem korelacione i regresione analize. Statistička obrada podataka obavljena je korišćenjem softvera IBM SPSS (verzija 25).

Rezultati i diskusija

Pouzdanost skala testirana je korišćenjem Kronbah alfa koeficijenta (*Tabela 1*).

Tabela 1. Deskriptivna statistika; Kronbah alfa koeficijent (α)

Varijable	**min**	**max**	**srednja vrednost**	**std. devijacija**	**α**
Organizaciona identifikacija	7	35	25.37	6.09	0.909
Zelena interna komunikacija	5	25	15.49	6.19	0.958
Razvoj zelenih veština	5	25	13.93	5.78	0.961
Zelene nagrade	5	25	11.76	4.92	0.948
Zadovoljstvo zaposlenih	5	25	18.60	6.78	0.897

Izvor: Izračunavanje autora

Budući da su se sve skale pokazale pouzdanim (*Tabela* 1; vidi: α), ovim rezultatom je opravdano dalje ispitivanje. Kako bi se testirale hipoteze, kompozitne mere svih varijabli su izračunate zbrajanjem rezultata za svaki indikator koji se odnosi na varijablu. U prvom koraku je korišćena korelaciona analiza za otkrivanje veze između posmatranih varijabli. Određivanje veza između organizacione identifikacije i drugih posmatranih varijabli podržano je Pirsonovom korelacijom. Rezultat ove analize prikazan je u *Tabeli 2*.

Tabela 2. Korelacije između posmatranih varijabli – koeficijent Pirsonove korelacije

	Organizational identification
Zadovoljstvo zaposlenih	0.606**
Zelena interna komunikacija	0.534**
Razvoj zelenih veština	0.541**
Zelene nagrade	0.471**

Izvor: Izračunavanje autora

Beleška: ** Korelacija na nivou značajnosti od 0.01 (dvostrani test)

Dobijeni rezultati su pokazali da je organizaciona identifikacija zaposlenih u jakoj vezi sa svakom dimenzijom internog zelenog marketinga (p=0,01). Postoji snažna i pozitivna korelacija: između organizacione identifikacije zaposlenih i zadovoljstva zaposlenih, između organizacione identifikacije zaposlenih i zelene interne komunikacije, između organizacione identifikacije zaposlenih i razvoja zelenih veština, i između organizacione identifikacije zaposlenih i zelenih nagrada. Pozitivni koeficijenti korelacije (*Tabela 2*) ukazuju da bi poboljšanja zelene interne komunikacije, razvoja zelenih veština, zelenih nagrada i zadovoljstva zaposlenih odgovarala povećanju organizacione identifikacije zaposlenih.

Nakon što je potvrđeno da postoji korelacija između posmatranih varijabli, sprovedena je serija jednostavnih bivarijantnih regresionih analiza kako bi se testirale hipoteze. Nezavisne varijable bile su: zelena interna komunikacija, razvoj zelenih veština, zelene nagrade i zadovoljstvo zaposlenih. Organizaciona identifikacija je bila zavisna varijabla u svim regresijama. Veza između nezavisnih varijabli i organizacione identifikacije kao zavisne varijable je testirana odvojeno. Rezultati serije bivarijantnih regresija sumirani su u *Tabeli 3*.

Tabela 3. Statistički parametri regresione analize

	Standardizovani koeficijent β	**T-vrednost**	**p-vrednost**
Zelena interna komunikacija	0.534	8.360	0.000
Razvoj zelenih veština	0.541	8.513	0.000
Zelene nagrade	0.471	7.071	0.000
Zadovoljstvo zaposlenih	0.606	10.081	0.000

Izvor: Izračunavanje autora

Dobijeni rezultati pokazuju da je u predviđanju organizacione identifikacije zaposlenih doprinos svakog posmatranog prediktora statistički značajan.

Prva hipoteza je potvrđena: postoji značajna pozitivna veza između zelene interne komunikacije i organizacione identifikacije zaposlenih. Ova veza je jaka. To znači da bi poboljšanje interne zelene komunikacije koja promoviše ekološku svest u organizaciji, te širi zelene vrednosti i zelenu kulturu odgovaralo povećanju nivoa organizacione identifikacije zaposlenih – osećaja njihove pripadnosti organizaciji, nivoa pozitivne empatije prema organizaciji kao i ponosa. Kada je zelena interna komunikacija stalan proces, koji jasno i nedvosmisleno komunicira zelenu viziju organizacije, zaposleni je lako percipiraju i ispravno razumeju. Mogućnosti za usvajanje zelene vizije organizacije od strane zaposlenih su veće kao i identifikacija zaposlenih sa njom. Tada zaposleni veruju u zelenu viziju organizacije i njene zelene (ekološke) vrednosti. Ovaj nalaz delom prati nalaz Milanović i Radosavljević Njegić (2019, str. 227) da interna komunikacija utiče na „identifikaciju zaposlenih sa ciljevima, misijom i vizijom i kulturom organizacije“. Ovaj nalaz delom prati nalaz Čauderi-a (Chaudhary, 2020) koji je potvrdio da neki elementi zelene interne komunikacije (formalni ili neformalni kanali komunikacije za širenje zelene kulture u organizaciji) utiču na organizacionu identifikaciju zaposlenih. Kada zaposleni veruju u zelenu viziju njihove organizacije, kada prepoznaju njene zelene vrednosti i identifikuju sopstvenu kulturu sa zelenom kulturom organizacije, biće više identifikovani s organizacijom. Tada se zaposleni osećaju poštovanim od strane organizacije, postaju svesni važnosti svoje uloge u organizaciji – u postizanju njenih zelenih ciljeva kao i implementaciji njene zelene strategije. U ovom procesu, zaposleni jačaju zeleni organizacioni identitet i najzad zelenu organizacionu identifikaciju. Osećaj pripadnosti zaposlenih zelenoj organizaciji raste, kao i emocionalni doživljaj zaposlenih uspeha i neuspeha organizacije. Zaposleni brinu o mišljenju drugih o svojoj organizaciji i identifikuju se s njom kao kolektivom. Otuda i poboljšana organizaciona identifikacija zaposlenih u kontekstu internog zelenog marketinga.

Druga i treća hipoteza su potvrđene: Postoji značajna pozitivna veza između razvoja zelenih veština i organizacione identifikacije zaposlenih, te između zelenih nagrada i organizacione identifikacije zaposlenih. Ove veze su takođe jake. Ovi rezultati su u skladu s rezultatima Čauderi-a (Chaudharyja, 2020) iako su u ovom radu razvoj zelenih veština i zelene nagrade posmatrani kao dimenzije internog zelenog marketinga, a u studiji koju je sproveo Čauderi kao dimenzije zelenog upravljanja ljudskim resursima. Dimenzije ova dva koncepta se u literature preklapaju. Pružanjem zelene obuke i zelene edukacije zaposlenima, kao i prepoznavanjem njihovih zelenih doprinosa i nagrađivanjem, organizacije podstiču razvoj zelenih veština zaposlenih koje im omogućavaju da učestvuju u zelenim inicijativama organizacije i kreiraju zelene strategije. To zaposlene čini „psihološki dostupnijim“, i „njihov rad smislenijim, što će zauzvrat poboljšati njihovu organizacionu identifikaciju“ (Chaudhary, 2020, p. 632). Shodno tome, zaposleni koji se identifikuju s organizacijom biće odgovorniji prema okolini.

Četvrta hipoteza je potvrđena: Postoji značajna pozitivna veza između zadovoljstva zaposlenih i organizacione identifikacije zaposlenih. Ova veza je jaka. Nalaz delom prati nalaz Bejlija i saradnika (Bailey et al., 2016). Ako zaposleni imaju dovoljno slobode da rade šta žele u svom poslu, ako su zaposleni zadovoljni kako raznolikošću svojih radnih aktivnosti, tako i mogućnostima koje njihov rad pruža za interakciju s drugima, kao i svojim poslom, onda njihovo zadovoljstvo utiče na njihovu organizacionu identifikaciju. Kada su zaposleni zadovoljni svojim poslom i organizacijom u celini, oni se identifikuju s organizacijom. Potom, zadovoljni zaposleni „rade na postizanju održivih ciljeva organizacije...“ (Chaudhary, 2020, str. 632).

Zaključak

S obzirom na važnost organizacione identifikacije zaposlenih u odgovoru organizacije na promene i izazove okoline, potrebu brige o zaposlenima i okolini, te nedostatak istraživanja o odnosu između dimenzija internog zelenog marketinga, zadovoljstva zaposlenih, i organizacione identifikacije, u ovom radu je sprovedeno istraživanje o vezi između dimenzija internog zelenog marketinga, zadovoljstva zaposlenih, i organizacione identifikacije na uzorku zaposlenih u različitim organizacijama u Republici Srbiji (uslužni sektor).

Rezultati ovog istraživanja potvrdili su hipoteze: postoji značajna pozitivna veza između svih dimenzija internog zelenog marketinga – zelene interne komunikacije, razvoja zelenih veština, zelenih nagrada, i organizacione identifikacije zaposlenih. Takođe, postoji značajna pozitivna veza između zadovoljstva zaposlenih i organizacione identifikacije zaposlenih. Osim toga, u predviđanju organizacione identifikacije zaposlenih doprinos svakog posmatranog prediktora je statistički značajan. Značaj rezultata u ovom radu je u tome što u dosadašnjim istraživanjima veza između ovih varijabli nije ispitivana.

Da bi zaposleni bili identifikovani s organizacijom, potrebno je intenzivirati napore u svim dimenzijama internog zelenog marketinga i zadovoljstvo zaposlenih. Širenje zelenih vrednosti i zelene kulture organizacije među zaposlenima, kao i promocija ekološke svesti, pozitivno i značajno su povezani s organizacionom identifikacijom zaposlenih. Istovremeno, podizanje ekološke svesti za sve zaposlene i zelena obuka za razvoj veština i sposobnosti za implementaciju zelenih (ekoloških) strategija doprinose identifikaciji zaposlenih s organizacijom. Nagrade za zaposlene (koje doprinose poboljšanju životne sredine i zelene organizacije) mogu dovesti do poboljšane identifikacije zaposlenih s organizacijom. Osim toga, zadovoljstvo zaposlenih u kontekstu internog zelenog marketinga i njegove prakse mogu dovesti do poboljšane identifikacije zaposlenih s organizacijom.

Teorijske i menadžerske implikacije

Nalazi ovog istraživanja mogu doprineti boljem razumevanju značaja internog zelenog marketinga za zaposlene i organizacije. Takođe, rezultati mogu biti korisni istraživačima u oblasti internog zelenog marketinga i zelenog upravljanja ljudskim resursima. Budući da nedostaju empirijska istraživanja u ovoj oblasti, nalazi mogu podstaći menadžment organizacija da primeni interni zeleni marketing i koristi njegov potencijal u smislu dizajniranja programa za poboljšanje organizacijske identifikacije zaposlenih kroz internu zelenu komunikaciju, razvoj zelenih veština, zelene nagrade kao i kroz zadovoljstvo zaposlenih.

Menadžment organizacija koje posluju u sektoru usluga u kontekstima sličnim kontekstu Republike Srbije treba da bude svestan da su individualne percepcije zaposlenih o dimenzijama internog zelenog marketinga pozitivno i značajno povezane s nivoom organizacione identifikacije zaposlenih. Takođe, individualna percepcija zadovoljstva poslom i organizacijom u celini pozitivno je i značajno povezana s nivoom njegove/njene organizacione identifikacije.

Indikatori dimenzija internog zelenog marketinga u ovom radu reflektuju percepciju zelene interne komunikacije koja je bazirana na zelenoj viziji u koju zaposleni veruju, nivo promocije ekološke svesti i vrednosti u organizaciji, i nivo zelene kulture u organizaciji. Osim toga, ovi indikatori reflektuju zelene nagrade koje su bazirane na motivaciji za ekološki prihvatljivo ponašanje zaposlenih, razvoj zelenih veština kroz zelenu obuku koja je povezana sa podizanjem ekološke svesti svih zaposlenih, poboljšanjem njihovih veština, kao i znanja o ekološkom (zelenom) upravljanju. Menadžment treba da neguje okruženje internog zelenog marketinga u kojem zaposleni imaju visok nivo ekološke svesti i visok nivo identifikacije s organizacijom. Osim toga, zaposleni su zadovoljniji u ovakvom okruženju.

Menadžment treba da kreira efikasne programe internog zelenog marketinga, jer ovi programi dovode do većeg zadovoljstva zaposlenih slično kao i programi internog marketinga. Istovremeno, može se očekivati da ovi programi doprinesu organizacionoj identifikaciji zapsolenih. Najzad, organizaciona identifikacija zaposlenih može ubrzati implementaciju ekoloških strategija ili internih zelenih marketinških strategija u organizaciji.

Ograničenja i pravci budućih istraživanja

Rezultati istraživanja u ovom radu odnose se na skroman uzorak organizacija koje posluju u Republici Srbiji u sektoru usluga, tako da, iako ovo istraživanje pruža značajan uvid u vezu između internih dimenzija zelenog marketinga, zadovoljstva zaposlenih, i organizacione identifikacije zaposlenih, interpretaciji rezultata treba pristupiti s rezervom.

Za buduća istraživanja preporučuje se testiranje veze između ovih varijabli kao i uticaja internih dimenzija zelenog marketinga na organizacionu identifikaciju zaposlenih uzimajući u obzir ograničenja uzorka. Pored toga, preporučuje se da se u istraživanje uključe i stavovi menadžera, posebno o dimenzijama internog zelenog marketinga, kao i njihova procena nivoa implementacije internog zelenog marketinga u organizaciji i njegovih efekata na zaposlene i organizaciju. Najzad, glavni pravac budućih istraživanja je sprovođenje longitudinalne studije kako bi se procenili efekti primene programa internog zelenog marketinga na organizacionu identifikaciju zaposlenih i druge rezultate na nivou zaposlenih i organizacije.

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THE INTERNAL GREEN MARKETING DIMENSIONS, EMPLOYEES' SATISFACTION, AND EMPLOYEES' ORGANIZATIONAL IDENTIFICATION

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Abstract

Examining the impact of green orientation and other similar practices in an organization on employees' organizational identification is becoming increasingly important. At the same time, internal green marketing is increasingly attracting the attention of researchers. However, there is a lack of studies in which the primary goal was to examine the relationship between internal green marketing, employee satisfaction in its context, and employees'organizational identification. Hence, the aim of this paper was to determine whether there is a relationship between all dimensions of internal green marketing and organizational identification of employees, as well as between employees' satisfaction and organizational identification. The online survey was conducted among employees of different organizations in the Republic of Serbia. The regression and correlation analysis was used to test the hypotheses. The obtained results showed a statistically significant positive relationship between each dimension of internal green marketing and employees' organizational identification as well as between employees' satisfaction and organizational identification. For future research, a longitudinal study is recommended, testing the relationships between these variables on a larger sample, and testing on a sample of managers.

Key words: *internal green marketing, employees' satisfaction, employees' organizational identification*

JEL: *M31, M12*

Introduction

There is a growing interest among researchers in examining the effects of green (environmental) strategies or activities on the outcomes of both employees and an organization. At the same time, the role of organizational identification in the

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relationship between organizational environmental orientation, and the efforts and participation of employees is examined (Gabler et al., 2014). It was found that employees identified with the organization can contribute to its facing green challenges from the environment (adapted from Chen, 2011). Consequently, organizational identification needs to be constantly improved.

Some of the effects of organizational identification at the individual level are the effects on work engagement and employees' job satisfaction (Karanika-Murray et al., 2015), organizational commitment (Hernández-Díaz et al., 2017), employees' retention (Bharadwaj et al., 2021), employees' customer-oriented behaviour (Ferdous, Polonsky, 2014). Besides, organizational identification is one way to motivate employees to achieve better performance (Bjerregaard et al., 2017; Miao et al., 2019; Wieseke et al., 2009). Therefore, it is important that an employee is highly identified with his/her organization.

Previous empirical studies confirmed that employees' organizational identification can be improved by internal marketing (Bailey et al., 2016; Boukis et al., 2015; Ferdous, Polonsky, 2014; Hernández-Díaz et al., 2017; Wieseke et al., 2009) as well as by job satisfaction (e.g. Bailey et al., 2016). However, there is a lack of studies in which the primary goal was to examine the relationship between internal green marketing and employees' organizational identification as opposed to studies in which the primary goal was to examine the relationship between internal marketing and employees' organizational identification. Besides, there is a lack of studies examining the relationship between employees' satisfaction and organizational identification in the internal green marketing context as opposed to the internal marketing context. Given the growing need to implement green strategies, and to align the organizations' green marketing strategy "with the behavior of their employees who are expected to serve and implement it" (Papadas et al., 2019, p. 636), the question arises whether there is the relationship between internal green marketing (internal green marketing strategy - Papadas et al., 2019) as well as employees' satisfaction in the context of internal green marketing, and employees' organizational identification. According to the above, the aim of this paper was to determine whether there is a relationship between all dimensions of internal green marketing (green internal communication, green skill development, green rewards) and employees' organizational identification as well as between employees' satisfaction and employees' organizational identification.

The findings of this research can contribute to a better understanding of the importance of internal green marketing in today's business environment. Also, the results can be useful to researchers in the field of internal green marketing and green human resource management. Since there is a lack of empirical research in this area, the findings can encourage management to apply internal green marketing and use its potential in terms of designing programs to improve employees' organizational identification through internal green marketing dimensions. This is especially true for managers of organizations in less developed countries such as the Republic of Serbia.

The paper consists of several parts: conceptual research framework, the methodological framework of research, results and discussion, conclusion, theoretical and managerial implications, limitations and future research directions. Acknowledgment and the list of literature follow.

Conceptual research framework

According to Qureshi and Mehraj (2021, p. 6 of 19), internal green marketing is "the extent to which an organization involves endorsing environmental values and develops a wider corporate green culture across the organization". Internal green marketing (orientation) reflects the extent to which employees and other internal stakeholders assimilated of environmental values of organization (Papadas et al., 2017). Employees' satisfaction in the context of internal marketing is achieved by meeting their needs, i.e. by offering internal products - jobs (Berry, 1981). From the social identity theory perspective (Tajfel, Turner, 1979), organizational identification reflects the attitude of an employee towards her/his organization as a collective. The relationship between internal green marketing, employees' satisfaction, and organizational identification is supported by social identity theory. This explains that individuals (employees) under the influence of internal (green) marketing programs identify with their organization and consequently strive to achieve (green) organizational goals.

Previous empirical studies on internal marketing confirmed: the indirect effect of internal marketing on employees' organizational identification through job satisfaction (Bailey et al., 2016); the indirect effect of front-line employees' experience of internal marketing programs on employees' organizational identification through their perception of internal marketing orientation (Ferdous, Polonsky, 2014); the direct impact of internal marketing initiatives on organizational identification of customers-contact employees (Hernández-Díaz et al., 2017); positive effect of individual perceptions of internal marketing on organizational identification of employees (Boukis et al., 2015).

In scarce empirical studies on internal green marketing such as the study of Papadas et al. (2019), its impact in interplaying with strategic green marketing orientation on competitive advantage was examined. Internal green marketing was observed through a few items (Papadas et al., 2017, Table 7, p. 241). According to Qureshi and Mehraj (2021, Table 3), internal green marketing includes green internal communication, green skill development, and green rewards. These dimensions of internal green marketing are accepted in this paper as well. However, in this paper green internal communication, green skill development, and green rewards are examined individually, not from the perspective of the global measure of internal green marketing. To these dimensions a dimension was added – employees' satisfaction based on the findings that employees' job satisfaction in the context of internal marketing affects the organizational identification of employees (Bailey et al., 2016).

The purpose of green internal communication is to inform employees about the green values of the organization, in order to spread these values among employees (Wells et al. 2015); to promote environmental awareness in the organization (Papadas et al., 2019; Qureshi, Mehraj, 2021), and the development of environmental dimensions of corporate culture (McDonagh, Prothero, 2014; Qureshi, Mehraj, 2021), i.e. to spread green culture in the organization (Chaudhary, 2020). In this paper, green internal communication was observed as the communication whose purpose is to promote green awareness in the organization and spread green values and culture.

Green skill development includes activities such as green education and green training in the organization in order to raise environmental awareness for all employees (McDonagh, Prothero, 2014; Qureshi, Mehraj, 2021). In this paper, green skill development was observed in this way, because „embedding environmental knowledge and green organization culture encourages employees to develop skills and abilities to implement successful environmental strategies" (Qureshi, Mehraj, 2021, p. 6 of 19).

As the component of internal green marketing – green rewards include rewards for employees who contribute to environmental protection (Chen et al., 2015; Fraj et al., 2015; Menguc et al., 2010 as cited in Qureshi, Mehraj, 2021).

Since satisfied employees are one of the goals of internal marketing, employees' satisfaction is the result of caring for them and their needs, which are met by offering internal products (Berry, 1981). In this paper employees' satisfaction was observed in the context of internal green marketing, which does not exclude the fact that it is its goal.

Organizational identification of employees is the "perceived oneness with an organization and experience of the organization's successes and failures as one's own" (Mael, Ashforth, 1992, p. 103). In previous studies, organizational identification was observed according to Mael and Ashworth (1992). The observation of organizational identification by Mael and Ashforth (1992) was accepted in this paper.

To authors' knowledge, no previous research on internal (green) marketing or organizational identification has examined the relationship between internal green marketing dimensions and employees' organizational identification. Having in mind the importance of employees' organizational identification in the organization's response to environmental challenges, on the one hand, and the need to care for employees and the environment, on the other, this paper tested the relationship between internal green marketing dimensions, employees' satisfaction, and employees' organizational identification based on the results of studies on organizational identification in the context of internal marketing (Bailey et al., 2016), in the context of internal communications (Milanović, Radosavljević Njegić, 2019), and in the context of green human resource management (Chaudhary, 2020). All this research confirmed the positive influence of the dimensions, programs, or activities of internal marketing, employees' satisfaction, and the dimensions of green human resources management (which overlap with the dimensions of internal green marketing) on the organizational identification of employees.

According to all the above, it was assumed that:
H1: There is a significant positive relationship between green internal communication and employees' organizational identification
H2: There is a significant positive relationship between green skill development and employees' organizational identification
H3: There is a significant positive relationship between green rewards and employees' organizational identification
H4: There is a significant positive relationship between employees' satisfaction and organizational identification of employees.

Methodological framework of research

Data collection for hypotheses testing was done through a structured questionnaire. The survey (Google Form) was conducted in various organizations operating in the Republic of Serbia in the period March – June 2022. From 695 distributed questionnaires by a random sampling method, 173 completed questionnaires were returned (the response rate was 24.8%). Questionnaires were filled out by employees.

Regarding sample demographics: 66% of respondents were females, whereas 34% were males. The age distribution of respondents is following: 18% of respondents range in age <31, 30% of respondents range in age from 31 to 40, 28% of respondents range in age from 41 to 50, 14% of respondents range in age from 51 to 60, and 10% of respondents range in age >60. The educational distribution of respondents is following: 14% of respondents have secondary education, 83% of respondents have higher education, and 3% are in the category "rest". Regarding the working experience of the respondents, 35% of them have <10 years of work experience, 35% have 11-20 years of work experience, 20% have 21-30 years, 7% have 31-40 years, and 3% >40 years of work experience. Of the total number of respondents, 39% are in managerial positions and 61% are in non-managerial positions. The majority of respondents are employed in service sector organizations (90%).

Green internal communication, green skill development, and green rewards as the dimensions of internal green marketing were described with 5 questions each (the scale: Qureshi, Mehraj, 2021). Employees' satisfaction was described with 5 questions (the scale: Huang et al., 2019). Organizational identification of employees was described with 7 questions. To measure organizational identification, the scale developed by Mael and Ashforth (1992) was used. The statement of the employees' level of awareness of belonging to their organization (a cognitive aspect of organizational identification) was added to this scale. Respondents rated the extent to which they agree with the offered statements in the survey (a scale from 1 to 5; 1 - do not agree at all or to a very small extent; 5 - completely agree or to a very large extent).

The data were analyzed using correlation and regression analysis. Statistical data processing was done using the IBM SPSS (version 25) software.

Results and discussion

The reliability of the scales was tested by using the Cronbach's alpha coefficient (*Table 1*).

Table 1. Descriptive statistics; Cronbach's alpha coefficient (α)

The variables	**min**	**max**	**mean**	**Std. dev.**	**α**
Organizational identification	7	35	25.37	6.09	0.909
Green internal communication	5	25	15.49	6.19	0.958
Green skill development	5	25	13.93	5.78	0.961
Green rewards	5	25	11.76	4.92	0.948
Employees' satisfaction	5	25	18.60	6.78	0.897

Source: Authors' calculation

Since all scales were shown to be reliable (*Table 1*; see: α), further examination was justified by this result. In order to test the hypotheses, composite measures of all variables were computed by summarizing the scores for each indicator relating to the variable. In the first step, correlation analysis was used to detect the relationship between the observed variables. Determining the relationships between organizational identification and other observed variables was supported by Pearson's correlation. The result of this analysis is presented in *Table* 2.

Table 2. Correlations between observed variables – the Pearson's correlation coefficients

	Organizational identification
Employees' satisfaction	0.606**
Green internal communication	0.534**
Green skill development	0.541**
Green rewards	0.471**

Source: Authors' calculation

Note: ** Correlation is significant at the 0.01 level (2-tailed)

The obtained results showed that employees' organizational identification correlates strongly with each dimension of internal green marketing ($p=0.01$). There is a strong and positive correlation: between employees' organizational identification and employees' satisfaction, between employees' organizational identification and green internal communication, between employees' organizational identification and green skill development, and between employees' organizational identification and green rewards. The positive coefficients of correlation (*Table 2*) indicate that improvements in green internal communication, green skill development, green rewards, and employees' satisfaction would correspond to an increase in employees' organizational identification.

After it was confirmed that the correlation between the observed variables exists, a series of simple bivariate regression analyses were conducted in order to test the hypotheses. The independent variables were: green internal communication, green skill development, green rewards, and employees' satisfaction. Organizational identification was the dependent variable in all regressions. It was tested separately if there is a relationship between independent variables and organizational identification as a dependent variable. The results of the series of bivariate regressions are summarized in *Table 3*.

Table 3. Statistical parameters of regression analysis

	Standardized coefficient β	T-value	p-value
Green internal communication	0.534	8.360	0.000
Green skill development	0.541	8.513	0.000
Green rewards	0.471	7.071	0.000
Employees' satisfaction	0.606	10.081	0.000

Source: Authors' calculation

The obtained results show that in predicting employees' organizational identification the contribution of each observed predictor is statistically significant.

The first hypothesis was confirmed: There is a significant positive relationship between green internal communication and employees' organizational identification. This relationship is strong. This means that an improvement in internal green communication that promotes environmental awareness in the organization, and spreads green values and green culture would correspond to an increase in the level of organizational identification of employees - a sense of their belonging to the organization, a level of positive empathy for the organization as well as pride. When green internal communication is a constant process, which clearly and unambiguously communicates the green vision of the organization, employees easily perceive and understand it correctly. The possibilities for the adoption of the green vision of the organization by the employees are greater as well as the identification of employees with it. Then the employees believe in the green vision of the organization and its green values. This finding partly follows the finding of Milanović and Radosavljević Njegić (2019, p. 227) that internal communication affects „the identification of the employees with goals, mission and vision, and the culture of the organization“. This finding partly follows the finding of Chaudhary (2020) who confirmed that some elements of green internal communication (formal or informal channels of communication to spread green culture in the organization) affect the organizational identification of employees. When employees believe in the green vision of their organization, when they recognize its green values and identify their own culture with the green culture of the organization, they will be more identified with the organization. Then the employees feel respected by the organization, they are becoming aware of the importance of their role in the organization - in achieving its green goals as well as implementing its green strategy. In this process, employees strengthen green organizational identity and finally green organizational identification. The sense of belonging of employees to green organization is growing as well as the employees' emotional experience of the organization successes and failures. Employees care about the opinion of others about their organization and identify with it as a collective. Hence the improved organizational identification of employees in the context of internal green marketing.

The second and the third hypotheses were confirmed: There is a significant positive relationship between green skill development and employees' organizational identification, and between green rewards and employees' organizational identification. These relationships are also strong. These results are consistent with the results of Chaudhary (2020) although, in this paper, green skill development and green rewards were observed as the dimensions of internal green marketing, and in the study conducted by Chaudhary as the dimensions of green human resource management. In the literature, the dimensions of these two concepts overlap. By providing green training and green education to employees, as well as recognizing their green contributions and rewarding them, organizations encourage the development of green skills of employees that enable them to participate in green initiatives of the organization and create green strategies. This makes employees "more psychologically available", and "their work more meaningful, which in turn will enhance their organizational identification" (Chaudhary, 2020, p. 632). Consequently, the employees that are identified with the organization will be more responsible toward the environment.

The fourth hypothesis was confirmed: There is a significant positive relationship between employees' satisfaction and organizational identification of employees. This relationship is strong. The finding partly follows the finding of Bailey et al. (2016). If the employees have enough freedom to do what they want in their work, if the employees are satisfied with both the variety of their work activities and the opportunities that their work provides for interaction with others, as well as with their job, then their satisfaction affects their organizational identification. When employees are satisfied with their job and organization as a whole, they are identified with the organization. Then, satisfied employees „work toward the attainment of sustainable goals of the organization...” (Chaudhary, 2020, p. 632).

Conclusion

Given the importance of organizational identification of employees in the organization’s response to changes and environmental challenges, the need to care for employees and the environment, and the lack of the research on the relationship between internal green marketing dimensions, employees’ satisfaction, and organizational identification, this paper conducted research on the relationship between the dimensions of internal green marketing, employees’ satisfaction, and organizational identification of employees on the sample of employees of different organizations in the Republic of Serbia (service sector).

The results of this research confirmed the hypotheses: there is a significant positive relationship between all dimensions of internal green marketing - green internal communication, green skill development, green rewards, and employees’ organizational identification. Also, there is a significant positive relationship between employees’ satisfaction and employees’ organizational identification. Besides, in predicting employees’ organizational identification the contribution of each observed predictor is statistically significant. The significance of the results in this paper is that in previous studies the relationship between these variables has not been examined.

In order for employees to be identified with organization, it is necessary to intensify efforts in all dimensions of internal green marketing and employees’ satisfaction. Spreading the green values and green culture of the organization among employees, as well as the promotion of environmental awareness, are positively and significantly related to the organizational identification of employees. At the same time, rising environmental awareness for all employees and green training to develop skills and abilities to implement green (environmental) strategies contribute to the identification of employees with the organization. Awards for employees (which contribute to the improvement of the environment and the green organization) can lead to improved identification of employees with the organization. Besides, employees’ satisfaction in the context of internal green marketing can lead to improved identification of employees with their organization.

Theoretical and managerial implications

The findings of this research can contribute to a better understanding of the importance of internal green marketing for employees and organizations. Also, the results can be useful to researchers in the field of internal green marketing and green human resource management. Since there is a lack of empirical research in this field, the findings can encourage management of the organizations to apply internal green marketing and use its potential in terms of designing programs to improve employees' organizational identification through internal green communication, green skill development, green rewards, as well as through employees' satisfaction.

Management of the organizations operating in the service sector in the contexts similar to the Republic Serbia context should be aware that individual perceptions of employees on internal green marketing dimensions are positively and significantly related to the level of employees' organizational identification. Also, the individual perception of job satisfaction and the organization as a whole is positively and significantly related to the level of his/her identification with organization.

The indicators of the dimensions of internal green marketing in this paper reflect the perceptions of green internal communication based on the green vision that employees believe in, the level of the promotion of environmental awareness and values in the organization, and the level of the green culture in the organization. In addition, these indicators reflect green rewards based on motivation to eco-friendly behavior of employees, green skill development through green training related to the raising of environmental awareness for all employees, improvement of their skills, as well as know-how about environmental (green) management. Management should be to foster an environment of internal green marketing where employees have a high level of environmental awareness and a high level of identification with the organization. In addition, employees are more satisfied in this environment.

Management should create effective programs of internal green marketing because these programs lead to greater employees' satisfaction similar to internal marketing programs. At the same time, these programs can be expected to contribute to employees' organizational identification. Finally, organizational identification of employees can accelerate the implementation of environmental strategies or internal green marketing strategies in the organization.

Limitations and future research directions

The results of the research in this paper refer to a modest sample of organizations operating in the Republic of Serbia in the service sector, so that, although this research provides significant insight into the relationship between internal green marketing dimensions, employees' satisfaction, and organizational identification of employees, interpretation of results should be approached with reservations.

For future research, it is recommended to test the relationship between these variables as well as the impact of internal green marketing dimensions on employees' organizational identification taking into account the limitations of the sample. In addition, it is recommended to include in the research the attitudes of managers, especially about the dimensions of internal green marketing as well as their assessment of the level of implementation of internal green marketing in the organization and its effects on employees and the organization. Finally, the main direction of future research is to conduct a longitudinal study in order to assess the effects of application of internal marketing programs on organizational identification of employees and other outcomes at the level of both employees and organization.

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PROCENJIVANJE PDV EFIKASNOSTI U ZEMLJAMA BENELUKSA

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Apstrakt

Relevantnost poreza na dodatu vrednost ogleda se u generisanju značajne količine prihoda i suzbijanju poreske evazije. Svrha istraživanja je usmerena ka procenjivanju prikupljenih prihoda i merenju efikasnosti naplate PDV prihoda u zemljama Beneluksa (Belgija, Holandija i Luksemburg) za vremenski period 2011-2020. godine. Empirijski rezultati istraživanja ukazuju da je prosečna PDV efikasnost iznosila 59.84% u posmatranim zemljama. pri čemu je najveći stepen efikasnosti zabeležen u Luksemburgu, a najmanja vrednost u Belgiji. Panel regresioni rezultati pokazuju da ekonomski rast, finalna potrošnja, državni rashodi i PDV prihodi pozitivno utiču na PDV efikasnost u posmatranim zemljama. Istovremeno, varijable poput nezaposlenosti i inflacije, kao i standardna PDV stopa imaju negativan efekat na efikasnost PDV prihoda. Dobijeni empirijski nalazi mogu biti od pomoći kreatorima ekonomske politike u analiziranim zemljama prilikom profilisanja i prilagođavanja poreske politike sa stanovišta poreza na dodatu vrednost.

Ključne reči: *porez na dodatu vrednost, efikasnost, panel analiza, zemlje Beneluksa.*

JEL: *H20, H21, H26*

Uvod

Države širom sveta imaju poteškoća sa prikupljanjem zahtevanog nivoa poreskih prihoda za finansiranje planiranih aktivnosti (Mu et al., 2022). Potencijalni problem prikupljanja prihoda naročito dolazi u kriznim momentima, kada usporava ekonomska aktivnost i dovodi do negativnih tendencija u kretanju fundamentalnih makroekonomskih indikatora. Pitanje efikasnosti prikupljanja i

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naplate prihoda je važno za sve fiskalne vlasti, pri čemu je neophodno utvrditi glavne generatore poreskih prihoda u državnim budžetima. Radi obezbeđivanja javnih usluga i pokrivanja javnih potreba, kreatori fiskalnih vlasti moraju stvoriti odgovarajući poreski sistem koji će generisati potreban nivo prihoda na poreskoj, ali i neporeskoj osnovi. Adekvatno upravljanje prihodnom stranom budžeta je preduslov za optimalno planiranje i izvršenje projektovanih rashoda.

Prikupljanje poreza predstavlja značajan instrument u osiguranje ekonomske stabilnosti i razvoja (Majerová, 2016), kao i najvažnija stavka državnih budžetskih prihoda (Kubjatkova et al., 2021). Sredstva od poreza se mogu koristiti za usmeravanje privrede ka realizaciji specifičnih ciljeva (Kowal, Przekota, 2021). U skladu sa tim, poreski prihodi treba da omoguće sredstva za odgovarajuću infrastrukturu, zdravstvo, obrazovanje, kulturu, zaposlenost, raspodelu društvenog dohotka i javnu bezbednost. (Dobrovič et al., 2021). Slično, Barbu et al. (2022) identifikuje poreske prihode kao glavni izvor finansiranja državnih buxeta za ulaganja u javnu infrastrukturu. Kako bi se poboljšalo prikupljanje poreskih prihoda, pored odgovarajućeg institucionalnog i zakonodavnog okvira, neophodno je unaprediti kapacitete poreske administracije, kao i efikasnost njihovih aktivnosti (Ramírez-Álvarez, Carrillo-Maldonado, 2020). Takođe, pitanje prikupljanja poreza je esencijalno za fiskalne vlasti i ono je uslovljeno strukturom poreskog sistema određene zemlje. Naime, struktura poreskih sistema zemalja u razvoju i nerazvijenih zemalja je prvenstveno opredeljena ka posrednim porezima, odnosno porezima na potrošnju. S druge strane, poreski sistemi razvijenih zemalja imaju daleko veće učešće neposrednih poreza zbog znatno više dohodne osnovice koja podleže oporezivanju. Pored ozbiljnih ograničenja zaduživanja i prepreka za povećanjem resursa putem podizanja fiskalnog pritiska, ogroman rast obima javne potrošnje u većini razvijenih zemalja ukazuje da kreatori ekonomskih politika moraju unaprediti efikasnost javnog sektora (Cordero et al., 2021). Ovo pitanje je značajno za upravljanje poreskim prihodima i njihovo efikasno alociranje u produktivne svrhe.

Oporezivanje potrošnje u većini zemalja širom sveta je bazirano na porezu na dodatu vrednost i porezu na promet (Sokolovska, Sokolovskyi, 2015). Iz tog razloga, porez na dodatu vrednost dobija sve više na značaju u empirijskim merenjima i analizama efekata na određene makroekonomske indikatora. Tóth et al. (2021) navodi da uloga poreza na potrošnju predstavlja jedno od najvažnijih pitanja u okviru debata oko optimalne poreske strukture sa aspekta efikasnosti i pravičnosti. Acosta-Ormaechea et al. (2019) ističe da kreatori ekonomske politike neretko favorizuju poreze na potrošnju za podsticanje ekonomskog rasta u odnosu na neposredne poreze na primeru 70 ekonomija.

Struktura rada obuhvata četiri segmenta. Posle uvodnog razmatranja, sledi pregled teorijskih i empirijskih nalaza koji su povezani sa porezom na dodatu vrednost sa stanovišta naplate i efikasnosti prikupljenih prihoda. Treći segment rada podrazumeva metodološki okvir koji obuhvata uzorak, odabir posmatranih varijabli, definisanje hipoteza, primena panel testova radi selektovanja odgovarajućeg empirijskog modela. Četvrti segment rada uključuje merenje i ocenjivanje efekata odabranih varijabli na PDV efikasnost u zemljama Beneluksa. Poslednji segment rada podrazumeva zaključna razmatranja i preporuke za kreatore ekonomske politike zemalja Beneluksa.

Teorijski okvir istraživanja

Suočavajući se sa izazovima prikupljanja sredstava i pokrivanja narastajućih potreba, mnoge zemlje uvode različite poreske oblike, uključujući i porez na dodatu vrednost (Aizenman, Jinjarak, 2008). Porez na dodatu vrednost je postao najčešći porez na potrošnju širom sveta (Giesecke, Tran, 2012), pri čemu Keen (2013) ističe da je ovaj poreski oblik implementiran u više od 150 zemalja širom sveta. Porez na dodatu vrednost, kao zamena za porez na promet, ističe se kao efikasan poreski oblik, odnosno, instrument koji generiše i povećava poreske prihode (Hoseini, Briand, 2020). Prema evidenciji OECD-a, na kraju 2018. godine, taj broj je povećan na 168 zemalja koje su implementirale PDV u poreske sisteme (OECD, 2018). Teorija predviđa porez na dodatu vrednost kao efikasan poreski oblik, što predstavlja jedan od priamrnih razloga za rapidno implementiranje ovog poreskog oblika širom sveta (Adhikari, 2020). O značaju poreza na dodatu vrednost sa aspekta generisanja prihoda govore Feltenstein et al. (2022) i Morrow et al. (2022), koji naglašavaju da porez na dodatu vrednost predstavlja glavni izvor poreskih prihoda. Takođe, Lin (2008) ističe da ovaj poreski oblik generiše značajno više prihoda u odnosu na ostale poreske oblike, odnosno predstavlja najstabilniji i najproduktivniji oblik od svih komponenti poreskog sistema (Abshari et al., 2021). Shodno tome, porez na dodatu vrednost bi trebalo da bude poreski oblik kojim se postiže veća ekonomska efikasnost u odnosu na alternativne posredne poreze (Mascagni et al., 2021). Istovremeno, ovaj poreski oblik nije pogodan kao instrument raspodele dohotka (Shiraishi, 2022). U zemljama bez velikih administrativnih ograničenja, ovaj poreksi oblik prvenstveno treba da služi za efikasno i predvidivo prikupljanje prihoda (Cnossen, 2012).

Efikasan poreski sistem često karakteriše visok stepen naplate poreza uz prihvatljive troškove naplate (Babici et al., 2019). Posmatrajući strukturu PDV sistema, Kalyva et al. (2016) naglašava jednostavan sistem oporezivanja sa ograničenom upotrebom sniženih stopa. Uvođenje poreza na dodatu vrednost podrazumeva odgovarajući ekonomski kapacitet u pogledu apsorbovanja potencijalnih cenovnih oscilacija. Benkovskis i Fadejeva (2014) navode da su stope poreza na dodatu vrednost važne za potrošnju, ali i nivo cena, kao i da kretanje, odnosno promena PDV stopa može imati suštinske implikacije na stopu inflacije. U skladu sa tim, Milenković et al. (2020) potvrđuju statistički značajan uticaj poreza na dodatu vrednost na stopu inflaciji u Republici Srbiji. Campos-

Vázquez i Medina-Cortina (2019) navode da je manji stepen disperzija cena prisutan na tržištima sa izraženom konkurencijom. Pored mogućeg cenovne oscilacije na opštem nivou, porez na dodatu vrednost je zahvalan poreski oblik sa stanovišta prikupljanja prihoda i jačanja poreske discipline. Chan et al. (2017) navodi da sistem poreza na dodatu vrednost ima pozitivne efekte na disciplinu izvršne vlasti u pogledu prikupljanja i upravljanja poreskim prihodima. Jačanje poreske discipline predstavlja esencijalan zadatak za fiskalne vlasti širom sveta, imajući u vidu postojanje problema poreske evazije (Martinez et al., 2022). U istraživanju autora Baum et al. (2017) potvrđena je statistički značajna veza između prikupljanja prihoda i kapaciteta poreske administracije. Prema autorima Capasso et al. (2021) važno je obezbediti snažne fiskalne institucije koje su od suštinskog značaja radi osiguranja pozitivnog stava javnosti prema plaćanju poreza. Takođe, autori Lin i Jia (2019), kao i Ndubula i Matiku (2021) u svojim studijama ukazuju da su edukacija o porezu i poreske stope usko vezane za performanse prikupljenih prihoda.

Postoji određeni broj teorijskih i empirijskih istraživanja koja su bila fokusirana na efikasnost poreza na dodatu vrednost (Zídková, 2014; Tagkalakis, 2014; Baum et al., 2017; Bostan et al., 2017; Hodžić, Celebi, 2017; Đorđević et al., 2019; Hodroyiannis and Papaoikonomou, 2020; Kowal, Przekota, 2021). Autori Đorđević et al. (2021) ističu da je najveća efikasnost naplate PDV moguća ako su mere fiskalne politike korelisane sa ekonomskim i strukturnim politikama ostvarujući snažan sinergetski efekat. Zídková (2014) potvrđuje pozitivan odnos između finalne potrošnje i ukupnog PDV jaza u dvadeset četiri EU zemlje, dok Tagkalakis (2014) ističe da poboljšanje ekonomskih uslova unapređuje efikasnost PDV-a. S druge strane, empirijska analiza Bostan et al. (2017) prikazuje iznenađujuće rezultate koji potvrđuju da ne postoji statistički značajna razlika između PDV stope i PDV prihoda, kao i negativan uticaj PDV stope na fiskalnu efikasnost Rumunije za vremenski period 2006-2014. godine. Acosta-Ormaechea i Morozumi (2021) naglašavaju da povećanje PDV-a pozitivno utiče na dugoročni rast, samo u slučaju da je poboljšana naplata prikupljenih prihoda, ali ne i standardna PDV stopa. Takođe, Hodroyiannis and Papaoikonomou (2020) su utvrdili da povećanje PDV prihoda i njihove efikasnosti može biti realizovana putem veće upotrebe plaćanja kartica u zemljama unutar Evrozone za vremenski period 2006-2016. godine.

Budući da je cilj istraživanja usmeren ka utvrđivanju PDV efikasnosti u zemljama Benelusa, dobijeni empirijski rezultati mogu biti lukrativni za fiskalne vlasti posmatranih zemalja prilikom kreiranja i profilisanja poreskih politika. Doprinos ovog istraživanja podrazumeva da kreatori ekonomske vlasti mogu uvažiti i primeniti empirijske nalaze kao vodič prilikom formulisanja politike i sistema poreza na dodatu vrednost. Na taj način, optimalni empirijski model PDV efikasnosti doprineće maksimalnom prikupljanju prihoda uz minimalne štetne implikacije na ekonomiju.

Metodološki okvir istraživanja

Procenjivanje poreske efikasnosti je oduvek bila u fokusu istraživanja javnih finansija, kako na nacionalnom, tako i međunarodnom nivou (Mukherjee, 2020). Metodologija ispitivanja PDV efikasnosti zahteva prikupljanje podataka o prihodima od PDV-a u odnosu na bruto domaći proizvod (BDP), standardnu stopu PDV-a, finalnu potrošnju i indeks potrošačkih cena (CPI). Poslednjih godina istraživanja o PDV efikasnost u Evropskoj uniji je povezana sa modelom koji je razvio Keen (2013). To utvrđuje efikasnost povezujući stvarne prihode od PDV-a sa teoretskim prihodima od PDV-a. Na osnovu koncepta Tanzi and Davoodi (2000), PDF efikasnost se može izračunati putem tradicionalnog pristupa merenja:

$$\text{VAT efficiency} = \frac{\frac{VAT\ revenue}{GDP}}{SVAR} \quad (1)$$

Istovremeno, koeficijent PDV efikasnosti, koji se neretko u literaturi označava oznakom C, može se izračunati i prema sledećoj matematičkoj formuli:

$$\text{C-efficiency} = \frac{V}{PV} \quad (2)$$

$$PV = svr \times (FC - V) \quad (3)$$

V – realizovani PDV prihodi, PV – teorijski (pretpostavljeni) PDV prihodi, SVAR – standardna PDV stopa, FC – finalna potrošnja.

Pokazatelj C-efikasnost PDV-a pokazuje koji procenat finanlne potrošnje je prikupljen za svaki procentni poen standardne stope poreza na dodatu vrednost (Cnossen, 2015).

Optimalni koeficijent PDV efikasnosti od 100 procenata treba razmatrati totalno efikasnim u slučaju kada je poreska osnovica obuhvaćena proporcionalnom poreskom stopom. U slučaju postojanja snižene PDV stope na određena dobra i usluge, vrednost datog pokazatelja biće ispod 100 procenata (Hodžić, Celebi, 2017). Nakon izračunavanja ovih indikatora/koeficijenata, moguće je utvrditi i PDV jaz, kao razliku između ostvarivog prihoda od PDV-a (teorijskog) i realnog prihoda od PDV-a da bi se identifikovalo njegovo povećanje odnosno smanjenje u vremenu, kroz stopu PDV jaza. Na osnovu metodološkog okvira istraživanja baziranog na istraživačkim konceptima Keen (2013) i Popa i Botos (2021), razvijene su sledeće hipoteze:

H_0: Makroekonomski faktori značajno utiču na PDV efikasnost u zemljama Beneluksa.

H_1: Stopa ekonomskog rasta pozitivno utiče na PDV efikasnost u zemljama Beneluksa.

H_2: Stopa finalne potrošnje pozitivno utiče na PDV efikasnost u zemljama Beneluksa.

H_3: Stopa nezaposlenosti negativno utiče na PDV efikasnost u zemljama Beneluksa.

H_4: Stopa inflacije negativno utiče na PDV efikasnost u zemljama Beneluksa.

H_5: Državni rashodi pozitivno utiču na PDV efikasnost u zemljama Beneluksa.

H_6: Veće standardne PDV stope dovode do manje PDV efikasnosti u zemljama Beneluksa.

H_7: Veći PDV prihodi doprinose većoj PDV efikasnosti u zemljama Beneluksa.

Empirijski okvir merenja i ocenjivanja PDV efikasnosti u zemljama Beneluksa je izvršen na osnovu istraživačkog koncepta autora Keen (2013) i Popa i Botos (2021), koji posmatra PDV prihode, standardnu PDV stopu, kao i finalnu potrošnju kao ključni pokazatelj prilikom merenja efekta indirektnog oporezivanja, tj. poreza na potrošnju. U radu je predstavljen regresioni model koji podrazumeva zavisnu varijablu EF i uticaj nezavisnih varijabli poput BDP, FP, NEZ, INF, DR, PDV stopa i PDV prihodi (Tabela 1).

Tabela 1. Odabir eksplanatornih varijabli

Varijable	**Simbol**	**Kalkulacija**	**Očekivani efekat**
Bruto domaći proizvod	BDP	godišnja stopa	+
Finalna potrošnja	FP	% učešće u BDP	+
Nezaposlenost	NEZ	godišnja stopa	-
Inflacija	INF	godišnja stopa	-
Državni rashodi	DR	% učešće u BDP	+
Standardna PDV stopa	PDVs	godišnja stopa	-
PDV prihodi	PDVp	% učešće u BDP	+

Izvor: Ilustracija autora

Na osnovu panel konstrukcije Brooks (2008), regresioni model je predstavljen kao:

$Y_{it} = \alpha + \beta x_{it} + \mu_{it}$ (4)

Y_{it} – zavisna varijabla (EF)

α - konstanta

βx_{it} - koeficijenti nezavisnih varijabli (BDP, FP, NEZ, INF, DR, PDVs, PDVp)

i – 3 zemlje (Belgija, Holandija i Luksemburg)

t – 2011-2020

μ_{it} - rezidual

EF – PDV efikasnost; BDP – stopa rasta bruto domaćeg proizvoda; FP – finalna potrošnja; NEZ – stopa nezaposlenosti; INF – stopa inflacije; DR – državni rashodi; PDVs – standardna PDV stopa; PDVp – PDV prihodi.

Empirijski rezultati i diskusija

U okviru ovog segmenta rada, izvršena je kalkulacija pokazatelja PDV efikasnosti u zemljama Beneluksa za vremenski period 2011 – 2020. Dobijene vrednosti posmatranog indikatora predstavljaju preduslov za panel ocenjivanje efekata eksplanatornih varijabli.

Tabela 2. Komparativni prikaz PDV efikasnosti u zemljama Beneluksa

Godina	Belgija	Holandija	Luksemburg
2011	47.83	51.18	92.44
2012	48.14	46.79	88.95
2013	47.02	46.98	86.72
2014	46.77	47.19	83.69
2015	45.98	48.73	78.33
2016	47.02	51.81	77.14
2017	47.05	52.35	78.23
2018	46.80	52.48	76.84
2019	47.14	55.43	75.96
2020	44.79	57.41	78.95

Izvor: Kalkulacija autora

Na osnovu rezultata iz Tabele 2, može se primetiti da je prosečna PDV efikasnost najviša u Luksemburgu (81.73%) u odnosu na Belgiju (46.85%) i Holandiju (51.04%), gde su vrednosti posmatranog indikatora znatno manje. Analizirajući po godinama, PDV efikasnost je najviše porasla u 2012. godini u Holandiji (+6.32%), zatim 2020. godine u Luksemburgu (+3.94%), odnosno 2016. godine u Belgiji (+2.26%). Ukoliko se analizira relativni pad ovog indikatora, uočava se da je PDV efikasnost najviše opala u Holandiji u 2012. godini (-8.58%), zatim Luksemburgu (-6.41%), kao i 2020. godine u Belgiji (-4.98%).

Za merenje uticaja makroekonomskih faktora na elastičnost i efikasnost poreza na dodatu vrednost u zemljama Beneluksa, u okviru ovog istraživanja, korišćeni su podaci iz sekundarnih izvora podataka, koji se odnose na makroekonomske pokazatelje (bruto društveni proizvod – BDP, nezaposlenost, finalna potrošnja, inflacija, državni rashodi). Svi podaci su prikupljeni sa službenih stranica vodećih međunarodnih institucija, tako da je većina podataka u istraživanju, preuzeto sa stranica Međunarodnog monetarnog fonda (Internationl Monetary Fund) i Svetske banke (World Bank). U istraživanju se koriste podaci za period od 2011. – 2020. godine, a odnose se na zemlje Beneluksa. Pre samog ispitivanja i ocenjivanja uticaja makroekonomskih faktora na PDV elastičnost i PDV efikasnost, potrebno je utvrditi potencijalne razlike u nivou posmatranih pokazatelja između analiziranih zemalja Beneluksa (Belgija, Holandija i Luksemburg) za vremenski period 2011.-2020. godine.

Tabela 3. Procenjivanje razlika u nivou PDV efikasnosti

EF	W = Wilks' lambda		L = Lawley-Hotelling trace		
	P = Pillai's trace		R = Roy's largest root		
Source	**Statistic**	**F(df1)**	**F(df2)**	**F**	**Prob>F**
W	0.1792	2.0	27.0	61.82	0.0000
P	0.8208	2.0	27.0	61.82	0.0000
L	4.5789	2.0	27.0	61.82	0.0000
R	4.5789	2.0	27.0	61.82	0.0000
Residual					27
Total					29

Izvor: Kalkulacija autora

Tabela 3 prikazuje rezultate multivarijane analize za zemlje Beneluksa u pogledu procene nivoa razlika vrednosti PDV elastičnosti i PDV efikasnosti za vremenski period 2011. - 2020. godine. Na osnovu dobijenih vrednosti Pillai's Trace = 0.000 za odabranu varijablu PDV efikasnost, može se zaključiti da postoji statistički značajna razlika u nivou PDV efikasnosti u navedenim zemljama za analizirani vremenski period.

Nakon utvrđivanja razlika u nivou PDV efikasnosti u zemljama Beneluksa, sledi ispitivanje i ocenjivanje uticaja odabranih makroekonomskih faktora na PDV efikasnost panel nivou za vremenski period 2011.-2020. godine. Panel procena je izvršena na osnovu modela slučajnih efekata i modela fiksnih efekata. Istovremeno, prikazana je panel uzročnost, odnosno kauzalnost između makroekonomskih faktora i PDV efikasnosti. Kao uslov odgovorajućeg regresionog modela, potrebno je sprovesti testiranje stacionarnosti, kao i utvrditi da li postoji problem multikolinearnosti, odnosno naglašene korelisanosti između odabranih nezavisnih varijabli.

U Tabeli 4 prikazani su različiti panel testovi stacionarnosti (LLC test, BTtest and H-T test) na primeru tri panela (Belgija, Holandija i Luksemburg) koji su primenjeni radi ispitivanja i identifikovanja trenda stacionarnosti uključenih varijabli. Rezultati ukazuju na stacionarnost prvog reda kod većine varijabli na nivou značajnosti 0.05. Sledi ispitivanje međusobne korelisanosti eksplanatornih varijabli primenom VIF testa.

Tabela 4. Testovi stacionarnosti

Variables	LLC test	P-value	Breitung test	P-value	Harris-Tzavalis test	P-value	Hadri LM test	P-value
Paneli sadrže jedinične korene								
Paneli su stacionarni								
EF	-1.38	0.643	-1.41	0.205	0.79	0.645	5.98	0.000
ΔEF	-5.42	0.041	-5.63	0.000	-0.18	0.001	-0.47	0.681
BDP	-2.60	0.000	-1.81	0.036	0.19	0.000	0.18	0.426
ΔBDP	-1.16	0.000	-1.66	0.048	-0.18	0.000	0.65	0.257
FP	-2.53	0.019	-1.09	0.862	0.83	0.735	6.18	0.000
ΔFP	-4.89	0.038	-1.28	0.098	-0.28	0.002	-0.41	0.656
NEZ	-6.31	0.000	-0.97	0.117	0.88	0.537	4.39	0.000
ΔNEZ	-5.87	0.000	-1.31	0.096	-0.61	0.003	2.14	0.016
INF	-5.35	0.000	3.09	0.992	0.92	0.689	7.98	0.000
Δ INF	-7.56	0.000	-0.68	0.248	-0.34	0.001	-0.46	0.679
DR	-4.07	0.000	-1.34	0.091	0.47	0.051	1.17	0.120
ΔDR	-6.32	0.000	-1.51	0.066	-0.27	0.001	1.16	0.122
PDVs	-5.39	0.048	0.5	0.000	0.46	0.047	4.31	0.000
ΔPDVs	-2.47	0.905	-0.48	0.314	-0.07	0.000	0.45	0.325
PDVp	-0.82	0.721	-1.13	0.872	0.71	0.435	5.07	0.000
ΔPDVp	-4.71	0.006	-1.77	0.038	-0.05	0.000	-0.82	0.793

Izvor: Kalkulacija autora

Rezultati VIF testa (Tabela 5) prikazuju prosečnu vrednost od 2.39, što dovodi do zaključka da ne postoji problem multikolinearnosti između odabranih eksplanatornih varijabli (vrednost manja od 4). Imajući u vidu da su ispunjeni svi preduslovi za kreiranje odgovarajućeg panel regresionog modela, sledi komparativni prikaz modela slučajnih efekata i modela fiksnih efekata.

Tabela 5. VIF test - test multikolinearnosti

Varijable	VIF
BDP	1.81
FP	2.68
NEZ	2.95
INF	2.52
DR	3.68
PDVs	1.77
PDVp	1.32
Mean VIF	2.39

Izvor: Kalkulacija autora

Na osnovu rezultata modela slučajnih efekata (Tabela 6), može se uočiti statistički značajan uticaj eksplanatornih varijabli, odnosno BDP-a, finalne potrošnje, nezaposlenosti, inflacije, državnih rashoda, PDV stope i PDV prihoda, na PDV efikasnost u zemljama Beneluksa za vremenski period 2011. - 2020. godine. Analizirajući karakter i intenzitet uticaja, primetno je da varijable BDP, FP, DR i PDV prihodi pozitivno i statistički značajno utiču na PDV efikasnost u posmatranim zemljama, što podrazumeva da njihov rast doprinosi povećanju efikasnosti naplate PDV-a. S druge strane, varijable NEZ, INF i PDV stopa imaju negativan i statistički značajan uticaj na PDV efikasnost, što implicira da njihovo povećanje rezultira padom efikasnosti naplate PDV-a. Visoka vrednost koeficijenta determinacije R-squared (0.876) ukazuje da je model adekvatno dizajniran, kao i Prob F (0.000) na validnost postavljenog empirijskog modela.

Tabela 6. Model slučajnih efekata

Varijable	Model slučajnih efekata (RE)	Efekat + 1%	Efekat + 10%
ΔBDP	0.172 (0.000)	+0.17%	1.72%
ΔFP	0.895 (0.007)	+0.89%	+8.95%
ΔNEZ	-0.212 (0.000)	-0.21%	-2.12%
ΔINF	-0.159 (0.032)	-0.16%	-1.59%
ΔDR	0.124 (0.000)	+0.12%	+1.24%
ΔPDVs	-0.583 (0.000)	-0.58%	-5.83%
ΔPDVp	0.518 (0.000)	+0.52%	+5.18%
R-squared			0.876
Model validity			0.000

Izvor: Kalkulacija autora

Na osnovu rezultata modela fiksnih efekata (Tabela 7), može se konstatovati statistički značajan uticaj eksplanatornih varijabli, odnosno BDP-a, finalne potrošnje, nezaposlenosti, inflacije, državnih rashoda, PDV stope i PDV prihoda, na PDV efikasnost u zemljama Beneluksa za vremenski period 2011. - 2020. godine. Analizirajući karakter i intenzitet uticaja, primetno je da varijable BDP, FP, DR i PDV prihodi pozitivno i statistički značajno utiču na PDV efikasnost u posmatranim zemljama, što podrazumeva da njihov rast doprinosi povećanju efikasnosti naplate PDV-a. S druge strane, varijable NEZ, INF i PDV stopa imaju negativan i statistički značajan uticaj na PDV efikasnost, što implicira da njihovo povećanje rezultira padom efikasnosti naplate PDV-a. Visoka vrednost koeficijenta determinacije R-squared (0.924) ukazuje da je model postavljen na odgovarajući način, kao i Prob F (0.000) na validnost definisanog empirijskog modela.

Tabela 7. Model fiksnih efekata

Varijable	Model fiksnih efekata (FE)	Efekat + 1%	Efekat + 10%
ΔBDP	0.204 (0.000)	+0.20%	2.04%
ΔFP	0.958 (0.002)	+0.96%	+9.58%
ΔNEZ	-0.216 (0.000)	-0.22%	-2.16%
ΔINF	-0.147 (0.000)	-0.15%	-1.47%
ΔDR	0.159 (0.004)	+0.16%	+1.59%
ΔPDVs	-0.597 (0.000)	-0.60%	-5.97%
ΔPDVp	0.592 (0.000)	+0.59%	+5.92%
R-squared			0.924
Model validity			0.000

Izvor: Kalkulacija autora

Rezultati Hausman testa (Tabela 8) pokazuju da je model fiksnih efekata adekvatan prilikom procenjivanja uticaja makroekonomskih faktora na PDV efikasnost u zemljama Beneluksa. To podrazumeva da odabrani model uključuje eksplanatorne varijable koje objašnjavaju 92.4% varijacija PDV efikasnosti u posmatranim zemljama, što ukazuje na visoku pouzdanost i verodstojnost dobijenih empirijskih nalaza.

Tabela 8. Odabir modela – Hausman test

Specifikacija modela	Rezultat	Zaključak
Model slučajnih efekata vs Model fiksnih efekata	Chi2(7) = (b-B)'[(Vb-VB)^(-1)](b-B) =	Model fiksnih efekata je odgovarajući
	Prob>chi2 = 0.0000	

Izvor: Kalkulacija autora

Kako bi se utvrdila potencijalna uzročnost između makroekonomskih faktora i indikatora PDV efikasnosti, sprovedeno je merenje kauzalnosti između odabranih varijabli za vremenski period 2011-2020. godine. Rezultati testa kauzalnosti (Tabela 9) ukazuju na dvosmernu uzročnost između bruto domaćeg proizvoda (BDP), finalne potrošnje (FP), državnih rashoda (DR), PDV stope, PDV prihoda i PDV efikasnosti (EF). S druge strane, potvrđena je jednosmerna kauzalnost nezaposlenosti (NEZ), inflacije (INF) i PDF efikasnosti EF). Kod identifikovanih jednosmernih uzročnosti, potrebno je naglasiti da promena na strani makroekonomskih faktora poput nezaposlenosti i inflacije dovodi do promene PDV efikasnosti u zemljama Beneluksa.

Tabela 9. Merenje uzročnosti makroekonomskih faktora i PDV efikasnosti

Smer	F-statistic	Prob.	Uzročnost
BDP → EF	3.587	0.034	dvosmerna uzročnost
EF → BDP	3.794	0.019	
FP → EF	4.637	0.008	dvosmerna uzročnost
EF → FP	4.716	0.012	
NEZ → EF	2.656	0.328	jednosmerna uzročnost
EF → NEZ	4.131	0.047	
INF → EF	4.140	0.039	jednosmerna uzročnost
EF → INF	1.568	0.575	
DR → EF	3.696	0.042	dvosmerna uzročnost
EF → DR	4.217	0.036	
PDVs → EF	7.306	0.000	dvosmerna uzročnost
EF → PDVs	7.748	0.004	
PDVp → EF	7.223	0.000	dvosmerna uzročnost
EF → PDVp	7.101	0.000	

Izvor: Kalkulacija autora

Zaključak

Rad podrazumeva empirijsku analizu merenja i ocenjivanja uticaja odabranih makroekonomskih faktora na PDV efikasnost u zemljama Beneluksa (Belgija, Holandija i Luksemburg) za vremenski period 2011-2020. godine. Stope poreza na dodatu vrednost u zemljama Beneluksa kretale su se od 17% u Belgiji, do 21% koliko je iznosio porez na dodatu vrednost u Holandiji i Luksemburgu. Prosečna PDV efikanost posmatranih zemalja je iznosila 59.84%, pri čemu je daleko najveća prosečna vrednost indikatora zabeležena u Luksemburgu (81.73%). S druge strane, Belgija i Holandija su ostvarile prosečne vrednosti od 46.85% i 51.04% tokom analiziranog vremenskog perioda. Rezultati multivarijacione analize ukazuju na statistički značajne razlike u nivou PDV efikasnosti u zemljama Beneluksa tokom posmatranog vremenskog perioda. Panel regresiona analiza je izvršena na osnovu modela slučajnih efekata i modela fiksnih efekata, pri čemu su rezultati Hausman testa su potvrdili da je model fiksnih efekata adekvatan. Empirijski nalazi ukazuju na statistički značajan uticaj svih varijabli, što dovodi do zaključka da se može prihvatiti hipoteza H_0. Imajući u vidu pozitivan uticaj bruto domaćeg proizvoda, finalne potrošnje, državnih rashoda i PDV prihoda na PDV efikasnost, može se konstatovati prihvatanje hipoteza H_1, H_2, H_5 i H_7. Konkretno, rast BDP-a, FP, DR i PDV prihoda za 1% doprinosi povećanju PDV efikasnosti za 0.20%, 0.96%, 0.16% i 0.59%. S druge strane, nezaposlenost, inflacija i PDV stopa imaju negativan uticaj na PDV efikasnost u posmatranim zemljama, što omogućava prihvatanje hipoteza H_3, H_4 i H_6. Naime, rast NEZ, INF i PDV stope za 1% rezultira smanjenju PDV efikasnosti za 0.22%, 0.15% i 0.60%. Doprinos ovog rada se ogleda u proširivanju postojećeg teorijskog okvira usmerenog ka poreskoj efikasnosti, kao i pružanju novih empirijskih saznanja vezanih za efikasnost naplate prihoda od poreza na dodatu vrednost u zemljama Beneluksa. Dobijeni empirijski rezultati ukazuju da se zemlje

Beneluksa moraju fokusirati na veće stope BDP rasta i finalne potrošnje uz veće učešće državnih rashoda, kako bi se ostvarile pozitivne implikacije na PDV efikasnost. Istovremeno, niža stopa inflacije i stopa nezaposlenosti imaće pozitivne efekte na PDV efikasnost. Na kraju, smanjenje standardne PDV stope može generisati više PDV prihoda, što će se nesumnjivo povoljno odraziti na PDV efikasnost u posmatranim zemljama. Rezultati kauzalnosti ukazuju na dvosmernu uzročnost između bruto domaćeg proizvoda (BDP), finalne potrošnje (FP), državnih rashoda (DR), PDV stope, PDV prihoda i PDV efikasnosti (EF). S druge strane, potvrđena je jednosmerna kauzalnost nezaposlenosti (NEZ), inflacije (INF) i PDF efikasnosti EF). Doprinos ovog rada se ogleda u pružanju empirijskih smernica kreatorima ekonomskih politika prilikom profilisanja PDV politike u kontekstu prilagođavanja makroekonomskom okviru zemalja Beneluksa. Istovremeno, dobijeni empirijski nalazi mogu biti od pomoći i zemljama širom sveta, naročito zemljama u kojima PDV ima značajno učešće u prikupljenim poreskim prihodima.

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EVALUATION OF VAT EFFICIENCY IN BENELUX COUNTRIES

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Abstract

The relevance of value added tax is reflected in the generation of a significant amount of revenue and the suppression of tax evasion. The purpose of the research is aimed at assessing collected revenues and measuring the efficiency of VAT revenue collection in the Benelux countries (Belgium, the Netherlands and Luxembourg) for the period 2011-2020. years. Empirical research results indicate that the average VAT efficiency was 59.84% in the observed countries. where the highest degree of efficiency was recorded in Luxembourg, and the lowest value in Belgium. Panel regression results show that economic growth, final consumption, government expenditures and VAT revenues have a positive effect on VAT efficiency in the observed countries. At the same time, variables such as unemployment and inflation, as well as the standard VAT rate, have a negative effect on the efficiency of VAT revenue. The obtained empirical findings can be of help to economic policy makers in the analyzed countries when profiling and adjusting tax policy from the point of view of value added tax.

Key words: *value added tax, efficiency, panel analysis, Benelux countries.*

JEL: *H20, H21, H26*

Introduction

States around the world have difficulties in raising the required level of tax revenue to finance planned activities (Mu et al., 2022). The potential problem of revenue collection especially occurs in moments of crisis, when economic activity slows down and leads to negative tendencies in the movement of fundamental macroeconomic indicators. The issue of the efficiency of revenue collection and collection is important for all fiscal authorities, where it is necessary to determine the main generators of tax revenue in state budgets. In order to provide public services and cover public needs, the creators of fiscal authorities must create an appropriate tax system that will generate the required level of income on a tax, but

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also non-tax basis. Adequate management of the revenue side of the budget is a prerequisite for optimal planning and execution of projected expenditures.

Tax collection represents an important instrument in ensuring economic stability and development (Majerová, 2016), as well as the most important item of state budget revenues (Kubjatkova et al., 2021). Tax funds can be used to direct the economy towards the realization of specific goals (Kowal, Przekota, 2021). Accordingly, tax revenues should provide funds for appropriate infrastructure, health, education, culture, employment, social income distribution and public safety. (Dobrović et al., 2021). Similarly, Barbu et al. (2022) identifies tax revenues as the main source of financing state budgets for investments in public infrastructure. In order to improve the collection of tax revenues, in addition to the appropriate institutional and legislative framework, it is necessary to improve the capacities of the tax administration, as well as the efficiency of their activities (Ramírez-Álvarez, Carrillo-Maldonado, 2020). Also, the issue of tax collection is essential for fiscal authorities and it is conditioned by the structure of the tax system of a particular country. Namely, the structure of the tax systems of developing and underdeveloped countries is primarily focused on indirect taxes, ie taxes on consumption. On the other hand, the tax systems of developed countries have a much higher share of direct taxes due to a significantly larger income base that is subject to taxation. In addition to serious borrowing constraints and obstacles to increasing resources through raising fiscal pressure, the huge growth in the volume of public spending in most developed countries indicates that economic policy makers must improve the efficiency of the public sector (Cordero et al., 2021). This issue is significant for the management of tax revenues and their efficient allocation for productive purposes.

Taxation of consumption in most countries around the world is based on value added tax and sales tax (Sokolovska, Sokolovskyi, 2015). For this reason, value added tax is gaining more and more importance in empirical measurements and analyzes of effects on certain macroeconomic indicators. Tóth et al. (2021) states that the role of consumption tax is one of the most important issues in the debates about the optimal tax structure from the perspective of efficiency and fairness. Acosta-Ormaechea et al. (2019) points out that economic policy makers often favor consumption taxes to stimulate economic growth over direct taxes on the example of 70 economies.

The structure of the work includes four segments. After the introductory discussion, there follows an overview of theoretical and empirical findings related to value added tax from the point of view of collection and efficiency of collected revenues. The third segment of the work includes a methodological framework that includes the sample, selection of observed variables, definition of hypotheses, application of panel tests in order to select the appropriate empirical model. The fourth segment of the work involves measuring and evaluating the effects of selected variables on VAT efficiency in the Benelux countries. The last segment of the work involves concluding considerations and recommendations for economic policy makers of the Benelux countries.

Theoretical framework of research

Facing the challenges of raising funds and covering the growing needs, many countries are introducing various tax forms, including value added tax (Aizenman, Jinjarak, 2008). Value added tax has become the most common consumption tax worldwide (Giesecke, Tran, 2012), with Keen (2013) pointing out that this tax form has been implemented in more than 150 countries worldwide. Value added tax, as a replacement for sales tax, stands out as an effective tax form, that is, an instrument that generates and increases tax revenues (Hosseini, Briand, 2020). According to OECD records, at the end of 2018, that number increased to 168 countries that implemented VAT in their tax systems (OECD, 2018). The theory predicts value added tax as an efficient tax form, which is one of the primary reasons for the rapid implementation of this tax form worldwide (Adhikari, 2020). The importance of value added tax from the aspect of revenue generation is discussed by Feltenstein et al. (2022) and Morrow et al. (2022), who emphasize that value added tax represents the main source of tax revenues. Also, Lin (2008) points out that this form of taxation generates significantly more revenue compared to other forms of taxation, that is, it represents the most stable and productive form of all components of the tax system (Abshari et al., 2021). Accordingly, value added tax should be a tax form that achieves greater economic efficiency compared to alternative indirect taxes (Mascagni et al., 2021). At the same time, this tax form is not suitable as an instrument of income distribution (Shiraishi, 2022). In countries without major administrative restrictions, this tax form should primarily serve for efficient and predictable revenue collection (Cnossen, 2012).

An efficient tax system is often characterized by a high level of tax collection with acceptable collection costs (Babici et al., 2019). Looking at the structure of the VAT system, Kalyva et al. (2016) emphasizes a simple taxation system with limited use of reduced rates. The introduction of value added tax implies an appropriate economic capacity in terms of absorbing potential price fluctuations. Benkovskis and Fadejeva (2014) state that value added tax rates are important for consumption, but also the price level, as well as that the movement or change of VAT rates can have essential implications for the inflation rate. Accordingly, Milenković et al. (2020) confirm the statistically significant influence of value added tax on the inflation rate in the Republic of Serbia. Campos-Vázquez and Medina-Cortina (2019) state that a lower degree of price dispersion is present in markets with pronounced competition. In addition to the possible price oscillation at the general level, the value added tax is a grateful tax form from the point of view of revenue collection and strengthening of tax discipline. Chan et al. (2017)

states that the value added tax system has positive effects on the discipline of the executive in terms of tax revenue collection and management. Strengthening tax discipline is an essential task for fiscal authorities worldwide, given the existence of the problem of tax evasion (Martinez et al., 2022). In the research of Baum et al. (2017) confirmed a statistically significant relationship between revenue collection and tax administration capacity. According to the authors Capasso et al. (2021) it is important to ensure strong fiscal institutions which are essential to ensure a positive public attitude towards paying taxes. Also, authors Lin and Jia (2019), as well as Ndubula and Matiku (2021) indicate in their studies that tax education and tax rates are closely related to the performance of collected revenues.

There is a certain number of theoretical and empirical research that focused on the effectiveness of value added tax (Zídková, 2014; Tagkalakis, 2014; Baum et al., 2017; Bostan et al., 2017; Hodžić, Celebi, 2017; Đorđević et al., 2019; Hodroyiannis and Papaoikonomou, 2020; Kowal, Przekota, 2021). Authors Đorđević et al. (2021) point out that the highest efficiency of VAT collection is possible if fiscal policy measures are correlated with economic and structural policies, achieving a strong synergistic effect. Zídková (2014) confirms a positive relationship between final consumption and the total VAT gap in twenty-four EU countries, while Tagkalakis (2014) points out that improving economic conditions improves VAT efficiency. On the other hand, the empirical analysis of Bostan et al. (2017) shows surprising results confirming that there is no statistically significant difference between the VAT rate and VAT revenue, as well as the negative impact of the VAT rate on the fiscal efficiency of Romania for the time period 2006-2014. years. Acosta-Ormaechea and Morozumi (2021) emphasize that an increase in VAT has a positive effect on long-term growth, only if the collection of collected revenues is improved, but not the standard VAT rate. Also, Hodroyiannis and Papaoikonomou (2020) found that the increase in VAT revenues and their efficiency can be realized through greater use of card payments in countries within the Eurozone for the time period 2006-2016. years.

Since the goal of the research is aimed at determining the VAT efficiency in the Benelux countries, the obtained empirical results can be lucrative for the fiscal authorities of the observed countries when creating and profiling tax policies. The contribution of this research implies that the creators of the economic authorities can appreciate and apply the empirical findings as a guide when formulating the policy and the value added tax system. In this way, the optimal empirical model of VAT efficiency will contribute to maximum revenue collection with minimal harmful implications for the economy.

Methodological research framework

Assessing tax efficiency has always been the focus of public finance research, both at the national and international level (Mukherjee, 2020). The VAT efficiency testing methodology requires the collection of data on VAT revenues in relation to gross domestic product (GDP), standard VAT rate, final consumption and consumer price index (CPI). In recent years, research on VAT efficiency in the European Union has been linked to the model developed by Keen (2013). It determines efficiency by relating actual VAT revenues to theoretical VAT revenues. Based on the concept of Tanzi and Davoodi (2000), PDF efficiency can be calculated through a traditional measurement approach:

$$\text{VAT efficiency} = \frac{\frac{VAT\ revenue}{GDP}}{SVAR} \quad (1)$$

At the same time, the VAT efficiency coefficient, which is often denoted in the literature with the symbol C, can also be calculated according to the following mathematical formula:

$$\text{C-efficiency} = \frac{V}{PV} \quad (2)$$

$$PV = \text{purpose} \times (FC - V) \quad (3)$$

V - realized VAT revenues, PV - theoretical (assumed) VAT revenues, SVAR - standard VAT rate, FC - final consumption.

The indicator C-efficiency of VAT shows what percentage of financial spending is collected for each percentage point of the standard rate of value added tax (Cnossen, 2015).

The optimal VAT efficiency coefficient of 100 percent should be considered totally efficient in the case where the tax base is covered by a proportional tax rate. In the case of a reduced VAT rate on certain goods and services, the value of this indicator will be below 100 percent (Hodžić, Celebi, 2017). After calculating these indicators/coefficients, it is possible to determine the VAT gap, as the difference between the achievable VAT income (theoretical) and the real VAT income in order to identify its increase or decrease over time, through the VAT gap rate. Based on the methodological research framework based on the research concepts of Keen (2013) and Popa and Botos (2021), the following hypotheses were developed:

$H_{0:}$ Macroeconomic factors significantly affect VAT efficiency in the Benelux countries.

$H_{1:}$ Economic growth rate has a positive effect on VAT efficiency in the Benelux countries.

$H_{2:}$ The rate of final consumption has a positive effect on VAT efficiency in the Benelux countries.

$H_{3:}$ The unemployment rate has a negative effect on VAT efficiency in the Benelux countries.

$H_{4:}$ Inflation rate negatively affects VAT efficiency in the Benelux countries.

$H_{5:}$ Government expenditures have a positive effect on VAT efficiency in the Benelux countries.

$H_{6:}$ Higher standard VAT rates lead to less VAT efficiency in the Benelux countries.

$H_{7:}$ Higher VAT revenues contribute to higher VAT efficiency in the Benelux countries.

The empirical framework for measuring and evaluating VAT efficiency in the Benelux countries is based on the research concept of the authors Keen (2013) and Popa and Botos (2021), which observes VAT revenues, the standard VAT rate, as well as final consumption as a key indicator when measuring the effect of indirect taxation., that is consumption tax. The paper presents a regression model that includes the dependent variable EF and the influence of independent variables such as GDP, FP, NEZ, INF, DR, VAT rate and VAT revenues (Table 1).

Table 1. Selection of explanatory variables

Variables	A symbol	Calculation	Expected effect
Gross domestic product	GDP	annual rate	+
Final consumption	FP	% participation in GDP	+
Unemployment	NOT Z	annual rate	-
Inflation	INF	annual rate	-
State expenditures	DR	% participation in GDP	+
Standard VAT rate	VAT	annual rate	-
VAT revenues	VAT	% participation in GDP	+

Source: Illustration by the author

Based on the panel construction of Brooks (2008), the regression model is presented as:

$Y_{it} = \alpha + \beta x_{it} + \mu_{it}$ (4)

Y_{it} – dependent variable (EF)

α - constant

βx_{it} - coefficients of independent variables (GDP, FP, NEZ, INF, DR, PDVs, PDVp)

and – 3 countries (Belgium, Netherlands and Luxembourg)

t – 2011-2020

μ_{it} - residual

EF – VAT efficiency; GDP – gross domestic product growth rate; FP – final consumption; NEZ - unemployment rate; INF – inflation rate; DR – state expenditures; VATs – standard VAT rate; VATp - VAT revenues.

Empirical results and discussion

Within this segment of the work, the calculation of the VAT efficiency indicator in the Benelux countries was performed for the period 2011 - 2020. The obtained values of the observed indicator are a prerequisite for the panel evaluation of the effects of the explanatory variables.

Table 2. Comparative overview of VAT efficiency in the Benelux countries

Year	Belgium	Netherlands	Luxembourg
in 2011	47.83	51.18	92.44
in 2012	48.14	46.79	88.95
in 2013	47.02	46.98	86.72
in 2014	46.77	47.19	83.69
in 2015	45.98	48.73	78.33
in 2016	47.02	51.81	77.14
in 2017	47.05	52.35	78.23
in 2018	46.80	52.48	76.84
in 2019	47.14	55.43	75.96
in 2020	44.79	57.41	78.95

Source: Author's calculation

Based on the results from Table 2, it can be noted that the average VAT efficiency is the highest in Luxembourg (81.73%) compared to Belgium (46.85%) and the Netherlands (51.04%), where the values of the observed indicator are significantly lower. Analyzing by year, VAT efficiency increased the most in 2012 in the Netherlands (+6.32%), then in 2020 in Luxembourg (+3.94%), and in 2016 in Belgium (+2.26%). If the relative decline of this indicator is analyzed, it can be seen that the VAT efficiency decreased the most in the Netherlands in 2012 (-8.58%), followed by Luxembourg (-6.41%), as well as in Belgium in 2020 (-4.98%).

In order to measure the impact of macroeconomic factors on the elasticity and efficiency of the value added tax in the Benelux countries, as part of this research, data from secondary data sources related to macroeconomic indicators (gross social product - GDP, unemployment, final consumption, inflation, government expenditures). All data were collected from the official pages of leading international institutions, so most of the data in the research was taken from the pages of the International Monetary Fund and the World Bank. The research uses data for the period from 2011 to 2020, and refers to the Benelux countries. Before examining and evaluating the impact of macroeconomic factors on VAT elasticity and VAT efficiency, it is necessary to determine potential differences in the level of observed indicators between the analyzed Benelux countries (Belgium, the Netherlands and Luxembourg) for the time period 2011-2020. years.

Table 3. Assessing differences in the level of VAT efficiency

EF	W = Wilks' lambda		L = Lawley-Hotelling trace		
	P = Pillai's trace		R = Roy's largest root		
Source	**Statistics**	**F(df1)**	**F(df2)**	**F**	**Prob>F**
W	0.1792	2.0	27.0	61.82	0.0000
P	0.8208	2.0	27.0	61.82	0.0000
L	4.5789	2.0	27.0	61.82	0.0000
R	4.5789	2.0	27.0	61.82	0.0000
Residual					27
Total					29

Source: Author's calculation

Table 3 shows the results of the multivariate analysis for the Benelux countries regarding the assessment of the level of differences in the values of VAT elasticity and VAT efficiency for the time period 2011 - 2020. Based on the obtained values of Pillai's Trace = 0.000 for the selected variable VAT efficiency, it can be concluded that there is a statistically significant difference in the level of VAT efficiency in the mentioned countries for the analyzed time period.

After determining the differences in the level of VAT efficiency in the Benelux countries, the examination and assessment of the influence of selected macroeconomic factors on the VAT efficiency panel level for the time period 2011-2020 follows. years. The panel estimation was performed based on the random effects model and the fixed effects model. At the same time, panel causality, i.e. causality between macroeconomic factors and VAT efficiency, is presented. As a condition for an appropriate regression model, it is necessary to conduct stationarity testing, as well as to determine whether there is a problem of multicollinearity, that is, of pronounced correlation between the selected independent variables.

Table 4 shows different panel stationarity tests (LLC test, BTtest and HT test) on the example of three panels (Belgium, Netherlands and Luxembourg) which were applied to examine and identify the stationarity trend of the included variables. The results indicate first-order stationarity for most variables at the 0.05 significance level. The following is an examination of the mutual correlation of the explanatory variables using the VIF test.

Table 4. Stationarity tests

Panels contain unit roots								
The panels are stationary								
Variables	**LLC test**	**P-values**	**Breitung test**	**P-values**	**Harris-Tzavalis test**	**P-values**	**Hadri LM test**	**P-values**
EF	-1.38	0.643	-1.41	0.205	0.79	0.645	5.98	0.000
ΔEF	-5.42	0.041	-5.63	0.000	-0.18	0.001	-0.47	0.681
GDP	-2.60	0.000	-1.81	0.036	0.19	0.000	0.18	0.426
ΔGDP	-1.16	0.000	-1.66	0.048	-0.18	0.000	0.65	0.257
FP	-2.53	0.019	-1.09	0.862	0.83	0.735	6.18	0.000
ΔFP	-4.89	0.038	-1.28	0.098	-0.28	0.002	-0.41	0.656
NOT Z	-6.31	0.000	-0.97	0.117	0.88	0.537	4.39	0.000
ΔNEZ	-5.87	0.000	-1.31	0.096	-0.61	0.003	2.14	0.016
INF	-5.35	0.000	3.09	0.992	0.92	0.689	7.98	0.000
Δ INF	-7.56	0.000	-0.68	0.248	-0.34	0.001	-0.46	0.679
DR	-4.07	0.000	-1.34	0.091	0.47	0.051	1.17	0.120
ΔDR	-6.32	0.000	-1.51	0.066	-0.27	0.001	1.16	0.122
VAT	-5.39	0.048	0.5	0.000	0.46	0.047	4.31	0.000
ΔVATs	-2.47	0.905	-0.48	0.314	-0.07	0.000	0.45	0.325
VAT	-0.82	0.721	-1.13	0.872	0.71	0.435	5.07	0.000
ΔVATp	-4.71	0.006	-1.77	0.038	-0.05	0.000	-0.82	0.793

Source: Author's calculation

The results of the VIF test (Table 5) show an average value of 2.39, which leads to the conclusion that there is no problem of multicollinearity between the selected explanatory variables (value less than 4). Bearing in mind that all prerequisites for creating a suitable panel regression model have been met, the following is a comparative presentation of the random effects model and the fixed effects model.

Table 5. VIF test - multicollinearity test

Variables	**VIF**
GDP	1.81
FP	2.68
NOT Z	2.95
INF	2.52
DR	3.68
VAT	1.77
VAT	1.32
Mean VIF	2.39

Source: Author's calculation

Based on the results of the random effects model (Table 6), a statistically significant impact of the explanatory variables, i.e. GDP, final consumption, unemployment, inflation, government expenditures, VAT rate and VAT revenue, on VAT efficiency in the Benelux countries for the time period can be observed. 2011 - 2020. Analyzing the character and intensity of the impact, it is noticeable that the variables GDP, FP, DR and VAT revenues have a positive and statistically significant effect on VAT efficiency in the observed countries, which implies that their growth contributes to increasing the efficiency of VAT collection. On the other hand, the variables NEZ, INF and VAT rate have a negative and statistically significant impact on VAT efficiency, which implies that their increase results in a decrease in VAT collection efficiency. The high value of the coefficient of determination R-squared (0.876) indicates that the model is adequately designed, as well as Prob F (0.000) on the validity of the established empirical model.

Table 6. Random effects model

Variables	Random Effects (RE) Model	Effect + 1%	Effect + 10%
Δ GDP	0.172 (0.000)	+0.17%	1.72%
Δ FP	0.895 (0.007)	+0.89%	+8.95%
ΔNEZ	-0.212 (0.000)	-0.21%	-2.12%
ΔINF	-0.159 (0.032)	-0.16%	-1.59%
ΔDR	0.124 (0.000)	+0.12%	+1.24%
Δ VATs	-0.583 (0.000)	-0.58%	-5.83%
Δ VAT	0.518 (0.000)	+0.52%	+5.18%
R-squared	0.876		
Model validity	0.000		

Source: Author's calculation

Based on the results of the fixed effects model (Table 7), it can be concluded that the explanatory variables, namely GDP, final consumption, unemployment, inflation, government expenditures, VAT rate and VAT revenue, have a statistically significant influence on VAT efficiency in the Benelux countries for the time period 2011 - 2020. Analyzing the character and intensity of the impact, it is noticeable that the variables GDP, FP, DR and VAT revenues have a positive and statistically significant effect on VAT efficiency in the observed countries, which implies that their growth contributes to increasing the efficiency of VAT collection. On the other hand, the variables NEZ, INF and VAT rate have a negative and statistically significant impact on VAT efficiency, which implies that their increase results in a decrease in VAT collection efficiency. The high value of the coefficient of determination R-squared (0.924) indicates that the model is set appropriately, as well as the Prob F (0.000) on the validity of the defined empirical model.

Table 7. Fixed effects model

Variables	Fixed effects (FE) model	Effect + 1%	Effect + 10%
Δ GDP	0.204 (0.000)	+0.20%	2.04%
Δ FP	0.958 (0.002)	+0.96%	+9.58%
ΔNEZ	-0.216 (0.000)	-0.22%	-2.16%
ΔINF	-0.147 (0.000)	-0.15%	-1.47%
ΔDR	0.159 (0.004)	+0.16%	+1.59%
Δ VATs	-0.597 (0.000)	-0.60%	-5.97%
Δ VAT	0.592 (0.000)	+0.59%	+5.92%
R-squared			0.924
Model validity			0.000

Source: Author's calculation

The results of the Hausman test (Table 8) show that the fixed effects model is adequate when assessing the impact of macroeconomic factors on VAT efficiency in the Benelux countries. This means that the selected model includes explanatory variables that explain 92.4% of the VAT efficiency variations in the observed countries, which indicates high reliability and credibility of the obtained empirical findings.

Table 8. Model selection – Hausman test

Model specification	The result	Conclusion
Random Effects Model vs Fixed Effects Model	Chi2(7) = (bB)'[(Vb-VB)^(-1)](bB) = Prob>chi2 = 0.0000	A fixed effects model is appropriate

Source: Author's calculation

In order to determine the potential causality between macroeconomic factors and VAT efficiency indicators, causality measurement was conducted between selected variables for the time period 2011-2020. years. The results of the causality test (Table 9) indicate bidirectional causality between gross domestic product (GDP), final consumption (FP), government expenditure (DR), VAT rate, VAT revenue and VAT efficiency (EF). On the other hand, unidirectional causality of unemployment (NEZ), inflation (INF) and PDF efficiency EF) was confirmed. In the case of identified unidirectional causality, it should be emphasized that a change on the side of macroeconomic factors such as unemployment and inflation leads to a change in VAT efficiency in the Benelux countries.

Table 9. Measuring the causality of macroeconomic factors and VAT efficiency

Direction	F-statistic	Prob.	Causality
GDP → EF	3,587	0.034	bidirectional causality
EF → GDP	3,794	0.019	
FP → EF	4,637	0.008	bidirectional causality
EF → FP	4,716	0.012	
NEZ → EF	2,656	0.328	unidirectional causality
EF → NEZ	4.131	0.047	
INF → EF	4,140	0.039	unidirectional causality
EF → INF	1.568	0.575	
DR → EF	3,696	0.042	bidirectional causality
EF → DR	4.217	0.036	
VAT → EF	7.306	0.000	bidirectional causality
EF → VATs	7,748	0.004	
VATp → EF	7.223	0.000	bidirectional causality
EF → VAT	7.101	0.000	

Source: Author's calculation

Conclusion

The paper includes an empirical analysis of measurement and assessment of the impact of selected macroeconomic factors on VAT efficiency in the Benelux countries (Belgium, the Netherlands and Luxembourg) for the period 2011-2020. years. Value-added tax rates in the Benelux countries ranged from 17% in Belgium to 21%, which was the value-added tax in the Netherlands and Luxembourg. The average VAT efficiency of the observed countries was 59.84%, with the highest average value of the indicator recorded in Luxembourg (81.73%). On the other hand, Belgium and the Netherlands achieved average values of 46.85% and 51.04% during the analyzed time period. The results of the multivariate analysis indicate statistically significant differences in the level of VAT efficiency in the Benelux countries during the observed time period. Panel regression analysis was performed based on the random effects model and the fixed effects model, with the results of the Hausman test confirming that the fixed effects model is adequate. Empirical findings indicate a statistically significant influence of all variables, which leads to the conclusion that the hypothesis H_{0} can be accepted. Bearing in mind the positive impact of gross domestic product, final consumption, state expenditures and VAT revenue on VAT efficiency, it can be stated that hypotheses H_{1}, H_{2}, H_{5} and H_{7} are accepted. Specifically, the growth of GDP, FP, DR and VAT revenue by 1% contributes to the increase of VAT efficiency by 0.20%, 0.96%, 0.16% and 0.59%. On the other hand, unemployment, inflation and VAT rate have a negative impact on VAT efficiency in the observed countries, which allows the acceptance of hypotheses H_{3}, H_{4} and H_{6}. Namely, the growth of NEZ, INF and VAT rates by 1% results in a decrease in VAT efficiency by 0.22%, 0.15% and 0.60%. The contribution of this paper is reflected in the expansion of the existing theoretical framework aimed at tax efficiency, as well as the provision of new empirical knowledge related to the efficiency of value added tax revenue collection in the Benelux countries. The obtained empirical results indicate that the Benelux countries must focus on higher rates of GDP growth and final consumption with a higher participation of state expenditures, in order to achieve positive implications for VAT efficiency. At the same time, a lower inflation rate and unemployment rate will have positive effects on VAT efficiency. Finally, a reduction in the standard VAT rate can generate more VAT revenue, which will undoubtedly have a positive impact on VAT efficiency in the observed countries. Causality results indicate bidirectional causality between gross domestic product (GDP), final consumption (FP), government expenditure (DR), VAT rate, VAT revenue and VAT efficiency (EF). On the other hand, unidirectional causality of unemployment (NEZ), inflation (INF) and PDF efficiency EF) was confirmed. The contribution of this paper is reflected in the provision of empirical guidelines to economic policy makers when profiling the VAT policy in the context of adjusting the macroeconomic framework of the Benelux countries. At the same time, the obtained empirical findings can be of help to countries around the world, especially countries where VAT has a significant share in collected tax revenues.

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POLITIČKA EKONOMIJA NOVCA

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Apstrakt

Nekadasnju polarizaciju finansijskih teoreticara po pitanju važnosti novca karakteriše višedecenijska konfrontacija monetarista i kejnzijanaca, njihova dugogodišnja debata i suprotstavljenost teza "novac nije važan" i „samo je novac važan", Poslednje dve dekade dvadesetog veka karakteristične su za oficijelnu zajedničku tezu da „novac jeste važan"

Opravdanost potrebe za teorijskom analizom u ovom radu i u danasnje vreme nalazimo u činjenici da savremena makroekonomska teorija prepoznaje kraj radikalnog antikejnzijanizma a ujedno i kraj intelektualnog monopola dominantne neoliberalne doktrine koja se logicki oslanja i/ili iz nje izranja, a to je na monetarizam i sve kasnije teorijske derivate.

S druge strane cilj ovog rada nije dosegnuti mogucnost da formulisemo nove teorijske postavke vec da pregledom konfliktno uspostvaljenih stavova predstavnika različitih dokttina u finansijskoj teoriji uočimo i danas aktuelne probleme i kontorverze, i eventualno i dalje neresene dileme, kako u finansijskoj teoriji tako i u vodjenju monetarne i fisklane politike. u svetu pa i kod nas.

Ključne reči: *novac, monetarizam, kejnzijanizam, finansijska teorija*

JEL: *E52, E59.*

Uvodna razmatranja

Reinterpetacije na temu važnosti novca i njegove funkcionalne komponnte, a na posletku i u kojoj meri je novac važan, nalazimo u obimnoj literaturi poslednjih 50 godina. Ono na što ranija istraživanja ukazuju su svakako sve ono što kvantitativno predstavlja domete različitih makroekonomskih modela. Medjutim, obzirom da oni respektuju i finansijski element u svojim strukturama neumitno se

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diferencirala i čitava struja finansijskih teoretičara koj su sistematičnije analizirali finansijske elemente u navedenim modelima. Tako se svojevremeno etablirao i konceptualizirao monetarizam koji je obeležio čitavih nekoliko dekada u finansijskoj teoriji i dao praktični tonalitet čak i današnjoj ekonomskoj praksi.

Vrednost takvih istraživanja i njima inherentnih stavova izazivala je širu naučnu polemiku i komparativne analize sa prethodno identifikovanim tendecijama u vodjenju ekonomske politike, prvenstveno sa kejnzijanizmom. Značajne razlike su svakako postojale i danas vrlo prisutne sa suptimnim ukrštanjima do mere da je „srž“ pojedinačnih teoretskih elaboracija jako teško utvrdiva sa aspekta izvornosti. No i pored toga, ta preplitanja i svojevrsna naučna pomodnost u odredjenim periodima davale su, a i danas daju, vrlo inspirativno polje za dalju aktuelizaciju ovakvih polemika do današnjih dana kada je potrebno konkretnije dati odgovor na globalna dešavanja.

Dakle ako podjemo od ideje da razvrstamo i fregmentišemo etablirane doktorine sa ciljem da istražimo „apsolitnu istinu“ dolazimo do gepa u kome prema Ristić i Živković (1998) nijedna doktrina nije u potpunosti monolitna već da sva, kroz vreme evidentirana i objavljena, istraživanja, zapravo reprezentuju „*skup multipliciranih analiza monetarističkih modela, koji impliciraju različite posledice u procesu vođenja ekonomske politike u skladu sa evolucijom monetarističkih ideja u skoro svim makroekonomskim modelima*.“ (Ristić, Živković, 1998, str.134.)

U konkretnom slučaju monetarizma navedeni autori ukazuju da monetauzma nije i u svom izvornom obliku homogen blok sa inherentnim čvrstim stavovima pojedinih teoretičara već škola sa konvergirajućim i divergirajućim stavovima, u principu istih teoretičara koji imaju zajednički fundament. Zajednički fundament svih monetarističkih teoretskih struja ogleda se u tome da monetarni faktor ima opredeljujuči i determinantan uticaj na razvoj, da nacionalni dohodak isključivo zavisi od varijacija monetarne mase i da je privatni sektor u suštini stabilan. Što se tiče ciklusa na nivou privrednih kretanja ona rezultiraju isključivo pod dejstvom rasta monetarne mase i da se u dugom roku gubi relevantna veza izmedju inflacije i nezaposlenosti.(Bilghi,2001)

Pod zajedničkim okriljem proističe i teza da inflacija ima težnju da bude anticipirana i da ne utiče na nivo nezaposlenosti pod pretpostavkom prirodne nazaposlenosti. Može se zaključiti da apostrofiranje prirodne nazaposlenosti korelira unapred problematizovanim stavom monetarista generalno. (Ghatak, 1995; Ristić, 2020)

Sve ukazano portretira ključnu filozofiju monetarizma u svim njegovim varijetetima koji direktno korespondiraju sa različitim implikacijama na ekonomsku politiku. Različite implikacije tiču se i ekonomskog ambijenta u kome su teoretski pristupi i nastajali kao i na politike zemalja koje su bile konzumenti ovakvih pristupa, globalno, i kroz vreme.

Ako bismo hteli da konkretizujemo ključne premise monetarizma onda bi to bilo da inflacija isključivo rezultira iz nekontrolisane ekspanzije novčane mase a i da se jedino može kontrolisati podizanjem kamatnih stopa, otećanim pozajmlivanjem novca kao i upravljanje rezevama. Otuda je danas aktuelna polemika oko podizanja referentne kamatne stope koje je i ključno sidro monetarističkog pristupa na kojima centralno bankarstvo sveta i „leži“

S druge strane ako bismo se osvrnuli na oponentnu doktrinu, ključno opšte mesto fiskalizma je zapravo određivanje vrednosti novca sa koga su se oni kroz vreme preko teorijskih rasprava oštro suprostavljali monetarističkim pogledima time problematizirajući značaj novlane mase i njenog kretanja.

U različitim epohama u literaturi dolazi do svojevrsnog mirenja polarizirajućih stavova u stav „novac jeste važan“ ili čuvena Fridmanova opaska „sad smo svi kejnzijanci“. (Živković, Ristić, 2020)

Različita shvatanja o determinantama vrednosti novca vodila su monetariste i fiskaliste u pravcu davanja različitog značaja novčanoj masi prvenstveno u razlici između nominalne i realne novčane mase a zatim i oko problema determinisanja kamate.

Teoretičari dohotka ili fiskalisti u različitim analizama ne prave razliku između nominalnih i realnih kamata, jer kamatu smatraju monetarnim fenomenom dok s druge strane teoretičari oanetarističkog gledišta prave razliku između nominalne i realne kamate obtirom da tržišnu kamatu dovode u vezu sa promenama nivoa cena i da s tim u vezi realnu kamatu objašnjavaju svim aktuelnim nemonetarnim faktorima. (Ristić, Živković, 1998)

Činjenica je dalje da je efekat realnog novca empirijski slab saglasno kejnzijancima, što identifikujemo pregledom literature, i da je ideja da je monetarna politika imala slab uticaj na nacionalni dohodak, obzirom da njeni efekti proizilaze uglavnom preko varijacija kamatne stope i nivoa zaposlenosti, ukazuje da je na ovom mestu potrebno reinterpretirati oprečna stanovišta i uporišta u komparativnoj analizi fiskalista i monetarista kako kako bi se praktično približili cilju ovog rada a to je odgonetnemo moguće ishode današnje globalne monetarne i fiskalne politike u uslovima aktuelnih tendencija uslovljenih postkovidom i geopolitičke ranjivosti nametnunte rarom u Ukrajini i s tim u vezi suštinskim „politekonomskim“ tretmanom novca.

Monetarističko-kejnzijanski konflikt i pokušaj etabliranja diverzifikacije finansijske teorije

Analizom dostupne literature koja se bavi ekonometrijskim merenjima efekata novca na realni sektor, u periodu od 1960 pa na ovamo pronalazimo da teoretičari uglavnom apostrofiraju da postoji uska veza između rezervi i monetarnog stoka, i da pravilo konstantnog rasta novčane mase reprezentuje esencijalni instrument monetarne politike (Ilić et al., 2022), s druge strane obzirom da izvršeni uticaj novca na nominalni dohodak odnosi se na realni dohodak, a ne na komponentu cena, teoretski se konstituiše kejnizjanska alternativa u poziciji monetarizma (Savić & Bonić, 2022). Analiza ranijih istraživanja nameće potrebu da je takodje važno istaći da suprotno od toga, efekti fiskalnog impulsa na realnu proizovodnju jesu jedva značajniji nego na nivo cena i da dejstva promene novčane mase pre pogađaju realnu proizvodnju nego nivo cena.(Hetyel, 2017)

Ovo je momennat diverzifikacije finansijske teorije koja onda „putuje“ kroz vreme i u različitim interpretacijama i uporištima konvergira ili divergira jednoj ili drugoj doktorini. Zanimljivo je ukazati da je potencijalna sinteza monetarizma i fiskalizma u potpunosti izostala iako se u nekom momentu tako činilo (Klincov et al., 2022).

Svi varijeteti doktirna koje literatura prepoznaje, pokazuju i tendenciju pojedinih teoretičara da „osmisle“ novu teoriju što takodje nije rezultiralo istom jer se sve baziraju na istim indikatorima u različtim kombinacijama.

Tako je recimo u navedenom konfliktu monetarista i fiskalista inherentna toerija ekonomike ponude, koja se bazira na sniženju poreza ili programu poreske redukcije, limitiranju budžetskog deficita i redukciji kamatne stope a sve u funkciji eliminisanja trendova recesije i akceleracije privrednog rasta (Mihajlović et al., 2022).

Medjutim analize koje su negirale relaciju redukcije poreza, ekonomski rast, porast fiskalnih prihoda i smanjenje budžetskog deficita se preokrenula u relaciju redukcija poreza, rast budžetskog deficita, rast kamatne stope, ekonomska kriza i recesija, i ukazale na postojanje stukturne kontradiktorsnoti monetarističkog pristupa u finansijskoj teoriji (Ilić & Tasić, 2021).

U cilju sistematizacije kontradikotrnsoti osvrnućemo se na sledeći popis i to: (Groenwegen, 2003; Ristić, 2020)

1. monetaristička politika pogađa prvenstveno zaposlene pre nego što ima uticaja na porast opšteg nivoa cena i nadnica.
2. kombinacija restriktivne monetarne politike i ekspanzivnog budžetskog deficitarnog finansiranja utiče na porast kamatne stope čime umanjuje investicione aktivnosti sa jasnim pretendovanjem ka recesiji.
3. čvrsta kontrola monetarnog rasta posredstvom politike upravljanja bankarskim rezervama skicira polje liberalnom ponašanju kamate i posledično tome indiferentnosti koje taj manevar ima u medjunarodnim ekonomskim i finansijskim odnosima.

4. politika novca koja ima za cilj da umanji ili u odredjenoj meri neutrališe inflatorne tendencije uslovljava rigidniju klimu zapošljavanja koja sledstveno tome generiše recesivne ekonomske tendencije i povećava budžetski deficit.
5. monetaristi su stava da svako redukovanje stope poreza u kontekstu recesije ne dovodi nužno do budžetskog deficita, kao generatora inflacije kao i dodatni rast kamatne stope i istiskivvanju investicija u korist potrošnje, ali iskazuju sumnju sve analize i optimističke predikacije onih teoretičara koji govore o koegzistiranju inflacije i ekonomskog rasta.
6. monetaristi tvrde da potrebe trezora u vidu zajmova signifikantno ukazuju na senzibilitet finansijskog sektora.
7. monetaristička postavka je i da su promene novčane mase dominirajuća determinanta promene novčanog dohotka.

Sve navedeno u odredjenoj meri ukazuje na prisustvo „slabih tačaka" monetarističke doktorine koje je i otovrilo polje daljih polemika i teoretskih rasprava.

Tako je recimo po fiskalistima nasuprot stavovima monetarista, prema istraživanjima Ristić, Živković (1998) i Ristić (2020) uprono renebregavana činjenica da dominirajuće dejstvo novca zavisi od procena alternativa između inflacije i nezaposlenosti. Prema Groenwegeni (2003) uočava se da se odredjene statističke pravilnosti koje su identifikovane u relaciji između nezaposlenosti i stope inflacije nisu održale čak i u slučajevima kada je ekonomska politika pokušala da obezbedi i osigura nižu nezaposlenost sa predviđenim porastom inflacije. (Groenwegeni, 2003).

Ako se osvrnemo na ključne kontorverze izmedju monetarista i fiskalista, kažemo da je Keynes pridavao značaj "slepoj ulici" zamke likvidnosti kao i mnogi njegovi sledbenici, teoretičari, da je i ukazivao da najveći deo privatnih potraživanja i novčane imovine ima protivtežu u dugovanjima. Opet s druge strane, u našim razmatranjima dostupne literature nameće nam se pitanje da li poreski obveznici, koji predviđaju i projekturju da treba da plate poreze za otplatu većeg realnog javnog duga, smatraju sebe siromašnijim i/ili osiromašenim u istoj srazmeri u odnosu na vlasnike obveznica pod pretpostavkom da sebe smatraju bogatijim. (Ristić, Živković, 1998; Živković et al, 2019)

Kontroverzno je, što se zaključuje iz analize radova različitih teretičara koji pripadaju dvema navedenim doktorimnama da i kada se državni dug umanji i/ili u odredjenoj meri neutrališe „*ostaje novčana osnova i one državne obveznice koje u zamci likvidnosti postaju ekvivalent za novac i ne nose kamatu*".(Živković, Lakić, Ristić, 2019, str. 219)

S tim u vezi, sa aspekta naše analize, konstatujemo da je pogrešno oslanjati se na reakciju potrošnje i štednje na evidentirao bogatstvo, ali je vrlo neoprezna tendencija prenebregavanja činjenice da je porast realne vrednosti novčanog bogatstva povoljan, možda i dovoljan za razvoj investicionih aktivnosti i akceleracije rasta.

U cilju sagledavanja teoretskog otpora monetarista fiskalizmu osvnućemo se na praktične verzije monetaruzma u Velikj Britaniji i SAD u poglavlju koje sledi.

Politička ekonomija „Reganomije i Tačerizma“ kao oblik konfrontacije fiskalizmu

Konfrotnacija fiskalističkom pogledu na ekonomsku stvarnost i načine regulisanja i akceleracije ekonomskog rasta i razvoja, prvi konkretan politički i funkcionalni oblik dobila je za vreme vlade Tačer/Regan u Velikoj Britaniji i SAD.

Dakle, etabliranje praktičnog monetarizma javlja se kao reakcija na tradicionalnu postavljenu kejnzijansku politiku regulisanja tražnje fiskalnom politikom (Pantić et al., 2021). Epohalni naziv ovog oblika finansijske vladavine naziva se Tačerizam ili Reganomija što ćemo kao oficijalne termine koristiti u daljem tekstu.

Naime, obzirom da se fiskalna politika krajem sedamdesetih godina prošlog vek pokazala nesposobnom da izvuče privredu iz recesije i stagnantnih okvira a samim tim i da suzbije inflaciju i nezaposlenost usledila je brza penetracija radikalnih fundamenata monetarizma.

Taj monetarizam nazivao se i intervenističkim na svom početku obzirom na ciljeve koje je imao a ubrzo potom dobio je i formu i naziv kao restriktivni usled redizajniranja ciljeva i željenih ekonomskih ishoda (Jovanović, 2021). Praktični dometi konvergirali su i teoretskim analizama tog doba. (Ristić, Živković, 1998; Liondis, 2019)

Zapravo ovaj pobratimljen britanskoamerički praktični monetarizam koji reprezentuje tip restriktivne monetarne politike, u svojoj osnovi takodje reprezentuje različite monetarištičke tendencije otelovljene u različitim nazivima i to fridmanovski monetarizam, anticipativni monetarizam, itd. Sve su to varijeteti koji su zapravo oličenje i političkig konteksta ekonomije zamalja u kojima je nastajao.

U navedenoj verziji ovaj monetarizam u tačerovsko reganomijskom obliku inkorporiše politiku progresivne deceleracije stope rasta novčane mase, zatim slobodno flotirajuće stope razmene i kamatne stope, poresku redukciju i kresanje socijalnih rashoda. U kasnijim izvedenim oblicima limitirao je budžetskih deficit, ukinuo masivne subvencije javnim preduzećima a sve u cilju da se obori inflacija. (Vukša i dr., 2013; Ristić, Živković, 1998)

Kad je u pitanju nezaposlenost oslanjali su se na ključnu monetarističku premisu da će se ona neminovno redukovati u svislu smanjenja po uravnoteženju privrednog ambijenta. (Hetzel, 2017)

Ovakva shvatanja i delovanja uzimala su u obtir neminovnu medjunarodnu razmenu i medjunarodne ekonomske odnose tako da bi prebacivanje tereta stabilizacije na ostale zemlje postiao efekat „lokomotive“ i pokrenuo rast, u rekompenzovanom obliku, u tim zemljama i generalno dovesti do ravnoteže i permanentnog rasta globalno.

Glavno uporište tačerizma je bilo i urušavanja države blagostanja, i s tim u vezi tezu o punoj zaposlenosti čime je praktično izvojevano volšebno smanjenje državnog učešća u privredi i vraćanje na laissezfaire ekonomsko ponašanje na tržištu (Đorđević & Krstić, 2020). Cilj je dafakto bio prekinuti lanac preraspodele nacionalnog dohotka u korist nadnica pa i po cenu povećanja stope nezaposlenosti i produbljenja recesije.

Ovo je prvenstveno važno da se na ovom mestu poentira i danas aktuelna kontroverza koja globalno nije razrešena u kreiranju ekonomskih politika.

Dakle prema Živković, Ristić (2020, str. 87) „m*onetarizam tačerizma i reganomije utisnut u različite ekonomske tokove upotrebom monetarističke doktrine reprezentuje svojevrsnu mešavinu manjeviše svih njegovih varijanata sa opredeljujućim kredom fiksirati normu kvantitativnog rasta monetarnih agregata nezavisno od mogućih fluktuacija kamatne stope, zatim osigurati budžetsku ravnotežu i ne koristiti budžetski arsenal za amortizovanje fluktuacija ekonomske aktivnosti“.*

Epohalna procena ekonomske vrednosti ovog doktrinalnog pristupa ogleda se od prečnih stavova oko progresivnog rasta novčane mase, smanjenja budžetskog deficita i smanjenja prestacija na rast nadnica a zapravo sve u cilju denacionalizacije i stvaranja ekonomskog liberalizma.

Politička ekonomija novca nalaže danas ponovno preispitivanje krutih stavova o ne mesanju države u privredni ambijent, promoviše ideju nove preduzetne države, gde se u novim okvirima socijalne strukture traže nove inkluzivne strategije rasta koje respektuju manju nejednakost, veću koheziju, sigurniji i stabilniji finansijski sektor.

Doktrinske kontroverze o inflaciji: politekonomska reinterpretacija

Vrednost novca i kretanje cena kao ekonomski fenomeni bili su predmet opservacija i mnogo pre Kejnza. U vreme pre fatalne velike recesije, monetarna politika je bila procenjivana kao jedina moguća opcija za ekonomsko usmerevanje i optomizaciju rasta cena.

U vreme pomenute Velike krize, obzrrom na konstituisano podozrenje prema monetarnoj politici, konstituisala se potraba da se pored stabilnosti cena jedanko valorizuje i važnost zaposlenosti (Krstić & Brajković, 2022). Tako je Kejnz pored monetarne politke uvrstio i fiskalnu. čime je želeo da obezbedi da se ukupnom ekonomskom politikom obezbedi postignuće dva cilja sa dva instumenta i time obezbedi konzistentnost u vodjenju ekonomske politike. (Obregon, 2020)

Medjutim posle sinteze klasičnih i kejnzijanskih propozicija zasnovane na uzimanju u obzir efekata realnog novca sve debate o mogućem uticaju monetarne i fiskalne politike na inflaciju, konvertovala se u opsežnu kontroverzu monetarista i kejnzijanaca, čije polemike kao svojevrsan tonalitet i danas obeležavaju sva ekonomska stanovišta.

Ortodoksni kejnzijanski pristup, koji su sledili mnogi teoretičari odbacuje i naglašava da je Kejnz razmatrao problem nezaposlenosti kao fenomen slabe ukupne tražnje u situaciji koju je karakterisala tendencija pada nominalnih i realnih cena i nadnica dok suptorno tome monetaristi tvrde da nezaposlenost nije posledica nedovoljne tražnje, već da će svako povećanje tražnje koje ekonomska politika izazove pre vršti inflatorne prestacije nego što će uspeti da smanji stopu nezaposlenost koja zapravo i nije nastala sledstveno smanjenim tendencijama tražnje.(Bradford, 2000; Ristić, Živković, 1998)

Zanimljiva je uvek Fridmanova teza da je inflacija uvek i svuda monetarni fenomen. Njegova epohalna tvrdja odnosi se pravashodno na uslove u kojima se inflacija stvara samo rastom količine novca koji je brži od stope rasta proizvodnje. Kasnija istraživanja pokazuju i danas opravdanu sumnju pa i tvrdnju da je samo trajna inflacija uvek i svuda monetarna s tim da je istina da nije nužno da svaki porast novčane mase izaziva i proporcionalno porast cena..

Komazec, Ristić (2016) istražuju i nalaze da monetaristi smatraju da je inflacija monetarni fenomem i da nije uzrok recesije, već da su recesija, rast stope nazaposlenosti, inflacija i disbalanski platnog bilansa proistekli iz pogrešno vodjene politike novca koja akcelerira brži opticaj novca od stope rasta proizvodnje pri čemu konstatuju da svako monetarno indukovane fluktuacije stopa povećanja cena zapravo vode težem diferenciranju potencijalno relativnih od apsolutnih promena cena, što je takodje kontorverza koju je bilo ključno identifikovai za potrebe ovog rada.

Pregledom različitih teoretskih debata konstatujemo da se prema shvatanjima pristalica kejnzijanske škole, inflacija javlja kada novčana tražnja premašuje ponudu roba i usluga. Prema ovim shatanjima tražnja koja se javlja u uslovima bržeg ekonomskog rasta neumitno dovodi do smanjivanja proizvodnih rezervi Tako kejnzijanci apeluju na smanjenje potencijalnog porasta tražnje povećanjem poreza i kamatnih stopa i s tim u vezi višeg opsega javnih rashoda. (Ristić, Živković, 1998)

Teoretičari tzv. troškovne inflacije uzrok inflacije nalaze u porastu nadnica pri čemu insistiraju isključivo na primeni politike dohotka koja ima za cilj da redukujea i/ili kontroliše cene i zarade. Za domete ovih teoretskih elaboracija možemo navesti da je ključan trenutak u vremenu kada že se ove mere primenjivati. Dakle, „hladjenje“ ili „grejanje“ konjukture.

Dalje, analizirajući nemonetarističke teorije inflacije svaki porast investicija iznad nivoa štednje, pritisak u pogledu rasta nadnica, profita i materijalnih troškova kao i porast budžetskog deficita mogu izazvati porast cena i inflaciju ali jedino ako determinišu porast stokova novca gde će stalno odstupanje emitovane količine novca od tražnje realnih stokova novca dovoditi do stvaranja inflacionih sila koje se u odredjenom vremenu mogu kontrolisati a u dugom roku ne.

Ovim osvrtom na medjusoban tretman monetarista i fiskalista u pogledu procenjimanja koji faktori deerminišu stvaranje inflacije i koji su instrumenti najpodesniji za suzbijanje i kontrolu konstatujemo da sve eleboracije, polemike i rasprave nastavljaju da žive u tim raspravamo bez mnogo teoretskog a ni praktčnog iskoraka do dan danas.

Medjutim primetna je tendencija i međusobnog uvažavanja makar u formi „obraćanja pažnje“ na drugu stranu što bi moglo u perspektivi da skicira neko novo rešenje.

Oštro suprotstavljanje monetarista i fiskalista nije doprinosilo da se da konkretan odgovor na realne procese s obzirom na to da je inflacija posledica mnogih faktora koji se medjusobno prepliću i na odredjene načine integrišu.

Tako je svojevremena kejnzijanska tvrdnja da je monetarna poliitka neefikasna i nedovoljana oplemenjena i slabljenjem stava monetarista koji govore o rigidnosti fiskalne poliiteke i politike dohotka obzirom da po njihovom tumaćenju ove dve politike imaju zajednički cilj i da je to zapravo realokacija finansijskih resursa iz pivrednog u javni sektor.

Generalno govoreći možemo se složiti da je iInflacija dinamičan proces. Kompleksan odnos troškova i cena, nadnica i tržišnih uslova proizvodje i prometa impliciraju da se inflacija mora sagledavati šire i dublje i sa različitih nekada i nerazumljivih strana kako bi izbegli zamku pogrešnog zaključivanja u formi da se inflacija možeobuzdati jedino produkovanjem recesije, da se tržišni monopoli mogu kontrolisati padom proizvodnje i da se sila sindikalnih organizacija može ukrotiti večom nezaposlenošću.

U okrilju kompleksnijeg pristupa u sagledavanju inflacije konstatuje se da monetarna politika, monetaristički dizajnirana, nije dooljna sama po sebi, već da joj je komplementaran pandam upravo fiskalna politika kroz adekvatnu primenu odredjenih alata.

Kako monetarna i fiskalna politka nikada nisu dovoljno ekspertski koordinirane niti njihov odnos adekvatno procenjivan konsentus po ovom pitaju ni danas nije postignut te i da i dalje otvara vrata za dalja istraživanja i pokušaje.

Zaključak

Pregledom oponentnih diskusija u finansijskoj teoriji koje čine strukturu ovog rada ukazuju na i danas prisutna otvorena pitanja i dileme izmedjju monetarista i kejnzijanaca pogotovo u pogledu traganja za odgovorima oko dinamičnijeg ekonosmkog rasta, veće zaposlenosti i izlaska iz stagnantih okvira.

Svojevremena rehabilitacija kejnzijanske ekonomije ušla je u modu zbog nedostatka teorijskih fundamenata monetarizma, empirijskih osnova teorije racionalnih očekivanja i teorijsko-empirijskih dokaza teoretičara ekonomike ponude dok je savremenu rehabilitaciju kejnzijanizam doživeo od svetske finansijske krize 2007. Medjutim ne možemo govoriti o povratku staromodnog kejnzijanizma niti o postignutoj sintezi suprostavljenih doktrina

Covid pandemija i trenutna geopoliticka previranja aktuelizuju, afirmišu i nuzžno determinišu potrebu za dubljom i cvrvšćom integraciojom finansijske teorije i svetske prakse.

Može se zajkljuciti da je i trenutna fragmentacija unutar finansisjske teorije više metodolosko pitanje nego cist intelektualni senzibilitet teoreticara, što bi bilo otvoreno pitanje za sebe.

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POLITICAL ECONOMY OF MONEY

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Abstract

The former polarization of financial theorists regarding the importance of money is characteristic more than a decade confrontation monetarist and Keynesians, theirs long - term debate and opposition thesis " money it's not important " and " just is Money important ", The last two decades of the twentieth century are characteristic of the official common house thesis that " money it is important "

The justification for the need for a theoretical analysis in this work and today is found in the fact that contemporary macroeconomic theory recognizes the end of radical anti-Keynesianism and at the same time the end of the intellectual monopoly of the dominant neoliberal doctrine that logically relies on and/or emerges from it, namely monetarism and all later theoretical derivatives.

On the other hand, the goal of this work is not to reach the possibility of formulating new theoretical propositions, but rather to review the conflicting positions of representatives of different doctrines in financial theory to see current problems and controversies, and possibly still unresolved dilemmas, both in financial theory and in the management of monetary policy. and fiscal policies. in the world and here too.

Key words: *money, monetarism, Keynesianism, financial theory*

JEL: *E52, E59.*

Initial consideration

Reinterpretations on the topic of the importance of money and its functional components, and ultimately to what extent money is important, can be found in the extensive literature of the last 50 years. What earlier research points to is certainly all that quantitatively represents the scope of various macroeconomic models. However, considering that they also respect the financial element in their structures, the whole stream of financial theorists who systematically analyzed the financial elements in the mentioned models also inevitably differentiated itself. This is how monetarism was once established and conceptualized, which marked several decades in financial theory and gave a practical tone even to today's economic practice.

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The value of such research and the attitudes inherent in it caused wider scientific polemics and comparative analyzes with previously identified tendencies in the management of economic policy, primarily with Keynesianism. Significant differences certainly existed and are still very present today with subtle overlaps to the extent that the "core" of individual theoretical elaborations is very difficult to determine from the aspect of originality. But in addition, these intertwinings and a kind of scientific fashion in certain periods provided, and still provide, a very inspiring field for the further actualization of such polemics until today, when it is necessary to give a more concrete answer to global events.

Therefore, if we start from the idea of classifying and fragmenting established doctorates with the aim of investigating the "absolute truth", we come to a gap in which, according to Ristić and Živković (1998), no doctrine is completely monolithic, but that all research, recorded and published over time, actually represent " *a set of multiplied analyzes of monetarist models, which imply different consequences in the process of conducting economic policy in accordance with the evolution of monetarist ideas in almost all macroeconomic models.*" " (Ristić, Živković, 1998, p. 134.)

In the specific case of monetarism, the mentioned authors point out that monetaism in its original form is not a homogenous block with inherent firm positions of certain theorists, but a school with converging and diverging positions, basically the same theorists who have a common foundation. The common foundation of all monetarist theoretical currents is reflected in the fact that the monetary factor has a determining and determining influence on development, that the national income exclusively depends on the variations of the monetary mass and that the private sector is essentially stable. As for cycles at the level of economic movements, they result exclusively under the influence of the growth of the monetary mass and that in the long term the relevant connection between inflation and unemployment is lost. (Bilghi, 2001)

The thesis that inflation tends to be anticipated and does not affect the level of unemployment under the assumption of natural employment arises under the common umbrella. It can be concluded that the apostrophization of natural employment correlates with the previously problematized attitude of monetarists in general. (Ghatak, 1995; Ristić, 2020)

All of the above portrays the key philosophy of monetarism in all its varieties, which correspond directly to the various implications of economic policy. Various implications concern the economic environment in which the theoretical approaches were created, as well as the policies of the countries that were consumers of such approaches, globally, and over time.

If we wanted to specify the key premises of monetarism, it would be that inflation exclusively results from the uncontrolled expansion of the money supply and that it can only be controlled by raising interest rates, making money lending more difficult, and managing cuts. Hence, today there is a current controversy about raising the reference interest rate, which is the key anchor of the monetarist approach on which the central banking of the world "rests".

On the other hand, if we were to look back at the opponent's doctrine, the key general point of fiscalism is actually the determination of the value of money, from which they sharply opposed monetarist views through theoretical discussions, thereby problematizing the importance of the monetary mass and its movement.

In different epochs in the literature, there is a kind of reconciliation of polarizing attitudes into the attitude "money is important" or Friedman's famous remark "now we are all Keynesians". (Živković, Ristić, 2020)

Different understandings of the determinants of the value of money led monetarists and fiscalists in the direction of giving different importance to the money supply, primarily in the difference between the nominal and real money supply and then around the problem of interest determination.

Income theorists or fiscalists in different analyzes do not differentiate between nominal and real interest rates, because they consider interest as a monetary phenomenon, while on the other hand theorists of the non-netarian point of view differentiate between nominal and real interest rates because they relate the market interest rate to changes in the level price and that in this connection the real interest rate is explained by all current non-monetary factors. (Ristic, Živković, 1998)

The fact is that the effect of real money is empirically weak according to the Keynesians, which we identify by reviewing the literature, and that the idea is that monetary policy had a weak impact on national income, considering that its effects come mainly through variations in the interest rate and the level of employment, indicates that at this point it is necessary to reinterpret the conflicting points of view and strongholds in the comparative analysis of fiscalists and monetarists in order to practically approach the goal of this work, which is to figure out the possible outcomes of today's global monetary and fiscal policy in the conditions of current tendencies conditioned by the post-covid and geopolitical vulnerability imposed rar in Ukraine and in this connection with essential "polyeconomic" treatment of money.

Monetarist-Keynesian conflict and attempt to establish diversification of financial theory

By analyzing the available literature that deals with econometric measurements of the effects of money on the real sector, in the period from 1960 onwards, we find that theorists generally apostrophize that there is a close connection between reserves and the monetary stock, and that the rule of constant growth of the money supply represents an essential instrument of monetary policy (Ilić et al., 2022), on the other hand, given that the effect of money on nominal income refers to real income and not to the price component, a Keynesian alternative is theoretically constituted in the position of monetarism (Savić & Boni ć, 2022). The analysis of earlier research imposes the need to point out that, contrary to that, the effects of the fiscal impulse on real production are barely more significant than on the price level and that the effects of changes in the money supply affect real production rather than the price level. (Hetyel, 2017)

This is the moment of diversification of financial theory, which then "travels" through time and converges or diverges to one or another doctorate in different interpretations and strongholds. It is interesting to point out that the potential synthesis of monetarism and fiscalism was completely absent, although at some point it seemed so (Klincov et al., 2022).

All the varieties of doctrine recognized by the literature also show the tendency of individual theoreticians to "invent" a new theory, which also did not result in the same result because they are all based on the same indicators in different combinations.

of supply economics is inherent, which is based on lowering taxes or a tax reduction program, limiting the budget deficit and reducing the interest rate, and all in function of eliminating recession trends and acceleration of economic growth (Mihajlović et al., 2022).

However, the analyzes that denied the relationship between tax reduction, economic growth, increase in fiscal revenues and budget deficit reduction turned into the relationship between tax reduction, budget deficit growth, interest rate growth, economic crisis and recession, and indicated the existence of a structural contradiction of the monetarist approach in financial theory (Ilić & Tasić, 2021).

In order to systematize the contradictions, we will refer to the following list: (Groenwegen, 2003; Ristić, 2020)

1. monetarist policy primarily affects employees before it has an impact on the general level of prices and wages.

2. the combination of restrictive monetary policy and expansive budget deficit financing affects the increase in the interest rate, which reduces investment activities with a clear tendency towards recession.

3. firm control of monetary growth through bank reserve management policies outlines the field for liberal interest behavior and consequently the indifference that this maneuver has in international economic and financial relations.

4. monetary policy that aims to reduce or to a certain extent neutralize inflationary tendencies conditions a more rigid employment climate, which consequently generates recessionary economic tendencies and increases the budget deficit.

5. monetarists are of the opinion that any reduction in the tax rate in the context of a recession does not necessarily lead to a budget deficit, as a generator of inflation as well as an additional increase in the interest rate and crowding out investments in favor of consumption, but they express doubt about all the analyzes and optimistic predications of those theorists who talk about coexistence inflation and economic growth.

6. monetarists claim that the needs of the treasury in the form of loans significantly indicate the sensitivity of the financial sector.

7. the monetarist position is that changes in the money supply are the dominant determinant of changes in monetary income.

All of the above to a certain extent indicates the presence of "weak points" of the monetarist doctorate, which opened up the field of further polemics and theoretical discussions.

Thus, for example, according to the fiscalists, as opposed to the views of the monetarists, according to research by Ristić, Živković (1998) and Ristić (2020), the fact that the dominant effect of money depends on the evaluation of the alternatives between inflation and unemployment is persistently neglected. According to Groenwegena (2003), certain statistical regularities are observed which have been identified in the relationship between unemployment and the rate of inflation did not hold even in cases when the economic policy tried to ensure and ensure lower unemployment with the predicted increase in inflation. (Groenwegeni, 2003).

If we look back at the key controversies between monetarists and fiscalists, we can say that Keynes attached importance to the "dead end" trap like many of his followers, theoreticians, and that he pointed out that the majority of private claims and monetary assets have a counterweight in debts. On the other hand, in our consideration of the available literature, the question arises whether taxpayers, who anticipate and project that they should pay taxes to pay off a larger real public debt, consider themselves poorer and/or impoverished in the same proportion relative to bondholders on the assumption that they consider themselves richer. (Ristic, Živković, 1998; Živković et al, 2019)

It is controversial, which is concluded from the analysis of the works of different therists who belong to the two mentioned doctoral programs, that even when the national debt is reduced and/or neutralized to a certain extent " *the monetary base* *also remains those government bonds that, in the liquidity trap, become the equivalent of money and bear no interest ".* (Živković, Lakić, Ristić, 2019, p. 219)

In this regard, from the aspect of our analysis, we conclude that it is wrong to rely on the reaction of consumption and savings to recorded wealth, but it is a very careless tendency to neglect the fact that the increase in the real value of monetary wealth is favorable, perhaps even sufficient for the development of investment activities. and growth acceleration.

In order to look at the theoretical resistance of monetarists to fiscalism, we will refer to the practical versions of monetarism in Great Britain and the USA in the following chapter.

The political economy of "Reaganism and Thatcherism" as a form of confrontation with fiscalism

Confrontation with the fiscalist view of economic reality and ways of regulating and accelerating economic growth and development took its first concrete political and functional form during the Thatcher/Reagan government in Great Britain and the USA.

Thus, the establishment of practical monetarism appears as a reaction to the traditional Keynesian policy of regulating demand with fiscal policy (Pantić et al., 2021). The epoch-making name of this form of financial rule is called Thatcherism or Reaganomics, which we will use as official terms in the following text.

Namely, given that the fiscal policy at the end of the 1970s proved to be incapable of pulling the economy out of recession and stagnant frameworks, and thus of suppressing inflation and unemployment. the rapid penetration of the radical foundations of monetarism followed.

That monetarism was also called interventionist at its beginning, considering the goals it had, and soon after it received the form and name as restrictive due to the redesign of goals and desired economic outcomes (Jovanović, 2021). The practical scopes also converged with the theoretical analyzes of that era. (Ristic, Živković, 1998; Liondis, 2019)

In fact, this twinned British-American practical monetarism, which represents a type of restrictive monetary policy, basically also represents different monetaristic tendencies embodied in different names, namely Friedman's monetarism, anticipatory monetarism, etc. All of these are varieties that are actually the embodiment of the political context of the local economy in which it was created.

In the mentioned version, this monetarism in the Thatcherian Reaganomic form incorporates the policy of progressive deceleration of the money supply growth rate, then free floating exchange rates and interest rates, tax reduction and cutting of social expenditures. In its later forms, it limited the budget deficit, abolished massive subsidies to public enterprises, all with the aim of fighting inflation. (Vukša et al., 2013; Ristić, Živković, 1998)

When it comes to unemployment, they relied on the key monetarist premise that it will inevitably decrease in terms of reduction after balancing the economic environment. (Hetzel, 2017)

Such understandings and actions took into account the inevitable international exchange and international economic relations so that the transfer of the burden of stabilization to other countries would become a "locomotive" effect and initiate growth, in a compensated form, in those countries and generally lead to balance and permanent growth globally.

The main stronghold of Thatcherism was the collapse of the welfare state, and in connection with the thesis of full employment, which practically won the magical reduction of state participation in the economy and the return to laissezfaire economic behavior on the market (Đorđević & Krstić, 2020). The objective was, in fact, to break the chain of redistribution of national income in favor of wages, even at the cost of increasing the unemployment rate and deepening the recession.

This is primarily important in order to point out the current controversy that has not been resolved globally in the creation of economic policies.

Thus, according to Živković, Ristić (2020, p. 87), "the monetarism *of Thatcherism and Reaganomics imprinted in various economic flows through the use of the monetarist doctrine represents a kind of mixture of more or less all its variants with the defining belief of fixing the norm of quantitative growth of monetary aggregates independently of possible interest rate fluctuations rates, then ensure the budget balance and not use the budget arsenal to amortize the fluctuations of economic activity.*

The epoch-making assessment of the economic value of this doctrinal approach is reflected in the opposite views on the progressive growth of the money supply, the reduction of the budget deficit and the reduction of allowances for the growth of wages, and in fact all for the purpose of denationalization and the creation of economic liberalism.

The political economy of money today requires a re-examination of rigid attitudes about non-interference of the state in the economic environment, promotes the idea of a new entrepreneurial state, where new inclusive growth strategies that respect less inequality, greater cohesion, a safer and more stable financial sector are sought in the new framework of the social structure.

Doctrinal Controversies on Inflation: A Polyeconomic Reinterpretation

The value of money and the movement of prices as economic phenomena were the subject of observations long before Keynes. In the time before the fatal Great Recession, monetary policy was seen as the only possible option for economic guidance and optimization of price growth.

At the time of the aforementioned Great Crisis, due to the established suspicion of monetary policy, a need arose to valorize the importance of employment in addition to price stability (Krstić & Brajković, 2022). So Keynes included fiscal policy in addition to monetary policy. by which he wanted to ensure that the overall economic policy would ensure the achievement of two goals with two instruments and thereby ensure consistency in the conduct of economic policy. (Obregon, 2020)

However, after the synthesis of classical and Keynesian propositions based on taking into account the effects of real money, all the debates about the possible influence of monetary and fiscal policy on inflation turned into an extensive controversy between monetarists and Keynesians, whose polemics as a peculiar tonality still mark all economic viewpoints today.

The orthodox Keynesian approach, followed by many theoreticians, rejects and emphasizes that Keynes considered the problem of unemployment as a phenomenon of weak overall demand in a situation characterized by a tendency to fall in nominal and real prices and wages, while monetarists claim that unemployment is not a consequence of insufficient demand. but that any increase in demand caused by economic policy will lead to inflation rather than succeeding in reducing the unemployment rate, which did not actually arise as a result of reduced demand tendencies. (Bradford, 2000; Ristić, Živković, 1998)

The Friedman one is always interesting thesis that inflation is always and everywhere a monetary phenomenon. His epoch-making claim rightly refers to conditions in which inflation is created only by growth in the quantity of money that is faster than the growth rate of production. Later research shows even today a justified doubt and even an assertion that only permanent inflation is always and everywhere monetary, with the fact that it is true that it is not necessary that every increase in the money supply causes a proportional increase in prices..

Komazec, Ristić (2016) investigate and find that monetarists believe that inflation is a monetary phenomenon and that it is not the cause of recession, but rather that recession, growth in the employment rate, inflation and imbalances in the balance of payments resulted from a misguided monetary policy that accelerates a faster circulation of money than production growth rates, where they state that any monetary induced fluctuations in the rate of price increase actually lead to a more difficult differentiation of potentially relative from absolute price changes, which is also a contortion that was key to identify for the purposes of this work.

By reviewing various theoretical debates, we conclude that according to the understanding of supporters of the Keynesian school, inflation occurs when monetary demand exceeds the supply of goods and services. According to these statements, the demand that occurs in the conditions of faster Mr e of economic growth inevitably leads to a decrease in production reserves. Thus, Keynesians appeal to reduce the potential increase in demand by increasing taxes and interest rates and, in connection with this, a higher range of public expenditures. (Ristic, Živković, 1998)

Theorists of the so-called cost inflation, they find the cause of inflation in the increase in wages, while insisting exclusively on the application of income policy, which aims to reduce and/or control prices and wages. Regarding the scope of these theoretical elaborations, we can state that the key moment in time is when these measures will be applied. Thus, "cooling" or "heating" of the conjuncture.

Furthermore, analyzing the non-monetarist theories of inflation, any increase in investments above the level of savings, pressure in terms of the growth of wages, profits and material costs as well as the increase in the budget deficit can cause an increase in prices and inflation, but only if they determine an increase in money stocks, where there will be a constant deviation of the amount of money emitted the demand for real money stocks leads to the creation of inflationary forces that can be controlled in a certain time but not in the long run.

With this review of the mutual treatment of monetarists and fiscalists in terms of assessing which factors determine the creation of inflation and which instruments are the most suitable for suppression and control, we note that all the elaborations, polemics and discussions continue to live in these discussions without much theoretical or practical progress to this day.

However, there is a noticeable tendency of mutual respect, at least in the form of "paying attention" to the other side, which could outline some new solution in the future.

The sharp opposition between monetarists and fiscalists did not contribute to giving a concrete answer to the real process, given that inflation is the result of many factors which intertwine and integrate in certain ways.

Thus, the old Keynesian claim that monetary policy is ineffective and insufficient has been refined by the weakening of the attitude of monetarists who talk about the rigidity of fiscal policy and income policy, given that according to their interpretation these two policies have a common goal and that it is actually the reallocation of financial resources from the private sector to the public sector.

Generally speaking, we can agree that inflation is a dynamic process. The complex relationship between costs and prices, wages and market conditions of production and turnover imply that inflation must be viewed more broadly and deeply and from different and sometimes incomprehensible sides in order to avoid the trap of erroneous conclusions in the form that inflation can only be curbed by producing a recession. that market monopolies can be controlled by falling production and that the power of trade unions can be tamed by higher unemployment.

Under the auspices of a more complex approach in looking at inflation, it is stated that the monetary policy, monetarist designed, is not sufficient in itself, but that its complementary counterpart is precisely the fiscal policy through the adequate application of certain tools.

Since monetary and fiscal policies have never been expertly coordinated enough, nor has their relationship been adequately evaluated, a consensus on this issue has not been reached even today, and it still opens the door for further research and attempts.

Conclusion

By reviewing the panel discussion, in financial theory which they do structure this one work indicate on the and today present open questions and dilemmas in between monetarist and Keynesians especially in view searching For answers eye its dynamics economic of growth, already employment and exit from stagnant frame.

At one time, the rehabilitation of Keynesian economics came into vogue due to the lack of the theoretical foundations of monetarism, the empirical foundations of the theory of rational expectations and the theoretical-empirical evidence of supply-side economics theorists, while the modern rehabilitation of Keynesianism has been experienced since the world financial crisis of 2007. However, we cannot talk about the return of old-fashioned Keynesianism nor about the achieved synthesis of conflicting doctrines.

Covid pandemic and current geopolitical turmoil actualize, affirm and no determine what need for deeper and integration financial theories and world practices.

He can se to lock is and current fragmentation inside of financial theories higher methodologically Question rather clean intellectual sensibility theoreticians, what? would be there were openly Question For myself.

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UTICAJ PANDEMIJE COVID - 19 NA DIGITALIZACIJU BANKARSKOG SEKTORA SRBIJE

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Apstrakt

Ovaj rad sagledava posledice COVID -19 na digitalizaciju bankarskog sektora, kako bi se identifikovali izazovi i prilike bankarskog sektora Srbije. Istraživanje se sastoji od dva dela. U prvom delu su korišćenji statistički podaci regulatornih i nadzornih tela, a drugi deo se odnosi na terenska istraživanja, koja se baziraju na anketi. Obrada podataka je kreirana na softveru IBM SPSS Statistics. Anketni upitnici su prikupljani u periodu od januara do maja meseca 2022. godine. Za analizu su prihvaćeni odgovori 174 ispitanika, klijenata banaka. Upitnik je sastavljen pomoću Likertove petostepene skale. Ovakav uzorak možda nije sasvim reprezentativan, ali je u svakom slučaju dovoljno informativan, jer je moguće izvesti zaključak o doprinos svake promenljive razvoju digitalnog bankarstva. Za analiziranje veze između metričke promenljive i više nezavisnih promenljivih primenjujemo višestruku ili multiplu regresiju. Naše procene otkrivaju uticaj digitalnih proizvoda i usluga na razvoj digitalnog bankarstva. U istraživanju treba utvrditi i specifične ciljeve, konkretno koji procenat ispitanika je upoznat sa uslugama digitalnog bankarstva. Takođe, u daljoj analizi treba proveriti tvrđenje da je proporcija ispitanika koji imaju negativan stav prema digitalnom bankarstvu manja od 45%. U ovom istraživanju korišćena je regresiona analiza, kao deo analize koja se koristi za formiranje digitalne zrelosti klijenata u Srbiji. Za potrebe istraživanja poželjnih vrsta bankarskih proizvoda i usluga primenjena je dvofaktorska analiza. Analiza podataka pomoću SPSS verzija 20 za Windows pokazuje da: Postoji pozitivan i značajan uticaj digitalnih bankarskih proizvoda na zadovoljstvo klijenata banke. Analizirani modeli za istraživanje preferencija klijenta ukazuju da menadžerski pristup banke podrazumeva stvarno poznavanje i praćenje želja i preferencija svojih klijenata, kao i adekvatne ključne prioritete

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koje menadžeri bankarske industrije treba da pruže. Rezultati istraživanja pokazuju da digitalna banka može biti jedinstveni odgovor na sve izazove, kao i najefikasnije sredstvo za zadržavanje i privlačenje klijenata.

Ključne reči: *COVID-19 pandemic, digitalna zrelost, digitalizacija bankarstva.*

JEL: *G21, O32.*

Uvod

Pandemija COVID – 19, osim zdravstvene krize, uzrokovala je promene u globalnoj ekonomiji, ali i način poslovanja u svim zemljama. Bankarski sistem je najviše pogodjen izazovima i rizicima koje je izazvala pandemija. Preoblikovano je finansijsko poslovanje. Ekonomska teorija i njena primena u praksi, pokazuju povezanost finansijkog sistema sa realnom ekonomijom (Ercegovac, 2002). Put digitalne transformacije, je put izazova, tako da je neophodan balans izmedju tehnologije, bankarske ponude i finansijskih potreba klijenata. Adekvatnom metodologijom istraživanja i istraživačkim alatima moguće je predvideti buduće ponašanje klijenta i odgovoriti adekvatnim digitalnim rešenjima. Digitalno bankarstvo predstavlja platformu za rešavanje jednostavnih finansijskih transakcija koje će u budućnosti potisnuti tradicionalni poslovni odnos izmedju banke i klijenta.

Bankarski sistem Republike Srbije suočen je sa velikim promenama, a trajanje i ozbiljnost posledica ekonomske krize, kao i brzinu oporavka, veoma je teško sagledati. Stoga je na bankarskim menadžerima naporan zadatak da ponovo planiraju scenarije i prilagodjavaju se novodnastaloj situaciji. Analiza situacije i adekvatno upravljanje izazovima i prilikama ključna je za kratkoročni opstanak i dugoročno zdravlje bankarske industrije. Neki autori smatraju da je ovakav stav presudan za finansijske organizacije (Radić, et al., 2020). U periodu krize stvaraju se moćni bankarski menadžeri, koji veoma uspešno mogu odgovoriti na sve nastale izazove i iskoristiti prilike koje se nude. Iskustvo pokazuje da lideri treba da donose odluke danas kako bi očekivali pobedu u budućnosti. Na osnovu pogrešno donetih odluka razvili su se modeli predvidjanja kriza i ponašanje bankarskog sistema na različite uticaje iz okoline.

U uslovima pandemije i iskustvo klijenata se sve više diferencira, tako da bankarski menadžeri sugerišu promenu dosadašnjih poslovnih sadržaja kako bi zadovoljile finansijske potrebe svojih klijenata i izdržali pritisak sve rastuće konkurencije kroz nove modele bankarskih aktivnosti. Savremena banka mora biti prisutna na tržištu onako kako korisnici ili klijenti od nje očekuju. Izazove sa kojima se suočava moderna bankarska industrija u velikoj meri određuju finansijske tehnologije, bankarstvo u senci i inovacije u finansijama na međunarodnoj sceni. Obrasci po kojima bankarski sektor posluje su se menjali i pre izbijanja pandemije pa tako imamo različite postojeće tehnološke inovacije u primeni. Transformacija bankarskih aktivnosti postaje neophodnost, a posebno digitalna transformacija, kao dominantan makrotrend. Dominantna je težnja da se ljudi povežu, uprkos fizičkoj distanci, tako da su beskonačna rešenja sastavni deo mera za smanjenje stope zaraze, kao siguran i bezbedan način obavljanja transakcija. Medjutim, rast bezgotovinskih transakcija uslovio je nove izazove za bankarsku industriju po pitanju prevara.

Pandemija COVID-19 stvorila je savršen ambijent za sajber kriminal u uslovima pandemije, medju kojima su najviše pogodjeni digitalno neiskusni klijenti i oni klijenti sa tradicionalnim uverenjima, kojima je neophodna kontinuirana personalizovana usluga. Prema Financial Times, procenjuje se da je više od polovine pozajmljenih 43 milijarde funti izgubljeno zbog lažnih zahteva. (Thomas, at al. 2020). Ključna uloga bankarske industrije jeste da zauzme holistički pristup digitalnim iskustvima. U uslovima pandemije trend digitalne tranformacija veoma je aktuelan, ali rešavanje problema digitalnog jaza postaje sve dominantnije. U primeni je niz informacionih tehnologija koje mogu pomoći procesu digitalne transformacije bankarskog sektora i time pomoći i mendžerima i klijentima bankarskog sektora (integracija veštačke inteligencije; blockchain tehnologije; internet of things; cloud computing) i druga napredna rešenja kako bi bolje odgovorila na promene u načinu obavljanja poslovnih aktivnosti.

Ciljevi studije

Prvi i osnovni cilj rada je analizirati srukturu bankarskog sektora Republike Srbije i objasniti njegovu transformaciju u kratkom roku u uslovima pandemije. Kao nastavak ovog cilja nameće se dodatna analiza, ispitivanje stavova klijenata o bankarskoj ponudi. Osnovni cilj ovog rada je istraživanje uticaja pandemije COVID-19 na bankarsko poslovanje. Predmet istraživanja karakteriše aktuelnost i važnost problema, značajna za industriju bankarstva, kako sa makroekonomskog aspekta (efikasna alokacija resursa na finansijskom tržištu) i mikroekonomskog aspekta (otpuštanje zaposlenih) tako i sa psihološkog aspekta (rizik i povećanje stresa usled zdravstvene i finansijske krize). Cilj istraživanja je da se utvrde posledice pandemije na bankarski sektor Srbije, kao i da se definišu bankarski proizvodi i usluge u periodu pandemije i istaži zadovoljstvo klijenta banke tom ponudom. Mnogi faktori utiču na zadovoljstvo klijenata, a neki od njih su: cena, pouzdanost, dostupnost, lakoća primene, ljubaznost servisnog osoblja i dr. Imajući u vidu ključna pitanja sa kojima će se bankarski menadžeri suočavati u budućem periodu sa dinamikom stalne transformacije u cilju fokusiranja na finansijske potrebe klijenta, povećanja profitabilnosti, u granicama tolerancije na rizik, s jedne strane, kao i motivaciju klijenata u izboru bankarske ponude sa druge strane, iniciralo je izbor teme i fokusiralo predmet i cilj istraživanja ovog rada.

Prednost ovog istraživanja je u otkrivanju ponašanja zasnovano na uzajamnoj razmeni ideja menadžmenta sa klijentima, kako bi se kontinuirano poboljšali i osnažili ovi odnosi. Ponašanje bankarskih klijenata gravitira od konzervatizma i averzije prema digitalnim kanalima prodaje u periodu pre pandemije pa sve do sve veće motivisanosti za upotrebu digitalnih bankarskih proizvoda za vreme pandemije. Istovremeno uočen je oprezan motiv klijenata zbog sajber kriminala. Dobijeni podaci daju jasnu sliku: postoje klijenti koji su spremni i traže digitalna rešenja odmah, a bankarski menadžeri treba da ih implementiraju što hitnije uz sve veću zaštitu od rizika sajber kriminala i postoji druga grupa tradicionalnih klijenata koji, uprkos korona virusu daju prednost odlasku u banku. Ovim istraživanjem dajemo dvostruki doprinos literaturi. Prvo, ispitujemo uticaj pandemije na digitalizaciju bankarskog poslovanja, kroz multikanalni pristup, odnosno izbor klijenta da stupi u kontakt sa bankom u bilo koje vreme, bilo kada i sa bilo kog uredjaja, digitalne procedure, elektronsko upravljanje odnosa sa klijentima. Drugo, mi predlažemo poželjne karakteristike bankarske ponude u procesu digitalne transformacije. Ispitivanje zadovoljstva klijenata veoma je važan parametar koji se mora uzeti u obzir pri formiranju bankarske ponude. Na osnovu ovog istraživanja moguće je izvesti zaključak o funkcionisanju bankarskog sektora u budućnosti, s obzirom da postoje različiti izazovi u periodu pandemije. Digitalna transformacija bankarskog poslovanja više se ne postavlja kao mogućnost, nego kao nužnost. Ono što je za većinu banaka u predpandemijskom periodu bila stvar izbora sada, za vreme pandemije postala je obaveza za sve učesnike na finansijskom tržištu.

Pregled literature

Predviđeno je, da ovo istraživanje bude realizovano u dve faze, teorijska istraživanja i praktična provera. Istraživanje izvora informacija o uticaju pandemije na bankarski sektor ukazuje zanemarljivo mali broj odrednica na ovu tematiku. (oko 15.900 rezultata). Pretraživanjem izvora na engleskom jeziku dobijeno je mnogo više izvora (48.500.000 rezultata). Ovi pomenuti rezultati mogu se prihvatiti kao grubi pokazatelji otvorenosti i aktuelnosti teme istraživanja. Efekat pandemije na bankarski sektor uključuje evaluacije uticaja koje su deo šireg programa kreiranja politike zasnovane na dokazima (Gertler, 2011). Nekoliko studija je otkrilo negativne efekte pandemije, kroz povećanu neefikasnost, promene cene fjučersa, promene cene nafte i sve veće nestabilnosti tržišta (Narayan, 2020; Haldar et al., 2021). Saglasni smo s mišljenjima autora, da je pandemija COVID-19 ostavila velike posledice na globalnu ekonomiju. Imajući u vidu da je u prošloj 2021. godini, svetski BDP opao za oko 6%, ova se kriza izazvana pandemijom COVID-19 može upoređivati sa najvećim ekonomskim krizama svih vremena poput one iz 1929. godine, kao i sa onom izazvanom naftnim šokom sedamdesetih godina prošlog veka (Ramasamy, 2020). U periodu od 1970. do 2007. godine, desile su se 394 finansijske krize, među kojima su najčešće 207 valutne krize, zatim 124 bankarske krize i 63 savremene dužničke krize (Racickas, et al., 2012). Kriza izazvana pandemijom COVID-19, porastom sistemskog rizika izazvala je rast neneplativih kredita širom sveta (Rizwan, et. al.

2012). Porast nenaplativih kredita treba posmatrati u skladu sa ostalim nepovoljnim makroekonomskim pokazateljima. Autori (Ari, 2021) uočavaju da se u periodu pandemije zajmoprimci i preduzeća sve više suočavaju se sa gubitkom posla, usporenom prodajom i padom profita. Realno je očekivanje da će klijenti tražiti finansijsku pomoć, a regulatori podsticati banke da im pomognu. Same banke imaju svoj plan zaštite klijenata od korona virusa, preporukom rada od kuće, a klijentima dostupnost obavljanja bankarskih aktivnosti bez fizičke interakcije.

Takodje, Svetska zdravstvena organizacija (WHO, 2020) savetovala je ljude da koriste beskontaktno plaćanje koliko god je to moguće, jer se novčanice smatraju za potencijalni nosilac koronavirusa. Iz tih razloga fizičko bankarstvo postaje sve manje privlačno, ne samo za stariju i ugorženu populaciju nego i mladju. Prema istraživanju Pwc's iz 2021. godine, o navikama klijenata, njihovim preferencijama, zaduživanju, plaćanju, osiguranju i investiranju, na osnovu 6000 anketiranih, uočen je porast broja klijenata za digitalnim bankarskim uslugama, dok 32 odsto izbegavaju odlazak u fizičku filijalu. Banke su uspešno odgovorile na izazove u pandemijekom periodu. Po mišljenju mnogih autora digitalizacija dovodi do smanjenja i do 25% troškova, što direktno dovodi do povećanja prihoda u segmentu kratkoročnog i gotovinskog kreditiranja. Pandemija podstiče digitalno bankarstvo, on-line bankarstvo, telefonsko bankarstvo i usluge call centra. Dok korona virus čini potrebu za uslugama digitalnog bankarstva hitnijom, sve veća preferencija potrošača za digitalizacijom nije ništa novo. Prema nedavnom istraživanju kompanije Lightico, 56% potrošača bankarstva je izjavilo da su preusmereni sa onlajn bankarskih interakcija na fizičke lokacije. Čak 48% ispitanih kaže, da je od njih zatraženo da odštampaju, potpišu i pošalju papire e-poštom dok bankiraju na mreži (Lighico, 2021). Da bi pružanje digitalizovanih bankarskih usluga obezbedilo uspeh na finansijskom tržištu, AtKearney, u svom istraživanju, sugeriše da banke treba da primenjuju elektronsku bazu podataka i interakcije sa klijentima putem društvenih mreža, uz niže troškove (AtKearney, 2014). Banke mogu da dodju do podataka na društvenim mrežama o stavovima o stavovima korisnika o novim bankarskim proizvodima i uslugama, kvalitetu korisničkog servisa, problemima koji su prisutni. Bankarska industrija u SAD je u velikoj trci za digitalnim naoružanjem. Za mnoge banke, digitalni kanali distribucije svojih proizvoda i usluga postali su važniji od filijala i bankomata. Banke u razvijenim zemljama smatraju da ulaganja u digitalnu tehnologiju donose veće koristi od zadovoljstva svojih klijenata. Na primer, Bank of America prima više depozita sa svog mobilnog kanala nego iz filijala (Rogers, 2018).

Pregled literature pokazuje da je digitalna transformacije ubrzana u proseku za šest godina (Twilio, 2020). Istraživanje konsultantske kompanije pokazuje da su klijenti banaka povećali upotrebu digitalnih bankarskih usluga za 50% od početka pandemije, a 71% ih nedeljno koristi kanale digitalnog bankarstva (KPMG, 2020). Sprovedeno istraživanje na Kosovu (Božović, 2016.) ukazuje da digitalni kanali distribucije bankarske ponude još uvek nije zastupljeno u meri u kojoj bi trebalo, ali su zainteresovani da banke digitalizuju svoje usluge u većem obimu. Transformacija bankarskog sistema treba da bude usmerena prema klijentu (Jaubert, 2014). Uočena su mnoga korisna rešenja i preporuke za obim digitalne bankarske ponude u periodu pandemije, ali ukazano je i na rizik od sajber kriminala tokom pandemije. Evropsko telo za sistemski rizik je u svom dokumentu "Sistemski sajber rizik" (ESRB, 2020.) predstavilo konceptualni model razvoja i materijalizacije sajber rizika, kao i faktore nastanka sistemske krize usled sajber incidenta. Imajući u vidu da je od perioda pandemije posrednička uloga banaka smanjena, bankarski sektor posluje u uslovima većeg rizika zbog neizvesnosti tokom pandemije. Provajderi usluga digitalnog bankarstva i programeri aplikacija, mogu da iskoriste naučna istraživanja za poboljšanje tržišnog udela konceptom personalizacije usluga. (Krishanan, et al. 2016).

U Srbiji, centralna banka donela je odluku da u ambijentu ponovo pooštrene zdravstvene situacije deluje ekonomski proaktivno i preventivno. Banke su reagovale preduzimajući mere za nastavak poslovanja, vodeći računa o nesmetanom odvijanju osnovnih funkcija banke, ali i očuvanju zdravlja svojih zaposlenih. Istraživanje autora (Terkan, Ucar, 2020;NBS, 2021.) otvara novi pogled učenja na daljinu, jer većina ispitanika ima negativno mišljenje u pogledu efikasnosti i prakse učenja na daljinu. Banke su ubrzano aktivirale opcije rada od kuće za najveći broj zaposlenih, saradnja i komunikacija sa strankama odvija se, elektronski i preko video-konferencijskih poziva, dok su sa druge strane, klijenti banaka ohrabrivani da koriste digitalne kanale komunikacije, uključujući i beskontaktna plaćanja (mobilnim telefonom, putem računara, platnim karticama) uključujući i plaćanja nedavno uvedenim QR kodom na prodajnim mestima, za pitanja, konsultacije ili slanje dokumentacije bankama preporučuje se korišćenje elektronske pošte, društvenih mreža i usluga bankarskih kontakt centara. Pregledom relevantne literature i konsultovanjem zvaničnih podataka, analizom se sagledavaju faktori koji mogu doprineti da sektor bankarstva bude dovoljno izdržljiv nakon pandemije Covid -19, da finansijski sistem iskoristi trenutnu kriznu situaciju i poprimi održiviji oblik poslovanja. Bruto nenaplativih potraživanja (NLP) pokazatelj i dalje je ispod pretkriznog nivoa i u junu je iznosio 3,6%, što ukazuje na to da su mere Narodne banke Srbije i Vlade bile pravovremene, te da su sprečile veći negativan efekat po privredu i stanovništvo, a time i po finansijsku stabilnost. Takođe, u poređenju s krajem 2020. godine, to učešće je smanjeno (za 0,1 p.p.), pri čemu je kod sektora privrede 17% došlo do smanjenja za 0,2 p.p., na 2,9% u junu, a kod stanovništva 18% do rasta za 0,4 p.p., na 4,0% u junu (NBS, 2021). Narodna banka Srbije je još u 2018. godine, uvela sistem za instant plaćanja, zahvaljujući kome su plaćanja dostupna građanima i privredi 24 časa dnevno, sedam dana u nedelji, tokom cele godine. Plaćanje je moguće sa svih najčešće korišćenih savremenih komunikacionih uređaja, u bilo koje vreme i s bilo kog mesta, a novac se prenosi za 1,2 sekunde (NBS, 2018). Efekat koji pandemija može imati na finansijski sistem zavisi od: a) daljeg širenja virusa i njegovog uticaja na ekonomska kretanja, b) reakcije monetarne i fiskalne politike na tržišne šokove i c) regulatorne reakcije na moguće urušavanje bankarskog sistema (Beck, 2020).

Metodologija istraživanja

Metodologija istraživanja usklađena je sa ciljevima i zadacima. Istraživanje se sastoji od dva dela. Prvi deo se odnosi na zvanične statističke podatke za Srbiju, a drugi deo obuhvata empirijska istraživanja.

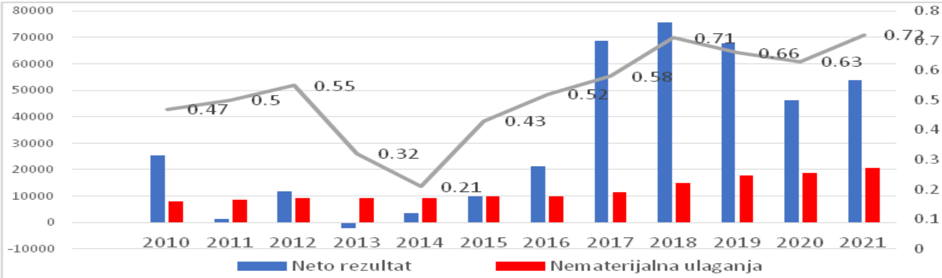
Posledice COVID-19 na bankarski sektor Srbije

U prvom delu su korišćenji statistički podaci NBS, Republički zavod za statistiku. Analizom ovih podataka sagledavamo dubinu posledica COVID-19 na bankarski sektor Srbije.

Centalna banka Srbije bila je jedna od prvih centralnih banaka u Evropi koja je na krizu izazvanu pandemijom odgovorila pravovremeno i sveobuhvatno nizom sprovedenih mera fiskalne, monetarne i makroprudencijalne politike, koje su delovale u pravcu jačanja stabilnosti finansijskog sistema Republike Srbije. Zvanični podaci pokazuju da u Srbiji 78.4% populacije svakodnevno koristi internet, a više od 50 odsto njih pristupa internetu preko mobilnih uređaja. Takođe, broj korisnika mobilnog bankarstva povećan je i do 20 puta u poslednjih šest godina. Prema zvaničnim podacima, mobilno bankarstvo koristi više od 2.2 miliona ljudi u Srbiji (NBS, 2022). Prva banka u Srbiji koja je uvela mobilno bankarstvo kroz aplikacije za pametne telefone je Banca Intesa, a u svetu to je "JP Morgan Chase Bank" iz SAD (Sanader, 2014.).

Sledeći, logički korak je analiza nematerijalnih ulaganja. Radi se o jedino javno objavljenim podacima o ulaganju u IT tehnologije, inovacijama i digitalizacijom, kao i upravljanje rizicima, ali su podaci ograničeni jer se radi o kumulativnim podacima o softverima i licencama. Rezultati istraživanja za period od 2010. do 2021. predstavljeni su grafički (*Slika 1.*).

Slika 1. Korelacioni koeficijent nematerijalnih ulaganja i neto rezultata za bankarski sektor za period od 2010. do 2021.



Izvor: Proračun autora na osnovu podataka Narodne banke Srbije.

Korelacija izmedju nematerijalnih ulaganja i neto rezultata za bankarski sektor Srbije je 0.74, tj. srednje jaka korelaciona veza i pozitivna. Najjača korelaciona veza je ostvarena u 2018. godini. Prema uporednim podacima iz narednog grafikona, evidento je da postoji veza između nematerijalnih investicija i neto rezultata. Medjutim, koeficijent korelacije opada uprkos uvećanim nematerijalnim ulaganjima. To samo potvrdjuje uticaj i drugih faktora koji utiču i opterećuju neto rezultat. Zabeležen je i gubitak u 2013. godini koji je nastao kao posledica oduzimanja dozvole za rad dvema bankama usled visokih rashoda otpisa plasmana. Klijenti su zbog epidemije bili prinuđeni da se okrenu elektronskom i mobilnom bankarstvu, tako da je uvođenje IPS platnog sistema pre nastanka epidemije dodatno doprineo popularizaciji istog. 27. februara 2020. godine uvedeno je instant plaćanje QR kodom na prodajnim mestima koju su sve izabrane banke implementirale u svoje m-banking aplikacije.

Empirijsko istraživanje stavova klijenata o bankarskoj ponudi u periodu pandemije

U drugom delu sprovedeno je kvantitativno istraživanje stavova klijenata o bankarskoj ponudi u periodu pandemije. Za utvrdjivanje zadovoljstva klijenata bankarskom ponudom u doba pandemije nije moguće direktno merenje, već indirektno. Kvantitativno istraživanje sprovedeno je metodom anketiranja i intervjuisanja na populaciji koji su klijenti banke na teritoriji centralne Srbije. Ovaj rad se zasniva na primeni primarnih i sekundarnih podataka. Primarni podaci su prikupljeni putem struktuiranih upitnika. Prikupljanje podataka za ovo istraživanje sprovedeno je u periodu od januara do maja 2022. godine. Istrživanje je sprovedeno medju istom grupom ljudi, tj. istraživači su sproveli neformalne intervjue i anketirali isključivo klijenate bankarskog sektora Srbije.

Broj ispitanika bio je 200, a od toga je 175 važećih anketnih upitnika, koji su korišćeni za izračunavanje važnosti parametra i motiva za kupovinu. Radi zaštite poverljivosti učesnika, podaci su šifrovani u radu. U istraživanju je sprovedena prikladna skala koju primenjuju i drugi istraživači u iste svrhe. Pitanja su zatvorenog tipa, sa unapred definisanim odgovorima. Obrada podataka je kreirana primenom statističkog računarskog paketa za društvene nauke SPSS programa.

Upitnik se sastoji od dva dela. Prvi deo upitnika odnosi se na demografske karakteristike (Set demografskih pitanja obuhvata: pol, starosnu grupu, obrazovanje ispitanika, radni staž), a drugi deo pitanja ima za cilj da otvori značajna pitanja u vezi sa mobilnim bankarstvom, kako bi dobijeni rezultati doprineli boljem sagledavanju i oceni postojećeg stanja i ponudi digitalnih usluga od strane bankarskih institucija. Upitnik u radu je razvijen pomoću Likertove petostepene skale. Pitanja u anketnom upitniku struktuirana su u dva dela, sa odgovorima iskazanim ocenama od 1 do 5 (1-uopšte se ne slažem, 2. ne slažem se, 3- nemam stav, 4 - slažem se i 5- u potpunosti se slažem) Pitanja su formulisana tako da ispituju stavove klijenata o bankarskoj ponudi i koji utiču na motivisanost kupovine bankarskih proizvoda i zadovoljstvo klijenata. (Gliem, 2003).

Rezultati istraživanja

Za statističku analizu bilo je dostupno ukupno 174 upitnika (N=174). Među anketiranima bilo je 56 osoba ženskog pola (97%) i 77 osoba muškog pola (44%). Među njima anketirano je 79 osoba starosti do 35 godina (45%), 53 osobe starosti od 35 do 45 godina (31%) i 42 osoba iznad 45 godina (24%). Podaci nam pokazuju da medju klijentima dominira mlada populacija. Što se stepena obrazovanja tiče, dominiraju zaposleni srednjeg stepena obrazovanja 108 osobe (62%), niže obrazovanje 9 osoba (5%) i 57 osoba sa završenom višom školom ili fakultetom (33%). Sa aspekta dužine radnog staža dominiraju zaposleni sa minulim stažom do 10 godina, 72 osobe (41%), zatim slede 54 osobe sa stažom do 20 godina (31%) i 48 osoba sa stažom preko 20 godina (28%).

Nakon ispitivanja demografskih karakteristika, usledilo je ispitivanje motivacionih stavova koje su ispitanici rangirali prema njihovom stepenu važnosti za odabir banke. Na osnovu testa homogenosti varijanse utvrdjujemo kod kojih pogodnosti nije prekršena pretpostavka o homogenosti varijanse (*Tabela 1.*). Najpoželjnija pogodnost je: cenovna pogodnost bankarske ponude (79%), Korisničko iskustvo (82%) i ugled i imidž banke (79%), to znači da postoji statistički značajna razlika izmedju srednjih vrednosti konkretne pogodnosti. Najniže rangirana pogodnost je lokacija banke (29).

Tabela 1. Test homogenosti varijanse

Najvažniji motivi za izbor banke?	**Levene Statistic**	**df1**	**df2**	**Sig.**
Pozitivna iskustva bliskih osoba	.565	2	45	.419
Korisničko iskustvo	5.509	2	45	.006
Lokacija banke	.369	2	45	.608
Cenovna pogodnost	7.532	2	45	.000
Ugled i imidž banke	4.101	2	45	.013

Izvor: Proračun autora primenom programa IBM SPPS Statistics.

Od 174 ispitanika, najviše ispitanika (59%) koristi mobilno bankarstvo, telefonski poziv koristi 4 %, a fizički odlazak u banku obavlja čak 37 %. Detaljnom segmentacijom odgovora najviše ispitanika (42%) koristi sledeće bankarske proizvode (plaćanje računa, kalkulator kurseva i uvid u trajne naloge. Rezultati razmatranja frekvencije pokazuju da klijenti najviše koriste mobilni telefon (89%), dominantna podrška je vodič kroz aplikaciju 52%, skoro svkodnevno korišćenje Interneta (79%), dok je najmanja fizička posećenost filijali banke, jednom mesečno 37%. S aspekta istraživanja lojalnosti banci, najviše ispitanika ima definisan stav oko promene banke 73% ukoliko ona ne ispuni njihova očekivanja.

Sledi set pitanja čija je namena da ispitaju važnost različitih činioca u pandemijskom periodu. Ispitanici su dobili mogućnost ocenjivanja od 1-5, gde 1- uopšte nisam zadovoljan, a 5 veoma sam zadovoljan. (*Tabela 2.*).

Tabela 2. Ispitivanje važnosti činilaca u pandemijskom periodu

Red. broj	**Istraživačko pitanje**	**O C E N A**				
		1	**2**	**3**	**4**	**5**
1.	Da li ste zadovoljni cenom bankarske ponude?	6%	26%	29%	32%	7%
2.	Da li smatrate da ste zaštićeni od sajber kriminala	10%	19%	30%	32%	9%
3.	Da li ste zadovoljni ljubaznošću osoblja banke?	7%	9%	11%	39%	34%
4.	Da li ste zadovoljni promocijom poslovanja banke u periodu pandemije?	1%	6%	23%	38%	32%
5.	Kako ocenjujete korisničko uputstvo vaše banke sa aspekta razumljivosti primene?	3%	5%	8%	35%	49%
6.	Koliko ste u potpunosti zadovoljni celokupnom kvalitetom bankarske usluge?	19%	21%	6%	17%	37%
7.	Da li ste zadovoljni proširenjem bankarske ponude?	20%	36%	19%	16%	9%
8.	Da li ste zadovoljni brzinom korisničkog interfejsa?	4%	19%	27%	33%	17%

Izvor: Proračun autora primenom programa IBM SPPS Statistics.

Zapažamo da je većina ispitanika, tj. 32% zadovoljna cenom bankarske ponude, 30% ispitanika nema stav da su zaštićeni od sajber kriminala, 39% je zadovolno ljubaznošću osoblja, 38% je zadovoljno promocijom poslovanja banke i 35% je zadovoljno korisničkim uputstvom sa aspekta razumljivosti primene. Veoma važno istraživačko pitanje jeste kvalitet celokupne bankarske ponude jer predstavlja svojstvo usluge koje je najteže oponašati i ima veliki uticaj na konkurentnost. Odgovori po ovom kriterijumu imaju najviše zadovoljnih ispitanika (37%).

U daljoj analizi treba proveriti tvrđenje da je proporcija ispitanika koji imaju negativan stav prema digitalnom bankarstvu manja od 45%. Testiranje ćemo izvršiti primenom SPSS procedure "Non parametring test". Promenljiva digitalno bankarstvo ima dve kategorije: 1. kategorija ispitanika koji imaju negativan odnos prema digitalnom bankarstvu i 2. kategorija ispitanika koji nemaju negativan odnos prema mobilnom bankarstvu. Rezultat testa prikazan je u tabeli.

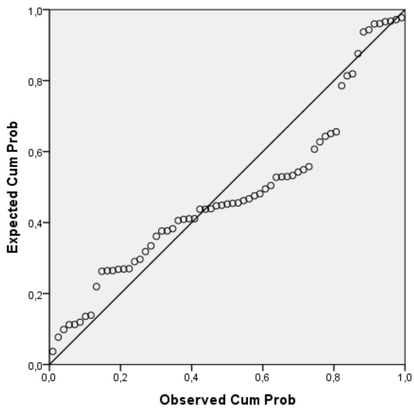
Tabela 3. Independent Samples Test

Independent Samples Test		**Category**	**N**	**Observed Prop.**	**Test Prop.**	**Exact Sig. (1-tailed)**
Digitalno bankarstvo	Group 1	ostali	104	,59	,45	,000
	Group 2	negativan	70	,40		
	Total		174	1,00		

Izvor: Proračun autora primenom programa IBM SPPS Statistics.

Na osnovu realizovanog nivoa značajnosti zaključujemo da prihvatamo alternativnu hipotezu da je proporcija ispitanika koji imaju negativan stav prema mobilnom bankarstvu manja od 45%. Naredna slika (*Slika 2.*) vizuelno potvrđuje hipotezu o normalnoj distribuciji za razvoj usluga digitalnog bankarstva.

Slika 2. Dijagram normalnosti raspodele za standardizovane reziduale



Izvor: Proračun autora primenom programa IBM SPPS Statistics.

Napomena: Zavisna varijabla: Digitalna bankarska ponuda; Nezavisna varijabla: Očekivana promenljiva: cena bankarske ponude, zaštita od sajber kriminala, ljubaznost osoblja, promotivne aktivnosti, razumljivost korisničkog uputstva i brzina korisničkog interfejsa.

Dokazano je da pretpostavke normalnosti regresione analize nisu bile narušene. Tačke leže u približno pravoj dijagonalnoj liniji od donjeg levog do gornjeg desnog uglla dijagrama. Na osnovu dijagrama raspršenosti zaključujemo sledeće: po jačini kvantitativnog slaganja veza izmedju celokupne digitalne bankarske ponude i ostalih pretpostavki je statistička, prilicne jačine, zato što su tačke blizu zamišljenog pravca koji uvek prolazi kroz tačku. Po obliku je linearna, tačke su raspoređene približno zamisljenom pravcu, a po smeru direktna i pozitivna tj. sa rastom promenljivih dolazi do digitalne bankarske ponude. Za potrebe istraživanja na nivou zemlje moguće je identifikovati digitalnu zrelost klijenta.

Tabela 4. Digitalna zrelost klijenata po etapama

Etape zrelosti	Digitalna zrelost klijenata	%
Prikupljanje informacija	Dostupnost informacija	54
Otvaranje računa	Proces otvaranja	18
Uključivanje korisnika	Dostupnost kanala distribucije bankarske ponude	63
Day-to-day bankarstvo	Upravljanje nalozima i bankarskim proizvodima, autorizacija, upravljanje karticama, korisnička podrška, lične finansije, transferi i plaćanja	51
Proširena bankarska ponuda	Kartice, gotovinski zajam, ček, menica, hipoteka, računi (devizni, štedni, oročeni)	28
Prekid veze	Zatvaranje naloga	21

Izvor: Proračun autora primenom programa IBM SPPS Statistics.

Rezultati ankete upućuju na perspektivu klijenta koja pokazuje kako se poboljšanjem karakteristika i funcionalnošću može postići zadovoljstvo klijenta. Najmanje zadovoljstvo (18) se javlja zbog nemogućnosti otvaranja računa na daljinu. Klijenti su prosečno zadovoljni obavljanjem svakodnevnih transakcija putem digitalnih kanala.

Ograničenja istraživanja

U ovom istaživanju prisutna su izvesna ograničenja. S obzirom, da je u periodu pandemije poštovana preporuka o beskontaknim transakcijama sasvim je izvesno da dominiraju digitalni kanali distribucije bankarske ponude. Kod odgovora na pitanja koji uključuje Likertovu skalu, postoji mogućnost da pojedinci imaju različitu percepciju stvarnosti.

Zaključak i preporuke

Svetska ekonomija nakon pandemije neće biti ista, što važi i za bankarski sektor kao neodvojivi deo ekonomije. Na osnovu analize rezultata istraživanja koji su zasnovani na statističkim podacima, izvodi se zaključak da je pandemija ostavila dubok trag na bankarski sektor Srbije. Blagi porast učešća problematičnih kredita, posledica je negativnih efekata pandemije i većih dospeća kredita nakon prestanka drugog moratorijuma na otplatu kredita, negativnih uticaja pandemije virusa korona na finansijska tržišta u prvoj polovini 2020. godine, usledio je porast пораст кompozitnog pokazatelja sistemskog stresa i drugih pokazatelja finansijskog zdravlja. Pitanje zadovoljstva klijenata bankarskom ponudom u uslovima krize, pa i ove pandemijske, naročito dobija na značaju. U praksi je pravi izazov motivisati klijente da budu lojalni banci. Jedinstveno rešenje ne postoji, jer su klijenti individua, ličnost za sebe sa svojim osobenostima, a banka sui generis preduzeće, a konkurentski uslovi oštri. Najviše zabrinjava stav ispitanika, s aspekta lojalnosti banci, jer najviše ispitanika ima definisan stav oko promene banke 73% ukoliko ona ne ispuni njihova očekivanja.

Ova studija je pružila odgovor na glavna istraživačka pitanja koja su podržana u literaturi. Ishodi ovih istraživanja definišu motivacioni pristup klijenata bankarskog sektora Republike Srbije. Na osnovu rezultata analize konstatujemo da su klijenti banke najviše privučeni cenovnom pogodnošću banke, da koriste usluge mobilnog bankarstva, a od bankarskih proizvoda najviše plaćanje računa, kalkulator kurseva i uvid u trajne naloge. Možemo konstatovati da je većina ispitanika, 32% zadovoljna cenom bankarske ponude, 37% ispitanika nema stav da su zaštićeni od sajber kriminala, 42 % je zadovoljno ljubaznošću osoblja, 38% je zadovoljno promocijom poslovanja banke i 49 % je zadovoljno korisničkim uputstvom sa aspekta razumljivosti primene. Veoma važno istraživačko pitanje jeste kvalitet celokupne bankarske ponude jer predstavlja svojstvo usluge koje je najteže oponašati i ima veliki uticaj na konkurentnost. Odgovori po ovom zadatom kriterijumu jesu pozitivni i to pokazuju najviše zadovoljnih ispitanika (37%). Ova istraživanja pokazuju koje aktivnosti treba preduzeti da bi sektor bankarstva sačuvao svoju poziciju i dinamizirao svoju aktivnost. Rezultati ove analize samo potvrdjuju hipotezu, da sektor bankarstva mora da koristi pandemijski izazov kao priliku za proširenje ponude svojih proizvoda i usluga, jer 36 % klijenata nije zadovoljno proširenjem bankarske ponude, uprkos kvalitetu koji se nudi za dosadašnje proizvode. Porast onlajn trgovine i usluga koji se odobravaju „na daljinu“, kao i uvođenje novih servisa poput video onbordinga, prenosa računa i prenosa sredstava putem mobilnih telefona, pokazuju spremnost banaka i regulatora da finansijsko tržište Srbije učine savremenim i usklade ga sa najnovijim trendovima u Evropi.

Masovni prelazak na digitalne usluge i preispitivanje starih poslovnih navika ubrzaće digitalnu konkurentsku dinamiku. Da bi opstale i vršile svoju misiju, banke će morati da se prilagode novonastalim okolnostima. Da bi ubrzali digitalnu transformaciju bankarskog poslovanja rukovodioci banaka treba da se fokusiraju na sledeće prioritete: Banke treba da se opredele za strateški prioritet kroz stvaranje novih tokova prihoda, smanjenje troškova i poboljšanje korisničkog iskustva. Treba uspostaviti tehnološke i organizacione mogućnosti kako na strani ponude, tako i na strani tražnje. Na strani ponude banka treba da upravlja svojim distributivnim kanalima prodaje. Kreiranjem interfejsa, kao na primer aplikacija prodavnica, treba da budu dostupne korisnicima kroz jednostavan pristup, uključujući brzinu postupka registracije, autentifikaciju i smernice za cene. Bankarski menadžeri u Srbiji treba da stvore povoljnije radno okruženje. Bankarski menadžeri treba da preduzmu više mera da bi podržali svoje zaposlene. Banke treba da nastave sa stručnim usavršavanjem svojih zaposlenih kroz vebinare, digitalne kurseve radi boljeg pružanja usluga klijentima. Pandemija COVID-19 primorala je bankarske klijente da prihvate digitalnu bankarske proizvode i usluge na daljinu. Usredsredjenost na klijenta može se poboljšati kroz 1. prilagodjenu bankarsku ponudu ka digitalnim proizvodima, uslugama i operacijama, 2. adaptacija u smislu postojećih linija poslovanja relevantim kupcima u skladu sa postojećim propisima i 3. implementiranje inovacija u vidu novih, boljih i bezbednijih digitalnih rešenja i boljeg korisničkog iskustva. Što je banka opremljenija, to i klijenti imaju više poverenja u nju. Rezultati sprovedenog istraživanja pokazuju da digitalne transformacije imaju uzlazni trend i da menjaju sliku tradicionalnih banaka. Najevidentnije koristi za klijenta jesu od pristupa servisu pa sve do sagledavanja efekata digitalne transakcije. Ostaje otvoreno pitanje za bankarske menadžere, da li će bankarski sektor biti otporniji u budućnosti i koliko će digitalizacija ubrzati proces ekonomskog oporavka, kao i kako poboljšati digitalnu bankarsku ponudu.

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IMPACT OF THE PANDEMIC COVID - 19 ON THE DIGITALIZATION OF THE BANKING SECTOR OF SERBIA

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Abstract

This paper examines the consequences of COVID-19 on the digitalization of the banking sector, in order to identify the challenges and opportunities of the banking sector in Serbia. The research consists of two parts. The first part uses statistical data from regulatory and supervisory bodies, and the second part refers to field research, which is based on a survey. Data processing was created using IBM SPSS Statistics software. Survey questionnaires were collected in the period from January to May 2022. The answers of 174 respondents, bank clients, were accepted for analysis. The questionnaire was compiled using a five-point Likert scale. This sample may not be entirely representative, but in any case it is sufficiently informative, as it is possible to draw a conclusion about the contribution of each variable to the development of digital banking. To analyze the relationship between the metric variable and several independent variables, we use multiple or multiple regression. Our assessments reveal the impact of digital products and services on the development of digital banking. In the research, specific goals should be determined, specifically what percentage of respondents are familiar with digital banking services. Also, further analysis should verify the statement that the proportion of respondents who have a negative attitude towards digital banking is less than 45%. In this research, regression analysis was used, as part of the analysis used to form the digital maturity of clients in Serbia. A two-factor analysis was used to research the preferred types of banking products and services. Data analysis using SPSS version 20 for Windows shows that: There is a positive and significant impact of digital banking products on bank customer satisfaction. Analyzed models for researching client preferences indicate that the bank's managerial approach implies real knowledge and monitoring of the wishes and preferences of its clients, as well as adequate key priorities that managers of the banking industry should provide. The research results show that a digital bank can be a unique answer to all challenges, as well as the most effective tool for retaining and attracting clients.

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Key words: *COVID-19 pandemic, digital maturity, digitization of banking.*

JEL: *G21, O32.*

Introduction

The COVID-19 pandemic, in addition to the health crisis, caused changes in the global economy, but also the way of doing business in all countries. The banking system is most affected by the challenges and risks caused by the pandemic. Financial operations were reshaped. Economic theory and its application in practice show the connection of the financial system with the real economy (Ercegovac, 2002). The path of digital transformation is a path of challenges, so a balance between technology, banking offer and financial needs of clients is necessary. With an adequate research methodology and research tools, it is possible to predict the future behavior of the client and respond with adequate digital solutions. Digital banking is a platform for solving simple financial transactions that will in the future suppress the traditional business relationship between the bank and the client.

The banking system of the Republic of Serbia is facing major changes, and the duration and severity of the consequences of the economic crisis, as well as the speed of recovery, are very difficult to assess. Therefore, bank managers have an arduous task to re-plan scenarios and adapt to the new situation. Analyzing the situation and adequately managing challenges and opportunities is key to the short-term survival and long-term health of the banking industry. Some authors believe that this attitude is crucial for financial organizations (Radić, et al., 2020). In the period of crisis, powerful bank managers are created, who can very successfully respond to all the challenges and take advantage of the opportunities that are offered. Experience shows that leaders need to make decisions today to expect victory in the future. On the basis of wrongly made decisions, crisis prediction models and the behavior of the banking system to various influences from the environment were developed.

In the conditions of the pandemic, the experience of clients is increasingly differentiated, so bank managers suggest changing the current business contents in order to meet the financial needs of their clients and withstand the pressure of growing competition through new models of banking activities. A modern bank must be present on the market in the way that users or clients expect from it. The challenges facing the modern banking industry are largely determined by financial technologies, shadow banking and innovation in finance on the international stage. The patterns by which the banking sector operates were changing even before the outbreak of the pandemic, so we have various existing technological innovations in use. Transformation of banking activities is becoming a necessity, especially digital transformation, as a dominant macrotrend. There is a dominant desire to connect people, despite physical distance, so infinite solutions are an integral part of measures to reduce the rate of contagion, as a safe and secure way of conducting transactions. However, the growth of cashless transactions has caused new challenges for the banking industry in terms of fraud.

pandemic has created the perfect environment for cybercrime in pandemic conditions, among which digitally inexperienced clients and those clients with traditional beliefs who need continuous personalized service are the most affected. According to the Financial Times, it is estimated that more than half of the £43 billion borrowed was lost to fraudulent claims. (Thomas, at al. 2020). A key role for the banking industry is to take a holistic approach to digital experiences. In the conditions of the pandemic, the trend of digital transformation is very current, but solving the problem of the digital gap is becoming more and more dominant. A number of information technologies are in use that can help the process of digital transformation of the banking sector and thus help both managers and clients of the banking sector (integration of artificial intelligence; blockchain technology; internet of things; cloud computing) and other advanced solutions in order to better respond to changes in the way performing business activities.

Objectives of the study

The first and basic goal of the paper is to analyze the structure of the banking sector of the Republic of Serbia and explain its transformation in the short term in the conditions of the pandemic. As a continuation of this goal, an additional analysis is imposed, the examination of clients' attitudes about the banking offer. The main goal of this paper is to investigate the impact of the COVID-19 pandemic on banking operations. The subject of the research is characterized by the topicality and importance of the problem, significant for the banking industry, both from the macroeconomic aspect (effective allocation of resources on the financial market) and the microeconomic aspect (laying off employees) as well as from the psychological aspect (risk and increased stress due to the health and financial crisis). The goal of the research is to determine the consequences of the pandemic on the banking sector of Serbia, as well as to define banking products and services during the pandemic period and to determine the satisfaction of the bank's clients with that offer. Many factors affect customer satisfaction, and some of them are: price, reliability, availability, ease of application, courtesy of service staff, etc. Bearing in mind the key issues that bank managers will face in the future with the dynamics of constant transformation in order to focus on the financial needs of the client, increase profitability, within the limits of risk tolerance, on the one hand, as well as the motivation of clients in choosing a banking offer on the other sides, initiated the choice of topic and focused the subject and research goal of this paper.

The advantage of this research is in the discovery of behavior based on the mutual exchange of management ideas with clients, in order to continuously improve and strengthen these relationships. The behavior of banking clients gravitates from conservatism and aversion to digital sales channels in the period before the pandemic to increasing motivation to use digital banking products during the pandemic. At the same time, a cautious motive of clients due to cybercrime was observed. The obtained data give a clear picture: there are clients who are ready and looking for digital solutions immediately, and bank managers should implement them as soon as possible with increasing protection against the risk of cybercrime, and there is another group of traditional clients who, despite the corona virus, prefer going to the bank. With this research, we make a double contribution to the literature. First, we examine the impact of the pandemic on the digitization of banking operations, through a multi-channel approach, that is, the choice of the client to contact the bank at any time, any time and from any device, digital procedures, electronic management of relations with clients. Second, we propose the desirable characteristics of the banking offer in the process of digital transformation. Examining customer satisfaction is a very important parameter that must be taken into account when forming a banking offer. Based on this research, it is possible to draw a conclusion about the functioning of the banking sector in the future, given that there are various challenges during the pandemic period. Digital transformation of banking operations is no longer seen as a possibility, but as a necessity. What was a matter of choice for most banks in the pre-pandemic period has now become an obligation for all participants in the financial market during the pandemic.

Literature review

It is planned that this research will be carried out in two phases, theoretical research and practical verification. Research on sources of information on the impact of the pandemic on the banking sector indicates a negligible number of determinants on this topic. (about 15,900 results). Searching for sources in English yielded many more sources (48,500,000 results). These mentioned results can be accepted as rough indicators of the openness and topicality of the research topic. The effect of the pandemic on the banking sector includes impact evaluations that are part of a broader evidence-based policy-making program (Gertler, 2011). Several studies have revealed the negative effects of the pandemic, through increased inefficiency, futures price changes, oil price changes, and increasing market volatility (Narayan, 2020; Haldar et al., 2021). We agree with the author's opinion that the COVID-19 pandemic has had a major impact on the global economy. Bearing in mind that in the last year 2021, the world GDP decreased by about 6%, this crisis caused by the pandemic of COVID-19 can be compared to the biggest economic crises of all time, such as the one in 1929, as well as the one caused by the oil shock of the seventies years of the last century (Ramasamy, 2020). In the period from 1970 to 2007, 394 financial crises occurred, among which the most common are 207 currency crises, followed by

124 banking crises and 63 contemporary debt crises (Racickas, et al., 2012). The crisis caused by the COVID-19 pandemic, the increase in systemic risk caused the growth of non-payable loans worldwide (Rizwan, et. al. 2012). The increase in non-performing loans should be viewed in accordance with other unfavorable macroeconomic indicators. The authors (Ari, 2021) observe that during the pandemic, borrowers and companies are increasingly faced with job losses, slowed sales and falling profits. It is a realistic expectation that clients will seek financial assistance, and regulators will encourage banks to help them. The banks themselves have their own plan to protect clients from the corona virus, by recommending working from home, and providing clients with the ability to perform banking activities without physical interaction.

Also, the World Health Organization (WHO, 2020) advised people to use contactless payment as much as possible, because banknotes are considered a potential carrier of the coronavirus. For these reasons, physical banking is becoming less and less attractive, not only for the elderly and burdened population, but also for the younger population. According to Pwc's 2021 research on customer habits, preferences, borrowing, payment, insurance and investing, based on 6,000 respondents, an increase in the number of customers for digital banking services was observed, while 32 percent avoid going to a physical branch. Banks have successfully responded to the challenges in the pandemic period. In the opinion of many authors, digitization leads to a reduction of up to 25% of costs, which directly leads to an increase in income in the segment of short-term and cash lending. The pandemic is boosting digital banking, online banking, telephone banking and call center services. While the coronavirus makes the need for digital banking services more urgent, consumers' growing preference for digitization is nothing new. According to a recent survey by Lightico, 56% of banking consumers reported being diverted from online banking interactions to brick-and-mortar locations. As many as 48% of respondents say they have been asked to print, sign and email documents while banking online (Lighico, 2021). In order to provide digitized banking services to ensure success in the financial market, AtKearney, in his research, suggests that banks should implement electronic database and customer interactions through social networks, with lower costs (AtKearney, 2014). Banks can obtain data on social networks about the opinions of users about new banking products and services, the quality of customer service, and the problems that are present. The US banking industry is in a major digital arms race. For many banks, digital distribution channels for their products and services have become more important than branches and ATMs. Banks in developed countries believe that investments in digital technology bring greater benefits than the satisfaction of their customers. For example, Bank of America receives more deposits from its mobile channel than from branches (Rogers, 2018).

A review of the literature shows that digital transformation has been accelerated by an average of six years (Twilio, 2020). Research from a consulting company shows that bank customers have increased their use of digital banking services by 50% since the start of the pandemic, and 71% of them use digital banking channels weekly (KPMG, 2020). Research conducted in Kosovo (Božović, 2016) indicates that the digital distribution channels of the banking offer are still not represented to the extent they should be, but banks are interested in digitizing their services on a larger scale. The transformation of the banking system should be directed towards the client (Jaubert, 2014). Many useful solutions and recommendations for the scope of the digital banking offer during the pandemic period were observed, but the risk of cybercrime during the pandemic was also pointed out. In its document "Systemic cyber risk" (ESRB, 2020), the European body for systemic risk presented a conceptual model of the development and materialization of cyber risk, as well as the factors of the emergence of a systemic crisis due to a cyber incident. Bearing in mind that since the pandemic period, the intermediary role of banks has been reduced, the banking sector operates in conditions of greater risk due to uncertainty during the pandemic. Digital banking service providers and application developers can take advantage of academic research to improve market share with the concept of service personalization. (Krishanan, et al. 2016).

In Serbia, the central bank made a decision to act in an economically proactive and preventive manner in the context of a worsening health situation. Banks responded by taking measures to continue operations, taking care of the unhindered performance of the bank's basic functions, as well as preserving the health of its employees. The author's research (Terkan, Ucar, 2020; NBS, 2021) opens a new view of distance learning, because most respondents have a negative opinion regarding the effectiveness and practice of distance learning. Banks have rapidly activated work-from-home options for the largest number of employees, cooperation and communication with customers takes place electronically and via video-conference calls, while on the other hand, bank clients are encouraged to use digital communication channels, including contactless payments (mobile by phone, via computer, payment cards) including payments with the recently introduced QR code at points of sale, for questions, consultations or sending documents to banks, it is recommended to use e-mail, social networks and banking contact center services. By reviewing the relevant literature and consulting official data, the analysis looks at the factors that can contribute to the banking sector being durable enough after the Covid-19 pandemic, to the financial system taking advantage of the current crisis situation and adopting a more sustainable form of business. The indicator of gross non-collectible claims (NLP) is still below the pre-crisis level and amounted to 3.6% in June, which indicates that the measures of the National Bank of Serbia and the Government were timely and that they prevented a larger negative effect on the economy and the population, and thereby also financial stability. Also, compared to the end of 2020, that share decreased (by 0.1 pp), with the economy sector 17% decreasing by 0.2 pp to 2.9% in June, and the population 18% to growth of 0.4 pp, to 4.0% in June (NBS, 2021). Back in 2018, the National Bank of Serbia introduced a system for instant payments, thanks to which payments are available to citizens and the economy 24 hours a day, seven days a week, throughout the year. Payment is possible from all commonly used modern communication devices, at any time and from any place, and money is transferred in 1.2 seconds (NBS, 2018). The effect that the pandemic can have on the financial system depends on: a) the further spread of the virus and its impact on economic trends, b) the reaction of monetary and fiscal policy to market shocks and c) the regulatory reaction to the possible collapse of the banking system (Beck, 2020).

Research methodology

The research methodology is aligned with the goals and objectives. The research consists of two parts. The first part refers to official statistical data for Serbia, and the second part includes empirical research.

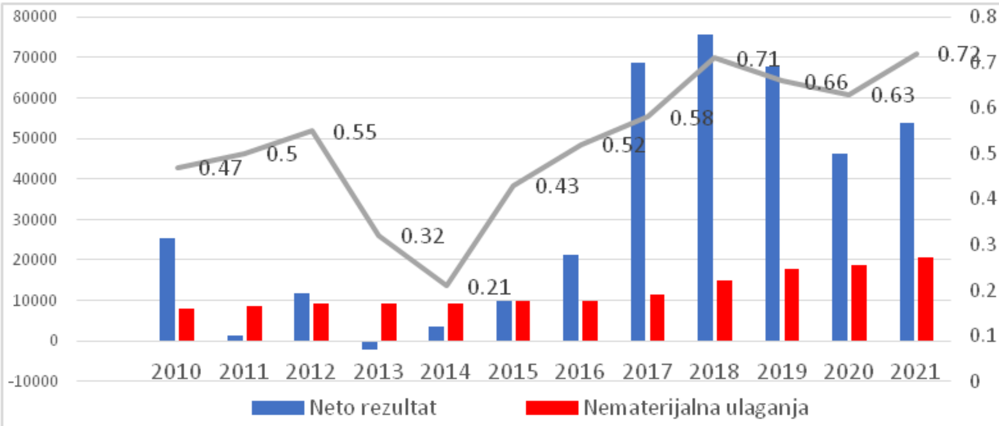
Consequences of COVID-19 on the banking sector of Serbia

In the first part, the statistical data of NBS, Republic Institute of Statistics are used. By analyzing these data, we see the depth of the consequences of COVID-19 on the banking sector of Serbia.

The Central Bank of Serbia was one of the first central banks in Europe to respond to the crisis caused by the pandemic in a timely and comprehensive manner with a series of implemented measures of fiscal, monetary and macroprudential policy, which acted in the direction of strengthening the stability of the financial system of the Republic of Serbia. Official data show that in Serbia, 78.4% of the population uses the Internet every day, and more than 50% of them access the Internet via mobile devices. Also, the number of mobile banking users has increased up to 20 times in the last six years. According to official data, mobile banking is used by more than 2.2 million people in Serbia (NBS, 2022). The first bank in Serbia that introduced mobile banking through smartphone applications is Banca Intesa, and in the world it is "JP Morgan Chase Bank" from the USA (Sanader, 2014).

The next, logical step is the analysis of intangible assets. It is the only publicly available data on investment in IT technologies, innovation and digitization, as well as risk management, but the data is limited because it is cumulative data on software and licenses. The research results for the period from 2010 to 2021 are presented graphically (*Figure 1)*.

Figure 1. Correlation coefficient of intangible investments and net results for the banking sector for the period from 2010 to 2021.



Source: Author's calculation based on data from the National Bank of Serbia.

The correlation between intangible investments and net results for the banking sector of Serbia is 0.74, i.e. medium strong correlation relationship and positive. The strongest correlation was achieved in 2018. According to the comparative data from the following graph, it is evident that there is a connection between intangible investments and net results. However, the correlation coefficient is decreasing despite increased intangible investments. It only confirms the influence of other factors that influence and burden the net result. A loss was also recorded in 2013, which arose as a result of the revocation of the operating license of two banks due to the high expenses of writing off placements. Due to the epidemic, clients were forced to turn to electronic and mobile banking, so the introduction of the IPS payment system before the outbreak of the epidemic additionally contributed to its popularization. On February 27, 2020, instant payment by QR code was introduced at points of sale, which all selected banks implemented in their m-banking applications.

Empirical research of clients' attitudes about the banking offer during the pandemic period

Of clients' attitudes about the banking offer during the pandemic period was conducted. To determine the satisfaction of clients with the banking offer during the pandemic, it is not possible to measure directly, but indirectly. Quantitative research was conducted using the method of surveying and interviewing on the population who are clients of the bank in the territory of central Serbia. This paper is based on the application of primary and secondary data. Primary data were collected through structured questionnaires. Data collection for this research was conducted in the period from January to May 2022. The research was conducted among the same group of people, i.e. researchers conducted informal interviews and surveyed exclusively clients of the Serbian banking sector.

The number of respondents was 200, of which 175 were valid survey questionnaires, which were used to calculate the importance of the parameter and purchase motive. In order to protect the confidentiality of the participants, the data is encrypted in the work. An appropriate scale was implemented in the research, which is also used by other researchers for the same purposes. The questions are closed-ended, with predefined answers. Data processing was created using the SPSS statistical computer package for social sciences.

The questionnaire consists of two parts. The first part of the questionnaire refers to demographic characteristics (The set of demographic questions includes: gender, age group, education of the respondents, work experience), and the second part of the questions aims to open important questions related to mobile banking, so that the obtained results contribute to a better understanding and evaluate the current state and offer of digital services by banking institutions. The questionnaire in the paper was developed using a five-point Likert scale. The questions in the survey questionnaire are structured in two parts, with answers expressed in grades from 1 to 5 (1- do not agree at all, 2. do not agree, 3- have no opinion, 4 - agree and 5- completely agree) The questions were formulated in such a way as to examine the attitudes of clients about the banking offer and which influence the motivation to purchase banking products and client satisfaction. (Gliem, 2003).

Research results

A total of 174 questionnaires (N=174) were available for statistical analysis. Among the respondents there were 56 female persons (97%) and 77 male persons (44%). Among them, 79 people under the age of 35 (45%), 53 people between the ages of 35 and 45 (31%) and 42 people over 45 (24%) were surveyed. The data show us that the young population dominates among clients. As far as the level of education is concerned, 108 people (62%) have a secondary level of education, 9 people (5%) have a lower education and 57 people have completed a higher school or university (33%). In terms of length of service, employees with up to 10 years of service dominate, 72 people (41%), followed by 54 people with up to 20 years of service (31%) and 48 people with more than 20 years of service (28%).

After examining the demographic characteristics, there followed an examination of the motivational attitudes that the respondents ranked according to their degree of importance for choosing a bank. Based on the homogeneity of variance test, we determine in which facilities the assumption of homogeneity of variance is not violated (*Table 1)*. The most desirable convenience is: the price convenience of the banking offer (79%), the user experience (82%) and the reputation and image of the bank (79%), this means that there is a statistically significant difference between the mean values of the specific convenience. The lowest ranked convenience is the location of the bank (29).

Table 1. Test of homogeneity of variance

The most important reasons for choosing a bank?	**Levene Statistic**	**df1**	**df2**	**Sig.**
Positive experiences of close people	.565	2	45	.419
User experience	5,509	2	45	.006
Bank location	.369	2	45	.608
Price convenience	7,532	2	45	.000
Reputation and image of the bank	4.101	2	45	.013

Source: Author's calculation using the IBM SPPS program Statistics.

Out of 174 respondents, most respondents (59%) use mobile banking, 4% use a phone call, and 37% make a physical visit to the bank. By detailed segmentation of the responses, most of the respondents (42%) use the following banking products (bill payment, exchange rate calculator and insight into standing orders. The results of the frequency analysis show that clients use the mobile phone the most (89%), the dominant support is the guide through the application 52%, almost daily use of the Internet (79%), while the smallest physical visit to a bank branch is once a month at 37%. In terms of bank loyalty research, the majority of respondents have a defined attitude about changing banks, 73% if it does not meet their expectations.

The following is a set of questions intended to examine the importance of various factors in the pandemic period. Respondents were given the option of rating from 1-5, where 1- is not satisfied at all, and 5 is very satisfied. (*Table 2.)*.

Table 2. Examining the importance of factors in the pandemic period

A row. Number	A research question	EVALUATION				
		1	**2**	**3**	**4**	**5**
1.	Are you satisfied with the price of the bank offer?	6%	26%	29%	32%	7%
2.	Do you think you are protected from cybercrime?	10%	19%	30%	32%	9%
3.	Are you satisfied with the courtesy of the bank staff?	7%	9%	11%	39%	34%
4.	Are you satisfied with the promotion of the bank's business during the pandemic?	1%	6%	23%	38%	32%
5.	How do you evaluate the user manual of your bank from the aspect of comprehensibility of application?	3%	5%	8%	35%	49%
6.	How completely satisfied are you with the overall quality of the banking service?	19%	21%	6%	17%	37%
7.	Are you satisfied with the expansion of the banking offer?	20%	36%	19%	16%	9%
8.	Are you satisfied with the speed of the user interface?	4%	19%	27%	33%	17%

Source: Author's calculation using the IBM SPPS Statistics program.

We note that the majority of respondents, i.e. 32% are satisfied with the price of the bank's offer, 30% of the respondents do not believe that they are protected from cybercrime, 39% are satisfied with the courtesy of the staff, 38% are satisfied with the promotion of the bank's business and 35% are satisfied with the user manual from the aspect of comprehensibility of application. A very important research question is the quality of the entire banking offer because it is the most difficult service attribute to imitate and has a great impact on competitiveness. Answers according to this criterion have the most satisfied respondents (37%).

In further analysis, the statement that the proportion of respondents who have a negative attitude towards digital banking is less than 45% should be verified. We will perform the testing using the SPSS procedure " Non parametrizing test". The digital banking variable has two categories: 1st category of respondents who have a negative attitude towards digital banking and 2nd category of respondents who do not have a negative attitude towards mobile banking. The test result is shown in the table.

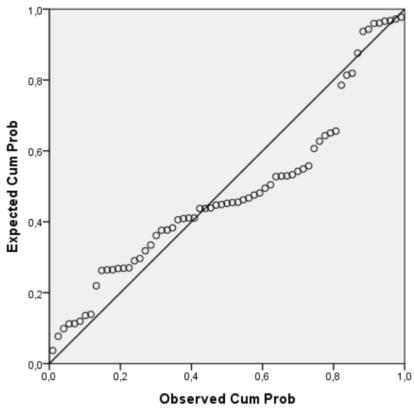
Table 3. Independent Samples Test

Independent Samples Test		Category	N	Observed Prop.	Test Prop.	Exact Sig. (1-tailed)
Digital banking	Group 1	the others	104	,59	,45	,000
	Group 2	negative	70	,40		
	Total		174	1.00		

Source: Author's calculation using the IBM SPPS Statistics program.

Based on the realized level of significance, we conclude that we accept the alternative hypothesis that the proportion of respondents who have a negative attitude towards mobile banking is less than 45%. The next picture (*Figure 2)* visually confirms the hypothesis of a normal distribution for the development of digital banking services.

Figure 2. Normality distribution diagram for standardized residuals



Source: Author's calculation using the IBM SPPS Statistics program.

Note: Dependent variable: Digital banking offer; Independent variable: Expected variable: price of banking offer, cybercrime protection, friendliness of staff, promotional activities, comprehensibility of user manual and speed of user interface.

It was proved that the normality assumptions of the regression analysis were not violated. The points lie in an approximately straight diagonal line from the lower left to the upper right corner of the diagram. Based on the scatter diagram, we conclude the following: according to the strength of the quantitative agreement, the connection between the entire digital banking offer and the other assumptions is statistical, of considerable strength, because the points are close to the imaginary direction that always passes through the point. Its shape is linear, the points are distributed approximately in the imagined direction, and its direction is direct and positive, i.e. with the growth of variables comes the digital banking offer. For the purposes of country-level research, it is possible to identify the digital maturity of the client.

Table 4. Digital maturity of clients by stages

Stages of maturity	**Digital maturity of clients**	**%**
Information gathering	Availability of information	54
Account opening	Opening process	18
User involvement	Availability of distribution channels of the banking offer	63
Day-to-day banking	Account and banking product management, authorization, card management, customer support, personal finance, transfers and payments	51
Extended banking offer	Cards, cash loan, check, bill of exchange, mortgage, accounts (foreign exchange, savings, term)	28
Disconnection	Closing the account	21

Source: Author's calculation using the IBM SPPS Statistics program.

The survey results point to the client's perspective, which shows how customer satisfaction can be achieved by improving features and functionality. The least satisfaction (18) occurs due to the impossibility of opening an account remotely. On average, clients are satisfied with performing everyday transactions through digital channels.

Limitations of the research

There are certain limitations in this research. Given that the recommendation on contactless transactions was respected during the pandemic period, it is quite certain that digital distribution channels of the banking offer dominate. When answering questions that involve a Likert scale, there is a possibility that individuals have different perceptions of reality.

Conclusion and recommendations

The world economy will not be the same after the pandemic, which also applies to the banking sector as an inseparable part of the economy. Based on the analysis of research results based on statistical data, it is concluded that the pandemic left a deep mark on the banking sector of Serbia. The slight increase in the share of problem loans is a consequence of the negative effects of the pandemic and higher loan maturities after the end of the second moratorium on loan repayments, the negative effects of the corona virus pandemic on the financial markets in the first half of 2020, followed by an increase in the composite indicator of systemic stress and other indicators of financial health. The issue of client satisfaction with the banking offer in crisis conditions, including this pandemic one, is gaining particular importance. In practice, it is a real challenge to motivate customers to be loyal to the bank. There is no single solution, because clients are individuals, a personality in themselves with their own peculiarities, and the bank is a sui generis company, and competitive conditions are harsh. The attitude of the respondents is the most worrying, from the aspect of loyalty to the bank, because most of the respondents have a defined attitude about changing the bank, 73%, if it does not meet their expectations.

This study answered the main research questions that are supported in the literature. The results of these researches define the motivational approach of clients of the banking sector of the Republic of Serbia. Based on the results of the analysis, we conclude that the bank's clients are most attracted by the bank's price advantage, that they use mobile banking services, and among banking products, the most are bill payment, exchange rate calculator and insight into standing orders. We can state that the majority of respondents, 32%, are satisfied with the price of the bank's offer, 37% of respondents do not believe that they are protected from cybercrime, 42% are satisfied with the friendliness of the staff, 38% are satisfied with the promotion of the bank's business and 49% are satisfied with the user instructions from the aspect of comprehensibility applications. A very important research question is the quality of the entire banking offer because it is the most difficult service attribute to imitate and has a great impact on competitiveness. The answers according to this given criterion are positive and this is shown by the majority of satisfied respondents (37%). These studies show what activities should be undertaken in order for the banking sector to preserve its position and dynamize its activity. The results of this analysis only confirm the hypothesis that the banking sector must use the pandemic challenge as an opportunity to expand the range of its products and services, because 36% of clients are not satisfied with the expansion of the banking range, despite the quality offered for the current products. The increase in online trade and services that are approved "at a distance", as well as the introduction of new services such as video onboarding, account transfer and fund transfer via mobile phones, show the willingness of banks and regulators to modernize the Serbian financial market and bring it into line with the latest trends in Europe..

The massive shift to digital services and the rethinking of old business habits will accelerate digital competitive dynamics. In order to survive and fulfill their mission, banks will have to adapt to the new circumstances. In order to accelerate the digital transformation of banking operations, bank managers should focus on the following priorities: Banks should choose a strategic priority through the creation of new revenue streams, cost reduction and improvement of user experience. Technological and organizational capabilities should be established both on the supply side and on the demand side. On the supply side, the bank should manage its sales distribution channels. By creating interfaces, such as app stores, they should be accessible to users through easy access, including the speed of the registration process, authentication, and pricing guidelines. Bank managers in Serbia should create a more favorable working environment. Bank managers should take more measures to support their employees. Banks should continue professional development of their employees through webinars, digital courses in order to provide better services to clients. The COVID-19 pandemic has forced banking customers to embrace digital banking products and services remotely. Focus on the client can be improved through 1. adapted banking offer to digital products, services and operations, 2. adaptation in terms of existing lines of business to relevant customers in accordance with existing regulations and 3. implementing innovations in the form of new, better and safer digital solutions and better user experience. The more equipped the bank is, the more trust clients have in it. The results of the conducted research show that digital transformations have an upward trend and are changing the image of traditional banks. The most obvious benefits for the client are from accessing the service to seeing the effects of the digital transaction. It remains an open question for bank managers, whether the banking sector will be more resilient in the future and how much digitization will accelerate the process of economic recovery, as well as how to improve the digital banking offer.

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Tabele moraju biti formirane u tekstu rada, a ne preuzete u formi slika iz drugih materijala. Tabele unositi u sam tekst rada i numerisati ih prema redosledu njihovog pojavljivanja. Nazivi tabela moraju biti dati neposredno iznad tabele na koju se odnose. Koristite dole prikazani stil tokom njihovog formatiranja. Naslov tabela pisati sa razmakom 6 pt – iznad/before i 6pt – ispod/after, u fontu TNR, font size 12, ravnanje Justified. Tekst unutar tabela pisati fontom TNR, font size 9. Tekst u zaglavlju tabela boldirati. Izvor i potencijalne napomene pisati sa razmakom 6 pt ispod tabela (before). Izvore i napomene pisati u fontu TNR, font size 10, ravnanje Justified. Naredni pasus početi na razmaku od 6pt od izvora tabele ili napomene (after). Tokom pisanja rada u originalnom tekstu treba markirati poziv na određenu tabelu (*Table 5*.). Trudite se da se sve tabele u radu veličinom uklapaju u zadati format strane (Table properties – preferred width – max 97% - alignment: center). Sav tekst u poljima tabele treba unositi u formi (paragraph – spacing: before/after 0pt, line spacing: single). U slučaju da se tabela lomi na narednu stranicu, molimo Vas da prelomljeni deo tabele na narednoj stranici bude propraćen zaglavljem tabele.

Tabela 5. Troškovi distribucije dobara iz Subotice u maloprodajne objekte

Indikatori	Period			Ukupno
	Mesec 1	Mesec 2	Mesec 3	
Pređena razdaljina (km)	12.926	11.295	13.208	37.429
Korišćeno gorivo (litar)	3.231	2.823	3.302	9.356
Vrednost korišćenog goriva (RSD)	242.378	211.790	247.653	701.821
Ukupno provedeno vreme u vožnji (sati)	314	266	417	997
Vrednost ukupno provedenog vremena u vožnji (RSD)	47.048	39.890	62.570	149.508
Broj vožnji	98	77	102	277
Ukupna vrednost (RSD)	0	0	0	0
Broj prevezenih paleti (komad)	1.179	976	1358	3.513
Ukupna prevežena količina (kg)	602.600	429.225	711.116	1.742.941
Suma (RSD)	974.222	870.864	1.100.813	2.945.899

Izvor*:* Nikolić, 2010;

Napomena: Vrednosti u tabeli ne sadrže porez na dodatu vrednost (PDV)

Grafike, dendrograme, dijagrame, šeme i slike treba unositi u sam tekst rada (ne koristiti opciju Float over text) i numerisati ih prema redosledu njihovog pojavljivanja. Njihovi nazivi se moraju pozicionirati neposredno iznad grafika, dendrograma, dijagrama, šeme ili slike na koju se odnose. Kod navođenja naslova, izvora i napomena koristiti isti stil koji je predhodno prikazan za formiranje tabela. Tokom pisanja rada u originalnom tekstu treba markirati pozive na određeni grafik, dendrogram, dijagram, šemu ili sliku (Graph 2.). Svi grafici, dendrogrami, dijagrami, šeme i slike u radu se svojom veličinom moraju uklapati u zadati format strane, te moraju biti centralno postavljeni. Fotografije nisu poželjne u predmetnom radu, a ukoliko se one ne mogu izbeći molimo Vas da koristite optimalnu rezoluciju (preniska rezolucija dovodi do pikselacije i krzavih ivica, dok previsoka samo povećava veličinu fajla bez doprinosa čitljivosti rada).

Kod pisanja zaključka rada, molimo Vas imajte na umu da iako **Zaključak** može dati sažeti pregled glavnih rezultata rada, nemojte ponavljati apstrakt na ovome mestu. Zaključak može objasniti značaj rada, dati preporuke za dalje delovanje ili predložiti dalji rad na obrađivanoj temi.

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rada. Literaturu navoditi u fontu TNR, font size 12, ravnanje Justified, sa međusobnim razmakom 3pt – iznad/before i 3pt – ispod/after. U svim literaturnim jedinicama koristiti **Čikaški šablon za stil.** Molimo Vas da navodite prezimena svih autora, a ne da koristite stil navođenja Nikolić et al. Nemojte kombinovati literaturne jedinice (pod jednim rednim brojem može biti samo jedna referenca) i uvek pišite pune naslove u radu korišćenih literaturnih jedinica. Ukoliko je korišćena/citirana literatura preuzeta iz internet publikacija, posle pravilno izvršenog imenovanja literaturne jedinice u zagradi se mora navesti kompletan link sa koga je materijal preuzet (dostupno na web sajtu: www.nikolanikolic.pdf). Molimo Vas pridržavajte se dole navedenih primera navođenja različitih tipova literaturnih jedinica i referenci.

Literatura

1. Nikolić N., M. Marković, i P. Petrović. 2016. Poreski bilans. Oditor 2, (1): 13-17.

Prilikom unošenja literaturnih jedinica unosite korišćenjem **Čikaškog šablona za stil,** minimum 10 literaturnih jedinica. Sva korišćena literatura mora biti citirana u radu.

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Nik Holmes[46], John Peters[47]

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Table 5. The distribution cost

Indicators	Period			Total
	2013	2014	2015	
Fixed costs	12.926	11.295	13.208	37.429
Variable costs	3.231	2.823	3.302	9.356

Source: Nikolic, 2016;

Graphs, diagrams, schemes and pictures should be entered within the text of article (do not use option Float over text) and numerated according to order of their appearance. Their titles have to be positioned immediately above the graph, diagram, scheme or picture to which they relate. Please, have in mind that all titles, sources and notes have to be written by identical style which was used for tables formatting. During the article writing please mark in the main text all calls to a certain graph, diagram, scheme or picture (*Graph 2.*). All graphs, diagrams, schemes and pictures within the paper have to fit the specified format of the page, as well as they have been centrally positioned.

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Literature

1. Vall J. 2014. Accounting theory. Valid, New York.
2. Parks D., W. Robberts. 2016. Macroeconomic indicators. Finance 23, (4): 462-476.

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