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SADRŽAJ ČASOPISA BROJ 02/2023

PRAVNO TUMAČENJE SAVREMENIH BEZBEDNOSNIH RIZIKA

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Apstrakt

Kod globalizacije imamo izraženu paradigmu rizičnog društva. Ta paradigma nastaje zbog nekontrolisane produkcije socioekonomskih, ekoloških i vojnih rizika. Ako ka tome dodamo i relativizovanje društvenih razlika i granica onda kao rezultat imamo porast nebezbednosti i nesigurnosti. Zemlja i teritorije koje su „pojedene“ globalizacijom postaju nepouzdano mesto za život.

Sve gore navedeno ima za posledicu da transnacionalni procesi, globalno tržište i demokratije ne znače nužno mir već suprotno veoma često nesigurnost, nemire, sukobe i krvave ratove.

Iako se ne mogu osporiti vrednosti aktuelnih procesa koji su zasnovani na integrativnim teorijama i naglašavanju zajedničkih interesa paradigma jednog harmoničnog sveta isuviše je daleko od stvarnosti. Nesporno je da su se u svetu s procesom globalizacije povećali nebezbednost i nesigurnost.

Ključne reči*: menadžment bezbednosti, pravno tumačenje, međunarodni odnosi.*

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Uvod

Paradigma rizičnog društva koja relativizuje sve razlike i granice, sve češći je okvir za definisanje bezbednosti savremenog sveta. Nekontrolisana produkcija rizika kontinuirano vodi ka politici koja Zemlju čini nepouzdanim mestom za život. Nada da će mir i demokratija zavladati svetom kroz globalizaciju nije se ostvarila. Teza teoretičara neoliberalne koncepcije da će svet ući u period miroljubivih odnosa kroz transnacionalnu saradnju pokazala se kao neosnovana.

Jedno je sasvim izvesno, a to je da tržište i demokratija traže veliko ulaganje u pravno regulisanje bezbednost kako na nivou državе tako i na globalnom nivou. Maksima koju su isticali najistaknutiji filozofi i političari globalizacije da će globalizacija doneti blagostanje kroz rečenicu "Globalnim trijumfom mira,

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demokratije i slobodnog tržišta" upućivalo se na potrebe novog načina pravnog regulisanja međunarodnog sistema bezbednosti kako se ne bi jedni problemi zamenili drugim problemima, ili se doprinelo intenziviranju problema koji su već postojali.

Funkcionisanje slobodnog tržišta neizbežno donosi nepoželjne prateće pojave, pri čemu razdvaja, dislocira i narušava prirodno okruženje i stvara materijalnu nejednakost, čime doprinosi da nepoverenje, animozitet i mržnja budu snažno obeležje savremenog svetskog poretka. Globalizacija uveliko narušava i uvećava socio-ekonomske rizike kroz: tržišni fundamentalizam i ekonomsku nejednakost, demografsku eksploziju i nepovoljno globalno okruženje, univerzalizaciju vrednosti i etnički, nacionalni i verski ekstremizam i denacionalizacija i transnacionalizovanje društvene patologije.

Naglašavajući primarni značaj ekonomskog faktora, neoliberalizam marginalizuje i potiskuje sve druge principe socijalne organizacije, što za posledicu ima svojevrsnu destrukciju i dehumanizaciju društvenih odnosa i porast socijalne patologije. Takva tendencija redukovanja društvenih odnosa na tržišni model i dopuštanje da tržište bude jedini činilac u oblikovanju društvenog života nosi mnoge neizvesnosti.

U želji za uspehom, postavke tržišnog fundamentalizma suštinski su lišene bilo kakvih moralnih obzira. Time neoliberalni program globalno teži da potpomogne i ubrza raskid između ekonomije i društvene stvarnosti, izazivajući mnoštvo socioekonomskih, ekoloških i vojnih rizika.

Savremeni međunarodni odnosi i strategijsko okruženje

Kroz savremene međunarodne odnose suštinski se kreira strategijsko okruženje koje neposredno i veoma značajno utiču na organizaciju i razvoj sektora bezbednosti i sistema bezbednosti. Međunarodni odnosi se u kontekstu stanja i međuzavisnosti mogu sagledati kroz analizu sadržaja i obima osnovnih kategorijalnih pojmova, kao što su novi svetski poredak, globalizacija, integracija, dezintegracija i drugi značajni niže kategorijalni pojmovi.

Da bi se sagledali osnovni elementi sadržaja tih pojmova u analizama se najčešće polazi od nestanka bipolarne podele sveta. Takav pristup jeste korektan, ali on u sebi treba da nosi i istorijsko komparativnu dimenziju promene sadržaja i obima osnovnih kategorijalnih pojmova. Eliminisanjem bipolarne ravnoteže 1989. godine pala je i poslednja prepreka za dalju ekspanziju megakapitala u aktuelnim ekonomskim i geopolitičkim procesima. (Životić I, 2022) Tu tendenciju Džordž Herbert Voker Buš je na Univerzitetu u Teksasu 1989. godine izrazio kao pravac izgradnje novog svetskog poretka. Samir Amin u studiji "Odbrana od mondijalizma" (1998) analizira kako "SAD svoju neoimperijalnu ulogu ostvaruju putem monopola svetskih razmera u pet oblasti: monopola u oblasti novih tehnologija; kontrolom svetskih finansijskih tokova, kontrolom prirodnih resursa, monopolom u OUN i njenim glavnim institucijama (MMF, OECD itd.), monopola vojne sile".

Kroz uspostavu novog svetskog poretka realizuje se globalna dominacija i posebno monopolisana eksploatacija svetskih prirodnih resursa od strane megakapitala megakorporacija. (Brajković B. et al, 2022) Ti strategijski mehanizmi globalne dominacije ostvaruju se: preko nametanja neoliberalnog modela razvoja i tranzicije u formi zavisne modernizacije i neokolonijalizma; smanjenjem teritorijalnog suvereniteta nacionalnih država; preko oblika kulturnog imperijalizma; kroz izazivanje unutrašnjih sukoba i njihovu instrumentalizaciju u funkciji dostizanja definisanih ciljeva; putem primene vojne sile u cilju ostvarivanja definisanih političkih interesa.

Engleski naučnik Arnold Tojnbi (Tojnbee A, 1970) u knjizi "Istraživanje istorije" prikazao je podatke koji argumentuju tezu da je u istoriji društva postojao i postoji pluralizam civilizacija. Razmatrajući uzroke i proces nestajanja civilizacija Tojnbi ističe da jedno od "najupadljivijih obeležja raspadanja, jeste pojava pretposlednjeg stepena u opadanju i padu, kad civilizacija u raspadanju odlaže svoju smrt predajući se nasilnom političkom ujedinjenju u okviru univerzalne države." U procesu globalizacije izražava se moć multinacionalnih megakorporacija, koja je podržana od strane mnogih međunarodnih organizacija.

Mnogi teoretičari danas u svetu ciljno iznose samo pozitivne efekte globalizacije koji nisu sporni, ali se ne bave analizom i posledica koje ona sa sobom nosi. Globalizacija je i nastala kao izraz sve veće međuzavisnosti država i naroda, u skoro svim oblastima društvenog života. Ta međuzavisnost se povećava sa razvojem tehnološke osnove i sredstava komunikacije. Najveća borba u savremenom svetu je borba za znanje jer je ono nosilac progresa i novih vrednosti. (Milanović N, 2023)

Iako se globalizacija odigrava vekovima, njen savremeni oblik ima specifične karakteristike. ukratko, ona je „deblja i brža“. Globalizacija danas razlikuje se od one u 19. veku, kada je evropski imperijalizam obezbedio većinu svoje političke strukture, a visoki troškovi transporta i komunikacija značili su da je manje ljudi bilo direktno povezano sa ljudima i idejama iz drugih kultura. (Chassang G. et al 2017) Ali, mnoge od najznačajnijih razlika blisko su povezane sa informatičkom revolucijom. Kao što tvrdi Tomas Fridman, savremena globalizacija ide „dalje, brže, jeftinije i dublje“.

Svet je danas suočen sa globalizacijom, kao svetskim procesom. Treba razlikovati tehnološku i ideološku dimenziju globalizacije. (Custers B, 2018) Tehnološka dimenzija jeste izraz progresa i razvoja čovečanstva, a ideološka dimenzija nastala je kao izraz težnji vladanja svetom. Većinom se globalizacija predstavlja kao pozitivan proces koji je prirodan i u funkciji je eliminisanja protivrečnosti koje izazivaju sukobe, ratove i za posledicu donose siromaštvo, glad, bedu i nerazvijenost. Bžežinski u svojoj knjizi: "Velika šahovska tabla", između ostalog, opisuje i način ostvarivanja procesa globalizacije na putu za Istok: "Umešno igrajući na kartu etničkih i verskih konflikata, na prostorima tzv. etničkog koktela, tj. u državama sa etnički mešovitim stanovništvom, SAD izazivaju i upravljaju krizama i konfliktima, instrumentalizujući ih za svoje strateške ciljeve. U tom smislu njihov je geostrateški cilj da Evropu drže u šah poziciji, a da Rusiju i Evroaziju osvajaju u 21. veku. U tom kontekstu geostrateških igri i Balkan predstavlja svojevrsni prag i vrata za dalji prodor NATO snaga na Istok".

Posle nestanka bipolarne podele sveta, pored ostalih misija, NATO-u je definisana suštinska misija zaštite globalne ekonomske moći megakorporacija u pogledu prostora za resurse i plasman roba. Zbog toga, NATO mnogi teoretičari smatraju predhodnicom u procesu stvaranja uslova za pristup multinacionalnih kompanija novim prirodnim resursima i tržištu. Multinacionalne korporacije uspevaju da utiču na odluke država i nadnacionalnih regionalnih i međunarodnih institucija.

Globalizacija je krenula stranputicom u odnosu na poželjni pravac integracionih procesa u svetu. Pobednici u hladnom ratu su rešeni da brzo eksploatišu tu pobedu tako što će uvećati svoju ekonomsku i vojnu moć do stepena da postanu apsolutni gospodari sveta. Zato im ne odgovara normalan i postupan proces integracije jer u tom vremenu mogu izrasti i nove sile na svetskoj pozornici, koje će tražiti da utiču na globalne procese.

Stvaranje jedne globalne civilizacije koja bi bila harmonična, prihvatljiva za većinu moguće je samo ako ona ne nastaje uništavanjem drugih i u kojoj privilegovana manjina neće silom potčinjavati druge narode i države u funkciji ostvarenja interesa multinacionalnog kapitala.

Sve je, dakle, podređeno ostvarenju monopolskog položaja najjačih kompanija, a to ne može da zameni poželjne procesa ravnopravne saradnje i kooperacije nacionalnih preduzeća na regionalnom ili svetskom tržištu. (Jestrović, V. et al, 2022)

Proces globalizacije, zbog preterane žurbe nestrpljivog megakapitala, sve više se provodi nasilno naročito kad je u pitanju osvajanje tržišnog prostora. Sudeći po događajima na svetskoj sceni prevagnulo je mišljenje da se globalizacija treba ostvarivati putem stvaranja novog svetskog poretka tako što će odlučujuću ulogu u tome imati ekonomski najrazvijenije i politički najmoćnije države. Opredeljenje je, dakle, da se globalni svetski poredak radi brže realizacije tog procesa, stvara primetnim ekonomskim i vojnim snagama, a ne snagom kulture i prava.

To dovodi u pitanje očuvanje nacionalnog i kulturnog identiteta naroda koji su zahvaćeni procesom globalizacije pa i suvereniteta njihovih država, čime se direktno ugrožava kulturni i lični suverenitet i integritet pojedinca. (Flynn M, 2015)

Globalizacija kao proces integracija i objedinjavanja sveta u svim oblastima društvenog života, uprkos njegovoj materijalnoj, duhovnoj egzistencijalnoj raznovrsnosti i raznolikosti predstavlja zakonitost koja ima svoje korene i svoj razvojni put. Ona se počela prvo realizovati kroz integracione procese u oblasti ekonomije. Ti procesi su doveli do nastanka velikih multinacionalnih sistema, a potom su ubrzali kulturnu pa i političku komunikaciju i prožimanje među narodima, državama, regijama, pa i kontinentima. (Zendulková D, 2017)

U procesu globalizacije očekuje se da će se sa dovoljno pažnje uvažavati pluralizam kultura uz prirodnu evoluciju kulturnih posebnosti naroda. Odnos prema nacionalnim kulturama bitno je uslovljen generalnim opredeljenjem ostvarivanja procesa globalizacije. (Avakumović J. et al, 2021)

Ako se proces globalizacije bude ostvarivao povezivanjem i saradnjom nacionalnih država a ne njihovim ukidanjem i degradacijom onda je izvesno da će za rezultat imati zaista nove vrednosti koje će biti opšteprihvaćene.

Bezbednosne perspektive savremenog sveta

Bezbednosne perspektive savremenog sveta nisu nimalo svetle. Njih kreira i vodi globalizacija. To se može videti iz sledećih stavova: globalizacija kreira podeljen, uznemiren, nesiguran, nepredvidiv i rizičan svet, sve je manje slobode, sve je više straha i egzistencijalne nesigurnosti, sve je više globalnih raskola - Sever-Jug, Centar-Periferija, Zona mira - Zona nemira, sukob civilizacija, kreiranje geografije nepotrebnog sveta - moć haosa Juga, globalni mir i bezbednost su veoma teško ostvarivi, globalizacija je osnova jačanja multilateralizma i partnerstva u rešavanju bezbednosnih problema.

Ako sagledamo celinu možemo reći da je potencijalno moguće globalizaciju humanizovati ali sa velikim promenama koje bi se ogledale kroz: stvaranje globalizacije sa ljudskim likom, moralni obzir, odgovornost i solidarnost, demokratizacija međunarodnih odnosa i pravednija ekonomska raspodela, pomirljivo socijalno i ekološko upravljanje globalnom zajednicom i odustajanje od univerzalizacije samo jednog političkog modela. (Ivanova B. et al, 2020)

Ne dovodeći u pitanje ogroman doprinos globalizacije ostvarenju ideje o jednom svetu kao domovini svih ljudi, potencijalne opasnosti, kao prateći elementi tog procesa, veoma su aktuelne i opravdano privlače pažnju. Činjenica da taj proces sadrži nepoznanice koje mogu da poprime apokaliptičan karakter i da značajno promene početne namere, kao i presudan uticaj njegovih glavnih subjekata i promotera na svet budućnosti, razlog su za drugačije vrednovanje prirode i krajnjih efekata globalnog procesa. (Greene A, 2020)

Danas je sve jasnije da tehnološka racionalnost i ekonomska efikasnost, ako su lišeni moralnog obzira i osećanja odgovornosti, ne mogu da budu osnov stabilnosti i prosperiteta savremenih društava. Otuda su solidarnost i odgovornost uslov bez kojeg moderno društvo ne može uspešno da funkcioniše. Prvi preduslov za to je demokratizacija međunarodnih odnosa i uspostavljanje nove raspodele odgovornosti. (Żywiołek J, 2019) U suprotnom, nije moguće potisnuti neoimperijalna svojstva globalizacije.

U razmišljanjima o globalnoj bezbednosti savremenog sveta u budućnosti, kao jednom od najvažnijih pitanja savremene socijalne i političke moći, pod kojom se podrazumeva preraspodela moći, moraju se uzeti u obzir nastojanja da se kompleksnim i demokratskim upravljanjem prevazilaze ispoljeni nedostaci globalnog procesa. Nesumnjivo, objektivno sagledavanje uzročno-posledičnih relacija izazova i rizika koji prate globalizaciju prvi je korak u stvaranju uslova da se umanji ili izbegne mogućnost njihove potpune aktuelizacije. (Kostić R, 2020)

U vezi s tim, svakako je najvažnija pretpostavka pomirljivo socijalno i ekološko upravljanje globalnom zajednicom, kao i odustajanje od obrazaca legitimisanja na osnovu kojih se insistira na univerzalizovanju samo jednog političkog modela. (Lindley A, 2022) Ona donosi i uslovno rečeno neke pozitivne stvari kao što su: povećana ekonomska međuzavisnost kao osnov saradnje između država, neograničenost da se rad i kapital ulažu na bilo kojem mestu u svetu, jačanje svetske ekonomije (Zekić, Brajković, 2022), i jedno porast svetskog bogastva, u trgovini veća mogućnost izbora, kao i mogućnost prodaje i kupovine u bilo kom kraju sveta, širenje demokratskih formi političkog organizovanja, jačanje svesti o nedeljivoj budućnosti, veći pozitivni uticaj nevladinih međunarodnih subjekata i tržišni obrazac socijalne organizacije. Sa druge strane i negativne i to: globalizacija privileguje bogate i razvijene, katastrofalni su učinci međunarodnih institucija, socijalno ekonomske posledice globalizacije daju veoma sumorna predviđanja za budućnost, mračne su perspektive nerazvijenog sveta, globalni procesi nisu spontani, a vođenje procesa je vanserijski negativno, raste i razvija se kriza međunarodno poretka i globalizacija kao poredak trajno institucionalizuje neravnopravnost.

Globalno bezbednosno okruženje

Nacionalna bezbednost je uslovljena bezbednošću okruženja. Danas je bezbednost okruženja jedna od glavnih karakteristika nebezbednosti. U ovom, savremenom, dobu bezbednosno okruženje čini jedno od osnovnih uslova i karakteristika bezbednosti koje karakteriše: turbulentna dinamika i izmenjeno globalno okruženje, porast povezanosti i međuzavisnosti između država i naroda, netradicionalni izazovi, rizici i pretnje postaju dominantni, novi pristupi bezbednosti kroz globalne asocijacije, model partnerstva i bezbednosne zajednice i neprevaziđenost relevantnosti vojne moći. (Miletić N. et al, 2021)

Pri ovome vojna misija se kreće u granicama u istorijske perspektive i poprima sledeće karakteristike: globalna perspektiva jer rat nije više preovlađujući oblik sukoba; regionalni sukobi, građanski ratovi, terorizam i etničko nasilje čine postmoderni modus oružanog sukoba; moderne konvencionalne vojske nedovoljno su pripremljene za nove vrste sukoba; koncept kooperativne bezbednosti se vidi kao osnova za udruživanje nacionalnih i međunarodih nastojanja u sprečavanju sukoba i njihovim upravljanjem; izmena svrhe, zadataka i načina upotrebe oružanih snaga; razvoj novih oružja i vojne opreme; standardizacije i specijalizacije oružanih snaga; svetski trend demobilizacije i ubrzane profesionalizacije oružanih snaga; bezbednosne integracije i preplitanje nacionalne i regionalno - globalne funkcije oružanih snaga. (Tešić R. et al, 2021)

Na ovaj način nastaje nova bezbednosna paradigma, sa sledećim karakteristikama: savremeni međunarodni odnosi se razvijaju i postoje na temelju kategorija zasnovanih na vrednostima, a ne moći i odnosa snaga; globalni procesi dovode do sve veće međuzavisnosti koja dovodi do sve veće osetljivosti i ranjivosti država na krize; sve ovo dovodi do nekih pretpostavki i stavova o bezbednosnom okruženju, tako da je mišljenje da je: rat širokih razmera malo verovatan, jer je i legitimitet masovnih vojski sporan, tranzicija od modela masovne vojske ka modelu brojčano manje i profesionalne vojske, povećanje zastupljenosti visokorazvijenih i složenih vojno - tehnoloških sistema i visoko osposobljenog osoblja, nove netradicionalne misije i nevojni aspekti bezbednosti kao i neophodnost revizije klasične vojne misije.

Savremeni izazovi, rizici i pretnje

Savremeni izazovi, rizici i pretnje kao svoje sastavne delove i eksponente imaju sledeće izazove, rizike i pretnje: netradicionalne koje vidimo kroz aktere, forme i sredstva, asimetrične koji se pojavljuju kroz veličinu i transnacionalne. (Avakumović J. et al 2021)

Netradicionalni rizici imaju globalni kontekst i reflektuju se kroz: socijalne raskole, globalnu nejednakosti i siromaštvo, terorizam, etnički i verski ekstremizam, ekološke probleme i deficit resursa, demografske trendove, proliferaciju oružje za masovno uništavanje, organizovani kriminal, globalnu finasijsku krizu, migracije, kršenje međunarodnog poretka, vojni intervencionizam, pandemije zaraznih bolesti. (Schöpfel J. et al, 2020)

Da bi smo bolje razumeli ovakvo kategorisanje napravićemo kratak pregled kroz dokumenta kojima određene zemlje, vojne i ekonomske integracije trenutno ili su do skoro definisali izazove, rizike i pretnje.

Evropska strategija bezbednosti: terorizam, proliferacija oružja za masovno uništavanje, regionalni sukobi, neuspele države, organizovani kriminal i migrantska kriza.

Strategija nacionalne bezbednosti – SAD: terorizam, oružje za masovno uništavanje, neuspele države, deficit resursa, demografski trendovi, klimatske promene, kriminalne mreže i migracije. Posebno se napominju direktni protivnici i to Ruska federacija i NR Kina.

Strategija nacionalne bezbednosti – Ruska Federacija (Bardžić, 2023): neravnomeran razvoj sveta, slabost globalne bezbednosne arhitekture, korišćenje vojne moći i sile u međunarodnim odnosima, oružje za masovno uništavanje, terorizam i visoka tehnologija, ultranacionalizam, ksenofobija, separatizam, narkobiznis kriminal, demografski trendovi i nasilne migracije, degradacija životne sredine.

Imajući u vidu da se neki izazovi, rizici i pretnje pojavljuju skoro u svim dokumentima koji se bave bezbednošću probaćemo ukratko da damo karakteristike najčešćih.

Terorizam

Globalna međuzavisnost, razvoj tehnologije i komunikacija čine fundamentalno nove mogućnosti terorizma kroz stvaranje globalne mreže, najveće teškoće nastaju kod njegovog ograničavanja, kontrole i eliminisanja jer su zastupljeni neravnopravni učesnici, privatizacija rata i softiciranost taktike, ekonomska i politička frustracija i globalizacija terorizma, taktika slabih protiv jakih i zanemarivanje socijalnih i političkih uzroka terorizma, kazneni pristup terorizmu i militarizacija međunarodnih odnosa.

Oružje za masovno uništavanje

Porast broja država koje poseduju nuklearno oružje i porast rizika od njegove upotrebe, legalni posednici nuklearnih bojevih glava (preko 32.000 komada), porast broja nedržavnih aktera koji poseduju ili mogu da dođu u posed oružja za masovno uništenje, kriza države, tehnološki dinamizam, razvoj komunikacija, propustljivost granica i porast mogućnosti ilegalne nabavke oružja za masovno uništenje, korak do katastrofalnog terorizma – raskršće radikalizma i tehnologije.

Ekološki problemi

Ekološki poremećaji kao kritični aspekt globalne bezbednosti, destruktivnost prirode – zemljotresi, ekstremne vremenske prilike (uragani, tornada, dugotrajne suše, nezabeležen nivo padavina...), cunami, poplave...ekološka degradacija koja se javlja kao kumulativni efekat modernog načina proizvodnje i transnacionalnih tendencija potrošnje, nadmetanje za resurse i novi antagonizmi u međunarodnim odnosima.

Zaključak

Savremene međunarodne odnose sačinjava sveukupnost relativno stabilnih bilateralnih i multilateralnih odnosa između teritorijalno razgraničenih društava organizovanih u države kao osnovne subjekte međunarodnih odnosa, saveza država i drugih oblika međudržavnih integracija. Svaka država, kao teritorijalna, politička, ekonomska i kulturna celina, ne može da egzistira i da se razvija samostalno, već je upućena na povezivanje sa drugim državama, na regionalnom i globalnom – svetskom nivou.

Odnosi između država, iskazani u obliku spoljno-političke aktivnosti, određeni su definisanim vrednostima, nacionalnim i državnim interesima i ciljevima koje je potrebno ostvariti ili zaštititi na dostignutom nivou. Suštinu sukobljavanja u međunarodnim odnosima predstavlja težnja da se ostvare sopstveni interesi i ciljevi uz istovremeno nametanje svoje volje i prisiljavanje drugog subjekta da izmeni ili potpuno odustane od realizacije svojih ciljeva.

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LEGAL INTERPRETATION OF MODERN SECURITY RISKS

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Original scientific paper

Abstract

With globalization, we have a pronounced paradigm of a risky society. That paradigm arises due to the uncontrolled production of socioeconomic, environmental and military risks. If we add to that the relativization of social differences and boundaries, then as a result we have an increase in insecurity and insecurity. The land and territories that have been "eaten" by globalization become an unreliable place to live.

All of the above has the effect that transnational processes, the global market and democracies do not necessarily mean peace, but on the contrary very often insecurity, riots, conflicts and bloody wars.

Although the value of current processes based on integrative theories and emphasizing common interests cannot be disputed, the paradigm of a harmonious world is too far from reality. It is undeniable that insecurity and insecurity have increased in the world with the process of globalization.

Keywords*: security management, legal interpretation, international relations.*

JEL*: K29, K49.*

Introduction

A relativizing risk society paradigm all differences and borders, is an increasingly common framework for defining the security of the modern world. The uncontrolled production of risk continuously leads to policies that make the Earth an unreliable place to live. The hope that peace and democracy will rule the world through globalization has not come true. The thesis of neoliberal theorists that the world will enter a period of peaceful relations through transnational cooperation has been shown to be unfounded.

One thing is quite certain, and that is that the market and democracy require a large investment in the legal regulation of security, both at the state level and at the global level. The maxim emphasized by the most prominent philosophers and politicians of globalization is that globalization will bring prosperity through the

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phrase " Global through the triumph of peace, democracy and the free market ". it referred to the need for a new way of legal regulation of the international security system in order not to substitute one problem for another, or to contribute to the intensification of problems that already existed.

The functioning of the free market inevitably brings undesirable side effects, whereby it separates, dislocates and disrupts the natural environment and creates material inequality, thereby contributing to mistrust, animosity and hatred being a strong feature of the modern world order. Globalization greatly disrupts and increases socio-economic risks through: market fundamentalism and economic inequality, demographic explosion and unfavorable global environment, universalization of values and ethnic, national and religious extremism and denationalization and transnationalization of social pathology.

Emphasizing the primary importance of the economic factor, neoliberalism marginalizes and suppresses all other principles of social organization, which results in a kind of destruction and dehumanization of social relations and an increase in social pathology. Such a tendency to reduce social relations to a market model and allow the market to be the only factor in shaping social life carries many uncertainties.

In the desire for success, the propositions of market fundamentalism are essentially devoid of any moral considerations. Thus, the neoliberal program globally tends to facilitate and accelerate the rupture between the economy and social reality, causing a multitude of socioeconomic, environmental, and military risks.

Contemporary international relations and strategic environment

Through contemporary international relations, a strategic environment is fundamentally created that directly and significantly influences the organization and development of the security sector and security system . International relations in the context of the state and interdependence can be seen through the analysis of the content and scope of basic categorical terms, such as the new world order , globalization, integration, disintegration and other important lower categorical terms.

In order to look at the basic elements of the content of those concepts, analyzes are usually based on the disappearance of the bipolar division of the world. Such an approach is correct, but it should also include the historical comparative dimension of changes in the content and scope of basic categorical terms. By eliminating the bipolar balance in 1989, the last obstacle to the further expansion of mega-capital in the current economic and geopolitical processes fell. (Životić I, 2022) This tendency was expressed by George Herbert Walker Bush at the University of Texas in 1989 as the direction of building a new world order. Samir

Amin in the study "Defense from Globalism" (1998) analyzes how "the US achieves its neo-imperial role through world-scale monopoly in five areas: monopoly in the field of new technologies; control of world financial flows, control of natural resources, monopoly in the OUN and its main institutions (IMF, OECD, etc.) , the monopoly of military power".

Through the establishment of the new world order, global domination and especially monopolized exploitation of the world's natural resources by megacapital megacorporations is realized. (Brajković B. et al, 2022) Those strategic mechanisms of global domination are realized: through the imposition of a neoliberal model of development and transition in the form of dependent modernization and neocolonialism; by reducing the territorial sovereignty of national states; through the form of cultural imperialism; through causing internal conflicts and their instrumentalization in the function of reaching defined goals; through the application of military force in order to achieve defined political interests.

The English scientist Arnold Toynbee (Toynbee A, 1970) in the book "Research of History" presented data that argue the thesis that in the history of society there was and is a pluralism of civilizations. Discussing the causes and process of the disappearance of civilizations, Toynbee points out that one of the "most striking features of disintegration is the appearance of the penultimate stage in decline and fall, when a disintegrating civilization postpones its death by surrendering to violent political unification within the framework of a universal state ." In the process of globalization, the power of multinational megacorporations is expressed, which is supported by many international organizations .

Many theoreticians in the world today aim to present only the positive effects of globalization, which are not disputed, but do not deal with the analysis and consequences that it brings with it. Globalization arose as an expression of the increasing interdependence of states and peoples, in almost all areas of social life. This interdependence increases with the development of the technological base and means of communication. The biggest struggle in the modern world is the struggle for knowledge because it is the bearer of progress and new values. (Milanović N, 2023)

Although globalization has been taking place for centuries, its modern form has specific characteristics. in short, she is "fatter and faster". Globalization today is different from that of the 19th century, when European imperialism provided most of its political structure and the high costs of transport and communication meant that fewer people were directly connected to people and ideas from other cultures. (Chassang, G. 2017) But many of the most significant differences are closely related to the information revolution. As Thomas Friedman argues, contemporary globalization goes "further, faster, cheaper and deeper."

Today, the world is faced with globalization, as a world process. The technological and ideological dimensions of globalization should be distinguished. (Custers B. et al, 2018) The technological dimension is an expression of the progress and development of humanity, and the ideological dimension was created as an expression of the desire to rule the world. For the most part, globalization is presented as a positive process that is natural and serves the purpose of eliminating contradictions that cause conflicts, wars, and result in poverty, hunger, misery and underdevelopment. Brzezinski in his book: "The Big Chess Board", among other things, describes the way of achieving the process of globalization on the way to the East: "Skillfully playing the card of ethnic and religious conflicts, in the areas of the so-called ethnic cocktail, i.e. in countries with an ethnically mixed population, the USA provokes and manages crises and conflicts, instrumentalizing them for its own strategic goals. In this sense, their geostrategic goal is to keep Europe in check, and to conquer Russia and Eurasia in the 21st century. In this context of geostrategic games, the Balkans also represent a kind of threshold and door for further penetration of NATO forces in the East".

After the disappearance of the bipolar division of the world, in addition to other missions , NATO was defined as the essential mission of protecting the global economic power of megacorporations in terms of space for resources and placement of goods. Because of this, many theoreticians consider NATO to be a forerunner in the process of creating conditions for the access of multinational companies to new natural resources and markets. Multinational corporations manage to influence the decisions of states and supranational regional and international institutions.

Globalization has gone astray in relation to the desired direction of integration processes in the world. The victors in the Cold War were determined to quickly exploit that victory by increasing their economic and military power to the point of becoming absolute masters of the world. That is why the normal and gradual process of integration does not suit them, because in that time new forces can grow on the world stage, which will seek to influence global processes.

The creation of a global civilization that would be harmonious and acceptable to the majority is possible only if it is not created by destroying others and in which a privileged minority will not subjugate other peoples and states by force in order to achieve the interests of multinational capital.

Therefore, everything is subordinated to the realization of the monopoly position of the strongest companies, and this cannot replace the desirable processes of equal cooperation and cooperation of national companies on the regional or world market. (Jestrović, V. et al, 2022)

The process of globalization, due to the excessive haste of impatient mega-capital, is increasingly carried out violently, especially when it comes to conquering the market space. Judging by the events on the world scene, the prevailing opinion is that globalization should be achieved through the creation of a new world order, in which the most economically developed and politically powerful countries will play a decisive role . The determination is, therefore, that the global world order, for the sake of faster realization of that process, is created by noticeable economic and military forces, and not by the force of culture and law.

This calls into question the preservation of the national and cultural identity of peoples who are affected by the process of globalization and the sovereignty of their countries, which directly threatens the cultural and personal sovereignty and integrity of the individual. (Flynn M, 2015)

Globalization as a process of integration and unification of the world in all areas of social life, despite its material, spiritual existential variety and diversity, represents a legality that has its own roots and its own development path. It started to be realized first through integration processes in the field of economy. Those processes led to the creation of large multinational systems, and then they accelerated cultural and political communication and permeation between peoples, states, regions, and even continents. (Zendulková D, 2017)

In the process of globalization, it is expected that pluralism of cultures will be respected with sufficient attention along with the natural evolution of cultural peculiarities of peoples. The attitude towards national cultures is essentially determined by the general commitment to the realization of the globalization process. (Avakumović J. et al 2021)

If the process of globalization is realized through the connection and cooperation of national states and not through their abolition and degradation, then it is certain that the result will be truly new values that will be generally accepted.

Security perspectives of the modern world

The security prospects of the modern world are not bright at all. They are created and led by globalization. This can be seen from the following points: globalization creates a divided, troubled, insecure, unpredictable and risky world, there is less and less freedom, more and more fear and existential insecurity, there are more and more global divisions - North-South, Center-Periphery, Zone of peace - Zone of unrest, clash of civilizations, creation of the geography of an unnecessary world - the chaos power of the South, global peace and security are very difficult to achieve, globalization is the basis of strengthening multilateralism and partnership in solving security problems.

If we look at the whole, we can say that it is potentially possible to humanize globalization, but with major changes that would be reflected through: creation of globalization with a human face, moral consideration, responsibility and solidarity, democratization of international relations and fairer economic distribution, conciliatory social and ecological management of the global community. and giving up the universalization of only one political model. (Ivanova B. et al, 2020)

Without questioning the enormous contribution of globalization to the realization of the idea of one world as the homeland of all people, potential dangers, as accompanying elements of that process, are very current and justifiably attract attention. The fact that this process contains unknowns that can take on an apocalyptic character and significantly change the initial intentions, as well as the decisive influence of its main subjects and promoters on the world of the future, are the reason for a different evaluation of the nature and final effects of the global process. (Greene A, 2020)

Today, it is increasingly clear that technological rationality and economic efficiency, if they are deprived of moral consideration and sense of responsibility, cannot be the basis of stability and prosperity of modern societies. Hence, solidarity and responsibility are conditions without which modern society cannot function successfully. The first prerequisite for this is the democratization of international relations and the establishment of a new distribution of responsibilities. (Żywiołek J, 2019) Otherwise, it is not possible to suppress the neo-imperial properties of globalization.

In thinking about the global security of the modern world in the future, as one of the most important issues of contemporary social and political power, under which is meant the redistribution of power, efforts to overcome the manifested shortcomings of the global process must be taken into account. Undoubtedly, an objective assessment of the cause-and-effect relationships of the challenges and risks accompanying globalization is the first step in creating the conditions to reduce or avoid the possibility of their complete actualization. (Kostić R, 2020)

In this regard, the most important assumption is certainly the reconciling social and ecological management of the global community, as well as the abandonment of patterns of legitimization based on which one insists on the universalization of only one political model. (Lindley A, 2022) It brings some positive things, conditionally speaking, such as: increased economic interdependence as a basis for cooperation between countries, unlimited investment of labor and capital anywhere in the world, the strengthening of the world economy (Zekić, Brajković, 2022), and an increase in world wealth, greater choice in trade, as well as the possibility of selling and buying in any part of the world, spread of democratic forms of political organization, strengthening awareness of the indivisible future, greater positive influence of non-governmental international entities and the market pattern of social organization. On the other hand, there are also negative ones: globalization privileges the rich and developed, the effects of international institutions are catastrophic, the socio-economic consequences of globalization give very gloomy predictions for the future, the prospects of the underdeveloped world are dark, global processes are not spontaneous, and the management of the process is unusually negative, the crisis of the international order is growing and developing, and globalization as an order permanently institutionalizes inequality.

Global security environment

National security is conditioned by the security of the environment. Today, environmental security is one of the main characteristics of insecurity. In this modern age, the security environment constitutes one of the basic conditions and characteristics of security, which is characterized by: turbulent dynamics and a changed global environment, increasing connectivity and interdependence between states and peoples, non-traditional challenges, risks and threats becoming dominant, new approaches to security through global associations, the model of partnership and security community and the unsurpassed relevance of military power. (Miletić N. et al, 2021)

In doing so, the military mission moves within the boundaries of historical perspectives and takes on the following characteristics: global perspective because war is no longer the predominant form of conflict; regional conflicts, civil wars, terrorism and ethnic violence constitute the postmodern mode of armed conflict; modern conventional armies are insufficiently prepared for new types of conflicts; the concept of cooperative security is seen as the basis for joining national and international efforts in conflict prevention and management; changing the purpose, tasks and way of using the armed forces; development of new weapons and military equipment; standardization and specialization of the armed forces; the world trend of demobilization and accelerated professionalization of the armed forces; security integration and interweaving of national and regional - global functions of the armed forces. (Tešić R. et al, 2021)

In this way, a new security paradigm is emerging, with the following characteristics: contemporary international relations develop and exist on the basis of categories based on values, not on power and the balance of forces; global processes lead to increasing interdependence, which leads to increasing sensitivity and vulnerability of states to crises; All this leads to some assumptions and attitudes about the security environment, so the opinion is that: a large-scale war is unlikely, because the legitimacy of mass armies is also disputed, transition from the mass army model to the numerically smaller and professional army model, increasing the representation of highly developed and complex military-technological systems and highly trained personnel, new non-traditional missions and non-military aspects of security as well as the necessity of reviewing the classic military mission.

Contemporary challenges, risks and threats

Contemporary challenges, risks and threats have the following challenges, risks and threats as their constituent parts and exponents: non -traditional ones that we see through actors, forms and means, and symmetrical ones that appear through size and transnational ones. (Avakumović J. et al 2021)

Non-traditional risks have a global context and are reflected through: social divisions, global inequalities and poverty, terrorism, ethnic and religious extremism, environmental problems and resource deficits, demographic trends, proliferation of weapons of mass destruction, organized crime, global financial crisis, migration, violation of the international order, military interventionism, pandemics of infectious diseases. (Schöpfel J. et al, 2020)

In order to better understand this categorization, we will make a brief overview through the documents by which certain countries, military and economic integrations currently or recently defined challenges, risks and threats.

European security strategy: terrorism, proliferation of weapons of mass destruction, regional conflicts, failed states, organized crime and the migrant crisis.

National security strategy - USA: terrorism, weapons of mass destruction, failed states, resource deficit, demographic trends, climate changes, criminal networks and migration. Special mention should be made of the direct opponents, namely the Russian Federation and the People's Republic of China.

National security strategy - Russian Federation (Bardžić, 2023): uneven development of the world, weakness of the global security architecture, use of military power and force in international relations, weapons of mass destruction, terrorism and high technology, ultra-nationalism, xenophobia, separatism, drug business crime, demographic trends and forced migration, environmental degradation.

Bearing in mind that some challenges, risks and threats appear in almost all documents dealing with security, we will briefly try to give the characteristics of the most common ones.

Terrorism

Global interdependence, the development of technology and communication create fundamentally new opportunities for terrorism through the creation of a global network, the greatest difficulties arise in its limitation, control and elimination because unequal participants are represented, the privatization of war and the softening of tactics, economic and political frustration and the globalization of terrorism, the tactics of the weak against the strong and the neglect of the social and political causes of terrorism, the punitive approach to terrorism and the militarization of international relations.

Weapons of mass destruction

The increase in the number of states possessing nuclear weapons and the increase in the risk of their use, legal owners of nuclear warheads (over 32,000 pieces), the increase in the number of non-state actors who possess or can acquire weapons of mass destruction, the crisis of the state, technological dynamism, the development of communications, the permeability of borders and the increase in the possibility of illegal acquisition of weapons of mass destruction, a step towards catastrophic terrorism - the intersection of radicalism and technology.

Environmental problems

Environmental disturbances as a critical aspect of global security, the destructiveness of nature - earthquakes, extreme weather conditions (hurricanes, tornadoes, long-term droughts, unprecedented levels of precipitation...), tsunamis, floods... environmental degradation that occurs as a cumulative effect of modern production methods and transnational consumption tendencies, competition for resources and new antagonisms in international relations.

Conclusion

Modern international relations consist of the totality of relatively stable bilateral and multilateral relations between territorially demarcated societies organized into states as the basic subjects of international relations, alliances of states and other forms of interstate integration. Each country, as a territorial, political, economic and cultural entity, cannot exist and develop independently, but is directed to connect with other countries, at the regional and global - world level.

Relations between states, expressed in the form of foreign political activity, are determined by defined values, national and state interests and goals that need to be achieved or protected at the level reached. The essence of conflict in international relations is the desire to realize one's own interests and goals while at the same time imposing one's will and forcing another entity to change or completely abandon the realization of its goals.

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ANALIZA FAKTORA RIZIKA FINANSIJSKE I PROFITNE POZICIJE U CILJU UNAPREĐENJA VITALNOSTI SEKTORA ENERGETIKE

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Apstrakt

Ovaj rad se bavi istraživanjem rizika profitne i finansijske pozicije energetske delatnosti u periodu Covid-19, odnosno sektora D – Proizvodnja i snabdevanje električnom energijom, gasom i vodom podsektora 351 - Proizvodnja, prenos i distribucija električne energije, 352 - Proizvodnja gasa i distribucija gasovitih goriva gasovodima i 353 - Snabdevanje parom i klimatizacija putem odabranih pokazatelja za 2020. godinu u odnosu na prethodnu 2019. godinu, te ih vrednuje u odnosu prema prosečnim petogodišnjim ostvarenjima. Daljom analizom po podsektorima, uočavaju su razlike u oceni finansijske, ali i profitne pozicije po podsektorima u odnosu na sektorske ocene. Rezultati istraživanja pokazuju da u kratkom roku nije zapaženo pogoršanje faktora rizika profitne i finansijske pozicije, na bazi godišnjih bilansnih iskaza analiziranih kategorija, na nivou celine energetskog sektora. Regresionom analizom ispitan je i uticaj parametara likvidnosti i solventnosti na stopu povrata aktive u periodu pre Covid-19 i u toku Covid-19 pandemije.

Ključne reči: *likvidnost, solventnost, energetika, Republika Srbija, pandemija Covid-19.*

JEL: *G32, M40*

Uvod

Pitanje vitalnosti modernog preduzeća, kao obeležja celine, ne podrazumeva ispunjavanje minimalnih uslova poslovanja, već mnogo više od toga – održanje

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pune poslovne snage („života“). Naravno, jačanjem vitalnosti poboljšavaju se izgledi za trajno jačanje postignuća preduzeća, u holističkom kontesktu, a time i finansijskih postignuća. Finansijska vitalnost se fokusira na sposobnost održavanja dinamičke ravnoteže u odnosu na promenjive eksterne faktore poslovanja, te istovremeno i u odnosu na interne faktore poslovanja, pri čemu integralno sagledava pitanja likvidnosti, adekvatnosti izvora finansiranja i imovine, generisanja profita i vrednosti za vlasnike i druge stejkoholdere. S tim u vezi ističe se ključni značaj analize finansijske i profitne pozicije za održanje finansijske vaitalnost preduzeća odnosno konkretnije, pitanje analize kategorija likvidnosti i profita. Likvidnost predstavlja primarnu meru opstanka ili nestanka preduzeća, a profit je tradicionalna, primarna mera održanja i rasta preduzeća.

Predmet izučavanja ovog rada će sagledati problematiku finansijske vitalnosti preduzeća industrijske delatnosti sektora D – Proizvodnja i snabdevanje električnom energijom, gasom i vodom u Republici Srbiji, a u periodu i uslovima poslovanja zahvaćenim pandemijom Covid-19 sa akcentom na nedovoljno istražene probleme finansijske vitalnosti, tj. profitne i finansijske pozicije kao snažnog i značajnog instrumenta konkurentne sposobnosti, koji utiče na ukupan privredni razvoj države. Istraživanje je struktuirano na sledeći način: u prvom delu istraživanja opisuje se značaj finansijske vitalnosti preduzeća u savremenoj ekonomiji; drugi deo istraživanja obuhvata metodologiju za analizu postojećih pokazatelja za 2020. u odnosu na prethodnu 2019. godinu, te ih vrednovati sa prosečnim petogodišnjim ostvarenjima u okviru sektora D – Proizvodnja i snabdevanje električnom energijom, gasom i vodom podsektora 351 - Proizvodnja, prenos i distribucija električne energije; 352 - Proizvodnja gasa i distribucija gasovitih goriva gasovodima i 353 - Snabdevanje parom i klimatizacija; treći deo istraživanja se bavi analizom dobijenih rezultat; u četvrtom delu istraživanja biće sublimirana saznanja u cilju unapređenja finansijske vitalnosti.

Pregled literature

Moderan smisao postojanja i delovanja preduzeća kao kompleksa je izražen na sledeći način: „ekonomski smisao poslovanja je proizvodnja vrednosti i uvećanje bogatstva kao kapitala, povećavanje sposobnosti za poslovnu aktivnost ili povećanje imovine, znanja i veština, ali i kao poboljšanje odnosa među ljudima radi kapitala, imovine, sticanja znanja i veština te uslova življenja“ (Tintor, 2009, str. 159). Dakle, poslovne odluke više ne mogu biti usmerene samo na ciljeve; one moraju težiti ka holističkom kontekstu. Holistički kontekst za jedno preduzeće je kontekst koji obuhvata sve ciljeve i akcije koji vode ka realizaciji vizije, odnosno misije zbog kojih je preduzeće inicijalno i osnovano (Marković i Krmpot, 2014).

„Likvidnost predstavlja najvažniju, ali i prvu pojavnu kratkoročnu upravljačku veličinu, koja determiniše postojanje ili nepostojanje mogućnosti opstanka preduzetnika (preduzeća), pre svega, finansijskog poverenja među poslovnim partnerima – suprotno, opstanak ili stečaj“ (Malešević i Čavlin, 2020, str. 56). Sve brži razvoj finansijskih proizvoda i instrumenata na finansijskom tržištu, koji su bili u funkciji diverzifikacije i transfera rizika na relaciji finansijski – realni sektor, uticao je da investitori posvete više pažnje razumevanju i upravljanju rizicima kojima se izlažu (Ivanović, 2020). Nijedno preduzeće nije pošteđeno krize, a uspešno upravljanje krizom podrazumeva (Osmanagić−Bedenik, 2003):

a) anticipativno upravljanje krizom, tj. preventivno delovanje, predusretanje krize (uvođenje mera opreza, prevencije);
b) identifikaciju krize (je li nastupila, kako je prepoznati, koje je snage?);
c) reaktivno upravljanje krizom, tj. ovladavanju krizom (šta učiniti kako bi se uspešno „izašlo“ iz krize?).

Krizni menadžment prati sve faze kriznog razvoja, nastoji preventivno delovati, a u krajnjem slučaju deluje kad je kriza već nastupila. S kriznim fazama, naime, raste i pritisak delovanja, dok se istovremeno smanjuje manevarski prostor potreban za sanaciju i restrukturiranje. Što je proces propadanja preduzeća više uznapredovao, to su slabiji izgledi za njegovo ozdravljenje. Krizni menadžment pomaže u izbegavanju poslovne krize i merama predostrožnosti, tj. preventivnim delovanjem, ublažava posledice krize – reaktivno, u zavisnosti od uzroka i faze razvoja krize (Malešević i Čavlin, 2020, str. 75). Strategijski kontroling usmeren je na delovanje zaposlenih sa svrhom ostvarivanja dobiti preduzeća, povećanja njegove vitalnosti i poboljšanja njegovih mogućnosti za trajan uspeh. Pri tome, vitalnost preduzeća se sagledava (Malešević i Čavlin, 2020, str.76):

- „kao sposobnost prilagođavanja (aktivno i reaktivno) i
- sposobnost napredovanja (očuvanje i razvijanje identiteta kroz iskustvo i učenje), a da bi obezbedilo vitalnost u današnjem kriznom okruženju, preduzeće mora da reaguje, na osnovu obuhvata celovitih informacionih rersursa, i da razume poremećaje, i identifikuje uzroke radi pravovremene i svrsishodne terapije otklanjanja krize“.

Stoga se u okviru strategijskog kontrolinga obavljaju sledeće aktivnosti: „analiza prednosti i slabosti organizacije, analiza organizacionih potencijala, analiza okruženja, analiza životnog ciklusa proizvoda, /usluga. Break-even anlaiza, return-on-investment analiza i analiza imidža organizacije“ (Lekić, Davidovac i Lekić, 2021, str. 256).

Globalna tržišta su suočena sa jednom od najtežih pandemija u modernoj istoriji. Širom sveta finansijska tržišta su u ozbiljnim teškoćama, čije posledice su počele da se prelivaju i u realni sektor. Krizom su najviše pogođene zemlje koje u velikoj meri zavise od turizma, saobraćaja i drugih privrednih delatnosti, a koje su najviše pogođene merama ograničenja kretanja (Marjanović i Đukić, 2020). Industrijska proizvodnja EU-a u 2020. godini smanjila se za 7% u odnosu na 2019. godinu zbog pandemije Covid-19, dok se više od 75% vrednosti proizvodnje EU-a odvijalo u šest država članica: Nemačka (29% ukupnog broja članica EU-a), Italija (18%), Francuska (12%), Španija (9%), Poljska (5%) i Holandija (3%) (Eurostat, www. https://ec.europa.eu/eurostat/). Vlade, centralne banke i regulatorna tela trude se da pospeše likvidnost na tržištu, uvodeći nove monetarne i finansijske mere, kao i poreske olakšice jer je Covid-19 prouzrokovao oštre kontrakcije u ekonomskom razvoju, smanjenje likvidnosti i otežan pristup kapitalu. Rezultati istraživanja ukazuju da se su centralne banke okrenule nekonvencionalnim monetarnim merama poput snižavanja kamatnih stopa i obaveznih rezervi za banke, ublažavanja uslova za kolateral, povećanja obima repo operacija i svop aranžmana, kao i programima kvantitativnog popuštanja (Čavlin, Vapa Tankosić i Egić, 2021; Vapa Tankosić, Čavlin i Buđevac, 2020).

Posmatrano po delatnostima, u Republici Srbiji najznačajnije učešće u formiranju BDP-a u 2020. godini imali su: sektor prerađivačke industrije (13,3%), sektor trgovine na veliko i malo i popravke motornih vozila (11,3%), sektor poslovanja nekretninama (7,0%), sektor poljoprivrede, šumarstva i ribarstva (6,3%), sektor informisanja i komunikacija (5,4%) i sektor građevinarstva (5,4%). Sektor D – Proizvodnja i snabdevanje električnom energijom, gasom i vodom je činio 3,2% u formiranju BDP-a u 2020. godini dok je njegova stopa realnog rasta u istoj godini, iznosila 0,9%. U tom sektoru ostvaren je prihod od RSD 177.420 miliona, što predstavlja blagi pad u odnosu na prihod iz 2019. godine kada je ukupno iznosio RSD 171.978 miliona (Republički zavod za statistiku, https://www.stat.gov.rs/).

Upravo stoga, ovaj rad ima za cilj da izuči pitanje održanja finansijske vitalnosti Sektora D – Proizvodnja i snabdevanje električnom energijom, gasom i vodom, imajući u vidu postojeće krizne uslove koji su uzrokovali poremećaje u međunarodnoj razmeni i transportu, ceni energije, hrane, u kontekstu njegovog značaja za vitalnost privrede Srbije.

Metodološki okvir istraživanja

Za potrebe istraživanja oblikovan je uzorak preduzeća koja su klasifikovana na područja delatnosti poslovnim strukturnim statistikama Republičkog zavoda za statistiku Srbije. a pokazatelji su izvedeni iz javno dostupnih informacija, odnosno zvaničnih finansijskih izveštaja, koje su predmetna preduzeća dostavila Agenciji za privredne registre Republike Srbije, te iz neposrednog uvida u izveštaje preduzeća. Prema dostupnim podacima od ukupnog broja preduzeća koja su pripremila i predala godišnje finansijske izveštaje, a za potrebe istraživanja, uvažavajući kriterijum delatnosti, oblikovan je uzorak i prikupljeni relevantni podaci za period 2019–2020. godinu.

Izvršena je analiza likvidnosti industrijske delatnosti po sektorima i oblastima putem odabranih pokazatelja za 2020. godinu u odnosu na prethodnu godinu, i primenom deskriptivnih statističkih metoda identifikovana je reprezentivnost prosečnih vrednosti na primeru pokazatelja tekuće likvidnosti sektora D –

Proizvodnja i snabdevanje električnom energijom, gasom i vodom podsektora 351 - Proizvodnja, prenos i distribucija električne energije; 352 - Proizvodnja gasa i distribucija gasovitih goriva gasovodima i 353 - Snabdevanje parom i klimatizacija. U daljem tekstu koristiće se pripadajuće slovne oznake za sektore, a pripadajuće numeričke oznake za podsektore.

U ovom istraživanju biće upotrebljena regresiona analiza uticaja dve ili više objašnjavajućih varijabli na zavisnu varijablu, tj. višestruka ili multiple regresija. Ovom regresijom smo utvrdili koliko procenata varijabiliteta zavisne varijable je objašnjeno određenim skupom nezavisnih varijabli i koliki je relativni doprinos svake nezavisne varijable uključene u regresionu analizu. Višestruka logistička regresija je statistički metod na osnovu kojeg se ispituje uticaj više nezavisnih faktora na jedan zavisni faktor (Rosner, 2011; Radović-Marković i Hanić, 2018):

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k + \varepsilon$$

gde su:

$x_1, x_2, \dots, x_k$ nezavisne (objašnjavajuće) varijable ili prediktori

$\beta_0, \beta_1, \beta_2, \dots, \beta_k$ regresioni koeficijenti ili regresioni parametri

ε stohastički član ili slučajna greška koja obuhvata efekte svih drugih varijabli (izuzev varijabli $x_1, x_2, \dots, x_k$) koje nisu direktne uključene u regresioni model.

U okviru sektora D – Proizvodnju i snabdevanje električnom energijom, gasom i vodom i njegovih podsektora, u cilju ispitivanja uticaja nezavisnih varijabli (parametara likvidnosti i solventnosti) u periodu pre Covid-19 (2015–2019. godina) i u toku Covid-19 pandemije (2020. godina) na stopu povrata aktive regresionom analizom. Autori su uzeli za nezavisne varijable: Koeficijent tekuće likvidnosti (opšti racio likvidnosti), Koeficijent trenutne likvidnosti (novčani racio likvidnosti), Koeficijent ubrzane likvidnosti (rigorozni racio likvidnosti), Solventnost (dinamički pokazatelj) i Zaduženost. Zavisna varijabla je Stopa povrata aktive. Za analizu podataka ovog rada upotrebljen je statistički programski paket SPSS.

Rezultati i diskusija

Uzorak obuhvata preduzeća iz Sektora D i njegovih podsektora, a istraživanje započinjemo analizom profitne i finansijske pozicije na nivou celine Sektora D. Rezultati istraživanja prikazani su u *Tabeli 1*.

Tabela 1. Dinamika poslovnog prihoda, poslovnog i neto dobiti/gubitka u okviru sektora D – Proizvodnju i snabdevanje električnom energijom, gasom i vodom u Republici Srbiji za 2019–2020. i 2015–2019. godinu

Kategorije	D - Snabdevanje električnom energijom, gasom, parom i klimatizacija (2019)	D - Snabdevanje električnom energijom, gasom, parom i klimatizacija (2020)	Stopa +/- 2019/2020	Prosečna stopa +/- 2015/2019
Poslovni prihodi	620.730.391,00	609.931.925,00	-0,02	-0,01
Poslovni dobitak	34.528.345,00	41.291.691,00	0,20	-0,07
Poslovni gubitak	9.714.309,00	4.056.194,00	-0,58	0,49
Neto dobitak	22.532.708,00	23.112.619,00	0,03	0,04
Neto gubitak	18.565.905,00	6.312.841,00	-0,66	0,37

Izvor: Istraživanje autora

Analizom dobijenih rezultata iz *Tabele 1* moguće je istaći sledeće ocene:

- posmatrajući 2019–2020. godinu na nivou sektora sektora D pad prihoda je bio neznatan (2%) i
- kod sektora D data tendencija oscilacije prihoda praćena je solidnim povećanjem poslovnog i neto dobitka, i značajnim smanjenjem poslovnih i neto gubitaka, čiji je kvalitet još značajniji kada se uporedi sa prosečnom stopom rasta poslovne i neto dobiti te prosečnom stopom smanjenja poslovnih i neto gubitaka za period 2015–2019. godine.

Možemo zaključiti da su profitna pozicija i kvalitet Sektora D u posmatranom periodu bili stabilni.

Tabela 2. Pregled pokazatelja likvidnosti i solventnosti u Republici Srbiji u okviru sektora D – Proizvodnju i snabdevanje električnom energijom, gasom i vodom u Republici Srbiji za 2019–2020. i 2015–2019. Godinu

Kategorije	D - Snabdevanje električnom energijom, gasom, parom i klimatizacija (2019)	D - Snabdevanje električnom energijom, gasom, parom i klimatizacija (2020)	Stopa +/- 2019/2020	Prosečna stopa +/- 2015/2019
Koeficijent perspektivne likvidnosti (opšti racio likvidnosti)	0,81	0,78	-0,04	0,69
Koeficijent trenutne likvidnosti (gotovinski racio likvidnosti)	0,11	0,13	0,20	0,13
Koeficijent efektivne likvidnosti (rigorozni racio likvidnosti)	0,61	0,60	-0,01	0,55
Prosečan period "gotovinskog ciklusa" (u danima)	112,57	115,40	0,03	90,81
Prosečno vreme naplate potraživanja (u danima)	68,20	73,79	0,08	84,05
Prosečno vreme plaćanja dobavljačima (u danima)	119,66	124,57	0,04	133,26
Vreme obrta zaliha (u danima)	164,03	166,17	0,01	140,02
Solventnost (dinamički pokazatelj)	3,70	6,05	0,64	4,95

Izvor: Istraživanje autora

Analizom dobijenih rezultata iz *Tabele 2* moguće je izvesti sledeće ocene:

- Prosečne vrednosti koeficijenta opšte likvidnosti preduzeća na nivou Sektora D u Republici Srbiji su znatno niže od poželjene teorijske norme (≥2) što implicira ugroženost uslova za održanje likvidnosti, s tim da je prisutan neznatan pad u odnosu na prethodnu godinu, kao i primetno niže vrednosti od prosečnih vrednosti za period 2015–2019. godine;
- Prosečne vrednosti koeficijenta ubrzane likvidnosti preduzeća u analiziranom sektoru u Republici Srbiji pokazuje da su manja od poželjene teorijske norme

(≥1) što implicira da preduzeća nemaju dovoljno brzo unovčive imovine za izmirenje kratkoročnih obaveza. Rast vrednosti pokazatelja je minimalan kod sekora D u odnosu na prethodnu godinu, a data vrednost je više od njegove prosečne vrednosti za period 2015–2019. godine;

- Prosečne vrednosti koeficijenta trenutne likvidnosti preduzeća u analiziranom sektoru u Republici Srbiji u kontekstu datih vrednosti koeficijenata opšte i ubrzane likvidnosti impliciraju da preduzeća nemaju dovoljno brzo unovčive imovine za izmirenje kratkoročnih obaveza;
- Dalji razvoj analize, upotpunjujemo rezultatima vrednosti dinamičkih pokazatelja likvidnosti radi celovitijih zaključaka o likvidnosti analiziranog sektora, a moguće je primetiti da je došlo do produženja perioda gotovinskog ciklusa;
- Analizom strukture elementa gotovinskog ciklusa Sektora D može se uočiti da je primetno produženje gotovinskog ciklusa za 3,00%, a da je presudan negativan uticaj produženja perioda naplate potraživanja, zatim perioda obrta zaliha, a koji je praćen produženjem perioda isplate dobavljača, uz primetno duže trajanje gotovinskog ciklusa u odnosu na prosek u periodu 2015–2019. godine;
- Pokazatelj zaduženosti kao odnos ukupnih obaveza (kratkoročna i dugoročna) i ukupne imovine govori koliko se društvo finansira iz tuđih izvora odnosno iz tuđeg kapitala. Što je pokazatelj veći preduzeće je zaduženije i veći je rizik investirati u samo preduzeće. Poželjna iskustvena norma je da pokazatelj zaduženosti ne prelazi vrednost 0,5 iz razloga što bi preduzeće trebalo da preferira finansiranje iz sopstvenih na račun iz tuđih izvora. Vrednosti pokazatelja zaduženosti u Sektoru D su niže od 0,5 i pokazuju prevagu finansiranja sopstvenih u odnosu na tuđe izvore. U Sektoru D je došlo do neznatnog smanjenja stepena zaduženosti u 2020. godine u odnosu na 2019. godinu, a tik ispod njegovog proseka za 2015–2019. godinu.
- Iskustvene norme u praksi ukazuju da je veća vrednost pokazatelja pokrića troškova kamata (dinamičke solvetnosti) bolja, pa se smatra da je vrednost od 3-7 solidna, a preko 7 poželjna. Prikazani, rezultati pokrića troškova kamata prikazuju značajne razlike u finansijskoj moći, odnosno stepenu generisanja operativne gotovine za plaćanje kamata za kredite. Pokazatelj dinamičke solventnosti Sektora D povećao se za skoro 2/3 u 2020. prema 2019. godini, a ujedno iznad njegovog proseka za period 2015–2019. godine, što implicira solidnu finansijsku moć. Kod Sektora D prisutna je tendencija produženja perioda gotovinskog ciklusa usled dominacije prosečne starosti kupaca i zaliha, kao i blagog poboljšanja stepena zaduženosti, koje je praćeno jačanjem finansijske moći. Dalju analizu razvijamo analizom tri podsektora u sektoru energetike.

Tabela 3. Dinamika poslovnog prihoda, poslovnog i neto dobiti/gubitka za sektor i podsektore energetike u Republici Srbiji za 2019–2020. i 2015–2019. godinu

Kategorije	Poslovni prihodi	Poslovni dobitak	Poslovni gubitak	Neto dobitak	Neto gubitak
"351" (2019)	462.774.261,00	23.807.470,00	7.513.243,00	6.311.409.00	9.447.849,00
"351" (2020)	457.724.605,00	26.602.201,00	3.549.615,00	15.672.906,00	3.338.818,00
Stopa +/- 2019/2020	-0,01	0,12	-0,53	1,48	-0,65
Prosečna stopa +/- 2015/2019	-0,01	0,03	0,52	-0,21	0,27
"352" (2019)	103.167.573,00	6.855.212,00	1.345.774,00	5.137.704,00	8.573.784,00
"352" (2020)	99.118.546,00	10.559.662,00	16.434,00	3.647.094,00	1.740.148,00
Stopa +/- 2019/2020	-0,04	0,54	-0,99	-0,29	-0,80
Prosečna stopa +/- 2015/2019	0,04	-0,11	2,78	1,18	8.19
"353" (2019)	54.788.557,00	3.865.663,00	855.292,00	11.083.595,00	544.272,00
"353" (2020)	53.088.774,00	4.129.822,00	490.145,00	3.792.619,00	1.233.875,00
Stopa +/- 2019/2020	-0,03	0,07	-0,43	-0,66	1,27
Prosečna stopa +/- 2015/2019	-0,01	0,03	0,25	0,49	-0,10

Izvor: Istraživanje autora

Dalje istraživanje nastavljamo analizom profitne i finansijske pozicije po podsektorima „351", ”352" i „353" Sektora D, a analizom dobijenih rezultata iz *Tabele 3* moguće je istaći sledeće ocene:

- u sa tri podsektora došlo je do pada poslovnih prihoda u 2020. u odnosu na 2019. godinu, s tim što je kod podsektora "352" i "353" nešto veći pad u odnosu na podsektor "351" koji je neznatan (1%).
- kod podsektora "351" data tendencija oscilacije prihoda praćena je solidnim povećanjem poslovnog i neto dobitka i značajnim smanjenjem poslovnih i neto gubitaka, za razliku od podsektora "352" gde je data tendencija prihoda praćena solidnim povećanjem poslovnog i značajnim smanjenjem poslovnih i neto gubitaka, ali smanjenjem neto dobiti za skoro 1/3 čime se umanjuje ocena kvaliteta profitne pozicije podsektora;
- kod podsektora "353" data tendencija prihoda praćena je blagim povećanjem poslovnog i značajnim smanjenjem poslovnog gubitka, ali i značajnim

smanjenem neto dobitka i povećanjem neto gubitaka, što doprinosi lošijoj oceni kvaliteta profitne pozicije podsektora.

Na osnovu prikazene analize, može se zaključiti da su profitna pozicija i kvalitet podsektora “351” relativno povoljniji, nego kod podsektora “352”, a pogotovu kod podsektora “353” za koji možemo dati nepovoljnu ocenu profitne pozicije.

Tabela 4. Pregled pokazatelja likvidnosti i solventnosti u Republici Srbiji za sektor i podsektore energetike u Republici Srbiji za 2019–2020. i 2015–2019. godinu

Kategorije	Koeficijent perspektivne likvidnosti (opšti racio likvidnosti)	Koeficijent trenutne likvidnosti (gotovinski racio likvidnosti)	Koeficijent efektivne likvidnosti (rigorozni racio likvidnosti)	Posečan period “gotov. ciklusa” (u dan.)	Posečno vreme naplate potraž. (u dan.)	Posečno vreme plaćanja dobavlj. (u dan.)	Vreme obrta zaliha (u dan.)	Solventnost (dinamički pokazatelj)	Zaduženost
“351” (2019)	0,89	0,14	0,70	166,92	73,79	109,28	202,41	3,94	0,35
“351” (2020)	0,89	0,14	0,70	195,05	84,04	112,20	226,21	6,69	0,35
Stopa +/- 2019/2020	0,00	-0,05	-0,01	0,17	0,10	0,03	0,12	0,70	-0,02
Prosečna stopa +/- 2015/2019	1,02	0,21	0,83	144,07	87,70	114,99	171,35	5,21	0,32
“352” (2019)	0,76	0,02	0,43	61,61	37,76	87,64	111,49	2,86	0,43
“352” (2020)	0,65	0,19	0,46	8,75	38.94	110,43	80,24	5,16	0,42
Stopa +/- 2019/2020	-0,14	9,75	0,06	-0.86	0,03	0,26	-0,28	0,81	-0,03
Prosečna stopa +/- 2015/2019	0,34	0,01	0,22	2,16	68,03	145,53	79,66	5,06	0,82
“353” (2019)	0,50	0,10	0,40	153,35	78,31	280,69	355,73	4,32	0,39
“353” (2020)	0,45	0,04	0,33	276.45	76,41	264,76	464,80	5,15	0,37
Stopa +/- 2019/2020	-0,10	-0,60	-0,17	0,80	-0,02	-0,06	5,15	0,19	-0,06
Prosečna stopa +/- 2015/2019	0,50	0,13	0,42	203,33	81,09	275,74	0,37	5,35	0,52

Izvor: Istraživanje autora

Analizom dobijenih rezultata iz *Tabele 4* je moguće istaći sledeće ocene:

- Prosečne vrednosti koeficijenta opšte likvidnosti preduzeća u analiziranim podsektorima pokazuju da su daleko od njene poželjene teorijske norme (≥2) što implicira ugroženost uslova za održanje likvidnosti. Značajniji pad vrednost pokazatelja je kod podsektora “352” i “353”, a data vrednost kod podsektora “353” je niža od njegove prosečne vrednosti za period 2015–2019. godine;
- Prosečne vrednosti koeficijenta ubrzane likvidnosti preduzeća u analiziranim sektorima Republici Srbiji pokazuje da su manja od poželjene teorijske norme (≥1) što implicira da preduzeća nemaju dovoljno brzo unovčive imovine za izmirenje kratkoročnih obaveza. Najznačajnija promena je pad vrednost

pokazatelja je kod podsektora “353”, a data vrednost kod podsektora “353” je niža od njegove prosečne vrednosti za period 2015–2019. godine;
- Prosečne vrednosti koeficijenta trenutne likvidnosti preduzeća u analiziranim podsektorima Republici Srbiji u kontekstu datih vrednosti koeficijenata opšte i ubrzane likvidnosti impliciraju da preduzeća nemaju dovoljno brzo unovčive imovine za izmirenje kratkoročnih obaveza.

Dalji razvoj analize, upotpunjujemo nalazima vrednosti dinamičkih pokazatelja likvidnosti radi celovitijih zaključaka o likvidnosti analiziranih podsektora, a moguće je primetiti da je došlo do produženja perioda gotovinski ciklusa u podsektorima “351” i “353”, a do značajnog smanjena u podsektoru “352”:

- Produženje gotovinskog ciklusa u podsektorima “351” i “353” je zbog negativnog uticaja produženje perioda naplate potraživanja i obrta zaliha, a koje je praćeno značajnim produženjem perioda isplate dobavljača koji je iznad perioda prosečnog trajanja gotovinskog ciklusa za period 2015–2019. godine;
- Analizom strukture elementa gotovinskih ciklusa u podsektoru “352” da se uočiti značajno smanjenje perioda gotovinskog ciklusa na šta je uticalo smanjenje perioda obrta zaliha koje je praćeno produženjem perioda isplate dobavljača, ali u 2020. godini je i dalje duži period trajanja gotovinskog ciklusa u odnosu na prosek za period 2015–2019. godine;
- Vrednost pokazatelja zaduženosti u analiziranim podsektorima ima tendenciju smanjenja u 2020. prema 2019. godini, a posebno primetno u podsektoru “352” značajno niže od njegove prosečne vrednosti za 2015–2019. godinu, što ukazuje na prevagu finansiranja iz sopstvenih u odnosu na tuđe izvora i sticanje uslova za povoljnu ocenu dužničke pozicije;
- Vrednost pokazatelja dinamičke solvetnosti ima tenedenciju povećanja u 2020. u odnosu na 2019. godinu, njene vrednosti impliciraju solidnu, a kod podsektora „353“ i poželjnu finansijsku moć grupe analiziranih preduzeća. Može se zaključiti da vrednosti analiziranih pokazatelja nisu ni blizu poželjnih normi likvidnosti, a da je u 2020. godini značajniji pad vrednost pokazatelja kod podsektora “352” i “353” što implicira respektivno i nepovoljnu ocenu pozicije likvidnosti, posebno za podsektor “353”. Datu ocenu likvidnosti potvrđuje i tendencija produženja perioda gotovinskog ciklusa kod podsektora “351” i “353” pretežno na teret period trajanja zaliha, dok je kod podsektora “352” došlo do skraćenja gotovinskog ciklusa jer su date promene praćene intezivnijim produženjem perioda isplate dobavaljača. Kod svih podsektora postoji tendencija smanjenja pokazatelja zaduženosti, a koja je praćena jačanjem finansijske moći.

Da bismo u okviru sektora D – Proizvodnja i snabdevanje električnom energijom, gasom i vodom i njegovih podsektora, dalje ispitali uticaj nezavisnih varijabli u vremenskom periodu pre Covid 19-a na stopu povrata aktive (eng.Return on Assets - ROA) u ovom istraživanju koristimo sledeće nezavisne varijable:

Koeficijent tekuće likvidnosti (opšti racio likvidnosti), Koeficijent trenutne likvidnosti (novčani racio likvidnosti), Koeficijent ubrzane likvidnosti (rigorozni racio likvidnosti), Solventnost (dinamički pokazatelj) i Zaduženost. Zavisna varijabla je Stopa povrata aktive (eng. ROA). U *Tabeli 5*, „R" predstavlja vrednost koeficijenta višestruke korelacije koji se koristi za određivanje kvaliteta predviđanja zavisne varijable, u ovom slučaju ROA. Vrednost od 0,748 predstavlja dobar nivo predviđanja. Kolona „R kvadrat" predstavlja koeficijent odlučivanja, odnosno odnos disperzije zavisne varijable koji se može objasniti nezavisnim varijablama, odnosno 56% varijabilnosti zavisne varijable koja se može objasniti nezavisnim varijablama.

Tabela 5. Rezultati modela

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	0,748	0,560	0,403	0,02723

Izvor: Istraživanje autora

F-vrednost u *Tabeli 6*, testira da li je regresioni model dobar. Iz prikazane tabele uočava se da nezavisne varijable statistički dobro predviđaju zavisnu varijablu (Sig. = 0,028) i to zapravo znači da je naš regresioni model dobar F =3.560, p <0,05.

Tabela 6. Test regresionog modela

ANOVA[a]						
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	0,013	5	0,003	3.560	0,028
	Residual	0,010	14	0,001		
	Total	0,024	19			

Izvor: Istraživanje autora

Iz *Tabele 7* za period 2015–2019. godine koeficijent trenutne likvidnosti β = 0,635, p= 0,012) i ubrzane likvidnosti (β = -0,299, Sig. = 0,001) dali su statistički značajnu predikciju Stope povrata aktive (ROA) pre Covid-19.

Tabela 7. Vrednosti koeficijenata modela

Coefficients						
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
		B	**Std. Error**	**Beta**		
1	(Constant)	0,163	0,053		3,089	0,008

	Koeficijent tekuće likvidnosti (opšti racio likvidnosti)	-0,004	0,024	-0,034	-0,176	0,863
	Koeficijent trenutne likvidnosti (novčani racio likvidnosti)	0,635	0,220	1,405	2,882	0,012
	Koeficijent ubrzane likvidnosti (rigorozni racio likvidnosti)	-0,299	0,075	-2,033	-3,985	0,001
	Solventnost (dinamički pokazatelj)	-0,002	0,005	-0,114	-0,452	0,658
	Zaduženost	-0,087	0,056	-0,561	-1,554	0,142

Izvor: Istraživanje autora

Da bismo dalje, u okviru sektora D – Proizvodnja i snabdevanje električnom energijom, gasom i vodom i njegovih podsektora, ispitali uticaj nezavisnih varijabli, u vremenskom periodu 2020. godine, u toku Covid 19 pandemije na stopu povrata aktive (eng. ROA) u našem istraživanju koristimo već pomenute sledeće nezavisne varijable: Koeficijent tekuće likvidnosti (opšti racio likvidnosti), Koeficijent trenutne likvidnosti (novčani racio likvidnosti), Koeficijent ubrzane likvidnosti (rigorozni racio likvidnosti), Solventnost (dinamički pokazatelj) i Zaduženost. Zavisna varijabla je Stopa povrata aktive.

Tabela 8. Rezultati modela

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	0,963	0,928	0,892	0,00315

Izvor: Istraživanje autora

U *Tabeli 8*, „R” predstavlja vrednost koeficijenta višestruke korelacije koji se koristi za određivanje kvaliteta predviđanja zavisne varijable, u ovom slučaju ROA. Vrednost od 0,963 predstavlja dobar nivo predviđanja. Kolona „R kvadrat“ predstavlja koeficijent odlučivanja, odnosno odnos disperzije zavisne varijable koji se može objasniti nezavisnim varijablama, odnosno 92,8% varijabilnosti zavisne varijable koja se može objasniti nezavisnim varijablama.

Tabela 9. Test regresionog modela

ANOVA[a]						
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	0,000	1	0,000	25.756	0,037[b]
	Residual	0,000	2	0,000		
	Total	0,000	3			

Izvor: Istraživanje autora

F-vrednost u *Tabeli 9*, testira da li je regresioni model dobar. Ova tabela pokazuje da nezavisne varijable statistički dobro predviđaju zavisnu varijablu (Sig. = 0,037) i to zapravo znači da je naš regresioni model dobar F = 25.756, p <0,05.

Tabela 10. Vrednosti koeficijenata modela

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0,047	0,006		7,781	0,016
	Koeficijent ubrzane likvidnosti (rigorozni racio likvidnosti)	-0,057	0,011	-0,963	-5,075	0,037

Izvor: Istraživanje autora

Na osnovu rezultata prikazanih u *Tabeli 10* primećuje se da u toku Covid-19 pandemije koeficijent ubrzane likvidnosti (β = -0,057, Sig.= 0,037) daje statistički značajnu predikciju Stope povrata aktive (ROA).

Zaključak

Sektor D - Proizvodnja i snabdevanje električnom energijom, gasom i vodom nezaobilazna je kategorija industrijske delatnosti, a kako čini skoro petinu industrijskih aktivnosti smatra se jednom od najvažnijih i najpouzdanijih komponenti ukupne privredne aktivnosti u Srbiji. Rad predstavlja jedno od malobrojnih istraživanja koje se bavi pitanjem finansijske vitalnosti (faktora likvidnosti, solventnosti i profitabilnosti) ovog sektora u vremenu Covid-19 u Republici Srbiji. Rezultati istraživanja pokazuju da je profitna pozicija na nivou Sektora D solidna, i pored neznatne oscilacije prihoda, a koja je praćena solidnim povećanjem poslovnog i neto dobitka, odnosno kvalitetom prihoda. Kada je u pitanju finansijska pozicija, i pored značajnog rizika po održanje likvidnosti, faktori likvidnosti su bolji nego u prethodnom petogodišnjem periodu.

Analiza je otkrila razlike u profitu i finansijskoj poziciji podsektora, koje pokazuju da uticaj pandemije nije uticao na sve podsektore podjednako, a da su su najveći rizici po finansijsku vitalnost u podsektoru 353 – Snabdevanje parom i klimatizacija. Regresionom analizom ispitan je i uticaj likvidnosti i solventnosti na stopu povrata aktive. Rezultati ukazuju da koeficijent ubrzane likvidnosti daje statistički značajnu predikciju stope povrata aktive i u periodu pre Covid-19 i u toku Covid-19 pandemije. Stoga se racionalnim čini nastaviti istraživanje analizom uticaja na grane i grupe delatnosti, a prvenstveno uvažavajući veličinu i profil analaziranih preduzeća, uključivanjem uticaja i drugih ekonomskih determinanti.

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ANALYSIS OF RISK FACTORS OF THE FINANCIAL AND PROFIT POSITION WITH THE OBJECTIVE OF IMPROVING THE VITALITY OF THE ENERGY SECTOR

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Original scientific paper

Abstract

This paper deals with the research of the risk of the profit and financial position of the energy industry in the period of Covid-19, i.e. sector D - Production and supply of electricity, gas and water subsector 351 - Production, transmission and distribution of electricity, 352 - Production of gas and distribution of gaseous fuels gas pipelines and 353 - Steam supply and air conditioning through selected indicators for the year 2020 compared to the previous year 2019, and evaluates them in relation to the average five-year achievements. Further analysis by sub-sectors revealed differences in the assessment of financial and profit positions by sub-sectors in relation to sectoral assessments. The results of the research show that, in the short term, no worsening of the risk factors of the profit and financial position was observed, based on the annual balance statements of the analyzed categories, at the level of the energy sector as a whole. Regression analysis also examined the influence of liquidity and solvency parameters on the rate of return on assets in the period before Covid-19 and during the Covid-19 pandemic.

Keywords: *liquidity, solvency, energy, Republic of Serbia, Covid-19 pandemic.*

JEL: *G32, M40*

Introduction

The question of the vitality of a modern company, as a feature of the whole, does not mean meeting the minimum business conditions, but much more than that - maintaining full business strength ("life"). Of course, by strengthening vitality they improve looks like For permanently strengthening the company's

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achievements, in a holistic context, and thus financial achievements. Financial vitality focuses on ability maintenance dynamics of equality in relationship on the variables external factors business, and simultaneously in relationship on the internal factors business, while integrally looking at issues of liquidity and adequacy source financing and property, generation profit and values For owners and other stakeholders. In this connection, the key importance of the analysis of the financial and profit position for the maintenance of the financial vitality of the company is emphasized, that is, more specifically, the question of the analysis of the categories of liquidity and profit. Liquidity represents the primary measure of the survival or disappearance of the company, and profit is the traditional, primary measure of the maintenance and growth of the company.

The subject of this study will look at the issue of financial vitality of industrial companies in sector D - Production and supply of electricity, gas and water in the Republic of Serbia, in the period and business conditions affected by the Covid-19 pandemic, with an emphasis on insufficiently researched problems of financial vitality, i.e. profit and financial positions as a strong and significant instrument of competitive ability, which affects the overall economic development of the country. The research is structured as follows: the first part of the research describes the importance of the financial vitality of companies in the modern economy; the second part of the research includes the methodology for analyzing the existing indicators for 2020 in relation to the previous year 2019, and evaluating them with the average five-year achievements within sector D - Production and supply of electricity, gas and water subsector 351 - Production, transmission and distribution of electricity; 352 - Gas production and distribution of gaseous fuels through gas pipelines and 353 - Steam supply and air conditioning; the third part of the research deals with the analysis of the obtained results; in the fourth part of the research, knowledge will be sublimated in order to improve financial vitality.

Literature review

The modern meaning of the existence and operation of a company as a complex is expressed as follows: "the economic meaning of business is the production of value and the increase of wealth as capital, increasing the capacity for business activity or increasing assets, knowledge and skills, but also as improving relations between people for the sake of capital, property, acquiring knowledge and skills, and living conditions" (Tintor, 2009, p. 159). Therefore, business decisions can no longer be focused only on goals; they must tend towards a holistic context. A holistic context for a company is a context that includes all goals and actions that lead to the realization of the vision, that is, the mission for which the company was initially founded (Marković and Krmpot, 2014).

"Liquidity represents the most important, but also the first emerging short-term management quantity, which determines the existence or non-existence of the possibility of survival of entrepreneurs (enterprises), above all, financial trust among business partners - on the contrary, survival or bankruptcy" (Malešević and Čavlin, 2020, p. 56). The increasingly rapid development of financial products and instruments on the financial market, which were in the function of diversification and risk transfer in the relationship between the financial and the real sector, influenced investors to pay more attention to understanding and managing the risks they are exposed to (Ivanović, 2020). No company is spared from the crisis, and successful crisis management implies (Osmanagić−Bedenik, 2003):

d) anticipatory crisis management, i.e. preventive action, crisis prevention (introduction of precautionary measures, prevention);
e) identification of the crisis (has it occurred, how to recognize it, what is its strength?);
f) reactive crisis management, i.e. crisis management (what to do in order to successfully "get out" of the crisis?).

Crisis management follows all stages of crisis development, tries to act preventively, and in the last case acts when the crisis has already occurred. With the crisis phases, namely, the pressure to act increases, while at the same time the room for maneuver required for rehabilitation and restructuring decreases. The more advanced the process of the company's decline, the weaker the prospects for its recovery. Crisis management helps in avoiding business crisis and precautionary measures, i.e. by preventive action, it mitigates the consequences of the crisis - reactively, depending on the cause and stage of the development of the crisis (Malešević and Čavlin, 2020, p. 75). Strategic controlling is focused on the actions of employees with the purpose of achieving the company's profit, increasing its vitality and improving its opportunities for lasting success. At the same time, the vitality of the company is considered (Malešević and Čavlin, 2020, p.76):

- "as the ability to adapt (actively and reactively) and
- the ability to progress (preserving and developing identity through experience and learning), and in order to ensure vitality in today's crisis environment, the company must react, based on the inclusion of comprehensive information resources, and understand disturbances, and identify causes for timely and purposeful therapy to eliminate the crisis ".

Therefore, the following activities are performed within the framework of strategic controlling: "analysis of strengths and weaknesses of the organization, analysis of organizational potentials, analysis of the environment, analysis of the life cycle of products/services." Break-even analysis, return-on-investment analysis and analysis of the organization's image" (Lekić, Davidovac and Lekić, 2021, p. 256).

Global markets are facing one of the most severe pandemics in modern history. All over the world, financial markets are in serious difficulties, the consequences of which have begun to spill over into the real sector as well. The countries that are most affected by the crisis are those that depend to a large extent on tourism, transport and other economic activities, and which are most affected by measures to limit movement (Marjanović and Đukić, 2020). EU industrial production in 2020 decreased by 7% compared to 2019 due to the Covid-19 pandemic, while more than 75% of EU production value took place in six member states: Germany (29% of the total number of member states of the EU), Italy (18%), France (12%), Spain (9%), Poland (5%) and the Netherlands (3%) (Eurostat, www. https://ec.europa.eu/eurostat /). Governments, central banks and regulatory bodies are trying to boost liquidity in the market, introducing new monetary and financial measures, as well as tax relief as Covid-19 has caused sharp contractions in economic development, reduced liquidity and difficult access to capital. Research results indicate that central banks have turned to unconventional monetary measures such as lowering interest rates and required reserves for banks, easing collateral requirements, increasing the volume of repo operations and swap arrangements, as well as quantitative easing programs (Čavlin, Vapa Tankosić and Egić, 2021; Vapa Tankosić, Čavlin and Buđevac, 2020).

Observed by activities, in the Republic of Serbia the most significant participation in the formation of GDP in 2020 was: the manufacturing industry sector (13.3%), the wholesale and retail trade and motor vehicle repair sector (11.3%), the business sector real estate (7.0%), the agriculture, forestry and fishing sector (6.3%), the information and communication sector (5.4%) and the construction sector (5.4%). Sector D - Production and supply of electricity, gas and water accounted for 3.2% of the GDP in 2020, while its real growth rate in the same year was 0.9%. Revenue of RSD 177,420 million was realized in that sector, which represents a slight decrease in relation to the income from 2019, when it totaled RSD 171,978 million (Republički zavod za statistiku, https://www.stat.gov.rs/).

Therefore, this paper aims to study the issue of maintaining financial vitality Sector D - Production and supply of electricity, gas and water, bearing in mind the existing crisis conditions that caused disruptions in international exchange and transport, the price of energy, food, in the context of its importance for the vitality of the Serbian economy.

Methodological research framework

For the purposes of the research, a sample of companies was formed that were classified into areas of activity by business structural statistics of the Republic of Serbia Statistics Institute. and the indicators are derived from publicly available information, i.e. official financial reports, which the companies in question submitted to the Agency for Economic Registers of the Republic of Serbia, and from direct inspection of the company's reports. According to the available data from the total number of companies that prepared and submitted annual financial reports, and for the purposes of the research, taking into account the criteria of activity, a sample was formed and relevant data was collected for the period 2019-2020. Mr. Odin.

An analysis of the liquidity of industrial activity by sector and area was performed using selected indicators for 2020 compared to the previous year, and the representativeness of average values was identified using descriptive statistical methods on the example of current liquidity indicators of sector D - Production and supply of electricity, gas and water subsector 351 - Production, transmission and distribution of electricity; 352 - Gas production and distribution of gaseous fuels through gas pipelines and 353 - Steam supply and air conditioning. In the following text, the corresponding letter designations will be used for sectors, and the corresponding numerical designations for subsectors.

In this research, regression analysis of the influence of two or more explanatory variables on the dependent variable will be used, ie. multiple or multiple regression. With this regression, we determined how many percent of the variability of the dependent variable was explained by a certain set of independent variables and what was the relative contribution of each independent variable included in the regression analysis. Multiple logistic regression is a statistical method based on which the influence of several independent factors on one dependent factor is examined (Rosner, 2011; Radović-Marković and Hanić, 2018):

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k + \varepsilon$$

where are they:

$x_1, x_2, \dots, x_k$ n independent (explanatory) variables or predictors

$\beta_0, \beta_1, \beta_2, \dots, \beta_k$ regression coefficients or regression parameters

ε stochastic term or random error that includes the effects of all other variables (except the variable $x_1, x_2, \dots, x_k$) that are not directly included in the regression model.

Within sector D - Production and supply of electricity, gas and water and its sub-sectors, in order to examine the influence of independent variables (liquidity and solvency parameters) in the period before Covid-19 (2015-2019) and during the Covid-19 pandemic (2020) on the rate of return on assets by regression analysis. The authors took as independent variables: Current liquidity ratio (general liquidity ratio), Current liquidity ratio (cash liquidity ratio), Accelerated liquidity ratio (rigorous liquidity ratio), Solvency (dynamic indicator) and Indebtedness.

The dependent variable is the Rate of Return on Assets. The statistical software package SPSS was used to analyze the data of this paper.

Results and Discussion

The sample includes companies from Sector D and its sub-sectors, and we begin the research with an analysis of the profit and financial position at the level of the entire Sector D. The results of the research are shown in *Table 1*.

Table 1. Dynamics of business income, business and net profit / loss within sector D - Production and supply of electricity, gas and water in the Republic of Serbia for 2019-2020. and 2015-2019 _

Categories	D - Supply of electricity, gas, steam and air conditioning (2019)	D - Supply of electricity, gas, steam and air conditioning (2020)	Rate +/- 2019/2020	Average rate +/- 2015/2019
Business income	620,730,391.00	609,931,925.00	-0.02	-0.01
Operating profit	34,528,345.00	41,291,691.00	0.20	-0.07
Business loss	9,714,309.00	4,056,194.00	-0.58	0.49
Net gain	22,532,708.00	23,112,619.00	0.03	0.04
Net loss	18,565,905.00	6,312,841.00	-0.66	0.37

Source: Author's research

By analyzing the obtained results from *Table 1*, it is possible to highlight the following grades:

- looking at 2019–2020. year at the level of sector D, the drop in income was insignificant (2%) and
- in the case of sector D, the given tendency of income oscillation is accompanied by a solid increase in business and net profit, and a significant decrease in business and net losses, the quality of which is even more significant when compared to the average rate of growth of business and net profit and the average rate of decrease in business and net losses for the period 2015–2019. years.

We can conclude that the profit position and quality of Sector D were stable in the observed period.

Table 2. Overview of indicators of liquidity and solvency in the Republic of Serbia within sector D - Production and supply of electricity, gas and water in the Republic of Serbia for 2019-2020. and 2015–2019. A year

Categories	D - Supply of electricity, gas, steam and air conditioning (2019)	D - Supply of electricity, gas, steam and air conditioning (2020)	Rate +/- 2019/2020	Average rate +/- 2015/2019
Prospective liquidity ratio (general liquidity ratio)	0.81	0.78	-0.04	0.69
Current liquidity ratio (cash liquidity ratio)	0.11	0.13	0.20	0.13
Effective liquidity ratio (rigorous liquidity ratio)	0.61	0.60	-0.01	0.55
Average "cash cycle" period (in days)	112.57	115.40	0.03	90,81
Average claim collection time (in days)	68.20	73,79	0.08	84.05
Average payment time to suppliers (in days)	119.66	124.57	0.04	133.26
Inventory Turnover Time (in days)	164.03	166.17	0.01	140.02
Solvency (dynamic indicator)	3.70	6.05	0.64	4.95

Source: Author's research

By analyzing the obtained results from *Table 2*, it is possible to derive the following ratings:

- The average values of the coefficient of general liquidity of companies at the level of Sector D in the Republic of Serbia are significantly lower than the desired theoretical norm (≥2), which implies a threat to the conditions for maintaining liquidity, with the fact that there is a slight decrease compared to the previous year, as well as noticeably lower values from the average values for the period 2015–2019. years;
- The average values of the coefficient of accelerated liquidity of companies in the analyzed sector in the Republic of Serbia show that they are lower than the desired theoretical norm (≥1), which implies that companies do not have enough

quickly liquid assets to settle short-term obligations. The growth of the indicator value is minimal in sector D compared to the previous year, and the given value is higher than its average value for the period 2015–2019. years;

- The average values of the coefficient of the current liquidity of companies in the analyzed sector in the Republic of Serbia in the context of the given values of the coefficients of general and accelerated liquidity imply that companies do not have enough quickly liquid assets to settle short-term obligations;
- Further development of the analysis, we complete the results of the values of dynamic liquidity indicators for more complete conclusions about the liquidity of the analyzed sector, and it is possible to notice that there was an extension of the period of the cash cycle;
- Analyzing the structure of the cash cycle element of Sector D, it can be seen that the cash cycle lengthened by 3.00%, and that the decisive negative impact is the lengthening of the receivables collection period, then the stock turnover period, which is followed by the lengthening of the supplier payment period, with a noticeably longer the duration of the cash cycle compared to the average in the period 2015–2019. years;
- The indebtedness indicator as a ratio of total liabilities (short-term and long-term) and total assets shows how much the company is financed from other sources, i.e. from other people's capital. The larger the indicator, the more indebted the company is and the greater the risk of investing in the company itself. The preferred experiential norm is that the debt ratio does not exceed the value of 0.5, because the company should prefer financing from its own sources to the account from other sources. The values of the indebtedness indicator in Sector D are lower than 0.5 and show the predominance of own financing in relation to other sources. In Sector D, there was a slight decrease in the level of indebtedness in 2020 compared to 2019, and just below its average for 2015-2019. a year.
- Experiential norms in practice indicate that a higher value of the indicator of interest cost coverage (dynamic solvency) is better, so a value of 3-7 is considered solid, and over 7 is desirable. The presented results of interest cost coverage show significant differences in financial power, i.e. the degree of generation of operating cash for loan interest payments. The indicator of dynamic solvency of Sector D increased by almost 2/3 in 2020 compared to 2019, and at the same time above its average for the period 2015 - 2019, which implies solid financial strength. In Sector D, there is a tendency to extend the period of the cash cycle due to the dominance of the average age of customers and inventory, as well as a slight improvement in the degree of indebtedness, which is accompanied by the strengthening of financial power. We develop further analysis by analyzing three subsectors in the energy sector.
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Table 3. Dynamics of business income, business and net profit / loss for the energy sector and sub-sectors in the Republic of Serbia for 2019-2020. and 2015-2019 _

Categories	Business income	Operating profit	Business loss	Net gain	Net loss
"351" (2019)	462,774,261.00	23,807,470.00	7,513,243.00	6.311.409.00	9,447,849.00
"351" (2020)	457,724,605.00	26,602,201.00	3,549,615.00	15,672,906.00	3,338,818.00
Rate +/- 2019/2020	-0.01	0.12	-0.53	1.48	-0.65
Average rate +/- 2015/2019	-0.01	0.03	0.52	-0.21	0.27
"352" (2019)	103,167,573.00	6,855,212.00	1,345,774.00	5,137,704.00	8,573,784.00
"352" (2020)	99,118,546.00	10,559,662.00	16,434.00	3,647,094.00	1,740,148.00
Rate +/- 2019/2020	-0.04	0.54	-0.99	-0.29	-0.80
Average rate +/- 2015/2019	0.04	-0.11	2.78	1.18	8.19
"353" (2019)	54,788,557.00	3,865,663.00	855,292.00	11,083,595.00	544,272.00
"353" (2020)	53,088,774.00	4,129,822.00	490,145.00	3,792,619.00	1,233,875.00
Rate +/- 2019/2020	-0.03	0.07	-0.43	-0.66	1.27
Average rate +/- 2015/2019	-0.01	0.03	0.25	0.49	-0.10

Source: Author's research

We continue further research by analyzing the profit and financial position by sub-sectors "351", "352" and "353" of Sector D, and by analyzing the obtained results from *Table 3,* it is possible to highlight the following ratings:

- in three sub-sectors, there was a decrease in business income in 2020 compared to 2019, with the fact that in sub-sectors "352" and "353" there is a slightly greater decrease compared to sub-sector "351", which is insignificant (1%).
- in sub-sector "351" the given tendency of income oscillation is followed by a solid increase in business and net profit and a significant decrease in business and net losses, in contrast to sub-sector "352" where the given tendency of income is followed by a solid increase in business and a significant decrease in business and net losses, but by reducing the net profit by almost 1/3, which lowers the quality rating of the subsector's profit position;
- in sub-sector "353" the given income tendency is followed by a slight increase in business and a significant decrease in business loss, but also a significant

decrease in net profit and an increase in net losses, which contributes to a worse assessment of the quality of the profit position of the sub-sector.

Based on the presented analysis, it can be concluded that the profit position and quality of sub-sector "351" are relatively more favorable than that of sub-sector "352", and especially of sub-sector "353", for which we can give an unfavorable assessment of the profit position.

Table 4. Overview of liquidity and solvency indicators in the Republic of Serbia for the energy sector and sub-sectors in the Republic of Serbia for 2019-2020. and 2015–2019. a year

Categories	Prospective liquidity ratio (general liquidity ratio)	Current liquidity ratio (cash liquidity ratio)	Effective liquidity ratio (rigorous liquidity ratio)	The special period "over. cycle" (in day.)	Please ask for a special billing time. (in the day.)	Special payment time provided. (in the day.)	Stock turnover time (in days)	Solvency (dynamic indicator)	Indebtedness
"351" (2019)	0.89	0.14	0.70	166.92	73,79	109.28	202.41	3.94	0.35
"351" (2020)	0.89	0.14	0.70	195.05	84.04	112.20	226.21	6.69	0.35
Rate +/- 2019/2020	0.00	-0.05	-0.01	0.17	0.10	0.03	0.12	0.70	-0.02
Average rate +/- 2015/2019	1.02	0.21	0.83	144.07	87.70	114.99	171.35	5.21	0.32
"352" (2019)	0.76	0.02	0.43	61,61	37.76	87.64	111.49	2.86	0.43
"352" (2020)	0.65	0.19	0.46	8.75	38.94	110.43	80.24	5,16	0.42
Rate +/- 2019/2020	-0.14	9.75	0.06	-0.86	0.03	0.26	-0.28	0.81	-0.03
Average rate +/- 2015/2019	0.34	0.01	0.22	2.16	68.03	145.53	79.66	5.06	0.82
"353" (2019)	0.50	0.10	0.40	153.35	78,31	280.69	355.73	4.32	0.39
"353" (2020)	0.45	0.04	0.33	276.45	76.41	264.76	464.80	5.15	0.37
Rate +/- 2019/2020	-0.10	-0.60	-0.17	0.80	-0.02	-0.06	5.15	0.19	-0.06
Average rate +/- 2015/2019	0.50	0.13	0.42	203.33	81.09	275.74	0.37	5.35	0.52

Source: Author's research

By analyzing the obtained results from *Table 4*, it is possible to highlight the following grades:

- The average values of the general liquidity coefficient of companies in the analyzed sub-sectors show that they are far from its desired theoretical norm (≥2), which implies a threat to the conditions for maintaining liquidity. Subsectors "352" and "353" saw a more significant drop in the value of the indicator, and the given value for subsector "353" is lower than its average value for the period 2015-2019. years;

- The average values of the coefficient of accelerated liquidity of companies in the analyzed sectors of the Republic of Serbia show that they are lower than the desired theoretical norm (≥1), which implies that companies do not have enough quickly liquid assets to settle short-term obligations. The most significant change is the decrease in the value of the indicator in subsector "353", and the given value in subsector "353" is lower than its average value for the period 2015-2019. years;
- The average values of the coefficient of current liquidity of companies in the analyzed sub-sectors of the Republic of Serbia in the context of the given values of the coefficients of general and accelerated liquidity imply that companies do not have enough quickly liquid assets to settle short-term obligations.

We complete the further development of the analysis with the findings of the values of dynamic liquidity indicators for the sake of more complete conclusions about the liquidity of the analyzed subsectors, and it is possible to notice that there was an extension of the cash cycle period in subsectors "351" and "353", and a significant decrease in subsector "352":

- The extension of the cash cycle in sub-sectors "351" and "353" is due to the negative impact of the extension of the receivables collection period and inventory turnover, which is accompanied by a significant extension of the supplier's payment period, which is above the period of the average duration of the cash cycle for the period 2015-2019. years;
- By analyzing the structure of the element of cash cycles in the sub-sector "352", it is possible to observe a significant reduction in the period of the cash cycle, which was influenced by the decrease in the period of inventory turnover, which was followed by the extension of the payment period of suppliers, but in 2020, the duration of the cash cycle is still longer compared to average for the period 2015–2019. years;
- The value of the indebtedness indicator in the analyzed sub-sectors has a tendency to decrease in 2020 compared to 2019, and is especially noticeable in the "352" sub-sector significantly lower than its average value for 2015-2019. year, which indicates the predominance of financing from own sources compared to other sources and the acquisition of conditions for a favorable assessment of the debt position;
- The value of the dynamic solvency indicator has a tendency to increase in 2020 compared to 2019, its values imply solid, and in the case of subsector "353" desirable financial power of the group of analyzed companies. It can be concluded that the values of the analyzed indicators are not even close to the desired liquidity norms, and that in 2020, the value of the indicators in the subsectors "352" and "353" is more significant, which implies respectively an unfavorable assessment of the liquidity position, especially for the subsector "353". The given liquidity assessment is confirmed by the tendency to extend

the period of the cash cycle in the sub-sectors "351" and "353", mainly at the expense of the inventory period, while in the sub-sector "352" there was a shortening of the cash cycle because the given changes were followed by a more intensive extension of the supplier's payment period. In all sub-sectors, there is a tendency to reduce indebtedness indicators, which is accompanied by a strengthening of financial power.

In order to further examine the influence of independent variables in the time period before Covid 19 on the rate of return on assets (eng. Return on Assets - ROA) within the sector D - Production and supply of electricity, gas and water and its sub-sectors, in this research we use the following independent variables: Current liquidity ratio (general liquidity ratio), Current liquidity ratio (cash liquidity ratio), Accelerated liquidity ratio (rigorous liquidity ratio), Solvency (dynamic indicator) and Indebtedness. The dependent variable is the rate of return on assets (ROA). In *Table 5*, "R" represents the value of the multiple correlation coefficient used to determine the quality of the prediction of the dependent variable, in this case ROA. A value of 0.748 represents a good level of prediction. The "R square" column represents the decision coefficient, i.e. the dispersion ratio of the dependent variable that can be explained by the independent variables, i.e. 56% of the variability of the dependent variable that can be explained by the independent variables.

Table 5. Model results

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the estimate**
1	0.748	0.560	0.403	0.02723

Source: Author's research

The F-value in *Table 6* tests whether the regression model is good. From the table shown, it can be seen that the independent variables predict the dependent variable statistically well (Sig. = 0.028) and this actually means that our regression model is good $F = 3.560$, $p < 0.05$.

Table 6. Regression model test

ANOVA [a]						
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	0.013	5	0.003	3,560	0.028
	Residual	0.010	14	0.001		
	Total	0.024	19			

Source: Author's research

From *Table 7* for the period 2015–2019. (current liquidity coefficient β = 0.635, p= 0.012) and accelerated liquidity (β = -0.299, Sig. = 0.001) gave a statistically significant prediction of the Return on Assets (ROA) rate before Covid-19.

Table 7. Values of model coefficients

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.163	0.053		3,089	0.008
	Current liquidity ratio (general liquidity ratio)	-0.004	0.024	-0.034	-0.176	0.863
	Current liquidity ratio (money liquidity ratio)	0.635	0.220	1,405	2,882	0.012
	Accelerated liquidity ratio (rigorous liquidity ratio)	-0.299	0.075	-2,033	-3,985	0.001
	Solvency (dynamic indicator)	-0.002	0.005	-0.114	-0.452	0.658
	Indebtedness	-0.087	0.056	-0.561	-1,554	0.142

Source: Author's research

In order to further examine, within the framework of sector D - Production and supply of electricity, gas and water and its sub-sectors, the influence of independent variables, in the time period of 2020, during the Covid 19 pandemic, on the rate of return on assets (eng. ROA) in our for research we use the following independent variables already mentioned: Current liquidity ratio (general liquidity ratio), Current liquidity ratio (cash liquidity ratio), Accelerated liquidity ratio (rigorous liquidity ratio), Solvency (dynamic indicator) and Indebtedness. The dependent variable is the Rate of Return on Assets.

Table 8. Model results

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the estimate
1	0.963	0.928	0.892	0.00315

Source: Author's research

In *Table 8,* "R" represents the value of the multiple correlation coefficient used to determine the quality of the prediction of the dependent variable, in this case ROA. A value of 0.963 represents a good level of prediction. The "R square" column represents the decision coefficient, that is, the dispersion ratio of the dependent variable that can be explained by the independent variables, that is, 92.8% of the variability of the dependent variable that can be explained by the independent variables.

Table 9. Regression model test

ANOVA [a]						
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	0.000	1	0.000	25,756	0.037 [b]
	Residual	0.000	2	0.000		
	Total	0.000	3			

Source: Author's research

The F-value in *Table 9* tests whether the regression model is good. This table shows that the independent variables predict the dependent variable statistically well (Sig. = 0.037) and this actually means that our regression model is good F = 25.756, p <0.05.

Table 10. Values of model coefficients

Coefficients						
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
		B	**Std. Error**	**Beta**		
1	(Constant)	0.047	0.006		7,781	0.016
	Accelerated liquidity ratio (rigorous liquidity ratio)	-0.057	0.011	-0.963	-5,075	0.037

Source: Author's research

Based on the results shown in *Table 10*, it is observed that during the Covid-19 pandemic, the coefficient of accelerated liquidity (β = -0.057, Sig.= 0.037) gives a statistically significant prediction of the Return on Assets (ROA).

Conclusion

Sector D - Production and supply of electricity, gas and water is an indispensable category of industrial activity, and as it accounts for almost a fifth of industrial activity, it is considered one of the most important and reliable components of the total economic activity in Serbia. The paper represents one of the few researches that deals with the issue of financial vitality (liquidity, solvency and profitability factors) of this sector in the time of Covid-19 in the Republic of Serbia. The results of the research show that the profit position at the level of Sector D is solid, despite the slight fluctuation of income, which is accompanied by a solid increase in business and net profit, that is, the quality of income. When it comes to the financial position, despite the significant risk of maintaining liquidity, liquidity factors are better than in the previous five-year period.

The analysis revealed differences in the profit and financial position of subsectors, which show that the impact of the pandemic did not affect all subsectors equally, and that the greatest risks to financial vitality are in subsector 353 - Steam supply and air conditioning. The influence of liquidity and solvency on the rate of return on assets was also examined through regression analysis. The results indicate that the coefficient of accelerated liquidity gives a statistically significant prediction of the rate of return on assets both in the period before Covid-19 and during the Covid-19 pandemic. Therefore, it seems rational to continue the research by analyzing the impact on branches and groups of activities, primarily respecting the size and profile of the analyzed companies, including the impact and other economic determinants.

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KOMPARATIVNA ANALIZA DEŠAVANJA NA SVETSKOM TRŽIŠTU NA PRIMERU IZABRANOG PORTFOLIA I VAR METODE

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Apstrakt

Tema rada se fokusira na kretanje četiri berzanska indeksa u periodu od 2007. do 2022. godine, sa ciljem procene koja kriza je imala veći uticaj na pojedinačne indekse kao i na portfolio kreiran putem analize srednje varijanse. Takođe, sam rizik meren je metodom VaR (Vrednost u riziku). Svaki indeks predstavlja jednu klasu imovine, i računarska kalkulacija korišćenjem analize srednje varijanse predložila je određene pondere, koji su korišćeni u daljim proračunima. Glavni zaključak ovog rada jeste da je kriza u 2020. imala snažniji uticaj na sve indekse, i dovela do većih volatilnosti u prihodima nego što je kriza tokom 2008. godine. Dalje, portfolio kreiran putem analize srednjih vrednosti za investitore koji nisu skloni riziku je potvrdio ove rezultate, pokazujući najveću volatilnosti u prihodima celog portfolia u 2020. godini.

Ključne reči: *VaR, finansijska kriza, analiza portfolia.*

JEL: *G110, G010*

Uvod

Istorijski smo svedoci mnogim krizama koje su se desile tokom 21-og veka. Najznačajnije su dve koje su pogodile celo svetsko tržište i to svetska ekonomska kriza 2008. godine i Covid19 kriza 2020. godine. Tema ovog rada se fokusira na kretanje četri indeksa u periodu od 2007. do 2022. godine, koji obuhvataju obe krize. Cilj je proceniti koja kriza je imala veći uticaj na pojedinačne indekse kao i na portfolio kreiran putem analize srednje varijanse. Takođe visina volatilnosti u vezi sa reakcijom na krize je izračunata putem VaR metode. Teorijski deo će biti fokusiran na objašnjenja analize srednje varijanse i VaR metoda kao centralnom delu rada.

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Odnos rizika i prinosa je jedna od tema o kojima se najviše diskutuje na finansijskim tržištima, jer njegovo razumevanje omogućava investitorima da donose odluke. S toga, neki investitori su skloni riziku i ne žele da preuzmu dodatnu izloženost kako bi postigli veće prinose, dok sa druge strane postoje investitori koji su spremni da preuzmu veće rizike. Procena ove dve kategorije je stoga od najveće važnosti, bez obzira na vrstu investitora. U ovom radu rizik portfolija će biti izračunat primenom VaR metode, za koji je potrebno kreirati portfolio. Portfolio će se sastojati od četiri berzanska indeksa, čiji će ponderi biti dodeljeni na osnovu analize srednje varijanse (Takino & Ishinagi, 2022).

Što se tiče vremenskog okvira, globalna slika finansijskog sveta je obuhvaćena za period od aprila 2007. do januara 2022. godine. Ovaj vremenski okvir je izabran da pokrije period obe krize koje su se zadesile u 21-om veku. Tokom ovog perioda, fokus je na periodima u kojima je volatilnost pojedinačnih indeksa i portfolia bila veća, sa ciljem da se proceni koja kriza je imala veći uticaj kako na same indekse, tako i na kreirani portfolio. Takođe će rizik biti procenjen VaR metodom i kvantifikovan. Stoga, cilj rada možemo podeliti na dva problemska pitanja: 1. Uticaja kriza na izabrane indekse, sa nastojanjem da se proceni koja je imala snažniji uticaj, i 2. Kreiranje portfolia putem analize srednje varijanse i procena rizika putem VaR metode.

Teorijske osnove

Iako je glavna ideja da se proceni uticaj kriza na indekse, a potom portfolio, jaz u znanju će biti fokusiran na VaR metodu i analizu srednje varijanse. Uopšteno govoreći, VaR kao mera je usmerena isključivo na procenu rizikaNekoliko istraživača preporučuje upotrebu istorijskog VaR-a jer je ovo najjednostavniji metod. Nasuprot tome, postoje neki koji se ne slažu sa tim jer veruju da može da obmanjuje jer ne obuhvata neočekivane promene na tržištu. Još jedna poteškoća sa kojom se može zadesiti u suočavanju sa istorijskim VaR-om je pitanje koliko bi uzorak trebalo da bude veliki da bi obuhvatio sve distribucije povrata.

Druga vrsta VaR je delta-normal VaR, koji pretpostavlja normalnu distribuciju prinosa, što nije uvek slučaj i stoga je često nepraktično. Pored toga, EWMA metoda se može koristiti za izračunavanje VaR-a, sa prednošću što su noviji događaji ponderisani više. Tehnike koje rešavaju nedostatke ranijih metoda mogu biti računski zahtevne. Jedno od rešenja koja su preporučili mnogi autori je GARCH (Generilizovana autoregresivna uslovna heteroskedastičnost) metoda. GARCH metoda uključuje dodatni parametar u proračunu volatilnosti i stoga poboljšava tačnost VaR-a. Postoji dalje niz suprotstavljenih stavova o upotrebi VaR-a, a jedan od njih je upotreba mnogih metoda izračunavanja, što dovodi do različitih rezultata (Xiang & Zhang, 2022). U ovom radu autori će primenti računanje VaR metode putem metode normalne distribucija, kao metode koja je najzastupljenija u teoriji.

Pregled literature

VaR je mera rizika koja se uglavnom koristi za merenje rizične pozicije banke ili investicione kompanije. Rane 1990-te donele su neizvesnost na finansijsko tržište (Angelidis & Degiannakis, 2019), što je dovelo do razvoja različitih modela za procenu tržišnog rizika. Ovo je uticalo na stvaranje VaR-a 1995. od strane JP Morgana, koji je objavio dokument pod naslovom Risk Metrics (Morgan/Reuters, 1995). Dokument je predstavio šta je VaR i kako se može izračunati. Čak i pre objavljivanja dokumenta, VaR je predložen kao mere tržišnog rizika (Group of Thirty, 1993). Prema JP Morganu, VaR je mera gubitka sa datom verovatnoćom tokom vremenskog horizonta. Najvažniji parametar u njegovoj formuli je standardna devijacija kao mera disperzije. Standardna devijacija ili njena kvadratna verzija - vvarijansa mogu se izračunati na mnogo načina, npr. istorijska volatilnost, EWMA (Eksponecijalni ponderisani prosek), GARCH, itd. Sam VaR se može izračunati korišćenjem simulacionih modela kao što su istorijska simulacija ili Monte Karlo simulacija. VaR metode se mogu klasifikovati u tri kategorije: parametarske metode – delta-normalni pristup, neparametarske metode – istorijska simulacija i Monte Karlo metode (Nabella, Maski, & Wahyudi, 2020). Ovaj rad obuhvata delta-normalni pristup, koji podrazumeva normalnu distribuciju prinosa.

U literaturi postoje različiti pogledi. Na primer, istorijski simulacioni model je dao bolje rezultate predviđanja od drugih metoda koje se koriste ako je veličina uzorka dovoljno velika i ako je uključen viši nivo pouzdanosti (Craig, 2019). Metode simulacije su se pokazale kao bolje od parametarskih metoda kada je u pitanju procena VaR-a (Liu & Luger, 2022). Ipak, nedostatak je u tome što je istorijska volatilnost suviše jednostavan metod za izračunavanje volatilnosti koji koristi samo formulu standardne devijacije (Marra, 2017). U ovim osnovnim informacijama, razvijen je delta-normalni pristup koji uključuje matricu kovarijanse kao dodatni parametar za proračun. Spada u grupu parametarskih VaR metoda, sa glavnom pretpostavkom o normalno raspoređenim prinosima (Kulali, 2016).

Problem i cilj rada

Problem rada se fokusira na rešavanje pitanja koja kriza je imala snažniji uticaj na pojedinačne indekse kao i na celokupni kreirani portfolio. S obzirom da ekonomija kao celina ima cikluse, krize kao fenomen nisu nešto nepoznato. Ono što ostaje nepoznato jeste kada će se koja kriza desiti, i koji sektori će biti pogođeni. Direktno u vezi sa tim, ovaj rad nastoji da da odgovor kako su se koji indeksi ponašali tokom dve krize u 21-om veku. Analiza srednje varijanse se prvo vrši da bi se kreirao optimalni portfolio. Svrha kreiranja optimalnog portfolia je da se pronađe najbolji prinos putem kombinacije sredstava. Kada se kreira optimalni portfolio, primeniće se metoda delta-normal VaR. Osvrćući se na temu VaR, glavna namera je da se izračuna najveći mogući gubitak na portfoliju sa datom verovatnoćom u datom periodu (Buczynski & Chlebus, 2020).

Metodologija

Za potrebe analize uzeta su u obzir četiri indeksa. Svaki indeks predstavlja jednu klasu imovine, a indeksi pokrivaju i razvijena i nerazvijena tržišta, i slede:

1. MSCI World Index: indeks akcija;
2. Vanguard Total Bond Market Index Fund: indeks obveznica;
3. S&P GSCI Index – indeks robe;
4. Vanguard Real Estate Index Fund Investors – indeks nekretnina.

Za početak procesa optimizacije potrebno je prikupiti podatke za sva četiri indeksa od aprila 2007. do januara 2022. Godine. U ovom radu su dnevni podaci preuzeti sa veb sajta investing.com, sa namerom da se obuhvate sve promene. Shodno tome, podaci će biti uvezeni u Python, gde će se vršiti sve analize.

Analiza srednje varijanse

Ovo poglavlje se bavi temom analize srednje varijanse, fokusirajući se na proračun i njegovo fundamentalno razumevanje. Teorija srednje varijanse je deo moderne teorije portfelja koju je razvio Hari Markovic. Ispitivao je ulogu odnosa između rizika i prinosa i otkrio da su svi investitori neskloni riziku – preferiraju manji rizik za isti očekivani iznos prinos (Reilly & Brown, 2003).

Svi investitori imaju za cilj da pronađu individualno optimalan portfolio. To znači kreiranje portfolija koji odražava njihove sopstvene preferencije u smislu investicionih očekivanja. Optimalni portfolio je portfolio koji ostvaruje najveći očekivani prinos za dati rizik, meren kao standardna devijacija (Hiller, 2022). Ova studija će koristiti portfolio kreiran od četiri različita indeksa akcija sa ciljem stvaranja optimalnog portfolia sa minimalnim rizikom. Ovaj portfolio će sadržati indekse koji odražavaju i razvijena i nerazvijena tržišta, kao i tržišta akcija, obveznica, nekretnina i roba. U tom smislu portfolio će odražavati celo tržište. Optimalni portfolio se može izračunati na osnovu cene na zatvaranju berze, očekivanog prinosa, standardne devijacije i korelacije. Očekivani prinos za portfolio može se izračunati na sledeći način (Markowitz, 1952):

$$[E(R]_p) = \sum_{i=1}^{N} w_i \cdot E(Ri) \tag{1}$$

Gde je $E(Rp)$ očekivani prinos portfolia, w_i je ponderisanje svake klase sredstava u portfoliu i R_i su prinosi svih klasa sredstava. Prema tome, očekivani prinos portfelja je zbir ponderisanih prinosa svake klase sredstava uključenih u portfolio. S druge strane, varijansa portfolija nije jednostavno ponderisana standardna devijacija klasa aktive, jer njihova korelacija čini razliku u smislu procenjenog rizika. Diverzifikacijom je moguće postići manji rizik u portfoliju nego što ga ima sama akcija. Dakle, opšta formula za rizik portfolija može se izračunati na sledeći način (Hiller, 2022):

$$\sigma_p^2 = \sum_{i=1}^{N} \sum_{j=1}^{N} w_i w_j Cov(R_i, R_j) \tag{2}$$

Gde je σ_p^2 portfolio varijansa, Cov je kovarijansa između svaka dva sredstva imovine. I-ti red i j-ta kolona je kovarijansa između promenljivih i i j. Kovarijansa između varijable i nje same je varijansa koja predstavlja dijagonalne ulaze u matrici (Hull, 2017).

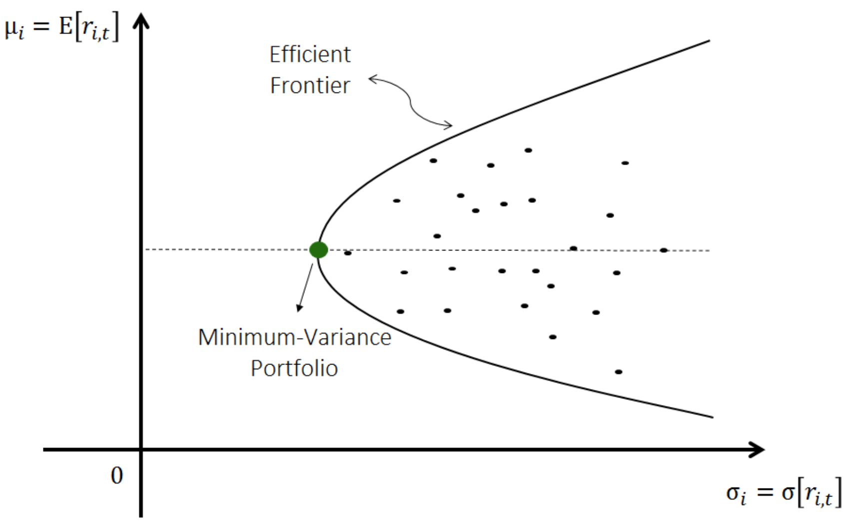
$$\begin{pmatrix} var_1 & \cdots & cov_{1n} \\ \vdots & \ddots & \vdots \\ cov_{n1} & \cdots & var_n \end{pmatrix} \tag{3}$$

Dva ograničenja su data (Markowitz, 1952):

1. $\sum_{i=1}^{n} w_i = 1$
2. $w_i \geq 0$

Prvo ograničenje je da zbir pondera svake klase imovine mora biti jednak 1, a drugo zabranjuje prodaju finansijskih instrumenata koji se ne poseduju.

Grafikon 1: Analiza srednje varijanse



Izvor: (Goncalves, 2022)

Kada se izračunaju očekivani prinosi i rizik, sve njihove kombinacije mogu biti prikazane na grafikonu (Goncalves, 2022). Linija sa optimalnim portfeljima naziva se efikasna granica. X-osa prikazuje standardnu devijaciju, a Y-osa prikazuje povrat. Pomeranje ulevo od x-ose rezultira manjom varijansom. I suprotno, pomeranje udesno dovodi do veće varijanse. Pomeranje nagore do y-ose dovodi do većeg prinosa, pomeranje nadole znači niže prinose. Portfolio koji je najdalje levo na x-osi predstavlja portfolio sa minimalnom varijansom i prikazan je kao tačka. Portfoliji koji nisu na liniji ne daju bolje rezultate. Oni nude ili veći rizik za isti prinos ili manji prinos za isti rizik.

U ovom radu, kao što je već pomenuto, koriste se četiri berzanska indeksa, pa je formula za očekivani portfolio i varijansu sledeća:

$$[E(R]_p) = w_1 E(R_1) + w_2 E(R_2) + w_3 E(R_3) + w_4 E(R_4) \quad (4)$$

R_2, R_4

(5)

Jedna od prednosti koje je donela moderna teorija portfolija (MPT) jeste uticaj na trgovce da diversifikuju svoje portfelje umesto da se koncentrišu na jednu klasu sredstava. Iako je zasnovan na mnogim restriktivnim pretpostavkama, omogućio je procenu rizika portfelja i prinosa. Neke od glavnih pretpostavki su normalna raspodela prinosa i racionalno ponašanje investitora (Rice, 2017).

Value at Risk (VaR)

VaR je statistička mera koja se generalno koristi za analizu tržišnog rizika povezanog sa finansijskim sredstvima ili portfeljima (Mensink & Neves, 1999). Datira iz 1995. godine, kada je JP Morgan objavio RiskMetrics dokument, koji je objasnio VaR kao model. Pod tim imenom je definisan tek 1995. Godine. Nakon što ga je uveo JP Morgan, postao je široko korišćena mera izloženosti tržišnom riziku. On pruža jednostavnu i lako primenljivu kvantitativnu meru za procenu ukupnog tržišnog rizika kome je neko izložen. Takođe ga koriste mnogi menadžeri rizika za procenu potencijalnog gubitka portfelja tokom određenog vremenskog perioda i na određenom nivou poverenja.

Postoje dva ključna elementa za opisivanje VaR-a (Olsen, 2020):

1. Vremenski horizont – što je veći horizont, veći je VaR. Kada se izračuna dnevni VaR, može se produžiti na više dana množenjem kvadratnog korena vremena. Ovo je slučaj kada su prinosi nezavisno i identično raspoređeni (iid) sa normalnom distribucijom (Jorion, 2007);

2. Nivo poverenja – što je viši nivo poverenja, veći je VaR i više scenarija je pokriveno. Najčešće korišćene verovatnoće su one od 95% i 99%. Ovi elementi se mogu opisati u jednoj rečenici: "Mi smo X posto sigurni da nećemo izgubiti više

ode V dolara u vremenskom periodu T" (Hull, 2015). VaR se stoga definiše kao iznos novca koji se može izgubiti tokom određenog vremenskog perioda na određenom nivou poverenja.

$VaR = \mu + \sigma N^{-1}(X)$ (6)

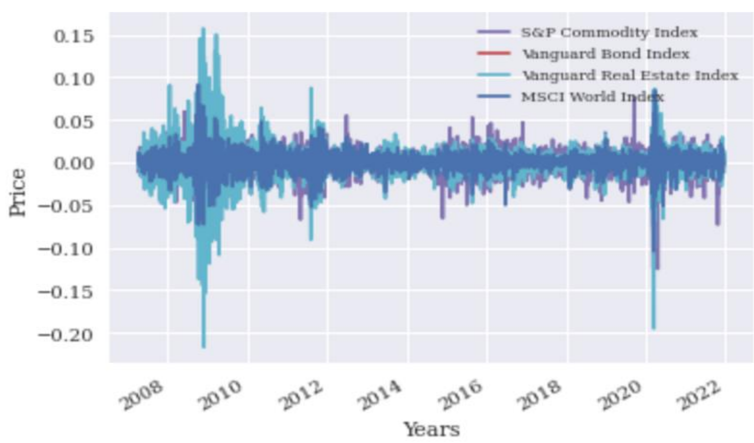
Gde je μ srednja vrednost, σ je standardna devijacija portfolia, $N^{-1}(X)$ je inverzna kumulativna normalna raspodela (Hull, 2017).

Može se reći da ako je VaR portfelja milion dnevno sa sigurnošću od 95%, postoji samo 5% šanse da će gubitak biti veći od milion. Nedostatak VaR-a je ovde izražen, jer ne govori ništa o iznosu gubitka ako dođe do ovih 5%. Iz tog razloga, VaR je često bio kritikovan i uvedena je dodatna mera, odnosno očekivani gubitak (ES) ili uslovni VaR (CVaR), koji meri prosek svih gubitaka koji su veći od VaR (Mendes, 2022). Upotreba CVaR-a umesto VaR-a ima mnogo prednosti, kao što je uključivanje gubitaka viših od VaR-a, što rešava jedan od problema povezanih sa VaR-om, ali praksa u finansijskoj industriji i dalje snažno favorizuje upotrebu VaR-a (Chipping, 2014). Drugo ograničenje VaR-a je to što daje različite rezultate u zavisnosti od korišćene metode (Bedi, Shankar, Agnihotri, & Kalra, 2018). Daljnji nedostatak o kome se raspravlja je to što VaR nema sub-aditivnost, što znači da VaR portfelja može biti veći od zbira pojedinačnih VaR-ova (Meissner, Bhaduri, Linsky, & Yuan, 2021) što uzrokuje probleme agregacije (Chen, Sit, & Wong, 2019). Rešenja za većinu nedostataka VaR-a nalaze se u CVaR-u, kao što su subaditivnost i konveksnost (Francq & Zakoian, 2019).

Rezultati rada sa diskusijama

Ovo poglavlje opisuje rezultate rada. Nakon unosa biblioteka i skupa podataka u programski jezik Python, prinosi za svaki indeks se izračunavaju.

Dijagram 1: Prinosi sva četri indeksa



Izvor: Autor na osnovu podataka sa Platforme investing.com

Kada se pogleda prezentacija prinosa sva četiri indeksa na sledećem dijagramu, može se zaključiti da je:

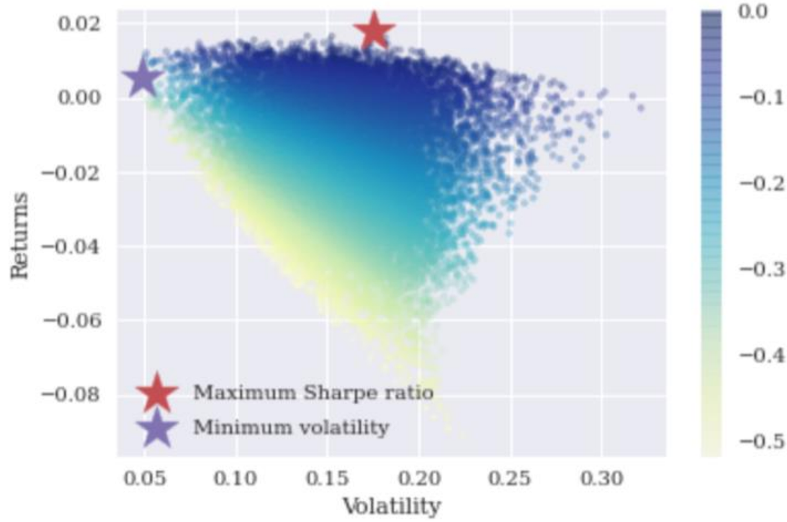
1. The Vanguard Bond index najmanje volatilan, jer njegove crvene linije nisu vidljive na grafikonu, tj. najniža volatilnost;
2. S&P Commodity indeks nije toliko izražen u poređenju sa drugim indeksima;
3. The MSCI World Index pokazuje veće devijacije i odstupanja, kao i Vanguard Real Estate indeks u poređenju sa gore navedenim indeksima, i pokazuje najveću devijaciju tokom 2008. godine, dok MSCI World indeks pokazuje najveća odstupanja tokom 2020. godine.

Sa ovim rezultatom, sada je moguće pronaći odgovarajuće ponderisanje koristeći teoriju portfolija. U ovom trenutku portfolio se može izračunati sa minimalnom volatilnošću generisanjem nasumičnih portfelja i pronalaženjem najniže standardne devijacije za date pondere. Na osnovu prethodnog grafikona, očekuje se, između ostalog, da će Vanguard Bond index biti relativno zastupljeniji i da će Vanguard Real Estate i S&P Commodity indeks, kao najpromenljiviji indeksi, dobiti manje pondere. Pošto je investitor u ovom slučaju nije sklon riziku, bira se alternativa koja nudi minimalnu volatilnost. Računarska kalkulacija korišćenjem analize srednje varijanse predlaže sledeće pondere:

1. Vanguard Bond Index - 91.01%;
2. S&P Commodity Index - 1.94%;
3. Vanguard Real Estate Index - 5.90%;
4. MSCI World Index - 1.15%.

U poređenju sa očekivanjima, svaka tačka je potvrđena, odnosno veći udeo Vanguard Bond indeksa i niži udeo Vanguard Real Estate i S&P Commodity indeksa. Dijagram 2 prikazuje sve moguće kombinacije portfelja. Investitor može da bira između svih tačaka na grafikonu, pri čemu je maksimalni Šarp racijo prikazan crvenom tačkom, a minimalni promenljivi portfolio ljubičastom tačkom. U ovom slučaju, investitor nije sklon riziku, tako da je izabrana ljubičasta tačka koja je najdalje levo. Ova tačka nudi minimalnu volatilnost, za dati prinos.

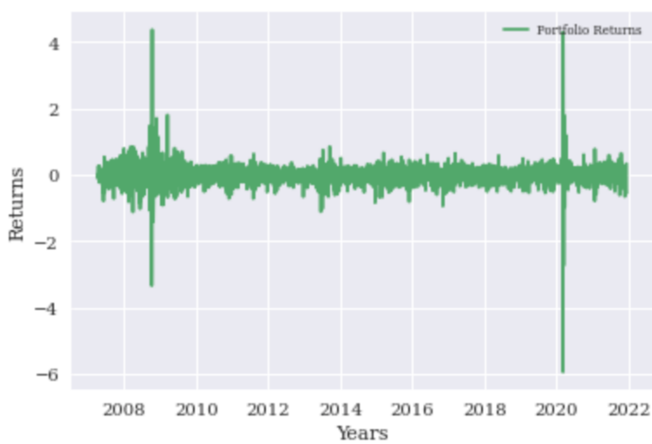
Dijagram 2: Simulirana optimizacija portfelja zasnovana na Efficient Frontier-u



Izvor: Autor na osnovu podataka sa Platforme investing.com

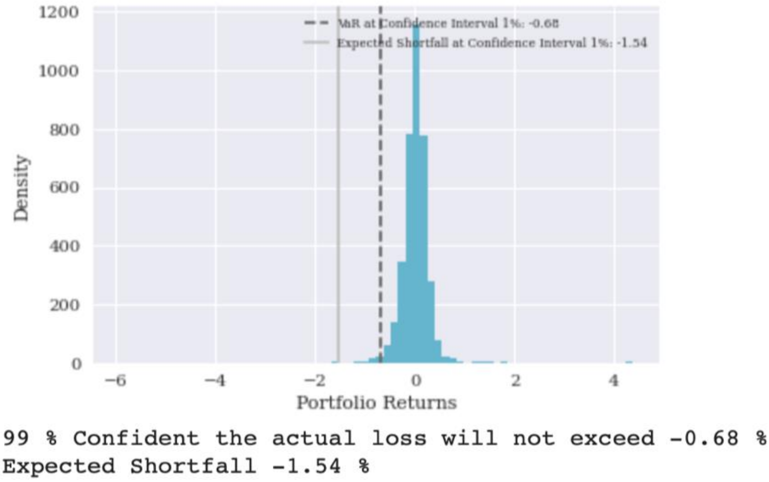
Nakon dodele pondera, prinos portfelja se može prikazati grafički za dati period na dijagramu 3. Kao što se vidi na posebno iscrtanim indeksima, tako i ovde najveće odstupanje se može uočiti na kraju 2008. i 2020. godine Prinosi se kreću od -3 do +4 % u 2008. godini, dok u 2020. godini variraju od -6 do +4%, što potvrđuje da je kriza 2020. godine imala snažniji uticaj na sve klase imovine, čak i na kreirani portfolio za investitore koji nisu skloni riziku.

Dijagram 3: Ponderisani prinosi portfolia



Izvor: Autor na osnovu podataka sa Platforme investing.com

Dijagram 4: Histogram portfolio prinosa



Izvor: Autor na osnovu podataka sa Platforme investing.com

Dijagram 4 prikazuje distribuciju svih prinosa portfelja za period od aprila 2007. do januara 2022. godine koristeći dve mere: svetlosiva linija pokazuje očekivani gubitak(ES), a tamna tačkasta linija VaR.

VaR se ovde izračunava kao jedan procentil sortiranih negativnih prinosa, i može se biti 99% sigurno da stvarni gubitak portfelja neće preći 0,68% vrednosti portfelja u jednom danu, dok očekivani gubitak je uvek veći i iznosi 1,54%, računato kao prosek najvećih gubitaka.

Na osnovu rezultata deskriptivne statistike može se zaključiti da prinosi nisu normalno raspoređeni. Standardna devijacija je manja, asimetrija veća i kurtozis mnogo veći nego kod normalno raspoređenih prinosa. Iz rezultata može se implicirati da su prinosi blago negativno iskrivljeni, a da je kurtozis pozitivan - leptokurtik. Ovde se može prepoznati rizik od ekscesa, što znači da u nekim slučajevima dobijamo preterane prinose, bilo pozitivne ili negativne, u statistikama poznatim kao ekstremni repovi.

Zaključak

U ovom radu obrađene su različite teme vezane za programiranje, statistiku i finansijsko modeliranje sa glavnom idejom sagledavanja finansijskih kriza u 21-om veku. Nakon čitanja različite dostupne literature, jaz je identifikovan, čijom definicijom počinje rad. Zatim se detaljno opisuje metodologija istraživanja. Formule, grafikoni, parametri su definisani i predstavljeni, kao i izvori koji se koriste, tako da čitalac može da ih koristi ako mu je neki deo teško razumljiv. Rezultati proračuna i analize su detaljno opisani.

Glavni zaključak ovog rada jeste da je kriza u 2020. godini imala snažniji uticaj na sve indekse, i dovela do većih volatilnosti u prihodima nego što je kriza tokom 2008. godine. Dalje, portfolio kreiran putem analize srednjih vrednosti za investitore koji nisu skloni riziku je potvrdio ove rezultate, pokazujući najveću volatilnosti u prihodima celog portfolia u 2020. godini. Takođe, VaR je izračunat sa ciljem da se proceni i kvantifikuje rizik. Tako rezultat VaR-a sa 99% sigurnošću je kvantifikovao da gubitak portfelja neće preći 0,68% vrednosti portfelja u jednom danu. Očekivani gubitak (ES) je uvek veći i iznosi 1,54%, računato kao prosek najvećih gubitaka.

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COMPARATIVE ANALYSIS OF EVENTS ON THE WORLD MARKET USING THE SELECTED PORTFOLIO AND THE VAR METHOD

Danica Cicmil [16], Pavle Jakšić [17], Miloš Đaković[18]

Review paper

Abstract

The topic of the paper focuses on the movement of four stock market indices in the period from 2007 to 2022, with the aim of assessing which crisis had a greater impact on individual indices as well as on the portfolio created through mean variance analysis. Also, the risk itself was measured using the VaR (Value at Risk) method. Each index represents one asset class, and computer calculation using mean-variance analysis suggested certain weights, which were used in further calculations. The main conclusion of this paper is that the crisis in 2020 had a stronger impact on all indices, and led to greater volatility in income than the crisis in 2008. Further, a portfolio created through mean analysis for risk-averse investors confirmed these results, showing the highest volatility in the returns of the entire portfolio in 2020.

***Keywords**: VaR, financial crisis, portfolio analysis.*

***JEL**: G110, G010*

Introduction

Historically, we have witnessed many crises that occurred during the 21st century. The most significant are the two that affected the entire world market, namely the world economic crisis of 2008 and the Covid19 crisis of 2020. The topic of this paper focuses on the movement of four indices in the period from 2007 to 2022, which include both crises. The goal is to assess which crisis had a greater impact on individual indices as well as on the portfolio created through mean-variance analysis. Also, the level of volatility related to the reaction to crises was calculated using the VaR method. The theoretical part will be focused on explanations of mean variance analysis and VaR methods as the central part of the paper.

The relationship between risk and return is one of the most discussed topics in the financial markets, because understanding it allows investors to make decisions.

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Therefore, some investors are risk averse and do not want to take on additional exposure in order to achieve higher returns, while on the other hand there are investors who are willing to take on higher risks. The assessment of these two categories is therefore of utmost importance, regardless of the type of investor. In this paper, the portfolio risk will be calculated using the VaR method, for which a portfolio needs to be created. The portfolio will consist of four stock indices, whose weights will be assigned based on mean variance analysis (Takino & Ishinagi, 2022).

As for the time frame, the global picture of the financial world is covered for the period from April 2007 to January 2022. This time frame was chosen to cover the period of both crises that occurred in the 21st century. During this period, the focus is on periods in which the volatility of individual indices and portfolios was higher, with the aim of assessing which crisis had a greater impact on both the indices themselves and the created portfolio. Also, the risk will be assessed by the VaR method and quantified. Therefore, the aim of the work can be divided into two problematic issues: 1. The impact of the crisis on the selected indices, with an effort to assess which one had a stronger impact, and 2. Portfolio creation through mean variance analysis and risk assessment through the VaR method.

Theoretical foundations

Although the main idea is to estimate the impact of crises on the indices and then the portfolio, the knowledge gap will be focused on the VaR method and the mean-variance analysis. In general, VaR as a measure is aimed solely at risk assessment Several researchers recommend the use of historical VaR because this is the simplest method. Conversely, there are some who disagree with it because they believe it can be misleading because it does not capture unexpected changes in the market. Another difficulty encountered in dealing with historical VaR is the question of how large the sample should be to cover all return distributions.

Another type of VaR is delta-normal VaR, which assumes a normal distribution of returns, which is not always the case and is therefore often impractical. In addition, the EWMA method can be used to calculate VaR, with the advantage that more recent events are weighted more. Techniques that address the shortcomings of earlier methods can be computationally demanding. One of the solutions recommended by many authors is the GARCH (Generalized Autoregressive Conditional Heteroscedasticity) method. The GARCH method includes an additional parameter in the volatility calculation and therefore improves the accuracy of VaR. There are also a number of opposing views on the use of VaR, one of which is the use of many calculation methods, which leads to different results (Xiang & Zhang, 2022). In this paper, the authors will apply the calculation of the VaR method using the normal distribution method, as the method that is most prevalent in theory.

Literature review

VaR is a measure of risk that is mainly used to measure the risky position of a bank or investment company. The early 1990s brought uncertainty to the financial market (Angelidis & Degiannakis, 2019), which led to the development of various models for assessing market risk. This influenced the creation of VaR in 1995 by JP Morgan, who published a paper entitled Risk Metrics (Morgan/Reuters, 1995). The document presented what VaR is and how it can be calculated. Even before the paper was published, VaR was proposed as a measure of market risk (Group of Thirty, 1993). According to JP Morgan, VaR is a measure of loss with a given probability over a time horizon. The most important parameter in his formula is the standard deviation as a measure of dispersion. Standard deviation or its squared version - vvariance can be calculated in many ways, e.g. historical volatility, EWMA (Exponential Weighted Average), GARCH, etc. VaR itself can be calculated using simulation models such as historical simulation or Monte Carlo simulation. VaR methods can be classified into three categories: parametric methods - delta-normal approach, non-parametric methods - historical simulation and Monte Carlo methods (Nabella, Maski, & Wahyudi, 2020). This paper includes the delta-normal approach, which assumes a normal distribution of returns.

There are different views in the literature. For example, the historical simulation model has produced better prediction results than other methods used if the sample size is large enough and a higher level of confidence is included (Craig, 2019). Simulation methods have proven to be better than parametric methods when it comes to estimating VaR (Liu & Luger, 2022). However, the disadvantage is that historical volatility is too simple a method to calculate volatility that only uses the standard deviation formula (Marra, 2017). In this basic information, a delta-normal approach is developed that includes the covariance matrix as an additional parameter for the calculation. It belongs to the group of parametric VaR methods, with the main assumption of normally distributed returns (Kulali, 2016).

Problem and goal of the work

The problem of the work focuses on solving the question of which crisis had a stronger impact on individual indices as well as on the entire created portfolio. Given that the economy as a whole has cycles, crises as a phenomenon are not something unknown. What remains unknown is when which crisis will occur, and which sectors will be affected. Directly related to that, this paper tries to answer how which indices behaved during two crises in the 21st century. Mean-variance analysis is first performed to create an optimal portfolio. The purpose of creating an optimal portfolio is to find the best return through a combination of assets. When the optimal portfolio is created, the delta-normal VaR method will be applied. Turning to the subject of VaR, the main intention is to calculate the largest possible loss on a portfolio with a given probability in a given period (Buczynski & Chlebus, 2020).

Methodology

For the purposes of the analysis, four indices were taken into account. Each index represents one asset class, and the indices cover both developed and underdeveloped markets, and are as follows:

1. MSCI World Index: stock index;
2. Vanguard Total Bond Market Index Fund: bond index;
3. S&P GSCI Index – commodity index;
4. Vanguard Real Estate Index Fund Investors - real estate index.

To start the optimization process, it is necessary to collect data for all four indices from April 2007 to January 2022. Years. In this paper, daily data were taken from the website investing.com, with the intention of including all changes. Accordingly, the data will be imported into Python, where all analyzes will be performed.

Analysis of mean variance

This chapter deals with the topic of mean-variance analysis, focusing on the calculation and its fundamental understanding. Mean-variance theory is part of modern portfolio theory developed by Harry Markowitz. He examined the role of the relationship between risk and return and found that all investors are risk averse – they prefer less risk for the same expected amount of return (Reilly & Brown, 2003).

All investors aim to find an individually optimal portfolio. This means creating a portfolio that reflects their own preferences in terms of investment expectations. The optimal portfolio is the portfolio that achieves the highest expected return for a given risk, measured as a standard deviation (Hiller, 2022). This study will use a portfolio created from four different stock indices with the aim of creating an optimal portfolio with minimal risk. This portfolio will contain indices that reflect both developed and underdeveloped markets, as well as equity, bond, real estate and commodity markets. In this sense, the portfolio will reflect the entire market. The optimal portfolio can be calculated based on the closing price, expected return, standard deviation and correlation. The expected return for a portfolio can be calculated as follows (Markowitz, 1952):

$$[E(R]_p) = \sum_{i=1}^{N} w_i \cdot E(Ri) \qquad (1)$$

Wherein $E(Rp)$ expected portfolio return, w_i is the weighting of each asset class in the portfolio i R_i are the returns of all asset classes. Therefore, the expected return of the portfolio is the sum of the weighted returns of each asset class included in the portfolio. On the other hand, portfolio variance is not simply the weighted standard deviation of asset classes, because their correlation makes a difference in terms of estimated risk. Through diversification, it is possible to achieve a lower risk in the portfolio than the stock itself. Therefore, the general formula for portfolio risk can be calculated as follows (Hiller, 2022):

$$\sigma_p^2 = \sum_{i=1}^{N} \sum_{j=1}^{N} w_i w_j Cov(R_i, R_j) \qquad (2)$$

Where is σ_p^2 the portfolio variance, Cov is the covariance between any two assets. The ith row and jth column is the covariance between variables ii and j. The covariance between the variable and itself is the variance that represents the diagonal entries in the matrix (Hull, 2017).

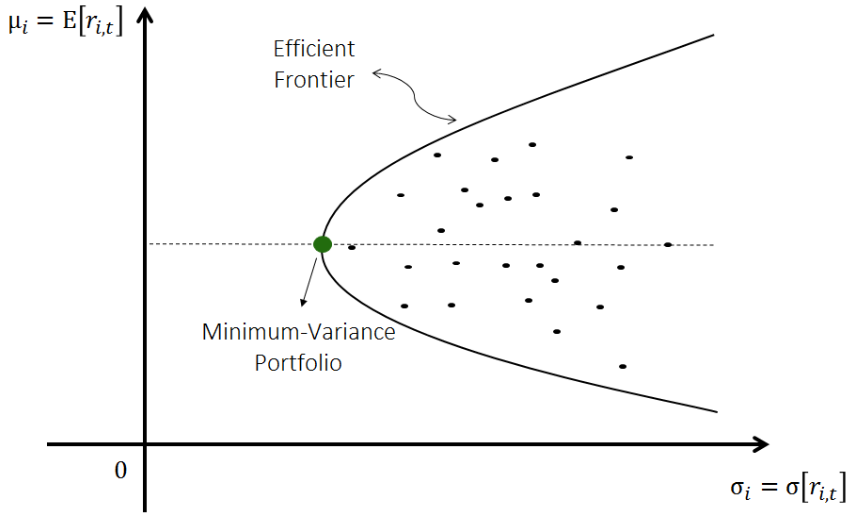
$$\begin{pmatrix} var_1 & \cdots & cov_{1n} \\ \vdots & \ddots & \vdots \\ cov_{n1} & \cdots & var_n \end{pmatrix} \qquad (3)$$

Two limitations are given (Markowitz, 1952):

3. $\sum_{i=1}^{n} w_i = 1$
4. $w_i \geq 0$

The first restriction is that the sum of the weights of each asset class must be equal to 1, and the second prohibits the sale of financial instruments that are not owned.

Chart 2: Mean variance analysis



Source: (Goncalves, 2022)

Once expected returns and risk are calculated, all their combinations can be shown on a graph (Goncalves, 2022). The line with optimal portfolios is called the efficient frontier. The X-axis shows the standard deviation and the Y-axis shows the return. Moving to the left of the x-axis results in less variance. Conversely, moving to the right leads to higher variance. Moving up the y-axis results in higher returns, moving down means lower returns. The portfolio furthest to the left on the x-axis represents the portfolio with minimum variance and is shown as a dot. Portfolios that are not in line do not outperform. They offer either higher risk for the same return or lower return for the same risk.

In this paper, as already mentioned, four stock market indices are used, so the formula for the expected portfolio and variance is as follows:

$$[E(R]_p) = w_1E(R_1) + w_2E(R_2) + w_3E(R_3) + w_4E(R_4) \quad (4)$$

R_2, R_4

(5)

One of the benefits brought about by Modern Portfolio Theory (MPT) is influencing traders to diversify their portfolios instead of concentrating on a single asset class. Although it was based on many restrictive assumptions, it allowed the estimation of portfolio risk and return. Some of the main assumptions are the normal distribution of returns and the rational behavior of investors (Rice, 2017).

Value at Risk (VaR)

VaR is a statistical measure generally used to analyze the market risk associated with financial assets or portfolios (Mensink & Neves, 1999). It dates back to 1995, when JP Morgan published the RiskMetrics paper, which explained VaR as a model. It was defined under that name only in 1995. After being introduced by JP Morgan, it became a widely used measure of market risk exposure. It provides a simple and easy-to-apply quantitative measure for assessing the overall market risk one is exposed to. It is also used by many risk managers to estimate the potential loss of a portfolio over a period of time and at a certain level of confidence.

There are two key elements to describe VaR (Olsen, 2020):

1. Time horizon – the longer the horizon, the higher the VaR. Once daily VaR is calculated, it can be extended to multiple days by multiplying by the square root of time. This is the case when returns are independently and identically distributed (iid) with a normal distribution (Jorion, 2007);

2. Confidence level – the higher the confidence level, the higher the VaR and the more scenarios are covered. The most commonly used probabilities are those of 95% and 99%. These elements can be described in one sentence: " We are X percent certain that we will not lose more than V dollars in time period T" (Hull, 2015). VaR is therefore defined as the amount of money that can be lost over a period of time at a certain level of confidence.

$VaR = \mu + \sigma N^{-1}(X)$(6)

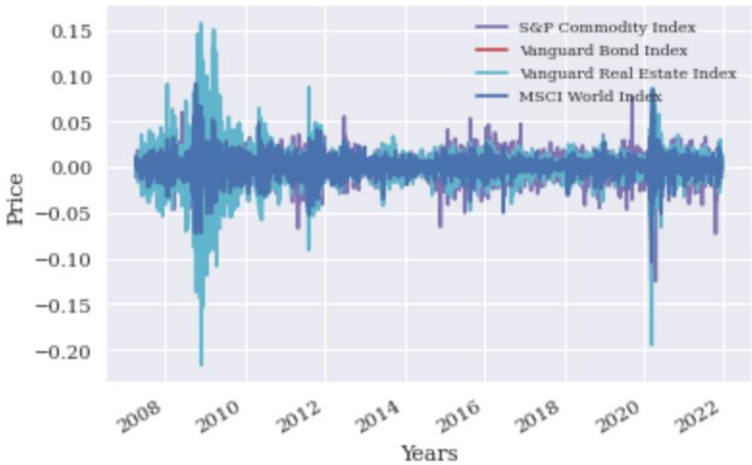
Wherein μ mean value, σ is the standard deviation of the portfolio, $N^{-1}(X)$ is the inverse cumulative normal distribution (Hull, 2017).

It can be said that if the VaR of the portfolio is 1 million per day with 95% certainty, there is only a 5% chance that the loss will be more than 1 million. The lack of VaR is pronounced here, because it does not say anything about the amount of loss if this 5% occurs. For this reason, VaR was often criticized and an additional measure was introduced, i.e. expected loss (ES) or conditional VaR (CVaR), which measures the average of all losses that are greater than VaR (Mendes, 2022). The use of CVaR instead of VaR has many advantages, such as the inclusion of losses higher than VaR, which solves one of the problems associated with VaR, but practice in the financial industry still strongly favors the use of VaR (Chipping, 2014). Another limitation of VaR is that it produces different results depending on the method used (Bedi, Shankar, Agnihotri, & Kalra, 2018). A further discussed disadvantage is that VaR does not have sub-additivity, which means that the VaR of a portfolio can be greater than the sum of the individual VaRs (Meissner, Bhaduri, Linsky, & Yuan, 2021) causing aggregation problems (Chen, Sit, & Wong, 2019). Solutions to most of VaR's shortcomings are found in CVaR, such as subadditivity and convexity (Francq & Zakoian, 2019).

Results of work with discussions

This chapter describes the results of the work. After inputting the libraries and dataset into the Python programming language, the returns for each index are calculated.

Diagram 1: Returns of all four indices



Source: Author based on data from the investing.com Platform

When looking at the presentation of the returns of all four indices in the following diagram, it can be concluded that:

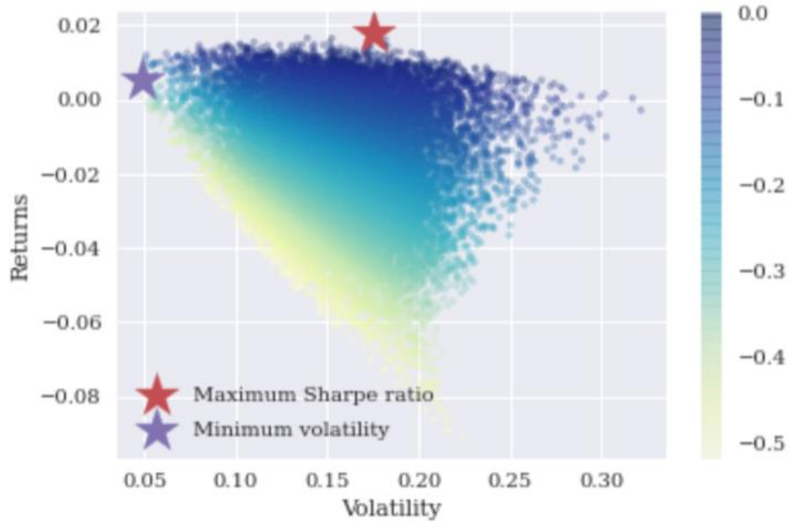
1. The Vanguard Bond index is the least volatile, because its red lines are not visible on the chart, i.e. lowest volatility;
2. The S&P Commodity index is not as pronounced compared to other indices;
3. The MSCI World Index shows higher deviations and deviations, as does the Vanguard Real Estate Index compared to the above indices, and shows the highest deviation during 2008, while the MSCI World Index shows the highest deviations during 2020.

With this result, it is now possible to find the appropriate weighting using portfolio theory. At this point a portfolio can be calculated with minimum volatility by generating random portfolios and finding the lowest standard deviation for the given weights. Based on the previous graph, it is expected, among other things, that the Vanguard Bond index will be relatively more represented and that Vanguard Real Estate and the S&P Commodity index, as the most volatile indices, will receive smaller weights. Since the investor in this case is not prone to risk, the alternative that offers minimum volatility is chosen. A computer calculation using mean-variance analysis suggests the following weights:

1. Vanguard Bond Index - 91.01%;
2. S&P Commodity Index - 1.94%;
3. Vanguard Real Estate Index - 5.90%;
4. MSCI World Index - 1.15%.

Compared to expectations, each point was confirmed, namely higher shares of the Vanguard Bond Index and lower shares of the Vanguard Real Estate and S&P Commodity indices. Diagram 2 shows all possible portfolio combinations. The investor can choose between all the points on the chart, with the maximum Sharpe ratio shown by the red dot and the minimum volatility portfolio by the purple dot. In this case, the investor is risk averse, so the purple point furthest to the left is chosen. This point offers minimum volatility, for a given yield.

Diagram 2: Simulated portfolio optimization based on the Efficient Frontier



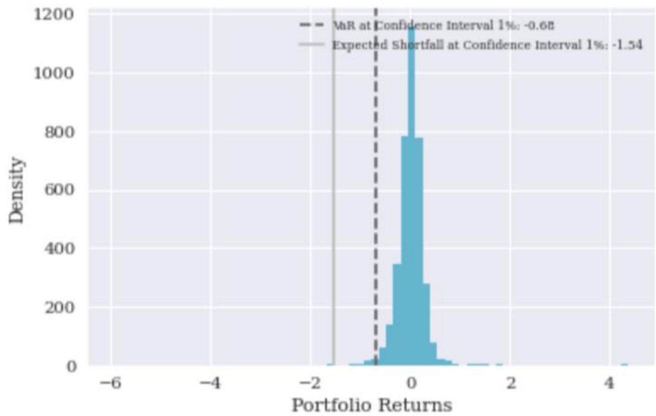
Source: Author based on data from the investing.com Platform

After assigning the weights, the return of the portfolio can be shown graphically for a given period in diagram 3. As can be seen on the specially plotted indices, here too the biggest deviation can be observed at the end of 2008 and 2020. Returns range from -3 to +4% in 2008, while in 2020 they vary from -6 to +4%, which confirms that the crisis in 2020 had a stronger impact on all asset classes, even on the portfolio created for risk-averse investors.

Diagram 3: Weighted portfolio returns

Source: Author based on data from the investing.com Platform

Diagram 4: Histogram of portfolio returns




```
99 % Confident the actual loss will not exceed -0.68 %
Expected Shortfall -1.54 %
```

Source: Author based on data from the investing.com Platform

Chart 4 shows the distribution of all portfolio returns for the period from April 2007 to January 2022 using two measures: the light gray line shows expected loss(ES) and the dark dotted line VaR.

VaR is calculated here as one percentile of sorted negative returns, and one can be 99% sure that the actual loss of the portfolio will not exceed 0.68% of the portfolio value in one day, while the expected loss is always higher and is 1.54%, calculated as an average the biggest losses.

Based on the results of descriptive statistics, it can be concluded that returns are not normally distributed. The standard deviation is lower, the skewness is higher and the kurtosis is much higher than in normally distributed returns. From the results, it can be implied that the returns are slightly negatively skewed, and that the kurtosis is positive - leptokurtic. Here one can recognize the risk of excess, which means that in some cases we get excessive returns, either positive or negative, in statistics known as extreme tails.

Conclusion

This paper deals with various topics related to programming, statistics and financial modeling with the main idea of looking at financial crises in the 21st century. After reading the various available literature, a gap was identified, with the definition of which the paper begins. Then the research methodology is described in detail. Formulas, graphs, parameters are defined and presented, as well as the sources used, so that the reader can use them if a part is difficult for him to understand. The results of calculations and analysis are described in detail.

The main conclusion of this paper is that the crisis in 2020 had a stronger impact on all indices, and led to greater volatility in income than the crisis in 2008. Further, a portfolio created through mean analysis for risk-averse investors confirmed these results, showing the highest volatility in the returns of the entire portfolio in 2020. Also, VaR is calculated in order to assess and quantify risk. Thus, the VaR result quantified with 99% certainty that the loss of the portfolio will not exceed 0.68% of the portfolio value in one day. The expected loss (ES) is always higher and amounts to 1.54%, calculated as the average of the largest losses.

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GODIŠNJI TROŠKOVI DISFUNKCIONALNE FLUKTUACIJE NA PRIMERU PROIZVODNE KOMPANIJE U SRBIJI

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Apstrakt

Visoka fluktuacija zaposlenih je velik problem savremenog poslovanja koji ima negativan efekat kako na uspešnost organizacije, tako i na profitabilnost. Cilj ovog rada je da izmeri finansijki efekat neželjene fluktuacije zaposlenih na godišnjem nivou u jednoj velikoj proizvodnoj kompaniji, kao i da proveri da li postoji značajnost razlike u finansijkim troškovima prilikom napuštanja kompanije od strane različitih kategorija zaposlenih. Rezultati finansijke analize disfunkcionalne fluktuacije, koju je sproveo Sektor za ljudske resurse, pokazuju da je negativan finansijki uticaj blizu 284.000 eura na godišnjem nivou. Utvrđeno je i da su troškovi ponovnog zapošljavanja kandidata za rukovodeće pozicije približno deset puta veći nego prilikom zapošljavanje operatera, a skoro šest puta veći nego za zapošljavanje kandidata na poslovima vezano za administaciju.

Ključne reči: *disfukcionalna fluktuacija, troškovi fluktuacije,finansijska analiza, ljudski resursi*

JEL: J3, M51

Uvod

Savremeni menadžment ljudskih resursa podrazumeva šire poslovne kompetencije profesionalaca koji se u praksi bave ovom oblašću, koje bi im omogućile lakšu izgradnju partnerstva sa rukovodstvom organizacije i postizanje očekivanog poslovnog rezultata. Sve više studija iz oblasti menadžmenta otvoreno ukazuju da poslovna funkcija koja se bavi upravljanjem ljudskim resursima mora postati strateški partner biznisu (Ulrich, Schieman and Sartain 2020) ukoliko želi da ima kredibilnu ulogu u organizaciji. Od profesionalaca iz oblasti ljudskih resursa (u daljem tekstu umesto ljudskih resursa koristiće se skraćenica HR) se danas očekuje da imaju široko razumevanje poslovnih principa iz različitih oblasti poput

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proizvodnje, finansija, marketinga, prodaje i sl. kako bi ispravno usmerili organizacione aktivnosti vezane za upravljanje zaposlenima.

U skladu sa ovim očekivanjima, u oblasti menadžmenta ljudskih resursa relativno dugo je bio zanemaren napor da se računaju finansijske i ekonomske posledice uticaja i posledica različitih obrazaca ponašanja zaposlenih na samu organizaciju. Jedna od najčešćih analiziranih pojava tiče se razumevanja fluktuacije zaposlenih, stalnog i dugogodišnjeg problema gotovo svih organizacija (Smith, 2018). U cilju uspešnog upravljanja organizacijom je i efikasno rešavanje fluktuacije, kao jedna od važnijih aktivnosti kojima se, u savremenim organizacijama, bavi sektor ljudskih resursa. Ova pojava je kadrovski i organizacioni problem, i ima negativan uticaj na poslovnu uspešnost i finansijske pokazatelje organizacija.

Pregled literature

Nije svaka fluktuacija obavezno negativna pojava po organizaciju jer je to i prirodan način da se nadopuni radna snaga i izvrši pozitivan uticaj na postojeće znanje i ustaljene načine rada u organizaciji. Do funkcionalne fluktuacije dolazi kada organizacija inicira prekid radnog odnosa sa zaposlenom ili zaposleni, ne svojom voljom, podnese ostavku na svoj položaj. Razlog za napuštanje organizacije su različiti, a najčešće je u pitanju loš učinak od strane zaposlenog, disciplinski problemi ili pak do otpuštanja dolazi zbog prevremeno penzionisanje, restrukturiranja ili reorganizacije (Dwesini, 2019). S druge strane, dobrovoljna ili disfunkcionalna fluktuacija se dešava kada zaposleni odluči da napusti kompaniju svojom voljom, zbog čega se svi otkazi ugovora o radu koji nisu formalno pokrenuti od strane poslodavaca, smatraju dobrovoljnom fluktuacijom (Dwesini, 2019). U ovom slučaju, fluktuacija ima negativne efekte jer, po pravilu, najbolji zaposleni odlaze kod drugih poslodavaca, dok oni koji su lošiji ostaju i dalje u organizaciji (Asimah, 2018). Iako je mali broj istraživanja na ovu temu, nalazi nekih autora (Sulek, Trembath et al. 2017), sugerišu da fluktuacija ima negativan uticaj na kvalitet rada i poslovno postignuće na preostale zaposlene u okviru organizacije.

Neizbežna fluktuacija je rezultat poslovnih i životnih odluka i okolnosti koje su van kontrole zaposlenih, dok se do fluktuacije koja se može izbeći dolazi kada rukovodstvo unapredi sprovođenje efektivnih praksi u oblasti menadžmenta ljudskih resursa (Dwesini, 2019). Važno da se poslodavac na sistemskom nivou bavi dobrovoljnom ili disfunkcionalnom fluktuacijom u cilju pronalaženja prave strategiji za zadržavanje svojih zaposlenih. Da bi zadržala svoje radnike, organizacija mora da razumevanje potreba svojih zaposlenih, što bi bila osnova za razvijanje i usvajanje adekvatne strategije za zadržavanje zaposlenih.

Fluktuacija je organizacioni fenomen koji se relativno sporo razvija, jer odlazeći zaposleni ne napuštaju organizaciju odjednom, pa je socijalnim trendovima potrebno neko vreme da se manifestuju. Podaci o fluktuaciji zaposlenih se procesuiraju u odnosu na određene vremenske periode koji te podatke čine značajnijim. Visina fluktuacija se izražava u procentima, a odnosi se na broj zaposlenih koji napuštaju organizaciju u toku određenog vremenskog perioda, odnosno procenat otišlih u odnosu na ukupan broj zaposlenih (Siebert and Zubanov, 2009). Za procenu stope fluktuacije u odnosu na godišnji ciklus se najčešće kumulativno analiziraju stope fluktuacije za određene mesece ili kvartale tokom godine (Newcomb, Camblin et al. 2019). Važna činjenica koja se odnosi na fluktuaciju u organizacijama jeste da li rukovodstvo organizacije ima tačnu procenu i empirijske dokaze vezano za troškove ove pojave, kako bi se bavilo strategijom za minimiziranje fluktuacije. Iako je zbog procena koje dolaze iz različitih organizacionih okruženja, teško generalizirati nalaze, autori (Larson et al. 2016) su izneli opšte smernice za troškove koje organizacija treba da uzme u obzir prilikom izračunavanja troškova fluktuacije. Ne smeju se izgubiti iz vida izgubljeni resursi poput potrošenog vremena za traženje novog kandidata i smanjene produktivnosti na tom radnom mestu u vreme dok je radna pozicija bila nepopunjena (Beato, 2017). Odlazak zaposlenih dovodi do troškova poput dodatnog vremena zaposlenih u ljudskim resursima potrebnog za ispunjavanje zahteva procedure za prestanak rada, troškove prekovremenog rada i druge troškove privremenih zaposlenih potrebnih za obavljanje tekućih dužnosti. Kada organizacija angažuje zamenskog zaposlenog, treba da izračuna troškove obuke, uključujući materijale, vreme za obuku novo zaposlenog za samostalan rad i dodatno vreme trenera. Organizacija mora da identifikuje i ove troškove, kao i sve druge relevantne troškov, da ih pažljivo notifikuje, prati i analizira kako bi mogla da izračuna stvarni trošak koji se odnosi na specifični kontekst organizacije, jer visoki troškovi koji proizilaze iz fluktuacije zaposlenih negativno utiču na učinak organizacije, na prodaju, konkurentnost i profitabilnost (Osborne and Hammoud, 2017). Potrebno je dodati i da visoka fluktuacija zaposlenih, ima ozbiljan negativan uticaj na organizaciju ne samo na finansijskom, nego i na emocionalnom nivou zbog loše i demotivišuće radne atmosfere u kolektivu (Reina, Rogers et al., 2018). Problemi se dodatno multipliciraju kada odlaskom zaposlenog nestanu i profesionalna znanja, veštine i iskustva stečena radom u samoj organizaciji (Noh, Jang and Choi, 2019).

Iako je fenomen fluktuacije zaposlenih, u poslovnom životu, takoreći permanentno prisutan (Smith, 2018), istraživanja na temu razloga i namera napuštanja organizacije od strane zaposlenih je dugo bila jedna od glavnih razloga za strepnju kod menadžmenta savremenih organizacija (Belete, 2018) posebno uzimajući u obzir veliku globalnu konkurenciju na tržištu sa kojom se savremene organizacije susreću (Alias, Ismail et al., 2018). Potrebno je reći i da visok nivo nezaposlenosti, samo po sebi otežava radnicima da pronađu odgovarajući posao, što pored dominantno negativnog uticaja na ekonomski razvoj, ima i pozitivan uticaj na smanjenje fluktuacije zaposlenih, uglavnom zbog spoljašnjih faktora vezano za organizaciju kao što je opšta nestabilnost na tržištu radne snage (Al-suraihi, Wahab et al., 2020).

Ključni nalazi istraživanja na temu fluktuacije radnika pokazuju da zaposleni imaju nekoliko razloga da napuste svoja radna mesta, poput stresa na poslu (Chiat and Pantik, 2019). Stres je napetost koja uglavnom negativno utiče na emocije, misli i fizičko stanje osobe, i kao takav ima značajan uticaj na nameru za napuštanjem organizacije, a takođe negativno utiče i na nedostatak zadovoljstva poslom, uključujući i zadovoljstvo platom (Hakim and Sudarmiatin, 2018). Jedan od važnih uslova za ostanak i nenapuštanje organizacije je i zadovoljstvo zaradom zaposlenih, zahvaljujući strukturi i sistemu plata u organizaciji, kao i doživljaju pravičnosti politika plata i beneficija (Hung et al., 2018).

Pored toga, potrebno je obratiti pažnju i na fenomen izgaranja ili sagorevanja na poslu, koje je posledica hroničnog stresa kojem zaposleni može biti izložen na radnom mestu, a koga, između ostalog, karakteriše emocionalna iscrpljenost, nezadovoljstvo i smanjena, ne samo radna nego i opšte životna efikasnost zaposlenih (Yu and Lee, 2018). Dodatno, zaposleni sve češće napuštaju organizaciju i zbog i nemanjem mogućnosti za balansom između poslovnog i privatnog života (Hakim and Sudarmiatin, 2018).

Neka istraživanja pokazuju da lideri i menadžeri svojim ponašanjem i ličnim primerom, mogu uticati i na fluktuaciju, kao i na zadržavanje zaposlenih (Reina, Rogers, Peterson at al. 2018). Faktori poput promena u stilu i načinu upravljanja, način tretiranja zaposlenih,agresivnost i nepoverenje u radu prema zaposlenima, utiču na povećanje fluktuacije (Reina, Rogers, Peterson at al. 2018) i smanjenja entuzijazma i nezadovoljstva zaposlenih. Nedostatak stručnog kredibiliteta i snage rukovodstva, takođe vodi do fluktuacije zaposlenih (Azam, Khan and Khan, 2019). Zaposleni imaju tendenciju da ostanu u onim organizacijama u kojima menadžeri ne pokazuju autoritarno ponašanje i nezainteresovanost za ljude, a mnogi studije (Hom et al., 2017) pokazuju da percepcija fer i pravednog tretmana koje se tiču same prirode posla imaju veliki uticaj na zadržavanje zaposlenih

Takođe i organizaciona kultura koja je usklađena sa potrebama i ciljevima zaposlenih, pozitivno utiče na poboljšanu percepciju radnika vezano za kvalitet njihovog profesionalnog života, što rezultira posvećenošću radnika, što dovodi do poboljšanja organizacionih performansi i poboljšanja efikasnosti (Holston-Okae and Mushi, 2018). Efektivna organizaciona kultura angažuje zaposlene na osnovnom nivou i transformiše to angažovanje ka visokoj produktivnosti, što je između ostalog, dobra strategija za zadržavanje radnika.

Nivoi fluktuacije mogu varirati u odnosu na zanimanje zaposlenih, industriju i sektor u kome rade. Tradicionalno, fluktuacija je visoka u trgovini (poput maloprodaje ili velikih trgovinskih lanaca), uslužnim delatnostima (poput hotelijerstva, ugostiteljstva i rekreacije), *call centrima* i sl., odnosno u industrijama i oblastima rada koje spadaju u niže plaćene grupe poslova, najčešće u privatnom sektoru.

Troškovi fluktuacije

Kada je stopa fluktuacije u organizaciju visoka, to negativno utiče na konkurentnost i profitabilnost organizacije. Zato što se radi o negativnom fenomenu koji je u vezi sa gubitkom ljudskog kapitala (Dwesini, 2018). Organizacioni lideri mogu razviti adekvatnu strategiju za poboljšanje konkurentnosti i profitabilnosti, ukoliko upoznaju uzroke fluktuacije. Dodatno, za analizu je neophodno i tačno definisati vrstu i visinu troškova vezanih za fluktuaciju. U praksi se mnogi elementi, posebno oni vezani za indirektne troškove, se ne prate i ne beleže, ili se teško kvantifikuju. Takođe je važno proceniti razliku između funkcionalne i disfunkcionalne fluktuacije jer je jedna poželjna, a druga nepoželjna.

Disfukncionalan trošak visoke fluktuacije je, po pravilu, visok trošak za organizaciju, a predstavlja i direktan i indirektan trošak (*Tabela 1*). Za stručnjake iz oblasti menadžmenta ljudskih resursa je veoma važno da izračunaju i analiziraju ovaj trošak, kako zbog sveobuhvatnog sagledavanja uzroka i posledica problema vezanih za fluktuaciju, tako i zbog dobijanja podrške od strane top menadžmenta za dalje organizacione inicijative za rešavanje ovog problema.

Tabela 1. Direktni i indirektni troškovi fluktuacije zaposlenih

Direktni troškovi fluktuacije	**Indirektni troškovi fluktuacije**
Vreme potrebno administraciji u Sektoru ljudskih resursa za obradu dokumentacije za odlazećeg radnika	Zaposleni je manje motivisan i produktivan od momenta kada je odlučio da napusti organizaciju
Troškovi oglašavanja slobodne pozicije	Novozaposleni je nedovoljno produktivan i efikasan u početku
Vreme HR osoblja potrebno za proces novog zapošljavanja (pregled pristiglih Cv-ja, intervju itd.)	Smanjena motivacija i pad produktivnosti kod zaposlenih sa kojima je odlazeći zaposleni radio
Troškovi ’pokrivanja’ nepopunjene pozicije (prekovremeni rad, privremena zamena i sl.)	Moguće narušavanje relacije sa poslovnim partnerima
Rad HR tima sa novim zaposlenim	Smanjeni ROI za sve treninge i razvojne programe koje je odlazeći zaposleni pohađao
Troškovi za novog zaposlenog (npr. radno odelo i cipele, telefon, kompjuter i sl.)	Informacije o kompanije mogu lako procuriti do konkurencije
On boarding i osnovni treninzi za uvođenje u posao (bezbednost na radu i sl.)	Šteta za reputaciju kompanije ukoliko je visoka fluktuacija ili zaposleni ode u lošim okolnostima

Izvor: Taylor and Woodhams, 2016

Postoji i klasifikacija troškova fluktuacije u različite kategorije, uključujući direktni ili indirektni, vidljivi ili nevidljivi, pre i posle angažovanja zaposlenog (Kiernan, 2018). Većina ovih modela uključuje troškove regrutovanja, selekcije, zapošljavanja, obuke i popunjavanja konkursa. Mnogi takođe uključuju i trošak izgubljene produktivnosti, kada postojeći zaposleni moraju da prihvate neke od obaveza odlazećeg zaposlenog zbog upražnjenog radnog mesta. Neki modeli uključuju i troškove kao što su gubitak organizacionog znanja i druge negativne efekti na radno okruženje. Bez obzira koji model se koristi, mnogi od ovih troškova nisu vidljivi, ni lako kvantifikovani. Kao rezultat toga, poslodavci imaju tendenciju da potcenjuju cenu fluktuacije.

Najèešæa klasifikacija kategorija troškova kao posledice neželjene fluktuacije je na: direktne, indirektne i oportune troškovi fluktuacije.

U samom momentu kada zaposleni napušta organizaciju, ovaj događaj se ne smatra direktnim troškom. Prateæi administrativni poslovi vezani za napuštanje posla, kao što su, na primer, odjava sa centralne baze zaposlenih, priprema radno-pravne dokumentacije za završetak radnog odnosa, pisanje preporuke, vracìanje i kontrola opreme za rad, izlazni intervju i sl. su aktivnosti koje ipak proizvode troškove, ali se oni uobièajeno u finansijskom smislu vode kao zajednièki (engl. *overhead*), administrativni troškovi. Međutim, radi se o troškovima koji po svojoj prirodi ipak nisu zajednièki, jer se mogu direktno alocirati (Plinke and Rese, 2006, str. 36).

Ako se vratimo na trenutak davanja otkaza od strane zaposlenog i korake koji slede nakon ove odluke, pojednostavljeno gledište da se ovaj događaj ne smatra direktnim troškom se, ipak, menja. Naime, novi konkurs kojim se mora pronaæi i zaposliti zamena za odlazeæeg zaposlenog, provocira širok spektar direktnih troškova. Pojava i visina ovih troškova zavisi od toga da li je upražnjeno radno mesto popunjeno iznutra (internim resursima) ili van organizacije (spoljašnje tržište rada). Dodatno, za zaposlene koji napuste organizaciju, veæ na samom poèetku svog radnog angažmana, u prva tri meseca rada u organizaciji, se smatra da imaju mali ili nikakav povracìaj investicija uloženih u njihovo zapošljavanje, a sa finansijskog aspekta ovakvo zapošljavanje predstavlja èist gubitak.

Indirektni troškovi fluktuacije zaposlenih uključuju narušene organizacione procese, smanjenu motivaciju i radni moral, potrebno vreme adaptacije za rad novih zaposlenih.

Sa aspekta samog procesa zapošljavanja, za analizu indirektnih troškova, pitanje internog ili eksternog zapošljavanja za zamenu odlazeæeg zaposlenog postaje manje relevantno. Takođe, sa aspekta kolièine i vrste posla u okviru kadrovske administracije, mala je razlika između novo-regrutovanog zaposlenog i postojecìeg zaposlenog koji je premešten na drugo radno mesto. Jedine dodatne aktivnosti su pregovaranje o elementima novog ugovora o radu i eventualno novi lekarski pregledi, ukoliko su potrebni. Obièno su to vrste troškova koje se mogu dodeliti prema mestu porekla, iako prema principu uzroènosti to nije u potpunosti taèno. S tim u vezi se može desiti da u sluèaju da pojedinaèna organizaciona jedinica uzrokuje neopravdano visoke troškove fluktuacije u poreðenju sa drugima, sistem alociranja troškova bude prilagoðen, iako najèešæa trenutna praksa obièno funkcioniše sa fiksnim formulama alokacije troškova.

U poređenju sa relativno zanemarljivim indirektnim troškovima, oportuni troškovi fluktuacije su relevantni koliko i direktni troškovi. Posebno se moraju uzeti u obzir i znanja i veštine koje su izgubljene dotadašnjim ulaganjem u profesionalni razvoj odlazećeg zaposlenog. Praksa u oblasti ljudskih resursa pokazuje i da ostanak bez, na primer, specijaliste za treninge, može dovesti do toga da se interni treninzi ne mogu više obavljati u samostalnoj organizaciji zbog nedostatka internih kompetencija i resursa, i da ih je potrebno nabaviti spolja po znatno većim troškovima.

Cilj i metodologija rada

Primarni cilj poslovne analize privrednog društva XY, koje predstavlja veliku internacionalnu proizvodnu kompaniju, koja posluje u oblasti industrije nameštaja, bio je da se izmere finansijske posledice disfunkcionalne fluktuacije, na godišnjem nivou. Drugi cilj je bio da se utvrdi da li postoji i kolika je razlika u visini troškova, u odnosu na kategoriju zaposlenih koji su napustili kompaniju XY.

Kompaniju XY je u toku jedne kalendarske godine, u periodu od oktobra 2020. do septembra 2021. godine, svojevoljno napustilo ukupno 194 zaposlena. U to vreme kompanija je zapošljavala, u proseku, na godišnjem nivou oko 1.000 zaposlenih. Svi zaposleni koji su svojevoljno napustili kompaniju, su u svrhu ove analize, podeljeni u tri kategorije, a u odnosu na vrstu posla koju su obavljali: operateri (N = 158), administracija (N = 30) i rukovodstvo (N = 6). Prilikom obraèuna ukupnih troškova fluktuacije, korišæen je on-line kalkulator fluktuacije prema formulama implementiranim u excel dokumentu (https:// www.collage.co/tools/cost-of-employee-turnover-calculator).

Rezultati i diskusija

Prva faza analize podrazumevala je klasifikaciju svih razloga napuštanja organizacije. Podaci su uzimani iz baze dokumentacije iz oblasti radno-pravnih odnosa kako bi se za procenu visine troškova disfunkcionalne fluktuacije izdvojili samo sluèajevi samoinicijativnog napuštanja (otkaz ugovora o radu od strane zaposlenog). Drugi izvor podataka za analizu je bio platni spisak i svi povezani troškovi vezano za zarade zaposlenih koji su vlastitom voljom napustili organizaciju. U ovom konkretnom sluèaju radilo se o ugovorenoj zaradi, ali i o varijabilnoj zaradi, kao i pripadajuæim bonusima i beneficijama koje su zaposleni ostvarili. Ovi troškovi su prikazani sa pripadajuæim porezima i doprinosima, odnosno u bruto[2] iznosu, kao ukupni trošak zarada za kompaniju.

Visina godišnje zarade su raèunate na bazi 285 radnih dana za radnike koji pripadaju kategoriji operatera u proizvodnji, jer proizvodnja radi i subotom, kao i na bazi 261 radna dana za administraciju i rukovodioce. U obzir su uzete i sve ostvarene varijabilne zarade i bonusi koji su isplaæeni u periodu za koji je rađena anliza.

Tabela 2. Troškovi zarada po radnoj poziciji odnosno kategoriji, po danu i na godišnjem nivou sa ukljuèenim porezima i doprinosima, izraženi u dinarima (RSD)

Troškovi zarada zaposlenih	OPERATERI		ADMINISTRACIJA		RUKOVODIOCI	
	Po osobi	**Ukupno**	**Po osobi**	**Ukupno**	**Po osobi**	**Ukupno**
Broj radnika koji napuštaju organizaciju	1	158	1	30	1	6
Godišnja bruto 2 zarada (RSD)	713,640	112,755,120	1,321,704	39,651,120	4,898,448	29,390,688
Godišnji bonusi, dodaci (RSD)	259,920	41,067,360	52,200	1,566,000	448,920	2,693,520
Dnevni trošak (Plata + Beneficije) - RSD	3,416	539,728	5,264	157,920	20,488	122,928

Paralelno su procenjivani troškovi koji su nastajali kao posledica smanjene produktivnosti zbog privremeno nepopunjenih ranih mesta i èinjenice da su u to vreme postojeæi zaposleni popunjavali upražnjena radna mesta dok se ne zaposli nova osoba (*Tabela 3*). Ovo je trošak prekovremenih radnih sati postojecìih zaposlenih koji su obavljali posao upražnjenog radnog mesta zajedno sa svojim poslom. Ova cifra je raèunata korišæenjem stope obraèuna od 37% cene dnevnice odlazeæeg radnika, a po ugledu na sliènu kalkulaciju, dostupno na sajtu (www.collage.co/tools/cost-of-employee-turnover-calculator/).

Tabela 3. Troškovi slobodnog radnog mesta (smanjena produktivnost zaposlenih koji zamenjuju radnika koji je otišao, izražen u dinarima (RSD)

Troškovi slobodnog radnog mesta	**Operater**		**Administracija**		**Rukovodioci**	
	Po osobi	**Ukupno**	**Po osobi**	**Ukupno**	**Po osobi**	**Ukupno**
Broj zaposlenih koji su napustili radno mesto	1	158	1	30	1	6
Dnevni trošak zamene za nepopunjenu poziciju	1,263.92	199,699.36	1,947.68	58,430.40	7,580.56	45,483.36
Proseèan broj dana da su radne pozicije nepopunjene	5	5	30	30	60	60
Troškovi slobodnog radnog mesta	**Operater**		**Administracija**		**Rukovodioci**	
	Po osobi	**Ukupno**	**Po osobi**	**Ukupno**	**Po osobi**	**Ukupno**
Ukupni trošak da se "pokrije" pozicija	6,319.60	998,496.80	58,430.40	1,752,912	454,833.60	2,729,001.60

Vršena je i procena troškova izlaznog intervjua, kao proizvod visine satnice Specijaliste za zapošljavanje i potrebnog vremena za ovu vrstu posla. Ove poslove u Sektoru ljudskih resursa obavlja Specijalista za zapošljavanje. Kalkulacija obračuna satnice specijaliste za zapošljavanje je bazirana na 261 radnom danu ili ukupno 2088 radnih sati na nivou godine. Bruto godišnja zarada specijaliste za zapošljavanje iznosi 1,401,197.00 RSD ili po satu 715.81 RSD.

Slično su procenjivani i administrativni troškovi vezani za pripremu dokumentacije za prekid radnog odnosa, odjavljivanje sa Centralnog registra socijalnog osiguranja (CROSO), promene na platnom spisku, vreme provedeno na raznim formularima poput obeveštavanja kreditora i sl. Troškovi zapošljavanja zamene za odlazećeg zaposlenog podrazumevali su troškove objavljivanja oglasa za slobodno radno mesto (internet, radio). Iskazani su i troškovi vezani za potrebno vreme specijalisti za zapošljavanje za pregled pristiglih biografija, telefonske pozive kandidatima, vođenje intervjua, procene kandidata, proveru referenci, pripreme ponude za zapošljavanje i slanja obaveštenja neuspešnim kandidatima. Za operaterske pozicije, u odnosu na druge, ovo vreme je značajno kraće jer su i selektivni kriterijumi za prijem u radni odnos daleko niži. Broj potrošenih radnih sati koje je specijalista za zapošljavanje proveo intervjuišući interno kandidate, zajedno sa troškovima odsustva tih kandidata sa posla prilikom intervjuisanja, ovom prilikom nisu računati. Naime, nije bilo dostupno dovoljno relevantnih podatka poput, na primer, broja radnih mesta koja su popunjena internim resursima, kao ni broja, a ni vrste internih kandidata koji su učestvovali u ovim selekcijama.

Određivan je i trošak učestvovanja rukovodećeg kadra u procesu zapošljavanja, uzimanjem u obzir vremena za objašnjenje zahteva slobodne pozicije, pregleda biografija kandidata, te intervjuisanje.

Tabela 4. Troškovi napuštanja i troškovi zapošljavanja zamene odlazećeg zaposlenog, izraženi u dinarima (RSD)

TROŠKOVI NAPUŠTANJA & TROŠKOVI ZAPOŠLJAVANJA ZAMENE	Operateri		Administracija		Rukovodioci	
	Broj sati	Trošak (RSD)	Broj sati	Trošak (RSD)	Broj sati	Trošak (RSD)
Odlazeći zaposleni - Troškovi izlaznog intervjua	0.50	357.90	2	1,431.62	2	1,431.62
Odlazeći zaposleni - Drugi troškovi	2	1,431.62	2	1,431.62	2	1,431.62
Zapošljavanje - Pregled CV-jeva	1.25	894.76	10	7,158.09	15	10,737.14
Zapošljavanje - Intervjui	0.50	357.90	1.80	1,288.46	4	2,863.24
Ukupan broj radnih sati da se popuni pozicija	1.75	1,252.67	11.80	8,446.55	19	13,600.38
Zapošljavanje - Troškovi oglašavanja ili korišćenja specijalizovanih agencija za zapošljavanje za pozicije rukovodilaca	/	5,000	/	10,666	/	476,750
Zapošljavanje - Drugi troškovi (uniforma, oprema za rad, lap topovi, telefoni i sl.)	/	12,700	/	65,000	/	120,000
Total troškovi zamene po zaposlenom (rsd)	20,742.19		86,975.79		613,213.62	

Broj odlazećih zaposlenih	158	30	6
Total troškovi zapošljavanja zamene (rsd)	3,277,266.05	2,609,273.68	3,679,281.70

Troškovi treninga orijentacije u toku procesa uvođenja u posao za novozaposlenog su računati tako što je pomnožena vrednost radnog sata pozicije koja najčešće sprovodi proces orijentacije u kompaniji sa potrebnim brojem sati za ovaj proces, a u odnosu na kategoriju zaposlenih koji se zapošljavaju. Broj radnih sati za ovu aktivnost se razlikuje kao i broj potrebnih sati svih uključenih lica u ovaj proces, poput mentora i rukovodioca odeljenja.

Tabela 5. Troškovi treninga u toku procesa orijentacije za novozaposlene izraženi u dinarima (RSD)

Troškovi treninga orjentacije za novozaposlene	**Operateri**	**Administracija**	**Rukovodioci**
Broj radniih mesta za koje je potrebno organizovati proces orjentacije	158	30	6
Prosečna plata rukovodioca/menadžera (RSD)	1.401.197,00	1.401.197	4.955.640
Cena radnog sata za proces orjentacije u koju su uključeni rukovodioci i menadžeri (RSD)	5.368,57	5.368,57	18.987,13
Ukupan broj trening dana	316	30	6
Total trošak treninga novozaposlenog po kategoriji radnih mesta (RSD)	1.696.468,40	161.057,13	113.922,76

I na kraju su dodati procenjeni troškovi izgubljene produktivnosti (*Tabela 6*) koje se prirodno može očekivati u početku rada na novom radnom mestu kod svih zaposlenih, nevezano za radnu poziciju. Sve dok se novozaposleni adaptiraju na posao, ili uèe kako se odreðeni procesi i poslovi obavljaju, dok se upoznaju sa politikama, procedurama i radnom praksom kompanije, oni nisu u potpunosti produktivni. Koristitili smo se procenom da zaposleni doprinosi sa 50% svog potencijalnog nivoa produktivnosti u odnosu na zaposlenog koji je otišao. Vreme adaptacije se naravno razlikuje od individue, do individue i zavisi od brojnih elemenata poput obrazovanja, iskustva, vrste radnog mesta i sl. Za potrebe ovog projekta Sektor ljudskih resursa je u odnosu na svoje profesionalno iskustvo dao procenu da se na administrativnim i menadžerskih poslovima može očekivati puna produktivnost već nakon mesec dana (kandidati na ovim pozicijama su uglavnom visoko obrazovani, sa relevantnim poslovnim iskustvom). Sa druge strane, za operaterske poslove, zbog specifičnog proizvodnog procesa i načina rada (kao i nižeg nivoa obrazovanja), puna produktivnost se može očekivati nakon 45 radnih dana.

Tabela 6. Trošak smanjene produktivnosti (50%) u odnosu na vreme potrebno do pune produktivnosti po kategorijama radnih mesta, izražen u dinarima (RSD)

Potrebno vreme do pune produktivnosti	Operateri	Administracija	Rukovodioci
Broj radnika koji napuštaju	158	30	6
Dnevni trošak zaposlenog (RSD)	3,416	5,264	20,488
Broj dana do 100% Produktivnosti	45	30	30
Trošak smanjene produktivnosti (RSD)	12,143,880	2,368,800	1,843,920

Ukupni troškovi su dobijeni zbirom svih do sada navedenih, a prikazani su u *tabeli 7.*

Tabela 7. Ukupni trošak disfunkcionalne fluktuacije iskazan u dinarima i evrima

	Operateri	Administracija	Rukovodioci
Ukupan trošak (RSD) disfunkcionalne fluktuacije za period:X 2020. – IX 2021.	18.116.111,24	6.892.042,81	8.348.958,64
Total (RSD)	33.357.112,69		
Total (EUR)	283.721,30		

Nakon proračuna ukupnog troška vezanog za disfunkcionalnu fluktuaciju, a koji se odnosi na period od godinu dana, želelo se istražiti da li postoji statistički značajna razlika u visini troškova fluktuacije u odnosu na kategoriju zaposlenih koji su napustili kompaniju.

U tu svrhu je korišćena analiza varijanse kojom su obuhvaćeni svi troškovi koji se odnose na pojedinačnog zaposlenog. Svi indikatori koji su se odnosili na ukupan broj radnika su preračunati tako da se svedu na trošak za jednom otišlom radniku (osobi). U *tabeli 8* prikazani su indikatori troškova izraženi u dinarima, koji su se koristili u analizi varijanse.

Tabela 8. Prosečne vrednosti troškova fluktuacije u odnosu na poziciju

Kategorija	Aritmetička sredina	SD
Operateri	13542.42	26035.60
Administracija	21413.05	31602.70
Rukovodioci	117440.09	179796.25

Legenda: SD – standardna devijacija

Razlike u prosečnim vrednostima troškova proverene su jednosmernom analizom varijanse za nezavisne uzorke. Analiza varijanse je pokazala da bez ozbira na numeričke razlike u aritmetičkim sredinama, one nisu statistički značajne: $F(2,21)=2.36$, $p=0.12$. Odsustvo značajnosti je posledica toga što se varijanse grupa statistički značajno razlikuju (Levinov test jednakosti varijansi je statistički značajan $p<0.001$), tako da razlike između grupa nisu mogle dostići statističku značajnost.

Ipak, bez obzira na odsustvo značajnosti, može se zaključiti na osnovu prosečnih troškova (*Tabela 8*), da su troškovi za zapošljavanje kandidata za rukovodeće pozicije skoro deset puta veći nego za zapošljavanje operatera, a skoro šest puta veći nego za zapošljavanje ljudi na poslovima administratora.

Zaključak

Pitanjem praktičnog rešavanja visoke fluktuacije, u najvećem broju organizacija, se obično bavi funkcija ljudskih resursa. Uobičajeni način je orijentisan ka razumevanju najčešćih uzroka zbog kojih zaposleni odlaze, kao i ka osmišljavanju strategije za njihovo zadržavanje. Međutim, za podizanje poslovnog kredibiliteta i pozicioniranje funkcije menadžmenta ljudskih resursa na strateški nivo, kao relevantnog biznis partnera, od ove poslovne funkcije se očekuje da ume da pripremi obračun finansijskih posledica različitih obrazaca ponašanja zaposlenih na organizaciju ~~(Tziner and Birat, 1996).~~ Oslanjanjem na konkretne podatke i njihove finansijke implikacije, funkcija ljudskih resursa lakše donosi relevantne poslovne odluke. Ovakvim pristupom se istovremeno obezbeđuje adekvatna podrška od strane top menadžmenta kompanije, za inicijative koje su usmerene ka smanjenju fluktuacije.

U želji da obezbedi i usmeri pažnju celokupnog menadžmenta kompanije na ovu patološku pojavu i njene posledice u organizaciji, sektor ljudskih resursa XY kompanije je uradio procenu i proračun troškova izazvanih disfunkcionalnom fluktuacijom. Svojevoljni odlazak 194 zaposlena je za kompaniju bio trošak u visini od blizu 284.000€ na godišnjem nivou. Sa aspekta pojedinačnog troška u odnosu na radno mesto, očekivano je najveći trošak prilikom odlaska i zamene rukovodioca, a posledično najmanji prilikom napuštanja operatera.

U daljim analizama posledica disfunkcionalne fluktuacije, da bi se dobila još potpunija slika, bilo bi potrebno uraditi procenu kako disfunkcionalna fluktuacija utiče na ukupnu produktivnost kompanije, kvalitet proizvoda, visinu škarta i sl. Ovom analizom nije bila procenjena šteta zbog negativnog uticaja na reputaciju kompanije i njen brend poslodavca, što bi bila svakako preporuka za dalje istraživanje.

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ANNUAL COSTS OF DYSFUNCTIONAL FLUCTUATION ON THE EXAMPLE OF A MANUFACTURING COMPANY IN SERBIA

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Original scientific paper

Abstract

High turnover of employees is a major problem of modern business, which has a negative effect on the success of the organization as well as on profitability. The aim of this paper is to measure the financial effect of unwanted turnover of employees on an annual basis in a large manufacturing company, as well as to check whether there is a significant difference in financial costs when leaving the company by different categories of employees. The results of the financial analysis of dysfunctional turnover, conducted by the Human Resources Department, show that the negative financial impact is close to 284,000 euros on an annual basis. It was also determined that the costs of re-employing candidates for management positions are approximately ten times higher than when hiring operators, and almost six times higher than when hiring candidates for jobs related to administration.

Keywords: *dysfunctional turnover, turnover costs, financial analysis, human resources*

JEL: J3, M51

Introduction

Modern management of human resources implies broader business competencies of professionals who in practice deal with this field, which would enable them to more easily build a partnership with the management of the organization and achieve the expected business result. More and more studies in the field of management openly indicate that the business function that deals with human resource management must become a strategic partner of the business (Ulrich, Schieman and Sartain 2020) if it wants to have a credible role in the organization. Today, professionals from the field of human resources (in the following text instead of human resources, the abbreviation HR will be used) are expected to have a broad understanding of business principles from various fields such as production, finance, marketing, sales, etc. in order to properly direct organizational activities related to employee management.

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In accordance with these expectations, in the field of human resources management, an effort to calculate the financial and economic consequences of the influence and consequences of different behavior patterns of employees on the organization itself was neglected for a relatively long time. One of the most common phenomena analyzed concerns the understanding of employee turnover, a constant and long-standing problem of almost all organizations (Smith, 2018). Effective management of turnover is one of the most important activities that the human resources sector deals with in modern organizations. This phenomenon is a personnel and organizational problem, and has a negative impact on the business performance and financial indicators of organizations.

Literature review

Not every turnover is necessarily a negative phenomenon for the organization because it is also a natural way to replenish the workforce and exert a positive influence on the existing knowledge and established ways of working in the organization. Functional fluctuation occurs when the organization initiates the termination of the employment relationship with the employee or the employee, against his will, resigns from his position. The reason for leaving the organization is different, and most often it is a question of poor performance on the part of the employee, disciplinary problems, or dismissal occurs due to early retirement, restructuring or reorganization (Dwesini, 2019). On the other hand, voluntary or dysfunctional turnover occurs when an employee decides to leave the company of his own free will, which is why all terminations of employment contracts that are not formally initiated by employers are considered voluntary turnover (Dwesini, 2019). In this case, turnover has negative effects because, as a rule, the best employees go to other employers, while those who are worse remain in the organization (Asimah, 2018). Although there is a small amount of research on this topic, the findings of some authors (Sulek, Trembath et al. 2017) suggest that turnover has a negative impact on the quality of work and business achievement on the remaining employees within the organization.

Inevitable turnover is the result of business and life decisions and circumstances beyond the control of employees, while avoidable turnover occurs when management improves the implementation of effective human resource management practices (Dwesini, 2019). It is important that the employer at the systemic level deals with voluntary or dysfunctional turnover in order to find the right strategy for retaining its employees. In order to retain its employees, the organization must understand the needs of its employees, which would be the basis for developing and adopting an adequate strategy for employee retention.

Fluctuation is an organizational phenomenon that develops relatively slowly, because outgoing employees do not leave the organization all at once, so social trends take some time to manifest. Data on employee turnover are processed in relation to specific time periods that make the data more significant. The level of turnover is expressed in percentages, and refers to the number of employees who leave the organization during a certain period of time, that is, the percentage of those who left in relation to the total number of employees (Siebert and Zubanov, 2009). To assess the fluctuation rate in relation to the annual cycle, the fluctuation rates for certain months or quarters during the year are usually analyzed cumulatively (Newcomb, Camblin et al. 2019). An important fact related to turnover in organizations is whether the management of the organization has an accurate assessment and empirical evidence related to the costs of this phenomenon, in order to deal with a strategy to minimize turnover. Although due to the estimates coming from different organizational settings, it is difficult to generalize the findings, the authors (Larson et al. 2016) presented general cost guidelines that an organization should consider when calculating turnover costs. We must not lose sight of lost resources such as time spent searching for a new candidate and reduced productivity in that workplace while the position was unfilled (Beato, 2017). Employee departures lead to costs such as additional HR staff time required to meet the requirements of termination procedures, overtime costs, and other temporary employee costs required to perform ongoing duties. When an organization hires a replacement employee, it should calculate training costs, including materials, time to train the new employee to work independently, and additional trainer time. The organization must identify these costs, as well as all other relevant costs, carefully notify, monitor and analyze them in order to be able to calculate the real cost related to the specific context of the organization, because high costs arising from employee turnover negatively affect performance organizations, on sales, competitiveness and profitability (Osborne and Hammoud, 2017). It should also be added that high turnover of employees has a serious negative impact on the organization not only on a financial, but also on an emotional level due to a bad and demotivating working atmosphere in the collective (Reina, Rogers et al., 2018). The problems are further multiplied when the professional knowledge, skills and experiences gained from working in the organization disappear with the departure of the employee (Noh, Jang and Choi, 2019).

Although the phenomenon of employee turnover is, as it were, permanently present in business life (Smith, 2018), research on the topic of reasons and intentions to leave the organization by employees has long been one of the main reasons for anxiety among the management of modern organizations (Belete, 2018), especially taking taking into account the great global competition in the market that modern organizations face (Alias, Ismail et al., 2018). It should also be said that a high level of unemployment, in itself, makes it difficult for workers to find a suitable job, which, in addition to a dominantly negative impact on economic development, also has a positive impact on reducing employee turnover, mainly due to external factors related to the organization, such as general instability in labor market (Al-suraihi, Wahab et al., 2020).

The key findings of research on employee turnover show that employees have several reasons to leave their jobs, such as stress at work (Chiat and Pantik, 2019). Stress is a tension that mainly negatively affects a person's emotions, thoughts and physical condition, and as such has a significant impact on the intention to leave the organization, and also negatively affects the lack of job satisfaction, including salary satisfaction (Hakim and Sudarmiatin, 2018). One of the important conditions for staying and not leaving the organization is employee satisfaction with earnings, thanks to the organization's salary structure and system, as well as the perception of the fairness of salary and benefits policies (Hung et al., 2018).

In addition, it is necessary to pay attention to the phenomenon of burnout or burnout at work, which is a consequence of chronic stress to which an employee may be exposed at the workplace, and which, among other things, is characterized by emotional exhaustion, dissatisfaction and reduced, not only work, but also general life efficiency of employees (Yu and Lee, 2018). In addition, employees leave the organization more and more often due to the lack of opportunities for balance between work and private life (Hakim and Sudarmiatin, 2018).

Some researches show that leaders and managers, by their behavior and personal example, can influence turnover as well as retention of employees (Reina, Rogers, Peterson at al. 2018). Factors such as changes in the style and method of management, the way employees are treated, aggressiveness and mistrust in work towards employees, influence the increase in turnover (Reina, Rogers, Peterson et al. 2018) and the decrease in enthusiasm and dissatisfaction of employees. Lack of professional credibility and leadership strength also leads to employee turnover (Azam, Khan and Khan, 2019). Employees tend to stay in those organizations where managers do not show authoritarian behavior and lack of interest in people, and many studies (Hom et al., 2017) show that the perception of fair and just treatment concerning the very nature of the job has a great impact on employee retention

Also, an organizational culture that is aligned with the needs and goals of employees has a positive effect on the improved perception of employees regarding the quality of their professional life, which results in employee commitment, which leads to improved organizational performance and improved efficiency (Holston-Okae and Mushi, 2018). An effective organizational culture engages employees at the grassroots level and transforms that engagement into high productivity, which is, among other things, a good employee retention strategy.

Levels of turnover can vary in relation to the occupation of the employees, the industry and the sector in which they work. Traditionally, turnover is high in trade (such as retail or large retail chains), service activities (such as hotel, catering and recreation), *call centers,* etc., i.e. in industries and areas of work that fall into lower-paid job groups, most often in the private sector. sector.

Fluctuation costs

When the turnover rate in an organization is high, it negatively affects the competitiveness and profitability of the organization. Because it is a negative phenomenon related to the loss of human capital (Dwesini, 2018). Organizational leaders can develop an adequate strategy for improving competitiveness and profitability, if they know the causes of turnover. In addition, for the analysis it is necessary to accurately define the type and amount of costs related to fluctuation. In practice, many elements, especially those related to indirect costs, are not monitored and recorded, or are difficult to quantify. It is also important to appreciate the difference between functional and dysfunctional turnover because one is desirable and the other is undesirable.

The dysfunctional cost of high turnover is, as a rule, a high cost for the organization, and it represents both a direct and an indirect cost (*Table 1)*. It is very important for experts in the field of human resource management to calculate and analyze this cost, both for a comprehensive overview of the causes and consequences of problems related to turnover, and for obtaining support from top management for further organizational initiatives to solve this problem.

Table 1. Direct and indirect costs of employee turnover

Direct turnover costs	**Indirect turnover costs**
The time required by the administration in the Human Resources Sector to process the documentation for the departing employee	The employee is less motivated and productive from the moment he decided to leave the organization
Costs of advertising a vacant position	The new employee is insufficiently productive and efficient in the beginning
HR staff time required for the new hire process (review of incoming CVs, interview, etc.)	Decreased motivation and drop in productivity among employees with whom the departing employee worked
Costs of 'covering' an unfilled position (overtime, temporary replacement, etc.)	Possible disruption of relations with business partners
The work of the HR team with the new employee	Reduced ROI for all training and development programs attended by the departing employee
Expenses for a new employee (e.g. work clothes and shoes, phone, computer, etc.)	Company information can easily leak to competitors
On-boarding and basic training for introduction to work (safety at work, etc.)	Damage to the company's reputation if turnover is high or an employee leaves in bad circumstances

Source: Taylor and Woodhams, 2016

There is also a classification of turnover costs into different categories, including direct or indirect, visible or invisible, before and after hiring an employee

(Kiernan, 2018). Most of these models include the costs of recruitment, selection, hiring, training and filling of vacancies. Many also include the cost of lost productivity, when existing employees must assume some of the responsibilities of a departing employee due to a vacancy. Some models also include costs such as loss of organizational knowledge and other negative effects on the work environment. Regardless of which model is used, many of these costs are not visible, nor easily quantified. As a result, employers tend to underestimate the cost of turnover.

The most common classification of cost categories as a consequence of unwanted fluctuation is: direct, indirect and opportunity costs of fluctuation.

At the very moment when the employee leaves the organization, this event is not considered a direct cost. Accompanying administrative tasks related to leaving the job, such as, for example, deregistration from the central database of employees, preparation of labor-legal documentation for the termination of employment, writing a recommendation, returning and checking work equipment, exit interview, etc. are activities that nevertheless produce costs, but they are usually managed in the financial sense as joint (English *overhead)*, administrative costs. However, these are costs that by their nature are not shared, because they can be allocated directly (Plinke and Rese, 2006, p. 36).

If we return to the moment of resignation by the employee and the steps that follow after this decision, the simplistic view that this event is not considered a direct cost changes, however. Namely, the new competition in which a replacement for a departing employee must be found and employed provokes a wide range of direct costs. The appearance and amount of these costs depends on whether the vacant position is filled from within (internal resources) or outside the organization (external labor market). Additionally, for employees who leave the organization, already at the very beginning of their employment, in the first three months of working in the organization, it is considered that they have little or no return on the investment invested in their employment, and from the financial aspect, such employment represents a pure loss.

Indirect costs of employee turnover include disrupted organizational processes, reduced motivation and work morale, necessary adaptation time for the work of new employees.

From the aspect of the employment process itself, for the analysis of indirect costs, the question of internal or external employment to replace a departing employee becomes less relevant. Also, from the perspective of the amount and type of work within personnel administration, there is little difference between a newly recruited employee and an existing employee who has been transferred to another workplace. The only additional activities are the negotiation of the elements of the new employment contract and possibly new medical examinations, if necessary. Usually these are the types of costs that can be allocated according to the place of origin, although according to the principle of causation this is not entirely true. In this regard, it may happen that in the event that an individual organizational unit causes unreasonably high turnover costs compared to others, the cost allocation system will be adjusted, although the most common current practice usually works with fixed cost allocation formulas.

Compared to the relatively negligible indirect costs, the opportunity costs of turnover are as relevant as the direct costs. In particular, the knowledge and skills that have been lost due to previous investment in the professional development of the departing employee must be taken into account. Practice in the field of human resources also shows that remaining without, for example, a training specialist, can lead to the fact that internal trainings can no longer be carried out in an independent organization due to the lack of internal competences and resources, and that they need to be procured externally at significantly higher costs. expenses.

Objective and methodology of work

The primary objective of the business analysis of company XY, which represents a large international manufacturing company operating in the furniture industry, was to measure the financial consequences of dysfunctional turnover on an annual basis. The second objective was to determine if there is and how much difference there is in the amount of costs, in relation to the category of employees who left the company XY.

A total of 194 employees voluntarily left the XY company during one calendar year, in the period from October 2020 to September 2021. At that time, the company employed, on average, around 1,000 employees annually. All employees who voluntarily left the company, for the purpose of this analysis, were divided into three categories, in relation to the type of work they performed: operators (N = 158), administration (N = 30) and management (N = 6). When calculating the total fluctuation costs, an online fluctuation calculator was used according to the formulas implemented in the excel document (https:// www.collage.co/tools/cost-of-employee-turnover-calculator).

Results and Discussion

The first phase of the analysis included the classification of all reasons for leaving the organization. The data was taken from the documentation base in the field of labor-legal relations in order to estimate the cost of dysfunctional turnover, only cases of self-initiated leaving (cancellation of the employment contract by the employee) were singled out. Another source of data for analysis was the payroll and all related costs related to the wages of employees who voluntarily left the organization. In this particular case, it was about the contracted salary, but also about the variable salary, as well as the related bonuses and benefits that the employees received. These costs are shown with the corresponding taxes and contributions, that is, in the gross amount, as the total cost of wages for the company.

The annual salary is calculated on the basis of 285 working days for workers who belong to the category of production operators, because production also works on Saturdays, as well as on the basis of 261 working days for administration and managers. All realized variable wages and bonuses paid out in the period for which the analysis was made were also taken into account.

Table 2. Salary expenses by job position or category, by day and on an annual basis with taxes and contributions included, expressed in dinars (RSD)

Employee salary costs	**OPERATORS**		**ADMINISTRATION**		**MANAGERS**	
	Per person	**In total**	**Per person**	**In total**	**Per person**	**In total**
Number of workers leaving the organization	1	158	1	30	1	6
Annual gross 2 salary (RSD)	713,640	112,755,120	1,321,704	39,651,120	4,898,448	29,390,688
Annual bonuses, allowances (RSD)	259,920	41,067,360	52,200	1,566,000	448,920	2,693,520
Daily cost (Salary + Benefits) - RSD	3,416	539,728	5,264	157,920	20,488	122,928

In parallel, the costs that arose as a consequence of reduced productivity due to temporarily unfilled early positions and the fact that at that time existing employees were filling vacant positions until a new person was hired were estimated (Table 3). This is the overtime cost of existing employees who performed the job of the vacant position along with their own job. This figure was calculated using a calculation rate of 37% of the daily wage of the departing employee, based on a similar calculation, available on the website (www.collage.co/tools/cost-of-employee-turnover-calculator/).

Table 3. Costs of a vacancy (reduced productivity of employees who replace the employee who left, expressed in dinars (RSD)

Vacancy costs	Operator		Administration		Managers	
	Per person	In total	Per person	In total	Per person	In total
The number of employees who left the workplace	1	158	1	30	1	6
Daily replacement cost for an unfilled position	1,263.92	199,699.36	1,947.68	58,430.40	7,580.56	45,483.36
Average number of days that job positions are unfilled	5	5	30	30	60	60
Vacancy costs	Operator		Administration		Managers	
	Per person	In total	Per person	In total	Per person	In total
The total cost to "cover" the position	6,319.60	998,496.80	58,430.40	1,752,912	454,833.60	2,729,001.60

An assessment of the costs of the exit interview was also carried out, as a product of the hourly rate of the Employment Specialist and the time required for this type of work. These tasks in the Human Resources Sector are performed by the Employment Specialist. The calculation of the employment specialist's hourly rate is based on 261 working days or a total of 2088 working hours per year. The gross annual salary of an employment specialist is RSD 1,401,197.00 or RSD 715.81 per hour.

Administrative costs related to the preparation of documentation for termination of employment, deregistration from the Central Register of Social Insurance (CROSO), changes in the payroll, time spent on various forms such as notifying creditors, etc., were similarly estimated. The costs of hiring a replacement for a departing employee included the costs of publishing an advertisement for a vacant position (internet, radio). Costs related to the time required for employment specialists to review incoming CVs, make phone calls to candidates, conduct interviews, evaluate candidates, check references, prepare job offers and send notifications to unsuccessful candidates are also shown. For operator positions, compared to others, this time is significantly shorter because the selective criteria for employment are much lower. The number of working hours spent by the recruitment specialist interviewing candidates internally, together with the costs of those candidates being absent from work while interviewing, are not counted on this occasion. Namely, there was not enough relevant data available, such as, for example, the number of jobs that were filled with internal resources, as well as the number and type of internal candidates who participated in these selections.

The cost of the participation of management personnel in the recruitment process was also determined, taking into account the time for explaining the requirements of the vacant position, reviewing the candidate's resumes, and interviewing.

Table 4. Costs of leaving and costs of hiring a replacement for a departing employee, expressed in dinars (RSD)

LEAVING COSTS & REPLACEMENT HIRING COSTS	Operators		Administration		Managers	
	Number of hours	**Cost (RSD)**	**Number of hours**	**Cost (RSD)**	**Number of hours**	**Cost (RSD)**
Outgoing employees - Exit interview costs	0.50	357.90	2	1,431.62	2	1,431.62
Outgoing employees - Other expenses	2	1,431.62	2	1,431.62	2	1,431.62
Recruitment - Review of CVs	1.25	894.76	10	7,158.09	15	10,737.14
Recruitment - Interviews	0.50	357.90	1.80	1,288.46	4	2,863.24
Total number of working hours to fill the position	1.75	1,252.67	11.80	8,446.55	19	13,600.38
Recruitment - Costs of advertising or using specialized recruitment agencies for executive positions	/	5,000	/	10,666	/	476,750
Employment - Other costs (uniform, work equipment, laptops, phones, etc.)	/	12,700	/	65,000	/	120,000
Total replacement costs per employee (rsd)	20,742.19		86,975.79		613,213.62	
Number of outgoing employees	158		30		6	

Total replacement recruitment costs (rsd)	3,277,266.05	2,609,273.68	3,679,281.70

Orientation training costs during the induction process for a new employee are calculated by multiplying the value of the working hours of the position that most often carries out the orientation process in the company with the required number of hours for this process, in relation to the category of employees being hired. The number of working hours for this activity varies, as do the number of hours required by all persons involved in this process, such as mentors and department heads.

Table 5. Training costs during the orientation process for new employees expressed in dinars (RSD)

Orientation training costs for new employees	**Operators**	**Administration**	**Managers**
The number of jobs for which it is necessary to organize an orientation process	158	30	6
Average executive/manager salary (RSD)	1,401,197.00	1,401,197	4,955,640
Hourly cost of orientation process involving executives and managers (RSD)	5,368.57	5,368.57	18,987.13
Total number of training days	316	30	6
Total cost of new employee training by job category (RSD)	1,696,468.40	161,057.13	113,922.76

And finally, the estimated costs of lost productivity were added (*Table 6)*, which can naturally be expected at the beginning of work at a new workplace for all employees, regardless of the job position. As long as new employees adapt to the job, or learn how certain processes and jobs are performed, while they familiarize themselves with the policies, procedures and work practices of the company, they are not fully productive. We used the estimate that the employee contributes 50% of his potential productivity level compared to the employee who left. The time of adaptation naturally varies from individual to individual and depends on numerous elements such as education, experience, type of workplace, etc. For the purposes of this project, the Human Resources Department has given an assessment in relation to its professional experience that full productivity can be expected in administrative and managerial jobs after only one month (candidates for these positions are mostly highly educated, with relevant business experience). On the other hand, for operator jobs, due to the specific production process and way of working (as well as the lower level of education), full productivity can be expected after 45 working days.

Table 6. The cost of reduced productivity (50%) in relation to the time required to reach full productivity by job category, expressed in dinars (RSD)

Time needed to reach full productivity	**Operators**	**Administration**	**Managers**
Number of workers leaving	158	30	6
Employee Daily Cost (RSD)	3,416	5,264	20,488
Number of days to 100% Productivity	45	30	30
Cost of Reduced Productivity (DCR)	12,143,880	2,368,800	1,843,920

The total costs were obtained by summing up everything mentioned so far, and are shown in *table 7.*

Table 7. Total cost of dysfunctional fluctuation expressed in dinars and euros

	Operators	**Administration**	**Managers**
Total cost (RSD) of dysfunctional fluctuation for the period: X 2020 - IX 2021.	18.116.111.24	6,892,042.81	8,348,958.64
Total (RSD)	33,357,112.69		
Total (EUR)	283,721.30		

After calculating the total cost related to dysfunctional turnover, which refers to a period of one year, we wanted to investigate whether there is a statistically significant difference in the amount of turnover costs in relation to the category of employees who left the company.

For this purpose, variance analysis was used, which included all costs related to an individual employee. All indicators that related to the total number of workers were recalculated so that they were reduced to the cost of one departed worker (person). Table *8* shows the cost indicators expressed in dinars, which were used in the variance analysis.

Table 8. Average values of fluctuation costs in relation to position

Category	**Arithmetic mean**	**SD**
Operators	13542.42	26035.60
Administration	21413.05	31602.70
Managers	117440.09	179796.25

Legend: SD – standard deviation

Differences in mean cost values were tested by one-way analysis of variance for independent samples. The analysis of variance showed that regardless of numerical differences in arithmetic means, they are not statistically significant: $F(2,21)=2.36$, $p=0.12$. The absence of significance is due to the fact that the variances of the groups are statistically significantly different (Levin's test of equality of variances is statistically significant $p<0.001$), so the differences between the groups could not reach statistical significance.

Nevertheless, regardless of the absence of significance, it can be concluded based on the average costs (*Table 8)*, that the costs for hiring candidates for management positions are almost ten times higher than for hiring operators, and almost six times higher than for hiring people in administrative positions.

Conclusion

The issue of practical solutions to high turnover, in most organizations, is usually dealt with by the human resources function. The usual way is oriented towards understanding the most common reasons why employees leave, as well as designing a strategy for their retention. However, in order to raise business credibility and position the human resources management function at a strategic level, as a relevant business partner, this business function is expected to be able to prepare the calculation of the financial consequences of different patterns of employee behavior on the organization (Tziner and Birat, 1996). By relying on concrete data and its financial implications, the HR function makes relevant business decisions more easily. This approach simultaneously ensures adequate support from the company's top management for initiatives aimed at reducing turnover.

In order to ensure and focus the attention of the entire management of the company on this pathological phenomenon and its consequences in the organization, the human resources department of the XY company made an assessment and calculation of the costs caused by dysfunctional turnover. The voluntary departure of 194 employees cost the company close to €284,000 per year. From the aspect of the individual cost in relation to the workplace, the highest cost is expected when the manager leaves and is replaced, and consequently the lowest when the operator leaves.

In further analyzes of the consequences of dysfunctional fluctuation, in order to get an even more complete picture, it would be necessary to assess how dysfunctional fluctuation affects the company's overall productivity, product quality, scrap height, etc. This analysis did not assess the damage due to the negative impact on the company's reputation and its employer brand, which would certainly be a recommendation for further research.

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ULOGA SUPERVIZORA U OČUVANJU I JAČANJU BANKARSKOG SEKTORA REPUBLIKE SRPSKE

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Apstrakt

Bankarski sektor predstavlja komponentu bankarskog sistema i ukupne ekonomije države, koja ima značajan uticaj na opšti ekonomski ambijent u kojem se realizuju sve poslovne, finansijske aktivnosti ekonomskih subjekata, kao i sva ekonomska dešavanja koja su od značaja za nacionalnu privredu. Poslovne banke okrenute su, s jedne strane, prema upravljačkoj menadžerskoj strukturi banke, a s druge strane državnim kontrolnim institucijama. Regulatori bankarskog sektora nastoje kroz definisane instrumente i zakonsku regulativu očuvati i jačati stabilnost bankarskog sektora, te unaprijediti njegovo sigurno, kvalitetno i zakonito poslovanje.

Odsustvo regulative, neadekvatna regulativa i neadekvatan kapacitet regulatornih tijela i te kako su uticali na stanje u bankarskom sektoru kakvo prepoznajemo danas, odnosno u periodu nakon poslednje ekonomske krize. Stanje je dodatno otežala pandemija COVID-19 koja je u kratkom periodu prouzrokovala pad ekonomske i društvene aktivnosti, kojim su obilježene 2020. i prva polovina 2021. godine. Posljedice će se pokušati umanjiti uvođenjem nove, sveobuhvatnije regulative, uz neizvjesnost da li će regulatorno tijelo biti u stanju da preventivnim djelovanjem spriječi produbljivanje krize bankarskog sektora.

Agencija za bankarstvo Republike Srpske vrši superviziju funkcionisanja bankarskog sektora Republike Srpske, kao i opšteg ambijenta u kojem se nalazi bankarski sistem. Cilj rada je analizirati uticaj krize uzrokovane pandemijom COVID-19 na bankarski sector Republike Srpske, i to kroz kvantitativne pokazatelje - visinu ukupnih depozita/štednje sa jedne strane, te bankarske plasmane i kvalitet aktive sa stanovišta kreditnih gubitaka u periodu 30.06.2019-30.06.2021. godina, sa druge. Rezultati pokazuju da je u posmatranom periodu evidentan rast depozita, ali i povećanje kreditnih aktivnosti u bankarskom sektoru

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Republike Srpske. Zaključak istraživanja ukazuje na to da kriza uzrokovana pandemijom COVID-19 nije poljuljala povjerenje u bankarski sektor, odnosno da promjene nisu bile toliko značajne da bi mogle imati opredjeljujući uticaj na kretanja analiziranih finansijskih pokazatelja u periodu pandemije.

Rad je struktuiran na način da obuhvati kako teorijske principe, tako i konkretno empirijsko istraživanje o uticaju supervizije na jačanje stabilnosti bankarskog sistema.

Ključne riječi: *supervizor, osigurani depozit, finansijska stabilnost, COVID-19*

JEL: E52, E59.

Uvod

Kriza uzrokovana pandemijom COVID-19, koja se pojavila početkom 2020. godine, značajno je uticala ne samo na zdravlje ljudi, već i na privrede i društva širom svijeta. Lokdaun, ograničenja i zabrane kretanja, promjene u načinu rada, smanjenju ukupne društvene i ekonomske aktivnosti doveli su do velikih promjena u potrošnji stanovništva. Najznačajnije promjene uočavaju se u smanjenju potrošnje u sektorima turizma, ugostiteljstva i saobraćaja, odnosno u povećanju potrošnje u sektorima prehrambene industrije i kućnih potrepština.

Kreiranje ekonomskog, finansijskog ambijenta u kojem će se odvijati finansijske, bankarske aktivnosti jedne zemlje, posebno u uslovima pandemije COVID-19, nije ni najmanje jednostavan zadatak. Obzirom da su ekonomski odnosi složeniji u uslovima pandemije, država mora biti pažljivija u definisanju i sprovođenju svih strategija kojim se usmjerava ekonomska aktivnost države.

Da bi se odgovorilo na otežane uslove poslovanja, potrebno je preduzeti niz mjera u bankarskom sektoru. Bankarski sektor u Republici Srpskoj čini 8 banaka, sa ukupnom aktivom od 10,3 milijarde KM i oko 3.000 zaposlenih radnika. Država treba da se postara da kreira adekvatnu regulativu bankarskog sektora koja je, pored ostalih preduslova uspješnog poslovanja, svakako jedan od osnova stabilnog ekonomskog sistema države. Supervizija ima veoma značajnu ulogu u finansijskom sektoru, jer u zavisnosti od alata koje primjenjuje i uticaja koji ima, određuje okruženje u kojem će se obavljati poslovna aktivnost svakog učesnika pojedinačno, odnosno opšta stabilnost finansijskog sektora.

Države danas superviziju kreiraju uglavnom po ugledu na razvijene uspješnije zemlje, trudeći se da maksimalno iskoriste provjerene strategije. Supervizijom banaka kreira se opšte okruženje koje svim bankama daje jednake šanse, a od same banke zavisi da li će i u kojoj mjeri te mogućnosti iskoristiti.

U praksi se mogu identifikovati pravilnosti u pogledu određenih stavki u poslovanju banke. Odnosno, analizom niza raspoloživih indikatora koji pokazuju stepen razvoja, mogu se utvrditi uspješnost poslovanja banke i potencijal za njen dalji razvoj. Na osnovu analize rezultata poslovanja može se i predvidjeti pozicija banke na tržištu u komparaciji sa konkurentnim bankama.

Analiza međuzavisnosti supervizije i poslovanja banaka veoma je značajna. Važno je utvrditi pravilnosti u ponašanju banaka, kao i ispitati uticaje eksternih faktora na korišćenje internih prednosti banaka. U suštini, supervizijom banaka treba omogućiti jedno kompetetivno okruženje, tržište koje će regulatorno biti podešeno i usmjereno na rast i razvoj svakog njegovog učesnika. S obzirom da se u godinama pred nama očekuju još veće neizvjesnosti u poslovanju i rizici na savremenom tržištu, svaka država mora što prije kreirati svoj stabilan ekonomski sistem, stabilno političko i socijalno okruženje koje će omogućiti podsticaje daljem rastu i razvoju zemlje.

Osnovni cilj rada jeste utvrditi ulogu supervizora u očuvanju i jačanju bankarskog sektora na teritoriji Republike Srpske.

Agencija za bankarstvo Republike Srpske (u daljem tekstu: ABRS) predstavlja supervizora u funkcionisanju bankarskog sektora, odnosno opšteg ambijenta u kojem se nalazi finansijski sektor u Republici Srpskoj. Status, organizacija, finansiranje, nadležnosti i rad ABRS kao i osnovni cilj -očuvanje i jačanje stabilnosti bankarskog sistema uz unapređenje njegovog sigurnog, kvalitetnog i zakonitog poslovanja, propisani su Zakonom o Agenciji za bankarstvo Republike Srpske.

Predmet rada je uticaj ABRS na bankarski sektor, sa akcentom na dešavanja u sljedećim područjima: visina ukupnih depozita/štednje sa jedne strane, te uticaj na bankarske plasmane i kvalitet aktive sa stanovišta kreditnih gubitaka u periodu 30.06.2019-30.06.2021. godina, sa druge.

Rad je struktuiran na način da obuhvati teorijske principe i konkretno empirijsko istraživanje o značaju supervizije u jačanju stabilnosti bankarskog sistema. Cilj rada jeste dobijanje jasnije slike i bolje razumijevanje stabilnosti bankarskog sektora, te povjerenja u banke u uslovima pandemije. Konačan cilj rada je ukazati na, prednosti i nedostatke nadzora bankarskog sektora RS od strane ABRS, te uticaj iste na dalji razvoj finansijskog tržišta u Republici Srpskoj.

Supervizija bankarskog sektora

Suština supervizije bankarskog, odnosno finansijskog sistema jedne države je prvenstveno zaštita deponenata, investitora i akcionara finansijskih institucija od različitih rizika kojima su izloženi. Jedan od značajnijih ciljeva supervizije je umanjiti posljedice loše prakse i prevare, odnosno izolovati efekte svakog gubitka koji proizvodi određena institucija, sprečavajući tako nastanak potencijalnog „domino efekta".

Banka u okviru finansijskog sistema ima ulogu da obezbijedi kredite, prima depozite i pruža druge finansijske usluge klijentima, poštujući striktne zakonske propise koji su pripremljeni prvenstveno u cilju zaštite interesa javnosti. Da bi se funkcija supervizije banaka efikasno vršila neophodno je i postojanje adekvatnih resursa i zakonskih ovlaštenja za sprovođenje oprezne supervizije, uspostavljanje nezavisnih regulatornih i supervizorskih autoriteta, kao i jasno definisanje odgovornosti supervizora u procesu vršenja supervizorskih aktivnosti.

Reforma bankarskog sistema usmjerena je na prevenciju krize, efikasniji nadzor nad bankarskim sistemom, blagovremenom intervenisanju supervizora u slučaju pogoršanja finansijskog položaja banaka i utvrđivanja ovlaštenja i instrumenata za upravljanje procesom izlaska propalih banaka sa tržišta, uz minimalno oslanjanje na javna sredstva.

Regulacija i supervizija poslovanja banaka podrazumijevaju se u tržišnim uslovima privređivanja.

Razdvajanje funkcije upravljanja i rukovođenja, uz postojanje asimetričnih informacija dovodi do problema u odnosima između vlasnika banaka (principala) i menadžera banaka (agenata). Nezadovoljni podrškom koju imaju od strane vlasnika, menadžeri banaka često nisu zainteresovani za maksimiziranje dobiti jednako kao i sami vlasnici banaka i, u želji da ostvare lične koristi, mogu da se odluče i na sprovođenje određenih „sumnjivih“ aktivnosti sa kojima vlasnici banaka nisu upoznati.

Povećana i strožija regulacija aktivnosti banaka, u prvi plan stavlja konkurenciju poslovnih banaka i njihovo aktivno učešće na finansijskom tržištu. Poslovne banke daju akcenat profitabilnosti plasmana, u uslovima promjenljivih kamatnih stopa i fluktuirajućih deviznih kurseva, uz prihvatanje većeg rizika kako bi ostale konkurentne na finansijskom tržištu.

U cilju smanjenja uticaja sistemskog rizika na poslovanje banaka, nužno je uspostaviti novi oblik kontrole putem supervizije banaka, a u cilju očuvanja njihove sistemske stabilnosti. Supervizijom banaka donose se pravila koja stvaraju tržišnu disciplinu i motivišu privatni monitoring banaka koji dokazano ima uticaj na poslovanje banaka, a time i na poboljšanje uticaja bankarstva na cjelokupnu ekonomiju.

ABRS kroz superviziju i mjere za otklanjanje utvrđenih nepravilnosti i slabosti ima za cilj da obezbjedi stabilan, solventan, likvidan i profitabilan bankarski sistem Republike Srpske. Otežavajuća okolnost za regulatora u realizaciji poslovnih aktivosti je ta što banke, odnosno finansijske institucije u potrazi za profitom imaju dobar motiv za izbjegavanje postojećih propisa i traženje „rupa u zakonu“, pronalazeći način da izbjegnu propise, zbog čega regulator mora iste da modifikuje. U finansijskom sistemu u kojem su promjene veoma česte, regulatorni organi se često suočavaju sa novim izazovima, jer ukoliko na promjene ne odgovore brzo, neće uspjeti da spriječe finansijske institucije da se upuste u prevelike rizike. Takođe, otežavajuća okolnost za regulatora su i „sitnice“ koje mogu biti od izuzetnog značaja, jer ukoliko se u podacima pojave i najmanje razlike, one mogu prouzrokovati nesagledive posljedice. Međutim, iako prema zakonskom okviru ABRS ima operativnu nezavisnost, sam kontekst u kojem posluje otežan je zbog značajne međuzavisnosti između Vlade i domaćeg bankarskog sektora čiji uticaj nije zanemarljiv.

ABRS je odlukama (2020. godina) o uvođenju privremenih mjera kako bi se ublažile negativne posljedice uzrokovane virusom COVID-19, preduzela aktivnosti u cilju očuvanja stabilnosti bankarskog sektora Republike Srpske. Mjere su se odnosile na odobravanje olakšica klijentima banke koji su pogođeni negativnim efektima pandemije, kako bi prevazišli poteškoće sa kojima se suočavaju i u narednom periodu uredno izmirivali svoje obaveze prema banci. Takođe, mjere su se odnosile i na određena pravila za upravljanje kreditnim rizikom i očuvanjem kapitala banaka i dr.

Osiguranje depozita

Potreba zaštite depozita poslovnih banaka prouzrokovana je nestabilnom situacijom na svjetskom finansijskom tržištu. Finansijski sektor se ubraja u red najstrože regulisanih sektora u privredi, a banke se najviše regulišu od svih finansijskih institucija. Regulatorni procesi ne funkcionišu uvijek kako se očekuje i kako treba, o čemu svjedoče i krize bankarskih sistema.

Državni program za osiguranje depozita može da smanji najezdu deponenata na banke, štiteći ih i omogućavajući da oni ponovo ulažu sredstva u bankarski sistem.

Osim osiguranja depozita, vlade su često pomagale domaćim bankama koje zapadnu u probleme, čak i onima koje nemaju osigurane depozite, najčešće na način da Centralna banka odobrava pozajmice problematičnim bankama- „uloga kreditora u krajnjoj instanci“. U drugim slučajevima, problematične banke dobijaju sredstva direktno od vlade ili ih vlada preuzima.

Osnovni principi Bazelskog odbora za uspješnu superviziju bankarstva, potvrdili su da pažljivo kreiran sistem osiguranja depozita može značajno doprinjeti povjerenju javnosti u finansijski sistem i tako ograničiti „zarazu“ od banaka u nevolji, s tim što nije istovremeno ponudio i uputstvo za uspješne sisteme osiguranja depozita. Uvođenje, odnosno reforma sistema za osiguranje depozita uspješnija je ukoliko imamo zdrav bankarski sistem i stabilne institucije u okruženju. Međutim, deponenti su svjesni da neće pretrpjeti nikakve gubitke do iznosa osiguranog depozita, ukoliko banka propadne, te i ne nameću bankama tržišnu disciplinu, odnosno ne povlače sredstva kada posumnjaju da se banka upustila u rizično poslovanje. Sa druge strane, zbog takve sigurnosti banke su motivisane da se upuste u veće rizike.Pošto zaštićeni deponenti nemaju previše razloga da nadgledaju aktivnosti banke, bez uplitanja vlade u bankarski sektor mogu dospjeti i prevaranti koji, za sve loše što učine mogu da dobiju blagu kaznu.

„Previše velik da bi propao“, objašnjava da regulatori banaka nerado dozvoljavaju nekoj velikoj banci da propadne i prouzrokuje svojim deponentima velike gubitke, obzirom da propast velike banke dovodi do velikog finansijskog potresa u zemlji.

U junu 2020. godine donešen je novi Zakon o osiguranju depozita u bankama Bosne i Hercegovine. Osnovni cilj Zakona je da se obezbijedi zaštita depozita fizičkih i pravnih lica u bankama koje su dobile dozvolu za rad nadležne agencije za bankarstvo i na taj način doprinese očuvanju sveukupne finansijske stabilnosti. Takođe, Agencija za osiguranje depozita BiH dobija novi mandat – da sredstvima Fonda za osiguranje depozita, u određenim slučajevima, učestvuje u procesu restruktuiranja banaka. Rok za isplatu deponenata usljed oduzimanja dozvole za rad banci skraćuje se sa 90 na 20 radnih dana.

Maksimalan iznos osiguranog depozita koji trenutno isplaćuje Agencija za osiguranje depozita Bosne i Hercegovine iznosi 50.000 KM (zajedno sa obračunatom kamatom po deponentu po banci članici, umanjen za zakonski ili ugovoreni dug deponenta prema banci).

Bankarski sektor u Republici Srpskoj

Bankarski sistem Republike Srpske obuhvata banke, mikrokreditne organizacije, štedno-kreditne organizacije, davaoce lizinga i druge finansijske organizacije čije se osnivanje i poslovanje uređuje posebnim zakonom.

Bankarski sektor u Republici Srpskoj ima visok stepen pravne i regulatorne uređenosti, a po karakteru prevladava „konzervativno bankarstvo“ sa depozitima kao osnovnim izvorom poslovanja i kreditima kao osnovnim proizvodom. Pod uticajem ekonomske i finansijske nestabilnosti duži period je usporen rast bankarskog sektora, a izloženost prvenstveno kreditnom riziku je povećana.

Bankarski sektor Republike Srpske na dan 30.06.2019. godine čini osam banaka (Tabela 1) sa većinskim privatnim kapitalom, uz dominaciju stranog akcionarskog kapitala kod pet banaka, odnosno sa većinskom učešćem domaćeg akcionarskog kapitala kod dvije banke. Dvije banke imaju državni akcionarski kapital, a učešće državnog akcionarskog kapitala u ukupnom akcionarskom kapitalu banaka u Republici Srpskoj je oko 0,7%.

Struktura vlasništva banaka u Republici Srpskoj data je u sljedećoj tabeli:

Tabela 1: Struktura akcionarskog kapitala sa stanjem na dan 30.06.2021.							(mil. KM)
Red. broj	Banka	Privatni kapital		Državni kapital		Zadružni kapital	
		Iznos	%	Iznos	%	Iznos	%
1.	Nova banka a.d. Banjaluka	184,5	26,8	0,0	0,0	0,1	68,1
2.	NLB banka a.d. Banjaluka	62,0	9,0	0,0	0,0	0,0	0,0
3.	UniCredit Bank a.d. Banjaluka	97,0	14,1	0,0	0,0	0,0	17,4
4.	Sberbank a.d. Banjaluka	62,2	9,0	0,0	0,0	0,0	0,0
5.	Addiko Bank a.d. Banjaluka	153,1	22,2	0,0	0,0	0,0	1,4
6.	MF banka a.d. Banjaluka	51,1	7,4	0,0	0,0	0,0	0,0
7.	Komercijalna banka a.d. Banjaluka	60,0	8,7	0,0	0,0	0,0	0,0
8.	Naša banka a.d. Bijeljina	18,8	2,7	5,0	100,0	0,0	13,0
UKUPNO:		688,7	100	5,0	100	0,2	100

Izvor: ABRS,(2021) "Izvještaj o stanju u bankarskom sistemu Republike Srpske za period 01.01.2021-30.06.2021.",str.21

Iz tabelarnog pregleda uočava se da se ukupni akcionarski kapital u bankarskom sektoru (694 miliona KM) sastoji od privatnog akcionarskog kapitala (99,3%), državnog kapitala (0,7%) i malog učešća zadružnog kapitala.

Privatni strani akcionarski kapital čini 66% ukupnog privatnog akcionarskog kapitala bankarskog sektora Republike Srpske na dan 30.06.2021. godine. Dominantno mjesto imaju akcionari iz Austrije sa učešćem od preko 30%, Italije sa učešćem 15%, te Slovenije, Srbije i ostalih zemalja sa učešćem u ukupnom akcionarskom kapitalu od 20%.

Bilans stanja

Ukupna aktiva bankarskog sektora na 30.06.2021. godine iznosi 10,3 milijardi KM, a čini ju neto aktiva u iznosu od 9.2 milijardi KM i vanbilansna aktiva u iznosu od 1.2 milijardi KM. Bruto krediti bankarskog sektora na 30.06.2021. godine iznose 5.6 milijardi KM i čine 59% ukupne aktive.

Primarni izvor finansiranja bankarskog sektora čine depoziti, te je samim tim obim poslovanja, planiranje i vođenje poslovne politike svake banke u direktnoj zavisnosti od nivoa, strukture i ročnosti depozita. Depoziti bankarskog sektora na 30.06.2021. godine iznose 7.1 milijardi KM i čine 78% ukupne pasive.

Struktura bilansa stanja bankarskog sektora Republike Srpske na dan 30.06.2021. godine data je u sljedećoj tabeli:

Tabela 2: Bilans stanja

Opis	**30.06.2021.**	
	Iznos (mil. KM)	**%**
AKTIVA:		
Novčana sredstva	2.371	25
HOV za trgovanje	1.161	12

Plasmani drugim bankama	21	0
Krediti (bruto)	5.605	59
HOV do dospijeća	31	0
Poslovni 117ctive117 i ostala fiksna aktiva	196	2
Ostala aktiva	129	1
UKUPNO:	**9.514**	**100**
Ispravke vrijednosti	364	
Ispravke vrijednosti za stavke kredita	341	
Ispravke vrijednosti za stavke 117ctive bez kredita	23	
NETO AKTIVA:	**9.150**	
Ukupno vanbilans	1162,5	
Aktivni vanbilans	1.085	
Komisioni poslovi	77	
UKUPNO AKTIVA	**10.312**	
PASIVA:		
Depoziti	7.090	78
Uzete pozajmice	0	0
Obaveze po uzetim kreditima	674	7
Subordinisani dugovi	52	1
Ostale obaveze	194	2
Rezerve za stavke vanbilansa	11	0
Kapital	1.128	12
UKUPNO OBAVEZE I KAPITAL	**9.150**	**100**
Ukupno vanbilans	1.163	
Aktivni vanbilans	1.085	
Komisioni poslovi	77	
UKUPNO PASIVA	**10.312**	

Izvor: www.abrs.ba

Bilans stanja bankarskog sektora Republike Srpske baziran je bilansima osam banaka. Stopa promjene neto aktive sa vanbilansom iznosi 6,1% i veća je za 3,1% u odnosu na kraj 2020. godine, što predstavlja pokazatelj pozitivnih kretanja u aktivnostima banaka u uslovima pandemije COVID-19.

Bilans uspjeha

Ukupni prihodi bankarskog sektora sa 30.06.2021. godine iznosili su 240 miliona KM. U strukturi ukupnih prihoda, najznačajnije učešće imaju prihodi od kamata i slični prihodi u iznosu 149 miliona KM, odnosno isti čine 62% ukupnih prihoda. Operativni prihodi čine 38% ukupnih prihoda.

Ukupni rashodi bankarskog sektora u istom periodu iznosili su 171 milion KM. U strukturi ukupnih rashoda bankarskog sektora, najznačajnije učešće imaju operativni rashodi u iznosu 116 miliona KM, odnosno isti čine 67,8% ukupnih rashoda. Rashodi po kamatama i slični rashodi iznosili su 30 miliona KM (17,3%), odnosno poslovni i direktni rashodi iznosili su 26 miliona KM (15% ukupnih rashoda).

Struktura Bilansa uspjeha bankarskog sektora Republike Srpske na 30.06.2021. godine prikazana je u sljedećoj tabeli:

Tabela 3: Bilans uspjeha

(mil. KM)

OPIS	30.06.2021.	
	Iznos	**%**
PRIHODI PO KAMATAMA I SL. PRIHODI		
Prihodi od kamata i sl. Prihodi	149	62
Operativni prihodi	92	38
UKUPNI PRIHODI	**241**	**100**
RASHODI		
Rashodi po kamatama i slični rashodi	30	17
Poslovni i direktni rashodi	26	15
Operativni rashodi	116	68
UKUPNI RASHODI	**171**	**100**
UKUPNI PRIHODI-RASHODI	**70**	
DOBIT PRIJE OPOREZIVANJA	**70**	
GUBITAK	**0**	
POREZI	**5**	
Dobit po osnovu poveć.odl.por.sredst.i smanj.odl.por.obaveza	**0**	
Gubitak po osnovu smanj.odl.por.sredst.i poveć.odl.por.obaveza	**1**	
NETO-DOBIT	**64**	
NETO-GUBITAK	**0**	

Izvor: www.abrs.ba

Prema podacima ABRS, u prvih šest mjeseci 2021. godine uočava se rast ukupnih prihoda za 9% i pad ukupnih rashoda za 5% u odnosu na isti period 2020. godine. Odnosno, svih osam banaka u Republici Srpskoj iskazalo je neto dobit u ukupnom iznosu od 64 miliona KM i ista je za 26 miliona (69%) veća u odnosu na isti period 2020. godine. Stopa povrata na kapital je 12,1% i veća je za 4,8%, a stopa povrata na aktivu je 1,5% i predstavlja povećanje za 0,6% u odnosu na prvih šest mjeseci 2020. godine.

Mreža finansijske sigurnosti

Mreža finansijske sigurnosti može ograničiti rizik koji banke preuzimaju, smanjiti šanse za insolventnost ili nelikvidnost, kao i stabilizovati strah privatnog sektora zbog dešavanja vezanih za propadanje pojedinih banaka (npr. Bobar banka, Banka Srpske i dr.).

Značaj banaka unutar svake ekonomije uzrokuje potrebu za strogom regulacijom bankarskog sektora, kao i za uspostavljanjem mreže finansijske sigurnosti koju u jednoj državi u najužem smislu čine:

- Centralna banka, koja najčešće ima ulogu „kreditora u krajnjoj instanci",
- bankarska regulativa i supervizija i
- osiguranje depozita.

Sigurnosna mreža ima četiri osnovna cilja:

1. Regulativa i supervizija banaka uspostavljeni su kako bi se osiguralo da banke posluju na siguran i ispravan način. Regulativa daje smjernice za prihvatljivo preuzimanje rizika, a supervizija osigurava da se propisi poštuju.
2. Bankarski sektor mora u krajnjoj nuždi imati pristup utočištu. Neočekivani manjak likvidnosti može izazvati pad banaka i kolaps finansijskog sistema.
3. Mehanizmi za rješavanje pada finansijskih institucija obezbjeđuju da se propale banke uklone brzo, prije nego se finansijske teškoće prošire i na druge institucije.
4. Sigurnosna mreža obezbjeđuje zaštitu deponenata i to prvenstveno malih i relativno ranjivih štediša.

Nivo pokrića je svakako važna karakteristika sigurnosne mreže koja podržava privatne deponente. Ako je postavljen prenisko, relativno mali deponenti mogu se suočiti sa neizvjesnošću u vezi banke u kojoj drže depozite. Ukoliko je nivo pokrića suviše visok, veliki sofisticirani deponenti neće nametati tržišnu disciplinu i banke se mogu izložiti poslovanju sa većim stepenom rizika. U oba slučaja, snažna supervizija i efikasan okvir za rezoluciju banaka mogu ublažiti neke od negativnih posljedica neadekvatno određenog nivoa pokrića.

Efikasan sistem sigurnosne mreže podrazumijeva olakšice deponentima prilikom ispunjavanja svojih obaveza, uključujući isplatu deponenta brzo, tačno i na pravičnoj osnovi, uz smanjenje troškova poremećaja na tržištu, maksimiziranje naplate iz aktive, te pojačanu disciplinu kroz pravne okvire i akcije u slučaju nemara ili drugih pogrešnih aktivnosti. Učesnici u mreži sigurnosti finansijskog sistema trebali bi imati ovlaštenja da uspostave fleksibilne mehanizme za očuvanje kritične funkcije bankarstva.

Currency board aranžman daje CBBiH ograničen prostor da manevriše u slučaju bankarske krize. CBBiH bi trebala povećati svoju nadležnost monitoringa, i efikasno se uvezati sa drugim agencijama, posebno Agencijama za bankarstvo.

Mrežu finansijske sigurnosti, dakle, čine institucije koje imaju ovlaštenja i odgovornosti da regulišu i nadgledaju poslovanje banaka, te da intervenišu kada je neophodno zaštititi deponente i očuvati finansijsku stabilnost.

U situaciji kada dolazi do sistemskih kriza, kao podrška mreži finansijske sigurnosti uključuje se vlada države. Povlačenje depozita u toku bankarske panike, smanjenje kreditnih aktivnosti usljed povlačenja depozita, kao i mogućnost propasti banaka podstiču svaku državu na stvaranje adekvatne mreže finansijske sigurnosti. Iz tog razloga mreža finansijske sigurnosti treba da bude postavljena na način koji će obezbjediti opreznu regulatornu politiku i obeshrabriti neželjeno povlačenje depozita. Podjela ovlaštenja, moći i odgovornosti između učesnica u finansijskoj sigurnosnoj mreži stvar je izbora javne politike i uslova u pojedinim zemljama.

Trendovi u kretanju prikupljenih depozita

Depoziti banaka (78% ukupne pasive) čine primarni izvor finansiranja bankarskog sektora Republike Srpske. Planiranje, obim i vođenje poslovne politike svake banke u direktnoj je zavisnosti od nivoa, strukture i ročnosti depozita. Na 30.06.2021. godine, ukupno prikupljeni depoziti bankarskog sektora Republike Srpske iznose 7 milijardi KM i veći su za 11% u odnosu na isti period 2020., odnosno 15% 2019. godine. Depoziti u konvertibilnim markama (68%) bilježe rast u odnosu na depozite u stranoj valuti.

Pregled sektorske strukture ukupno prikupljenih depozita banaka Republike Srpske u posmatranom periodu dat je u sljedećoj tabeli:

Tabela 4: Sektorska struktura ukupno prikupljenih depozita

(mil. KM)

OPIS	30.06.2019.		30.06.2020.		30.06.2021.	
	Iznos	%	Iznos	%	Iznos	%
Vlada i vladine institucije	643,8	10,5	722,4	11,4	1033,1	14,6
Javna i državna preduzeća	248,0	4,1	286,5	4,5	359,0	5,1
Privatna preduzeća i društva	813,4	13,3	847,6	13,4	1035,7	14,6
Neprofitne organizacije	99,7	1,6	112,0	1,8	116,6	1,6
Banke i bankarske institucije	333,8	5,5	423,3	6,7	171,8	2,4
Nebankarske fin. Institucije	345,1	5,6	247,6	3,9	299,8	4,2
Građani	3551,7	58,0	3.671,9	58,0	4049,2	57,1

Ostalo	84,8	1,4	18,3	0,3	24,6	0,3
UKUPNO	**6.120**	**100**	**6.330**	**100**	**7.090**	**100**

Izvor: *www.abrs.ba*

Iz tabelarnog pregleda se uočava da najveći rast imaju depoziti vlade i vladinih institucija od 310,7 miliona KM (43%), građana od 377,3 miliona KM (10%), privatnih preduzeća i društava veći su za 188,1 milion KM (22%), u odnosu na isti period 2020. godine.

Pad depozita evidentiran je samo kod banaka i bankarskih institucija i to za 251,5 milion KM (60%).

Rast depozita stanovništva najvećim dijelom je rezultat povjerenja u institut osiguranja depozita i straha od bilo kakvog investiranja. Agencija za osiguranje depozita je u ranijem periodu, periodu insolventnosti i likvidacije banaka djelovala besprijekorno, te bi ukoliko bi došla u situaciju da zataji neminovno dovela do kolapsa bankarskog sistema.

Depozitni osnov, prvenstveno građana (57,1%), sasvim je dovoljan za postojeći nivo kreditnih aktivnosti banaka. Međutim, ročna struktura depozita građana nepovoljna je sa stanovišta mogućnosti dugoročnog kreditiranja.

Pregled ročne strukture ukupno prikupljenih depozita banaka Republike Srpske dat je u sljedećoj tabeli:

Tabela 5: Ročna struktura ukupno prikupljenih depozita

(mil. KM)

OPIS	30.06.2019.		30.06.2020.		30.06.2021.	
	Iznos	%	Iznos	%	Iznos	%
Štednja i depoziti po viđenju	3.354,5	54,8	3.595,8	56,8	4.499	64
Do 3 mjeseca	80,3	1,3	45,2	0,7	8	0
Do 1 godine	445,9	7,3	364,0	5,8	203	3
1. Ukupno kratkoročni depoziti	**3.881**	**63**	**4.005**	**63**	**4.711**	**67**
Do 3 godine	1.929,7	31,5	2.003,4	31,7	2.074	29
Preko 3 godine	310,1	5,1	321,2	5,1	305	4
2. Ukupno dugoročni depoziti	**2.240**	**37**	**2.325**	**37**	**2.379**	**34**
Ukupno depoziti	**6.120**	**100**	**6.330**	**100**	**7.090**	**100**

Izvor: *www.abrs.ba*

Pregled pokazuje da su kratkoročni depoziti imali rast u iznosu od 706 miliona KM (18%), a dugoročni depoziti su veći za 54 miliona (1%) u odnosu na isti period 2020. godine. Odnosno kratkoročni depoziti bilježe rast od 21%, a dugoročni 6% u odnosu na isti period 2019. godine.

Kod kratkoročnih depozita zabilježen je rast štednje i depozita po viđenju za 903 miliona KM (25%), pad kratkoročne štednje do 3 mjeseca za 37,2 miliona KM i do 1 godine za 161 milion KM u odnosu na isti period 2020. godine.

Kod dugoročnih depozita, depoziti do 3 godine bilježe rast za 70 miliona KM (3,5%) u odnosu na isti period 2020., odnosno 145 miliona KM (8%) u odnosu na isti period 2019. godine.

Depoziti preko 3 godine manji su za 16 miliona KM (5%) u odnosu na isti period 2020. godine., odnosno za 5 miliona KM (2%) u odnosu na isti period 2019. godine.

Obzirom da se odluka o visini osiguranog depozita donosi na nivou Upravnog odbora Agencije za osiguranje depozita Bosne i Hercegovine, obezbjeđena je mogućnost brzog reagovanja u cilju ispunjavanja ciljeva javne politike, odnosno obezbjeđuje se zaštita štediša i održanje stabilnosti finansijskog sistema. Međutim, sa druge strane postoji potreba detaljne analize koja treba da podrži donešene odluke, pri čemu se moraju uzeti u obzir elementi kao što su nivo privrednog razvoja Bosne i Hercegovine (jedna od odrednica može da bude i veličina društvenog bruto proizvoda po glavi stanovnika), kvalitet bankarskog sektora Bosne i Hercegovine, nivo Fonda za osiguranje depozita, nivo pokrivenosti depozita osiguranjem u zemljama u okruženju, kao i odredbe Direktive Evropske Unije o osiguranju depozita.

Trendovi u kretanju kreditnih plasmana

Iznos plasiranih kredita najvažniji je pokazatelj obima poslovanja svake banke i sektora u cjelini s jedne strane, ali istovremeno i najveći potencijalni generator rizika u poslovanju, s druge. Bruto krediti na dan 30.06.2021. godine čine 59% bruto bilansne aktive.

Pregled sektorske strukture kredita banaka Republike Srpske dat je u sljedećoj tabeli:

Tabela 6: Sektorska struktura ukupnih kredita (mil. KM)

OPIS	30.06.2019.		30.06.2020.		30.06.2021.	
	Iznos	%	Iznos	%	Iznos	%
Vlada i vladine institucije	555,2	10,8	688,5	12,7	656,3	11,7
Javna i državna preduzeća	221,6	4,3	237,1	4,4	235,2	4,2
Privatna preduzeća i društva	1890,8	36,8	1.922,2	35,4	1952,8	34,8
Neprofitne organizacije	8,5	0,2	8,7	0,2	6,2	0,1
Banke i bankarske institucije	0,0	0,0	0,0	0,0	0,0	0,0

Nebankarske fin. institucije	47,7	0,9	61,7	1,1	47,3	0,8
Građani	2406,4	46,8	2.502,1	46,1	2698,5	48,1
Ostalo	11,6	0,2	10,5	0,2	9,0	0,2
UKUPNO	**5.142**	**100**	**5.431**	**100**	**5.605**	**100**

Izvor: www.abrs.ba

Pregled pokazuje da je iznos ukupnih kredita u posmatranom periodu za 174 miliona (3%) veći u odnosu na isti period 2020. godine, odnosno veći za 463 miliona (9%) u odnosu na 2019. godinu.

Usljed nastanka vanredne situacije izazvane pandemijom COVID-19, ABRS je odlukama o privremenim mjerama za ublažavanje negativnih ekonomskih posljedica omogućila bankama da ponude klijentima koji su pogođeni negativnim efektima, moratorijum za otplatu nastalih obaveza, grejs period i dr. Prema izvještaju ABRS, krediti po kojima su odobrene mjere čine 16% portfolija sa 30.06.2021. godine. Banke su, u skladu sa Odlukom o upravljanju kreditnim rizikom i utvrđivanju očekivanih kreditnih gubitaka, u prvih šest mjeseci 2021. godine izvršile računovodstveni otpis kreditnih potraživanja u iznosu 24 miliona KM i trajni otpis u iznosu 5 miliona KM.

Kad posmatramo sektorsku strukturu plasiranih kredita banaka Republike Srpske, najzastupljeniji su krediti plasirani građanima (48%) i privatnim preduzećima i društvima (35%), Vladi i vladinim institucijama (12%) i dr. Kod kredita plasiranih građanima zabilježen je rast od 8%, a kod kredita datih privatnim preduzećima i društvima za 2% u odnosu na isti period 2020. godine, dok se kod svih ostalih sektora bilježi pad kreditnih aktivnosti. Krediti dati vladi i vladinim institucijama manji su za 4%, odnosno javnim i državnim preduzećima za 1% u odnosu na isti period 2020. godine.

Mjere Vlade Republike Srpske za ublažavanje negativnih efekata pandemije, restriktivne mjere u cilju njenog suzbijanja, podrška privredi i dr. uticali su na rast privredne aktivnosti u Republici Srpskoj. Npr. u prvom tromjesečju 2021. godine evidentiran je rast privredne aktivnosti od 2,3% u odnosu na isti period 2020. godine.

Međutim, stagnacija kredita bankarskog sektora ukazuje na izostanak podrške realnom sektoru. Problemi bankarskog i realnog sektora međusobno su uslovljeni, odnosno bankarski sektor zahtijeva visoke kamatne stope na kredite, međutim realni sektor kredite sa visokim kamatnim stopama ne može da prihvati. Problem neusklađenosti u snižavanju aktivnih i pasivnih kamatnih stopa, odnosno značajan pad pasivnih i stagniranje aktivnih kamatnih stopa doprinosi tekućoj rentabilnosti, ali i „žrtvovanju budućnosti“. Obaranje aktivnih kamatnih stopa je preduslov da realni sektor pokaže veći interes za kredite i na taj način obezbijedi bankama izlaz iz stagnacije i značajniji doprinos privrednom i ekonomskom razvoju Republike Srpske.

Posmatrajući ročnu strukturu kredita na 30.06.2021. godine, uočava se da su kratkoročni krediti veći za 15 miliona KM (2%), odnosno dugoročni krediti za 196 miliona KM (4%) u odnosu na isti period 2020. godine. Dospjela potraživanja bilježe smanjenje 36 miliona KM (15%) u odnosu na isti period 2020. godine.

Pregled ročne strukture kredita banaka Republike Srpske dat je u sljedećoj tabeli:

Tabela 7: Ročna struktura ukupnih kredita

(mil. KM)

OPIS	30.06.2019.			30.06.2020.			30.06.2021.		
	< 1 god.	**> 1 god.**	**Dospjela potraž.**	**< 1 god.**	**> 1 god.**	**Dospjela potraž.**	**< 1 god.**	**> 1 god.**	**Dospjela potraž.**
Vlada i vladine institucije	2,9	550,2	2,2	4,7	682,1	1,7	5,3	650,2	0,8
Javna i državna preduzeća	13,8	204,0	3,9	7,5	228,4	1,2	15,8	216,5	2,9
Privatna preduzeća i društva	508,8	1.152,2	229,9	589,4	1.185,1	147,7	592,4	1.243,1	117,3
Neprofitne organizacije	2,6	2,8	3,1	1,3	6,6	0,8	0,7	5,4	0,1
Banke i bankarske institucije	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Nebankarske fin. institucije	6,1	41,0	0,5	3,0	58,2	0,5	0,9	45,9	0,4
Građani	169,2	2.113,5	123,7	169,2	2.254,1	78,8	175,5	2.450,1	72,9
Ostalo	0	11	0	0	10	0	0,4	8,5	0,1
UKUPNO	**704**	**4.075**	**363**	**776**	**4.424**	**231**	**791**	**4.620**	**195**

Izvor: www.abrs.ba

U ročnoj strukturi kredita prevladava dugoročno kreditiranje i isto u posmatranom periodu bilježi trend rasta.

Sa 30.06.2021. godine dugoročni plasmani iznosili su 4.6 milijardi KM i učestvovali su sa 82% u ukupnom kreditnom plasmanu.

Najveće učešće u strukturi dugoročnih kredita imaju krediti građanima u iznosu 2.4 milijarde KM (53%) i isti pokazuju trend rasta u posmatranom periodu.

Dugoročni krediti privatnim preduzećima i društvima u iznosu 1.2 milijarde KM, učestvuju sa 27% u ukupnim dugoročnim kreditima na kraju juna 2021. godine i veći su za 5% u odnosu na isti period 2020. godine.

U strukturi kratkoročnih kredita, najznačajnije učešće imaju krediti privatnim preduzećima i društvima, u iznosu 592,4 miliona KM (75%) sa trendom rasta u posmatranom periodu.

Kratkoročni krediti građanima u ukupnim kratkoročnim kreditima učestvuju sa 22% i pokazuju blagi trend rasta u posmatranom periodu.

Dospjela potraživanja kod kredita privatnim preduzećima i društvima i dospjela potraživanja kod kredita datih građanima na 30.06.2021. godine čine 98% ukupnih dospjelih potraživanja. Stopa dospjelih kredita u odnosu na ukupne kredite iznosi 3,5% i manja je u odnosu na isti period 2020. godine (4,3%), odnosno isti period 2019. godine (7%). Na smanjenje dospjelih potraživanja uticala je primjena nove Odluke ABRS o upravljanju kreditnim rizikom i utvrđivanju očekivanih kreditnih gubitaka kojom je propisan računovodstveni otpis dospjelih kredita, kvalitetnije upravljanje kreditnim rizikom i dr.

Stopa dospjelih kredita privatnim preduzećima i društvima u odnosu na ukupne kredite date privatnim preduzećima i društvima iznosi 6%, a stopa dospjelih kredita građana u odnosu na ukupne kredite građanima iznosi 2,7%.

Ukupno prikupljeni depoziti i plasirani krediti u Republici Srpskoj

Ukupni depoziti na teritoriji Republike Srpske u posmatranom periodu bilježe rast od 11% u odnosu na isti period 2020. godine, odnosno 2019. godine, a iznos plasiranih kredita je za 4% veći u odnosu na 30.06.2020. godine, odnosno za 10% u odnosu na isti period 2019. godine.

Uporedni pregled prikupljenih depozita i plasiranih kredita na teritoriji Republike Srpske dat je u sljedećoj tabeli:

Tabela 8: Prikupljeni depoziti i plasirani krediti (mil. KM)

OPIS	30.06.2019.		30.06.2020.		30.06.2021.	
	Iznos depozita	Iznos kredita	Iznos depozita	Iznos kredita	Iznos depozita	Iznos kredita
Banke RS	6.120,4	5.141,8	6.329,6	5.430,7	7.089,9	5.605,2
Poslovne jedinice banaka FBiH	911,4	1.469,8	959,2	1.540,8	1.075,4	1.636,9
UKUPNO:	7.031,9	6.611,6	7.288,8	6.971,5	8.165,3	7.242,1

Minus: Poslovne jed. Banaka RS u FBiH	329,8	244,7	332,5	274,7	432,6	270,6
UKUPNO	**6.702**	**6.367**	**6.956**	**6.697**	**7.733**	**6.972**

Izvor: www.abrs.ba

Organizacione jedinice banaka sa sjedištem u Republici Srpskoj, koje obavljaju aktivnosti na teritoriji Federacije BiH, bilježe rast depozita od 30% i pad kredita od 2% na dan 30.06.2021. godine u odnosu na isti period 2020. godine, odnosno rast depozita od 30% i rast kredita od 10% u odnosu na isti period 2019. godine.

Poslovne jedinice banaka koje imaju sjedište u Federaciji BiH, a obavljaju aktivnosti u Republici Srpskoj bilježe rast depozita od 12% i rast kredita od 6% u odnosu na isti period 2020. godine, odnosno rast depozita od 18% i kredita od 11% u odnosu na isti period 2019. godine.

Supervizija banaka u Evropi i svijetu

Bankarski sistem u SAD vezuje se za osnivanje Federalnog rezervnog sistema (1913. godine) koji predstavlja centralnu banku i koji u svom sastavu ima dvanaest federalnih rezervnih banaka. Federalni rezervni sistem, pored obavljanja supervizije i kontrole poslovanja banaka članica, predlaže i sprovodi monetarnu politiku, obavlja transakcije za banke članice sistema, poslove za vladu SAD, te emituje novčanice i kovani novac.

Bankarski sistem Engleske datira od 1694. godine formiranjem Bank of England čiji je zadatak prvenstveno koncentracija kapitala i specijalizacija bankarskog poslovanja. Centralna banka Engleske sastoji se od bankarskog sektora (Banking department) koji se bavi aktivnim i pasivnim bankarskim poslovima i emisionog sektora (Issue department) koji se bavi izdavanjem novčanica.

Bankarski sistem Njemačke institucionalizovan je donošenjem Zakona 1885. godine. Centralna banka Njemačke predstavlja banku prvog stepena, čiji su zadaci emitovanje novca, određivanje eskontne politike, politike monetarnih rezervi, kreditne politike, finansijskih i blagajničkih poslova za centralnu vladu. Njemački bankarski sistem ima federalnih jedinica koliko i distrihta – 11.

Jedan je od najrazvijenijih bankarskih sistema u svijetu je bankarski sistem Švajcarske, u kojem Centralna banka Švajcarske nije državna ustanova, nego mješovita privredna institucija sa većinskim vlasništvom kantona. Kantonalne banke (28 banaka), pretežno se bave hipotekarnim poslovima, predstavljaju državne institucije koje su raspoređene po kantonima.

Bankarski sistem Japana karakterističan je prvenstveno po velikom broju bankarskih institucija (oko 9000), sa međusobno razvijenim finansijskim odnosima i čvrsto uspostavljenom vezom sa finansijskim vlastima. Japanska banka predstavlja Centralnu banku Japana koja obavlja poslove kreditne kontrole, emisione poslove i poslove iz domena monetarne politike, a organizovana je kao jedinstvena institucija sa tridesetak filijala u Japanu i sa filijalama u Londonu i Njujorku. Sa 55% kapitala država je većinski vlasnik kapitala odnosno privatni kapital prisutan je sa 45%. Centralnu banku Japana karakteriše sužena autonomija jer njene odluke može ograničiti ili suspendovati vlada Japana.

Ulogu centralne banke u Srbiji vrši Narodna banka Srbije koja je za svoj rad odgovorna Narodnoj skupštini Republike Srbije. Neke od nadležnosti Narodne banke su: utvrđivanje monetarne politike, regulisanje količine novca u opticaju, regulisanje likvidnosti banaka i drugih finansijskih organizacija, regulisanje aktivnosti u plaćanjima sa inostranstvom, izdavanje novčanica i kovanog novca i dr. Narodna banka Srbije je samostalna i nezavisna u obavljanju aktivnosti.

Supervizija banaka u Evropskoj uniji

Koncept Evropske bankarske unije podrazumijeva da se u okviru Evropske unije ustanovi centralna i zajednička odgovornost za finansijski nadzor, osiguranje depozita i sanaciju i poravnanje kreditnih instituta. Ovaj koncept bi trebao omogućiti zemljama evrozone, ali i zemljama koje se žele priključiti evrozoni, da objedine tri međusobno povezana i komplementarna podsistema:

- ✓ jedinstven nadzorni mehanizam,
- ✓ jedinstven mehanizam restruktuiranja i
- ✓ evropski sistem osiguranja depozita.

Jedinstvena i obavezujuća pravila za sve članice Evropske unije predstavljaju sveobuhvatan regulatorni okvir za funkcionisanje evropskog tržišta finansijskih usluga u cilju uređenja bankarskog sistema.

Kako bi se povećali efikasnost, efektivnost, tržišna disciplina i transparentnost banaka, utvrđena su sljedeća zajednička pravila:

- ➢ pravila vezana za kapitalne zahtjeve,
- ➢ okvir za intervenciju u banci suočenoj sa poteškoćama i likvidacijom i
- ➢ pravila osiguranja depozita.

Obzirom da je cilj Bosne i Hercegovine aplikacija za članstvo u Evropskoj uniji, ABRS je opredjeljena da u periodu tranzicije usmjeri aktivnosti na usaglašavanje regulatornog okvira sa okvirom Evropske unije. Posljedice globalne finansijske krize otkrile su značajne nedostatke u supervizorskim i regulatornim okvirima koji se primjenjuju u BiH, uključujući i nedostatak supervizorske kontrole nad prekomjernim i oslabljenim aktivnostima kreditiranja od strane banaka.

Projekat Evropske bankarske unije osmišljen je kao jedan od ključnih faktora za vraćanje povjerenja u finansijski sektor nakon svjetske finansijske krize i prevenciju budućih finansijskih potresa, koja podrazumijeva centralizaciju odlučivanja na nivou Evropske unije. Strategijom za uvođenje Bazela III, ABRS je predvidjela izmjene koje se odnose unapređenje u oblasti korporativnog upravljanja u bankama i uvođenje novih minimalnih standarda za upravljanje rizikom, uvođenje novih standarda kapitala, unapređenje kvaliteta kapitala, jačanje kapitalnih zahtjeva, uvođenje zaštitnih slojeva kapitala i finansijske poluge i dr. Takođe, predviđen je između ostalog i oprezan, postepen prelazak na novi regulatorni okvir kako bi se osiguralo da ABRS razvije i vlastite supervizorske kapacitete za kreiranje i provođenje novog regulatornog okvira, a u saradnji sa svim relevantnim domaćim i stranim institucijama (ABRS, 2016. godina).

ABRS je u obavezi da efikasno procjenjuje adekvatnost upravljanja rizicima i kapitalom od strane banaka, te da kontinuirano unapređuje regulativu iz oblasti supervizije banaka u cilju očuvanja, kontrole i jačanja stabilnosti bankarskog sistema Republike Srpske.

Evropska Komisija je u oktobru 2021. godine objavila Odluku kojom je potvrdila ekvivalenciju nadzornog i regulatornog okvira u Bosni i Hercegovini u odnosu na uredbe i direktivu Evropskog parlamenta i Vijeća o bonitetnim zahtjevima za kreditne institucije i investiciona društva, odnosno o pristupanju djelatnosti kreditnih institucijai bonitetnom nadzoru nad kreditnim institucijama i investicionim društvima. Odluka Evropske Komisije predstavlja dostizanje strateškog cilja ABRS i ima veliku važnost za Republiku Srpsku, Bosnu i Hercegovinu, bankarski sistem, ekonomiju i građane.

Zaključak

Svrha supervizije bankarskog sektora, odnosno bankarskog sistema je prvenstveno zaštita deponenata, investitora i akcionara finansijskih institucija od različitih vrsta rizika, te samim tim i smanjenje njihovih gubitaka. Uzimajući u obzir rezultate ostvarene u poslovanju banaka i drugih finansijskih institucija sa krajem juna 2021. godine, može se zaključiti da je u Republici Srpskoj bankarski sistem u cjelini zadržao stabilnost. Ukupne depozitne i kreditne aktivnosti bilježe rast na kraju posmatranog perioda i pored izazova sa kojima je bankarski sektor bio suočen usljed pandemije COVID-19. Kontinuiran rast depozita realnog sektora govori o kontinuiranom jačanju istog, a rast depozita stanovništva najvećim dijelom rezultat je povjerenja u institut osiguranja depozita i straha od bilo kakvog investiranja. Kreditni rast bankarskog sektora Republike Srpske najznačajnijim dijelom vezan je za rast kredita građana, dok kreditiranje privatnih preduzeća i društava koji predstavljaju potencijalno značajne nosioce privrednog i ekonomskog rasta od strane banaka je veoma malo, te ukazuje na nedovoljnu zainteresovanost bankarskog sektora za ulaganje u privredne aktivnosti Republike Srpske.Trend smanjenja depozita bankarskih institucija iz inostranstva, ukazuje na to da strani investitori nemaju interes za ulaganja u Republiku Srpsku. Depozitna osnova domaćih lica, prije svega građana, sasvim je dovoljna za postojeći nivo kreditnih aktivnosti banaka. Međutim, ročna struktura depozita građana ne ide u prilog dugoročnom kreditiranju, čime se značajno smanjuje i mogućnost značajnijeg doprinosa banaka privrednom i ekonomskom razvoju države.

Problem neusklađenosti u visini aktivnih i pasivnih kamatnih stopa, odnosno niske pasivne i stagniranje aktivnih kamatnih stopa doprinosi tekućoj rentabilnosti, ali i „žrtvovanju budućnosti“. Smanjenje aktivnih kamatnih stopa je preduslov da realni sektor pokaže veći interes za kredite i na taj način obezbijedi bankama izlaz iz stagnacije i značajniji doprinos privrednom i ekonomskom razvoju Republike Srpske.

ABRS treba da usmjeri aktivnosti i mjere kako bi se povećale ukupne kreditne aktivnosti, primarno kroz podršku privredi, kontinuiran nadzor banaka - prvenstveno banaka od sistemskog značaja jer je u istim koncentrisan najznačajniji dio štednje i drugih depozita, kapitalnom jačanju prvenstveno banaka koje bilježe natprosječan rast aktive i smanjenje koeficijenta adekvatnosti kapitala. Takođe, potrebno je unaprijediti aktivnosti na projektu "Stres testova" banaka, kao i pojačati nadzor kreditnog rizika, kvaliteta aktive itd.

Bankarska regulativa treba da podrži poslovanje banaka zasnovano na sigurnim i stabilnim osnovama.

Za efikasnu regulatornu disciplinu neophodna je saradnja svih učesnika mreže finansijske sigurnosti.

Efikasan proces rješavanja problematičnih banaka treba da obezbijedi kontinuitet u obavljanju bankarskih poslova, zaštitu osiguranih depozita, lociranje gubitaka ka akcionarima i neosiguranim kreditorima, neoslanjanje na javni novac, minimiziranje troškova rješavanja problematičnih banaka, zatvaranje neodrživih banaka, kredibilitet procesa rješavanja, te jačanje tržišne discipline.

Takođe, efikasan proces rješavanja problematičnih banaka podrazumjeva i da proces rješavanja problematičnih banaka bude takav da se u što je moguće kraćem roku donese odluka da li je neka banka sposobna da nastavi vlastito poslovanje ili, ukoliko to nije slučaj, da se što prije isključi iz sistema kako bi se vrijednost supstance (aktive) zadržala u što većem iznosu.

Brze korektivne supervizorske mjere podrazumjevaju upućivanje zahtjeva direktno prema bankama, njihovim menadžerima i samim vlasnicima banaka, da se zabrani isplata bonusa menadžmentu banke, ili zahtjeva njihova smjena sa menadžerskih pozicija. Supervizori su u mogućnosti da kroz različite mjere i postavljene zahtjeve direktno utiču na samu banku, a naročito na: održavanje visoke stope adekvatnosti kapitala i pozicije likvidnosti, zahtjeve za poboljšanjem sistema interne kontrole, mjere restrikcije u smislu nedozvoljavanja prekomjernog rasta bančinih bilansa, širenja poslovne mreže, i sl.

Ako proces rješavanja problematičnih banaka traje duži vremenski period, može da dođe do daljeg „topljenja" aktive banaka, nemogućnosti naplate Fonda za osiguranje depozita za prethodno isplaćene osigurane depozite, a time i do moguće destabilizacije cjelokupnog finansijskog sistema.

Efikasan supervizor će preduzeti aktivnosti i mjere koje će da podstaknu korporativno rukovođenje i adekvatno upravljanje rizicima banaka kroz propisane standarde i procedure koje predstavljaju pravce djelovanja menadžera u bankama, adekvatne interne kontrole i revizije, upravljanje rizicima, procjenjivanje bankarske tržišne pozicije, praćenje realizacije definisanih ciljeva, kao i upravljanje kapitalom i likvidnošću.

Naravno, značajnu ulogu u održavanju pozitivnih kretanja u bankarskom sektoru ima okruženje i to prije svega privredni ambijent, sudstvo i zakonodavstvo.

Pred bankarskim sektorom Republike Srpske je budućnost koja će sasvim sigurno biti neizvjesna, ali ono što je svakako izvjesno je da će supervizija banaka i dalje diktirati tempo i uspješnost razvoja i poslovanja bankarskog sektora, odnosno imati veoma važnu ulogu u njegovom daljem napretku i razvoju.

Bankarski sektor Republike Srpske, posmatrano u cjelini, pokazao je stabilnost usljed vanredne situacije izazvane pandemijom COVID-19, iako prolazi kroz određeni period stagnacije.

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THE ROLE OF THE SUPERVISOR PRESERVATION AND STRENGTHENING OF THE BANKING SECTOR OF REPUBLIKA SRPSKA

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Review paper

Abstract

Banking sector represents component of the banking system and the overall economy of the state, which a has a significant impact on the general economic environment in which all business and financial activities of economic entities are carried out, as well as all economic events that are important for the national economy. Commercial banks are facing, on the one hand, according to the management structure of the bank, and on the other hand to the state control institutions. The regulator of the banking sector, through defined instruments and legislation, strives to preserve and strengthen the stability of the banking sector, and to improve its safe, high-quality and legal operations.

Absence of regulation, inadequate regulation and inadequate capacity of regulatory bodies and how they affected the situation in the banking sector as we recognize it today, i.e. in the period after the last economic crisis. State is Additionally heavy sorrow pandemic COVID -19 which is in short period caused fall economic and society activities, which are the birth of women in 2020 the first half of 2021. An attempt will be made to reduce the consequences by introducing a new, more comprehensive regulation, with uncertainty as to whether the regulatory body will be able to prevent the deepening of the crisis in the banking sector through preventive action.

The Banking Agency of the Republika Srpska supervises the functioning of the banking sector Republika Srpska, as well as the general banking environment in which it is located system. The aim of the work is to analyze the impact of the crisis caused by the pandemic COVID -19 on banking sector Republic Srpska, that through quantitative indicators - the amount of total deposits/savings on the one hand, and bank placements and the quality of assets from the point of view of credit losses in the period 30.06. 2 019-30.06.2021. years, on the other. The results show that in the observed period, there is an evident increase in deposits,

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but also an increase in credit activities in the banking sector of the Republic of Srpska. The conclusion of the research indicates that the crisis caused by the COVID-19 pandemic did not shake confidence in the banking sector, i.e. that the changes were not so significant that they could have a decisive impact on the movements of the analyzed financial indicators during the pandemic period.

The work is structured in such a way as to include both theoretical principles and concrete empirical research on the influence of supervision on strengthening the stability of the banking system.

Keywords*: supervisor, insured deposit, financial stability, COVID-19*

JEL: E52, E59.

Introduction

A crisis caused by a pandemic COVID -19, which appeared at the beginning of 2020, significantly affected not only people's health, but also economies and societies around the world. Lockdown, restrictions and bans on movement, changes in the way of work, reduction of overall social and economic activity have led to major changes in the consumption of the population. The most significant changes are observed in the reduction of consumption in the sectors of tourism, catering and transport, that is, in the increase of consumption in the sectors of the food industry and household goods.

Creating an economic and financial environment in which m will the financial and banking activities of a country take place, especially in conditions of a pandemic COVID -19 is not a simple task at all. Given that -economic relations are more complex in the conditions of a pandemic, the state must be more careful in defining and implementing all strategies that direct the state's economic activity.

In order to respond to difficult business conditions, it is necessary to undertake a series of measures in the banking sector. The banking sector in Republika Srpska consists of 8 banks, with total assets of 10.3 billion KM and about 3,000 employees. The state should make sure to create adequate regulation of the banking sector, which, in addition to other prerequisites for successful business, is one of the foundations of a stable economic system of the state. Supervision has a very significant role in the financial sector, because depending on the tools it applies and the influence it has, it determines the environment in which the business activity of each individual participant will be carried out, that is, the general stability of the financial sector.

Today, countries create their supervision mostly in imitation of more successful developed countries, trying to make maximum use of proven strategies. The supervision of banks creates a general environment that gives all banks equal opportunities, and it depends on the bank itself whether and to what extent it will take advantage of that opportunity.

In practice, regularities can be identified with regard to certain items in the bank's operations. That is, by analyzing a series of available indicators that show the level of development, the success of the bank's operations and the potential for its further development can be determined. Based on the analysis of business results, the position of the bank in the market can be predicted in comparison with competing banks.

Analysis of the interdependence of supervision and bank operations is very significant. It is important to determine regularities in the behavior of banks, as well as to examine the influence of external factors on the use of banks' internal advantages. In essence, the supervision of banks should enable a competitive environment, a market that will be regulated and directed to the growth and development of each of its participants. Given that even greater uncertainties in business and risks are expected in the years ahead, every country must as soon as possible create its own stable economic system, stable political and social environment that will provide incentives for further growth and development of the country.

The main goal of the work is to determine in the supervisor's log the preservation and strengthening of the banking sector in the territory of the Republic of Srpska.

Republika Srpska Banking Agency (hereinafter: ABRS) represents the supervisor in the functioning of the banking sector, that is, the general environment in which the financial sector in the Republic of Srpska is located. Status, organization, financing, competences and work of ABRS as well as dream goal - preserving and strengthening the stability of the banking system while improving its safe, quality and legal operations, are prescribed by the Law on the Banking Agency of the Republic of Srpska.

The subject of the paper is the impact of ABRS on the banking sector, with an emphasis on developments in the following areas: the amount of total deposits/savings on the one hand, and the impact on bank placements and asset quality from the point of view of credit losses in the period 06.30.2019-06.30.2021. years, on the other.

The paper is structured in such a way as to include theoretical principles and concrete empirical research on the importance of supervision in strengthening the stability of the banking system. The aim of the work is to get a clearer picture and a better understanding of the stability of the banking sector, as well as trust in banks in the conditions of a pandemic. The final goal of the paper is to point out the advantages and disadvantages of supervision of the RS banking sector by AB RS, and its influence on the further development of the financial market in the Republic of Srpska.

Supervision of the banking sector

The essence of the supervision of the banking and financial system of a country is primarily the protection of depositors, investors and shareholders of financial institutions from various risks to which they are exposed. One of the more important goals of supervision is to reduce the consequences of bad practice and fraud, that is, to isolate the effects of any loss produced by a certain institution, thus preventing the emergence of a potential "domino effect ".

The role of the bank within the financial system is to provide loans, receive deposits and provide other financial services to clients, observing strict legal regulations that were prepared primarily to protect the interests of the public. In order for the function of bank supervision to be carried out effectively, it is necessary to have adequate resources and legal authorizations for the implementation of prudent supervision, the establishment of independent regulatory and supervisory authorities, as well as a clear definition of the supervisor's responsibilities in the process of performing supervisory activities.

The reform of the banking system is aimed at crisis prevention, more efficient supervision of the banking system, timely intervention of supervisors in the event of a deterioration in the financial position of banks, and determination of authorizations and instruments for managing the exit process of failed banks from the market, with minimal reliance on public funds.

Regulation and supervision business operations of banks are understood as market conditions and economic conditions.

and leadership functions, along with the existence of asymmetric information, leads to problems in the relationship between bank owners (principals) and bank managers (agents). Dissatisfied with the support they have from the owners, bank managers are often not interested in maximizing profits as much as the bank owners themselves and, in the desire to achieve personal benefits, they may decide to carry out certain "dubious" activities that the bank owners are not comfortable with. to meet.

Increased and stricter regulation of bank activities puts the competition of commercial banks and their active participation in the financial market in the foreground. Commercial banks emphasize profitability and placement, in conditions of variable interest rates and fluctuating exchange rates, while accepting greater risk in order to remain competitive on the financial market.

In order to reduce the influence of systemic risk on the operations of banks, it is necessary to establish a new form of control through the supervision of banks, and in order to preserve their systemic stability. With the supervision of banks, rules are adopted that create market discipline and motivate private monitoring of banks, which has proven to have an impact on the operations of banks, and thus on improving the impact of banking on the entire economy.

Through supervision and measures to eliminate established irregularities and weaknesses, ABRS aims to ensure a stable, solvent, liquid and profitable banking system of the Republic of Srpska. A complicating circumstance for the regulator in the implementation of business activities is that banks, that is, financial institutions in search of profit have a good motive for avoiding existing regulations and looking for "loopholes", finding a way to avoid regulations, which is why the regulator has to modify them. In a financial system in which changes are very frequent, regulatory authorities often face new challenges, because if they do not respond to changes quickly, they will not be able to prevent financial institutions from taking excessive risks. Also, aggravating circumstances for the regulator are "little things" that can be extremely important, because if even the smallest differences appear in the data, they can cause unfathomable consequences. However, although according to the legal framework ABRS has operational independence, the very context in which it operates is difficult due to the significant interdependence between the Government and the domestic banking sector, whose influence is not negligible.

With the decisions (year 2020) on the introduction of temporary measures in order to mitigate the negative consequences caused by the COVID-19 virus, ABRS undertook activities aimed at preserving the stability of the banking sector of the Republic of Srpska. The measures were related to the granting of relief to the bank's clients who were affected by the negative effects of the pandemic, in order to overcome the difficulties they are facing and to properly settle their obligations to the bank in the following period. Also, the measures related to certain rules for credit risk management and capital preservation of banks, etc.

Deposit insurance

The need to protect the deposits of commercial banks is caused by the unstable situation on the world financial market. The financial sector is one of the most strictly regulated sectors in the economy, and banks are the most regulated of all financial institutions. Regulatory processes do not always function as expected and as they should, as evidenced by the crises of banking systems.

A government deposit insurance program can reduce the influx of depositors into banks, protecting them and allowing them to reinvest funds in the banking system.

In addition to deposit insurance, governments have often helped domestic banks that get into trouble, even those that do not have insured deposits, most often in the form of the Central Bank approving loans to troubled banks - "the role of the lender of last resort". In other cases, troubled banks receive funding directly from the government or are taken over by the government.

The basic principles of the Basel Committee for Successful Banking Supervision confirmed that a carefully created deposit insurance system can significantly contribute to public confidence in the financial system and thus limit the "contagion" from banks in trouble, with the fact that it did not offer instructions for successful deposit insurance systems at the same time. The introduction or reform of the deposit insurance system is more successful if we have a healthy banking system and stable institutions in the environment. However, depositors are aware that they will not suffer any losses up to the amount of the insured deposit, if the bank fails, and they do not impose market discipline on banks, that is, they do not withdraw funds when they suspect that the bank has engaged in risky business. On the other hand, because of such security, banks are motivated to take greater risks. Since protected depositors do not have much reason to monitor the bank's activities, without the government's interference in the banking sector, fraudsters can also get into the banking sector and, for all the bad things they do, they can get a light sentence..

"Too Big to Fail" explains that bank regulators are reluctant to allow a large bank to fail and cause large losses to its depositors, since the failure of a large bank leads to a major financial upheaval in the country.

In June 2020, a new Law on deposit insurance in banks of Bosnia and Herzegovina was adopted. The main goal of the Law is to ensure the protection of deposits of individuals and legal entities in banks that have received a license to operate from the competent banking agency and thus contribute to the preservation of overall financial stability. Also, the Deposit Insurance Agency of Bosnia and Herzegovina receives a new mandate - to participate in the process of bank restructuring with the funds of the Deposit Insurance Fund, in certain cases. The deadline for paying depositors due to the revocation of the bank's license to operate is shortened from 90 to 20 working days.

The maximum amount of the insured deposit that is currently paid out by the Deposit Insurance Agency of Bosnia and Herzegovina amounts to 50,000 KM (together with the calculated interest per depositor per member bank, less the depositor's legal or contractual debt to the bank).

The banking sector in the Republic of Srpska

The banking system of the Republika Srpska includes banks, microcredit organizations, savings and credit organizations, lessors and other financial organizations whose establishment and operations are regulated by a special law.

The banking sector in Republika Srpska has a high degree of legal and regulatory organization, and "conservative banking" prevails in character, with deposits as the main source of business and loans as the main product. Under the influence of economic and financial instability, the growth of the banking sector slowed down for a long period, and the exposure primarily to credit risk increased.

The banking sector of the Republic of Srpska as of June 30, 2019. year consists of eight banks (Table 1) with the majority of private capital, with the dominance of foreign equity capital at five banks, i.e. with the majority participation of domestic equity capital at two banks. Two banks have state share capital, and the share of state share capital in the total share capital of banks in Republika Srpska is about 0.7%.

The ownership structure of banks in the Republic of Srpska is given in the following table:

Tabela 1: Struktura akcionarskog kapitala sa stanjem na dan 30.06.2021. (mil. KM)

Red. broj	Banka	Privatni kapital		Državni kapital		Zadružni kapital	
		Iznos	%	Iznos	%	Iznos	%
1.	Nova banka a.d. Banjaluka	184,5	26,8	0,0	0,0	0,1	68,1
2.	NLB banka a.d. Banjaluka	62,0	9,0	0,0	0,0	0,0	0,0
3.	UniCredit Bank a.d. Banjaluka	97,0	14,1	0,0	0,0	0,0	17,4
4.	Sberbank a.d. Banjaluka	62,2	9,0	0,0	0,0	0,0	0,0
5.	Addiko Bank a.d. Banjaluka	153,1	22,2	0,0	0,0	0,0	1,4
6.	MF banka a.d. Banjaluka	51,1	7,4	0,0	0,0	0,0	0,0
7.	Komercijalna banka a.d. Banjaluka	60,0	8,7	0,0	0,0	0,0	0,0
8.	Naša banka a.d. Bijeljina	18,8	2,7	5,0	100,0	0,0	13,0
UKUPNO:		688,7	100	5,0	100	0,2	100

Izvor: ABRS,(2021) "Izvještaj o stanju u bankarskom sistemu Republike Srpske za period 01.01.2021-30.06.2021.",str.21

From the tabular overview, it can be seen that the total share capital in the banking sector (694 million KM) consists of private share capital (99.3%), state capital (0.7%) and a small share of cooperative capital.

Private foreign share capital constitutes 66% of the total private share capital of the banking sector of the Republic of Srpska as of June 30, 2021. years. The dominant position is held by shareholders from Austria with a share of over 30%, Italy with a share of 15%, and Slovenia, Serbia and other countries with a share in the total share capital of 20%.

Balance Sheet

Total assets of the banking sector at 3 0. 06.20 21. year is 10.3 billion KM, and it consists of net assets in the amount of 9. 2 billion KM and off-balance sheet assets in the amount of 1.2 billion KM. Gross loans of the banking sector at 3 0. 06.20 21. years are 5. 6 billion KM and make up 59 % of total assets.

primary source of funding for the banking sector, and thus the volume of operations, planning and management of the business policy of each bank is directly dependent on the level, structure and maturity of deposits. Deposits of the banking sector at 3 0. 06.20 21. years are 7. 1 billion KM and make up 7-8 % of the total liabilities.

Structure of the balance sheet of the banking sector of the Republic of Srpska as of 30. 06.20 21. year is given in the following table:

Table 2: Balance sheet

Description	30.06.2021.	
	Amount (mil. KM)	**%**
ASSETS:		
Cash assets	2.371	25
HOV for trading	1.161	12
Placements with other banks	21	0
Loans (gross)	5,605	59
HOV until maturity	31	0
Business assets 139and 139other fixed assets	196	2
Other assets	129	1
IN TOTAL:	**9,514**	**100**
Value corrections	364	
Value corrections for loan items	341	
Corrections values For items 139cive without credit	23	
NET ASSETS:	**9,150**	
Total off balance	1162.5	
Active off balance	1.085	
Commission affairs	77	
TOTAL ASSETS	**10,312**	
LIABILITIES:		
Deposits	7,090	78
You took out loans	0	0
Obligations for taken loans	674	7
Subordinated debts	52	1
Other obligations	194	2
Reserves for off-balance sheet items	11	0
Capital	1.128	12
TOTAL LIABILITIES AND EQUITY	**9,150**	**100**
Total off balance	1.163	
Active off balance	1.085	
Commission affairs	77	

TOTAL LIABILITIES	10,312	

Source: www.abrs.ba

The balance sheet of the banking sector of Republika Srpska is based on balance sheets of eight banks. The rate of change in off-balance sheet net assets is 6.1% and is 3.1% higher than at the end of 2020, which is an indicator of positive trends in the activities of banks in pandemic conditions

COVID-19.

Income statement

Total revenues of the banking sector from 3 0. 06.20 21. were 240 million KM. In the structure of total income, the most significant share is income from interest and similar income in the amount of 149 million KM, that is, they make up 6.2 % of total income. Operating revenues make up 3 8 % of total revenues.

Total expenditures of the banking sector in the same period amounted to 171 million KM. In the structure of total expenditures of the banking sector, the most significant share is operational expenditures in the amount of 116 million KM, that is, they make up 67.8 % of total expenditures. Interest expenses and similar expenses amounted to 30 million KM (17.3%), that is, business and direct expenses amounted to 26 million KM (1.5 % of total expenses).

Structure of the Income Statement of the banking sector of the Republika Srpska at 30. 06.20 21. year is shown in the following table:

Table 3: Income statement

(mil. KM)

DESCRIPTION	30.06.2021.	
	Amount	**%**
INTEREST INCOME, ETC. INCOME		
Interest income, etc. Income	149	62
Operating income	92	38
TOTAL INCOME	**241**	**100**
EXPENSES		
Interest expenses and similar expenses	30	17
Business and direct expenses	26	15
Operating expenses	116	68
TOTAL EXPENDITURE	**171**	**100**
TOTAL INCOME-EXPENSES	**70**	
PROFIT BEFORE TAX	**70**	
LOSS	**0**	
TAXES	**5**	

Profit as per basis more dept. Lt. means. and reduce. dept. Lt. obligation	**0**	
Loss as per basis reduce. dept. Lt. means. and more dept. Lt. obligation	**1**	
NET PROFIT	**64**	
NET LOSS	**0**	

Source: www.abrs.ba

According to ABRS data, in the first six months of 2021, there is a 9% increase in total revenues and a 5% decrease in total expenses compared to the same period in 2020. That is, all eight banks in the Republic of Srpska reported a net profit in the total amount of 64 million KM, which is 26 million (69%) higher than in the same period of 2020. The rate of return on capital is 12.1% and is higher by 4.8%, and the rate of return on assets is 1.5% and represents an increase of 0.6% compared to the first six months of 2020.

Financial safety net

The financial security network can limit the risk that banks take, reduce the chances of insolvency or illiquidity, as well as to stabilize the fear of the private sector due to events related to the collapse of certain banks (eg Bobar banka, Banka Srpske, etc.).

The importance of banks within every economy causes the need for strict regulation of the banking sector, as well as for the establishment of a financial security network, which in a country in the narrowest sense consists of:

- The central bank, which most often plays the role of "creditor of last resort",
- banking regulation and supervision i
- deposit insurance.

The safety net has four main objectives:

1. Regulation and supervision are established to ensure that banks operate in a safe and sound manner. Regulation provides guidelines for acceptable risk-taking, and supervision ensures that regulations are followed.
2. The banking sector must have access to a safe haven as a last resort. An unexpected lack of liquidity can cause a bank failure and collapse of the financial system.
3. Mechanisms for resolving the failure of financial institutions ensure that failed banks are removed quickly, before financial difficulties spread to other institutions.
4. The safety net ensures the protection of depositors, primarily small and relatively vulnerable depositors.

The level of coverage is certainly an important feature of the safety net that supports private depositors. If it is set too low, relatively small depositors may face uncertainty about the bank where they hold their deposits. If the level of coverage is too high, large sophisticated depositors will not impose market discipline and banks may expose themselves to business with a higher degree of risk. In both cases, strong supervision and an effective bank resolution framework can mitigate some of the negative consequences of an inadequately determined coverage level.

An efficient safety net system implies relief for depositors when fulfilling their obligations, including paying depositors quickly, accurately and on a fair basis, while reducing the costs of disruptions in the market, maximizing recovery from assets, and strengthening discipline through legal frameworks and actions in case of negligence or other wrongful activities. Participants in the safety net of the financial system should be empowered to establish flexible mechanisms to preserve the critical function of banking.

The currency board arrangement gives the CBBH limited room to maneuver in case of a banking crisis. The CBBH should increase its monitoring authority and effectively link with other agencies, especially the Banking Agencies.

The financial security network, therefore, consists of institutions that have the authority and responsibility to regulate and supervise the operations of banks, and to intervene when necessary to protect depositors and preserve financial stability.

In a situation where systemic crises occur, the government of the country is involved as support for the financial security network. The withdrawal of deposits during a banking panic, the reduction of credit activities due to the withdrawal of deposits, as well as the possibility of bank failure encourage every country to create an adequate network of financial security. For this reason, the financial safety net should be set up in a way that will ensure prudent regulatory policy and discourage unwanted withdrawal of deposits. The division of authority, power and responsibility between participants in the financial safety net is a matter of public policy choices and conditions in individual countries.

Trends in the movement of collected deposits

Bank deposits (78 % of total liabilities) are the primary source of funding for the banking sector of the Republic of Srpska. The planning, scope and management of the business policy of each bank is directly dependent on the level, structure and maturity of deposits. N a 30.06.2021. In 2019, the deposits collected in the banking sector of the Republika Srpska amount to 7 billion KM and are higher by 11 % compared to the same period in 2020, i.e. 15 % in 2019. Deposits in convertible marks (68%) recorded growth compared to deposits in foreign currency.

An overview of the sectoral structure of the total collected deposits of the banks of the Republic of Srpska in the observed period is given in the following table:

Table 4: Sector structure of total collected deposits

(mil. KM)

DESCRIPTION	30.06.2019.		30.06.2020.		30.06.2021.	
	Amount	%	Amount	%	Amount	%
Government and government institutions	643.8	10.5	722.4	11.4	1033.1	14.6
Public and state enterprises	248.0	4.1	286.5	4.5	359.0	5.1
Private companies and societies	813.4	13.3	847.6	13.4	1035.7	14.6
Non-profit organizations	99.7	1.6	112.0	1.8	116.6	1.6
Banks and banking institutions	333.8	5.5	423.3	6,7	171.8	2,4
Non-bank fin. Institutions	345.1	5,6	247.6	3.9	299.8	4.2
Citizens	3551.7	58.0	3,671.9	58.0	4049.2	57.1
Other	84.8	1.4	18.3	0.3	24.6	0.3
IN TOTAL	**6,120**	**100**	**6,330**	**100**	**7,090**	**100**

Source: www.abrs.ba

From the tabular review, it can be seen that the largest growth is in the deposits of the government and government institutions, amounting to KM 310.7 million (43%), citizens' deposits, amounting to KM 377.3 million (10%), and private companies and societies increasing by KM 188.1 million (22%), compared to the same period in 2020.

The drop in deposits was recorded only at banks and banking institutions, by 251.5 million KM (60%).

is mostly the result of trust in the deposit insurance institute and fear of any investment. In the earlier period, the period of insolvency and liquidation of banks, the Deposit Insurance Agency operated flawlessly, and if it were to fail, it would inevitably lead to the collapse of the banking system.

The deposit base, primarily of citizens (57.1%), is quite sufficient for the current level of credit activities of banks. However, the term structure of citizens' deposits is unfavorable from the point of view of the possibility of long-term lending.

An overview of the maturity structure of the total collected deposits of the banks of the Republic of Srpska is given in the following table:

Table 5: Due date structure in total collected deposit (mil. KM)

DESCRIPTION	30.06.2019.		30.06.2020.		30.06.2021.	
	Amount	%	Amount	%	Amount	%
Savings and demand deposits	3,354.5	54.8	3,595.8	56.8	4,499	64
Up to 3 months	80.3	1,3	45.2	0.7	8	0
Up to 1 year	445.9	7.3	364.0	5.8	203	3
1. Total short-term deposits	**3,881**	**63**	**4.005**	**63**	**4,711**	**67**
Up to 3 years	1,929.7	31.5	2,003.4	31.7	2,074	29
Over 3 years	310.1	5.1	321.2	5.1	305	4
2. Total long-term deposits	**2,240**	**37**	**2,325**	**37**	**2,379**	**34**
Total deposits	**6,120**	**100**	**6,330**	**100**	**7,090**	**100**

Source: www.abrs.ba

The overview shows that short-term deposits grew by 706 million KM (18%), and long-term deposits increased by 54 million (1%) compared to the same period in 2020. That is, short-term deposits recorded a growth of 21%, and long-term deposits 6% compared to the same period in 2019.

Short-term deposits recorded an increase in savings and demand deposits by 903 million KM (25%), a decrease in short-term savings up to 3 months by 37.2 million KM and up to 1 year by 161 million KM compared to the same period in 2020.

In terms of long-term deposits, deposits up to 3 years recorded an increase of 70 million KM (3.5%) compared to the same period in 2020, i.e. 145 million KM (8%) compared to the same period in 2019.

Deposits over 3 years are lower by 16 million KM (5%) compared to the same period in 2020, or by 5 million KM (2%) compared to the same period in 2019.

Given that the decision on the amount of the insured deposit is made at the level of the Board of Directors of the Deposit Insurance Agency of Bosnia and Herzegovina, the possibility of quick reaction is ensured in order to fulfill the goals of public policy, that is, the protection of savers and the maintenance of the stability of the financial system are ensured. However, on the other hand, there is a need for a detailed analysis that should support the decisions made, where elements such as the level of economic development of Bosnia and Herzegovina must be taken into account (one of the determinants can be the size of the gross social product per capita), the quality of the banking sector of Bosnia and Herzegovina, the level of the Deposit Insurance Fund, the level of deposit insurance coverage in neighboring countries, as well as the provisions of the European Union Directive on deposit insurance.

Trends in the movement of credit placements

The amount of loans placed is the most important indicator of the business volume of each bank and the sector as a whole, on the one hand, but at the same time, it is also the biggest potential risk generator in business, on the other. Gross loans on day 3 0. 06.20 21. years make 59 % of gross balance sheet assets.

An overview of the sectoral structure of loans from banks in the Republic of Srpska is given in the following table:

Table 6: Sectoral structure of total loans (mil. KM)

DESCRIPTION	30.06.2019.		30.06.2020.		30.06.2021.	
	Amount	**%**	**Amount**	**%**	**Amount**	**%**
Government and government institutions	555.2	10.8	688.5	12.7	656.3	11.7
Public and state enterprises	221.6	4.3	237.1	4,4	235.2	4.2
Private companies and societies	1890,8	36.8	1,922.2	35.4	1952, 8	34.8
Non-profit organizations	8.5	0.2	8.7	0.2	6.2	0.1
Banks and banking institutions	0.0	0.0	0.0	0.0	0.0	0.0
Non-bank fin. institutions	47.7	0.9	61.7	1,1	47.3	0.8
Citizens	2406.4	46.8	2,502.1	46.1	2698.5	48.1
Other	11.6	0.2	10.5	0.2	9.0	0.2
IN TOTAL	**5.142**	**100**	**5.431**	**100**	**5,605**	**100**

Source: www.abrs.ba

The overview shows that the amount of total loans in the observed period is 174 million (3%) higher compared to the same period in 2020, i.e. 463 million (9%) higher compared to 2019.

Due to the emergence of an emergency situation caused by the COVID-19 pandemic, the ABRS, by decisions on temporary measures to mitigate negative economic consequences, enabled banks to offer clients who are affected by the negative effects, a moratorium on the repayment of incurred obligations, a grace period, etc. According to the ABRS report, loans for which the measures were approved make up 16% of the portfolio as of June 30, 2021. years. In accordance with the Decision on Credit Risk Management and Determination of Expected Credit Losses, in the first six months of 2021, the banks made an accounting write-off of credit claims in the amount of 24 million KM and a permanent write-off in the amount of 5 million KM.

When we look at the sectoral structure of loans placed by the banks of the Republic of Srpska, the most represented are loans placed to citizens (48%) and private companies and societies (35%), to the Government and government institutions (12%) and others. An 8% increase was recorded in loans placed to citizens, and a 2% increase in loans granted to private companies and societies compared to the same period in 2020, while a decline in lending activities was recorded in all other sectors. Loans given to the government and government institutions are lower by 4%, that is, to public and state enterprises by 1% compared to the same period in 2020.

Measures of the Government of the Republic of Srpska to mitigate the negative effects of the pandemic, restrictive measures aimed at suppressing it, support for the economy, etc. they influenced the growth of economic activity in the Republic of Srpska. For example. in the first quarter of 2021, economic activity grew by 2.3% compared to the same period in 2020.

However, the stagnation of loans in the banking sector indicates the absence of support for the real sector in. The problems of the banking and real sectors are mutually conditioned, that is, the banking sector requires high interest rates on loans, but the real sector cannot accept loans with high interest rates. The problem of inconsistency in lowering active and passive interest rates, that is, a significant drop in passive and stagnant active interest rates contributes to current profitability, but also to "sacrificing the future". Lowering active interest rates is a prerequisite for the real sector to show greater interest in loans and thus provide banks with a way out of stagnation and a more significant contribution to the economic development of the Republic of Srpska.

Looking at the maturity structure of the loan as of June 30, 2021. year, it is observed that short-term loans are higher by 15 million KM (2%), that is, long-term loans by 196 million KM (4%) compared to the same period in 2020. Due receivables recorded a decrease of 36 million KM (15%) compared to the same period in 2020.

An overview of the maturity structure of loans from the banks of the Republic of Srpska is given in the following table:

Table 7: Maturity structure of total loans

(mil. KM)

DESCRIPTION	30.06.2019.			30.06.2020.			30.06.2021.		
	< 1 year	**> 1 year**	**The search is due.**	**< 1 year**	**> 1 year**	**The search is due.**	**< 1 year**	**> 1 year**	**The search is due.**
Government and government institutions	2.9	550.2	2,2	4.7	682.1	1.7	5.3	650.2	0.8
Public and state enterprises	13.8	204.0	3.9	7.5	228.4	1,2	15.8	216.5	2.9
Private companies and societies	508.8	1,152.2	229.9	589.4	1,185.1	147.7	592.4	1,243.1	117.3
Non-profit organizations	2.6	2.8	3.1	1,3	6.6	0.8	0.7	5.4	0.1
Banks and banking institutions	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Non-bank fin. institutions	6.1	41.0	0.5	3.0	58.2	0.5	0.9	45.9	0.4
Citizens	169.2	2,113.5	123.7	169.2	2,254.1	78.8	175.5	2,450.1	72.9
Other	0	11	0	0	10	0	0.4	8.5	0.1
IN TOTAL	**704**	**4,075**	**363**	**776**	**4,424**	**231**	**791**	**4,620**	**195**

Source: www.abrs.ba

In the maturity structure of loans, long-term lending prevails, and also in the observed period, there is a growing trend.

With 3 0. 06.20 21. In 2008, long- term placements amounted to 4.6 billion KM and accounted for 82% of the total credit placement.

The largest share in the structure of long-term loans is held by loans to citizens in the amount of 2. 4 billion KM (5 3 %) and the same shows a growth trend in the observed period.

Long-term loans to private companies and companies in the amount of 1. 2 billion KM, participate with 27 % in total long-term loans at the end of June 2021 and are higher by 5 % compared to the same period in 2020.

In the structure of short-term loans, loans to private companies and companies have the most significant share, in the amount of 592.4 million KM (75%) with a growing trend in the observed period.

Short-term loans to citizens account for 22% of total short-term loans and show a slight growth trend in the observed period.

Due receivables from loans to private companies and companies and due receivables from loans given to citizens as of June 30, 2021. make up 98% of the total due receivables. The rate of overdue loans in relation to total loans is 3.5% and is lower compared to the same period in 2020 (4.3%), i.e. the same period in 2019 (7%). The reduction of overdue receivables was influenced by the application of the new ABRS Decision on credit risk management and determination of expected credit losses, which prescribes the accounting write-off of overdue loans, better credit risk management, etc.

The rate of overdue loans to private companies and companies in relation to total loans given to private companies and companies is 6%, and the rate of overdue loans to citizens in relation to total loans to citizens is 2.7%.

Total collected deposits and placed loans in Republika Srpska

Total deposits in the territory of Republika Srpska in the observed period recorded an increase of 11% compared to the same period in 2020, i.e. 2019, and the amount of loans placed was 4% higher compared to June 30, 2020. year, i.e. by 10% compared to the same period in 2019.

A comparative overview of collected deposits and placed loans in the territory of the Republic of Srpska is given in the following table:

Table 8: Deposits collected and loans placed (mil. KM)

DESCRIPTION	30.06.2019.		30.06.2020.		30.06.2021.	
	Deposit amount	**Loan amount**	**Deposit amount**	**Loan amount**	**Deposit amount**	**Loan amount**
Banks of the RS	6,120.4	5,141.8	6,329.6	5,430.7	7,089.9	5,605.2
Business units of FBiH banks	911.4	1,469.8	959.2	1,540.8	1,075.4	1,636.9
IN TOTAL:	7,031.9	6,611.6	7,288.8	6,971.5	8,165.3	7,242.1
Minus: Business units. Bank RS in FBiH	329.8	244.7	332.5	274.7	432.6	270.6
IN TOTAL	**6,702**	**6,367**	**6,956**	**6,697**	**7,733**	**6,972**

Organizational units of banks based in the Republic of Srpska, which perform activities on the territory of the Federation of Bosnia and Herzegovina, recorded an increase in deposits of 30% and a decrease in loans of 2% as of June 30, 2021. compared to the same period in 2020, i.e. a 30% increase in deposits and a 10% increase in loans compared to the same period in 2019.

Business units of banks that have their headquarters in the Federation of BiH and perform activities in the Republika Srpska recorded an increase in deposits of 12% and an increase in loans of 6% compared to the same period in 2020, i.e. an increase in deposits of 18% and loans of 11% compared to for the same period in 2019.

Supervision of banks in Europe and the world

The banking system in the USA is linked to the establishment of the Federal Reserve System (in 1913) which represents the central bank and which includes twelve federal reserve banks. The Federal Reserve System, in addition to supervising and controlling the operations of member banks, proposes and implements monetary policy, performs transactions for member banks of the system, business for the US government, and issues banknotes and coins.

The banking system of England dates back to 1694 with the establishment of the Bank of England, whose task is primarily the concentration of capital and the specialization of banking operations. The Central Bank of England consists of the banking department (Banking Department), which deals with active and passive banking operations, and the issue department (Issue Department), which deals with issuing banknotes.

The German banking system was institutionalized by the passing of the Law in 1885. The Central Bank of Germany represents a bank of the first degree, whose tasks are issuing money, determining discount policy, monetary policy reserves, credit policy, financial and treasury operations for the central government. The German banking system has as many federal units as there are districts.

It is one of the most developed banking systems in the world the Ankara system of Switzerland, in which the Central Bank of Switzerland is not a state institution, but a mixed economic institution with majority ownership by the cantons. Cantonal banks (28 banks), mainly engaged in mortgage business, represent state institutions that are distributed across the cantons.

The banking system of Japan is characterized primarily by a large number of banking institutions (about 9,000), with mutually developed financial relations and a firmly established connection with the financial authorities. The Bank of

Japan represents the Central Bank of Japan, which performs credit control, issuance and monetary policy activities, and is organized as a single institution with thirty branches in Japan and with branches in London and New York. With 55% of the capital, the state is the majority owner of the capital, that is, private capital is present with 45%. The Bank of Japan is characterized by narrow autonomy as its decisions can be limited or suspended by the Japanese government.

The role of the central bank in Serbia is performed by the National Bank of Serbia, which is responsible for its work to the National Assembly of the Republic of Serbia. Some of the responsibilities of the National Bank are: determining the monetary policy, regulating the amount of money in circulation, regulating the liquidity of banks and other financial organizations, regulating activities in foreign payments, issuing banknotes and coins, etc. The National Bank of Serbia is autonomous and independent in carrying out its activities.

Supervision of banks in the European Union

The concept of the European Banking Union implies that central and joint responsibility for financial supervision, deposit insurance and rehabilitation and settlement of credit institutes is established within the European Union. This concept should enable the countries of the Eurozone, as well as the countries that want to join the Eurozone, to unite three interconnected and complementary subsystems:

- ✓ a single supervisory mechanism,
- ✓ j unique restructuring mechanism i
- ✓ e European deposit insurance system.

The unique and binding rules for all members of the European Union represent a comprehensive regulatory framework for the functioning of the European market of financial services in order to regulate the banking system.

In order to increase the efficiency, effectiveness, market discipline and transparency of banks, the following common rules were established:

- ➢ rules related to capital requirements,
- ➢ o queer for intervention in a bank facing difficulties and liquidation i
- ➢ rules.

Given that Bosnia and Herzegovina's goal is to apply for membership in the European Union, ABRS is determined to focus its activities on harmonizing the regulatory framework with that of the European Union during the transition period. The consequences of the global financial crisis revealed significant deficiencies in the supervisory and regulatory frameworks applied in BiH, including the lack of supervisory control over excessive and impaired lending activities by banks.

The European Banking Union project was designed as one of the key factors for restoring confidence in the financial sector after the global financial crisis and preventing future financial upheavals, which implies the centralization of decision-making at the level of the European Union. With the strategy for the introduction of Basel III, ABRS envisaged changes related to improvement in the field of corporate governance in banks and the introduction of new minimum standards for risk management, introduction of new capital standards, improvement of capital quality, strengthening of capital requirements, introduction of protective layers of capital and financial leverage, etc. Also, a careful, gradual transition to the new regulatory framework is foreseen, among other things, in order to ensure that ABRS develops its own supervisory capacities for the creation and implementation of the new regulatory framework, in cooperation with all relevant domestic and foreign institutions (ABRS, 2016)..

ABRS is obliged to effectively assess the adequacy of risk and capital management by banks, and to continuously improve regulations in the field of bank supervision in order to preserve, control and strengthen the stability of the banking system of the Republika Srpska.

In October 2021, the European Commission published a Decision confirming the equivalence of the supervisory and regulatory framework in Bosnia and Herzegovina in relation to the regulations and directive of the European Parliament and the Council on prudential requirements for credit institutions and investment companies, i.e. on access to the activities of credit institutions and prudential supervision over credit institutions and investment companies. The European Commission's decision represents the achievement of the ABRS strategic goal and is of great importance for the Republika Srpska, Bosnia and Herzegovina, the banking system, the economy and citizens.

Conclusion

The purpose of supervision of the banking sector, i.e. the banking system, is primarily to protect depositors, investors and shareholders of financial institutions from various types of risks, and therefore to reduce their losses. Taking into account the results achieved in the operations of banks and other financial institutions as of the end of June 2021, it can be concluded that in the Republic of Srpska the banking system as a whole has maintained stability. Purchase, deposit and credit activities recorded growth at the end of the observed period, despite the challenges the banking sector faced due to the pandemic COVID -19. The continuous growth of deposits of the real sector speaks of its continuous strengthening, and the growth of household deposits is mostly the result of trust in the deposit insurance institute and fear of any kind of investment. The credit growth of the banking sector of the Republic of Srpska is most significantly related to the growth of citizens' loans, while the lending of private companies and companies that represent potentially significant carriers of economic and economic growth by the banks is very small, which indicates insufficient interest of the banking sector in investing in the economic activities of the Republic Republika Srpska. The trend of decreasing deposits of banking institutions from abroad indicates that foreign investors are not interested in investing in the Republic of Srpska. The deposit base of domestic persons, primarily citizens, is quite sufficient for the current level of credit activities of banks. However, the term structure of citizens' deposits does not support long-term lending, which significantly reduces the possibility of a significant contribution of banks to the economic development of the country.

The problem of mismatch in the level of active and passive interest rates, ie low passive and stagnant active interest rates contributes to current profitability, but also to "sacrifice the future". The reduction of active interest rates is a prerequisite for the real sector to show greater interest in loans and thus provide banks with a way out of stagnation and a more significant contribution to the economic and economic development of the Republic of Srpska.

ABRS should direct and activities and measures to increase overall credit activities, primarily through support to the economy, continuous supervision of banks - primarily banks of systemic importance because the most significant part of savings and other deposits are concentrated in them, capital strengthening primarily of banks that record above-average growth in assets and a reduction in the capital adequacy ratio. Also, it is necessary to improve the activities on the project "Stress tests" of banks, as well as strengthen the monitoring of credit risk, asset quality, etc.

Banking regulation should support bank operations based on safe and stable foundations.

Effective regulatory discipline requires the cooperation of all participants in the financial security network.

An efficient process of solving problem banks should ensure continuity in the performance of banking operations, protection of insured deposits, locating losses to shareholders and uninsured creditors, not relying on public money, minimizing the costs of solving problem banks, closing unsustainable banks, credibility of the resolution process, and strengthening market discipline.

Also, the effective process of solving problem banks implies that the process of solving problem banks should be such that a decision is made as soon as possible whether a bank is capable of continuing its own business or, if this is not the case, to be excluded from the system as soon as possible. in order to keep the value of the substance (asset) as high as possible.

Quick corrective supervisory measures include sending requests directly to banks, their managers and bank owners themselves, to prohibit the payment of bonuses to bank management, or request their removal from managerial positions. Supervisors are able to directly influence the bank itself through various measures and requirements, especially: maintaining a high rate of capital adequacy and liquidity position, the requirement to improve the internal control system, restrictive measures in the sense of not allowing excessive growth of bank balances, expansion of business networks, etc.

If the process of resolving problem banks lasts for a long period of time, there may be further "melting" of bank assets, the impossibility of charging the Deposit Insurance Fund for previously paid insured deposits, and thus the possible destabilization of the entire financial system.

An efficient supervisor will undertake activities and measures that will encourage corporate management and adequate risk management of banks through prescribed standards and procedures that represent the directions of action of managers in banks, adequate internal controls and audits, risk management, assessment of the banking market position, monitoring of implementation defined goals, as well as capital and liquidity management.

Of course, the environment plays a significant role in maintaining positive developments in the banking sector, primarily the economic environment, judiciary and legislation.

The banking sector of Republika Srpska has a future that will certainly be uncertain, but what is certainly certain is that the supervision of banks will continue to dictate the pace and success of the banking sector's development and operations, that is, it will play a very important role in its further progress and development.

The banking sector of Republika Srpska, viewed as a whole, showed stability due to the emergency situation caused pandemic COVID -19, although it is going through a certain period of stagnation.

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UTICAJ LIKVIDNOSTI NA PROFITABILNOST PREDUZEĆA PRERAĐIVAČKOG SEKTORA U R. SRBIJI

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Apstrakt

Predmet ovog rada je ispitivanje uticaja likvidnosti na profitabilnost 100 preduzeća prerađivačkog sektora R. Srbije sa najvišim nivoom poslovnih prihoda u periodu od 2016. do 2020. godine. Na panel podatke primenjena je regresija sa fiksnim efektima. Na osnovu dobijenih rezultata može se tvrditi da ne postoji direktna veza između pokazatelja ubrzane likvidnosti i neto prinosa na aktivu kada su posmatrana preduzeća u pitanju, što implicira da se ne može utvrditi ni optimalan iznos gotovine i gotovinskih ekvivalenata koji bi omogućio maksimiranje neto prinosa na aktivu. Direktna veza ne postoji ni između profitabilnosti i dužine trajanja poslovnog ciklusa posmatranih preduzeća. S druge strane, brži obrt kapitala za posledicu ima viši nivo profitabilnosti, kao i rast aktive preduzeća, dok veća zaduženost ima negativne implikacije na profitabilnost preduzeća prerađivačkog sektora. Dobijeni rezultati imaju značajne implikacije na odluke finansijskih menadžera, na fnansijski sektor, kao i na nadležne državne institucije.

Ključne reči: *profititabilnost, ROA, likvidnost, panel analiza*

JEL: *C22, C23, G30, G32*

Uvod

Cilj osnivanja svakog preduzeća je maksimizacija profita, koja je nužna za njegov dugoročan rast i razvoj. Nakon svetske ekonomske krize 2008. godine finansijski menadžeri uvideli su da je, pored maksimizacije profita, potrebno ozbiljno razmotriti i pitanje likvidnosti (Bigio, 2015; Lang i Maffet, 2011, Raykov, 2017). Stoga se kao jedan od najvažnijih zadataka finanijskih menadžera nameće

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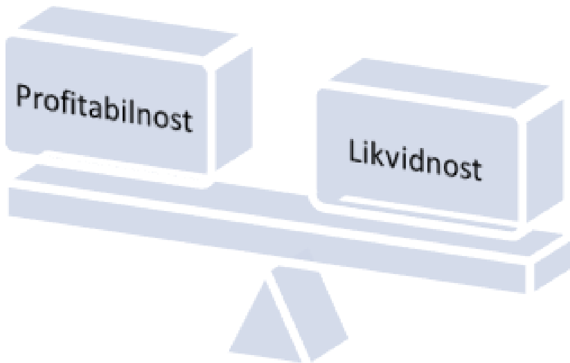
određivanje optimalne finansijske strukture koja je determinisana težnjom za višim nivoom profitabilnosti uz obezbeđenje nužnog nivoa likvidnosti (Slika 1).

Slika 3: Optimalan odnos likvidnosti i profitabilnosti preduzeća



Izvor: prilagođeno prema Balaban (2022)

Postoje dva različita pristupa koji teorijski objašnjavaju odnos između likvidnosti i profitabilnosti. Prema prvom pristupu, viši nivo likvidnosti dovodi do povećanja troškova, odnosno visokih oportunitetnih troškova, što može imati negativan uticaj na profitabilnost. Međutim, ovaj uticaj je verovatno kratkotrajne prirode. Hirigoien (1985) je otkrio da na srednji i dugi rok postoji mogućnost pozitivnog odnosa između likvidnosti i profitabilnosti jer bi niska likvidnost prouzrokovala nisku profitabilnost, budući da za posledicu ima veći broj zahteva za kreditima i nedovoljan tok gotovine. Slično tome, Hollmayr i Kühl (2019) smatraju da aktivno upravljanje likvidnošću ima pozitivan uticaj na profitabilnost dok Bakić i Petković (2020) tvrde da su i likvidnost i profitabilnost podjednako važne komponente za egzistenciju preduzeća i maksimizaciju vrednosti preduzeća (Knauer, 2013). Naime, viši nivo likvidnosti pozitivan je pokazatelj finansijskog stanja preduzeća, te iako kratkoročno posmatrano, viši nivo likvidnosti može imati negativan uticaj na profitabilnost, na srednji i dugi rok on će povećati profitabilnost preduzeća i minimizirati rizik od bankrota. Gonçalves i autori (2018) smatraju da je pronalaženje ravnoteže između profitabilnosti i likvidnosti jedan od glavnih izazova upravljanja poslovnim finansijama. S tim u vezi, predmet istraživanja ovog rada je analiza odnosa likvidnosti i profitabilnosti preduzeća prerađivačkog sektora u Republici Srbiji, dok je cilj kvantitativno determinisanje uticaja likvidnosti na profitabilnost posmatranih preduzeća. U skladu sa dostupnom teorijskom i empirijskom literaturom postavljene su sledeće hipoteze:

H_1: Između likvidnosti i profitabilnosti postoji direkan odnos

H_2: Viši nivo likvidnosti podrazumeva niži nivo profitabilnosti

H_3: Postoji optimalan nivo likvidne imovine za svako preduzeće.

Većina dostupnih empirijskih istraživanja dokazala je postojanje odnosa između likvidnosti i profitabilnosti (tabela 1), te je u skladu sa tom činjenicom formirana prva hipoteza. Iako dostupna teorijska literatura ukazuje na dugoročno pozitivan odnos likvidnosti i profitabilnosti, naša pretpostavka jeste da viši nivo likvidne imovine implicira nižu stopu profitabilnosti. Na ovakvu pretpostavku, odnosno definiciju druge hipoteze, navele su nas studije koje su analizirale pomenuti odnos na primeru preduzeća u okruženju (Raykov, 2017; Vuković i Jakšić, 2019). Rezultati studije koju su sproveli Korent i Orsag (2018) impliciraju postojanje veze između neto obrtnog kapitala i prinosa na sredstva. Ovo ukazuje na postojanje optimalnog nivoa neto obrtnog kapitala, odnosno u našem slučaju likvidne imovine koja balansira troškove i koristi i maksimizira profitabilnost analiziranih preduzeća. U skladu sa pomenutim rezultatima definisana je treća hipoteza. U svakom preduzeću treba izvršiti optimizaciju nivoa obrtnih sredstava, što povlači za sobom potrebu održavanja ravnoteže između dva naizgled suprotna cilja, profitabilnosti i likvidnosti (Van Horne i Wachowicz, 2009; Bieniasz i Gołaś, 2011; Gołaś, 2020).

Pregled literature

Odnos likvidnosti i profitabilnosti privukao je pažnju velikog broja autora, a rezultati određenog broja empirijskih studija predstavljeni su u Tabeli 1.

Kao što se može videti iz tabele, većina autora je primenjivala regresiju i/ili kointegraciju na panel podatke, odnosno posmatrani uzorak većeg broja preduzeća. Ono što je jasno, jeste da ne postoji konsenzus u vezi odnosa likvidnosti i profitabilnosti preduzeća. S tim u vezi, cilj ovog rada je kvantitativno determinisanje uticaja likvidnosti na profitabilnost preduzeća prerađivačkog sektora u Republici Srbiji, što ujedno predstavlja i naučni doprinos ovog rada.

Tabela 1: Rezultati dosadašnjih empirijskih studija

Autor(i)	**Uzorak**	**Period**	**Metodologija**	**Rezultati**
Mazanec (2022)	3828 transportnih preduzeća iz zemalja Višegradske grupe	2019	Korelacija i regresija	Različiti rezultati
Milošev (2021)	367 nefinansijskih preduzeća iz R. Srbije	2016-2019	PCSE	Pozitivan odnos
Kryszak i autori (2021)	477 farmi iz EU	2007-2018	SYS-GMM	Ne postoji odnos
Högerle i autori (2020)	115 kompanija kotiranih na FSE	2011-2017	Regresija	Pozitivan odnos
Gołaś (2020)	Mlekare u Poljskoj	2008-2017	Regresija	Negativan odnos
Seth i autori (2020)	563 indijskih proizvodnih preduzeća	2008-2018	FE regresija	Negativan odnos
Al-Homaidi i autori (2020)	2154 indijskih preduzeća	2010-2016	Regresija	Različiti rezultati
Olaoye (2020)	Prehrambene kompanije koje se kotiraju na NSE	2014-2018	Regresija i korelacija	Ne postoji odnos

Li i autori (2020)	15 nefinansijskih preduzeća kotiranih na GSE	2008-2017	Kointegracija	Negativan odnos
Yameen i autori (2019)	82 farmaceutske kompanije kotirane na BSE	2008-2017	Regresija	Pozitivan odnos
Alsulayhim (2019)	67 kompanija kotiranih na SSE	2007-2016	Regresija i kointegracija	Pozitivan odnos
Hossain i Alam (2019)	6 kompanija iz cementne industrije kotirane na DSE	2013-2017	Pearsonova korelacija	Negativan odnos
Ren i autori (2019)	Kineska proizvodna preduzeća koja se kotiraju na berzi	2010-2017	FE regresija	Negativan odnos
Vuković i Jakšić (2019)	9883 prehrambene kompanije iz jugoistočne Evrope	2010-2014	Probit regresija	Negativan odnos
Asche i autori (2018)	Norveške odgajivačnice lososa	2000-2014	Konitegracija i regresija	Ne postoji odnos
Korent i Orsag (2018)	442 hrvatske IT i konsalting kompanije	2008-2013	Kointegracija i regresija	Negativan odnos
Alom (2018)	Nefinansijske kompanije kotirane na DSE	1998-2013	Kointegracija	Pozitivan odnos
Gonçalves i autori (2018)	400 velikih i srednjih preduzeća iz VB koje se ne kotiraju na berzi	2006-2014	Regresija	Pozitivan odnos
Nanda i Panda (2018)	173 proizvodna preduzeća koja se kotiraju na BSE	2000-2015	Panel GLS i VAR	Pozitivan odnos

Izvor: sistematizacija autora

Tabela 1 – nastavak: Rezultati dosadašnjih empirijskih studija

Autor(i)	Uzorak	Period	Metodologija	Rezultati
Boțoc i Anton (2017)	937 brzo rastućih kompanija iz centralne, istočne i jugoistočne Evrope	2006-2015	GMM	Negativan odnos
Evci i Sak (2017)	41 kompanija kotirana na BIST	2005-2016	Regresija	Negativan odnos
Raykov (2017)	20 kompanija kotiranih na BSE (Bulgarian SE)	2007-2015	Kointegracija i regresija	Negativan odnos
Al-Jafari i Al Samman (2015)	17 industrijskih kompanija listiranih na MSM	2006-2013	Regresija	Negativan odnos
Kandpal (2015)	10 indijskih infrastrukturnih kompanija	2007-2015	Korelacija i regresija	Različiti rezultati

Izvor: sistematizacija autora

Podaci i metodologija

Uzorak se sastoji od 100 preduzeća prerađivačkog sektora sa najvišim nivoom poslovnih prihoda sa teritorije Republike Srbije, a vremenski obuhvat istraživanja je period od 2016. do 2020. godine. Prilikom razmatranja uticaja likvidnosti na profitabilnost preduzeća, većina empirijskih studija je koristila regresioni model (tabela 1), pa su se i autori opredelili za ocenu regresionog modela. Sledeći Milošev (2021), Nanda i Panda (2018), Gonçalves i autori (2018) i Knauer i Wöhrman (2013) u radu je kao mera profitabilnosti korišćen pokazatelj ROA. Kao mera likvidnosti korišćen je pokazatelj ubrzane likvidnosti, budući da se samo likvidna sredstva mogu koristiti u relativno kratkom vremenskom periodu za izmirenje preuzetih kratkoročnih obaveza preduzeća. Istu meru likvidnosti koristili su i Milošev (2021), Boțoc i Anton (2017), kao i Raykov (2017). Kako bi se dobili relevantni rezultati u regresioni model su unete kontrolne varijable. S tim u vezi, ocenjen je sledeći regresioni model:

$$ROA_{it} = \beta_1 LIK_{it} + \beta_2 DEBT_{it} + \beta_3 WCM_{it} + \beta_4 ACT_{it} + \beta_5 SIZE_{it} + \alpha_i + \epsilon_{it}$$

$$\alpha_i = \mu + \gamma_i$$

pri čemu je:

ROA_{it} – neto prinos na aktivu, odnosno mera profitabilnosti preduzeča,
$DEBT_{it}$ – racio duga i kapitala, odnosno mera zaduženosti preduzeća,
WCM_{it} – vreme trajanja poslovnog ciklusa, odnosno aproksimacija uspešnosti upravljanja obrtnim kapitalom,
ACT_{it} – koeficijent obrta kapitala, odnosno pokazatelj aktivnosti preduzeća i
$SIZE_{it}$ – prva diferenca prirodnog logaritma vrednosti aktive, odnosno mera veličine preduzeća,
α_i – odsečak, varira među pojedinačnim jedinicama posmatranja, ali je konstantan tokom vremena. Sastoji se od konstantnog dela (μ) i termina greške za pojedinačne jedinice posmatranja (γ_i),
ϵ_{it} – greška modela.

Deskriptivna statistika posmatranih varijabli 100 prerađivačkih preduzeća sa najvišim nivoom poslovnih prihoda u Republici Srbiji u periodu od 2016. do 2020. godine predstavljena je u tabeli 2.

Tabela 2: Deskriptivna statistika

	ROA	LIK	DEBT	WCM	ACT	SIZE
Mean	0.076713	1.325527	2.741983	75.23207	4.569831	9.902181
Median	0.069500	0.900000	1.000000	54.00000	2.400000	9.924504
Max	0.591000	11.60000	159.3000	651.0000	124.7000	10.99446
Min	-0.631000	0.000000	0.000000	-669.0000	0.400000	8.455786
St. Dev.	-0.110303	1.392566	9.341054	123.3299	8.955761	0.392289

Izvor: kalkulacija autora na osnovu podataka APR-a, EViews program

Rezultati rada sa diskusijuom

Korelaciona analiza je sprovedena kako bi se otkrio eventualni problem multikolinearnosti koji može da dovede do pogrešne interpretacije ocenjenih parametara. Na osnovu tabele 3 može se zaključiti da između posmatranih nezavisnih varijabli ne postoji korelacioni odnos, što implicira odsustvo multikolinearnosti u ocenjenom regresionom modelu.

U cilju testiranja stacionarnosti posmatranih varijabli sprovedeni su testovi jediničnog korena (Levin, Lin, Chu i IPS test). Kako bi se utvrdilo da li je na posmatrane varijable primereno primeniti test jediničnog korena prve ili druge generacije, sproveden je i test međuzavisnosti (Pesaran CD test), a rezultati dobijenih testova prikazani su u tabeli 4.

Tabela 3: Korelaciona matrica

	ROA	LIK	DEBT	WCM	ACT	SIZE
ROA	1.000000	0.215900	-0.189275	0.053742	0.176536	-0.070089
LIK	0.215900	1.000000	-0.139458	0.249664	-0.057682	-0.058240
DEBT	-0.189275	-0.139458	1.000000	-0.029278	-0.061399	0.003790
WCM	0.053742	0.249664	0.249664	1.000000	-0.256425	0.114399
ACT	0.176536	-0.057682	-0.061399	-0.256425	1.000000	-0.503348
SIZE	-0.070089	-0.058240	-0.003790	0.114399	-0.503348	1.000000

Izvor: kalkulacija autora na osnovu podataka APR-a, EViews program

Tabela 4: Test međuzavisnosti i testovi jediničnog korena

Test/ Varijable	**Pesaran CD**	**Levin, Lin and Chu**			**IPS**	
		none	individual intercept	in. intercept and trend	individual intercept	in. intercept and trend
ROA	0.715861 (0.4741)	-8.93573 (0.0000)	-31.3427 (0.0000)	-24.3550 (0.0000)	-10.4610 (0.0000)	-11.1931 (0.0000)
LIK	-0.970247 (0.3319)	-6.67467 (0.0000)	1.239930 (0.8924)	-96.6276 (0.0000)	-2.73695 (0.0031)	-9.0e+11 (0.0000)
DEBT	0.851633 (0.4012)	-15.8839 (0.0000)	-0.07486 (0.4702)	-318.283 (0.0000)	-2.8e+14 (0.0000)	-7.1e+13 (0.0000)
WCM	1.560188 (0.1187)	-3.93235 (0.0000)	-110.476 (0.0000)	-63.4740 (0.0000)	-14.2062 (0.0000)	-5.41119 (0.0000)
ACT	1.274329 (0.2057)	-17.3259 (0.0000)	-337.830 (0.0000)	-83.5527 (0.0000)	-37.0798 (0.0000)	-1.9e+12 (0.0000)
dSIZE	-0.813611 (0.4159)	-10.8386 (0.0000)	-7.54897 (0.0000)			

Izvor: kalkulacija autora na osnovu podataka APR-a, EViews program

Napomena: Pesaran CD test međuzavisnosti – H_0: Ne postoji međuzavisnost; Levin, Lin and Chu test jediničnog korena – H_0: Postoji individualni jedinični koren; IPS test jediničnog korena – H_0: Postoji zajednički jedinični koren.

Na osnovu dobijenih rezultata iz tabele 4, može se zaključiti da u pojedinačnim posmatranim varijablama ne postoji međuzavisnost, što implicira upotrebu testova jediničnog korena prve generacije. Autori su se opredelili za Levin, Lin i Chu test i IPS test, budući da pomenuti testovi imaju drugačije nulte hipoteze i mogu da služe kao provera jedan drugom. Na osnovu sprovedenih testova jediničnog korena (tabela 4), može se tvrditi da su sve posmatrane varijable, osim veličine preduzeća, stacionirane. Varijabla koja iskazuje veličinu preduzeća stacionarana je u prvoj diferenci, pa će ona kao takva biti uključena u model.

Hausman test pokazuje da je adekvatno koristiti regresioni model sa fiksnim efektima. Rezultati sprovedene FE regresije predstavljeni su u tabeli 5.

Sudeći preman dobijenim rezultatima, likvidnost nema uticaja na profitabilnost najvećih preduzeća prerađivačkog sektora u R. Srbiji, što implicira da ne postoji direktna veza između profitabilnosti i likvidnosti, kao i da ne postoji optimalan iznos gotovine i gotovinskih ekvivalenata koji bi omogućio maksimiranje neto prinosa na aktivu.

Tabela 5: Ocenjen regresioni model sa fiksnim efektima

Varijable	Koeficijent	Verovatnoća
c	0.049238	0.0001
LIK	0.005319	0.4263
DEBT	-0.005652	0.0001
WCM	-6.01e-05	0.4351
ACT	0.005794	0.0007
dSIZE	0.302544	0.0000
Effect specification		
R-squared		0.688366
Adjusted R-squared		0.575246
F-statistic		6.085280
Prob (F-statistic)		0.000000

Izvor: kalkulacija autora na osnovu podataka APR-a, EViews program

Profitabilnost, iskazana pokazateljem ROA, nije povezana ni sa dužinom trajanja poslovnog ciklusa posmatranih preduzeća. S druge strane, veća zaduženost preduzeća prerađivačkog sektora u R. Srbiji negativno utiče na profitabilnost preduzeća, dok brži obrt kapitala i veća aktiva preduzeća ima pozitivan uticaj na neto prinos na aktivu u posmatranom periodu.

Zaključak

O odnosu likvidnosti i profitabilnosti preduzeća ne postoji jedinstveno mišljenje. Prema jednom pristupu, odnos između dve varijable je negativan, budući da viša likvidnost iziskuje viši nivo oportunitetnih troškova i onemogućava nova ulaganja. Međutim, pojedini autori tvrde da je ovakav odnos prisutan samo kada se dve varijable posmatraju u kratkom roku. U dugom i srednjem roku, likvidnost i profitabilnost kreću se u istom pravcu. Drugim rečima, preduzeća koja imaju problem sa likvidnošću u srednjem i dugom roku ne mogu biti profitabilna. S tim u vezi, cilj ovog rada je kvantitativno determinisanje uticaja likvidnosti na profitabilnost 100 preduzeća prerađivačkog sektora u Republici Srbiji sa najvišim nivoom poslovnih prihoda posmatrano u petogodišnjem periodu.

Polazne hipoteze su formirane na osnovu dostupne teorijske i empirijske literature i testirane na panel podacima uz pomoć regresije sa fiksnim efektima. Dobijeni rezultati ukazuju da ne postoji direktna veza između pokazatelja ubrzane likvidnosti i neto prinosa na aktivu kada su posmatrana preduzeća u pitanju, što implicira da se ne može utvrditi ni optimalan iznos gotovine i gotovinskih ekvivalenata koji bi omogućio maksimiranje neto prinosa na aktivu. Direktna veza ne postoji ni između profitabilnosti i dužine trajanja poslovnog ciklusa posmatranih preduzeća. Može se tvrditi da brži obrt kapitala za posledicu ima viši nivo profitabilnosti, kao i rast aktive preduzeća. S druge strane, veća zaduženost ima negativne implikacije na profitabilnost preduzeća prerađivačkog sektora.

Rezultati sprovedenog istraživanja imaju značajne implikacije na finansijski menadžment preduzeća prerađivačkog sektora u R. Srbiji u cilju donošenja adekvatnih poslovnih odluka kada je povećanje profitabilnosti u pitanju. Dobijeni rezultati mogu biti od koristi i finansijskom sektoru prilikom donošenja odluka o odobravanju kredita preduzećima prerađivačkog sektora, kao i nadležnim institucijama koje pružaju podršku posmatranim preudzećima.

Sugestije za buduća istraživanja odnose se na korišćenje alternativnih mera pojedinih pokazatelja finansijske analize, pre svega likvidnosti i profitabilnosti, kako bi dobijeni rezultati bili još pouzdaniji. Druga sugestija odnosi se na proširenje perioda posmatranja, budući da se kao ograničenje ove studije može navesti relativno slaba javna dostupnost podataka vremenske serije (petogodišnji period) finansijskih izveštaja.

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THE INFLUENCE OF LIQUIDITY ON THE PROFITABILITY OF COMPANIES IN THE PROCESSING SECTOR IN THE RURAL SERBIA

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Original scientific paper

Abstract

The subject of this paper is the examination of the impact of liquidity on the profitability of 100 companies in the processing sector of the Republic of Serbia with the highest level of business income in the period from 2016 to 2020. A regression with fixed effects was applied to the panel data. Based on the obtained results, it can be argued that there is no direct relationship between indicators of accelerated liquidity and net return on assets when it comes to the observed companies, which implies that the optimal amount of cash and cash equivalents that would enable the maximization of net return on assets cannot be determined either.. There is no direct connection between profitability and the length of the business cycle of the observed companies. On the other hand, a faster turnover of capital results in a higher level of profitability, as well as the growth of company assets, while higher indebtedness has negative implications for the profitability of companies in the processing sector. The obtained results have significant implications for the decisions of financial managers, for the financial sector, as well as for competent state institutions.

Keywords: *profitability, ROA, liquidity, panel analysis*

JEL: *C22, C23, G30, G32*

Introduction

The goal of establishing any company is profit maximization, which is necessary for its long-term growth and development. After the world economic crisis in 2008, financial managers realized that, in addition to profit maximization, it is necessary to seriously consider the issue of liquidity (Bigio, 2015; Lang and Maffet, 2011, Raykov, 2017). Therefore, one of the most important tasks of financial managers is determining the optimal financial structure, which is

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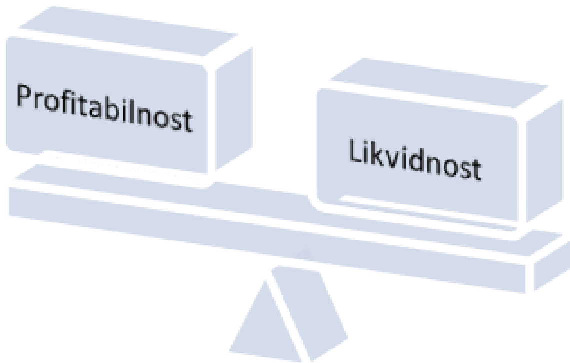
determined by striving for a higher level of profitability while ensuring the necessary level of liquidity (Figure 1).

Figure 4: Optimal ratio of liquidity and profitability of the company



Source: adapted from Balaban (2022)

There are two different approaches that theoretically explain the relationship between liquidity and profitability. According to the first approach, a higher level of liquidity leads to an increase in costs, i.e. high opportunity costs, which can have a negative impact on profitability. However, this impact is likely to be short-lived. Hirigoyen (1985) found that in the medium to long term there is a possibility of a positive relationship between liquidity and profitability because low liquidity would cause low profitability, since it results in more loan requests and insufficient cash flow. Similarly, Hollmayr and Kühl (2019) believe that active liquidity management has a positive impact on profitability, while Bakić and Petković (2020) claim that both liquidity and profitability are equally important components for the existence of the company and the maximization of the company's value (Knauer, 2013). Namely, a higher level of liquidity is a positive indicator of the company's financial condition, and although in the short term, a higher level of liquidity can have a negative impact on profitability, in the medium and long term it will increase the profitability of the company and minimize the risk of bankruptcy. Gonçalves and authors (2018) consider that finding a balance between profitability and liquidity is one of the main challenges of managing business finances. In this regard, the subject of research in this paper is the analysis of the relationship between liquidity and profitability of companies in the processing sector in the Republic of Serbia, while the goal is to quantitatively determine the impact of liquidity on the profitability of the observed companies. In accordance with the available theoretical and empirical literature, the following hypotheses were set:

$H_{1:}$ There is a direct relationship between liquidity and profitability

$H_{2:}$ A higher level of liquidity implies a lower level of profitability

H $_{3:}$ There is an optimal level of liquid assets for each company.

The majority of available empirical research proved the existence of a relationship between liquidity and profitability (table 1), and the first hypothesis was formed in accordance with this fact. Although the available theoretical literature indicates a long-term positive relationship between liquidity and profitability, our assumption is that a higher level of liquid assets implies a lower rate of profitability. We were led to this assumption, i.e. the definition of the second hypothesis, by studies that analyzed the mentioned relationship on the example of companies in the environment (Raykov, 2017; Vuković and Jakšić, 2019). The results of a study conducted by Korent and Orsag (2018) imply the existence of a relationship between net working capital and return on assets. This indicates the existence of an optimal level of net working capital, that is, in our case, liquid assets that balance costs and benefits and maximize the profitability of the analyzed companies. In accordance with the mentioned results, the third hypothesis was defined. In every company, the level of working capital should be optimized, which entails the need to maintain a balance between two seemingly opposite goals, profitability and liquidity (Van Horne and Wachowicz, 2009; Bieniasz and Gołaś, 2011; Gołaś, 2020).

Literature review

The relationship between liquidity and profitability has attracted the attention of a large number of authors, and the results of a certain number of empirical studies are presented in Table 1.

As can be seen from the table, most authors applied regression and/or cointegration to panel data, i.e. the observed sample of a larger number of companies. What is clear is that there is no consensus regarding the ratio of liquidity and profitability of the company. In this regard, the goal of this paper is to quantitatively determine the impact of liquidity on the profitability of companies in the processing sector in the Republic of Serbia, which also represents the scientific contribution of this paper.

Table 2: Results of previous empirical studies

Author(s)	**A sample**	**Period of time**	**Methodology**	**Results**
Mazanec (2022)	3828 transport companies from the Visegrad Group countries	in 2019	Correlation and regression	Different results
Milošev (2021)	367 non-financial companies from the Republic of Serbia	2016-2019	PCSE	A positive relationship
Kryszak et al (2021)	477 farms from the EU	2007-2018	SYS-GMM	There is no relationship
Högerle et al. (2020)	115 companies listed on FSE	2011-2017	Regression	A positive relationship

Gołaś (2020)	Dairies in Poland	2008-2017	Regression	Negative relationship
Seth and the Authors (2020)	563 Indian manufacturing companies	2008-2018	FE regression	Negative relationship
Al-Homaidi and authors (2020)	2154 Indian companies	2010-2016	Regression	Different results
Olaoye (2020)	Food companies listed on NSE	2014-2018	Regression and correlation	There is no relationship
Lee et al (2020)	15 non-financial companies listed on the GSE	2008-2017	Cointegration	Negative relationship
Yameen and the Authors (2019)	82 pharmaceutical companies listed on BSE	2008-2017	Regression	A positive relationship
Alsulayhim (2019)	67 companies listed on SSE	2007-2016	Regression and cointegration	A positive relationship
Hossain and Alam (2019)	6 companies from the cement industry listed on the DSE	2013-2017	Pearson correlation	Negative relationship
Wren and the Authors (2019)	Listed Chinese manufacturing companies	2010-2017	FE regression	Negative relationship
Vuković and Jakšić (2019)	9883 food companies from Southeast Europe	2010-2014	Probit regression	Negative relationship
Asche et al. (2018)	Norwegian salmon farms	2000-2014	Cointegration and regression	There is no relationship
Corent and Orsag (2018)	442 Croatian IT and consulting companies	2008-2013	Cointegration and regression	Negative relationship
Alom (2018)	Non-financial companies listed on the DSE	1998-2013	Cointegration	A positive relationship
Gonçalves and Authors (2018)	400 large and medium-sized companies from the UK that are not listed on the stock exchange	2006-2014	Regression	A positive relationship
Nanda and Panda (2018)	173 manufacturing companies listed on BSE	2000-2015	Panel GLS i VAR	A positive relationship

Source: author's systematization

Table 1- continued: Results of previous empirical studies

Author(s)	A sample	Period of time	Methodology	Results
Boțoc and Anton (2017)	937 fast growing companies from Central, Eastern and Southeastern Europe	2006-2015	GMM	Negative relationship
Evci and Sak (2017)	41 companies listed on BIST	2005-2016	Regression	Negative relationship
Raykov (2017)	20 companies listed on the BSE (Bulgarian SE)	2007-2015	Cointegration and regression	Negative relationship
Al-Jafari and Al Samman (2015)	17 industrial companies listed on MSM	2006-2013	Regression	Negative relationship
Kandpal (2015)	10 Indian Infrastructure Companies	2007-2015	Correlation and regression	Different results

Source: author's systematization

Data and methodology

The sample consists of 100 companies in the processing sector with the highest level of business income from the territory of the Republic of Serbia, and the time frame of the research is the period from 2016 to 2020. When considering the impact of liquidity on company profitability, most empirical studies used the regression model (table 1), so the authors opted for the regression model assessment. Following Milošev (2021), Nanda and Panda (2018), Gonçalves and authors (2018) and Knauer and Wöhrman (2013), the ROA indicator was used as a measure of profitability in the paper. As a measure of liquidity, the indicator of accelerated liquidity was used, since only liquid funds can be used in a relatively short period of time to settle the assumed short-term obligations of the company. The same measure of liquidity was used by Milošev (2021), Boţoc and Anton (2017), as well as Raykov (2017). In order to obtain relevant results, control variables were entered into the regression model. In this regard, the following regression model was evaluated:

$$ROA_{it} = \beta_1 LIK_{it} + \beta_2 DEBT_{it} + \beta_3 WCM_{it} + \beta_4 ACT_{it} + \beta_5 SIZE_{it} + \alpha_i + \epsilon_{it}$$

$$\alpha_i = \mu + \gamma_i$$

whereby:

ROA_{it} - net return on assets, i.e. a measure of the company's profitability,

$DEBT_{it}$ - the ratio of debt to capital, i.e. a measure of the company's indebtedness,

WCM_{it} - the duration of the business cycle, i.e. the approximation of the success of working capital management,

ACT_{it} - the capital turnover ratio, i.e. the indicator of the company's activity i

$SIZE_{it}$ - the first difference of the natural logarithm of the asset value, i.e. a measure of the size of the company,

α_i - section, varies among individual units of observation, but is constant over time. It consists of a constant part (μ) and an error term for individual observation units (γ_i),

ϵ_{it} – model error.

Descriptive statistics of the observed variables of 100 processing companies with the highest level of business income in the Republic of Serbia in the period from 2016 to 2020 are presented in Table 2.

Table 2: Descriptive statistics

	ROA	CHARACTER	DEBT	WCM	ACT	SIZE
Mean	0.076713	1.325527	2.741983	75.23207	4.569831	9.902181
Median	0.069500	0.900000	1.000000	54.00000	2.400000	9.924504
Max	0.591000	11.60000	159.3000	651.0000	124.7000	10.99446
Min	-0.631000	0.000000	0.000000	-669.0000	0.400000	8.455786
St. Dev.	-0.110303	1.392566	9.341054	123.3299	8.955761	0.392289

Source: author's calculation based on APR data, EViews program

Results of work with discussion

Correlation analysis was conducted in order to detect the possible problem of multicollinearity that can lead to a wrong interpretation of the estimated parameters. Based on Table 3, it can be concluded that there is no correlation between the observed independent variables, which implies the absence of multicollinearity in the estimated regression model.

In order to test the stationarity of the observed variables, unit root tests (Levin, Lin, Chu and IPS test) were conducted. In order to determine whether it is appropriate to apply the unit root test of the first or second generation to the observed variables, an interdependence test (Pesaran CD test) was also conducted, and the results of the obtained tests are shown in table 4.

Table 3: Correlation matrix

	ROA	CHARACTER	DEBT	WCM	ACT	SIZE
ROA	1.000000	0.215900	-0.189275	0.053742	0.176536	-0.070089
CHARACTER	0.215900	1.000000	-0.139458	0.249664	-0.057682	-0.058240
DEBT	-0.189275	-0.139458	1.000000	-0.029278	-0.061399	0.003790
WCM	0.053742	0.249664	0.249664	1.000000	-0.256425	0.114399
ACT	0.176536	-0.057682	-0.061399	-0.256425	1.000000	-0.503348
SIZE	-0.070089	-0.058240	-0.003790	0.114399	-0.503348	1.000000

Source: author's calculation based on APR data, EViews program

Table 4: Interdependence test and unit root tests

Test/ Variables	Pesaran CD	Levin, Lin and Chu			IPS	
		none	individual intercept	in. intercept and trend	individual intercept	in. intercept and trend
ROA	0.715861 (0.4741)	-8.93573 (0.0000)	-31.3427 (0.0000)	-24.3550 (0.0000)	-10.4610 (0.0000)	-11.1931 (0.0000)
CHARACTER	-0.970247 (0.3319)	-6.67467 (0.0000)	1.239930 (0.8924)	-96.6276 (0.0000)	-2.73695 (0.0031)	-9.0e+11 (0.0000)
DEBT	0.851633 (0.4012)	-15.8839 (0.0000)	-0.07486 (0.4702)	-318,283 (0.0000)	-2.8e+14 (0.0000)	-7.1e+13 (0.0000)
WCM	1.560188 (0.1187)	-3.93235 (0.0000)	-110,476 (0.0000)	-63.4740 (0.0000)	-14.2062 (0.0000)	-5.41119 (0.0000)
ACT	1.274329 (0.2057)	-17.3259 (0.0000)	-337,830 (0.0000)	-83.5527 (0.0000)	-37.0798 (0.0000)	-1.9e+12 (0.0000)
dSIZE	-0.813611 (0.4159)	-10.8386 (0.0000)	-7.54897 (0.0000)			

Source: author's calculation based on APR data, EViews program

Note: Pesaran CD test of interdependence – $H_{0:}$ There is no interdependence; Levin, Lin and Chu unit root test – $H_{0:}$ There is an individual unit root; IPS unit root test – $H_{0:}$ There is a common unit root.

Based on the obtained results from Table 4, it can be concluded that there is no interdependence in the individual observed variables, which implies the use of unit root tests of the first generation. The authors opted for the Levin, Lin and Chu test and the IPS test, since the mentioned tests have different null hypotheses and can serve as checks against each other. Based on the conducted unit root tests (table 4), it can be claimed that all the observed variables, except the size of the company, are stationary. The variable expressing the size of the company is stationary in the first differentiator, so it will be included in the model as such.

The Hausman test shows that it is adequate to use a regression model with fixed effects. The results of the performed FE regression are presented in Table 5.

Judging by the obtained results, liquidity has no influence on the profitability of the largest companies in the processing sector in the Republic of Serbia, which implies that there is no direct connection between profitability and liquidity, as well as that there is no optimal amount of cash and cash equivalents that would enable the maximization of the net return on assets.

Table 5: Estimated regression model with fixed effects

Variables	Coefficient	Probability
c	0.049238	0.0001
CHARACTER	0.005319	0.4263
DEBT	-0.005652	0.0001
WCM	-6.01e-05	0.4351
ACT	0.005794	0.0007
dSIZE	0.302544	0.0000
Effect specification		
R-squared		0.688366
Adjusted R-squared		0.575246
F-statistic		6.085280
Prob (F-statistic)		0.000000

Source: author's calculation based on APR data, EViews program

Profitability, expressed by the ROA indicator, is not even related to the length of the business cycle of the observed companies. On the other hand, the higher indebtedness of companies in the processing sector in the Republic of Serbia negatively affects the profitability of the company, while the faster capital turnover and larger company assets have a positive impact on the net return on assets in the observed period.

Conclusion

There is no single opinion on the relationship between the company's liquidity and profitability. According to one approach, the relationship between the two variables is negative, since higher liquidity requires a higher level of opportunity costs and discourages new investment. However, some authors claim that this relationship is present only when two variables are observed in the short term. In the long and medium term, liquidity and profitability move in the same direction. In other words, companies that have liquidity problems in the medium and long term cannot be profitable. In this regard, the goal of this paper is to quantitatively determine the impact of liquidity on the profitability of 100 companies in the processing sector in the Republic of Serbia with the highest level of business income observed in a five-year period.

Initial hypotheses were formed on the basis of available theoretical and empirical literature and tested on panel data with the help of regression with fixed effects. The obtained results indicate that there is no direct connection between indicators of accelerated liquidity and net return on assets when the observed companies are concerned, which implies that it is not possible to determine the optimal amount of cash and cash equivalents that would enable the maximization of net return on assets. There is no direct connection between profitability and the length of the business cycle of the observed companies. It can be argued that a faster turnover of capital results in a higher level of profitability, as well as the growth of the company's assets. On the other hand, higher indebtedness has negative implications for the profitability of companies in the processing sector.

The results of the conducted research have significant implications for the financial management of companies in the processing sector in the Republic of Serbia in order to make adequate business decisions when it comes to increasing profitability. The obtained results can be useful to the financial sector when making decisions on granting loans to companies in the processing sector, as well as to the competent institutions that provide support to the enterprises under review.

Suggestions for future research refer to the use of alternative measures of certain indicators of financial analysis, primarily liquidity and profitability, in order to make the obtained results even more reliable. The second suggestion refers to the extension of the observation period, since the relatively weak public availability of time series data (five-year period) of financial statements can be cited as a limitation of this study.

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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.

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

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“ (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

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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. Važan deo Konvencije o visokotehnološkom kriminalu posvećen je obavezama država da stvore normativne pretpostavke za uvođenje dodatnih procedura i ovlašćenja, kako bi se omogućilo efikasno otkrivanje i procesuiranje slučajeva kompjuterskog kriminala. Prvi koraci u tom postupku su otkrivanje dela i prikupljanje i obezbeđenje dokaza. 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).

Pitanje bezbenosti u virtuelnom prostoru delimično regulišu i druge konvencije koje se tiču ove materije, poput: Konvencije o zaštiti prava pojedinca u vezi sa automatskom obradom ličnih podataka, Konvencije o zaštiti dece od seksualne eksploatacije i seksualnog zlostavljanja, te Konvencije o sprečavanju terorizma.

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.

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.

Takođe, Ekonomsko-socijalni savet Ujedinjenih nacija, u julu 2007. godine, usvojio je Rezoluciju 2007/20, koja govori o međunarodnoj saradnji u oblasti prevencije, istrage, krivičnog progona i kažnjavanja privrednog kriminaliteta i dela povezanih sa zloupotrebom identiteta.

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:

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. 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. 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. 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. 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“, navodeći da sistem bezbednosti sajber prostora ima pet strateških prioriteta: postizanje elastičnosti, u smislu da se sistemi automatski vraćaju u normalno stanje nakon incidenta, značajno smanjenje sajber kriminala, razvoj politike sajber odbrane i kapaciteta saglasnih Zajedničkoj bezbednosnoj i odbrambenoj politici (Common Security and Defence Policy - CSDP), razvoj industrijskih i tehnoloških resursa za sajber bezbednost i uspostavljanje povezanih međunarodnih politika sajber bezbednosti za Uniju i promovisanje osnovnih vrednosti Evropske unije.

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. U svakoj od država članica ENISA ima najširu poslovnu sposobnost koja pravna lica imaju po unutrašnjem pravu članice i može da zaključuje ugovore u skladu sa pravom koje se primenjuje na konkretan ugovorni odnos. Ovlašćena je da sarađuje sa trećim zemljama i međunarodnim organizacijama radi promovisanja međunarodne saradnje u oblasti bezbednosti mreža i podataka. Organi ENISA su: Upravni odbor, Izvršni odbor, izvršni direktor, Stalno telo zainteresovanih strana (koje uključuje predstavnike akademske zajednice, privrede i potrošača) i ad hoc radne grupe. 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.. Evropski parlament, Savet, Evropska komisija i nadležna regulatorna tela država članica mogu da podnose zahteve za savete i podršku.

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. 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. 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 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).

Zakon o informacionoj bezbednosti koji je stupio na snagu u februaru 2016. godine, odnosi se na pravna lica. Propisano je osnivanje institucija među kojima je najznačajniji Nacionalni centar za prevenciju bezbednosnih rizika u IKT sistemima, domaći CERT tim. Njemu je dato u nadležnost prikupljanje informacija, klasifikacija informacija o incidentima i rizicima, podizanje svesti kod građana i saradnja sa javnim i privrednim subjektima (Đukić, 2018). Nakon toga, u martu 2016. godine, osnovano je Telo za koordinaciju poslova informacione bezbednosti, čime se Republika Srbija uključila u mrežu nacionalnih tela za razmenu informacija i borbu protiv kriminala kako je to propisano Direktivom 2013/40/EU.

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.

Keywords: *European law, cybercrime, personal data.*

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. In doing so, 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. An important part of the Convention on high-tech crime is devoted to the obligations of states to create normative assumptions for the introduction of additional procedures and powers, in order to enable effective detection and processing of computer crime cases. The first steps in that procedure are the discovery of the crime and the collection and securing of evidence. 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 issue of safety in the virtual space is partially regulated by other conventions that concern this matter, such as: the Convention on the Protection of Individual Rights in Relation to the Automatic Processing of Personal Data, the Convention on the Protection of Children from Sexual Exploitation and Sexual Abuse, and the Convention on the Prevention of Terrorism.

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.

The task of harmonizing national legislation in the field of high-tech crime and security in cyberspace is assigned by the United Nations 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 outlined the main problem and recommendations for improving security.

Also, the Economic and Social Council of the United Nations, in July 2007, adopted Resolution 2007/20, which talks about international cooperation in the field of prevention, investigation, prosecution and punishment of economic crime and acts related to identity abuse.

Many other organizations, such as NATO, 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?
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 adopted under the auspices of other international organizations, primarily the United Nations and the Council of Europe. 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. 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, criminal offenses related to high-tech crime did not exist in many countries. 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. 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 "European internal security strategy in action: five steps towards a safer Europe", stating that the cyberspace security system has five strategic priorities: achieving elasticity, in the sense that systems automatically return to a normal state after an incident, a significant reduction in cybercrime, the development of a cyber defense policy and capabilities compliant with the Common Security and Defense Policy (CSDP), the development of industrial and technological resources for cyber security and *the* establishment related international cyber security policies for the Union and promoting the fundamental values of the European Union.

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 acting 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. In each of the member states, ENISA has the widest legal capacity that legal entities have under the internal law of the member state and can conclude contracts in accordance with the law that applies to the specific contractual relationship. It is authorized to cooperate with third countries and international organizations in order to promote international cooperation in the field of network and data security. The bodies of ENISA are: Management Board, Executive Board, Executive Director, Permanent Body of Stakeholders (which includes representatives of the academic community, business and consumers) and ad hoc working groups. 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 European Parliament, the Council, the European Commission and the competent regulatory bodies of the Member States can submit requests for advice and support.

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. 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 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. 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 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).

The Law on Information Security, which entered into force in February 2016, applies to legal entities. The establishment of institutions is prescribed, among which the most important is the National Center for the Prevention of Security Risks in ICT Systems, the domestic CERT team. He is entrusted with collecting information, classifying information about incidents and risks, raising awareness among citizens and cooperating with public and business entities (Đukić, 2018). After that, in March 2016, the Body for the Coordination of Information Security Affairs was established, with which the Republic of Serbia joined the network of national bodies for the exchange of information and the fight against crime, as prescribed by Directive 2013/40/EU.

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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ŠABLON: NASLOV RADA (CENTRIRAN, TNR SIZE 12, BOLD, SVA SLOVA VELIKA, MAKSIMALNO DVA REDA)

***Nikola Nikolić*[35]*, Petar Petrović*[36]*, Marko Marković*[37]**

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Ključne reči: *navesti, maksimalno, pet, ključnih, reči.*

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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).

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Literatura

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

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Key words: *note, maximally, five, key, words.*

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Nik Holmes[38], John Peters[39]

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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;

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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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