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U pripreme ovog izdanja časopisa koji je pred Vama, početkom 2025. godine objavljen je peti po redu Izveštaj o budućnosti posla, World Economic Forum o promenama u poslovima i potrebnim veštinama u srednjeročnom periodu ispred nas 2025-2030. Polazeći od identifikovanja faktora koji na te promene utiču, kao i strateških odgovora poslodavaca kroz adekvatno pripremanje zaposlenih na predstojeće promene, središnji deo Izveštaja čini pregled istraživanja o poslovima i veštinama budućnosti po sektorima obavljenog na uzorku od preko 1000 kompanija iz 55 zemalja sveta i njihovih preko 14 miliona zaposlenih, pokrivajući 22 industrijske grane. Među glavnim pokretačima transformacije na tržištu rada širom sveta do 2030. godine, nalaze se sledeći trendovi:

- Širenje pristupa digitalnim uslugama kao trend sa najvećom snagom transformacije;
- Rastući troškovi života kao trend koji je drugi po stepenu uticaja transformacije;
- Upravljanje rizicima klimatskih promena, kao i mogućnosti zelene tranzicije i održivog razvoja su trend koji po snazi uticaja na transformaciju tržišta rada stoji na trećem mestu;
- Demografski trendovi, koji po stepenu uticaja transformacije stoje na četvrtom mestu, i to kroz dvojaku promenu: starenje stanovništva i smanjenje udela radno aktivne populacije (uglavnom u razvijenijim ekonomijama), kao i ekspanzija radno aktivne populacije (dominantno u ekonomijama sa nižim dohotkom);
- Geoekonomska fragmentacija i geopolitičke tenzije kao trendovi koji utiču na poslovni model takođe imaju uticaj na transformaciju tržišta rada i nalaze se na petom mestu.

Usled delovanja ovih trendova u narednom petogodišnjem periodu, procenjuje se da će doći do značajne strukturne transformacije na tržištu rada kroz otvaranje novih radnih mesta, što korespondira udelu od čak 22% od ukupnih postojećih poslova, od čega bi novokreirani poslovi dostigli nivo od 170 miliona poslova ili 14% današnje ukupne zaposlenosti. Ovaj rast će biti uravnotežen pomeranjem oko 8% (ili 92 miliona) postojećih poslova, rezultirajući neto rastom od 7% ukupne zaposlenosti ili 78 miliona poslova. Gledano po poslovima, to znači da je najveći uticaj u sledećim pozicijama i sektorima:

- Najveća tražnja u smislu apsolutnog broja radnih mesta, predviđa se kod tzv. Frontline poslova, odnosno poslova u vezi sa uslugama - kao što su dostavne, poljoprivredne, građevinske, proda-

jne, usluge pripreme hrane i sl. Takođe, rast se predviđa i kod usluga kao što su profesionalci za medicinsku negu (medicinske sestre), za socijalne savete i usluge, za ličnu negu i pomoć, ali i u sektoru edukacije i to posebno na nivou profesora srednjih škola i visokog obrazovanja;

- Najbrže rastuća tražnja u procentualnom smislu predviđa se kod sledećih grupa poslova: a) poslova u vezi sa tehnologijom – uključuju specijaliste kao što su Big Data Specialists, Fintech Engineers, AI specijalista, Machine Learning specijalista, Software and Application Developers; b) Poslovi u vezi sa zelenom tranzicijom (Green and energy transition roles) i oni uključuju različite pozicije od specijalista za autonomna i električna vozila, inženjera za životnu sredinu, inženjera za obnovljive izvore energije, održivi razvoj itd.;
- Najveći pad u smislu apsolutnog broja radnih mesta očekuje se kod kategorije poslova koji su na nivou šaltera kao što su blagajna, prodaja karata, ali i poslovni asistent, izvršni sekretar. Takođe, i procentualno, najbrža stopa opadanja poslova su na šalterima kao što su poštanske usluge, bankarske usluge i službenici za unos podataka.

U proseku, zaposleni mogu da očekuju da će dve petine ili 39% njihovih postojećih veština biti transformisano ili prevaziđeno u narednom periodu 2025-2030. Kada je reč o setu znanja, veština i kompetencija ističu se sledeća predviđanja:

- Analitičko razmišljanje i dalje ostaje u apsolutnom smislu najpotrebnija ključna veština kod zaposlenih, pri čemu je kao esencijalno važnu u 2025. god. smatra čak 7 od 10 ispitanih poslodavaca. Potom slede rezilijentnost, fleksibilnost i agilnost, liderstvo i socijalna inteligencija;
- Među najbrže rastućim veštinama nalaziće se veštine upravljanja AI i big data, kao i tehnološka pismenost i kibernetička bezbednost. Odmah potom slede veštine u domenu soft-skils i to sledećim redom: sposobnost kreativnog delovanja, rezilijentnost, fleksibilnost i agilnost, radoznalost i celoživotno učenje.

Tzv. Skill gaps su kategorično prepoznati kao najveća barijera poslovnoj transformaciji, sa čak 63% anketiranih poslodavaca koji ih smatraju ključnim za ceo period 2025-2030. Zato se ubrzano pripremaju i razvijaju politike u različitim segmentima koje imaju za cilj smanjenje gepa veština kod postojećih zaposlenih, ali i privlačenje novih zaposlenih, među kojima su: investicije poslodavca u treninge i edukaciju zaposlenih (upskilling, reskilling, odnosno dokvalifikacije, prekvalifikacije), politike blagostanja zaposlenih (health and well-being), politike uvažavanja različitosti, ravnopravnosti i inkluzije, politike održivosti.

Kao prilog ovoj velikoj temi od međunarodnog značaja, Udruženje banaka Srbije je u prvom kvartalu 2025. godine kroz aktivnosti više stručnih odbora Udruženja zajedno sa bankama realizovalo istraživanje u bankarskom sektoru Srbije na temu „Pogled na buduća znanja i veštine koje su potrebne za Bankarstvo budućnosti – iz ugla zaposlenih u bankama". Rezultati istraživanja u kojem je učestvovalo preko 1000 zaposlenih profesionalaca u bankarskom sektoru, i koji su prezentovani stručnoj i široj javnosti na Savetovanju Udruženja banaka Srbije za poslove sa stanovništvom, marketing i edukaciju i ljudske resurse održanog 26-28. marta 2025. godine na Zlatiboru, pokazuju da percepcije zaposlenih u bankarskom sektoru Srbije na svim pozicijama i poslovima (horizontalno i vertikalno) apsolutno korespondiraju trendovima koji se predviđaju na globalnom nivou. Među rezultatima izdvajaju se: uticaj veštačke inteligencije i tehnološkog napretka imaće značaj za postojeće poslove u različitoj meri, u zavisnosti od vrste posla i pozicije; uticaj održivog poslovanja i primene ESG kriterijuma se vidi kao pozitivan i dugotrajan; zaposleni se osećaju kao aktivni činioci promena na tržištu rada; uloga for-

malnog obrazovanja i kvalifikacija je i dalje ključna odrednica kompetencija; nužnost za dodatnim i kontinuiranim stručnim usavršavanjem se smatra ne samo potrebnom nego i željenom, kao i potreba za prenosivošću tako stečenog znanja. Rezultati istraživanja ukazuju i na visoku svest kod profesionalaca - kolega zaposlenih u bankama i menadžmenta - o trendovima i promenama na tržištu rada, nužnim prilagođavanjima, ali i spremnosti za lični razvoj i doprinos kompaniji i zajednici. Dodatno, i u potpunom skladu sa time, i novi zakonski okvir u bankarskom sektoru (Zakon o bankama i Zakon o zaštiti korisnika finansijskih usluga) o kojem se razgovaralo na pomenutom Savetovanju Udruženja banaka Srbije, prepoznaje važnost zaposlenih i standarda njihovih kompetencija i kvalifikacija u cilju obezbeđena kvaliteta usluge, upravljanja rizicima poslovanja, unapređenja odnosa sa klijentom i edukacije samih klijenata (finansijska edukacija, savetodavne usluge).

Na osnovu predviđanja sagovornika u istraživanju Svetskog ekonomskog foruma, ali i u istraživanju Udruženja banaka Srbije, transformacija poslova i veština je ne samo posledica nego i uzrok budućih promena; imaće značajan uticaj na poslovanje, industrije, javni sektor i same zaposlene širom sveta i u to u svim sektorima. Od krucijalnog je značaja pratiti dalje trendove kroz slična istraživanja, donositi odluke o upravljanju promenama bazirane na tim podacima, identifikovati blagovremeno potrebne veštine i programe obuke koji ih podržavaju i zaposlenima unapređuju znanja, kompetencije i kvalifikacije, i naravno imati međuinstitucionalnu saradnju. U tim procesima i aktivnostima, Udruženje banaka Srbije, uvek će biti partner zainteresovan za saradnju, inicijative i razvoj časopisa pred Vama, kao naše zajedničke platforme koja doprinosi boljoj praksi i podržava progres pojedinca, organizacije i društva.

Urednik
Dr Slađana Andrian Sredojević

THE FUTURE OF JOBS AND EDUCATION AND THE BANKING SECTOR IN SERBIA

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At the time of preparing this edition of the Journal, at the beginning of 2025, the fifth in a row Report on the Future of Work, was published at the World Economic Forum, covering changes in jobs and skills needed in the medium term ahead of us in 2025-2030. Starting from the identification of the factors that affect these changes, as well as the strategic responses of employers through adequate preparation of employees for the upcoming changes, the central part of the Report is an overview of research on jobs and skills of the future, by individual sectors, conducted on a sample of over 1000 companies from 55 countries around the world, with over 14 million employees, covering 22 industries. Among the main drivers of transformation in the global labour market by 2030 are the following trends:

- Expanding access to digital services as the trend with the greatest transformative power;
- The rising cost of living as a trend that is the second most influential in the transformation;
- Climate change risk management, as well as opportunities for green transition and sustainable development, are the trend that ranks third in terms of the strength of impact on the transformation of the labour market;
- Demographic trends, which are in fourth place in terms of the degree of impact of transformation, through a twofold change: an aging population and a decrease in the share of the working population (mainly in more developed economies), as well as the expansion of the working population (predominantly in lower-income economies);
- Geoeconomic fragmentation and geopolitical tensions as trends affecting the business model also have an impact on the transformation of the labour market, putting them in fifth place.

Due to the effects of these trends in the next five-year period, it is estimated that there will be a significant structural transformation in the labour market through the creation of new jobs, which corresponds to a share of as much as 22% of the total existing jobs, of which newly created jobs would reach the level of 170 million jobs, or 14% of today's total employment. This growth will be offset by a shift of about 8% (or 92 million) of existing jobs, resulting in a net growth of 7% of total employment or 78 million jobs. Looking at jobs, this means that the greatest impact is in the following positions and sectors:

- The highest demand in terms of the absolute number of jobs is forecasted in the so-called frontline jobs, i.e. jobs related to services - such as delivery, agricultural, construction, sales, food preparation services, etc. Also, growth is predicted in services such as nursing professionals, for social advice and services, for personal care and assistance, but also in the education sector, especially at the level of secondary school and higher education teachers;
- The fastest growing demand in percentage terms is predicted for the following groups of jobs: a) technology-related jobs – include specialists such as Big Data Specialists, Fintech Engineers, AI Specialists, Machine Learning Specialists, Software and Application Developers; b) Jobs related to the green and energy transition roles and they include various positions from specialists in autonomous and electric vehicles, environmental engineers, engineers for renewable energy sources, sustainable development, etc.;
- The largest decline in terms of the absolute number of jobs is expected in the category of counter jobs, such as cashiers, ticket salespersons, but also business assistants, executive secretaries. Also, in percentage terms, the fastest rate of job decline is at counters such as postal services, banking services and data entry clerks.

On average, employees can expect two-fifths or 39% of their existing skills to be transformed or overcome in the coming period 2025-2030. When it comes to a set of knowledge, skills and competencies, the following predictions stand out:

- Analytical thinking remains in absolute terms the most needed key skill in employees, with as many as 7 out of 10 surveyed employers considering it essential. This is followed by resilience, flexibility and agility, leadership and social intelligence;
- Among the fastest-growing skills will be AI and big data management skills, as well as technological literacy and cybersecurity. This is immediately followed by skills in the field of soft skills, in the following order: the ability to act creatively, resilience, flexibility and agility, curiosity and lifelong learning.

The so-called skill gaps are categorically recognised as the biggest barrier to business transformation, with as many as 63% of surveyed employers considering them crucial for the entire period 2025-2030. That is why policies are being prepared and developed rapidly in various segments aimed at reducing the lack of skills in existing employees, but also attracting new employees, including: employer investments in employee training and education (upskilling, reskilling), employee welfare policies (health and well-being), policies for respecting diversity, equality and inclusion, sustainability policies.

In the first quarter of 2025, as a contribution to this major topic of international importance, the Association of Serbian Banks, through the activities of several expert committees of the Association, together with banks, conducted a survey in the Serbian banking sector on the topic "A Perspective of Future Knowledge and Skills Needed for the Banking of the Future – from the Perspective of Bank Employees". The results of the survey, which involved over 1000 professionals employed in the banking sector, and which were presented to experts and the general public at the ASB Conference for Retail Operations, Marketing and Education and Human Resources, held on 26-28 March 2025 on Zlatibor, show that the perceptions of employees in the Serbian banking sector in all positions and jobs (horizontally and vertically) absolutely correspond to the trends predicted at the global economic level. Among the results, the impact of artificial intelligence and technological advances will have an impact on existing jobs to varying degrees, depending on the type of job and position; The impact of sustain-

able business and the application of ESG criteria is seen as positive and long-lasting; Employees feel like they are active agents of change in the labour market; The role of formal education and qualifications remains a key determinant of competences; The necessity for additional and continuous professional development is considered not only necessary but also desirable, as well as the need for the transferability of knowledge thus acquired. The results of the research also indicate a high awareness among professionals - colleagues employed in banks and management - of trends and changes in the labour market, necessary adjustments, but also their readiness for personal development and contribution to the company and the community. In addition, and in full compliance with this, the new legal framework in the banking sector (the Law on Banks and the Law on the Protection of Financial Services Users), which was discussed at the aforementioned Conference of the Association of Serbian Banks, recognises the importance of employees and the standards of their competencies and qualifications in order to ensure the quality of service, manage business risks, improve customer relations and educate clients themselves (financial education, advisory services).

Based on the predictions of the interlocutors in the research of the World Economic Forum, but also in the research of the Association of Serbian Banks, the transformation of jobs and skills is not only a consequence but also a cause of future changes; It will have a significant impact on business, industries, the public sector and employees around the world, in all sectors. It is crucial to monitor further trends through similar research, make decisions on change management based on this data, identify the necessary skills and training programs that support them in a timely manner and improve employees' knowledge, competencies and qualifications, and of course have inter-institutional cooperation. In these processes and activities, the Association of Serbian Banks will always be a partner interested in cooperation, initiatives and development of the Journal in front of you, as our common platform that contributes to better practice and supports the progress of the individual, organisation and society.

Editor
Slađana Andrian Sredojević, PhD

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ONLAJN BANKARSTVO U SRBIJI: ANALIZA KORISNIČKIH PREFERENCIJA I POTREBE ZA TRADICIONALNIM BANKARSKIM USLUGAMA

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Rezime

Ovaj rad ukazuje na ključne aspekte onlajn bankarstva u Srbiji, s posebnim fokusom na demografske karakteristike klijenata, njihove preferencije, kao i učestalost potrebe za fizičkim odlaskom u filijale banaka. Od avgusta do decembra 2024. godine, u istraživanju je učestvovalo 209 ispitanika iz Srbije. Iako onlajn bankarstvo postaje sve zastupljenije, fizičko prisustvo u bankama nije potpuno nestalo, jer mnogi korisnici i dalje odlaze u banke kako bi realizovali određene bankarske usluge. Rezultati Mann-Whitney testa su pokazali da pol ispitanika nije statistički značajan faktor u učestalosti odlazaka u filijale banaka. S druge strane, rezultati Kruskal-Wallis testa su pokazali da starosno doba ima značajan uticaj na učestalost odlazaka u filijale banaka i da stariji ispitanici češće odlaze u banke. Takođe, obrazovanje ispitanika pokazuje statistički značajne razlike, pri čemu ispitanici sa višim obrazovanjem češće posećuju banke. Rezultati istraživanja pružaju značajne smernice za banke u pogledu perspektive razvoja digitalnih usluga i očuvanja konkurentnosti na tržištu.

Ključne reči: onlajn bankarstvo, savremeno poslovanje, ponašanje korisnika, optimizacija digitalnih usluga, konkurentnost

JEL klasifikacija: D12, O33, G21.

Uvod

Poslovni svet je u prethodnom periodu bio izložen značajnom procesu transformacije usled razvoja i masovnog prihvatanja informacionih i komunikacionih tehnologija, a bankarski sektor nije izuzetak. Štaviše, ceo finansijski sektor je doživeo značajan preobražaj zbog pojave onlajn bankarstva koje je postalo sve zastupljenije usled rasta primene mobilnih telefona i rasprostranjenosti internet pristupa (Jain & Agarval, 2019). Imajući u vidu da su agilnost, fleksibilnost, prilagodljivost, umrežavanje, i orijentacija na nova tehnološka rešenja značajan faktor konkurentnosti svake organizacije (Lukić Nikolić et al., 2024), banke su se okrenule digitalnim tehnologijama sa ciljem da pruže dodatne usluge i bolje korisničko iskustvo svojim klijentima (Mirković et al., 2019). Iako su banke istorijski bile uspešne u integraciji novih tehnologija, današnji ekosistem finansijskih usluga zahteva dublju transformaciju (Omarini, 2024). Novi tipovi banaka, poznate kao onlajn banke, nastale su kao rezultat sve brže digitalizacije finansijskih usluga. Ove banke su posebno usmerene na tehnološki osvešćene korisnike koji preferiraju onlajn bankarstvo, bez fizičkog odlaska u banke (Lukić Nikolić, 2024). Onlajn banke često nude napredne funkcionalnosti poput informativnih korisničkih interfejsa, brzog otvaranja računa i nižih naknada u poređenju sa tradicionalnim bankama. Njihov cilj je da pruže jednostavnije i pristupačnije bankarsko iskustvo, posebno za mlađe generacije (Funcas, 2021).

Uticaj onlajn bankarstva na bankarski sektor je višestruk i može se posmatrati, kako iz perspektive samih klijenata, tako i iz perspektive banaka. Iz perspektive klijenata, onlajn bankarstvo nudi neuporedivu pogodnost i pristupačnost, omogućavajući korisnicima da upravljaju svojim finansijama bilo kada i sa bilo koje lokacije. Takođe, onlajn bankarstvo je značajno osnažilo korisnike bankarskih usluga jer im je pružilo pristup uslugama u realnom vremenu i mogućnost trenutnog izvršavanja transakcija. Iz perspektive banaka, onlajn bankarstvo predstavlja priliku da se pojednostavi poslovanje, smanje troškovi i proširi njihov domet na širu bazu klijenata. Pored toga, onlajn bankarstvo omogućava bankama da prikupe korisne podatke o ponašanju klijenata, koji se mogu iskoristiti za personalizovanje usluga, kao i za ciljane marketinške kampanje (Carranza et al., 2021).

Cilj ovog rada je da se ispitaju i analiziraju ključne tendencije onlajn bankarstva u Srbiji, kao i ključne transakcije i usluge koje su i dalje orijentisane na tradicionalan vid bankarstva koje podrazumeva fizičko prisustvo klijenata u banci. Istraživanje ove teme je od značaja, kako za poslovnu praksu, tako i za akademsku zajednicu. Za banke, razumevanje demografskih karakteristika korisnika, njihovih preferencija u pogledu usluga onlajn bankarstva, kao i učestalosti fizičkog odlaska u banke, predstavljaju ključne komponente za optimizaciju digitalnih usluga i prilagođavanje ponude potrebama tržišta. U svetlu sve većeg značaja digitalizacije, banke su dužne da prate promene u ponašanju klijenata kako bi ostale konkurentne i razvile inovativne pristupe koji poboljšavaju korisničko iskustvo. Sa akademskog stanovišta, istraživanje uticaja onlajn bankarstva doprinosi razumevanju šireg konteksta transformacije finansijskog sektora i ponašanja potrošača u digitalnoj eri. Takođe, ovakva istraživanja otvaraju prostor za dalja naučna istraživanja koja mogu da daju doprinos u razvoju novih teorijskih okvira i metodoloških pristupa u analizi digitalizacije u bankarstvu.

Rad je strukturiran na sledeći način. Prvo je definisano onlajn bankarstvo i njegove ključne karakteristike i prednosti. Zatim je predstavljena metodologija sprovedenog istraživanja – istraživačka pitanja, koncipirani upitnik, proces istraživanja, primenjene statističke metode za obradu podataka. Nakon toga su prikazani rezultati istraživanja, uz tabelarni prikaz i diskusiju dobijenih rezultata. U zaključku su sumirani ključni rezultati do kojih se došlo tokom istraživanja i njihove implikacije na banke koje su orijentisane na unapređenje usluga onlajn bankarstva. Takođe, u zaključku je ukazano i na ograničenja sprovedenog istraživanja, ali i na predloge za buduća istraživanja na ovu temu.

Pregled literature

Onlajn bankarstvo se definiše i opisuje na različite načine. Pre svega, onlajn bankarstvo predstavlja virtuelnu vezu koju banke i klijenti koriste za realizaciju finansijskih transakcija (Salehi et al., 2008). Preciznije, onlajn bankarstvo predstavlja korišćenje udaljenog pristupa bankovnim računima i samostalno obavljanje transakcija od strane klijenata. Dospinescu i Popescul (2004) posmatraju onlajn bankarstvo kao vid pružanja bankarskih usluga bez fizičkog prisustva klijenata u filijalama banaka, ističući da je onlajn bankarstvo značajna poslovna prilika kojom banke omogućavaju svojim klijentima da dobiju bankarske usluge bez dolaska u banku. Drugi autori ističu da se onlajn bankarstvo odnosi na pružanje finansijskih usluga i proizvoda elektronskim putem (Dangaiso et al., 2024). To je zapravo tehnološki napredak koji u finansijskom sektoru menja način na koji klijenti komuniciraju sa svojim bankama i upravljaju svojim novcem. Onlajn bankarstvo pruža korisnicima jednostavan i brz način za obavljanje različitih finansijskih aktivnosti korišćenjem digitalnih kanala, kao što su internet platforme i mobilne aplikacije. Onlajn bankarstvo obuhvata proveru stanja na računu, plaćanje računa, prenos sredstava između računa, podnošenje zahteva za kredite i otvaranje novih računa (Jain & Agarval, 2019; Mujinga, 2020; Dangaiso et al., 2024). Ovaj pomak ka digitalizaciji podstiče inovacije i konkurentnost u bankarskom sektoru, što posledično može da dovede do povećanja efikasnosti i šireg spektra finansijskih usluga (Gautam & Sah, 2023). Pojedini autori tvrde da je uspon onlajn bankarstva učinio tržište konkurentnijim i omogućio bankama da povećaju broj klijenata i da im ponude usluge po nižoj ceni (Alhassany & Faisal, 2018). Onlajn bankarstvo je izazvalo širok spektar efekata na bankarski sektor. Klijenti koji žive na udaljenim ili nerazvijenim lokacijama dobili su priliku da budu deo finansijskog sistema jer je došlo do povećanja dostupnosti bankarskih usluga. Isto tako, klijenti mogu samostalno da upravljaju sredstvima koristeći brojne usluge i pogodnosti zahvaljujući stalnoj dostupnosti onlajn bankarstva (Szopiński, 2016). Jedan od faktora koji je u velikoj meri doprineo na rast primene onlajn bankarstva je pandemija Covid-19 koja je dovela do ograničavanja fizičkog prisustva klijenata u filijalama banaka (Neves et al., 2023). Time su se klijenti banaka u velikoj meri okrenuli primeni usluga onlajn bankarstva, kako bi nesmetano u vanrednim okolnostima mogli da realizuju svoje finansijske transakcije.

Istraživanjima su identifikovani faktori koji su uticali na prihvatanje i korišćenje usluga onlajn bankarstva (Jenkins et al., 2022). Generalno posmatrano, pojedinci koji su savladavanje novih tehnologija doživljavali kao gubljenje vremena su u manjoj meri prihvatali onlajn bankarstvo. Isto tako, kod starijih ispitanika je prisutna manja stopa prihvatanja i usvajanja onlajn bankarstva jer su imali brojne poteškoće u procesu prilagođavanja novim tehnologijama. Sa druge strane, pojedinci koji su imali fakultetsko obrazovanje imali su i veći stepen usvajanja usluga onlajn bankarstva jer su na bolji način razumeli tehnološki napredak i njegovu ulogu. Kada je reč o sklonosti inovacijama, oni pojedinci koji su bili otvoreni ka inovacijama su u većoj meri usvajali onlajn bankarstvo. Ključna poruka istraživanja jeste da bi eliminisanje negativnih stavova prema novim tehnologijama i zadovoljavanje potreba starijih pojedinaca moglo da podstakne veći stepen prihvatanja i korišćenja usluga onlajn bankarstva (Jenkins et al., 2022).

Bitno je istaći i činjenicu da onlajn bankarstvo prate i određeni izazovi. Bezbednosni problemi, posebno rizik od prevare i krađe identiteta, ostaju značajna prepreka sveopštem usvajanju onlajn bankarstva (Maditinos et al., 2013). Pored toga, digitalni jaz, koji se odnosi na jaz između onih koji imaju pristup internetu i onih koji nemaju, ograničava domet internet bankarstva, posebno u zemljama u razvoju. Štaviše, neki klijenti, posebno starije osobe, mogu se suočiti sa poteškoćama u prilagođavanju digitalnom interfejsu i možda će preferirati tradicionalno bankarsko iskustvo licem

u lice (Carranza et al., 2021). Treba imati u vidu i činjenicu da aplikacije za onlajn bankarstvo često nisu savršene. Nekada su nove aplikacije bile implementirane postepeno, uz opsežno testiranje i pažljivo puštanje na produkciju. Međutim, danas su banke pod velikim pritiskom da razvijaju i lansiraju nove aplikacije brzo, često u roku od samo nekoliko meseci. Ova promena je izazvana konkurentnim tržištem, gde su brzina i efikasnost postali ključni faktori opstanka i uspeha. Samim tim, mogu se pojaviti određene manjkavosti usled nedovoljno pažljive evaluacije svih funkcionalnosti pre nego što se implementiraju nove aplikacije i onlajn sistemi (Al-shakrchy, 2024).

Metodologija istraživanja

- Ključna istraživačka pitanja (IP) postavljena u ovom radu su:
- IP 1: Preko kojih uređaja se dominantno koriste usluge onlajn bankarstva?
- IP 2: Koliko često korisnici onlajn bankarskih usluga odlaze u filijale banaka?
- IP 3: Koji su to poslovi koji se najčešće realizuju odlaskom u filijale banaka?
- IP 4: Da li postoje razlike u učestalosti fizičkog odlaska u banke na osnovu pola, starosne dobi i obrazovanja?

Istraživanje je sprovedeno primenom posebno koncipiranog upitnika koji su popunjavali korisnici onlajn bankarskih usluga u Srbiji. Upitnik se sastojao iz tri dela. Prvi deo upitnika odnosio se na profilna pitanja vezana za same ispitanike: pol, starosnu dob i obrazovanje. Drugi deo upitnika odnosio se na informacije vezane za korišćenje usluga onlajn bankarstva, kao što su broj otvorenih računa, broj banaka i same banke čije se usluge onlajn bankarstva koriste, kao i uređaji preko kojih ispitanici dominantno koriste usluge onlajn bankarstva. Treći deo upitnika obuhvatio je pitanja vezana za potrebu fizičke posete filijalama banaka i usluge zbog kojih korisnici najčešće moraju da odlaze u banke.

Prosečno vreme popunjavanja upitnika iznosilo je 15 minuta. Selekcija ispitanika bazirana je na pristupu koji omogućava lako prikupljanje podataka, bez specifičnih kriterijuma ili stratifikacije prema demografskim karakteristikama. Cilj je bio da se istraži varijacija u korisničkim preferencijama i ponašanju korisnika onlajn bankarstva u Srbiji. Ispitanici su prikupljani putem različitih kanala, uključujući profesionalne i društvene mreže i direktnu distribuciju upitnika u onlajn zajednicama, što je omogućilo pristup široj populaciji korisnika. Ispitanici su dobrovoljno učestvovali u istraživanju, uz punu saglasnost za korišćenje njihovih podataka u svrhu naučnog istraživanja. U periodu od avgusta do decembra 2024. godine, na upitnik je odgovorilo ukupno 209 ispitanika.

Prikupljeni odgovori su obrađeni primenom Microsoft® Excel® 2019 i Statističkog softvera za društvene nauke (engl. *Statistical Software for Social Sciences - SPSS*), verzija 26. Za procenu normalnosti raspodele podataka korišćen je Kolmogorov-Smirnov test. Kako su rezultati sa značajnošću Sig.=0,000 pokazali da pretpostavka normalnosti raspodele podataka nije zadovoljena, za statističku analizu su primenjene neparametarske tehnike. Mann-Whitney test je korišćen za upoređivanje razlika između dve grupe, dok je Kruskal-Wallis test korišćen za upoređivanje razlika između tri ili više grupa uz 95% interval poverenja. Levenov test za jednakost varijansi primenjen je u svim testovima koji su upoređivali razlike između grupa, zadovoljavajući pretpostavku homogene varijanse u svim slučajevima ($p > 0,05$).

Rezultati istraživanja i diskusija

U Tabeli 1 prikazane su osnovne informacije o ispitanicima koji su učestvovali u istraživanju. U uzorku je zastupljen veći broj žena (64,12%) u odnosu na muškarce (35,88%). Najveći broj ispitanika (39,23%) pripada starosnoj grupi od 35 do 44 godina, što sugeriše da su u pitanju korisnici koji imaju stabilne finansije i razvijene navike korišćenja bankarskih usluga. Zanimljivo je da je manji broj ispitanika među mlađim korisnicima (18,18% ispitanika ima od 18 do 24 godine), što može biti indikator da mlađe generacije nisu u potpunosti zastupljene u istraživanju, ili da nisu dominantni korisnici onlajn bankarstva u ovom uzorku. Ova starosna grupa verovatno još uvek studira ili nema svoja primanja. Grupa ispitanika starija od 45 godina takođe ima značajan udeo (30,15% ukupnog broja ispitanika), što ukazuje na to da onlajn bankarstvo koristi i starija populacija. U pogledu obrazovanja, najveći broj ispitanika (50,72%) ima fakultetsko obrazovanje (završene osnovne i master studije), što je očekivano, s obzirom na to da obrazovanje ima značajnu ulogu u usvajanju novih tehnologija, uključujući onlajn bankarstvo. Ispitanici sa višim obrazovanjem verovatno imaju veće poverenje u digitalne tehnologije, kao i veće mogućnosti za korišćenje složenijih funkcija onlajn bankarstva. Zanimljivo je da samo mali broj ispitanika ima osnovno (0,48%) ili srednje obrazovanje (16,75%), što može ukazivati na to da su učesnici istraživanja pretežno iz obrazovnih i profesionalnih grupa koje su bolje upoznate s onlajn uslugama.

Tabela 1 - Osnovne informacije o ispitanicima

	N	%
Pol		
Muški	75	35,88
Ženski	134	64,12
Starosna dob		
Od 18 do 24 godine	38	18,18
Od 25 do 34 godine	26	12,44
Od 35 do 44 godina	82	39,23
Od 45 do 54 godina	48	22,97
Preko 54 godine	15	7,18
Obrazovanje		
Osnovna škola	1	0,48
Srednja škola	35	16,75
Viša/Visoka škola	30	14,35
Fakultet (osnovne i master studije)	106	50,72
Fakultet (magistarske i doktorske studije)	37	17,70

Rezultati u Tabeli 2 o broju otvorenih računa za korišćenje usluga onlajn bankarstva pružaju korisne zaključke o ponašanju korisnika u pogledu diversifikacije njihovih finansijskih usluga i upotrebe digitalnih kanala. Najveći broj ispitanika (41,63%) ima dva otvorena računa, što ukazuje na to da mnogi korisnici preferiraju različite vrste računa (dinarske i devizne) za različite potrebe. Korisnici žele da

odvoje svoje svakodnevne finansijske transakcije od štednje ili ulaganja. Takođe, 36,36% ispitanika ima tri ili više računa, što ukazuje na veću finansijsku kompleksnost ili na potrebe korisnika da upravljaju različitim valutama ili vrstama usluga. Samo 22,01% ispitanika ima jedan otvoren račun za usluge onlajn bankarstva.

Tabela 2 - Broj aktivnih računa za usluge onlajn bankarstva

Broj računa za onlajn bankarstvo	N	%
Jedan	46	22,01
Dva	87	41,63
Tri i više	76	36,36

Rezultati u Tabeli 3 pokazuju da većina korisnika (56,46%) koristi usluge onlajn bankarstva samo jedne banke. To ukazuje da je za većinu korisnika dovoljno da imaju samo jedan bankovni račun za obavljanje svih digitalnih bankarskih transakcija, što odražava sklonost klijenata ka jednostavnosti i preferenciji prema stabilnim, dobro razvijenim onlajn platformama. S druge strane, 35,88% korisnika koristi usluge onlajn bankarstva dve banke, što sugeriše da postoji određena potreba za diversifikacijom usluga ili konkurencijom između banaka, što može biti povezano s različitim vrstama usluga koje svaka banka nudi. Samo 7,66% ispitanika koristi usluge tri ili više banaka onlajn, što ukazuje na to da je većina korisnika ipak sklona koncentraciji svojih bankarskih aktivnosti u jednoj ili dve banke, verovatno zbog veće efikasnosti i lakše organizacije svojih finansija.

Tabela 3 - Broj različitih banaka čije se usluge onlajn bankarstva koriste

Broj različitih banaka	N	%
Jedna	118	56,46
Dve	75	35,88
Tri i više	16	7,66

Rezultati iz Tabele 4 o uređajima preko kojih se dominantno koriste usluge onlajn bankarstva pružaju korisne informacije po pitanju preferencija korisnika i ukazuju na trendove u upotrebi tehnologija za obavljanje bankarskih transakcija. Najveći broj ispitanika (84,69%) koristi mobilni telefon kao primarni uređaj za korišćenje onlajn bankarstva, što je u skladu s globalnim trendovima u digitalnom bankarstvu. Mobilni telefon nudi visoku pristupačnost, praktičnost i fleksibilnost, jer korisnici mogu da obave bankarske transakcije u bilo kojem trenutku i sa bilo kojeg mesta. Takođe, mobilne aplikacije banaka su često dizajnirane za jednostavno korišćenje, s brzom autentifikacijom (kroz biometriju ili PIN), što dodatno doprinosi širokoj popularnosti ovog uređaja za usluge onlajn bankarstva. Na drugom mestu, sa 14,83%, nalazi se računar/laptop, što je značajno manji procenat u poređenju sa mobilnim telefonom. Iako računar pruža veću preglednost i precizniju funkcionalnost (posebno u kontekstu složenijih transakcija i analize finansijskih podataka), mobilni telefon je, zbog svoje prenosivosti i lakšeg pristupa, postao dominantan uređaj za svakodnevne bankarske aktivnosti. Korisnici računara i laptopa se

odlučuju za ove uređaje kada je potrebno obaviti kompleksnije zadatke, kao što je upravljanje većim novčanim iznosima ili pristup specifičnim funkcijama koje mobilni uređaji možda ne podržavaju jednako efikasno. Tablet, s minimalnim udelom od 0,48%, predstavlja gotovo zanemarljiv uređaj u korišćenju usluga onlajn bankarstva. Interesantno je da pametni sat nije zabeležio nijednu upotrebu za onlajn bankarstvo, što je očekivano s obzirom na trenutne tehnološke mogućnosti. Pametni satovi, iako popularni za praćenje zdravlja i raznih notifikacija, nisu u stanju da pruže dovoljnu funkcionalnost i sigurnost za kompleksnije bankarske transakcije (ne računajući plaćanja) što objašnjava njihov potpuni izostanak u ovom kontekstu.

Tabela 4 - Uređaj preko kojeg ispitanici dominantno koriste usluge onlajn bankarstva

Uređaji	N	%
Mobilni telefon	177	84,69
Računar/lap top	31	14,83
Tablet	1	0,48
Pametni sat	0	0,00

Rezultati u Tabeli 5 o bankama čije usluge onlajn bankarstva ispitanici koriste, pružaju uvid u preferencije ispitanika i tržišne trendove u oblasti digitalnog bankarstva. Banca Intesa i Raiffeisen banka zauzimaju prva dva mesta, sa 19, odnosno 18 anektiranih korisnika, što ukazuje na to da ove banke imaju visok stepen poverenja među korisnicima, verovatno zbog njihove široke ponude, stabilnosti, ali i pouzdane digitalne infrastrukture. Na trećem mestu su NLB Komercijalna banka i Yettel banka, sa po 15 korisnika, što takođe ukazuje na značajan interes za njihove onlajn usluge. Generalno posmatrano, rezultati pokazuju da je tržište onlajn bankarstva raznovrsno, a konkurencija među bankama prilično jaka. Samim tim, u cilju zadržavanja postojećih i privlačenja novih klijenata, banke moraju konstantno da inoviraju i unapređuju svoje digitalne platforme.

Tabela 5 - Banke čije se usluge onlajn bankarstva najčešće koriste

Banke	N	Rang
Banca Intesa	19	1
Raiffeisen banka	18	2
NLB Komercijalna banka	15	3
Yettel banka	15	3
Banka Poštanska štedionica	13	4
AIK banka	11	5
Erste banka	10	6
Eurobank Direktna banka	8	7
UniCredit banka	8	7
ALTA banka	7	8
OTP banka	6	9

Banke	N	Rang
ProCredit banka	5	10
Addiko banka	5	10
Halkbank	2	11
Adriatic banka	1	12

Rezultati u Tabeli 6 ukazuju na promene u bankarskim navikama korisnika, naročito u kontekstu digitalizacije bankarstva. Većina ispitanika (37,32%) odlazi u banke jednom do dva puta godišnje, dok značajan procenat (31,58%) tvrdi da nikada ne posećuje banke. Ovi rezultati ukazuju na opadanje potrebe za fizičkim odlaskom u banke, što je povezano s rastućom dostupnošću onlajn usluga i širenjem digitalnog bankarstva. Iako broj korisnika koji prelaze na onlajn bankarstvo stalno raste, i dalje postoji određeni broj ispitanika (13,40%) koji povremeno odlazi u banke, jednom mesečno, dok 17,70% ispitanika odlazi u banke jednom do dva puta kvartalno. Ovi rezultati ukazuju na to da postoje različite potrebe korisnika – neki korisnici se u potpunosti oslanjaju na onlajn bankarstvo, dok drugi povremeno odlaze u filijale banaka zbog specifičnih zahteva ili ličnih preferencija. Ovi trendovi sugerišu da, iako je digitalizacija postala dominantan način obavljanja bankarskih transakcija, fizičko prisustvo i dalje ima određenu ulogu, posebno u situacijama koje zahtevaju kompleksniju uslugu ili ličnu interakciju.

Tabela 6 - Odgovori na pitanje „Da li i dalje imate potrebu za klasičnim, fizičkim odlaskom u filijalu banke?“

Učestalost odlazaka u banku	N	%
Da, jednom mesečno	28	13,40
Da, jednom do dva puta kvartalno	37	17,70
Da, jednom do dva puta godišnje	78	37,32
Ne, nikada	66	31,58

Rezultati prikazani u Tabeli 7 pokazuju ključne usluge zbog kojih ispitanici fizički odlaze u filijale banaka. Najveći broj ispitanika odlazi u filijale banaka zbog podizanja dinarskih (27,75%) i deviznih sredstava (11,00%). Oko jedne trećine ispitanika odlazi u filijale banaka zbog preuzimanja kartica. Od toga, 23,92% ispitanika odlazi zbog preuzimanja kartica zbog isteka, dok 6,22% odlazi zbog preuzimanja novih kartica. Manje od jedne petine, tačnije 18,66% ispitanika, odlazi u filijale banaka zbog kredita. To uključuje konsultacije u vezi sa kreditima (7,65%), podnošenje zahteva za kredite (6,70%) i potpisivanje ugovora (4,31%). Proces odobravanja kredita može biti složen za onlajn rešavanje i često zahteva ličnu interakciju sa kreditnim savetnikom. Rezultati pokazuju da ukupno 24,89% ispitanika odlazi u filijale banaka za transakcije vezane za čekove i prenos novčanih sredstava. Iako su ove usluge često dostupne putem onlajn sistema, pojedini korisnici preferiraju lične transakcije, verovatno zbog sigurnosti ili kompleksnosti prenosa sredstava. Rezultati pokazuju da korisnici nekada moraju da koriste usluge koje uključuju specifične potrebe kao što su promena i ažuriranje podataka, rešavanje problema sa PIN kodom ili karticom, zatvaranje računa i slično. Iako ovakve situacije mogu biti rešene putem telefonske ili onlajn podrške, određeni broj korisnika smatra da je lakše rešiti te probleme lično u filijali.

Tabela 7 - Usluge koje se realizuju fizičkim odlaskom korisnika u filijalu banke

	N	%
Usluge podizanja sredstava		
Podizanje dinarskih sredstava	58	27,75
Podizanje deviznih sredstava	23	11,00
Ukupno	81	38,75
Usluge preuzimanja kartica		
Preuzimanje kartica zbog isteka	50	23,92
Preuzimanje novih kartica	13	6,22
Ukupno	63	30,14
Usluge vezane za kredite		
Konsultacije vezane za kredite	16	7,65
Podnošenje zahteva za kreditne proizvode	14	6,70
Potpisivanje ugovora za kredite	9	4,31
Ukupno	39	18,66
Usluge vezane za čekove i transfere		
Uplata novčanih sredstava na račun	22	10,53
Usluge vezane za čekove	21	10,05
Prenos deviznih sredstava	9	4,31
Ukupno	52	24,89
Razne druge usluge – specifične potrebe korisnika		
Promena podataka / ažuriranje informacija	6	2,87
Problem sa PIN kodom / karticom	4	1,91
Gasenje kartice / zatvaranje računa	2	0,96
Ukupno	12	5,74

Rezultati statističkih testova i diskusija

U cilju istraživanja potencijalnih statistički značajnih razlika u učestalosti odlazaka ispitanika u filijale banaka u odnosu na pol, starosnu dob i obrazovanje, sprovedeni su neparametarski statistički testovi. Mann-Whitney i Kruskal-Wallis testovi su odabrani zbog prirode podataka, koji ne prate normalnu raspodelu.

Rezultati Mann-Whitney testa, koji se koriste za poređenje dva nezavisna uzorka, prikazani su u Tabeli 8. Ovi rezultati ukazuju da ne postoji statistički značajna razlika u učestalosti odlazaka u filijale banaka između muškaraca i žena, budući da p-vrednost iznosi 0,643. Ova vrednost je veća od uobičajene

granice značajnosti (0,05), što znači da razlika u odgovorima nije dovoljno velika da bi bila smatrana statistički značajnom. Iako se uočava da su muškarci imali nešto niži rang (Mean Rank = 102,53) u odnosu na žene (Mean Rank = 106,38), ova razlika nije dovoljna da bi se doneo zaključak o statističkoj značajnosti. Ovi rezultati ukazuju da pol ispitanika nema značajan uticaj na učestalost fizičkih poseta filijalama banaka.

Tabela 8 - Rezultati Mann-Whitney testa (polna struktura ispitanika)

Pol	N	Mean Rank	Mann-Whitney	Z	Asymp. Sig.
Muški	75	102,53	4839,500	-0,464	0,643
Ženski	134	106,38			

Dalje, analizirana je starosna grupa ispitanika korišćenjem Kruskal-Wallis testa, koji omogućava testiranje razlika između tri i više nezavisnih uzoraka. Kao što se vidi u Tabeli 9, rezultati pokazuju statistički značajne razlike između starosnih grupa u pogledu učestalosti poseta filijalama banaka (p = 0,030). Rezultati pokazuju da starost ima značajan uticaj na učestalost odlazaka u filijalu banke. Konkretno, stariji ispitanici, posebno oni u grupi od 45+ godina, imaju najveću srednju vrednost (Mean = 2,47), što znači da su skloniji učestalijim posetama bankama u poređenju s mlađim grupama, poput ispitanika u grupama od 18 do 24 godine i 25 do 34 godine, koji imaju niže srednje vrednosti (Mean = 1,87 i 1,81, respektivno). Ovi rezultati ukazuju na moguće razlike u ponašanju, potrebama ili stavovima prema bankarskim uslugama među starijim i mlađim ispitanicima.

Tabela 9 - Rezultati Kruskal-Wallis testa (starosna struktura ispitanika)

Starost	N	Mean	Median	Kruskal-Wallis	df	Asymp. Sig.
Od 18 do 24 godine	38	1,87	1,00	10,673	4	0,030*
Od 25 do 34 godine	26	1,81	2,00			
Od 35 do 44 godina	82	2,13	2,00			
Od 45 do 54 godina	48	2,38	2,00			
Preko 54 godine	15	2,47	2,00			

Pored toga, analizirane su razlike u učestalosti odlazaka u filijale banaka na osnovu obrazovanja ispitanika. Rezultati Kruskal-Wallis testa, koji su prikazani u Tabeli 10, pokazuju statistički značajne razlike među obrazovnim grupama (p = 0,014). Ovo sugeriše da obrazovni nivo ispitanika ima značajan uticaj na to koliko često posećuju banku. Ispitanici sa višim nivoima obrazovanja, naročito oni sa magistarskim i doktorskim studijama, imaju višu srednju vrednost (Mean = 2,59) u poređenju sa ispitanicima sa nižim nivoima obrazovanja. Ovi rezultati ukazuju da ispitanici sa višim obrazovanjem mogu imati kompleksnije finansijske potrebe, kao i veću sklonost da koriste usluge koje zahtevaju lično prisustvo u banci, kao što su specifične usluge ili veći iznosi transakcija, koje se ne mogu uvek rešiti putem onlajn bankarstva.

Tabela 10 - Rezultati Kruskal-Wallis testa (obrazovna struktura ispitanika)

Obrazovanje	N	Mean	Median	Kruskal-Wallis	df	Asymp. Sig.
Osnovna škola	1	1,00	1,00	12,517	4	0,014*
Srednja škola	35	2,17	2,00			
Viša/Visoka škola	30	1,90	1,50			
Fakultet (osnovne i master studije)	106	2,02	2,00			
Fakultet (magistarske i doktorske studije)	37	2,59	3,00			

Zaključak

Rezultati istraživanja, koje je od avgusta do decembra 2024. godine obuhvatilo 209 ispitanika iz Srbije, pokazuju da su korisnici bankarskih usluga sve više orijentisani ka onlajn bankarstvu, pri čemu je primetan trend smanjene potrebe za fizičkim odlaskom u filijale banaka. Većina korisnika koristi usluge onlajn bankarstva putem mobilnih telefona. Takođe, iako mnogi korisnici imaju više otvorenih računa, većina koristi onlajn usluge samo jedne ili dve banke, što ukazuje na sklonost prema koncentraciji aktivnosti u nekoliko odabranih institucija. Rezultati Mann-Whitney testa su pokazali da pol ispitanika nije statistički značajan faktor prilikom razmatranja učestalosti odlazaka u filijale banaka. S druge strane, rezultati Kruskal-Wallis testa su pokazali da starosna dob ima statistički značajan uticaj jer stariji ispitanici češće odlaze u banke da bi realizovali određene bankarske usluge. Takođe, obrazovanje ispitanika pokazuje statistički značajne razlike, pri čemu ispitanici sa višim obrazovanjem češće posećuju banku, što može biti povezano sa složenijim finansijskim potrebama ili specifičnim uslugama koje zahtevaju lično prisustvo u banci.

Na osnovu rezultata ovog istraživanja, ključne preporuke za banke mogu da se formulišu u nekoliko pravaca, fokusirajući se na optimizaciju usluga i jačanje konkurentnosti u digitalnom bankarstvu. S obzirom na to da je mobilni telefon dominantan uređaj za onlajn bankarstvo, banke treba da nastave ulaganja u razvoj i unapređenje svojih mobilnih aplikacija, osiguravajući da one budu intuitivne, sigurne i prilagođene potrebama korisnika. Redovno ažuriranje funkcionalnosti, kao i pružanje novih usluga kroz mobilne platforme, ključno je za održavanje konkurentnosti i zadovoljstva korisnika. S obzirom na to da je i dalje prisutna određena potreba za fizičkim odlaskom u banke, posebno kod korisnika koji nemaju dovoljno poverenja ili iskustva u korišćenju digitalnih platformi, preporučuje se ulaganje u edukaciju korisnika o prednostima i jednostavnosti korišćenja onlajn bankarstva. Takođe, unapređenje korisničke podrške koja pomaže korisnicima u savladavanju tehničkih izazova može pomoći u povećanju digitalne pismenosti i većem stepenu primene onlajn bankarstva.

Ograničenja ovog istraživanja odnose se na veličinu i strukturu uzorka, koja nije potpuno reprezentativna za celu populaciju korisnika onlajn bankarstva u Srbiji. Istraživanjem nisu obuhvaćeni segmenti koji se odnose na stepen zadovoljstva korisnika uslugama onlajn bankarstva i ključnim

preprekama i izazovima sa kojima se suočavaju. Takođe, kvalitativni podaci, koji bi omogućili dublje razumevanje korisničkih preferencija i stavova, nisu bili deo ovog istraživanja. Razumevanje motivacije korisnika i specifičnih razloga za odlazak u filijale banaka, kao i stavovi korisnika prema bezbednosti i pouzdanosti onlajn transakcija, mogli bi dodatno da obogate zaključke i doprinesu preciznijim preporukama za razvoj usluga onlajn bankarstva.

Buduća istraživanja bi trebala da obuhvate veći broj ispitanika i veći broj zemalja, ali i analizu faktora koji utiču na sigurnost i poverenje korisnika u onlajn bankarstvo. Takođe, bilo bi korisno istražiti uticaj novih tehnologija (poput biometrije i blokčejna) na upotrebu onlajn bankarstva, kao i stavove korisnika prema budućim inovacijama u sektoru digitalnog bankarstva. I na kraju, iako sprovedeno istraživanje daje korisne smernice za banke u pogledu prilagođavanja ponude i razvoja digitalnih usluga, buduća istraživanja bi mogla da uključe i širi spektar socijalnih i kulturnih faktora koji imaju uticaj na ponašanje korisnika.

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ONLINE BANKING IN SERBIA: AN ANALYSIS OF CONSUMER PREFERENCES AND THE NEED FOR TRADITIONAL BANKING SERVICES

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Abstract

This paper discusses the fundamental elements of online banking in Serbia, with an emphasis on user demographics, preferences, and the frequency with which they need to physically visit bank branches. The survey gathered 209 responses between August and December 2024. Although online banking is growing increasingly popular, physical presence in banks has not faded entirely, as many customers continue to visit banks for certain services. The Mann-Whitney test results revealed that respondents' gender is not a statistically significant factor in the frequency with which they visit banks. On the other hand, the Kruskal-Wallis test results revealed that age had a significant impact on the frequency of visits to bank branches, with older respondents visiting the banks more frequently. In addition, there are statistically significant differences in respondents' educational levels, with those with greater education visiting banks more frequently. The study's findings provide important guidance for banks on how to build digital services while remaining competitive in the market.

Keywords: online banking, contemporary business, user behavior, user experience, optimization of digital services, competitiveness.

JEL classification: D12, O33, G21.

Introduction

The development and widespread adoption of information and communication technology throughout the previous decade exposed all organizations to a significant process of transformation, and the banking sector is no exception. The advent of online banking, which has grown in popularity as a result of the rise in mobile phone use and the widespread availability of Internet connectivity, has also significantly changed the financial industry as a whole (Jain & Agarwal, 2019). Given that any organization's competitiveness is greatly influenced by its agility, flexibility, adaptability, networking, and orientation to new technological solutions (Lukić Nikolić et al., 2024), banks have turned to digital technologies in an effort to offer their customers more services and a better user experience (Mirković et al., 2019). Even while banks have successfully incorporated new technology in the past, the ecosystem of financial services today needs a more thorough restructuring (Omarini, 2024). The increasingly rapid digitization of financial services has led to the emergence of new bank types, also referred to as online banks. These banks cater specifically to tech-savvy consumers who would rather do their banking online (Lukić Nikolić, 2024). Advanced features including informative user interfaces, quick account opening, and reduced costs compared to traditional banks are frequently provided by online banks. Their objective is to make banking easier and more accessible, particularly for younger generations (Funcas, 2021).

There are many different ways to examine the effects of online banking, both from the banks' and the clients' perspectives. From the standpoint of the client, online banking provides incomparable accessibility and convenience, enabling them to manage their finances at any time and from any location. Additionally, because online banking has given clients real-time access to services and the ability to execute transactions instantly, it has significantly empowered those who utilize financial services. From the standpoint of banks, online banking offers a chance to streamline processes, reduce expenses, and reach more customers. Additionally, banks can get valuable information about consumer behavior through online banking, which can be utilized for targeted marketing campaigns and to customize products and services to consumers (Carranza et al., 2021).

The objective of this paper is to investigate and evaluate the main trends in online banking in Serbia, along with important transactions and services that are still focused on traditional banking, which requires customers to physically visit the bank. Both the academic community and corporate practice may benefit from research on this subject. In order to optimize digital services and adjust the offer to market demands, banks must have a thorough grasp of customer demographics, preferences for online banking services, and the frequency of in-person bank visits. Given the growing significance of digitalization, banks must keep updated on shifts in customer behavior to stay competitive and create cutting-edge strategies that enhance client experience. From an academic standpoint, investigating the effects of online banking advances knowledge of the larger framework of the financial industry's development and the changing habits of customers in the digital age. Further scientific research that can help create new theoretical frameworks and methodological approaches for the analysis of banking digitalization is also made possible by this kind of research.

The structure of the paper is as follows. First, the main characteristics and advantages of online banking were explained. The research topics, questionnaire design, research process, and statistical techniques used for data processing were then provided as part of the methodology of the study. Following that, the research findings were given, together with a tabular presentation and a discussion of the findings. The main findings from the study are outlined in the conclusion, along with their significance for banks working to enhance online banking services. The limitations of the research that had been

conducted were also noted in the conclusion, along with recommendations for additional research on the subject.

Literature Review

There are various definitions and descriptions of online banking. To begin with, online banking is a virtual connection that facilitates financial transactions between banks and customers (Salehi et al., 2008). Online banking is more particularly the use of remote access to bank accounts and client-initiated transactions. According to Dospinescu and Popescul (2004), online banking is a way for banks to offer banking services to their customers without requiring them to physically visit bank branches. They highlighted that online banking is a huge business opportunity that allows banks to provide their customers with banking services without going to the bank. Online banking, according to other authors, is the term used to describe the electronic delivery of financial products and services (Dangaiso et al., 2024). The way consumers deal with their banks and handle their finances is truly being altered by technological advancement in the financial industry. Through digital channels including internet platforms and mobile applications, online banking offers consumers a quick and easy way to carry out a variety of financial tasks. Checking account balances, paying bills, moving money between accounts, applying for loans, and creating new accounts are all examples of online banking (Jain & Agarwal, 2019; Mujinga, 2020; Dangaiso et al., 2024). In the banking sector, the shift toward digitalization fosters innovation and competition, which may result in greater efficiency and a wider range of financial products and services (Gautam & Sah, 2023). According to some authors, the emergence of online banking increased market competition, gave banks access to a larger customer base, and enabled them to provide services at a reduced cost (Alhassany & Faisal, 2018). The banking sector has been impacted by online banking in many ways. Because banking services are now more widely available, customers who live in rural or undeveloped areas have the chance to engage with the financial ecosystem. Similarly, customers can handle money on their own with a variety of services and advantages because of the continuous availability of online banking (Szopiński, 2016). The Covid-19 pandemic, which restricted clients' ability to physically visit the banks, was one of the major drivers that fueled the expansion of online banking use (Neves et al., 2023). Therefore, in order to be able to conduct their financial operations without restriction in exceptional situations, bank customers mostly turned to using online banking services.

The acceptance and utilization of online banking services were shown to be impacted by several aspects (Jenkins et al., 2022). People were often less receptive to online banking if they thought learning new technology was a waste of time. Due to their many challenges adjusting to new technology, elder respondents also have a lower acceptability and adoption rate for online banking. Conversely, those with higher educational levels were more likely to use online banking services since they were more aware of the advancements in technology and its functions. In terms of innovation propensity, people who were receptive to new ideas were more likely to use online banking. The main takeaway from the research is that removing negative attitudes toward new technologies and meeting the needs of older citizens may promote a stronger acceptance and usage of online banking services (Jenkins et al., 2022).

It is important to emphasize that there are specific challenges associated with online banking. The broad use of online banking is still significantly hampered by security concerns, particularly the possibility of fraud and identity theft (Maditinos et al., 2013). Furthermore, the scope of online banking is restricted, particularly in developing nations, by the digital divide, which is the difference between

people who have access to the Internet and those who do not. Additionally, certain clients, particularly the elderly, may find it difficult to adjust to a digital interface and may prefer a more conventional in-person banking experience (Carranza et al., 2021). Additionally, it should be mentioned that online banking applications are often not perfect. New applications were previously introduced carefully, thoroughly verified, and cautiously launched into production. Nonetheless, banks are currently under a lot of pressure to create and release new applications as soon as possible, frequently in only a couple of months. This shift is the result of a competitive market where efficiency and speed are now essential for surviving and succeeding. Therefore, if new applications and online systems are implemented without a thorough assessment of all features, some problems may appear (Al-shakrchy, 2024).

Research Methodology

- This paper's main research questions (RQs) are:
- RQ 1: Which devices are most frequently utilized to access online banking services?
- RQ 2: How frequently do people who use online banking visit physical bank branches?
- RQ 3: Which operations are most frequently completed by visiting bank branches?
- RQ 4: Do gender, age, and educational level affect how frequently people physically visit banks?

A specially created questionnaire was used in the research, and it was completed by Serbian online bank users. There were three sections to the questionnaire. The questionnaire's first section asked profile questions on the respondents' age, gender, and level of education. The questionnaire's second section asked about the number of open accounts, the number of banks and the banks' online services, the devices that respondents primarily use to access online banking services, and other information pertaining to the use of online banking services. The questionnaire's third section asked about services that customers most frequently need to visit banks for and whether in-person visits to bank locations are necessary.

The questionnaire took an average of fifteen minutes to complete. Respondents were chosen using a methodology that makes data collection simple and does not rely on predetermined standards or demographic stratification. The goal was to look into the differences in online banking consumers' preferences and behavior in Serbia. In order to reach a larger user base, the questionnaire was distributed directly in online groups and through professional and social networks, among other ways. The respondents gave their complete approval for the use of their data for scientific research purposes and willingly took part in the research. A total of 209 respondents completed the questionnaire between August and December of 2024.

Microsoft® Excel® 2019 and Statistical Software for Social Sciences (SPSS), version 26, were used to process the responses that were gathered. The normality of the data distribution was evaluated using the Kolmogorov-Smirnov test. Non-parametric techniques were used for statistical analysis because the results with significance Sig.=0.000 demonstrated that the assumption of normality of the data distribution was not satisfied. The Kruskal-Wallis test was used to examine differences between three or more groups with a 95% confidence interval, whereas the Mann-Whitney test was used to compare differences between two groups. The assumption of homogenous variance was met in every instance ($p > 0.05$) by using Levene's test for equality of variances to all tests that evaluated differences between groups.

Research Results and Discussion

Basic details about the respondents who took part in the research are presented in Table 1. In the sample, there are more women (64.12%) than men (35.88%). The largest percentage of responders (39.23%) are between the ages of 35 and 44, indicating that they are banking service users with established usage patterns and steady finances. The fact that younger users make up a smaller percentage of respondents (18.18% of respondents are between the ages of 18 and 24) is interesting. This could mean that younger generations are either underrepresented in research or do not make up the majority of online banking users in this sample. Most likely, this age group is unemployed or still in their educational institutions. The fact that a sizable portion of respondents (30.15% of the total number of respondents) are above 45 suggests that elderly people also use online banking. Given that education is a major factor in the adoption of new technologies, such as online banking, it is not surprising that the largest group of respondents (50.72%) have a university degree, having completed both bachelor's and master's studies. Higher educated respondents are probably more comfortable using digital technologies and have more opportunities to use more sophisticated online banking features. It is interesting to note that only a small percentage of respondents have either primary (0.48%) or secondary education (16.75%). This could suggest that the majority of respondents are from professional and educational groups that are more accustomed to using online services and have preferences to do so.

Table 1 - Basic Information About the Respondents

	N	%
Gender		
Male	75	35.88
Female	134	64.12
Age		
From 18 to 24 years	38	18.18
From 25 to 34 years	26	12.44
From 35 to 44 years	82	39.23
From 45 to 54 years	48	22.97
Above 54 years	15	7.18
Education		
Primary school	1	0.48
Secondary school	35	16.75
College	30	14.35
University (bachelor and master studies)	106	50.72
University (doctoral studies)	37	17.70

The results presented in Table 2 on the number of accounts specified for online banking services offer valuable insights into user behavior with regard to digital channel usage and financial service diversification. Many users choose multiple types of accounts (foreign currency and domestic currency) for different

purposes, as evidenced by the fact that the largest group of respondents (41.63%) have two open accounts. Consumers wish to keep savings and investments apart from their regular financial transactions. A higher level of financial complexity or the requirement for users to manage multiple currencies or service types is also indicated by the fact that 36.36% of respondents had three or more accounts. Only 22.01% of those surveyed have at least one active online banking account.

Table 2 - Number of Active Accounts for Online Banking Services

Answers	N	%
One account	46	22.01
Two accounts	87	41.63
Three and more accounts	76	36.36

According to the findings in Table 3, more than half of respondents (56.46%) only utilize one bank's online banking services. This suggests that most users only need one bank account to complete all digital banking operations, which reflects their preference for dependable, well-designed online systems and their preference for simplicity. However, 35.88% of users use two banks' online banking services, indicating a need for service diversification or competition between banks. This could be related to the various kinds of products or services that each bank provides. Only 7.66% of respondents answered they use online services from three or more banks, suggesting that most users still choose to focus their banking activity on one or two banks, most likely because it is more efficient and makes managing their finances easier.

Table 3 - Number of Different Banks Whose Online Banking Services are Used

Answers	N	%
One bank	118	56.46
Two banks	75	35.88
Three and more banks	16	7.66

The findings in Table 4 about the devices that are most frequently used to access online banking services offer valuable insights into user preferences and show patterns in the usage of technology for banking. In keeping with global trends in digital banking, the majority of respondents (84.69%) use a mobile phone as their preferred device for online banking. Because users may conduct banking transactions from anywhere at any time, a mobile phone offers a great degree of accessibility, convenience, and flexibility. The widespread use of this device for online banking services is further influenced by the fact that bank mobile applications are frequently made to be simple to use and provide quick authentication (using PINs or biometrics). With a far lower percentage than a mobile phone, a computer or laptop comes in second position with 14.83% of respondents. Because of its mobility and ease of use, the mobile phone has supplanted the computer as the primary tool for daily banking tasks, despite the computer's increased transparency and more accurate functioning (particularly when it comes to more intricate transactions and financial data analysis). When more complicated tasks need to be completed, such as handling larger amounts of money or accessing particular features that mobile devices might not handle as well, customers choose computers and laptops. The tablet is a nearly insignificant device when it comes to using online banking

services, with a minimum share of 0.48%. Interestingly, smart watches have not been used for online banking, which is not surprising considering the state of technology today. Despite being widely used for health monitoring and other notifications, smart watches are completely absent from this context since they lack the functionality necessary for more complicated banking operations (apart from payments).

Table 4 - The Primary Device Used by Respondents to Access Online Banking Services

Answers	N	%
Mobile phone	177	84.69
Computer / laptop	31	14.83
Tablet	1	0.48
Smartwatch	0	0.00

The findings in Table 5 about the number of respondents who use online banking services in terms of bank in Serbia offers important information about consumer preferences and industry trends in the digital banking space. The fact that Banca Intesa and Raiffeisen bank rank first and second, with 19 and 18 users, respectively, suggests that both banks have a high degree of user trust, most likely as a result of their extensive product offerings, stability, and dependable digital infrastructure. With 15 users each, NLB Komercijalna bank and Yettel bank come in third place, demonstrating the high demand for their online services. Overall, the findings indicate that there is fierce rivalry among banks and that the online banking sector is diversified. Therefore, banks need to continuously innovate, enhance, and adapt their digital platforms in order to maintain current users and attract new ones.

Table 5 - Banks With the Highest Usage Rates for Online Banking

Banks	N	Rang
Banca Intesa	19	1
Raiffeisen bank	18	2
NLB Komercijalna banka	15	3
Yettel bank	15	3
Banka Poštanska štedionica	13	4
AIK bank	11	5
Erste bank	10	6
Eurobank Direktna bank	8	7
UniCredit bank	8	7
ALTA bank	7	8
OTP bank	6	9
ProCredit bank	5	10
Addiko bank	5	10
Halkbank	2	11
Adriatic bank	1	12

The results presented in Table 6 show that users' banking habits have changed, particularly in light of the digitalization of banking. While a sizable portion (31.58%) of respondents answer that they never visit banks, the largest percentage (37.32%) answer that they do it once or twice a year. These findings point to a decrease in the necessity for in-person bank visits, which is probably caused by the expansion of online services and the popularity of online banking. Even though the number of people using online banking is continuously increasing, some respondents (13.40%) still visit banks once a month, whereas 17.70% visit banks once or twice a quarter. According to these findings, different clients have diverse needs. While some clients only use online banking, others periodically visit bank branches because of particular needs or personal preferences. These trends indicate that physical presence still has a place in banking transactions, even though technology has taken over, particularly when more complex services or face-to-face interaction are needed.

Table 6 - Answers to "Do You Still Need a Traditional, Physical Visit to a Bank Branch?"

Answers	N	%
Yes, once a month	28	13.40
Yes, once or twice a quarter	37	17.70
Yes, once or twice a year	78	37.32
No, never	66	31.58

The results presented in Table 7 show the key services for which respondents physically go to banks. The largest number of respondents go to the bank to withdraw cash in local currency (27.75%) and foreign currency (11.00%). About one third of respondents go to banks to pick up cards. Of these, 23.92% of respondents go to pick up cards due to expiration, while 6.22% go to pick up new-issued cards. Less than one fifth, more precisely 18.66% of respondents, go to the bank for a loan. These include advisory services related to loans (7.65%), submitting applications for loan products (6.70%), and signing loan contracts (4.31%). The loan approval process can be complex to handle online and often requires personal interaction with a credit counselor. The results show that 24.89% of respondents use branches for transactions related to checks and money transfers. Although these services are often available through online systems, some users prefer in-person transactions, possibly due to security or the complexity of transferring funds. According to the results, users occasionally need to use services that address certain requirements like updating and changing data, resolving card or PIN issues, closing accounts, and the like. Some respondents feel that it is simpler to handle these issues in person at a bank, even though these scenarios can be handled by phone or online help.

Table 7 - Services That are Realized by the User's Physical Visit to a Bank

	N	%
Withdrawal funds services		
Cash withdrawal in local currency	58	27.75
Cash withdrawal in foreign currency	23	11.00
Total	81	38.75

Cards retrieving services		
Cards retrieval due to expiraton	50	23.92
Retrieval of new-issued cards	13	6.22
Total	63	30.14
Loans related services		
Advisory services related to loans	16	7.65
Submitting application for loan products	14	6.70
Signment of loan contract	9	4.31
Total	39	18.66
Cheque and transfer services		
Funds payment on the account	22	10.53
Services regarding cheques	21	10.05
Transfer of funds in foreign currency	9	4.31
Total	52	24.89
Other services – specific need of users		
Data changing / information update	6	2.87
Difficulties with PIN code / card	4	1.91
Cards / Account closing	2	0.96
Total	12	5.74

Results of Statistical Tests and Discussion

Non-parametric statistical tests were used to examine any significant differences in respondents' frequency of bank visits by gender, age, and educational level. Due to the fact that the data does not follow a normal distribution, Mann-Whitney and Kruskal-Wallis tests were chosen.

Table 8 presents the results of the Mann-Whitney test, which compares two independent samples. The results indicate that there is no statistically significant difference in the frequency of visits to the bank between men and women, as the p-value is 0.643. This value is greater than the usual significance criterion (0.05), which means that the difference in responses is not large enough to be considered statistically significant. Although it is observed that men had a slightly lower rank (Mean Rank = 102.53) compared to women (Mean Rank = 106.38), this difference is not sufficient to draw a conclusion on

statistical significance. These findings suggest that the frequency of in-person visits to bank branches is not significantly impacted by the respondents' gender.

Table 8 - Results of the Mann-Whitney Test (Gender of the Respondents)

Gender	N	Mean Rank	Mann-Whitney	Z	Asymp. Sig.
Male	75	102.53	4839.500	-0.464	0.643
Female	134	106.38			

Additionally, the Kruskal-Wallis test, which enables evaluating differences between three or more independent samples, was used to examine the respondents' age group. Table 9 shows that there are statistically significant differences in the frequency of bank visits between age groups (p = 0.030). The findings indicate that the number of visits to the bank branch is significantly influenced by age. Younger groups, like those in the 18–24 and 25–34 age groups, have lower mean values (1.87 and 1.81, respectively), whereas older respondents, particularly those in the 45+ age group, have the highest mean value (2.47), indicating that they are more likely to visit banks more frequently.

Table 9 - Results of the Kruskal-Wallis Test (Age Structure of the Respondents)

Age	N	Mean	Median	Kruskal-Wallis	df	Asymp. Sig.
From 18 to 24 years	38	1.87	1.00	10.673	4	0.030*
From 25 to 34 years	26	1.81	2.00			
From 35 to 44 years	82	2.13	2.00			
From 45 to 54 years	48	2.38	2.00			
Above 54 years	15	2.47	2.00			

Furthermore, the variations in the frequency of bank visits according to the respondents' educational level were examined. There are statistically significant differences across educational groups, according to the Kruskal-Wallis test results presented in Table 10 (p = 0.014). This implies that respondents' frequency of bank visits is significantly influenced by their educational level. In contrast to respondents with lower levels of education, those with higher levels of education, particularly those with doctoral degrees, have higher mean values (2.59). These findings suggest that respondents with higher levels of education might have more complex financial needs and a propensity to use services that necessitate in-person bank visits, like certain services or larger transaction amounts, which are not always efficiently resolved by online banking.

Table 10 - Results of the Kruskal-Wallis Test (Educational Level of the Respondents)

Education	N	Mean	Median	Kruskal-Wallis	df	Asymp. Sig.
Primary school	1	1.00	1.00	12.517	4	0.014*
Secondary school	35	2.17	2.00			
College	30	1.90	1.50			
University (bachelor and master studies)	106	2.02	2.00			
University (doctoral studies)	37	2.59	3.00			

Conclusion

The results of the research, which included 209 Serbian respondents in the period August – December 2024, demonstrate that users of banking services are becoming more and more focused on online banking, with an apparent trend toward a decrease in the necessity for in-person bank visits. Mobile phones are used by the majority of respondents to access online banking services. Additionally, the majority of respondents only use the online services of one or two banks, despite the fact that many have several open accounts. This suggests a tendency to concentrate on activity in a small number of chosen institutions. When examining the frequency of visits to banks, the gender of the respondents is not a statistically significant factor, according to the results of the Mann-Whitney test. However, because elder respondents visit the bank more frequently, the Kruskal-Wallis test results indicated that age had a statistically significant influence. Additionally, there are statistically significant differences in the respondents' educational levels. Higher educated respondents visit banks more frequently, which may be related to more sophisticated financial needs or certain services that call for a physical presence in the bank.

Key recommendations for banks can be developed in several ways based on the findings of this research, with an emphasis on enhancing competitiveness in online banking and optimizing services. Since mobile phones are the most popular device for online banking, banks should keep making investments in the creation and enhancement of their mobile applications to make sure they are user-friendly, safe, and suited to their consumer demand. Maintaining competitiveness and consumer satisfaction requires both regular functionality updates and the introduction of new services through mobile platforms. It is recommended to make an investment in educating consumers about the benefits and simplicity of utilizing online banking, as there is still a need for in-person bank visits, particularly among those who lack the confidence or knowledge to utilize digital platforms. Additionally, enhancing customer service to assist users in resolving technical issues will improve digital literacy and encourage more people to utilize online banking.

The size and composition of the sample, which are not entirely representative of Serbia's total population of online bank clients, are the limitations on this research. Furthermore, the questions pertaining to user satisfaction with online banking services and the main barriers and difficulties they encounter were not covered. Additionally, this research lacked qualitative data, which would have provided a

more thorough knowledge of user preferences and opinions. Gaining insight into customers' motivations and particular reasons for visiting the bank, as well as their opinions regarding the safety and reliability of online transactions, could enhance the findings and help formulate more specific suggestions for the advancement of online banking services.

Future research should include more respondents from more nations and look at the factors affecting consumers' safety and trust in online banking. Additionally, it would be beneficial to investigate how new technologies (such blockchain and biometrics) affect online banking usage and user perceptions of upcoming developments in digital banking. Lastly, even though the research offers helpful advice for banks looking to modify their products and provide digital services, more social and cultural elements that influence consumer behavior may be covered in future studies.

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UTICAJ FINANSIJSKE TEHNOLOGIJE NA NETO PRIHOD ISLAMSKIH BANAKA SAUDIJSKE ARABIJE

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Rezime

Ovo istraživanje istražuje uticaj finansijske tehnologije na finansijski učinak islamskih banaka u Saudijskoj Arabiji od 2010. do 2023. godine, fokusirajući se na četiri banke koje se u potpunosti pridržavaju šerijatskih principa – Al Rajhi, Al Jazeera, Al Bilad i Al Inma – kao čisti model islamskog bankarstva. Koristili smo model kvantilne panel regresije za analizu i merenje uticaja finansijske tehnologije na neto prihod. Rezultati pokazuju da je povećanje broja bankomata povezano sa većim neto prihodom, posebno u manjim bankama, dok je uticaj broja POS terminala pozitivan za manje banke, ali negativan za veće. Štaviše, usvajanje tehnologija druge i treće generacije negativno utiče na neto prihod zbog visokih troškova implementacije. Studija naglašava važnost procene svake tehnologije pojedinačno kako bi se razumeo njen specifičan uticaj na finansijske performanse

Ključne riječi: FinTech, islamsko bankarstvo, neto prihod, kvantilna panel regresija

JEL klasifikacija: G21, O33, C23, P47, Z12.

Uvod

Termin „FinTech" je prvi put upotrebljen 1972. godine u članku objavljenom u časopisu Interfaces pod naslovom „FinTech: Serija od 40 time-share modela korišćenih u Hanover Trust banci". Autor je definisao FinTech kao skraćenicu za finansijsku tehnologiju, kombinujući bankarsku ekspertizu sa modernom naukom o menadžmentu i kompjuterskim tehnologijama (Abraham, 1972).

Koncept finansijske tehnologije je evoluirao sa tehnološkim napretkom i promenljivim potrebama i trendovima na finansijskom tržištu. U početku, FinTech se prvenstveno odnosio na digitalnu transformaciju koju je donela internet revolucija ranih 1990-ih, koja je olakšala tradicionalne finansijske operacije, kao što su pružanje usluga elektronskog bankarstva i onlajn trgovanje akcijama. U to vreme, glavni fokus je bio na ponudi efikasnijih sredstava za rukovanje rutinskim finansijskim transakcijama (Firmansyah et al, decembar 2022, str. 01). U svojoj definiciji FinTech-a, Bazelski komitet za bankarsku superviziju (BCBS) usvojio je definiciju koju je predložio Odbor za finansijsku stabilnost (FSB), koja finansijsku tehnologiju smatra inovacijom zasnovanom na tehnologiji za pružanje finansijskih usluga. Ovo bi moglo dovesti do stvaranja novih poslovnih modela, aplikacija, operacija ili proizvoda koji značajno utiču na tržišta i finansijske institucije i unapređuju finansijske usluge (Bazelski komitet za nadzor banaka, 2018, str.08).

Sa brzim tehnološkim napretkom, koncept finansijske tehnologije se proširio kako bi uključio i kompanije koje nude finansijske usluge koristeći tehnološke platforme za inovativne finansijske proizvode. Oni pokrivaju visokotehnološke sisteme u finansijskim industrijama kao što su mobilna plaćanja, zajmovi, finansiranje, transferi novca, pa čak i upravljanje imovinom (Ururs i Mohamed, septembar 2021, str. 107). Fokus se pomerio na poboljšanje korisničkog iskustva i obezbeđivanje inkluzivnijeg i efikasnijeg pristupa finansijskim uslugama.

Trenutno je FinTech prepoznata kao jedna od najvažnijih inovacija u finansijskoj industriji, vođena tehnološkim napretkom kao što su veštačka inteligencija, mašinsko učenje, blokčejn, virtuelna stvarnost, proširena stvarnost (AR) i internet stvari (Artha B., i Jufri A., decembar 2020, str.59).

O varijablama:

Fokusiraćemo se na nezavisnu varijablu, finansijsku tehnologiju, koju su istraživači različito merili. Neki su se oslanjali na jedan indikator da bi predstavljali ovu varijablu, kao što su (Wagdy i Metwally, 2021), koji su FinTech merili relativnom težinom ulaganja u tehnološku infrastrukturu (uopšteno) kao procentom ukupne aktive banke. Drugi primer je studija Liu i dr. (2022), koja se oslanjala na FinTech indeks koji je objavio određeni entitet. Jianwei i dr. (2021) koristili su kineski indeks digitalne finansijske inkluzije za merenje FinTech-a, dok su Muganyi i dr. (2022) usvojili Indeks finansijske inkluzije Univerziteta u Pekingu kao odrednicu za FinTech. Rua (2022) je merio FinTech brojem novih FinTech kompanija svake godine tokom perioda istraživanja.

Nasuprot tome, druge studije su koristile više indikatora za merenje FinTech-a, ali nije bilo saglasnosti u pogledu prirode ili formata korišćenih indikatora. Na primer, bankomati su korišćeni na nekoliko načina. U studiji Okoli i Tewari (2020), FinTech je meren brojem bankomata, dok su u studiji Bashayreh i Wadi (2021) bankomati uključeni kao indikatorska varijabla, uzimajući vrednost 1 kada je usluga bila dostupna i 0 kada nije bila. Aboelezz (2021) se oslanjao na broj bankomata na 1000 odraslih, zajedno sa drugim indikatorima koji se koriste za merenje FinTech, kao što je broj korisnika interneta u studija-

ma Okoli i Tewari (2020), Wu & Yuan (2021), Malou i dr. (2021), i Bashayreh i Wadi (2021), kao i mobilna plaćanja u radovima Aboelezz (2021), Okoli i Tewari (2020), Bašajre i Vadi (2021) i Malou et al. (2021). Ostali pokazatelji uključuju brojeve kreditnih kartica i broj zajmoprimaca, kao što je korišćeno u studiji koju radio Aboelezz (2021).

U istraživanju koje su izvršili Sharma i dr. (2022), istraživači su koristili MSCI indeks tržišta u razvoju i tip fonda kao determinante FinTech, pošto su uzorci fondova bili povezani sa FinTech sektorom. Wu i Yuan (2021) su se oslanjali na ukupna plaćanja trećih strana (FinTech kompanije) i veličinu računarskog tržišta u oblaku kao determinante FinTech-a. Vredi napomenuti da su istraživači takođe koristili indikatorske varijable za predstavljanje nezavisne varijable u nekoliko slučajeva (R. Li & Wan, 2021), kao i u studijama koje je radio Al-Qaisi (2021), posebno kada su pokušavali da izmere blokčejn, pružanje specifičnih tehnoloških usluga ili strategije kao u Hornuf i dr. (2021), zbog posebnosti nezavisne varijable.

Glavna hipoteza:

Finansijska tehnologija ima pozitivan uticaj na neto prihod saudijskih islamskih banaka tokom perioda 2010-2023.

Da bi se tačno procenio ovaj uticaj, studija je podeljena na nekoliko podhipoteza, od kojih se svaka fokusira na određeni aspekt finansijske tehnologije, kako sledi:

- Prva podhipoteza: Mreža bankomata ima pozitivan uticaj na neto prihod saudijskih islamskih banaka tokom perioda 2010-2023.

- Druga podhipoteza: Sistemi na prodajnom mestu (POS) imaju pozitivan uticaj na neto prihod saudijskih islamskih banaka tokom perioda 2010-2023.

- Treća podhipoteza: Usvajanje finansijske tehnologije druge generacije (FIN1) pozitivno utiče na neto prihod saudijskih islamskih banaka tokom perioda 2010-2023.

- Četvrta podhipoteza: Usvajanje finansijske tehnologije treće generacije (FIN2) pozitivno utiče na neto prihod saudijskih islamskih banaka tokom perioda 2010-2023..

Metodologija i model koji se koristi:

Cilj ove studije je procena uticaja finansijske tehnologije na finansijske performanse islamskih banaka, koristeći Panel Data model. Uzorak studije obuhvata četiri islamske banke u Kraljevini Saudijskoj Arabiji u periodu 2010-2023.

Selekcija uzorka za istraživanje:

Kraljevina Saudijska Arabija je izabrana za ovu studiju iz sledećih razloga:

1. Uspostavljen islamski finansijski sistem: Saudijska Arabija ima dugogodišnji islamski bankarski sistem, koji pruža bogat izvor podataka za proučavanje uticaja finansijske tehnologije.

2. Brzo usvajanje FinTech-a: Saudijska Arabija je regionalni lider u finansijskoj tehnologiji, sa značajnim rastom digitalnih finansijskih usluga, nudeći idealno okruženje za proučavanje efekata na islamsko bankarstvo.

3. Snažna podrška vlade: Saudijska vlada i regulatorna tela aktivno podržavaju FinTech inovacije i neguju saradnju između FinTech startapova i islamskih banaka.

4. Prioritet digitalne transformacije: Digitalna transformacija je centralni element Saudijskog plana za 2030 (Saudi Vision 2030), sa fokusom na finansijski sektor i FinTech kao pokretače ekonomskog rasta.

5. Veliko i raznoliko finansijsko tržište: Kraljevina ima veliko i raznoliko finansijsko tržište, sa tradicionalnim i islamskim bankama, što ga čini idealnim okruženjem za proučavanje uticaja FinTech-a na islamsko bankarstvo.

Na osnovu ovih razloga, Saudijska Arabija pruža idealno okruženje za proučavanje uticaja finansijske tehnologije na islamsko bankarstvo. U okviru saudijskog bankarskog sistema, koji uključuje 11 lokalnih banaka, 23 filijale stranih banaka i 3 digitalne banke, određena grupa banaka u potpunosti se pridržava šerijatskih principa u svim svojim transakcijama. Ova studija se fokusira na četiri lokalne saudijske banke koje nude usluge u potpunosti u skladu sa islamskim zakonom: Al Rajhi Bank, Al Jazeera Bank, Al Bilad Bank i Al Inma Bank. Ove banke su izabrane da predstavljaju čisti model islamskog bankarstva unutar Kraljevine, dok je sedam drugih lokalnih banaka koje nude mešavinu islamskih i konvencionalnih finansijskih proizvoda isključeno iz ove studije zbog njihove hibridne prirode. Period istraživanja je definisan od prvog kvartala 2010. do trećeg kvartala 2023. godine, pošto je Al Inma banka nedavno osnovana i podaci za tu banku dostupni su tek od 2010. godine.

Varijable istraživanja:

U kontekstu ove studije, praktični aspekt se fokusira na istraživanje uticaja finansijske tehnologije na finansijski učinak saudijskih islamskih banaka. Tokom faze odabira modela, pažljivo smo birali indikatore koji zaista predstavljaju koncept finansijske tehnologije, prevazilazeći ograničeno stanovište koje razmatra samo savremene inovacije. Stoga smo indikatore koji predstavljaju varijablu finansijske tehnologije podelili u dve glavne kategorije: „tehnološka infrastruktura“ i „napredna finansijska tehnologija.”

Tehnološka infrastruktura:

Ova kategorija uključuje varijable koje predstavljaju tradicionalne komponente finansijske tehnologije koja olakšava pristup bankarskim uslugama i pružanje bankarskih usluga klijentima. U ovoj studiji pod terminom tehnološke infrastrukture podrazumevamo:

1. Broj bankomata:

- Značaj: Ova varijabla predstavlja nivo tradicionalne infrastrukture u banci i stepen do kojeg su osnovne bankarske usluge dostupne u urbanim sredinama. Bankomati su neophodni za pružanje bankarskih usluga klijentima, omogućavajući pristup sredstvima i osnovnim transakcijama.

- Razlog za odabir: Ova varijabla odražava fokus na to kako tradicionalna bankarska tehnologija utiče na bankarske operacije i usluge. Pomaže u merenju koliko je dobro banka razvila svoju upotrebu tehnologije za poboljšanje korisničkog iskustva.

2. Broj POS (Point of Sale) terminala:

- Značaj: Odnosi se na broj POS uređaja koje banke koriste za olakšavanje komercijalnih transakcija za klijente. Ova varijabla odražava obim do kojeg su se banke proširile kako bi ponudile rešenja za digitalno plaćanje za preduzeća i klijente.

- Razlog za odabir: Ova varijabla je značajna jer pokazuje spremnost i sposobnost banke da integriše

moderne tehnologije plaćanja u finansijski sistem, poboljšavajući efikasnost transakcija i korisničko iskustvo.

Ove varijable predstavljaju osnovne alate koji omogućavaju bankama da ponude tradicionalne finansijske usluge u digitalnom kontekstu i ključne su za unapređenje i širenje bankarskih usluga.

Napredna finansijska tehnologija:

Ova kategorija uključuje varijable koje odražavaju upotrebu inovativnih i naprednih finansijskih tehnologija koje prevazilaze tradicionalnu infrastrukturu u bankarskom sektoru, uključujući:

1. Finansijske tehnologije druge generacije (FIN1):

- Značaj: Predstavlja pomak ka korišćenju mobilnih aplikacija, digitalnih novčanika, veb stranica i drugih inovativnih rešenja koja olakšavaju finansijske transakcije i poboljšavaju pristup bankarskim uslugama.

- Razlog za odabir: Ova varijabla pokazuje oslanjanje banaka na tehnološke inovacije kako bi proširile svoju ponudu usluga i pružile napredna finansijska rešenja koja zadovoljavaju moderne potrebe klijenata, što ukazuje na napredak ka integraciji finansijske tehnologije.

2. Finansijske tehnologije treće generacije (FIN2):

– Značaj: Odnosi se na naprednu upotrebu tehnologija kao što su blokčejn, računarstvo u oblaku i veštačka inteligencija, koje omogućavaju sigurnije, efikasnije i transparentnije finansijske transakcije. Ove tehnologije otvaraju nove mogućnosti u finansijskim uslugama, uključujući pametne ugovore i analitiku velikih podataka za predviđanje ponašanja tržišta.

- Razlog za odabir: Ova varijabla ističe finansijsku tehnologiju treće generacije kao ključni element u transformaciji islamskog bankarstva, koji omogućava stvaranje finansijskih proizvoda i usluga koji su u skladu sa islamskim principima, i koji nudi inovativne karakteristike i dodatu vrednost klijentima.

Ovaj opis varijabli pomaže da se razjasne razlike između mnogostrukih aspekata finansijske tehnologije.

Kontrola varijabli:

Da bismo osigurali tačnost i sveobuhvatnost naše analize, pored identifikovanja nezavisnih varijabli koje odražavaju finansijsku tehnologiju, uključili smo i dve kontrolne varijable: veličinu banke i BDP Saudijske Arabije. Ovaj korak nam omogućava da razumemo i procenimo spoljne faktore koji mogu da utiču na proučavane odnose. Ove kontrolne varijable pomažu da se izoluje uticaj nezavisnih varijabli od drugih potencijalnih uticaja, poboljšavajući time validnost i pouzdanost rezultata studije.

1. Veličina banke (VELIČINA): Za modele jedan i tri.

- Značaj: Predstavlja veličinu banke na osnovu njene ukupne aktive. Ova varijabla odražava finansijski kapacitet banke, njen tržišni doseg i uticaj.

- Razlog za odabir: Odabir veličine banke kao kontrolne varijable jača standardni model pružanjem preciznijih objašnjenja o tome kako finansijska tehnologija utiče na razvoj bankarstva, uzimajući u obzir razlike između banaka na osnovu njihove veličine.

2. Bruto domaći proizvod (BDP):

- Značaj: BDP Saudijske Arabije predstavlja makroekonomsko okruženje u kojem banke posluju. Ova varijabla ukazuje na opšte ekonomsko stanje i nivo privrednog rasta u zemlji.

- Razlog za odabir: Uključivanje BDP-a kao kontrolne varijable pomaže da se shvati način na koji širi ekonomski kontekst može uticati na razvoj islamskog bankarstva i usvajanje finansijske tehnologije. Tokom perioda ekonomskog rasta, banke mogu biti sklonije ulaganju u nove tehnologije i širenju svojih usluga.

Zavisna varijabla:

Neto prihod (NETI) je odabran kao zavisna varijabla koja predstavlja finansijski učinak, jer jasno odražava direktne finansijske rezultate koje postižu islamske banke kroz svoje poslovanje. Neto prihod je ključni indikator koji naglašava sposobnost banke da ostvari profit iz svog poslovanja. On direktno odražava operativnu efikasnost i učinkovitost banke u generisanju prihoda nakon odbitka troškova.

Formulacija modela i metoda procene:

Nakon što smo prikazali uzorak i varijable, preći ćemo na specifikaciju modela za procenu.

Formulacija modela studija:

U ovoj studiji oslonićemo se na sledeći model:

$$NETI_{it} = b_0 + b_1\, ATM_{IT} + b_2\, POS_{it} + b_3\, FIN1_{it} + b_4\, FIN2_{it} + b_5\, SIZE_{it} + b_6\, GDP_{it} + + \alpha_i + e_{it}$$

Gde važi sledeće:

Nezavisne varijable (finansijska tehnologija):

- ATM: Broj bankomata po banci.

- POS: Broj POS terminala po banci.

- FIN1: indikatorska varijabla koja predstavlja drugu generaciju finansijske tehnologije (vrednost 0 pre usvajanja, vrednost 1 nakon usvajanja). Ovo se odnosi na inovacije kao što su mobilne aplikacije, e-novčanici itd.

- FIN2: indikatorska varijabla koja predstavlja treću generaciju finansijske tehnologije (vrednost 0 pre usvajanja, vrednost 1 nakon usvajanja). Ovo se odnosi na tehnologije kao što su blokčejn, računarstvo u oblaku, veštačka inteligencija itd.

Kontrolne varijable:

- VELIČINA: Veličina banke, predstavljena ukupnom vrednošću njene imovine.

- BDP: bruto domaći proizvod (BDP) Saudijske Arabije.

Zavisna varijabla:

- NETI: Neto prihod, koji odražava finansijski učinak banke.

Ovaj model nam omogućava da procenimo uticaj finansijske tehnologije na performanse islamskih banaka u Saudijskoj Arabiji, uz kontrolu eksternih faktora kao što su veličina banke i makroekonomski uslovi.

Primer opisa:

Uzorak studije čine četiri banke, što znači da (n = 4), što se odnosi na broj jedinica poprečnog preseka (banke). Svaka jedinica poprečnog preseka sadrži vremensku seriju za (t = 55), gde (t) obuhvata period od prvog kvartala 2010. godine do trećeg kvartala 2023. godine. Prema tome, ukupan broj opservacija korišćenih u analizi je (t * n = 220) posmatranja za svaki model.

Prezentacija i diskusija empirijskih rezultata i testiranje hipoteza:

Nakon definisanja modela i identifikovanja varijabli proučavanja, a pre nego što nastavimo sa procenom modela, sprovodimo testove homogenosti varijanse i autokorelacije da bismo utvrdili da li su jedinice uzorka slične ili ne.

Test homogenosti varijansi (Hsiao test):

Pre sprovođenja Hsiao testa, vršimo testove heterogenosti varijanse i autokorelacije modela. Na osnovu rezultata predstavljenih u Dodatku (X), naši podaci su pozitivni u jednom ili oba ova slučaja. Stoga nastavljamo sa robusnim Hsiao testom.

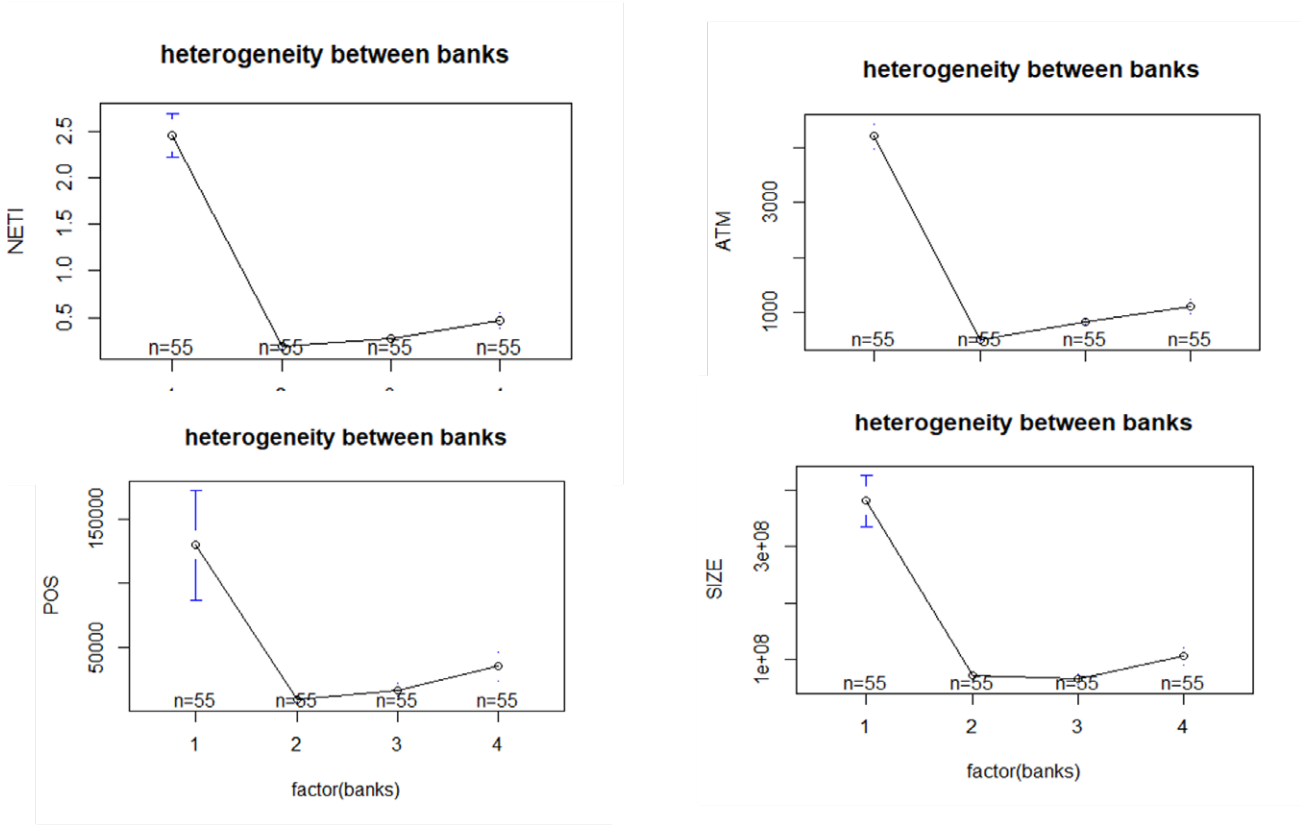
Nakon izvođenja robusnog Hsiao testa, rezultati su sledeći:

Tabela 01: Rezultati testiranja hipoteze

Hipoteza	F vrednost	Odluka	Komentari
H_0^1	3971 (0.000)	Odbacuje se nulta hipoteza	Nema ukupne homogenosti
H_0^2	239 (0.000)	Odbacuje se nulta hipoteza	Trendovi su heterogeni među bankama
H_0^3	339 (0.000)	Odbacuje se nulta hipoteza	Konstante su heterogene po bankama

Na osnovu rezultata Hsiao testova, nalazimo dokaze o totalnoj heterogenosti, što dovodi do odbacivanja strukture podataka panela i osnovnih modela panela. Da bismo istražili izvor heterogenosti poprečnog preseka, ilustrovaćemo obrasce heterogenosti koristeći paket sredstava za prikaz u R-STUDIO.

Slika 01: Analiza heterogenosti između banaka (višepanelni grafikon NETI-a, bankomata, POS-a i SIZE-a)



Izvor: Autorovo objašnjenje korišćenjem statističkog softvera R

Appendices

Appendix No. (01): Hsiao-test

First Hypothesis:

```
. testparm i.banks i.banks#c.ATM i.banks#c.POS i.banks#c.FIN1 i.banks#c.FIN2

 ( 1)  2.banks = 0
 ( 2)  3.banks = 0
 ( 3)  4.banks = 0
 ( 4)  2.banks#c.ATM = 0
 ( 5)  3.banks#c.ATM = 0
 ( 6)  4.banks#c.ATM = 0
 ( 7)  2.banks#c.POS = 0
 ( 8)  3.banks#c.POS = 0
 ( 9)  4.banks#c.POS = 0
 (10)  2.banks#c.FIN1 = 0
 (11)  3.banks#c.FIN1 = 0
 (12)  4.banks#c.FIN1 = 0
 (13)  2.banks#c.FIN2 = 0
 (14)  3.banks#c.FIN2 = 0
 (15)  4.banks#c.FIN2 = 0

       F( 15,   200) = 3971.61
            Prob > F =    0.0000
```

Second Hypothesis:

```
. testparm i.banks#c.ATM i.banks#c.POS i.banks#c.FIN1 i.banks#c.FIN2

 ( 1)  2.banks#c.ATM = 0
 ( 2)  3.banks#c.ATM = 0
 ( 3)  4.banks#c.ATM = 0
 ( 4)  2.banks#c.POS = 0
 ( 5)  3.banks#c.POS = 0
 ( 6)  4.banks#c.POS = 0
 ( 7)  2.banks#c.FIN1 = 0
 ( 8)  3.banks#c.FIN1 = 0
 ( 9)  4.banks#c.FIN1 = 0
 (10)  2.banks#c.FIN2 = 0
 (11)  3.banks#c.FIN2 = 0
 (12)  4.banks#c.FIN2 = 0

       F( 12,   200) =  239.76
            Prob > F =    0.0000
```

Third Hypothesis:

```
testparm i.banks

 ( 1)  2.banks = 0
 ( 2)  3.banks = 0
 ( 3)  4.banks = 0

       F(  3,   212) =  339.00
            Prob > F =    0.0000
```

Appendix No. (02) : Estimation of the Net Income

```
. bootstrap, seed(22): mmqreg  NETI ATM POS FIN1 FIN2 SIZE GDP, q(0.10 0.25 0.5 0.75 0.90)
(running mmqreg on estimation sample)

Bootstrap replications (50)
----+--- 1 ---+--- 2 ---+--- 3 ---+--- 4 ---+--- 5
..................................................    50
MM-qreg Estimator
Number of obs = 220
Quantile:  .
```

NETI	Observed coefficient	Bootstrap std. err.	z	P>|z|	Normal-based [95% conf.	interval]
location						
ATM	.1947329	.0436353	4.46	0.000	.1092093	.2802565
POS	-.002049	.0075687	-0.27	0.787	-.0168834	.0127853
FIN1	-.2307509	.03279	-7.04	0.000	-.2950182	-.1664836
FIN2	-.1098872	.0312772	-3.51	0.000	-.1711894	-.0485849
SIZE	.0050041	.0007475	6.69	0.000	.003539	.0064691
GDP	2.42e-07	9.41e-08	2.58	0.010	5.80e-08	4.27e-07
_cons	-.2094761	.0615532	-3.40	0.001	-.3301182	-.0888341
scale						
ATM	-.0521274	.0247748	-2.10	0.035	-.1006852	-.0035696
POS	-.016301	.0028858	-5.65	0.000	-.0219572	-.0106449
FIN1	-.0852997	.0149918	-5.69	0.000	-.1146831	-.0559163
FIN2	.0098763	.0191382	0.52	0.606	-.0276338	.0473865
SIZE	.0017406	.0003789	4.59	0.000	.0009981	.0024832
GDP	-7.06e-08	7.31e-08	-0.97	0.334	-2.14e-07	7.26e-08
_cons	.128224	.0536806	2.39	0.017	.023012	.233436
qtile__1						
ATM	.2638084	.0606867	4.35	0.000	.1448647	.3827522
POS	.0195519	.0087509	2.23	0.025	.0024005	.0367034
FIN1	-.1177178	.036503	-3.22	0.001	-.1892623	-.0461733
FIN2	-.1229746	.045345	-2.71	0.007	-.2118491	-.0341
SIZE	.0026975	.0010101	2.67	0.008	.0007178	.0046772
GDP	3.36e-07	1.26e-07	2.67	0.008	8.96e-08	5.82e-07
_cons	-.3793895	.0803305	-4.72	0.000	-.5368344	-.2219446
qtile__25						
ATM	.2369784	.0507747	4.67	0.000	.1374619	.3364949
POS	.0111618	.0077789	1.43	0.151	-.0040847	.0264082
FIN1	-.1616217	.0310084	-5.21	0.000	-.222397	-.1008463
FIN2	-.1178912	.0390756	-3.02	0.003	-.1944781	-.0413044
SIZE	.0035934	.0008379	4.29	0.000	.0019511	.0052357
GDP	3.00e-07	1.02e-07	2.94	0.003	9.98e-08	5.00e-07
_cons	-.3133924	.0606479	-5.17	0.000	-.4322602	-.1945247
qtile__5						
ATM	.1867981	.0442509	4.22	0.000	.100068	.2735282
POS	-.0045304	.0079799	-0.57	0.570	-.0201707	.0111099
FIN1	-.2437352	.0419434	-5.81	0.000	-.3259428	-.1615275
FIN2	-.1083838	.0320329	-3.38	0.001	-.1711672	-.0456004
SIZE	.005269	.0007985	6.60	0.000	.0037041	.006834
GDP	2.32e-07	1.01e-07	2.30	0.021	3.45e-08	4.29e-07
_cons	-.1899579	.0746236	-2.55	0.011	-.3362175	-.0436983
_						
qtile__75						
ATM	.1446642	.0463671	3.12	0.002	.0537864	.235542
POS	-.0177063	.0081933	-2.16	0.031	-.0337648	-.0016478
FIN1	-.3126818	.0438606	-7.13	0.000	-.3986469	-.2267167
FIN2	-.1004009	.031029	-3.24	0.001	-.1612166	-.0395851
SIZE	.006676	.0008175	8.17	0.000	.0050738	.0082782
GDP	1.75e-07	1.24e-07	1.41	0.158	-6.76e-08	4.17e-07
_cons	-.0863162	.0919481	-0.94	0.348	-.2665312	.0938988
qtile__9						
ATM	.106009	.0566938	1.87	0.062	-.0051088	.2171268
POS	-.0297944	.0099717	-2.99	0.003	-.0493386	-.0102501
FIN1	-.375936	.0505621	-7.44	0.000	-.4750359	-.2768361
FIN2	-.0930771	.0366543	-2.54	0.011	-.1649182	-.0212359
SIZE	.0079667	.001023	7.79	0.000	.0059616	.0099719
GDP	1.22e-07	1.59e-07	0.77	0.443	-1.90e-07	4.34e-07
_cons	.0087687	.1174415	0.07	0.940	-.2214125	.2389498

Gore navedene brojke pokazuju značajnu heterogenost u jedinicama uzorka, pri čemu jedna banka (Al Rajhi Bank) pokazuje znatno veće vrednosti u poređenju sa druge tri banke. Ova razlika u veličini objašnjava heterogenost nagiba otkrivenu u Hsiao-ovom testu. S obzirom na ovu asimetričnu distribuciju veličina banaka, sa jednim dominantnim entitetom, kvantilni regresioni modeli bi bili prikladniji za analizu, jer su pogodniji za rukovanje takvim heterogenim distribucijama

Model kvantilne regresije se definiše kako bi se u obzir uzela heterogenost u podacima, posebno zbog prisustva značajno većeg entiteta, što ga čini pogodnim za analizu uslovnih kvantila varijable odgovora.

Model kvantilne regresije se izražava kao:

$$Q_{NETI\_it\ |X\_it}(\tau) = b_{0\tau}+b_{1\tau}\,ATM_{IT}+b_{2\tau}\,POS_{it}+\,b_{3\tau}\,FIN1_{it}+b_{4\tau}\,FIN2_{it}+b_{5\tau}\,SIZE_{it}+b_{6\tau}\,GDP_{it}++\alpha_i+e_{it\tau}$$

Ovaj model omogućava procenu efekata nezavisnih varijabli na različite kvantile zavisne varijable, prilagođavajući heterogenost uočenu u podacima.

Rezultati

Empirijski rezultati su predstavljeni u dve tabele. Tabela 1 prikazuje efekte na skali lokacije, pružajući uvid u centralnu tendenciju i varijabilnost odnosa. Tabela 2 predstavlja procene kvantilne regresije u različitim kvantilima (τ = 0,25, 0,50, 0,75, 0,9) što nam omogućava da ispitamo kako se efekti eksplanatornih varijabli razlikuju u različitim tačkama uslovne distribucije NETI.

Tabela 02 – Uticaj lokacije i razmera

	Lokacija		Razmer	
	Koeficijent	**P-vrednost**	**Koeficijent**	**P- vrednost**
ATM	0,1941784	0,000	- 0,05212	0,035
POS	- 0,002049	0,787	- 0,01630	0,000
FIN1	- 0,2307509	0,000	-0 ,085299	0,000
FIN2	- 0,1098872	0,000	0,0098763	0,606
VELIČINA	0,0050041	0,000	0,0017406	0,000
BDP	2,42e-07	0,010	-7,06e-08	0,334
C	-0 ,2094761	0,001	0,128224	0,017

Izvor: Izvedeno iz Stata 17.

Empirijska analiza počinje procenom efekata lokacije i skale, nakon čega slede procene kvantilne regresije na određenim kvantilima. Procene lokacije pokazuju uticaj nezavisnih varijabli na uslovnu sredinu zavisne varijable, ukazujući na to kako ove varijable utiču na centralnu tendenciju distribucije ishoda. Procene skale, s druge strane, obuhvataju kako nezavisne varijable utiču na disperziju (ili varijansu) zavisne varijable oko njene centralne vrednosti, otkrivajući njihov uticaj na širenje distribucije ishoda.

Procena lokacije:

Statistički, sve p-vrednosti su značajne jer su manje od kritične vrednosti od 0,05, osim broja POS terminala koji ima p-vrednost od 0,787, što ukazuje da nije značajan. Prema ovoj proceni, broj bankomata ima snažan pozitivan efekat, pri čemu se neto prihod povećava za 0,1941784 za svaki dodatni bankomat. Pored toga, finansijska tehnologija druge generacije ima snažan negativan uticaj na neto prihod, smanjujući ga za 0,2307509 kada se primeni ova varijabla. Slično tome, finansijska tehnologija treće generacije takođe ima negativan efekat, smanjujući neto prihod za 0,1098872 u njenom prisustvu. Kontrolne varijable, veličina banke i BDP, pokazuju pozitivan, ali donekle slab efekat na neto prihod.

Procena razmera:

Statistički, parametri za varijable: broj bankomata, broj POS terminala, finansijska tehnologija druge generacije (FIN1) i veličina banke (VELIČINA) su značajni jer su njihove p-vrednosti manje od kritične vrednosti od 0,05. Nasuprot tome, parametri za finansijsku tehnologiju treće generacije (FIN2) i BDP nisu značajni u ovoj proceni, jer njihove p-vrednosti premašuju kritičnu vrednost od 0,05. Shodno tome, povećanje broja bankomata i POS terminala može doprineti smanjenju varijanse neto prihoda među islamskim bankama u Saudijskoj Arabiji za 0,05212 i 0,0163, respektivno. Slično, primena finansijske tehnologije druge generacije smanjuje varijansu neto prihoda za islamske banke u Saudijskoj Arabiji za 0,08529. Međutim, povećanje veličine islamske banke povećava njenu varijaciju neto prihoda za 0,00174. Preostale varijable, finansijska tehnologija treće generacije i BDP, ne utiču na varijansu neto prihoda islamskih banaka u Saudijskoj Arabiji.

Tabela 2 – Procena kvantilne regresije

	0.1	0.25	0.5	0.75	0.9
ATM	0,2638779 (0,000)	0,236978 (0,000)	0,186781 (0,000)	0,1446642 (0,002)	0 ,106009 (0,062)
POS	0,01955 (0,025)	0,0111618 (0,151)	- 0,0045304 (0,57)	- 0,0177063 (0,031)	- 0,0297944 (0,003)
FIN1	-0 ,1177178 (0,001)	-0 ,1616217 (0,000)	-0 ,2437352 (0,000)	-0 ,3126818 (0,000)	-0 ,375936 (0,000)
FIN2	-0 ,1229746 (0,007)	-0 ,1178912 (0,003)	-0 ,1083838 (0,001)	-0 ,1004009 (0,001)	-0 ,0930771 (0,011)
VELIČINA	0,0026975 (0,008)	0,0035934 (0,000)	0,005269 (0,000)	0,006676 (0,000)	0,0079667 (0,000)
BDP	3,36e-07 (0,008)	3,00e-07 (0,003)	2,32e-07 (0,021)	1,75e-07 (0,158)	1,22e-07 (0,443)
C	-0 ,3793895 (0,000)	-0 ,3133924 (0,000)	-0 ,1899579 (0,011)	-0 ,0863162 (0,348)	0,0087687 (0,94)

Izvor: Izvedeno iz Stata 17.

Statistička i ekonomska analiza modela

Statistička analiza:

Varijabla koja predstavlja broj bankomata ima statistički značajan pozitivan efekat na neto prihod (NETI) na nivoima procene od 0,1, 0,25, 0,5 i 0,75, sa p-vrednostima manjim od kritične vrednosti od 0,05. Postoji pozitivan efekat pri k=0,9, ali nije značajan, sa p-vrednošću od 0,062.

Efekat broja POS terminala na neto prihod (NETI) varira između nižeg i gornjeg nivoa procene. Postoji pozitivan efekat na nivoima 0,1 i 0,25 i negativan na nivoima 0,5, 0,75 i 0,9. Statistički, parametri su značajni na nivoima 0,1, 0,75 i 0,9, pošto su p-vrednosti manje od kritične vrednosti od 0,05. Parametri na nivou 0,25 i 0,5 nisu statistički značajni, sa p-vrednostima od 0,151 i 0,57, respektivno, koje su veće od kritične vrednosti od 0,05.

Varijabla finansijske tehnologije druge generacije (FIN1) ima negativan uticaj na neto prihod (NETI) na svim nivoima procene. Ovaj efekat je statistički značajan, pošto su sve p-vrednosti manje od kritične vrednosti od 0,05.

Varijabla finansijske tehnologije treće generacije (FIN2) takođe ima negativan uticaj na neto prihod (NETI) na svim nivoima procene. Ovaj efekat je statistički značajan, pošto su sve p-vrednosti manje od kritične vrednosti od 0,05.

Kontrolne varijable:

Varijabla veličine banke pokazuje pozitivan efekat na neto prihod (NETI) na svim nivoima procene. Ovaj efekat je statistički značajan pošto su sve p-vrednosti manje od kritične vrednosti od 0,05.

Varijabla bruto domaćeg proizvoda (BDP) pokazuje pozitivan efekat na neto prihod (NETI) na svim nivoima procene. Ovaj efekat je statistički značajan na nivoima 0,1, 0,25 i 0,5, sa p-vrednostima manjim od kritične vrednosti od 0,05. Međutim, to nije značajno na nivoima 0,75 i 0,9, sa p-vrednostima od 0,158 i 0,443 respektivno..

Ekonomska analiza:

- ATM varijabla:

Na osnovu statističke analize, primećujemo pozitivan uticaj ove varijable na neto prihod na svim nivoima procene:

- Kod (k=0,1), povećanje za jedan bankomat rezultira povećanjem neto prihoda od 0,2638779 jedinica. Ovo sugeriše da povećanje broja bankomata značajno utiče na banke sa nižim neto prihodom, značajno povećavajući njihov prihod.

- Na (k=0,25), povećanje za jedan bankomat dovodi do povećanja neto prihoda od 0,236978 jedinica, pojačavajući pozitivan efekat bankomata na banke sa relativno niskim neto prihodom.

- Na (k=0,5), neto prihod se povećava za 0,186781 jedinica za svaki dodatni bankomat. Ovo odražava kontinuirani pozitivan efekat, iako u manjoj meri u poređenju sa nižim kvantilima.

- Kod (k=0,75) povećanje neto prihoda iznosi 0,1446642 jedinice, što ukazuje da se pozitivan uticaj povećanja broja bankomata smanjuje kako prelazimo na banke sa većim neto prihodom.

- Na (k=0,9), uprkos tome što parametar nije značajan na ovom nivou, povećanje neto prihoda iznosi 0,106009 jedinica, što sugeriše da je pozitivan efekat povećanja broja bankomata manje izražen u višim razredima neto prihoda.

Iz ovakvog tumačenja može se zaključiti da povećanje broja bankomata donosi različite koristi među bankama u zavisnosti od nivoa njihovog neto prihoda, sa većim pozitivnim efektom na banke sa nižim neto prihodom u odnosu na one sa većim neto prihodom. Što se tiče beznačajnosti koeficijenta pri k=0,9, to se može objasniti kroz nekoliko tačaka koje se pre svega odnose na razlike u veličinama banaka i kako one utiču na odnos između broja bankomata i neto prihoda:

1. Marginalna korisnost bankomata: Za veće banke, marginalna korisnost od dodavanja novih bankomata može biti niža u poređenju sa manjim ili srednjim bankama. To je zato što već imaju široku mrežu bankomata koji u dovoljnoj meri pokrivaju potrebe njihovih klijenata, što rezultira smanjenjem prinosa sa dodatnih bankomata. Štaviše, oni su već pokrili geografska područja visoke gustine i profitabilnosti, čineći preostale mogućnosti širenja manje atraktivnim u smislu povraćaja ulaganja.

2. Diverzifikacija izvora prihoda: Veće banke često imaju širi spektar finansijskih proizvoda i usluga, pa su stoga manje zavisne od prihoda ostvarenih od bankomata u poređenju sa manjim bankama. U ovom slučaju povećanje broja bankomata može imati manje značajan uticaj na neto prihod većih banaka.

3. Operativna efikasnost: Veće banke mogu posedovati operativnu efikasnost i ekonomiju obima koja im omogućava da ostvare profit bez potrebe za značajnim povećanjem broja bankomata. Poboljšanje internog poslovanja i ulaganje u finansijsku tehnologiju mogu im pružiti alternativne ili efikasnije izvore prihoda.

POS varijabla:

Kao što je ranije pomenuto u statističkoj analizi, efekat ove varijable varira od jednog kvantila do drugog, na sledeći način:

- Kod **q** = **0,1**, kada se broj POS jedinica poveća za jedan, neto prihod se povećava za 0,01955 jedinica u bankama sa veoma niskim neto prihodom. Ovo odražava pozitivan efekat POS-a na ovu kategoriju banaka.

- Kod **q** = **0,25**, za banke sa relativno niskim neto prihodom (nešto višim od najnižeg), povećanje za jednu POS jedinicu dovodi do povećanja neto prihoda za 0,0111618 jedinica. Ovo ukazuje da se nastavlja pozitivan efekat POS-a za banke sa niskim neto prihodom, iako je manji u odnosu na najniži kvantil. Važno je napomenuti da ovaj koeficijent nije statistički značajan, što znači da se ne može zaključiti da efekat odražava pravu uzročnu vezu na ovom nivou neto prihoda.

- Kod **q** = **0,5**, povećanje za jednu POS jedinicu ima blagi negativan efekat na neto prihod, sa smanjenjem od 0,0045304 jedinice. Ovo može odražavati početak pomaka ka efektima zasićenja tržišta ili smanjenju marginalne efikasnosti dodatnih POS jedinica. Opet, statistička beznačajnost ovog koeficijenta sugeriše da se ne može zaključiti da efekat odražava pravu uzročnu vezu na ovom nivou neto prihoda.

- Kod **q** = **0,75**, za banke sa većim neto prihodom, povećanje za jednu POS jedinicu dovodi do smanjenja neto prihoda za 0,017706 jedinica, što dodatno potkrepljuje dokaze većeg negativnog efekta u segmentima sa većim prihodima.

- Kod **q** = **0,9**, u slučaju veoma visokih nivoa neto prihoda (velike banke), povećanje za jednu POS jedinicu rezultira najvećim smanjenjem neto prihoda, za 0,0297944 jedinice. Ovo ukazuje da negativni efekat postaje izraženiji u velikim bankama.

Sve u svemu, ovi rezultati pokazuju da se efekat broja POS terminala na neto prihod (NETI) menja od pozitivnog u nižim kvantilima do negativnog u višim kvantilima. Za manje banke, dodavanje novih POS terminala može ih značajno približiti klijentima i povećati obim transakcija, čime se povećava neto prihod. Ovo objašnjava pozitivan efekat primećen u kvantilima 0,1 i 0,25. Međutim, za kvantile 0,5, 0,75 i 0,9, koji predstavljaju veće banke, efekat postaje negativan. To objašnjavamo time što subjekti već imaju široku mrežu POS jedinica (zasićenost tržišta), a dalje širenje povećava troškove, kao što su troškovi održavanja i upravljanja, što rezultira smanjenjem marginalnih prinosa. Ovo se posebno dešava kada su banke već pokrile najgušće naseljena i najprofitabilnija geografska područja, čineći potencijal za dalje širenje manje atraktivnim u smislu očekivanog povrata ulaganja.

Varijabla finansijske tehnologije druge generacije (FIN1):
Kao što je ranije navedeno u statističkoj analizi, negativan efekat ove varijable na neto prihod varira u kvantilima, i to:

- Na **q** = **0,1**, neto prihod se smanjuje za 0,1177178 jedinica kada je prisutan FIN1. Ovo ukazuje da su banke u ovom nižem segmentu manje pogođene ovom varijablom.

- Na **k** = **0,25**, neto prihod se smanjuje za 0,1616217 jedinica kada je prisutan FIN1.

- Na **k** = **0,5**, neto prihod se smanjuje za 0,2437352 jedinica kada je prisutan FIN1.

- Na **q** = **0,75**, neto prihod se smanjuje za 0,3126818 jedinica kada je prisutan FIN1.

- Na **q** = **0,9**, neto prihod se smanjuje za 0,375936 jedinica kada je prisutan FIN1. Ovaj kvantil ukazuje na to da su najviše pogođene banke one sa visokim prihodima.

Varijabla finansijske tehnologije treće generacije (FIN2):
Kao što je ranije navedeno u statističkoj analizi, negativan efekat ove varijable na neto prihod varira u zavisnosti od kvantila, na sledeći način:

- Kod **q** = **0,1**, neto prihod se smanjuje za 0,1229746 jedinica kada je prisutan FIN2. Ovaj kvantil ukazuje da su banke u ovom segmentu najviše pogođene ovom varijablom.

- Kod **q** = **0,25**, neto prihod se smanjuje za 0,1178912 jedinica kada je prisutan FIN2.

- Kod **q** = **0,5**, neto prihod se smanjuje za 0,1083838 jedinica kada je prisutan FIN2.

- Kod **q** = **0,75**, neto prihod se smanjuje za 0,1004009 jedinica kada je prisutan FIN2.

- Kod **q** = **0,9**, neto prihod se smanjuje za 0,0930771 jedinica kada je prisutan FIN2. Ovaj kvantil ukazuje da su najmanje pogođene banke u ovom segmentu.

Sve u svemu, ovi rezultati naglašavaju konzistentan negativan odnos među kvantilima, što sugeriše da finansijske posledice usvajanja novih tehnologija zavise od nivoa prihoda banke, pri čemu banke sa višim prihodima doživljavaju izraženiji pad.

Jedno moguće objašnjenje za ovaj negativan efekat je da i finansijska tehnologija druge generacije (FIN1) i finansijska tehnologija treće generacije (FIN2) pokazuju negativan uticaj na neto prihod saudijskih islamskih banaka zbog nekoliko ključnih faktora. Prvo, visoka početna ulaganja i operativni troškovi povezani sa usvajanjem ovih tehnologija često prevazilaze njihove neposredne finansijske koristi. Integracija mobilnih aplikacija, digitalnih novčanika i rešenja zasnovanih na blokčejnu zahteva

značajne izdatke u infrastrukturi, sajber bezbednosti i usklađenosti, što dovodi do kratkoročnog pada profitabilnosti. Drugo, implementacija naprednih finansijskih tehnologija predstavlja operativne izazove, jer banke moraju da usklade ove inovacije sa postojećim nasleđenim sistemima. Ovaj proces može biti složen, dugotrajan i može dovesti do neefikasnosti tokom faze tranzicije.

Pored toga, regulatorni i šerijatski zahtevi za finansijsku tehnologiju u islamskom bankarstvu uvode dodatna ograničenja. Za razliku od konvencionalnih banaka, islamske finansijske institucije moraju osigurati da se novousvojene tehnologije pridržavaju šerijatskih principa, što može zahtevati dodatne modifikacije i odobrenja, dodatno povećavajući troškove i odlažući implementaciju. Drugi faktor je relativno spora stopa usvajanja među klijentima, posebno u kontekstu islamskog bankarstva, gde poverenje i poštovanje verskih principa igraju ključnu ulogu u donošenju finansijskih odluka. Ako klijenti ostanu neodlučni da u potpunosti prihvate rešenja za digitalno bankarstvo, očekivani rast prihoda od ovih inovacija se možda neće materijalizovati kako se očekivalo.

Na kraju, čini se da je negativan uticaj izraženiji u bankama sa većim neto prihodom, što sugeriše da bi se veće institucije mogle suočiti sa smanjenjem marginalnih prinosa od ulaganja u ove tehnologije. Dok se manje banke mogu boriti sa troškovima usvajanja, veće banke možda već imaju dobro uspostavljenu digitalnu infrastrukturu, smanjujući inkrementalne koristi od daljeg tehnološkog napretka. Ovi nalazi naglašavaju važnost procene dinamike troškova i koristi od usvajanja finansijske tehnologije i osiguravanja da strategije implementacije budu usklađene sa specifičnim operativnim i tržišnim uslovima islamskih banaka.

Varijabla veličine banke:
Pozitivan efekat veličine banke na neto prihod se primećuje u različitim kvantilima:

- Kod **q** = **0,1**, neto prihod se povećava za 0,0026975 jedinica sa svakim povećanjem veličine banke za jednu jedinicu.

- Kod **q** = **0,25**, neto prihod se povećava za 0,0035934 jedinice sa svakim povećanjem veličine banke za jednu jedinicu.

- Kod **q** = **0,5**, neto prihod se povećava za 0,005269 jedinica sa svakim povećanjem veličine banke za jednu jedinicu.

- Kod **q** = **0,75**, neto prihod se povećava za 0,006676 jedinica sa svakim povećanjem veličine banke za jednu jedinicu.

- Kod **q** = **0,9**, neto prihod se povećava za 0,0079667 jedinica sa svakim povećanjem veličine banke za jednu jedinicu.

Ovi statistički značajni rezultati pokazuju da odnos između veličine banke i neto prihoda postaje pozitivniji kako se pozicija banke u distribuciji neto prihoda poboljšava. Ovo ukazuje da su veće banke bolje u mogućnosti da ostvare veći neto prihod.

Varijabla BDP:
Varijabla BDP takođe ima pozitivan efekat na neto prihod (NETI) u različitim kvantilima, kao što sledi:

- Kod **q** = **0,1**, neto prihod se povećava za 3,36e-07 jedinica sa svakim povećanjem BDP-a od jedne jedinice.

- Kod **q** = **0,25**, neto prihod se povećava za 3,00e-07 jedinica sa svakim povećanjem BDP-a od jedne jedinice.

- Kod **q** = **0,5**, neto prihod se povećava za 2,32e-07 jedinica sa svakim povećanjem BDP-a od jedne jedinice.

- Kod **q** = **0,75**, neto prihod se povećava za 1,75e-07 jedinica sa svakim povećanjem BDP-a od jedne jedinice.

- Kod **q** = **0,9**, neto prihod se povećava za 1,22e-07 jedinica sa svakim povećanjem BDP-a od jedne jedinice.

Ovaj efekat je statistički značajan samo na kvantilima 0,1, 0,25 i 0,5, gde je neto prihod islamskih banaka (NETI) osetljiviji na promene privrednog rasta u odnosu na banke u višim kvantilima (0,75 i 0,9). Banke u višim kvantilima mogu imati raznovrsnije strategije i sposobnost da ublaže uticaj ekonomskih fluktuacija, uprkos tome što su statistički beznačajne. Generalno, rezultati sugerišu logičan odnos između povećanja BDP-a i neto prihoda za islamske banke, jer povećanje BDP-a odražava poboljšanje ekonomskih uslova, što dovodi do veće potražnje za finansijskim uslugama, na kraju poboljšavajući prihode islamskih banaka.

Rezultati hipoteza i diskusija

Nakon analize uticaja finansijske tehnologije na neto prihod islamskih banaka u različitim kvantilima, glavni nalazi su sažeti na sledeći način:

1. ATM (Bankomati): Postoji povećanje neto prihoda sa povećanjem broja bankomata u većini kvantila, sa jačim efektom u nižim kvantilima. Ovo sugeriše da manje islamske banke imaju više koristi od širenja bankomata.

2. POS terminali: Uticaj varira u zavisnosti od kvantila, sa pozitivnim efektom u nižim kvantilima i negativnim u višim kvantilima. Ovo ukazuje da manje islamske banke imaju koristi od širenja POS mreže, dok veće islamske banke pokazuju negativan uticaj na njihov neto prihod kako se broj POS terminala povećava.

3. Finansijska tehnologija (FIN1 i FIN2): Obe varijable pokazuju negativan uticaj na neto prihod u svim kvantilima, sa većim efektom u višim kvantilima. Ovo sugeriše da troškovi prelaska na nove tehnologije i izazovi u postizanju profitabilnosti od tehnoloških investicija utiču i na male i na velike banke u ranim fazama.

4. Veličina banke: Postoji jasan i statistički značajan pozitivan efekat na neto prihod, pri čemu se efekat povećava u višim kvantilima. Ovo ukazuje da su veće islamske banke u mogućnosti da ostvare veći neto prihod.

5. BDP (Bruto domaći proizvod): Postoji pozitivan efekat na neto prihod, posebno u nižim kvantilima, što ukazuje da povoljni ekonomski uslovi poboljšavaju neto prihod islamskih banaka, posebno manjih.

Diskusija o glavnoj hipotezi:

Nakon sumiranja rezultata modela, nastavljamo da testiramo hipoteze studije. Što se tiče prve opšte hipoteze, koja sugeriše pozitivan uticaj finansijske tehnologije na neto prihod saudijskih islamskih banaka tokom perioda 2010-2023, razmotrićemo sledeće podhipoteze pre nego što izvučemo zaključke:

- Prva podhipoteza: Mreža bankomata ima pozitivan uticaj na neto prihod saudijskih islamskih banaka tokom perioda 2010-2023.

Rezultati su pokazali pozitivan uticaj na neto prihod povećanjem broja bankomata. Ovaj efekat je izraženiji u nižim kvantilima i postepeno se smanjuje u višim kvantilima. Na osnovu ovih rezultata prihvatamo prvu podhipotezu.

- Druga podhipoteza: POS terminali imaju pozitivan uticaj na neto prihod saudijskih islamskih banaka tokom perioda 2010-2023.

Rezultati su pokazali pozitivan uticaj POS-a na manje banke i negativan, marginalni efekat na veće banke. Stoga se ova hipoteza ne može u potpunosti prihvatiti, ali je možemo prihvatiti delimično.

- Treća podhipoteza: Usvajanje finansijske tehnologije druge generacije (FIN1) ima pozitivan uticaj na neto prihod saudijskih islamskih banaka tokom perioda 2010-2023.

Na osnovu rezultata, koji pokazuju negativan uticaj usvajanja finansijske tehnologije druge generacije (FIN1) na neto prihod saudijskih islamskih banaka na svim navedenim kvantilnim nivoima, jasno je da se treća podhipoteza, koja sugeriše pozitivan uticaj ove varijable, ne može prihvatiti.

- Četvrta podhipoteza: Usvajanje finansijske tehnologije treće generacije (FIN2) ima pozitivan uticaj na neto prihod saudijskih islamskih banaka tokom perioda 2010-2023.

Rezultati procene uticaja usvajanja finansijske tehnologije treće generacije (FIN2) pokazuju negativan efekat na neto prihod saudijskih islamskih banaka na svim kvantilnim nivoima. Ovi rezultati zahtevaju odbacivanje četvrte pod-hipoteze.

Vraćajući se na prvu opštu hipotezu, zbog mešovitih rezultata podhipoteza, teško je u potpunosti prihvatiti opštu hipotezu. Neke varijable pokazuju negativne efekte, dok druge pokazuju pozitivan uticaj, što sugeriše da ukupni uticaj finansijske tehnologije može varirati u zavisnosti od vrste tehnologije i uslova poslovanja banke. Ovo naglašava važnost procene svake tehnologije pojedinačno i detaljnijeg ispitivanja njenog potencijalnog uticaja na neto prihod.

Važno je naglasiti da su ovi nalazi specifični za saudijske islamske banke, s obzirom na regulatorni okvir, ekonomske uslove i stope usvajanja finansijske tehnologije u Kraljevini Saudijskoj Arabiji . Iako slični trendovi mogu postojati u drugim islamskim bankarskim sistemima, potrebno je dalje istraživanje da bi se utvrdilo da li se ovi obrasci održavaju u različitim institucionalnim i ekonomskim kontekstima.

Preporuke i pravci za buduće istraživanje

Nalazi ove studije pružaju vredan uvid u odnos između finansijske tehnologije i neto prihoda saudijskih islamskih banaka. Međutim, određeni izazovi i prilike zahtevaju dalju pažnju.

1. Preporuke:

Procena efikasnosti ulaganja u finansijsku tehnologiju: Islamske banke treba da pažljivo procene kompromise između troškova i koristi usvajanja FIN1 i FIN2, s obzirom na njihov potencijalni kratkoročni negativan uticaj na neto prihod. Strateški pristup implementaciji mogao bi pomoći u ublažavanju finansijskih nedostataka uz maksimalno moguće povećanje dugoročnih dobitaka.

Poboljšanje usaglašenosti sa šerijatskim zakonom u usvajanju FinTech-a: Regulatorna tela bi trebalo da rade na uspostavljanju fleksibilnog pravnog i šerijatskog okvira koji olakšava integraciju naprednih tehnologija, kao što su blokčejn i pametni ugovori, u poslovanje islamskog bankarstva.

Podsticanje inovacija u islamskoj finansijskoj tehnologiji: Jačanje saradnje između islamskih banaka i FinTech startapova moglo bi da dovede do razvoja digitalnih finansijskih rešenja usklađenih sa šerijatom, podstičući i finansijsku uključenost i tehnološki napredak.

Preispitivanje strategija ekspanzije velikih banaka: S obzirom na uočeni negativan uticaj sistema na prodajnom mestu (POS) na neto prihod većih banaka, ključno je ponovo proceniti izvodljivost dalje ekspanzije POS-a, posebno na zasićenim tržištima gde se marginalne koristi smanjuju.

2. Budući pravci istraživanja:

Proširivanje obima uzorka: Buduće studije bi mogle da ispitaju islamske banke u drugim zemljama kako bi utvrdile da li su nalazi konzistentni u različitim regulatornim i ekonomskim okruženjima.

Analiza uticaja na dodatne finansijske pokazatelje: Osim neto prihoda, buduća istraživanja bi mogla da istraže efekte finansijske tehnologije na koeficijente profitabilnosti, operativnu efikasnost i izloženost riziku u islamskom bankarstvu.

Korišćenje naprednih statističkih metodologija: Istraživanje odnosa između finansijske tehnologije i neto prihoda korišćenjem modela slučajnih efekata ili pristupa mašinskom učenju moglo bi da poboljša robusnost i moć predviđanja nalaza.

Ispitivanje uticaja na ponašanje klijenata: Dalja istraživanja bi mogla da istraže kako usvajanje digitalnih finansijskih usluga utiče na lojalnost klijenata, poverenje i donošenje finansijskih odluka u islamskim bankarskim institucijama.

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THE IMPACT OF FINANCIAL TECHNOLOGY ON THE NET INCOME OF SAUDI ISLAMIC BANKS

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Abstract

This research investigates the impact of financial technology on the financial performance of Islamic banks in Saudi Arabia from 2010 to 2023, focusing on four banks that fully adhere to Sharia principles—Al Rajhi, Al Jazeera, Al Bilad, and Al Inma—as a pure model of Islamic banking. We utilized the Panel Quantile Model to analyze and measure the impact of financial technology on net income. The results reveal that an increase in ATMs is associated with higher net income, particularly in smaller banks, while the impact of POS termi-nals is positive for smaller banks but negative for larger ones. Furthermore, the adoption of second- and third-generation technologies negatively affects net income due to high implementation costs. The study emphasizes the importance of evaluating each technology individually to understand its specific impact on financial performance.

Keywords: FinTech, Islamic Banking, Net Income, Panel Quantile Regression

JEL classification: G21, O33, C23, P47, Z12.

Introduction

The term "FinTech" was first used in 1972 in an article published in the Interfaces journal titled "FinTech: A Series of 40 Models of Time-Sharing Used at Hanover Trust Bank." The author defined FinTech as an abbreviation for financial technology, combining banking expertise with modern management science and computer technologies (Abraham, 1972).

The concept of financial technology has evolved with technological advancements and the changing needs and trends in the financial market. Initially, FinTech was primarily related to the digital transformation brought about by the internet revolution in the early 1990s, which facilitated traditional financial operations, such as providing electronic banking services and online stock trading. At that time, the main focus was on offering more efficient means for handling routine financial transactions (Firmansyah et al, December 2022, p.01). In its definition of FinTech, the Basel Committee on Banking Supervision (BCBS) adopted the definition proposed by the Financial Stability Board (FSB), which considers financial technology an innovation based on technology for delivering financial services. This could lead to the creation of new business models, applications, operations, or products that significantly impact markets and financial institutions and enhance financial services (Basel Committee on Banking Supervision, 2018, p.08).

With rapid technological advancements, the concept of financial technology has expanded to include companies offering financial services using technological platforms for innovative financial products. These cover high-tech systems in financial industries such as mobile payments, loans, financing, money transfers, and even asset management (Ururs and Mohamed, September 2021, p.107). The focus has shifted to improving user experience and providing more inclusive and effective access to financial services.

Currently, FinTech is recognized as one of the most important innovations in the financial industry, driven by technological advancements such as artificial intelligence, machine learning, blockchain, virtual reality, augmented reality, and the Internet of Things (Artha.B, and Jufri.A, December 2020, p.59).

Regarding the Variables:
We will focus on the independent variable, financial technology, which has been measured differently by researchers. Some have relied on a single indicator to represent this variable, such as (Wagdy and Metwally, 2021), who measured FinTech by the relative weight of investment in technology infrastructure (in general) as a percentage of total bank assets. Another example is the study by Liu et al. (2022), which relied on the FinTech index published by a specific entity. Jianwei et al. (2021) used the Chinese Digital Financial Inclusion Index to measure FinTech, while Muganyi et al. (2022) adopted the Peking University Financial Inclusion Index as a determinant for FinTech. Rua (2022) measured FinTech by the number of new FinTech companies each year during the study period.

In contrast, other studies have used multiple indicators to measure FinTech, but there was no agreement regarding the nature or format of the indicators used. For example, Automated Teller Machines (ATMs) were used in several ways. In the study by Okoli & Tewari (2020), FinTech was measured by the number of ATMs, whereas in the study by Bashayreh & Wadi (2021), ATMs were included as a dummy variable, taking the value of 1 when the service was available and 0 when it was not. Aboelezz (2021) relied on the ratio of ATMs per 1000 adults, along with other indicators used to measure FinTech, such as the number of internet users in studies by Okoli & Tewari (2020), Wu & Yuan (2021),

Malou et al. (2021), and Bashayreh & Wadi (2021), as well as mobile payments in Aboelezz (2021), Okoli & Tewari (2020), Bashayreh & Wadi (2021), and Malou et al. (2021). Other indicators included credit card numbers and the number of borrowers, as used in Aboelezz (2021).

In Sharma et al. (2022), researchers used the MSCI Emerging Markets Index and fund type as determinants of FinTech, since the study's sample funds were linked to the FinTech sector. Wu & Yuan (2021) relied on the total third-party payments (FinTech companies) and the size of the cloud computing market as determinants of FinTech. It is worth noting that researchers have also used dummy variables to represent the independent variable in several cases (R. Li & Wan, 2021), as well as in studies by Al-Qaisi (2021), particularly when trying to measure blockchain, the provision of specific technological services, or strategies as in Hornuf et al. (2021), due to the particularity of the independent variable.

Main Hypothesis:
Financial technology has a positive impact on the net income of Saudi Islamic banks during the period 2010-2023.

To assess this impact accurately, the study is divided into several sub-hypotheses, each focusing on a specific aspect of financial technology, as follows:

- First Sub-Hypothesis: The ATM network has a positive impact on the net income of Saudi Islamic banks during the period 2010-2023.

- Second Sub-Hypothesis: Point of Sale (POS) systems have a positive impact on the net income of Saudi Islamic banks during the period 2010-2023.

- Third Sub-Hypothesis: The adoption of second-generation financial technology (FIN1) positively affects the net income of Saudi Islamic banks during the period 2010-2023.

- Fourth Sub-Hypothesis: The adoption of third-generation financial technology (FIN2) positively affects the net income of Saudi Islamic banks during the period 2010-2023.

Methodology and Model Used:
The aim of this study is to evaluate the impact of financial technology on the financial performance of Islamic banks, using the Panel Data model. The study sample includes four Islamic banks in the Kingdom of Saudi Arabia during the period 2010-2023.

Study Sample Selection:
The Kingdom of Saudi Arabia was selected for this study for the following reasons:

1. Established Islamic Financial System: Saudi Arabia has a long-standing Islamic banking system, providing a rich data source for studying the impact of financial technology.

2. Rapid FinTech Adoption: Saudi Arabia is a regional leader in financial technology, with significant growth in digital financial services, offering an ideal setting to study the effects on Islamic banking.

3. Strong Government Support: The Saudi government and regulatory bodies actively support FinTech innovation and foster collaboration between FinTech startups and Islamic banks.

4. Digital Transformation Priority: Digital transformation is a central element of Saudi Vision 2030, with a focus on the financial sector and FinTech as drivers of economic growth.

5. Large and Diverse Financial Market: The Kingdom has a large and diverse financial market, with both traditional and Islamic banks, making it an ideal environment for studying the impact of FinTech on Islamic banking.

Based on these reasons, Saudi Arabia provides an ideal environment for studying the impact of financial technology on Islamic banking. Within the Saudi banking system, which includes 11 local banks, 23 foreign bank branches, and 3 digital banks, a specific group of banks fully adhere to Sharia principles in all their transactions. This study focuses on four local Saudi banks that offer services fully compliant with Islamic law: Al Rajhi Bank, Al Jazeera Bank, Al Bilad Bank, and Al Inma Bank. These banks were chosen to represent a pure model of Islamic banking within the Kingdom, while seven other local banks offering a mix of Islamic and conventional financial products were excluded from this study due to their hybrid nature. The study period is defined from the first quarter of 2010 to the third quarter of 2023, as Al Inma Bank was established recently, and data for this bank is only available since 2010.

Study Variables:

In the context of this study, the practical aspect focuses on investigating the impact of financial technology on the financial performance of Saudi Islamic banks. During the model selection stage, we carefully chose indicators that truly represent the concept of financial technology, going beyond the limited view that only considers modern innovations. Therefore, we divided the indicators representing the financial technology variable into two main categories: "Technological Infrastructure" and "Advanced Financial Technology."

Technological Infrastructure:

This category includes variables that represent the traditional components of financial technology that facilitate basic access to and provision of banking services. In this study, it includes:

1. Number of ATMs (Automated Teller Machines):

- Significance: This variable represents the level of traditional infrastructure in the bank and the extent to which basic banking services are available in urban areas. ATMs are essential for providing banking services to customers, enabling access to funds and basic transactions.

- Importance of Selection: This variable reflects the focus on how traditional banking technology affects banking operations and services. It helps measure how well the bank has developed its use of technology to improve customer experience.

2. Number of POS (Point of Sale) Terminals:

- Significance: Refers to the number of POS devices used by banks to facilitate commercial transactions for customers. This variable reflects the extent to which banks have expanded to offer digital payment solutions for businesses and consumers.

- Importance of Selection: This variable is significant because it shows the bank's readiness and ability to integrate modern payment technologies into the financial system, enhancing transaction efficiency and improving customer experience.

These variables represent the basic tools that enable banks to offer traditional financial services in a digital context and are crucial for reaching and expanding banking services.

Advanced Financial Technology:

This category includes variables that reflect the use of innovative and advanced financial technologies by banks that go beyond traditional infrastructure, including:

1. Second-Generation Financial Technology (FIN1):

- Significance: Represents the shift toward using mobile applications, digital wallets, websites, and other innovative solutions that facilitate financial transactions and improve access to banking services.

- Importance of Selection: This variable reflects the banks' reliance on technological innovations to expand their service offerings and provide advanced financial solutions that meet modern customer needs, indicating progress toward the integration of financial technology.

2. Third-Generation Financial Technology (FIN2):

- Significance: Refers to the advanced use of technologies such as blockchain, cloud computing, and artificial intelligence, which enable more secure, efficient, and transparent financial transactions. These technologies open up new possibilities in financial services, including smart contracts and big data analytics to predict market behavior.

- Importance of Selection: This variable highlights third-generation financial technology as a crucial element in transforming Islamic banking, allowing the creation of financial products and services that adhere to Islamic principles while offering innovative features and added value to customers.

This description of the variables helps clarify the distinctions between different aspects of financial technology.

Control Variables:

To ensure the accuracy and comprehensiveness of our analysis, alongside identifying independent variables reflecting financial technology, we have included two control variables: bank size and Saudi Arabia's GDP. This step enables us to understand and evaluate external factors that may influence the studied relationships. These control variables help isolate the impact of independent variables from other potential influences, enhancing the validity and reliability of the study's results.

1. Bank Size (SIZE): For models one and three

- Significance: Represents the bank's size based on its total assets. This variable reflects the financial capacity of the bank, its market reach, and influence.

- Importance of Selection: Choosing bank size as a control variable strengthens the standard model by providing more accurate explanations of how financial technology impacts banking development, considering differences between banks based on their size.

2. Gross Domestic Product (GDP):

- Significance: Represents the GDP of Saudi Arabia, which serves as the macroeconomic environment in which banks operate. It indicates the general economic condition and level of economic growth in the country.

- Importance of Selection: Including GDP as a control variable helps understand how the broader

economic context can influence the development of Islamic banking and the adoption of financial technology. During periods of economic growth, banks may be more inclined to invest in new technologies and expand their services.

Dependent Variable:

The net income (NETI) is selected as the dependent variable to represent financial performance, as it clearly reflects the direct financial outcomes achieved by Islamic banks through their operations. Net income is a key indicator that highlights the bank's ability to generate profits from its operations. It directly reflects the bank's operational efficiency and effectiveness in generating revenue after deducting expenses.

Model Formulation and Estimation Method:

After outlining the sample and variables, we now proceed to specify the model for estimation.

Study Model Formulation:

In this study, we will rely on the following model:

$$NETI_{it} = b_0 + b_1\, ATM_{IT} + b_2\, POS_{it} + b_3\, FIN1_{it} + b_4\, FIN2_{it} + b_5\, SIZE_{it} + b_6\, GDP_{it} + + \alpha_i + e_{it}$$

Where:

. Independent Variables (Financial Technology):

- ATM: The number of ATMs per bank.

- POS: The number of POS terminals per bank.

- FIN1: A dummy variable representing the second generation of financial technology (value 0 before adoption, value 1 after adoption). This refers to innovations such as mobile applications, e-wallets, etc.

- FIN2: A dummy variable representing the third generation of financial technology (value 0 before adoption, value 1 after adoption). This refers to technologies like blockchain, cloud computing, artificial intelligence, etc.

Control Variables:

- SIZE: Bank size, represented by the total value of its assets.

- GDP: Gross Domestic Product (GDP) of Saudi Arabia.

Dependent Variable:

- NETI: Net income, reflecting the bank's financial performance.

This model allows us to evaluate the impact of financial technology on the performance of Islamic

banks in Saudi Arabia, while controlling for external factors such as bank size and macroeconomic conditions.

Sample Description:

The study sample consists of four banks, meaning that (n = 4), which refers to the number of cross-sectional units (banks). Each cross-sectional unit contains a time series for (t = 55), where (t) spans the period from the first quarter of 2010 to the third quarter of 2023. Therefore, the total number of observations used in the analysis is (t * n = 220) observations for each model.

Presentation and Discussion of Empirical Results and Hypothesis Testing:

After defining the model and identifying the study variables, and before proceeding with estimating the model, we conduct tests for homogeneity of variance and autocorrelation to determine whether the sample units are similar or not.

HSIAO Test:

Before conducting the HSIAO test, we perform tests for heterogeneity of variance and autocorrelation of the model. Based on the results presented in Appendix (X), our data suffers from one or both of these issues. Therefore, we proceed with the robust Hsiao test.

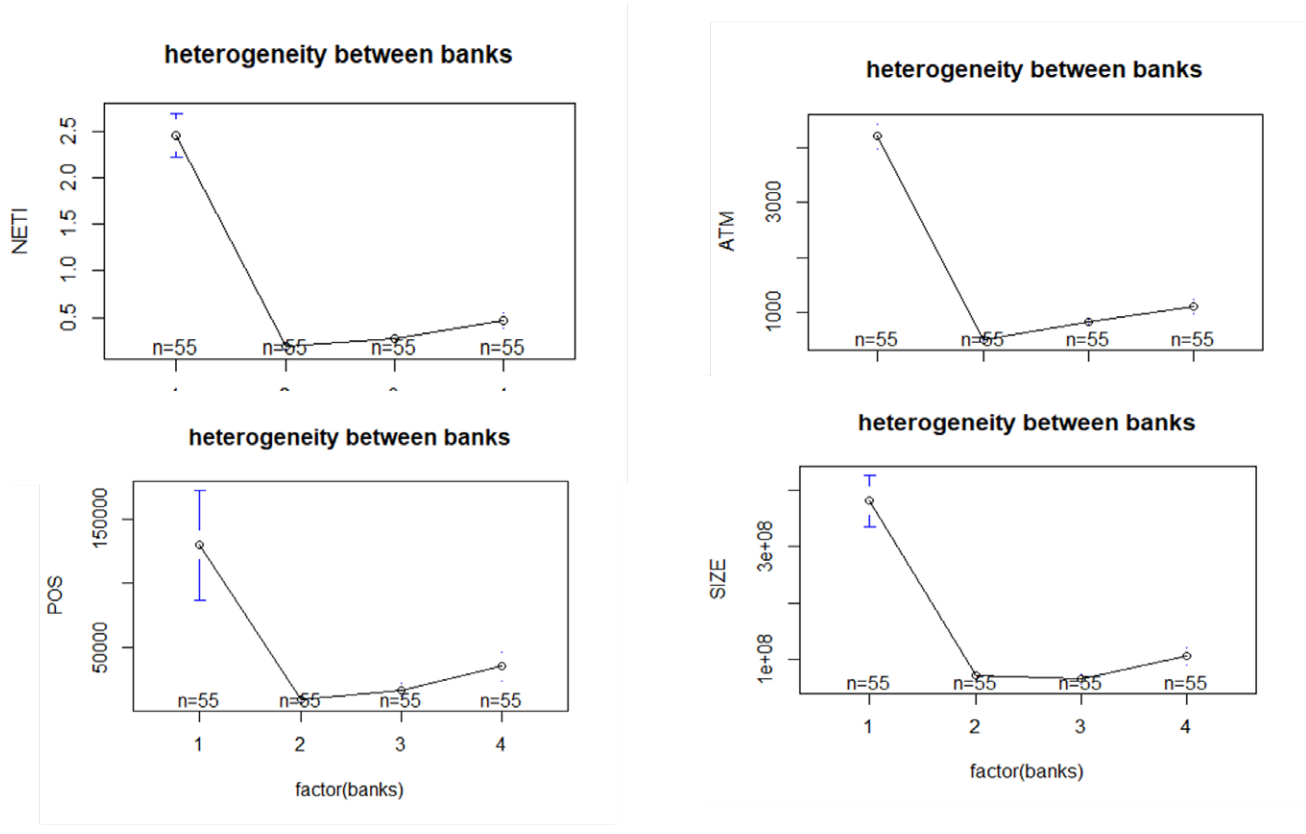
After performing the robust Hsiao test, the results were as follows:

Table 01: Hypothesis Testing Results

Hypothesis	F Value	Decision	Comment
H_0^1	3971 (0.000)	Reject Null Hypothesis	No overall homogeneity
H_0^2	239 (0.000)	Reject Null Hypothesis	Trends are heterogeneous across banks
H_0^3	339 (0.000)	Reject Null Hypothesis	Constants are heterogeneous across banks

Based on Hsiao's test results, we find evidence of total heterogeneity, leading to the rejection of the panel data structure and the basic panel models. To investigate the source of cross-sectional heterogeneity, we will visualize the heterogeneity patterns across individuals using the plotmeans package in R-STUDIO.

Figure 01 : Heterogeneity Analysis Between Banks (Multi-Panel Plot of NETI, ATM, POS and SIZE)



Source: Author's elaboration using R statistical softwar

Appendices

Appendix No. (01): Hsiao-test

First Hypothesis:

```
. testparm i.banks i.banks#c.ATM i.banks#c.POS i.banks#c.FIN1 i.banks#c.FIN2

 ( 1)  2.banks = 0
 ( 2)  3.banks = 0
 ( 3)  4.banks = 0
 ( 4)  2.banks#c.ATM = 0
 ( 5)  3.banks#c.ATM = 0
 ( 6)  4.banks#c.ATM = 0
 ( 7)  2.banks#c.POS = 0
 ( 8)  3.banks#c.POS = 0
 ( 9)  4.banks#c.POS = 0
 (10)  2.banks#c.FIN1 = 0
 (11)  3.banks#c.FIN1 = 0
 (12)  4.banks#c.FIN1 = 0
 (13)  2.banks#c.FIN2 = 0
 (14)  3.banks#c.FIN2 = 0
 (15)  4.banks#c.FIN2 = 0

       F( 15,   200) = 3971.61
            Prob > F =    0.0000
```

Second Hypothesis:

```
. testparm i.banks#c.ATM i.banks#c.POS i.banks#c.FIN1 i.banks#c.FIN2

 ( 1)  2.banks#c.ATM = 0
 ( 2)  3.banks#c.ATM = 0
 ( 3)  4.banks#c.ATM = 0
 ( 4)  2.banks#c.POS = 0
 ( 5)  3.banks#c.POS = 0
 ( 6)  4.banks#c.POS = 0
 ( 7)  2.banks#c.FIN1 = 0
 ( 8)  3.banks#c.FIN1 = 0
 ( 9)  4.banks#c.FIN1 = 0
 (10)  2.banks#c.FIN2 = 0
 (11)  3.banks#c.FIN2 = 0
 (12)  4.banks#c.FIN2 = 0

       F( 12,   200) =  239.76
            Prob > F =    0.0000
```

Third Hypothesis:

```
. testparm i.banks

 ( 1)  2.banks = 0
 ( 2)  3.banks = 0
 ( 3)  4.banks = 0

       F(  3,   212) =  339.00
            Prob > F =    0.0000
```

Appendix No. (02) : Estimation of the Net Income

```
. bootstrap, seed(22): mmqreg  NETI ATM POS FIN1 FIN2 SIZE GDP, q(0.10 0.25 0.5 0.75 0.90)
(running mmqreg on estimation sample)

Bootstrap replications (50)
----+--- 1 ---+--- 2 ---+--- 3 ---+--- 4 ---+--- 5
..................................................    50
MM-qreg Estimator
Number of obs = 220
Quantile:  .
```

NETI	Observed coefficient	Bootstrap std. err.	z	P>|z|	Normal-based [95% conf.	interval]
location						
ATM	.1947329	.0436353	4.46	0.000	.1092093	.2802565
POS	-.002049	.0075687	-0.27	0.787	-.0168834	.0127853
FIN1	-.2307509	.03279	-7.04	0.000	-.2950182	-.1664836
FIN2	-.1098872	.0312772	-3.51	0.000	-.1711894	-.0485849
SIZE	.0050041	.0007475	6.69	0.000	.003539	.0064691
GDP	2.42e-07	9.41e-08	2.58	0.010	5.80e-08	4.27e-07
_cons	-.2094761	.0615532	-3.40	0.001	-.3301182	-.0888341
scale						
ATM	-.0521274	.0247748	-2.10	0.035	-.1006852	-.0035696
POS	-.016301	.0028858	-5.65	0.000	-.0219572	-.0106449
FIN1	-.0852997	.0149918	-5.69	0.000	-.1146831	-.0559163
FIN2	.0098763	.0191382	0.52	0.606	-.0276338	.0473865
SIZE	.0017406	.0003789	4.59	0.000	.0009981	.0024832
GDP	-7.06e-08	7.31e-08	-0.97	0.334	-2.14e-07	7.26e-08
_cons	.128224	.0536806	2.39	0.017	.023012	.233436
qtile__1						
ATM	.2638084	.0606867	4.35	0.000	.1448647	.3827522
POS	.0195519	.0087509	2.23	0.025	.0024005	.0367034
FIN1	-.1177178	.036503	-3.22	0.001	-.1892623	-.0461733
FIN2	-.1229746	.045345	-2.71	0.007	-.2118491	-.0341
SIZE	.0026975	.0010101	2.67	0.008	.0007178	.0046772
GDP	3.36e-07	1.26e-07	2.67	0.008	8.96e-08	5.82e-07
_cons	-.3793895	.0803305	-4.72	0.000	-.5368344	-.2219446
qtile__25						
ATM	.2369784	.0507747	4.67	0.000	.1374619	.3364949
POS	.0111618	.0077789	1.43	0.151	-.0040847	.0264082
FIN1	-.1616217	.0310084	-5.21	0.000	-.222397	-.1008463
FIN2	-.1178912	.0390756	-3.02	0.003	-.1944781	-.0413044
SIZE	.0035934	.0008379	4.29	0.000	.0019511	.0052357
GDP	3.00e-07	1.02e-07	2.94	0.003	9.98e-08	5.00e-07
_cons	-.3133924	.0606479	-5.17	0.000	-.4322602	-.1945247
qtile__5						
ATM	.1867981	.0442509	4.22	0.000	.100068	.2735282
POS	-.0045304	.0079799	-0.57	0.570	-.0201707	.0111099
FIN1	-.2437352	.0419434	-5.81	0.000	-.3259428	-.1615275
FIN2	-.1083838	.0320329	-3.38	0.001	-.1711672	-.0456004
SIZE	.005269	.0007985	6.60	0.000	.0037041	.006834
GDP	2.32e-07	1.01e-07	2.30	0.021	3.45e-08	4.29e-07
_cons	-.1899579	.0746236	-2.55	0.011	-.3362175	-.0436983
_						
qtile__75						
ATM	.1446642	.0463671	3.12	0.002	.0537864	.235542
POS	-.0177063	.0081933	-2.16	0.031	-.0337648	-.0016478
FIN1	-.3126818	.0438606	-7.13	0.000	-.3986469	-.2267167
FIN2	-.1004009	.031029	-3.24	0.001	-.1612166	-.0395851
SIZE	.006676	.0008175	8.17	0.000	.0050738	.0082782
GDP	1.75e-07	1.24e-07	1.41	0.158	-6.76e-08	4.17e-07
_cons	-.0863162	.0919481	-0.94	0.348	-.2665312	.0938988
qtile__9						
ATM	.106009	.0566938	1.87	0.062	-.0051088	.2171268
POS	-.0297944	.0099717	-2.99	0.003	-.0493386	-.0102501
FIN1	-.375936	.0505621	-7.44	0.000	-.4750359	-.2768361
FIN2	-.0930771	.0366543	-2.54	0.011	-.1649182	-.0212359
SIZE	.0079667	.001023	7.79	0.000	.0059616	.0099719
GDP	1.22e-07	1.59e-07	0.77	0.443	-1.90e-07	4.34e-07
_cons	.0087687	.1174415	0.07	0.940	-.2214125	.2389498

The figures above demonstrate significant heterogeneity across the sample units, with one bank (Al Rajhi Bank) showing substantially larger values compared to the other three banks. This size disparity explains the slope heterogeneity detected in Hsiao's test. Given this asymmetric distribution of bank sizes, with one dominant entity, quantile regression models would be more appropriate for analysis, as they are better suited to handle such heterogeneous distributions.

The quantile regression model is being specified to account for heterogeneity in the data, particularly due to the presence of a significantly larger entity, which makes it suitable for analyzing the conditional quantiles of the response variable.

The quantile regression model is expressed as:

$$Q_{NETI\_it\ |X\_it}(\tau) = b_{0\tau}+b_{1\tau}\,ATM_{IT}+b_{2\tau}\,POS_{it}+b_{3\tau}\,FIN1_{it}+b_{4\tau}\,FIN2_{it}+b_{5\tau}\,SIZE_{it}+b_{6\tau}\,GDP_{it}++\alpha_i+e_{it\tau}$$

This model allows for the estimation of the effects of the independent variables on different quantiles of the dependent variable, accommodating the heterogeneity observed in the data.

Result

The empirical results are presented in two tables. Table 1 reports the location-scale effects, providing insights into the central tendency and variability of the relationships. Table 2 presents the quantile regression estimates at different quantiles (τ = 0.25, 0.50, 0.75, 0.9) allowing us to examine how the effects of the explanatory variables vary across different points of the conditional distribution of NETI.

Table 02 - Location-Scale Effects

	Location		Scale	
	Coefficient	P-Value	Coefficient	P-Value
ATM	0.1941784	0.000	- 0.05212	0.035
POS	- 0.002049	0.787	- 0.01630	0.000
FIN1	- 0.2307509	0.000	-0 .085299	0.000
FIN2	- 0.1098872	0.000	0.0098763	0.606
VELIČINA	0.0050041	0.000	0.0017406	0.000
BDP	2.42e-07	0.010	-7.06e-08	0.334
C	-0 .2094761	0.001	0.128224	0.017

Source: Outputs from Stata 17.

The empirical analysis begins with the estimation of location and scale effects, followed by quantile regression estimates at specified quantiles. The location estimates demonstrate the impact of independent variables on the conditional mean of the dependent variable, indicating how these variables influence the central tendency of the outcome distribution. The scale estimates, on the other

hand, capture how independent variables affect the dispersion (or variance) of the dependent variable around its central value, revealing their influence on the spread of the outcome distribution.

Location Estimate:
Statistically, all p-values are significant as they are smaller than the critical value of 0.05, except for the point-of-sale (POS) count, which has a p-value of 0.787, indicating it is not significant. According to this estimate, the number of ATMs has a strong positive effect, with net income increasing by 0.1941784 for each additional ATM. Additionally, second-generation financial technology has a strong negative impact on net income, decreasing it by 0.2307509 when this variable is applied. Similarly, third-generation financial technology also has a negative effect, reducing net income by 0.1098872 in its presence. The control variables, bank size and GDP, show a positive but somewhat weak effect on net income.

Scale Estimate:
Statistically, the parameters for the variables: number of ATMs, number of point-of-sale (POS) terminals, second-generation financial technology (FIN1), and bank size (SIZE) are significant as their p-values are less than the critical value of 0.05. In contrast, the parameters for third-generation financial technology (FIN2) and GDP are not significant in this estimate, as their p-values exceed the critical value of 0.05. Consequently, an increase in the number of ATMs and POS terminals may contribute to reducing the variance of net income among Islamic banks in Saudi Arabia by 0.05212 and 0.0163, respectively. Similarly, the application of second-generation financial technology reduces the variance of net income for Islamic banks in Saudi Arabia by 0.08529. However, an increase in the size of an Islamic bank increases its net income variance by 0.00174. The remaining variables, third-generation financial technology and GDP, do not affect the variance of net income for Islamic banks in Saudi Arabia.

Table 2 - Quantile Regression Estimates

	0.1	0.25	0.5	0.75	0.9
ATM	0.2638779 (0.000)	0.236978 (0.000)	0.186781 (0.000)	0.1446642 (0.002)	0 .106009 (0.062)
POS	0.01955 (0.025)	0.0111618 (0.151)	- 0.0045304 (0.57)	- 0.0177063 (0.031)	- 0.0297944 (0.003)
FIN1	-0 .1177178 (0.001)	-0 .1616217 (0.000)	-0 .2437352 (0.000)	-0 .3126818 (0.000)	-0 .375936 (0.000)
FIN2	-0 .1229746 (0.007)	-0 .1178912 (0.003)	-0 .1083838 (0.001)	-0 .1004009 (0.001)	-0 .0930771 (0.011)
SIZE	0.0026975 (0.008)	0.0035934 (0.000)	0.005269 (0.000)	0.006676 (0.000)	0.0079667 (0.000)
GDP	3.36e-07 (0.008)	3.00e-07 (0.003)	2.32e-07 (0.021)	1.75e-07 (0.158)	1.22e-07 (0.443)
C	-0 .3793895 (0.000)	-0 .3133924 (0.000)	-0 .1899579 (0.011)	-0 .0863162 (0.348)	0.0087687 (0.94)

Source: Outputs from Stata 17.

Statistical and Economic Analysis of the Model:

Statistically:

The variable representing the number of ATMs has a statistically significant positive effect on net income (NETI) at the estimation levels of 0.1, 0.25, 0.5, and 0.75, with p-values less than the critical value of 0.05. There is a positive effect at q=0.9, but it is not significant, with a p-value of 0.062.

The effect of the number of point-of-sale (POS) terminals on net income (NETI) varies between lower and upper estimation levels. There is a positive effect at the 0.1 and 0.25 levels and a negative effect at the 0.5, 0.75, and 0.9 levels. Statistically, the parameters are significant at the 0.1, 0.75, and 0.9 levels, as the p-values are less than the critical value of 0.05. The parameters at the 0.25 and 0.5 levels are not statistically significant, with p-values of 0.151 and 0.57, respectively, which are greater than the critical value of 0.05.

The second-generation financial technology variable (FIN1) has a negative effect on net income (NETI) at all estimation levels. This effect is statistically significant, as all p-values are less than the critical value of 0.05.

The third-generation financial technology variable (FIN2) also has a negative effect on net income (NETI) at all estimation levels. This effect is statistically significant, as all p-values are less than the critical value of 0.05.

Control Variables:

The bank size variable (SIZE) demonstrates a positive effect on net income (NETI) across all estimation levels. This effect is statistically significant as all p-values are less than the critical value of 0.05.

The Gross Domestic Product (GDP) variable shows a positive effect on net income (NETI) across all estimation levels. This effect is statistically significant at the 0.1, 0.25, and 0.5 levels, with p-values less than the critical value of 0.05. However, it is not significant at the 0.75 and 0.9 levels, with p-values of 0.158 and 0.443 respectively.

Economically:

- ATM Variable:

Based on the statistical analysis, we observe the positive impact of this variable on net income across all estimation levels:

- At (q=0.1), an increase of one ATM results in a net income increase of 0.2638779 units. This suggests that the increase in the number of ATMs significantly impacts banks with lower net income, substantially enhancing their income.

- At (q=0.25), an increase of one ATM leads to a net income increase of 0.236978 units, reinforcing the positive effect of ATMs on banks with relatively low net income.

- At (q=0.5), net income increases by 0.186781 units for each additional ATM. This reflects a continued positive effect, albeit to a lesser extent compared to the lower quantiles.

- At (q=0.75), the increase in net income is 0.1446642 units, indicating that the positive impact of increasing the number of ATMs diminishes as we move to banks with higher net income.

- At (q=0.9), despite the parameter not being significant at this level, the net income increase is 0.106009 units, suggesting that the positive effect of increasing the number of ATMs becomes less pronounced in the higher net income brackets.

From this interpretation, it can be concluded that increasing the number of ATMs yields varying benefits across banks depending on their net income levels, with a greater positive effect on banks with lower net income compared to those with higher net income. As for the insignificance of the coefficient at q=0.9, it can be explained through several points primarily related to the differences in bank sizes and how they affect the relationship between the number of ATMs and net income:

1. Marginal benefit of ATMs: For larger banks, the marginal benefit from adding new ATMs may be lower compared to smaller or medium-sized banks. This is because they already have an extensive network of ATMs that sufficiently cover their customers' needs, resulting in diminishing returns from additional ATMs. Furthermore, they have already covered high-density and profitable geographic areas, making the remaining expansion opportunities less attractive in terms of return on investment.

2. Diversification of income sources: Larger banks often have a broader range of financial products and services, and thus are less reliant on income generated from ATMs compared to smaller banks. In this case, increasing the number of ATMs may have a less significant impact on the net income of larger banks.

3. Operational efficiency: Larger banks may possess operational efficiencies and economies of scale that allow them to generate profits without needing a significant increase in the number of ATMs. Improving internal operations and investing in financial technology may provide them with alternative or more effective sources of income.

POS (Point of Sale) Variable:
As previously mentioned in the statistical analysis, the effect of this variable varies from one quantile to another, as follows:

- At **q** = **0.1**, when the number of POS units increases by one, the net income increases by 0.01955 units in banks with very low net income. This reflects a positive effect of POS on this category of banks.

- At **q** = **0.25**, for banks with relatively low net income (slightly higher than the lowest), an increase of one POS unit leads to an increase in net income by 0.0111618 units. This indicates that the positive effect of POS continues for banks with low net income, though it is smaller compared to the lowest quantile. It is important to note that this coefficient is not statistically significant, meaning it cannot be concluded that the effect reflects a true causal relationship at this level of net income.

- At **q** = **0.5**, an increase of one POS unit has a slight negative effect on net income, with a decrease of 0.0045304 units. This may reflect the beginning of a shift toward market saturation effects or diminishing marginal efficiencies from additional POS units. Again, the statistical insignificance of this coefficient suggests that it cannot be concluded that the effect reflects a true causal relationship at this level of net income.

- At **q** = **0.75**, for banks with higher net income, an increase of one POS unit leads to a decrease in net income by 0.017706 units, further supporting the evidence of a larger negative effect in higher-income segments.

- At **q** = **0.9**, in the case of very high net income levels (large banks), an increase of one POS unit re-

sults in the largest decrease in net income, by 0.0297944 units. This indicates that the negative effect becomes more pronounced in large banks.

Overall, these results show that the effect of the number of POS units on net income (NETI) changes from positive in the lower quantiles to negative in the higher quantiles. For smaller banks, adding new POS units can significantly expand their customer reach and increase transaction volumes, thus enhancing net income. This explains the positive effect observed in the 0.1 and 0.25 quantiles. However, for the 0.5, 0.75, and 0.9 quantiles, which represent larger banks, the effect becomes negative. This is due to these entities already having an extensive network of POS units (market saturation), and further expansion increases costs, such as maintenance and management expenses, resulting in diminishing marginal returns. This particularly occurs when banks have already covered the most densely populated and profitable geographic areas, making the potential for further expansion less attractive in terms of expected return on investment.

Second-Generation Financial Technology Variable (FIN1):
As previously noted in the statistical analysis, the negative effect of this variable on net income varies across quantiles, as follows:

- At **q** = **0.1**, net income decreases by 0.1177178 units when FIN1 is present. This indicates that banks in this lower segment are less affected by this variable.

- At **q** = **0.25**, net income decreases by 0.1616217 units when FIN1 is present.

- At **q** = **0.5**, net income decreases by 0.2437352 units when FIN1 is present.

- At **q** = **0.75**, net income decreases by 0.3126818 units when FIN1 is present.

- At **q** = **0.9**, net income decreases by 0.375936 units when FIN1 is present. This quantile indicates that the most affected banks are those in this high-income segment.

Third-Generation Financial Technology Variable (FIN2):
As previously noted in the statistical analysis, the negative effect of this variable on net income varies across quantiles, as follows:

- At **q** = **0.1**, net income decreases by 0.1229746 units when FIN2 is present. This quantile indicates that banks in this segment are most affected by this variable.

- At **q** = **0.25**, net income decreases by 0.1178912 units when FIN2 is present.

- At **q** = **0.5**, net income decreases by 0.1083838 units when FIN2 is present.

- At **q** = **0.75**, net income decreases by 0.1004009 units when FIN2 is present.

- At **q** = **0.9**, net income decreases by 0.0930771 units when FIN2 is present. This quantile indicates that the least affected banks are those in this segment.

Overall, these results highlight a consistent negative relationship across quantiles, suggesting that the financial consequences of adopting new technologies depend on the bank's income level, with higher-income banks experiencing a more pronounced decline.

One possible explanation for this negative effect is that both second-generation financial technology (FIN1) and third-generation financial technology (FIN2) exhibit a negative impact on the

net income of Saudi Islamic banks due to several key factors. First, the high initial investment and operational costs associated with adopting these technologies often outweigh their immediate financial benefits. The integration of mobile applications, digital wallets, and blockchain-based solutions requires significant expenditures in infrastructure, cybersecurity, and compliance, leading to a short-term decline in profitability. Second, the implementation of advanced financial technologies presents operational challenges, as banks must align these innovations with existing legacy systems. This process can be complex, time-consuming, and may result in inefficiencies during the transition phase.

Additionally, the regulatory and Sharia compliance requirements for financial technology in Islamic banking introduce further constraints. Unlike conventional banks, Islamic financial institutions must ensure that newly adopted technologies adhere to Sharia principles, which may necessitate additional modifications and approvals, further increasing costs and delaying implementation. Another factor is the relatively slow adoption rate among customers, particularly in the context of Islamic banking, where trust and compliance with religious principles play a crucial role in financial decision-making. If customers remain hesitant to fully embrace digital banking solutions, the expected revenue growth from these innovations may not materialize as anticipated.

Lastly, the negative impact appears to be more pronounced in banks with higher net income, suggesting that larger institutions might face diminishing marginal returns from investing in these technologies. While smaller banks may struggle with adoption costs, larger banks might already have a well-established digital infrastructure, reducing the incremental benefits of further technological advancements. These findings emphasize the importance of assessing the cost-benefit dynamics of financial technology adoption and ensuring that implementation strategies are aligned with the specific operational and market conditions of Islamic banks.

Bank Size (SIZE) Variable:
The positive effect of bank size on net income is observed across different quantiles:

- At **q** = **0.1**, net income increases by 0.0026975 units with each one-unit increase in bank size.

- At **q**= **0.25**, net income increases by 0.0035934 units with each one-unit increase in bank size.

- At **q** = **0.5**, net income increases by 0.005269 units with each one-unit increase in bank size.

- At **q** = **0.75**, net income increases by 0.006676 units with each one-unit increase in bank size.

- At **q** = **0.9**, net income increases by 0.0079667 units with each one-unit increase in bank size .

These statistically significant results show that the relationship between bank size and net income becomes more positive as the bank's position within the net income distribution improves. This indicates that larger banks are better able to achieve higher net income.

GDP Variable:
The GDP variable also has a positive effect on net income (NETI) across different quantiles, as follows:

- At **q**= **0.1**, net income increases by 3.36e-07 units with each one-unit increase in GDP.

- At **q**= **0.25**, net income increases by 3.00e-07 units with each one-unit increase in GDP.

- At **q= 0.5**, net income increases by 2.32e-07 units with each one-unit increase in GDP.

- At **q= 0.75**, net income increases by 1.75e-07 units with each one-unit increase in GDP.

- At **q= 0.9**, net income increases by 1.22e-07 units with each one-unit increase in GDP.

This effect is statistically significant only at the 0.1, 0.25, and 0.5 quantiles, where the net income of Islamic banks (NETI) is more sensitive to changes in economic growth compared to banks in the higher quantiles (0.75 and 0.9). The latter may have more diversified strategies and the ability to mitigate the impact of economic fluctuations, despite being statistically insignificant. In general, the results suggest a logical relationship between increases in GDP and net income for Islamic banks, as an increase in GDP reflects an improvement in economic conditions, which leads to higher demand for financial services, ultimately improving the income of Islamic banks.

Results and Discussion of Hypotheses

After analyzing the impact of financial technology on the net income of Islamic banks across various quantiles, the main findings are summarized as follows:

1. ATMs (Automated Teller Machines): There is an increase in net income with the increase in the number of ATMs across most quantiles, with a stronger effect in the lower quantiles. This suggests that smaller Islamic banks benefit more from the expansion of ATMs.

2. POS (Point of Sale): The impact varies across quantiles, with a positive effect in the lower quantiles and a negative effect in the higher quantiles. This indicates that smaller Islamic banks benefit from expanding the POS network, whereas larger Islamic banks show a negative impact on their net income as the number of POS increases.

3. Financial Technology (FIN1 and FIN2): Both variables show a negative impact on net income across all quantiles, with a larger effect in the higher quantiles. This suggests that the costs of transitioning to new technologies and the challenges in achieving profitability from technological investments affect both small and large banks in the early stages.

4. Bank Size (SIZE): There is a clear and statistically significant positive effect on net income, with the effect increasing in the higher quantiles. This indicates that larger Islamic banks are better able to achieve higher net income.

5. GDP (Gross Domestic Product): There is a positive effect on net income, especially in the lower quantiles, indicating that favorable economic conditions improve the net income of Islamic banks, particularly smaller ones.

Discussion of the Main Hypothesis:

After summarizing the results of the model, we proceed to test the study's hypotheses. As for the first general hypothesis, which suggests the positive impact of financial technology on the net income of Saudi Islamic banks during the period 2010-2023, we will discuss the following sub-hypotheses before drawing conclusions:

- First Sub-Hypothesis: The ATM network has a positive impact on the net income of Saudi Islamic banks during the period 2010-2023.

The results showed a positive impact on net income with an increase in the number of ATMs. This effect is more pronounced in the lower quantiles and gradually decreases in the higher quantiles. Based on these results, we accept the first sub-hypothesis.

- Second Sub-Hypothesis: POS (Point of Sale) has a positive impact on the net income of Saudi Islamic banks during the period 2010-2023.

The results showed a positive impact of POS on smaller banks and a negative, marginal effect on larger banks. Therefore, this hypothesis cannot be fully accepted, but we can accept it partially.

- Third Sub-Hypothesis: The adoption of second-generation financial technology (FIN1) has a positive impact on the net income of Saudi Islamic banks during the period 2010-2023.

Based on the results, which show a negative impact of adopting second-generation financial technology (FIN1) on the net income of Saudi Islamic banks across all specified quantile levels, it is clear that the third sub-hypothesis, which suggests a positive impact of this variable, cannot be accepted.

- Fourth Sub-Hypothesis: The adoption of third-generation financial technology (FIN2) has a positive impact on the net income of Saudi Islamic banks during the period 2010-2023.

The estimation results of the impact of adopting third-generation financial technology (FIN2) show a negative effect on the net income of Saudi Islamic banks across all quantile levels. These results require rejecting the fourth sub-hypothesis.

Returning to the first general hypothesis, due to the mixed results of the sub-hypotheses, it is difficult to fully accept the general hypothesis. Some variables show negative effects, while others show a positive impact, suggesting that the overall impact of financial technology may vary depending on the type of technology and the operational conditions of the bank. This highlights the importance of evaluating each technology individually and examining its potential impact on net income in more detail.

It is important to highlight that these findings are specific to Saudi Islamic banks, given the regulatory framework, economic conditions, and financial technology adoption rates in the Kingdom. While similar trends may exist in other Islamic banking systems, further research is required to determine whether these patterns hold in different institutional and economic contexts.

Recommendations and Future Research Directions

The findings of this study provide valuable insights into the relationship between financial technology and the net income of Saudi Islamic banks. However, certain challenges and opportunities require further attention.

1. Recommendations:

Assessing the Efficiency of Financial Technology Investments: Islamic banks should carefully evaluate the cost-benefit trade-offs of adopting FIN1 and FIN2, given their potential short-term negative impact on net income. A strategic approach to implementation could help mitigate financial drawbacks while maximizing long-term gains.

Enhancing Sharia Compliance in FinTech Adoption: Regulatory bodies should work towards establishing a flexible legal and Sharia-compliant framework that facilitates the integration of advanced technologies, such as blockchain and smart contracts, into Islamic banking operations.

Encouraging Innovation in Islamic Financial Technology: Strengthening collaboration between Islamic banks and FinTech startups could lead to the development of more Sharia-compliant digital financial solutions, fostering both financial inclusion and technological advancement.

Reevaluating the Expansion Strategies of Large Banks: Given the observed negative impact of Point of Sale (POS) systems on the net income of larger banks, it is crucial to reassess the feasibility of further POS expansion, particularly in saturated markets where marginal benefits are diminishing.

2. Future Research Directions:

Expanding the Sample Scope: Future studies could examine Islamic banks in other countries to determine whether the findings are consistent across different regulatory and economic environments.

Analyzing the Impact on Additional Financial Indicators: Beyond net income, future research could explore the effects of financial technology on profitability ratios, operational efficiency, and risk exposure in Islamic banking.

Employing Advanced Statistical Methodologies: Investigating the relationship between financial technology and net income using Random Effects Models or Machine Learning Approaches could enhance the robustness and predictive power of the findings.

Examining the Impact on Customer Behavior: Further research could explore how the adoption of digital financial services influences **customer loyalty, trust, and financial decision-making** in Islamic banking institutions.

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ALATI CENTRALNE BANKE ZA UTICAJ NA DINAMIKU HIPOTEKARNIH KREDITA U USLOVIMA VALUTNOG ODBORA I INFLACIJE

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Rezime

Cilj svake centralne banke i vlade je da održe cene stabilnim. U tom cilju, cilj njihove politike upravljanja novčanom masom je da održi inflaciju – stopu po kojoj se cene dobara i usluga menjaju tokom vremena – uvek niskom, održivom i predvidljivom. Cilj Bugarske narodne banke (BNB) je inflacija od 2% u srednjoročnom periodu kao kriterijum iz Mastrihta i predstojeće usvajanje evra kao nacionalne valute. Dodatna ograničenja su uslovi valutnog odbora kao sistema koji određuje mogućnosti centralne banke za intervencije. Inflacija kao proces stvara osećaj povećanog rizika od gubitka vrednosti, što navodi građane i ekonomske subjekte da traže dugoročne održive investicije. Kao rezultat toga, potražnja za hipotekarnim kreditima je porasla.
Nivo inflacije danas može uticati na očekivanja ljudi o kretanju cena u budućnosti. Ako potrošači i vlasnici preduzeća formiraju svoju politiku sa veoma niskom ili veoma visokom inflacijom, oni očekuju da će situacija i ostati takva. Ova očekivanja su važna. Građani ih koriste prilikom donošenja odluka o potrošnji, zaduživanju i ulaganju. Firme takođe uzimaju u obzir ova očekivanja prilikom određivanja cena svoje robe i usluga.
Kada se ova očekivanja udaljavaju od inflacionog cilja centralne banke, toj instituciji postaje sve teže da usmeri realnu dinamiku cena u privredi nazad ka inflacionom cilju. Centralna banka može doprineti izbegavanju stvaranja takvih očekivanja tako što će imati jasan cilj i zadržati inflaciju blizu tog cilja, koristeći svoj uticaj u takvim uslovima, premda je taj uticaj ograničen.
Da bi se proučio razvoj ovih važnih makroekonomskih varijabli, korišćene su metode ekonometrijske analize zasnovane na vremenskim serijama za analizu dinamike inflacionih očekivanja građana, inflacije, instrumenata koje centralna banka koristi za uticaj i dinamike hipotekarnih kredita odobrenih građanima.

Ključne reči: valutni odbor, inflaciona očekivanja, instrumenti centralne banke, hipotekarno kreditiranje.

JEL klasifikacija: G28, G52, E44, E52 G21, R31.

Uvod

Rast inflacije u poslednjih nekoliko godina od akumulacije nekoliko kriznih i postkriznih perioda, koje u ovom trenutku definišemo kao post-krizu, ponovo izaziva rasprave među političarima i stručnjacima u vezi sa determinantama i brzim rastom inflacije. Rast cena nekretnina, imovine iz sektora kojim se ne trguje,stručnjaci širom sveta su definisali kao postkriznu reakciju na kontrolu i uključivanje u investicioni proces značajnih inflatornih novčanih tokova.

Ako centralna banka predviđa inflatornu dinamiku na osnovu makroekonomskih modela, a oni sami se zasnivaju na interakciji agenata u ekonomskom ekosistemu, onda zaključci dovode do potrage za objašnjenjem u nekoliko hipoteza. Investicione odluke i poslovni i dokumenti za stvaranje rezervi, investicija ili otvaranje novih radnih mesta realizuju se u narednim periodima. Ulaganja u nekretnine pojavljuju se kao deo dugoročnog investicionog programa ekonomskih subjekata, što opravdava izbor da dinamiku ovog kreditnog kanala učinimo predmetom našeg istraživanja.

U ovoj studiji predlažemo okvir za analizu odnosa između determinanti monetarne politike centralne banke i tržišta hipotekarnih kredita u specifičnom kontekstu centralne banke u valutnom odboru. Na osnovu očekivanja domaćinstava za razvoj tržišta nekretnina i njihovog odnosa prema ponudi kredita, tražimo odgovor na prvo istraživačko pitanje: Da li inflaciona očekivanja ostvaruju direktnu vezu sa hipotekarnim tržištem, i drugo pitanje: mogu li instrumenti centralne banke ostvariti efikasnu intervenciju u koncentraciji rizika segmenta hipotekarnih finansijskih tržišta. Hipotekarni krediti su važan faktor u razvoju i stimulaciji ekonomskog ekosistema bilo koje zemlje. Stimulišu potražnju za nekretninama, što dovodi do ulaganja u građevinski sektor i stvara dodatna radna mesta. S druge strane, štednja građana ili rezerve preduzeća ulažu se u nekretnine, čime se utiče na prekomernu likvidnost banaka. A pošto su hipotekarni krediti tradicionalno dugoročni, rizici koje banke preuzimaju takođe zahtevaju dugoročne garancije i osiguranje kroz poslovne alate banke.

Poseban slučaj je funkcionisanje bankarskog sistema Republike Bugarske kao sistema valutnog odbora, uspostavljajući zakonom značajna ograničenja funkcija Centralne banke i svodeći ih na:

1. Određivanje obaveznih minimalnih rezervi
2. Zabranu direktnih intervencija na tržištima.
3. Utvrđivanje bafera, prema Bazelu-III: anticiklični, zaštitni kapital, za sistemski važne institucije, za sistemski rizik.

Pregled literature o problemu hipotekarnih kredita i ulozi centralne banke.

Kao što se može videti na **grafikonu broj 1** izdavanje novih kredita iz bankarskog sistema je veoma nestabilno tokom perioda sa vrhuncem u trećem kvartalu 2009. godine, značajnim dnom početkom 2016. godine i brzim oporavkom u 2019. i 2023. godini. Uočen je i uticaj pandemijskih ograničenja na rast tržišta nekretnina. Zbog globalnog uticaja ovog tržišta, istraživači iz mnogih jurisdikcija su ga takođe izabrali kao predmet svog istraživanja.

Kako tvrdi autor jednog istraživanja (Matteo Iacoviello, 2010), proučavanje odloženog tehnološkog napretka američkog tržišta nekretnina objašnjava trend rasta realnih cena kuća u proteklih 40 godina. Tokom poslovnog ciklusa, potražnja za stanovima i šokovi tehnologije izgradnje objašnjavaju četvrtinu varijabilnosti stambenih investicija i cene stanova. Monetarni faktori objašnjavaju manje od 20%, ali su

odigrali veću ulogu u stambenom ciklusu na početku 21. veka. Autori su otkrili da je rast tržišta stambenih nekretnina beznačajan, koncentrisan na zadovoljavanje potrošnje, a ne poslovna investicija, a taj značaj se povećava u budućnosti.

Referentna kamatna stopa centralne banke je u osnovi transmisionog mehanizma monetarne politike centralne banke. Povećanje kamatnih stopa na hipotekarne kredite dovodi do povećanja potrošnje potrošača na budžete domaćinstava, čime se ograničava potražnja i time smanjuju dugoročna ulaganja domaćinstava, a samim tim i uticaj na sve industrije vezane za stambenu izgradnju. (R. Kelly, 2018)

Nakon analize uticaja COVID krize na stanje ekonomija EU, autor je otkrio da je pandemija izazvala ne samo strukturne promene u finansijskim sektorima zemalja, već i način na koji se kamatne stope prenose na finansijska tržišта.

Kamatne stope na kredite, s druge strane, predstavljaju ključni faktor koji određuje troškove hipotekarnih kredita. Odnos između ova dva faktora je dinamičan i može imati značajan uticaj na tržište nekretnina.

Slika 1 - Rast hipotekarnih kredita

Izvor: www.bnb.bg

Ograničenja u vezi sa izdavanjem hipotekarnih kredita (Brian E. Higgins, 2024), koje su uvele banke na osnovu odnosa kredita i vrednosti (LTV) i kredita i prihoda (LTI), naglašavaju razlike u ponašanju pri za-

duživanju i dinamike tržišta nekretnina. Analiza to pokazuje kroz podatke da su zajmoprimci sa većim finansijskim sredstvima bolje u stanju da se prilagode ograničenjima kredita prilagođavanjem svog leveridža, a ne vrednosti imovine koju kupuju. Pored toga, analiza se i studije o uticaju kreditnih ograničenja na ravnotežne cene.

Banke igraju ključnu ulogu u stimulisanju investicija u nekretnine. Oni deluju kao posrednici između investitora i zajmoprimaca, obezbeđujući finansiranje u vidu hipotekarnih kredita. Kroz svoje aktivnosti, banke povećavaju dostupnost finansiranja. One pružaju investitorima mogućnost da dobiju sredstva za kupovinu nekretnina, čak i ako nemaju ceo potreban iznos. Ovo stimuliše potražnju za nekretninama i može dovesti do rasta cena.

Delujući kao posrednici, banke preuzimaju deo rizika u vezi sa ulaganjem u nekretnine zahtevajući od zajmoprimaca da obezbede učešće i kolateral u vidu hipoteke na imovinu koja se kupuje. Podela rizika može da podstakne investitore da preuzmu veće rizike, čineći ulaganja u više spekulativnih projekata verovatnijim.

Nekretnine mogu biti dragoceno sredstvo za diversifikaciju investicionih portfolija investitora. Banke nude različite vrste hipotekarnih proizvoda koji odgovaraju različitim potrebama i preferencijama investitora.

Bankarske institucije, koje finansiraju hipotekarnim kreditima, na kraju doprinose ekonomskom rastu. Ulaganje u nekretnine dovodi do stvaranja dodatnih radnih mesta u građevinskom sektoru i drugim srodnim industrijama. Ovaj proces dovodi do stimulacije ekonomskog rasta i može dovesti do povećanja životnog standarda ne samo zaposlenih, već i rastom poreskih prihoda - društva u celini.

Poslovni ciklus, koji se ogleda u dinamici rasta BDP-a, takođe igra neosporan uticaj na podsticanje ulaganja u nekretnine. Autori (Moramarco, 2024) pružaju nove empirijske rezultate o ulozi finansijskog ciklusa u predviđanju BDP-a u srednjem roku. Primenjujući različite metodologije, oni otkrivaju da dva racija imaju posebno jaku vezu sa ekonomskom aktivnošću u narednim godinama, i da oba kombinuju informacije o finansijskim uslovima i ekonomskim osnovama: odnos cene rentiranja i cene kupovine (rent-to-price) odražava stabilan odnos cena nekretnina na tržištu nekretnina; i odnos duga i prihoda (debt-to-income), koji pokriva teret duga domaćinstva. Visoke (niske) vrednosti ovih racija predviđaju nizak (visok) rast ponude na tržištu nekretnina u srednjem roku.

Specifičan slučaj direktne intervencije na tržištu su regulatorne mere kineske vlade. Autori (Hejia Zhuo, 2022) su napravili analizu zasnovanu na "brzini intervencije" kako bi ograničili rast cena u velikim gradovima, a zaključci nisu ohrabrujući i preduzete mere uglavnom nisu dale očekivane rezultate.

U cilju istraživanja i komparativne analize hipotekarnog tržišta u zemljama Višegradske četvorke (Češka, Poljska, Slovačka i Mađarska). Autori (R. Kracoskova, Z. Szkorupova, 2020) identifikuju mnoge faktore koji utiču na hipotekarno kreditiranje: BDP, inflacija, nezaposlenost, hipotekarne kamatne stope, cene nekretnina, poreske stope, državna podrška, finansijska pismenost i konkurencija u bankarskom sektoru. Oni su svoje empirijske alate zasnivali na makroekonomskim varijablama (BDP, inflacija i stopa nezaposlenosti i hipotekarna kamatna stopa) koje imaju značajan uticaj na obim hipotekarnih kredita.

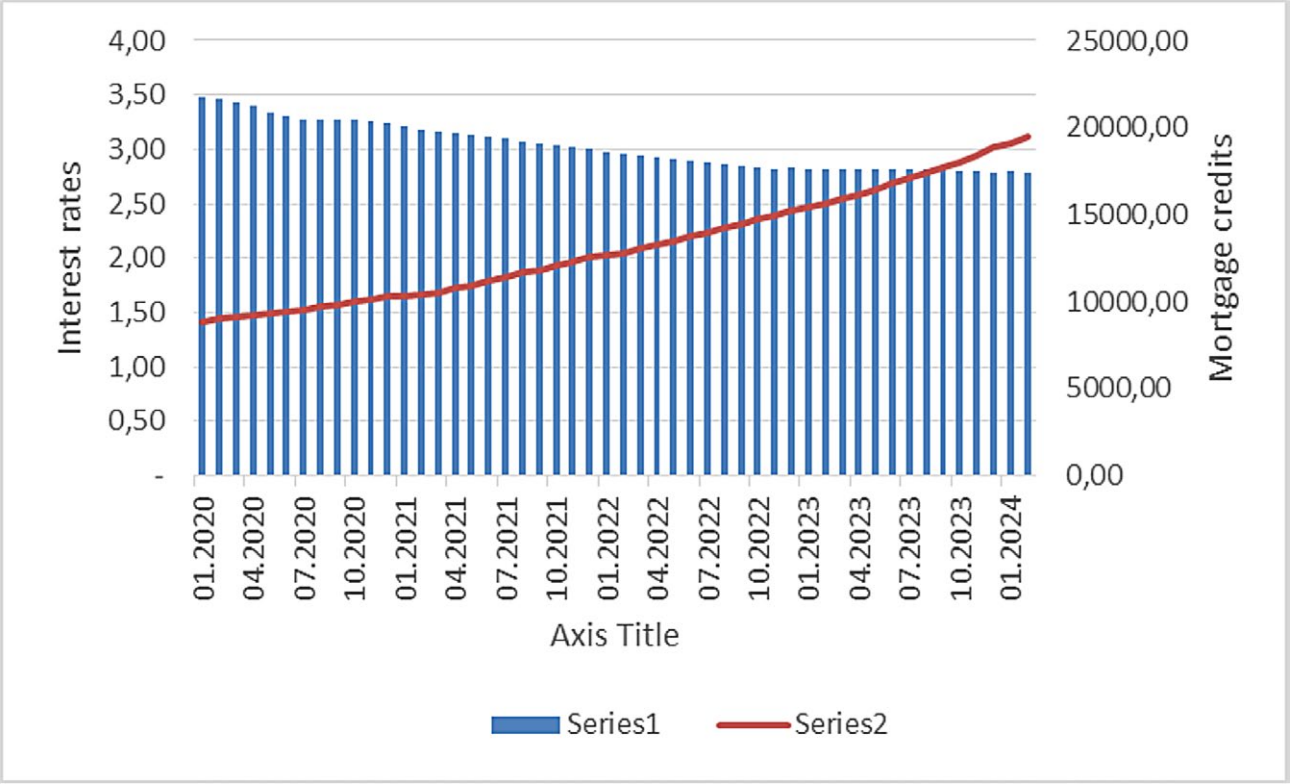
Evo nekih od glavnih alata koje centralna banka može koristiti:

1. Kamata na hipotekarne kredite

Centralna banka može podići ili sniziti glavnu stopu, što je referentna stopa za banke. Veće kamatne stope čine hipoteke skupljim, što može ohladiti tržište nekretnina, kao što se vidi u grafikonu br. 2. Leva

skala (crvena) pokazuje kamatne stope, a desna skala (plava) pokazuje rast fizičkih obima hipotekarnih kredita. Nasuprot tome, niže kamatne stope čine hipoteke pristupačnijim, stimulišući potražnju.

Slika 2 - Odnos „novi izdati krediti/kamatne stope"



Izvor: www.bnb.bg

Što se tiče odnosa između dinamike hipotekarnih kredita i kamatnih stopa na kredite, može se uspostaviti direktna veza. Niže kamatne stope obično rezultiraju nižim mesečnim otplatama hipoteke, čineći stanovanje pristupačnijim za zajmoprimce. Ovo stimuliše potražnju za hipotekarnim kreditima i može dovesti do rasta na tržištu nekretnina. Nasuprot tome, veće kamatne stope čine hipoteke skuplje, što može ohladiti tržište nekretnina i dovesti do pada potražnje hipoteke.

Očekivanja zajmoprimaca o budućim kamatnim stopama takođe mogu igrati ulogu. Ako zajmoprimci očekuju da će kamatne stope porasti u budućnosti, oni mogu biti skloni da uzmu hipoteke sada da bi iskoristili nižu stopu. Obrnuto, ako zajmoprimci očekuju da će kamatne stope pasti u budućnosti, oni mogu odložiti kupovinu kuće i čekati niže kamatne stope.

Centralna banka igra ključnu ulogu u određivanju kamatnih stopa. Kada centralna banka podigne kamatne stope, to obično dovodi do povećanja hipotekarnih stopa. Nasuprot tome, kada centralna banka snižava kamatne stope, to može stimulisati hipotekarno kreditiranje.

Centralna banka takođe može koristiti makroprudencijalne alate za regulisanje tržišta nekretnina. Ovi alati mogu uključivati ograničenja odnosa duga i prihoda zajmoprimaca, ograničenja iznosa učešća ili

ograničenja varijabilnih kamatnih stopa. Makroprudencijalni instrumenti mogu pomoći u smanjenju sistemskih rizika na tržištu nekretnina, ali mogu imati i negativan uticaj na dinamiku hipotekarnih kredita.

2. Odnos kredita i vrednosti (LTV) postavlja maksimalni procenat vrednosti imovine koji se može finansirati putem hipotekarnog kredita. Na primer, LTV ograničenje od 80% znači da dužnik mora da obezbedi 20% učešća.

Neformalne smernice i nadzor: Narodna banka Bugarske (BNB) prati LTV koeficijente u bankama i može da utiče na banke da pooštre kreditne standarde ako sistemski rizici rastu. Banke u Bugarskoj obično primenjuju LTV limite od 80-85%, u zavisnosti od interne politike rizika, pod uticajem nadzora BNB-a.

3. Odnos duga i prihoda (DTI) – ograničava udeo prihoda zajmoprimca koji može ići ka otplati duga. Iako nije striktno propisano od strane BNB-a, mnoge banke dobrovoljno primenjuju **DSTI ograničenja (obično oko 40-50%)**, posebno ohrabrene od strane BNB-a tokom perioda rasta kredita.

4. Kontraciklični zaštitni slojevi kapitala – zahtevaju od banaka da drže dodatni kapital tokom kreditnog buma. BNB koristi ovaj **instrument zasnovan na kapitalu** kako bi povećao otpornost banaka u kreditnim bumovima. U **2022. godini**, BNB je počeo postepeno povećavati CCyB na 1,5% (na snazi od 2023. godine) kao odgovor na ubrzani rast kredita, posebno u stambenim kreditima

5. Ponderi rizika na hipotekarne kredite – utiču na to koliko kapitala banke moraju se uzdržavaju od hipotekarne imovine.

6. Ograničenja na hipoteke samo sa kamatom ili promenljivom stopom – smanjuju rizike od neplaćanja pod promenljivim uslovima.

Ovde možemo rezimirati da je odnos između dinamike hipotekarnih kredita i kreditnih stopa složen i zavisi od faktora kao što su kamatne stope, inflaciona očekivanja, akcije centralne banke i makroprudencijalni instrumenti, a to su samo neki od faktora koji mogu uticati na dinamiku tržišta nekretnina. Razumevanje ovog odnosa je važno za zajmoprimce, investitore i regulatore koji su uključeni u tržište nekretnina.

Konvencionalna Centralna banka ima skup alata pomoću kojih može uticati na hipotekarne kredite. Ovi alati se mogu koristiti za stimulisanje ili hlađenje tržišta nekretnina, u zavisnosti od ekonomskih uslova i ciljeva centralne banke.

U Bugarskoj, Narodna banka Bugarske je centralna banka. BNB koristi niz alata za uticaj na hipotekarne kredite, uključujući glavnu kamatnu stopu, obavezne rezerve i makroprudencijalne alate. Cilj BNB-a je održavanje stabilnosti cena i finansijske stabilnosti, što uključuje obezbeđivanje stabilnog tržišta nekretnina.

Prema Todorovu (I. Todorov, 2023) pod uslovima monetarnog odbora, BNB je lišena prva dva instrumenta i ima pravo da odredi samo minimalne potrebne rezerve. Međutim, specifična struktura bugarskog valutnog odbora podrazumeva mogućnost monetarnih uticaja fiskalnim sredstvima. Kroz promene u veličini svojih depozita u obavezama BNB-a, bugarska vlada može da utiče na stopu inflacije u Bugarskoj.

Slično mišljenje o ulozi valutnog odbora deli još autora (PEYKOV, 2022), da, s druge strane, odgovarajući izbor instrumenta monetarne politike centralne banke ima potencijal za sektorske politike. U za-

visnosti od strukture javne proizvodnje i nivoa ekonomskog razvoja, centralna banka može da izabere inovativnu strategiju monetarne politike, možda održavanjem fiksnog ili upravljanog plutajućeg kursa na početku, kako je regulisano regulatornim okvirom, postepeno prelazeći na drugačiji cilj - na kontrolu inflacije nakon dostizanja višeg stepena razvoja ili strukture javne proizvodnje, što manje zavisi od dinamike realnog efektivnog deviznog kursa.

Centralna banka može da promeni obavezne rezerve, koje su minimalni udeo depozita koje banke moraju držati u rezervi. Veće obavezne rezerve smanjuju količinu novca koju banke mogu pozajmiti u obliku kredita, uključujući hipoteke.

Centralna banka može da kupuje imovinu, kao što su državne obveznice ili hartije od vrednosti, direktno sa tržišta. Ovo povećava količinu novca u opticaju i može dovesti do nižih kamatnih stopa i stimulisanja hipotekarnih kredita.

Centralna banka može aktivirati makroprudencijalne instrumente koji ciljaju specifične aspekte tržišta nekretnina kako bi smanjila sistemske rizike. Ovi alati mogu uključivati ograničenja odnosa duga i prihoda zajmoprimaca, ograničenja iznosa učešća ili ograničenja varijabilnih kamatnih stopa.

Važno je napomenuti da centralna banka ne koristi samo jedan instrument, već kombinaciju instrumenata za postizanje željenih ciljeva. Izbor instrumenata zavisi od različitih faktora, kao što su ekonomski uslovi, stanje na tržištu nekretnina i inflaciona očekivanja. Uticaj instrumenata centralne banke na hipotekarno kreditiranje može biti značajan. Promene u kamatnim stopama, na primer, mogu imati brz i direktan uticaj na potražnju hipoteke. Makroprudencijalni instrumenti, s druge strane, mogu imati indirektniji i dugoročni efekat, ali i dalje mogu biti efikasni u smanjenju sistemskih rizika na tržištu nekretnina. Uključivanje ovih instrumenata u uslovima hipotekarnog balona je od posebnog značaja, a posebno u uslovima krize, kada je asimetrija u pristupu informacijama od banke poverioca i vlasnika hipoteke značajna i stvara rizike značajne po obimu i snazi, baš kao što je to opisao Belski (E. S. Belsky, 2010). Razlog za ovakvo stanje je širok spektar kreditnih usluga kao rezultat konkurencije, što je otežalo informisani izbor i eroziju kreditnih standarda.

2. Makroekonomske varijable:

2.1 Inflaciona očekivanja **(INFL. OČ.)** – predstavljaju očekivanja javnosti o nivou inflacije u periodu u bliskoj budućnosti. Oni igraju ključnu ulogu u ponašanju potrošača i preduzeća. Inflaciona očekivanja mogu delovati kao samoispunjavajuće proročanstvo. Ako domaćinstva i preduzeća očekuju visoku inflaciju i već su sklopili ugovore o kreditima sa fiksnom stopom, to može dovesti do ponašanja koje zapravo uzrokuje veću inflaciju. Potrošači i firme imaju veću verovatnoću da troše ili ulažu, podstičući dalju potražnju i povećanje cena. Ako zajmoprimci očekuju da će kamatne stope porasti u budućnosti, oni mogu biti skloni da uzmu hipoteke sada kako bi osigurali nižu kamatnu stopu.

2.2 Inflacija u Bugarskoj **(BG INFL.)-** Inflacija je stalan i sveobuhvatan porast opšteg nivoa cena roba i usluga u privredi. To znači da novac gubi kupovnu moć tokom vremena. Iako to šteti štednji, rastuća inflacija može biti od koristi za dugoročne kredite kao što su hipoteke, zbog opadanja realne vrednosti novca. Dok su hipotekarne rate obično fiksne, njihova realna vrednost se vremenom smanjuje zbog inflacije. Međutim, efekat inflacije na obim hipotekarnih kredita nije jasan, ali razumevanje je važno za donošenje informisanih finansijskih odluka.

2.3 GINI koeficijent **(GINI)** – pokazuje društvenu homogenost nacije.

2.4 BNB anticiklični bafer (**Anticik. bafer**) - Anticiklični bafer je alat makrobonitetne politike koji centralne banke koriste za povećanje otpornosti bankarskog sistema tokom perioda ekonomskog procvata. Njegova svrha je da akumulira kapitalne rezerve u "dobrim" vremenima koja će se koristiti za apsorpciju gubitaka u "lošim" vremenima kada je kreditni rizik veći.

2.5 Minimalne rezerve banaka u BNB-u **(RMR**) – udeo privučenih depozita, koji se čuva na računima banaka u BNB-u kako bi se garantovala sigurnost ulaganja u sistem.

2.6 Stopa rasta novih hipotekarnih kredita (**Hipotekarni kredit**) – relativne vrednosti novih kredita odobrenih od strane banaka u vremenskim serijama

2.7 Indeks nekretnina u Bugarskoj (**REPI**) – indeks rasta cena nekretnina, koji je izračunao Nacionalni zavod za statistiku.

Ovako generisana baza podataka, koju su objavili Nacionalni zavod za statistiku i Narodna banka Bugarske, kao i sopstveni proračuni autora, pružaju priliku za analizu i traženje veza i zavisnosti, opisujući kako stanje na tržištu nekretnina, tako i glavne alate koje banka primenjuje kako bi ograničila neopravdani razvoj kreditnog tržišta i garantovala stabilnost sistema u celini.

3. Metodologija empirijskog istraživanja

Za sprovođenje empirijskog eksperimenta korišćena je vremenska serija kvartalnih podataka za period od 2020/Q1 do 2024/Q1.

Baza podataka objavljena na sajtu centralne banke (BNB) i Nacionalnog zavoda za statistiku bili su glavni izvori empirijskih podataka za glavne makroekonomske varijable. Opis pojedinačnih varijabli je prikazan u tabeli br. 1.

Tabela 1 - Značaj varijabli za ekonometrijski model

Br	Skraćenica	Varijable	Izvor baze podataka
1.	Infl.oč.	Inflaciona očekivanja: Očekivanja domaćinstava i preduzeća, očekivana inflacija je nivo inflacije koji se očekuje u određenom vremenskom periodu u bliskoj budućnosti. Oni mogu imati kontradiktoran efekat - pozitivan efekat (njihov rast uzrokuje povećanje potražnje u nastojanju da se očuva vrednost pre povećanja cena) i negativan efekat (prognoze rasta mogu povećati kamatne stope na kredite, ohladiti potražnju za kreditima na tržištu i ohladiti potražnju).	www.nsi.bg

2.	BgInfl.	Stalni i sveobuhvatni rast cena koji uzrokuje stalni pad kupovne moći novca. Pretpostavljamo da će porast indeksa cena ili povećanje inflacije prouzrokovati smanjenje iznosa novih odobrenih hipotekarnih kredita.	www.bnb.bg
3.	GINI	Visok GINI koeficijent ukazuje na veću osetljivost na inflatorna očekivanja, tj. da promene u očekivanoj inflaciji mogu imati veći uticaj na donošenje odluka od strane različitih društvenih grupa.	https://countryeconomy.com/demografija/ Gini-indeks
4.	RMR	Sredstva koja banke moraju da drže na računima u centralnoj banci kao rezervu imaju za cilj da obezbede stabilnost bankarskog sistema i podrže monetarnu politiku centralne banke.	www.bnb.bg
5.	Hipotekarni krediti	Rast ponude hipotekarnih kredita iz bankarskog sistema u inflatornom stanju privrede.	www.bnb.bg
6.	REPI	Indeks rasta cena nekretnina, u inflatornim uslovima cene rastu mnogo brže nego što padaju u dezinflatornim uslovima.	www.nsi.bg

Autorovi proračuni

Korelacijska matrica se koristi da pokaže snagu i pravac interakcije između skupa varijabli.

Tabela br. 2 Korelacijska matrica

	Infl. oč.	BG INFL.	GINI	Anticik. bafer	RMR	Hipo-tekarni kredit	REPI
Infl.oč.	1,000						
BG INFL.	0,08085	1,000					
GINI	0,82744	-0,4252	1,000				
Anticik. Bafer	-0,4103	-0,2039	-0,3765	1,000			
RMR	-0,7877	0,28106	-0,8515	0,33333	1,000		
Hipo-tekarni kredit	0,28496	0,3891	0,16114	-0,9364	-0,1175	1,000	
REPI	-0,7572	0,45814	-0,9588	0,45946	0,86628	-0,2085	1,000

Autorovi proračuni

Analiza koeficijenata u korelacijskoj matrici pokazuje pravac i snagu uticaja glavnih analiziranih varijabli. Najjača pozitivna korelacija nalazi se između inflacionih očekivanja Inf.oč. i koeficijent nejednakosti GINI (0,827), a između potrebnih minimalnih rezervi RMR i indeksa cena nekretnina REPI (0,866). Možemo videti najjače korelacijske zavisnosti sa negativnim predznakom korelacijske matrice sa obaveznim minimalnim rezervama RMR i inflacionim očekivanjima Infl. oč. i RMR- (-0.8515) i najjači je između stope rasta hipotekarnih kredita i kontracikličnog bafera (-0.9364). Pošto nalazimo koeficijente koji su <0,7, možemo reći prisustvo multikolinearnosti.

Tabela br. 3 Regresijska statistika

Model	R	R2	Prilagođen R2	Standardna greška
1	0,9652	0,9316	0,8860	4,2251

Autorovi proračuni

Kvadratni koeficijent korelacije (R2), koji se naziva i koeficijent određivanja, pokazuje koji procenat varijanse varijable ishoda se objašnjava delovanjem faktorske varijable. Za naš primer, R2 = 0,9316, tj. 93,16% inflacionih očekivanja zavisi od vrednosti varijabli uključenih u jednačinu. Ovo je još jedan dokaz adekvatnosti modela i rezultata ekonometrijskog eksperimenta.

D(Infl.oč.) = C(1) + C(2) (BG.INFL.) + C(3) (GINI) + C(4) (Anticik. bafer)) + C(5) RMR)
+ C(6) Hipo.kred.+ C(7) REPI

Ako stavimo koeficijente dobijene u ekonometrijskom modelu i sastavimo regresijsku jednačinu, koja ima sledeći oblik:

DInfl.oč. = -359,773 + C(2).1,142 + C(3). 10,684 + C(4) .24,001- C(5)*1,892 + *C(6) 0,425 - C(7).0,017

Rezultati analize dobijene ekonometrijske matrice prikazani su u tabeli br. 4.

Tabela br. 4 Koeficijenti jednačine regresije

Promenljive	Koeficijente	Standardna greška	T-statistika	Verovatnoća
C1	- 395,773	171,579	-2,307	0,0464
BG INFL.	1,142	0,265	4,306	0,0019
GINI	10,684	3,878	2,756	0,0222
Anticik. bafer	24,001	44,303	0,542	0,6011
RMR	-1,892	2,415	-0,783	0,4534
Hipotekarni kredit	0,425	1,546	0,275	0,7894
REPI	-0,017	0,288	-0,059	0,9541

Autorovi proračuni

Ako tumačimo vrednosti koeficijenata ispred makroekonomskih varijabli uključenih u regresijsku jednačinu, otkrili bismo da:

1. *142 (BG.INFL.) Povećanje bugarske inflacije od 1 procentnog poena dovodi do povećanja inflacionih očekivanja od 1,142 jedinice. Pozitivno i intuitivno: Ljudi očekuju da će buduća inflacija porasti kada se trenutna inflacija poveća.*

2. *C (3) = + 10.684 (GINI) Povećanje Ginijevog koeficijenta od 1 poena (više nejednakosti) dovodi do povećanja inflacionih očekivanja od 10.684 jedinica. Sugeriše da rastuća nejednakost može podstaći strahove od inflacije, možda kroz percipiranu socijalnu nestabilnost ili smanjeno poverenje u politiku.*

3. *C(4) = +24.001 (Anticik. bafer) Povećanje kontracikličnog bafera od 1 poena povezano je sa velikim porastom inflacionih očekivanja. Ovo može izgledati kontraintuitivno (tamponi su restriktivni), ali to može odražavati reakciju politike: tamponi rastu kada je rizik od inflacije već vidljiv.*

4. *C (5) = -1,892 (RMR) Povećanje referentne tržišne stope od 1 poena smanjuje očekivanja inflacije za 1,892 jedinice. Očekivani rezultat: Više kamatne stope prigušuju inflaciona očekivanja pooštravanjem monetarnih uslova.*

5. *C (6) = + 0,425 (Hipo.kred) Povećanje hipotekarnih kredita od 1 jedinice dovodi do povećanja inflacionih očekivanja od 0,425 jedinica. Sugeriše da kreditna ekspanzija, posebno u stanovanju, izaziva zabrinutost zbog buduće inflacije.*

6. *C(7) = -0,017 (REPI) Povećanje indeksa cena nekretnina od 1 poena neznatno smanjuje inflaciona očekivanja. Verovatno odražava efekat stabilizacije bogatstva ili da se inflacija nekretnina ne doživljava kao opšta potrošačka inflacija.*

Faktor varijanse inflacije (VIF): 7, VIF > 5: možemo reći da je umerena multikolinearnost.

Uprkos mogućnostima za poboljšanje regresijskog modela, u svom sadašnjem obliku on ima značajan kapacitet informisanja da objasni odnose između glavnih makroekonomskih varijabli koje se proučavaju. Njegovo poboljšanje predstoji i napori u tom pravcu neće biti prekinuti.

Zaključak

Stabilnost cena je glavni cilj monetarne politike centralnih banaka, a njeno održavanje omogućava domaćinstvima i privrednim subjektima da ostvare svoje finansijske planove. Fluktuirajuća inflacija utiče na dugoročne investicije, planiranje štednje i podriva poverenje u finansijski sistem. Uzimanje hipotekarni kredit za kupovinu kuće obično je povezan sa sticanjem najvrednije imovine u svom životu. Dodajući da se tradicionalno radi o dugoročnom finansiranju, postaje jasno zašto inflaciona očekivanja igraju tako važnu ulogu u transmisiji impulsa monetarne politike i uticaju monetarnih instrumenata na realnu kamatnu stopu. Iako relativno novi alat koji ECB koristi nakon 2020. godine, inflaciona očekivanja našla su odgovarajuće mesto u njenom alatu, i odmah u razvoju srednjoročnih i dugoročnih prognoza za dinamiku ključnih makroekonomskih posmatranja, kao što je kreditni kanal, tačnije – hipotekarni krediti.

Konvencionalni alati centralne banke koji se koriste u ekonometrijskim alatima, kao što su obavezne rezerve, kontraciklični bafer pokazuju značajan nivo povezanosti u regresijskom modelu sa varijablama Bg-inflacija i GINI koeficijent nejednakosti, koji procenjuje socijalnu homogenost društva.

Nasuprot tome, inflaciona očekivanja i dinamika rasta hipotekarnih kredita, kao i indeks cena nekretnina, pokazali su veoma nisku korelaciju sa čistim alatima centralne banke – obaveznim minimalnim

rezervama i kontracikličnim baferom. Iz svega ovoga zaključuje se da centralna banka u uslovima monetarnog odbora, u kojem posluje BNB, nema instrument za direktan uticaj na dinamiku rasta hipotekarnih kredita. Iz toga sledi da usvajanje čisto administrativnih mera ostaje da reguliše ili ograniči spontani rast hipotekarnih tržišta sa rizikom od pregrevanja finansijskog ekosistema.

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CENTRAL BANK TOOLS FOR AFFECTING THE DYNAMICS OF MORTGAGE LENDING IN THE CONDITIONS OF A CURRENCY BOARD AND INFLATION ENVIRONMENT

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Summary

It is the goal of every central bank and government to keep prices stable. To this end, the object of its money supply management policy is to keep inflation—the rate at which the prices of goods and services change over time—always low, sustainable and predictable. The Bulgarian National Bank's (BNB) target is an inflation target of 2% in the medium term as a criterion from Maastricht and the upcoming adoption of the euro as the national currency. Additional limitations are the conditions of the currency board as a system that determines the possibilities of the central bank for interventions. Inflation as a process creates a sense of increased risk of loss of value, which leads citizens and economic agents to seek long-term sustainable investments. As a result, the demand for mortgage loans has increased.

The level of inflation today can affect people's expectations of price developments in the future. If consumers and business owners form their policies with very low or very high inflation, they have an expectation that it will stay that way. These expectations are important. Citizens use them when making decisions about spending, borrowing and investing. Firms also consider these expectations when pricing their goods and services. When these expectations move away from the central bank's inflation target, it becomes very difficult for it to direct real price dynamics in the economy back to this target. The central bank can contribute to avoiding the creation of such expectations by having a clear target and keeping inflation close to it, using, albeit limited, its influence in such conditions.

To study the development of these important macroeconomic variables, the methods of econometric analysis based on time series were used for the dynamics of inflation expectations of citizens, inflation, the instruments used by the central bank for influence and the dynamics of mortgage loans granted to citizens.

Keywords: currency board, inflation expectations, central bank instruments, mortgage lending.

JEL classification: G28, G52, E44, E52 G21, R31.

Introduction

The growth of inflation in the last few years from the accumulation of several crisis and post-crisis periods, which at this point we define as post-crisis, is again provoking debates among the observing politicians and experts regarding its determinants and its rapid development. The growth of real estate prices, an asset from the non-tradable sector, worldwide, has been defined by experts as a post-crisis reaction to control and involve in the investment process significant inflationary cash flows.

If the central bank predicts inflationary dynamics on the basis of macroeconomic models, and they themselves are based on the interaction of agents in the economic ecosystem, then the conclusions lead to the search for an explanation in several hypotheses. Your investment decisions and business and documents for creating reserves, investments or opening new jobs are realized in future periods. Investments in real estate appear as part of the long-term investment program of economic agents, and this justifies our choice to make the dynamics of this credit channel the subject of our research.

In this study, we propose a framework for analyzing the relationship between determinants of central bank monetary policy and the mortgage lending market in the specific context of a central bank in a currency board. On the basis of the expectations of households for the development of the real estate market and their relationship with the supply of credits, we seek the answer to the first research question: Do inflation expectations realize a direct connection with the mortgage market and the Second: can the instruments of the central bank realize an effective intervention in risk concentration of a segment of the mortgage financial markets. Mortgage lending is an important factor in the development and stimulation of the economic ecosystem of any country. It stimulates the demand for housing, which leads to investment in the construction sector and creates additional employment. On the other hand, citizens' savings or company reserves are invested in real estate, thus influencing the banks' over-liquidity.And since mortgage loans are traditionally long-term, the risks that banks take also need long-term guarantees and insurance through the bank's business tools.

A special case is the functioning of the banking system of the Republic of Bulgaria as a currency board system, establishing by law significant restrictions on the functions of the Central Bank and reducing them to:

1. Determination of mandatory minimum reserves
2. Prohibition of direct interventions in the markets.
3. Determination, according to Basel-3, buffers: anti-cyclical, protective capital, for systemically important institutions, for systemic risk.

A review of the literature on the problem of mortgage lending and the role of the central bank.

As can be seen on Graff. No. 1 the issuance of new loans from the banking system is highly volatile during the period with a peak in the third quarter of 2009, a marked bottom in early 2016 and a rapid recovery in 2019 and 2023. The influence of the pandemic restrictions on the growth of the real estate market was also noted. Due to the global influence of this market, researchers from many jurisdictions have also chosen it as an object of their research.

As he claims (Matteo Iacoviello, 2010), studying the USA real estate market delayed technological advances in the housing sector explain the upward trend in real home prices over the past 40 years.

Over the business cycle, housing demand and housing technology shocks each explain a quarter of the variability in housing investment and housing prices. Monetary factors explain less than 20%, but played a larger role in the housing cycle at the turn of the century. The authors found that the growth of the residential real estate market is insignificant, concentrated on satisfying consumption rather than as a business investment, and this importance increases in the future.

The central bank's key interest rate not only underlies the central bank's monetary policy transmission mechanism. The increase in interest rates on mortgage loans leads to an increase in consumer spending on household budgets, thus limiting demand and hence reducing long-term household investment, and hence the effect on all industries related to housing construction. (R. Kelly, 2018)

After analyzing the impact of the COVID crisis on the state of EU economies, the author found that the pandemic has caused not only structural changes in the countries' financial sectors, but also in the way interest rates are transmitted to financial markets.

Loan interest rates, on the other hand, are a key factor that determines mortgage-lending costs. The relationship between these two factors is dynamic and can have a significant impact on the real estate market.

Figure 1 - The Growth of Mortgage Credits

Source: www.bnb.bg

The restrictions on the issue of mortgage loans (Brian E. Higgins, 2024), introduced by banks based on Loan-To-Value (LTV) and Loan-To-Income (LTI) ratios, highlighting the nuances of borrowing behavior

and housing market dynamics. The analysis shows that because it shows that borrowers with greater financial resources are better able to adapt to the loan restrictions by adjusting their leverage rather than the value of the property they are buying. Additionally, the study analyses of the impact of loan limits on equilibrium prices.

Banks play a key role in stimulating real estate investment. They act as intermediaries between investors and borrowers, providing financing in the form of mortgage loans. Through their activities, banks increase the availability of financing. They provide investors with the opportunity to obtain funds for the purchase of real estate, even if they do not have the entire required amount. This stimulates the demand for real estate and can lead to a rise in prices.

By acting as intermediaries, banks take on some of the risk associated with real estate investment by requiring borrowers to provide a down payment and collateral in the form of a mortgage on the property being purchased. Risk-sharing can encourage investors to take greater risks, making investments in more speculative projects more likely.

Real estate can be a valuable asset for diversifying investors' investment portfolios. Banks offer different types of mortgage products that suit the different needs and preferences of investors.

The Banking institutions, financing with mortgage loans, ultimately contribute to economic growth. Investment in real estate leads to the creation of additional jobs in the construction sector and other related industries. This process leads to the stimulation of economic growth and can lead to an increase in the standard of living not only of employed persons, but through the growth of tax revenues - of society as a whole.

The business cycle, reflected by the dynamics of GDP' growth, also plays an indisputable influence on stimulating investment in real estate. The authors (Moramarco, 2024) provide new empirical results on the role of the financial cycle in forecasting GDP in the medium term. Applying a variety of methodologies, they find that two ratios have a particularly strong relationship with economic activity in subsequent years, both combining information about financial conditions and economic fundamentals: the rent-to-price ratio reflects a stable ratio of property prices in the housing market; and the Debt-to-Income ratio, covering the household debt burden. High (low) values of these ratios predict low (high) growth in real estate market supply in the medium term.

A specific case of direct market intervention is regulatory measures by the Chinese government. The authors (Hejia Zhuo, 2022) have made an analysis based on "speed of intervention" to limit the growth of prices in large cities, and the conclusions are not encouraging and the measures taken generally did not give the expected results.

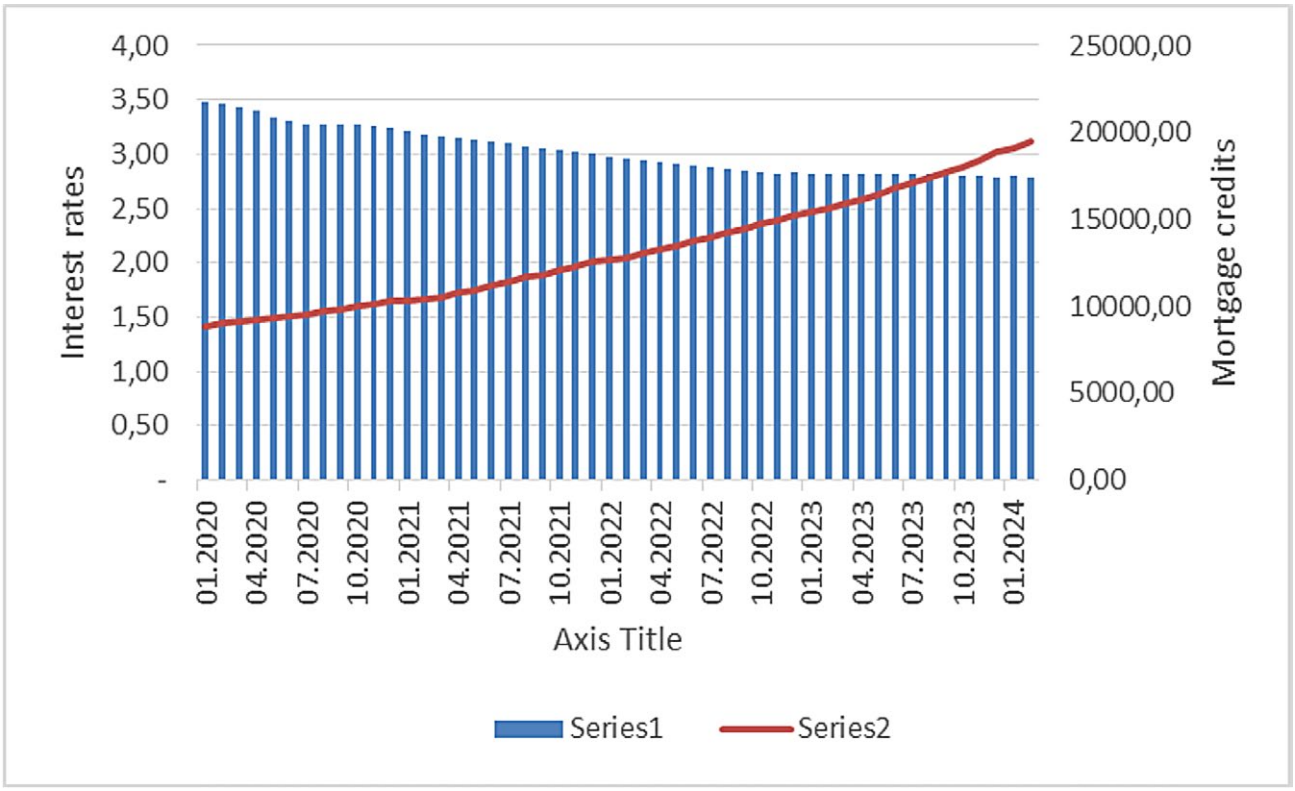
With a view to research and comparative analysis of the mortgage market in the countries of the Vishegrad Four (Czech Republic, Poland, Slovakia and Hungary) (R. Kracoskova, Z. Szkorupova, 2020). The authors identify many factors that influence mortgage lending: GDP, inflation, unemployment, mortgage interest rates, real estate prices, tax rates, government support, financial literacy, and competition in the banking sector. They based their empirical toolkit on macroeconomic variables (GDP, inflation, and unemployment rate and mortgage interest rate) that have a significant impact on the volume of mortgage loans.

Here are some of the main tools a central bank can use:

1. Interest on mortgage loans

The central bank can raise or lower the prime rate, which is the reference rate for banks. Higher interest rates make mortgages more expensive, which can cool the real estate market, as seen in Graff №.2. The left scale (red) shows interest rates, and the right scale (blue) shows the growth in physical volumes of mortgage loans. Conversely, lower interest rates make mortgages more affordable, stimulating demand.

Figure 2 - Ratio „new loans issued/interest rates»



Source: www.bnb.bg

In terms of the relationship between the dynamics of mortgage lending and interest rates on loans, a direct link can be established. Lower interest rates typically result in lower monthly mortgage payments, making housing more affordable for borrowers. This stimulates the demand for mortgage loans and can lead to growth in the real estate market. Conversely, higher interest rates make mortgages more expensive, which can cool the real estate market and lead to a decline in mortgage demand.

Borrowers' expectations of future interest rates may also play a role. If borrowers expect interest rates to rise in the future, they may be inclined to take out mortgages now to lock in a lower rate. Conversely, if borrowers expect interest rates to fall in the future, they may delay buying a home and wait for lower interest rates.

The central bank plays a key role in setting interest rates. When the central bank raises interest rates, it usually leads to an increase in mortgage rates. Conversely, when the central bank lowers interest rates, this can stimulate mortgage lending.

The central bank can also use macroprudential tools to regulate the real estate market. These tools may include limits on borrowers' debt-to-income ratios, limits on the amount of down payments, or limits on variable interest rates. Macroprudential instruments can help reduce systemic risks in the real estate market, but they can also have a negative impact on the dynamics of mortgage lending.

2. Loan-to-Value (LTV) ratio sets a maximum percentage of the property's value that can be financed through a mortgage loan. For example, an LTV limit of 80% means the borrower must provide a 20% down payment.

Informal guidance and supervision: BNB monitors LTV ratios in banks and can influence banks to tighten credit standards if systemic risks rise. Banks in Bulgaria typically apply LTV limits of 80–85%, depending on internal risk policies, influenced by BNB's oversight.

3. Debt-to-Income (DTI) Ratio – limits the share of a borrower's income that can go toward debt repayments. While not strictly mandated by BNB, many banks voluntarily apply DSTI caps (typically around 40–50%), especially encouraged by the BNB during periods of credit growth.

4. Countercyclical Capital Buffers – require banks to hold extra capital during credit booms. BNB uses this capital-based instrument to increase banks' resilience in credit booms. In 2022, BNB began gradually increasing the CCyB to 1.5% (effective from 2023) in response to accelerated credit growth, especially in housing loans

5. Risk Weights on Mortgage Loans – influence how much capital banks must hold against mortgage assets.

6. Limits on Interest-Only or Variable-Rate Mortgages – reduce default risks under changing conditions.

Here we can summarize that the relationship between the dynamics of mortgage lending and loan rates is complex and depends on factors such as interest rates, inflation expectations, central bank actions and macroprudential instruments, and these are just some of the factors that can affect dynamics of the real estate market. Understanding this relationship is important for borrowers, investors and regulators involved in the real estate market.

The conventional Central Bank has a set of tools with which it can influence mortgage lending. These tools can be used to stimulate or cool the real estate market, depending on economic conditions and central bank objectives.

In Bulgaria, the Bulgarian National Bank (BNB) is the central bank. The BNB uses a range of tools to influence mortgage lending, including the prime interest rate, reserve requirements and macroprudential tools. The goal of the BNB is to maintain price and financial stability, which includes ensuring a stable real estate market.

According (I. Todorov, 2023) under the conditions of a monetary board, the Bulgarian National Bank (BNB) is deprived of the first two instruments and has the right to determine only the minimum required reserves. However, the specific structure of the Bulgarian currency board implies the possibility

of monetary impacts with fiscal means. Through changes in the size of its deposits in the liabilities of the "Issue" management of the BNB, the Bulgarian government can influence the rate of inflation in Bulgaria.

A similar opinion about the role of the currency board is shared by (PEYKOV, 2022), that on the other hand, an appropriate choice of the central bank's monetary policy instrument has the potential for sectoral policies. Depending on the structure of public production and the level of economic development, it can choose an innovative monetary policy strategy, perhaps by maintaining a fixed or managed floating exchange rate at the beginning, as regulated by the regulatory framework, gradually moving to a different target - on inflation after reaching a higher stage of development or public output structure, which is less dependent on the dynamics of the real effective exchange rate.

The central bank can change reserve requirements, which are the minimum proportion of deposits that banks must hold in reserve. Higher reserve requirements reduce the amount of money that banks can lend in the form of loans, including mortgages.

The central bank can buy assets, such as government bonds or securities, directly from the market. This increases the amount of money in circulation and can lead to lower interest rates, stimulating mortgage lending.

The central bank can activate macroprudential instruments that target specific aspects of the real estate market in order to reduce systemic risks. These tools may include limits on borrowers' debt-to-income ratios, limits on the amount of down payments, or limits on variable interest rates.

It is important to note that the central bank does not use only one instrument, but rather a combination of instruments to achieve the desired objectives. The choice of instruments depends on various factors, such as economic conditions, the state of the real estate market and inflation expectations. The impact of central bank instruments on mortgage lending can be significant. Changes in interest rates, for example, can have a quick and direct effect on mortgage demand. Macroprudential instruments, on the other hand, can have a more indirect and long-term effect, but can still be effective in reducing systemic risks in the real estate market. The inclusion of these instruments in conditions of a mortgage bubble is of particular importance, and especially in conditions of crisis, when the asymmetry in access to information from the creditor bank and the owner of the mortgage is significantly significant and generates risks significant in scale and strength, just as they described it (E. S. Belsky, 2010). The reason for this state of affairs is the wide variety of credit services as a result of competition, which has made it difficult to make an informed choice and the erosion of lending standards.

2. Macroeconomic variables:

2.1 Inflation Expectations **(INFL.EXP)** – represent the public's expectation of the level of inflation over a period in the near future. They play a key role in the behavior of both consumers and businesses. Inflation expectations can act as a self-fulfilling prophecy. If households and businesses expect high inflation and they have already entered into fixed-rate loan agreements, this can lead to behavior that actually causes higher inflation. Consumers and firms are more likely to spend or invest, fueling further demand and price increases. If borrowers expect interest rates to rise in the future, they may be inclined to take out mortgages now to secure a lower interest rate.

2.2 Inflation in Bulgaria **(BG INFL.)-** Inflation is a constant and comprehensive increase in the general level of prices of goods and services in an economy. This means that money loses purchasing po-

wer over time. Although it hurts savings, rising inflation can benefit long-term loans such as mortgages. This is due to the declining real value of money. While mortgage payments are usually fixed, their real value decreases over time due to inflation. However, the effect of inflation on mortgage loan volume is not clear, but understanding it is important for making informed financial decisions.

2.3 GINI coefficient **(GINI)** – shows the social homogeneity of the nation.

2.4 BNB Anticyclical Buffer (**Anticicl. Buffer**) - The anticyclical buffer is a macro prudential policy tool used by central banks to increase the resilience of the banking system during periods of economic boom. Its purpose is to accumulate capital reserves in "good" times to be used to absorb losses in "bad" times when credit risk is higher.

2.5 Minimum reserves of the banks in the BNB **(RMR**) – share of attracted deposits, which is kept in the accounts of the banks in the BNB to guarantee the security of investments in the system

2.6 Growth rate of new mortgage loans (**Mortgage credit**) – the relative values of new loans granted by banks in time series

2.7 Real estate index in Bulgaria (**REPI**) – an index for the growth of real estate prices, calculated by the National Statistical Institute.

The database generated in this way, made public by the National Statistical Institute and the Bulgarian National Bank, as well as the author's own calculations, provide an opportunity for analysis and search for connections and dependencies, describing both the state of the real estate market and the main tools that the bank applies to limit the unjustified development of the credit market and guarantee the stability of the system as a whole.

3. Methodology of empirical research

A time series of quarterly data for the period from 2020/Q1 to 2024/Q1 was used to conduct the empirical experiment.

The database published on the website of the central bank (Bulgarian National Bank) and the National Statistical Institute were the main sources of empirical data for the main macroeconomic variables. The description of the individual variables is shown in Table No. 1.

Table 1 - The importance of the variables for the econometric model

№	Abbvr.	Variable	Source of data base
1.	Infl.exprct.	Inflation Expectations: The expectations of households and businesses, expected inflation is the level of inflation expected over a period of time in the near future. They can have a contradictory effect - a positive effect (their growth causes an increase in demand in an effort to preserve value before price increases) and a negative effect (growth forecasts can increase loan interest rates, cool the demand for loans in the market and cool demand)	www.nsi.bg

2.	BgInfl.	The constant and comprehensive rise in prices which causes a constant decline in the purchasing power of money. We assume that a rise in the price index or an increase in inflation will cause a decrease in the amount of new mortgage loans granted	www.bnb.bg
3.	GINI	A high GINI coefficient indicates greater sensitivity to inflationary expectations, i.e., that changes in expected inflation may have a greater impact on decision-making by different social groups	https://countryeconomy.com/demography/gini-index
4.	RMR	The resources that banks are required to keep in accounts at the central bank as a reserve are aimed at ensuring the stability of the banking system and supporting the monetary policy of the central bank.	www.bnb.bg
5.	Mortgage credits	Growth in the supply of mortgage loans from the banking system in an inflationary state of the economy	www.bnb.bg
6.	REPI	Real estate price growth index, in inflationary conditions prices rise at a much faster rate than they fall in disinflationary conditions	www.nsi.bg

Author›s calculations

The correlation matrix is used to demonstrate the strength and direction of interaction between a set of variables.

Table No. 2 Correlation matrix

	Infl. exp.	BG INFL.	GINI	Anticicl.buffer	RMR	Mortgage credit	REPI
Infl.exp.	1.000						
BG INFL.	0.08085	1.000					
GINI	0.82744	-0.4252	1.000				
Anticicl. buffer	-0.4103	-0.2039	-0.3765	1.000			
RMR	-0.7877	0.28106	-0.8515	0.33333	1.000		
Mortgage credit	0.28496	0.3891	0.16114	-0.9364	-0.1175	1.000	
REPI	-0.7572	0.45814	-0.9588	0.45946	0.86628	-0.2085	1.000

Author's calculations

The analysis of the coefficients in the correlation matrix show the direction and strength of impact of the main analyzed variables. The strongest positive correlation is found between inflation expectations Inf.exp. and the GINI inequality coefficient (0.827), and between the required minimum reserves RMR and the real estate price index REPI (0.866). We can see the strongest correlation dependences with a negative sign of the correlation matrix with the mandatory minimum reserves RMR and the inflation expectations Infl. exp. And RMR- (-0.8515) and the strongest is between the mortgage loan growth rate and the countercyclical buffer (-0.9364). Since we find coefficients that are <0.7, we can state the presence of multicollinearity.

Table No. **3 Regression statistic**

Model	R	R^2	Adjusted R^2	Standard Error
1	0.9652	0.9316	0.8860	4.2251

Author's calculations

The squared correlation coefficient (R2), also called the coefficient of determination, indicates what percentage of the variance of the outcome variable is explained by the action of the factor variable. For our example, R2 = 0.9316, i.e. 93.16% of inflation expectations depend on the values of the variables included in the equation. This is another proof of the adequacy of the model and the results of the econometric experiment.

$$D(Infl.Exp.) = C(1) + C(2)\,(BG.INFL.) + C(3)\,(GINI) + C(4)\,(Anticicl.Bufer)) + C(5)\,RMR) + C(6)\,Mort.Credit + C(7)\;REPI$$

If we put the coefficients obtained in the econometric model and compile the regression equation, which takes the following form:

$$DInfl.Exp. = -359{,}773 + C(2).1{,}142 + C(3).\,10{,}684 + C(4)\;.24{,}001 - C(5)1{,}892 + C(6)\,0{,}425 \;\; - C(7).0{,}017$$

The results of the analysis of the obtained econometric matrix are presented in Table No. 4.

Table No. 4 Regression equation coefficients

Variables	Coefficients	Standard Error	T-statistics	Probability
C1	- 395.773	171.579	-2.307	0.0464
BG INFL.	1.142	0.265	4.306	0.0019
GINI	10.684	3.878	2.756	0.0222
Anticycl. Buffer	24.001	44.303	0.542	0.6011
RMR	-1.892	2.415	-0.783	0.4534
Mortgage Credit	0.425	1.546	0.275	0.7894
REPI	-0.017	0.288	-0.059	0.9541

Author's calculations

If we interpret the values of the coefficients in front of the macroeconomic variables included in the regression equation, we would find that:

1.142 (BG.INFL.) A 1 percentage point increase in Bulgarian inflation leads to a 1.142 unit increase in inflation expectations. Positive and intuitive: People expect future inflation to rise when current inflation increases.

2. C(3) = +10.684 (GINI) A 1-point increase in the Gini coefficient (more inequality) leads to a 10.684 unit increase in inflation expectations. Suggests that rising inequality might fuel inflation fears, perhaps through perceived social instability or reduced trust in policy.

3. C(4) = +24.001 (Anticicl.Bufer) A 1-point increase in the countercyclical buffer is associated with a large rise in inflation expectations. This may appear counterintuitive (buffers are restrictive), but it might reflect policy reaction: buffers rise when inflation risk is already visible.

4. C(5) = -1.892 (RMR) A 1-point increase in the reference market rate reduces inflation expectations by 1.892 units. Expected result: Higher interest rates dampen inflation expectations by tightening monetary conditions.

5. C(6) = +0.425 (Mort.Credit) A 1-unit increase in mortgage credit leads to a 0.425 unit increase in inflation expectations. Suggests that credit expansion, especially in housing, raises future inflation concerns.

6. C(7) = -0.017 (REPI) A 1-point increase in the real estate price index slightly reduces inflation expectations. Possibly reflects a wealth stabilization effect or that real estate inflation is not perceived as general consumer inflation.

Variance Inflation Factor (VIF) : there is 7, VIF > 5: we may say it is moderate multicollinearity.

Despite the possibilities for improving the regression model, in its current form it has a significant information capacity to account for the relationships between the main macroeconomic variables under study. Its improvement is forthcoming and efforts in this direction will not be discontinued.

Conclusions

Price stability is the main objective of the monetary policy of central banks, and its maintenance enables households and economic agents to realize their financial plans. Fluctuating inflation affects long-term investments, savings planning and undermines confidence in the financial system. Taking out a mortgage loan for the purchase of a home is usually associated with the acquisition of the most valuable asset in their lifetime. Adding that it has traditionally been about long-term financing, it becomes clear why inflation expectations play such an important role in the transmission of monetary policy impulses and the impact of monetary instruments on the real interest rate. Although a relatively new tool that the ECB uses after 2020, inflation expectations have found a proper place in its toolkit, and immediately in the development of medium- and long-term forecasts for the dynamics of key macroeconomic observables, such as the credit channel, and more precisely – the mortgage ones.

The conventional tools of the central bank used in the econometric toolkit such as minimum reserve requirements, countercyclical buffer show a significant level of association in the regression model with the variables Bg-Inflation and the GINI inequality coefficient, which assesses the social homogeneity of the society.

Conversely, inflation expectations and the dynamics of mortgage loan growth, as well as the real estate price index, showed a very low correlation with the pure tools of the central bank – the mandatory minimum reserves and the countercyclical buffer. From all this, the conclusion is that the central bank in the conditions of a monetary board, in which the BNB operates, does not have an instrument for direct impact on the dynamics of the growth of mortgage lending. It follows that the adoption of purely administrative measures remains to regulate or limit the spontaneous growth of the mortgage markets with the risk of overheating the financial ecosystem.

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ZLOUPOTREBE I NAPADI NA BLOKČEJN SISTEME

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Rezime

Blokčejn sistemi su sveprisutniji u svim sektorima poslovanja, ali kao primarni korisnik ovih tehnologija javlja se finansijska industrija. Radom se žele istražiti napadi na blokčejn sisteme, odnosno želi se utvrditi jačina ovih napada u prošlosti i obim njihovih posledica. Kroz istoriju vrste i načini napada na blokčejn sisteme su inovirani, a sa tim i jačina ovih napada je rasla. Rezultati napada na blokčejn sisteme su kratkoročne nestabilnosti koje izazivaju promenu cena kriptovaluta i smanjenje poverenja u iste, ali dugoročno posmatrano napadi i zloupotrebe nemaju jak uticaj. Zapravo, prisutan je napredak navedenih sistema nakon izvršenih napada i zloupotreba. Sprovedeno istraživanje pokazuje da se najčešće javljao napad 51%. Primarni cilj zloupotreba bio je prisvajanje sredstava, ali i dokazivanje slabosti sistema na koje su napadi izvršeni.

Ključne reči: blokčejn sistemi, kriptovalute, zloupotrebe i napadi, finansijski sektor, napad 51%.

JEL klasifikacija: O33, L86, D85

Uvodna razmatranja

Razvojne tendencije u svetu, pre svega jačanje i neizostavna implementacija informaciono-komunikacionih tehnologija bitno su uticale na sve sfere poslovanja i života. Blokčejn tehnologije privlače veliku pažnju i pokreću sve veći broj projekata u različitim industrijama, međutim, finansijska industrija se smatra primarnim korisnikom blokčejn koncepta (Nofer et al., 2017, 183). U sektoru finansijskih usluga neophodan je kontinuirani razvoj istovremeno sa razvojem poslovnih i organizacionih procesa kao i novih proizvoda i instrumenata (Sredojević, 2018, 84). Digitalni svet unapređuje se, posredstvom blokčejna, kroz donošenje nove perspektive o bezbednosti, otpornosti i efikasnosti sistema (Ahram et al., 2017, 137) i predstavlja novu, revolucionarnu tehnologiju. Navedeni sistem sačinjen je od niza blokova koji su međusobno povezani, pri čemu ne postoji centralna institucija koja bi vršila kontrolu ili bila odgovorna za povezivanje svih ostalih učesnika u sistemu. Tehnologija blokčejna je osnova kriptovaluta, a koja se zasniva na decentralizovanoj računarskoj mreži. Značajna odlika blokčejn sistema jeste i konsenzus, odnosno putem protokola konsenzusa vrši se validacija transakcija i dodaju blokovi u lanac.

Poslednjih godina, kriptovalute su privukle pažnju investitora na finansijskim tržištima iz celog sveta, a oblast kriptovaluta, odnosno virtuelnih valuta u platnim sistemima se ubrzano širi (Alihodžić, 2023, 129). Tokom vremena, ulaganje u kriptovalute donelo je izuzetno visoke stope prinosa, što prati visok rizik, bez ikakvih garancija i bez zaštite investitora (Tomić, 2020, 22-23). Potencijal koji imaju kriptovalute zasnovane na blokčejnu privlači veliki broj investitora, kao i zlonamernih pojedinaca. Razvoj blokčejn sistema, ali i poverenje u ovakav sistem može biti narušeno zbog napada koji su ka njemu usmereni. Brojni su oblici napada i načina na koji napadači žele da pristupe blokčejn sistemima u cilju ostvarivanja koristi.

Predmet istraživanja u radu su različiti oblici napada na blokčejn sisteme. Kao relativno mladi i sistemi sa velikim potencijalom za rastuću primenu u budućnosti, blokčejn sistemi su izloženi brojnim oblicima napada. U skladu sa definisanim predmetom istraživanja, cilj rada jeste izvođenje zaključka o veličini i snazi istorijskih napada na blokčejn sisteme. Sagledaće se efekti različitih oblika napada, njihove posledice, ali i mogućnosti ponavljanja napada. Dodatno će biti utvrđeno koji oblici napada na blokčejn sisteme su najučestaliji. U skladu sa definisanim predmetom i ciljem istraživanja, u radu će se poći od sledećeg istraživačkog pitanja: *Da li su napadi na blokčejn sisteme imali dugoročni uticaj na njihovu stabilnost?*

Osnovne odlike blokčejn sistema

Blokčejn sistem predstavlja lanac transakcija koji ne daje mogućnost korisnicima da vrše izmene ili brisanje ranije unetih podataka. Blokčejn se može definisati kao distribuirana baza podataka ili javna knjiga svih transakcija ili digitalnih aktivnosti koje su realizovane ili podeljene između učesnika (Martić, 2021, 337-338). Navedena baza podataka, u slučaju kriptovaluta, odnosi se na knjigu svih transakcija, odnosno sadrži spisak svih učesnika i iznose novca u njihovom posedu (Tomić i Todorović, 2020, 16). Lanac se održava mrežom čvorova, koji verifikuju validnost transakcija i dodaju ih novim blokovima u procesu koji se naziva rudarenje (Gatteschi et al., 2018, 63). Ako se većina učesnika (čvorova) u mreži putem mehanizma konsenzusa složi o validnosti transakcija u bloku i o validnosti samog bloka, blok se može dodati u lanac (Nofer et al., 2017, 184). Koteska et al. (2017, 3) objašnjavaju da kada se kreira novi blok, on se emituje na mrežu, zatim svi čvorovi primaju blok, potvrđuju blok i sve transakcije u njemu. U situaciji da je on validan, svi čvorovi ga stavljaju kao sledeći blok u svom lokalnom blokčejnu.

Blokovi u lancu zapravo predstavljaju stavke u kojima su sadržane informacije o izvršenim transakcijama. Blokčejn sistem se na osnovu transakcija koje se izvršavaju kontinuirano povećava. Svaka nova transakcija koja se pojavi mora biti usklađena sa postojećim informacijama u sistemu. Ukoliko je transakcija validna i ukoliko učesnici to potvrde nastaje novo stanje u sistemu.

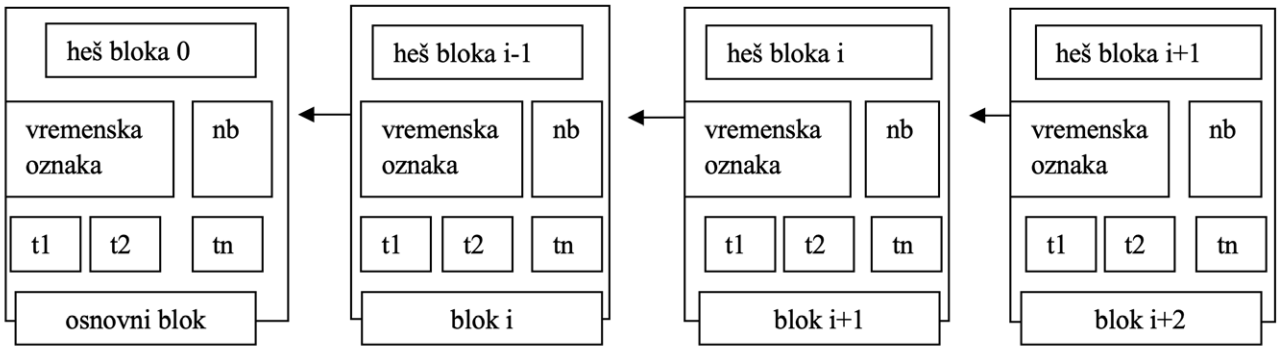
Blokčejn predstavlja tehnološku osnovu kriptovaluta, odnosno radi se o tehnologiji koja se do sada pokazala odličnom u očuvanju velikih baza podataka, jer istovremeno omogućava masovni pristup i sprečava zlonamerne napade (Tomić et al., 2020a, 41). Najznačajnije prednosti blokčejn tehnologije u poslovanju jesu sniženje troškova, brzina saldiranja transakcija, brzina i mogućnosti provere podataka, zaštita podataka, mogućnost provere krajnjeg korisnika i pouzdanost transakcija (Hadžić i Nedeljković, 2018, 153). U poređenju sa konvencionalnim, centralizovanim rešenjima, blokčejn koji se odlikuje decentralizacijom ima neke značajne prednosti kao što su nepromenljivost, poboljšana bezbednost, tolerancija grešaka i transparentnost (Fan et al., 2020, 126927).

Efikasnost blokčejn sistema zasniva se na tri elementa - decentralizovana mreža, konsenzus i kriptografija (Shetty et al., 2019, 5). Samo funkcionisanje blokčejn sistema podrazumeva nepostojanje centralnog autoriteta i postojanje potrebe za postizanjem konsenzusa za validaciju transakcija i dodavanje blokova u blokčejn lanac. Pored toga, kriptografija obezbeđuje sigurnost u funkcionisanju blokčejn sistema. Dva sastavna dela blokčejn sistema su konsenzus protokol i mehanizam transakcija (Kearney i Perez-Delgado, 2021, 2).

Konsenzus protokol se odnosi na donošenje odluka o dodavanju blokova u sistem i njihovoj validnosti. Mehanizam transakcija podrazumeva način na koji se prenose informacije u sistemu. Autori Hadžić i Nedeljković (2018, 154) kao osnovne karakteristike blokčejn tehnologije bitne za poslovnu implementaciju navode: Distribuirani podaci; Mogućnost da svi učesnici u direktnoj komunikaciji obavljaju transakcije koje međusobno validiraju na samom lancu; Anonimnost; Nepromenjivost zapisa; Mogućnost ugrađivanja računske logike i programiranje realizacije događaja ili transakcija u samoj strukturi lanca, koji se realizuju po ispunjavanju zadatih preduslova i postaju momentalno verifikovani – „pametni ugovori". Blokčejn tehnologija omogućava da se digitalna informacija distribuira između svih učesnika, pri čemu svaki učesnik održava sopstvenu kopiju svake relevantne informacije (Bolanča et al., 2018, 112). Svaki učesnik ima pristup celoj bazi podataka, a pri čemu ne postoji jedno centralno mesto u kome se podaci skladište i ne javlja se potreba da postoji centralna institucija za posredovanje i kontrolu u obavljanju transakcija. Transakcije koje su zabeležene u blokčejn sistemu su javne za učesnike.

Slika broj 1 prikazuje blokčejn lanac koji se sastoji od niza blokova. Sa Slike 1 se može videti da svaki novi blok sadrži heš prethodnog bloka, vremensku oznaku i više transakcija (od t1 do tn), kao i nasumični broj za verifikaciju heša (nb). Heš funkcija je matematička funkcija koja se efikasno može izračunati i koja vrši transformaciju ulazne poruke bilo koje veličine u izlaznu poruku fiksne veličine (Narayanan et al., 2016, 23). Korišćenje izlazne, fiksne veličine povećava bezbednost blokčejn sistema, odnosno pokušaj dešifrovanja heš vrednosti samo na osnovu izlazne veličine neće otkriti ulaznu veličinu (Frankenfield, 2022). Zapravo, heš se ne može upotrebiti za dobijanje ulaznih podataka, već isključivo za proveru validnosti.

Slika 1: Blokčejn sistem i niz blokova



Izvor: Zheng et al., 2018, 355

Svaki blok, sa izuzetkom prvog bloka, u blokčejn sistemu ukazuje na njegov neposredno prethodni blok (koji se naziva roditeljski blok) preko reference koja je u suštini heš vrednost roditeljskog bloka (Dai et al., 2019, 8078). Heš vrednosti su jedinstvene i prevara se može efikasno sprečiti pošto bi promene bloka u lancu odmah promenile odgovarajuću heš vrednost (Nofer et al., 2017, 184). Složen mehanizam validacije čini skoro nemogućim da čvor kontroliše većinu mreže, štaviše, činjenica da svaki validirani blok sadrži referencu na prethodni blok (obezbeđen korišćenjem metoda kriptografije) sprečava zlonamerne modifikacije snimljenih transakcija (Gatteschi et al., 2018, 64).

Konsenzus u blokčejn sistemima

Može se reći da je razvoj protokola konsenzusa sličan inženjeringu kriptografskih sistema i da bi programeri blokčejna trebalo da gledaju na uspostavljeno iskustvo u kriptografiji, bezbednosti i teoriji distribuiranih sistema za izgradnju sistema od poverenja (Cachin i Vukolić, 2017, 20). Ključna osobina blokčejn sistema je da čvorovi ne veruju jedni drugima, pri čemu se neki mogu ponašati na neadekvatan način (Dinh et al., 2018, 1368). U skladu sa ovom mogućnošću ispoljava se potreba za konsenzusom. Da bi se zadržao integritet sistema, podatke mora potvrditi i prihvatiti većina korisnika, ako ne i svi, što znači da svaki blokčejn mora imati ugrađeni konsenzus protokol (Tomić et al., 2020b, 366). Konsenzus je protokol u blokčejn mreži, koji specificira vremensku validnost i pravila kojih moraju da se pridržavaju svi učesnici da bi izvršili različite zadatke ili pridružene transakcije u mreži blokova (Bodkhe et al., 2020, 79772). Dakle, samo postojanje konsenzusa omogućava članovima blokčejn sistema da rade kao grupa i da teže zajedničkom cilju, čak i u situaciji postojanja zlonamernih učesnika.

Konsenzus je u skladu sa decentralizacijom blokčejn sistema, odnosno njime se uklanja potreba za centralnom institucijom koja bi garantovala validnost transakcija i održavala bezbednost blokčejn sistema. Narayanan et al. (2016, 54) objašnjavaju kako se zapravo dolazi do konsenzusa. Prema njima, u redovnim intervalima, recimo svakih 10 minuta, svaki čvor u sistemu predlaže sopstveni skup transakcija kao sledeći blok. Zatim čvorovi izvršavaju konsenzus protokol, gde je ulaz svakog čvora sopstveni predloženi blok. Neki čvorovi mogu biti zlonamerni i mogu stavljati nevažeće transakcije u svoje blokove, ali u takvoj situaciji treba uzeti u obzir da će drugi čvorovi biti iskreni. Ako konsenzus protokol uspe, validan blok će biti izabran kao izlaz. Čak i ako je izabrani blok predložio samo jedan čvor, to je validan izlaz sve dok je blok validan. U situaciji da postoji neka validna neizvršena transakcija koja nije uključena u blok, ona bi mogla samo da sačeka i uđe u sledeći blok.

Dve osnovne vrste blokčejn sistema jesu oni za koje nije potrebna dozvola (permissionless blockchains) i oni za koje je dozvola potrebna (permissioned blockchain) (Dinh et al., 2018, 1366). U prvom slučaju, stanje blokčejna i njegove transakcije, zajedno sa sačuvanim podacima je transparentno i dostupno svima, dok u slučaju blokčejn sistema za koje je potrebna dozvola, samo ovlašćenim entitetima je dozvoljeno da učestvuju u aktivnostima unutar blokčejna (Ferdous et al., 2020, 5). U skladu sa prethodno navedenom podelom blokčejn sistema prisutno je više protokola konsenzusa. Neki od protokola koji se primenjuju u blokčejn sistemima za koje je potrebna dozvola jesu: Paxos, Raft, Proof-of-authority, Practical Byzantine Fault Tolerance, Delegated Byzantine fault tolerance i Federated Byzantine Fault Tolerance (Tomić, 2021). S druge strane, protokoli koji se koriste u blokčejn sistemima za koje nije potrebna dozvola jesu: Proof-of-Work, Proof-of-Stake, Proof-of-Burn, Proof-of-Capacity, Proof-of-Importance, Proof-of-Activity (Tomić et al., 2020b). Može se reći da je najčešće spominjan, ali i najčešće primenjen konsenzus protokol Proof-of-Work. Ovaj konsenzus algoritam primenjuje se kod najpoznatije kriptovalute Bitcoin.

Napadi na blokčejn sisteme

Pored svih prednosti koje se vezuju za blokčejn sisteme prisutne su i određene manjkavosti koje se u vezi sa njima javljaju. Pri postojanju nedostataka u blokčejn sistemima uočava se mogućnost za napade i zloupotrebe u njima. Blokčejn je platforma koja teži obezbeđenju bezbednosti i sigurnosti, a kroz minimiziranje izloženosti zlonamernim napadima (Jiang et al., 2022, 1087).

U jednom od radova (Chen et al., 2022, 5-6) koji se bavi tematikom napada na blokčejn sisteme navodi se da postoje tri oblika napada: napad izazivanja konsenzusa (the attack of consensus protocol), napad srednjeg protokola (the attack of middle protocol), i napad servisa aplikacije (the attack of application service). Kod napada izazivanja konsenzusa cilj napadača je da ostvari dodatni prihod kroz umešanost u rezultate konsenzusa blokčejna. Kod ove grupe napada neke od metoda napada jesu: Block withholding napad, 51% napad, pool hopping napad, selfish mining napad i FAW napad. Napad srednjeg protokola podrazumeva uticaj napadača na komunikaciju čvorova i pametne ugovore. Kod napada na komunikaciju čvorova metode jesu: DdoS napad, Eclipse napad i Sybil napad, dok se kod napada na pametne ugovore može navesti reentrancy napad. Napad servisa aplikacije podrazumeva ponašanje napadača koje cilja na privatnost korisnika. Metode napada u ovom slučaju jesu: identity privacy i transaction information napadi.

Napadi na blokčejn sisteme su u jednom od radova (Kausar et al., 2022, 4301) podeljeni u dve grupe: napadi orijentisani na jezgro i napadi orijentisani na klijente. U grupu napada koji su orijentisani na jezgro mogu se ubrojati metode: Eclipse napad, Sybil napad, DNS napad, BGP hijacking and spatial partitioning, DDoS napad, Stress testing napad, Memory pool flooding napad, Block withholding napad, Finney napad, FAW napad, 51% napad, Selfish mining napad, Consensus delay i Timejacking napad. S druge strane, kod napada orijentisanih na klijente svrstavaju se Wallet theft, Cryptojacking napad, Double spending napad, Transaction malleability i Liveness napad.

U jednom od radova (Narayanan et al., 2016, 161) objašnjeno je da u situaciji kada se pronađe novi blok, podrazumevano ponašanje je da se to odmah objavi mreži. Međutim, napad Block withholding podrazumeva da se odstupi od takvog ponašanja i da napadač vrši dalje rudarenje u nadi da će pronaći dva bloka zaredom pre nego što ostatak mreže dođe do jednog. Dakle, napadač drži informacije u tajnosti sve vreme.

Napadači kroz napad 51% mogu da stvore duži lanac blokova u sistemu, a što podrazumeva da će sistem blokove poštenih učesnika učiniti nevažećim. Sayeed i Marco-Gisbert (2019, 5-6) objašnjavaju 51% napad kao napad koji se dešava kada napadač poseduje 51% snage heširanja. Ovaj napad počinje privatnim stvaranjem lanca blokova, koji je potpuno izolovan od prave verzije lanca. U kasnijoj fazi, izolovani lanac se predstavlja mreži da bi se uspostavio kao najduži lanac, a samim tim i kao pravi lanac. Kod ovog oblika napada nije neophodno da se dobije 51% moći heširanja, odnosno ako napadači dobiju manje procenata moći napad je moguć, ali sa manjom verovatnoćom uspeha.

Kod pool hopping napada napadač se pridružuje rudarskom pulu (mining pool) sa najvećim prihodom nakon analize prihoda više rudarskih pulova i na taj način poboljšava svoj prihod i utiče na efektivnu računarsku snagu u rudarskom pulu (Chen et al., 2022, 12). Drugim rečima, pool hopping podrazumeva vezivanje za rudarski pul u situaciji kada je njegova atraktivnost visoka i njegovo napuštanje kada ona nije, tj. usmeravanje računarske snage ka drugoj alternativi (Belotti et al., 2018, 2). Ovo znači da napadač iz rudarskog pula može da dobije više nego što mu doprinosi. U jednom od radova (Rosenfeld, 2011) pool hopping se objašnjava kao situacija u kojoj će napadač vršiti rudarenje u jednom pulu do određenog trenutka, a zatim će preći u drugi, pri čemu će dobiti nagradu za rudarenje u prvom pulu. Navedeno podrazumeva da će na osnovu preduzetih radnji napadač pre izlaska iz prvog pula dobiti određenu nadoknadu, iako su pošteni rudari završili rudarenje i došli do novog bloka nakon napadačevog izlaska iz datog rudarskog pula. Rudari koji napuštaju jedan rudarski pul utiču na smanjenje njegove ukupne heš snage, a što utiče na dalje rudarenje u smislu smanjenja uspešnosti ovog procesa (Singh et al., 2019, 1). Situacija u kojoj postoji veći broj učesnika koji prelaze iz jednog rudarskog pula u drugi je neodrživa. Svaki rudarski pul iz kog se može ovako izlaziti će doći u situaciju manje privlačnosti, a kada se ovo desi smanjiće se broj učesnika koji u njemu rudare i on će trajno zadržati ovakav status (Rosenfeld, 2011, 23).

U slučaju selfish mining napada, nepošteni rudari sakrivaju podatke i na taj način nanose štetu drugim poštenim rudarima (Vokerla et al., 2019, 5). U jednom od radova (Kausar et al., 2022, 4303) objašnjava se da napadač u slučaju selfish mining napada tajno dolazi do novih blokova i to ne objavljuje ostalim učesnicima sistema. Zatim, kada lanac blokova napadača postane duži od lanca blokova koji su kreirali pošteni učesnici on to objavljuje. Ovakav napad zapravo poništava blokove poštenih učesnika. Drugim rečima, u situaciji kada napadač prvi rudari blok on neće emitovati taj blok u lanac, ali će, kada pošteni rudari uspešno dođu do novog bloka, emitovati i svoj blok i prouzrokovati račvanje mreže (Chen et al., 2022, 12). Tada, pošto napadač ima skrivene blokove, lanac blokova koji on predlaže će biti duži i nadogradnja lanca će se nastaviti po liniji koju je predložio napadač prilikom račvanja.

DDoS je jedan od najčešćih napada u blokčejn mreži koji koriste napadači da ometaju autentične transakcije tako da se nevažeće transakcije mogu izvršiti (Sayeed i Marco-Gisbert, 2019, 5). Napadač preopterećuje mrežu velikim brojem zahteva, odnosno informacija, čime mrežne resurse čini nedostupnim korisnicima, odnosno dovodi do stanja da ona ne reaguje na transakcije (Aggarwal i Kumar, 2021, 406). U ovakvoj situaciji, zbog zagušenosti sistema, napadač može pokrenuti i druge vrste napada, kao što je, na primer, napad dvostruke potrošnje (Shetty et al., 2019, 58).

Aggarwal i Kumar (2021, 404) objašnjavaju Sybil napad kao situaciju u kojoj napadač stoji iza više učesnika istovremeno, odnosno napadač manipuliše mrežom i kontroliše celu mrežu kreiranjem više lažnih identiteta. Stvoreni različiti identiteti izgledaju kao pravi učesnici, ali zapravo nepoznati napadač kontroliše sve ove lažne učesnike. Napadač kroz lažne identitete uspeva da validira neadekvatne transakcije i uključi nove blokove u lanac blokova (Sayeed i Marco-Gisbert, 2019, 5). U ovom

slučaju napadač uspeva da nadglasa poštene učesnike mreže, odnosno kroz kreirane lažne identitete napadač stiče veliki uticaj na blokčejn sistem. Sybil napad predstavlja situaciju u kojoj napadač kontroliše onoliko identiteta koliko mu je potrebno da utiče na konsenzus i da izazove ishod koji ide u njegovu korist (Ferdous et al., 2020, 8) i zbog kog je pokrenuo napad. Napadač koristi lažne identitete za komunikaciju sa poštenim učesnicima, ovi učesnici zatim koriste vreme i resurse za komunikaciju sa napadačem i ne dobijaju na vreme validne informacije (Chen et al., 2022, 14). Dakle, u slučaju napada Sybil, napadači mogu da spreče validaciju određenih transakcija.

U slučaju eclipse napada, napadač izoluje žrtvu od ostatka svojih kolega na nivou mreže, kontrolišući njene dolazne i odlazne veze (Nayak et al., 2016, 305). Napadač prvo utiče na proces komunikacije između ciljnog čvora i okolnih poštenih čvorova, a kada se ciljni čvor poveže samo sa zlonamernim čvorom, napadač može da utiče na njega i dalje kontroliše efektivnu računarsku snagu ciljnog čvora (Chen et al., 2022, 14). Eclipse napad znači izolaciju i kontrolu ciljnog čvora, a što može dovesti do realizacije drugih napada (Yves-Christian, 2018, 4), odnosno suština ovog napada je u stvaranju mogućnosti za izvršenje drugih vrsta napada na blokčejn sisteme (academy.binance.com). Na osnovu navedenih aktivnosti, napadač može lako da izvrši napad dvostruke potrošnje (Aggarwal i Kumar, 2021, 405), odnosno na osnovu neadekvatnog pogleda na mrežu koji ima ciljni čvor omogućava se napad dvostruke potrošnje (Conti et al., 2018, 3431). Takođe, vršenje eclipse napada može se iskoristiti za stvaranje uslova za lakše sprovođenje napada 51% (academy.binance.com).

Kada zlonamerni učesnici ciljaju na privatnost korisnika postoje dva pristupa. Kako Chen et al. (2022, 15-16) objašnjavaju identity privacy napad podrazumeva situaciju u kojoj napadač dobija informacije o drugim učesnicima sistema. Napadač kod ove vrste napada može da lažira identitet poštenih učesnika i time ih ugrozi. Isti autori napad transaction information objašnjavaju kao situaciju u kojoj zlonamerni učesnici dolaze do istorije transakcija na osnovu kojih stiču saznanja o ponašanjima učesnika.

Double spending napad ili napad dvostruke potrošnje je problem koji znači trošenje iste kriptovalute dva puta, a da bi se sprečilo nastajanje ovog problema potrebno je da mreža ostane decentralizovana tako da jedna strana ne može da preuzme kontrolu nad svim transakcijama u njoj (Aggarwal i Kumar, 2021, 400). U radu koji objašnjava vrste blokčejn napada (Kausar et al., 2022, 4303) naznačava se da dvostruka potrošnja podrazumeva korišćenje jednokratne transakcije dva ili više puta. Kao primer za ovu vrstu napada može se navesti situacija u kojoj osoba A želi da plati osobama X i Y istim novčićem.

Pregled istorijskih napada na blokčejn sisteme

Za istraživanje koje je sprovedeno korišćeni su prethodni radovi, akademske studije i članci koji su se bavili napadima na blokčejn sisteme i čiji su predmet posmatranja bile različite kriptovalute. Analizirana su istraživanja koja su ispitivala ove napade, a u obzir su uzeti i izvori koji detaljno prikazuju specifične oblike napada. Posmatrani slučajevi su raspoređeni prema vrsti napada (51% napad, DdoS napad i drugi), analizirana je njihova jačina, trendovi u napadima, kao i posledice koje su se ispoljile. U istraživanju je primenjeno sistemsko mišljenje, odnosno, oslanjajući se na teorijske osnove istraživanog problemskog područja izvedeni su zaključci o vezi svih elemenata blokčejn sistema. Korišćene su i metode indukcije i dedukcije. Polazeći od pojedinačnih napada, izveden je zaključak koji se odnosi na celokupno problemsko područje, dok se, s druge strane, pošlo od opšteprihvaćenih teorijskih saznanja kako bi se bolje razumeli pojedinačni oblici napada. U radu je korišćena kvalitativna ekonomska analiza u cilju boljeg razumevanja uzroka i efekata napada na blokčejn sisteme.

Tabela 1 - Pregled napada 51% kroz istoriju

Oblik		Meta napada-Kriptovalute	Posledice
51% Napad	2012.	CoiledCoin	Dvostruka potrošnja
	2013.	Terracoin i Feathercoin	Dvostruka potrošnja
	2016.	Shift i Krypton	Dvostruka potrošnja
	2018.	Bitcoin gold	18 miliona dolara dvostruke potrošnje
	2018.	ZenCash	550.000 dolara dvostruke potrošnje
	2018.	Vertcoin	100.000 dolara dvostruke potrošnje
	2019.	Vertcoin	Dvostruka potrošnja
	2020.	Ethereum Classic - kroz tri napada	Prvim napadom reorganizovano je 3.693 bloka, drugim 4.000 blokova i trećim 7.000 blokova
	2020.	Bitcoin gold	70.000 dolara dvostruke potrošnje
	2021.	Verge	Reorganizovano je više od 560.000 blokova i procenjeni iznos krađe je 1,7 miliona dolara
	2021.	Firo (ranije poznat kao Zcoin)	Reorganizacija blockchaina i dvostruka potrošnja

Izvor: Pregled autora

Tabelom 1 prikazani su neki od napada 51% u period od 2012. do 2021. godine. 51% napad je bio izuzetno redak pre 2018. godine, neki od napada jesu bili CoiledCoin 2012. godine, Terracoin i Feathercoin u 2013. godini, kao i mali projekti Shift i Krypton 2016. godine (Shanaev et al., 2019, 69). Štete koje su nastale ovim napadima su manjih vrednosti od onih koje se pojavljuju kasnije. Nakon 2018. godine, broj ovih napada se povećava. Neki od njih jesu napadi na Bitcoin gold, ZenCash, Bitcoin SV, Vertcoin, Ethereum Classic, Verge, Firo (Zcoin).

Kao napadi nakon 2018. godine mogu se navesti napadi na Bitcoin gold. Informacije koje govore o ovim napadima (Redman, 2018; Redman, 2020) prikazuju da je Bitcoin gold (BTG) sistem maja 2018. godine pretrpeo ovaj vid napada. Napad je doveo do ukupnog gubitka od 388.000 BTG (18 miliona dolara). Ponovni napad izvršen je januara 2020. godine. U ovom napadu uklonjeno je 29 blokova kroz blokčejn reorganizaciju, odnosno, prvo je uklonjeno 14 blokova i dodato novih 13, dok je drugog dana uklonjeno 15 i dodato 16 blokova. Ovi napadi uticali su na dvostruko trošenje BTG kriptovalute, odnosno potrošeno je više od 7.000 BTG (70.000 dolara) za dva dana. Nedostatak heš snage iza BTG mreže čini blokčejn izuzetno ranjivim na 51% napade. Rešenje za ovo vidi se u promeni algoritma konsenzusa čime bi se poboljšala sigurnost sistema. Nakon izvršenog napada, cena Bitcoin gold-a su porasle za 9%, što je suprotno od očekivanog.

Napad 51% izvršen je juna 2018. godine na ZenCash mrežu (Hrones, 2018; Avan-Nomayo, 2018). Ovim napadom izazvan je gubitak koji se procenjuje na 550.000 dolara, kroz dve transakcije. Napadač je reogranizovao lanac blokova nekoliko puta, odnosno napadom je obuhvaćeno oko 110 blokova, a što je trajalo manje od četiri sata. Procenjuje se da je napadač potrošio oko 30.000 dolara da bi izvršio ovaj napad. Iznos koji je potrošen odnosi se na troškove električne energije i troškove održavanja opreme potrebne za rudarenje (Molchan, 2018).

Mreža Vertcoin je takođe bila meta napada 51% u dva navrata 2018. i 2019. godine (Redman, 2019). Tokom prvog napada reorganizovano je 300 blokova od strane napadača, što je izazvalo 100.000 dolara duple potrošnje. Nakon ovog napada usledila je revizija algoritma po kome je mreža funkcionisala. Tokom drugog napada, iz lanca je uklonjeno 603 bloka i zamenjeno sa 553 napadačkih blokova. U slučaju drugog napada, izvršioci nisu imali značajne koristi od napada, pa se pretpostavlja da cilj nije bio zarada, već dokazivanje slabosti samog sistema.

Primer napada 51% jeste i Ethereum Classic - ETC (Voell, 2020a). Na ovaj sistem napadi su izvršeni tokom avgusta 2020. godine tri puta. Prvim napadom reorganizovano je 3.693 bloka, drugim napadom reorganizovano je 4.000 blokova, dok je trećim reorganizovano 7.000 blokova. Kod ovih napada, čini se da kriptovaluta nije pogođena u velikoj meri, odnosno cena nakon svih napada bila je 6,86 dolara, dok se tokom avgusta kretala u rasponu od 6 do 8 dolara. Nakon izvršenih napada, aktivnosti koje su preduzete da bi se sprečili ponovni napadi pre svega su usmerene na povećani monitoring i promenu algoritma. U slučaju prvog napada izvršena je dupla potrošnja u iznosu od 5,6 miliona dolara (Foxley, 2020). Kod drugog napada, napadač je pokušao da udvostruči 465.444 ETC, u vrednosti od približno 3,3 miliona dolara, ali je uspešno udvostručio 238.306 ETC u vrednosti od približno 1,68 miliona dolara (Voell, 2020b).

Još jedna od mreža kriptovaluta koja je bila pogođena napadom 51% jeste Verge (Redman, 2021). Sam napad dogodio se 2021. godine, a rezultirao je krađom od 1,7 miliona dolara. Smatra se da je ovo jedna od najdubljih reogranizacija lanca blokova koja se dogodila, odnosno reorganizovano je više od 560 hiljada blokova. Činjenica koja Verge mrežu čini podložnijom napadima jeste niža cena potrebna za postizanje 51% moći napadača u odnosu na druge blokčejn sisteme. Razlog niže cene za postizanje većinske moći napadača jeste manja potrebna brzina rudarenja (hashrate) u odnosu na jače sisteme kao što je, na primer, Bitcoin.

Kako je objavljeno (Garg, 2021) Firo, ranije poznat kao Zcoin je bio predmet napada 51% januara 2021. godine. Navodi se da osnovni motivi napada nisu finansijski, već je cilj bio narušiti reputaciju sistema. Napad je otkriven kada su ranije potvrđene transakcije postale nepotvrđene. Takvo stanje bilo je rezultat reorganizacije blokčejna od strane napadača, a što je dotaklo 306 ranijih blokova.

Zajedničko za sve pomenute slučajeve napada 51% jeste da su napadači iznajmljivali brzinu rudarenja (hashrate). Time je jačana njihova moć u odnosu na poštene učesnike sistema i omogućavalo se izvršenje napada. Brzina rudarenja predstavlja broj hešova koji se izračunaju u sekundi, pri čemu izolovanost više od 50% brzine rudarenja mreže stvara mogućnost napada 51% (Kausar et al., 2022, 4302). Kao strana koja je iznajmljivala snagu za rudarenje kriptovaluta kod većine napada navodi se platforma NiceHash. U slučaju napada 51%, napadači manipulišu vremenskim oznakama i proizvode blokove, pri čemu zarađuju na nagradama za rudarenje. U takvim situacijama napadači mogu kombinovati prethodne aktivnosti sa napadom dvostruke potrošnje da bi ostvarili veće koristi. Veličina blokčejna može biti prepreka za napad 51%, odnosno, manji blokčejn sistemi su podložniji ovom obliku napada. Napad na velike mreže iziskivao bi visoke iznose novčanih sredstava, što bi predstavljalo prepreku zlonamernim učesnicima, ili s druge strane ne bi obezbedio željene rezultate za napadače. Takođe, glavna prepreka ovom obliku napada mogu biti troškovi električne energije i troškovi održavanja hardvera (Avan-Nomayo, 2018). Utvrđeno je da je indikator rizika od pojave napada 51% veća koncentracija heš snage kod malog broja učesnika, kao i da postoji određeni obrazac ponašanja učesnika koji žele ovakav napad da sprovedu (Aponte-Novoa et al., 2021). Takođe, ukoliko se utvrdi namera za dvostrukom potrošnjom, pošteni učesnici će odbiti lanac blokova napadača, uspostaviće se okruženje bez dvostruke potrošnje i sprečiti sveukupni napad 51% (Babur et al., 2024).

Tabela 2 - Pregled ostalih napada na blokčejn sisteme kroz istoriju

Oblik napada	Godina	Meta napada-Kriptovalute	Posledice
DdoS napad	2021.	Arbitrum	Smanjenje brzine transakcija, smanjenje poverenja
	2021.	Solana	Privremeni zastoj mreže, smanjenje poverenja
Selfish mining napad	2018.	Minacoin	Šteta od 90.000 dolara
Sybil napada	2020.	Monero	Privremeno usporavanje transakcija

Izvor: Pregled autora

U Tabeli 2 prikazani su ranije izvršeni napadi DdoS, Selfish mining i Sybil. Tokom 2021. godine dogodila su se dva DdoS napada na blokčejn sisteme Arbitrum i Solana (Muchoki, 2021). U slučaju sistema Arbitrum, tokom napada, sekvencer je bio preplavljen transakcijama i bio je van mreže 45 minuta zbog preopterećenosti. Sekvencer je čvor koji ima ulogu da prima transakcije i razvrstava ih u red za uključivanje u blokčejn lanac. U ovoj situaciji, sve druge transakcije su bile ostavljene na čekanje dok se mreža ne oporavi, odnosno nove transakcije nisu uključivane i blokčejn sistem nije rastao kroz kreiranje novih blokova. Napad na sistem Solana izvršen je puštanjem 400.000 transakcija u sekundi, čime je sistem bio preplavljen, a što je otežalo njegovo dalje funkcionisanje. Sistem je bio blokiran satima, a napad je završen tek nakon ponovnog pokretanja celog sistema od strane programera. Posledice ovog napada jesu smanjenje poverenja u blokčejn sistem. Jedan od glavnih razloga za sprovođenje DdoS napada jesu protokoli koji su dizajnirani tako da ne uzimaju u obzir bezbednosna pitanja (Chaganti et al., 2022). A kao predlozi za zaštitu od ove vrste napada navodi se decentralizacija, kao i praćenje i pamćenje IP adrese napadača (Ibrahim et al., 2022).

Selfish mining napad izvršen je maja 2018. godine na Minacoin kriptovalutu (Gutteridge, 2018). Napadač je uspešno rudario i nadograđivao blokčejn sistem novim blokovima, a te informacije nisu bile dostupne ostalim rudarima. Napadač je stvorio novu granu lanca pre nego što je napad otkriven. Kako u blokčejn sistemima lanac sa najviše blokova ima veću snagu, poništavaju se svi blokovi drugih rudara. Napadač je u ovom slučaju pokušao da zameni stečenu kriptovalutu za druge valute pre nego što njegov tajni lanac bude otkriven. Izvršilac napada je imao dovoljno računarske snage da preuzme čak 57% brzine rudarenja (hashrate). Procenjeni iznos štete na blokčejn mreži kao posledica ovog napada iznosi 90.000 dolara. U jednom istraživanju (Zhou et al., 2023) navode se dve strategije koje treba da destimulišu nepoštene napadače i povećaju otpornost sistema na ovu vrstu napada, a to su povećanje poteškoća u rudarenju kada se otkrije nepošteno rudarenje i ograničavanje stope prihvatanja kada se istovremeno emituje veći broj blokova. Selfish mining napad prouzrokuje gubitak rudarske moći poštenih učesnika, a što kreira velike bezbednosne izazove u blokčejn sistemu na kome je napad izvršen (Wang et al., 2021).

Monero je bio predmet Sybil napada 2020. godine, ali ovaj napad nije imao značajnije posledice. Navodi se da je napadač pokušao da dobije informacije o učesnicima blokčejn sistema (Chipolina, 2020). Naime, napadač je pokušao da poveže transakcije sa IP adresom učesnika u sistemu, čime bi ugrozio njihovu privatnost. Napadač je namerno odbacivao određene transakcije, čime su one bile

neuspešne u samom sistemu. Zaključak je da ovaj napad nije bio dovoljno snažan da bi zadao veliki udarac Monero blokčejn sistemu. Sybil napad može narušiti kredibilitet sistema nad kojim se napad vrši, a prepoznavanje realnih identiteta zlonamernih učesnika, odnosno verifikacija njihovih indentiteta može sprečiti započinjanje ovakvog napada (Ul Haq i Saqlain, 2023).

Zaključna razmatranja

Prethodno navedena razmatranja u radu ukazuju na način funkcionisanja blokčejn sistema i osnovne postulate na kojima se ovi sistemi zasnivaju. Blokčejn sistemi su i dalje u razvoju i može se reći da je prisutna viša zainteresovanost za razumevanje osnovne svrhe blokčejna, ali i za moguće potencijalne koristi koje ovakvi sistemi donose. Blokčejn sistemi danas su svakako rasprostranjeniji nego na početku, ali može se reći da će se njihova primena tek proširiti, odnosno prepoznaje se veliki potencijal blokčejn tehnologije. Konsenzus kao značajna odlika svakog blokčejn sistema bitno utiče na donošenje odluka i samo kreiranje lanca blokova. Može se zaključiti, na osnovu teorijskih tvrdnji, da će u redovnim okolnostima, kod donošenja odluka, pošteni učesnici blokčejn sistema preovladati zlonamerne učesnike i samim tim neadekvatne transakcije neće biti prihvaćene i uključene u blokove sistema.

Blokčejn sistemi posmatrano kroz istoriju bili su više puta predmet napada, a ovi napadi su se vršili na različite načine. Kroz vreme broj napada se povećavao, i može se reći da je jačina tih napada rasla. Treba napomenuti da je napade lakše bilo izvršiti na sisteme koji su manji i kod kojih je napadačima bilo potrebno manje računarske snage kako bi sproveli svoje zlonamerne akcije. Najčešći oblik napada koji se u javnosti objašnjava jeste napad 51%. Najpoznatiji napadi ove vrste jesu napadi na Bitcoin gold i Ethereum Classic. Kod njih, zlonamerni učesnici su dobili većinsku snagu, time bitno uticali na transakcije i kreiranje blokova u sistemu. Napadi ove vrste su najčešće kombinovani sa napadom dvostruke potrošnje. Njihov cilj bio je prisvajanje sredstava, a iznosi su bili više hiljada dolara.

Na osnovu posmatranih istorijskih napada na blokčejn sisteme može se dati odgovor na postavljeno istraživačko pitanje, odnosno napadi na blokčejn sisteme nisu dugoročno uticali na njihovu stabilnost. Iz primera posmatranih istorijskih napada, može se zaključiti da su oni uticali na privremenu promenu cena kriptovaluta i nepoverenje u iste. Pored toga, izvršene zloupotrebe nisu imale dugoročnije posledice na postojanje kriptovaluta i funkcionisanje blokčejn sistema. Nakon završetka svakog od analiziranih napada funkcionisanje blokčejn sistema se vraćalo u redovno stanje, uz napore za poboljšanja i buduća usavršavanja u njihovom radu. Prisutni napori za unapređenje blokčejn sistema pre svega se odnose na promenu algoritma.

Osnovni doprinos rada ogleda se u celovitom prikazu različitih teorijskih osnova za posmatrano problemsko područje. Predstavljeni su različiti napadi koji su pogodili blokčejn sisteme u prošlosti. Iznete činjenice mogu ukazati na bitnost blokčejn sistema, ali i moguće značajne posledice napada na ove sisteme. Osnovna ograničenja rada odnose se na broj i vrste posmatranih napada na blokčejn sisteme. Različiti načini napada su otkriveni, odnosno različiti pristupi napadača kod zlonamernih akcija na blokčejn sisteme. Rad se bavi pojedinim oblicima napada, kao što su napad 51%, DdoS napad i slično. Da bi se stekla šira slika i izveli obuhvatniji zaključci o jačini i posledicama napada potrebno je posmatrati više njih. U skladu sa prirodom i karakteristikama blokčejn tehnologije i karakteristikama napada, ograničenje sprovedenog istraživanja jeste i nemogućnost involviranja svih aspekata posmatranih zloupotreba i napada. Takođe, manjkavost sprovedene analize jeste i nedostatak i nedostupnost svih podataka, odnosno, zbog prirode blokčejna, politike privatnosti i ostalih skrivenih podataka u istraživan-

je nisu mogli biti uključeni svi aspekti koji bi omogućili izvođenje sveobuhvatnijih zaključaka. Buduća istraživanja mogla bi obuhvatiti veći broj različitih pristupa napadima na blokčejn sisteme. Ovo bi omogućilo komparaciju posledica koje zlonamerni pojedinci izazovu svojim prodiranjem u blokčejn sisteme. Kako se napadi na blokčejn sisteme kontinuirano razvijaju, predmet budućih istraživanja mogu biti novi oblici napada, odnosno oni napadi koji su najučestaliji u proteklom period, ili oni koji su se po prvi put pojavili. Dodatno, značajno područje istraživanja mogu biti i tehnike i instrumenti za zaštitu od napada na blokčejn sisteme, odnosno koji su to načini i koje mehanizme treba razviti kako bi se napadi onemogućili ili bar učinili slabijim. Postavlja se pitanje da li su odbrambeni mehanizmi univerzalni za svaki oblik napada ili postoje određene razlike. Značajno pitanje jeste i prilagođavanje zakonodavstva i regulative u oblasti kriptovaluta i blokčejn tehnologije, kao i identifikovanje i sankcionisanje napadača na blokčejn sisteme.

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ABUSES AND ATTACKS ON BLOCKCHAIN SYSTEMS

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Abstract

Blockchain systems are ever more ubiquitous in all business sectors, but the primary user of these technologies is the financial industry. This paper aims to explore attacks on blockchain systems, specifically determining the intensity of these attacks in the past and the extent of their consequences. Throughout history, the types and methods of attacks on blockchain systems have evolved, and with that, the intensity of these attacks has increased. The results of attacks on blockchain systems are short-term instabilities that cause changes in cryptocurrency prices and a decrease in trust in them, but in the long term, attacks and abuses do not have a strong impact. In fact, there is an improvement of these systems after the attacks and abuses. The research shows that the most common type of attack is the 51% attack. The primary aim of the abuses was the misappropriation of funds, but also proving the weakness of the system on which the attacks were carried out.

Keywords: blockchain systems, cryptocurrencies, abuses and attacks, financial sector, attack 51%.

JEL classification: O33, L86, D85.

Introduction

The development trends worldwide, above all the strengthening and indispensable implementation of information and communication technologies, have significantly impacted all spheres of business and life. Blockchain technologies are attracting a lot of attention and driving an increasing number of projects in various industries, however, the financial industry is considered the primary user of the blockchain concept (Nofer et al., 2017, 183). In the financial services sector, continuous development is essential, along with the development of business and organizational processes, as well as new products and instruments (Sredojević, 2018, 84). The digital world is being improved, through blockchain, by introducing a new perspective on security, resilience and system efficiency (Ahram et al., 2017, 137) and represents a new, revolutionary technology. The mentioned system consists of a series of blocks that are interconnected, with no central institution responsible for controlling or connecting all other participants in the system. Blockchain technology is the basis of cryptocurrencies, based on a decentralized computer network. An important characteristic of blockchain system is consensus, that is, through the consensus protocol, transactions are validated, and blocks are added to the chain.

In recent years, cryptocurrencies have attracted the attention of investors in financial markets worldwide, and the area of cryptocurrencies, or virtual currencies in payment systems, is rapidly expanding (Alihodžić, 2023, 129). Over time, investing in cryptocurrencies has yielded extremely high rates of return, accompanied by high risk, with no guarantees and no investor protection (Tomić, 2020, 22-23). The potential of blockchain-based cryptocurrencies attracts a large number of investors, as well as malicious individuals. The development of the blockchain system, as well as trust in such a system, can be damaged due to attacks directed at it. There are numerous forms of attacks and methods by which attackers want to access blockchain systems in order to gain benefits.

The subject of research in this paper is different forms of attacks on blockchain systems. As relatively young systems with great potential for growing applications in the future, blockchain systems are exposed to numerous types of attack. In accordance with the defined research subject, the aim of the paper is to draw a conclusion about the size and intensity of historical attacks on blockchain systems. The effects of different forms of attacks, their consequences, but also the possibility of repeated attacks will be analyzed. Additionally, the paper will identify which forms of attacks on blockchain systems are the most frequent. In accordance with the defined subject and aim of the research, the paper will start from the following research question: *Did attacks on blockchain systems have a long-term impact on their stability?*

Basic Characteristics of Blockchain Systems

A blockchain system represents a chain of transactions that does not allow users to modify or delete previously entered data. Blockchain can be defined as a distributed database or public ledger of all transactions or digital activities that have been realized or shared between participants (Martić, 2021, 337-338). The mentioned database, in the case of cryptocurrencies, refers to the ledger of all transactions, meaning it contains a list of all participants and the amounts of coins they hold (Tomić & Todorović, 2020, 16). The chain is maintained by a network of nodes, which verify the validity of transactions and add them to new blocks in a process known as mining (Gatteschi et al., 2018, 63). If a majority of participants (nodes) in the network agree on the validity of the transactions in the block and the validity of the block itself through a consensus mechanism, the block can be added to the chain (Nofer et al., 2017, 184). Koteska et al. (2017, 3) explain that when a new block is created, it is broadcast to the

network, then all nodes receive the block, verify the block and all transactions in it. If the block is valid, all nodes add it as the next block in their local blockchain.

Blocks in the chain actually represent entries that contain information about completed transactions. The blockchain system is continuously increasing based on the transactions being carried out. Each new transaction that appears must be reconciled with the existing information in the system. If the transaction is valid and participants confirm it, a new state in the system is created.

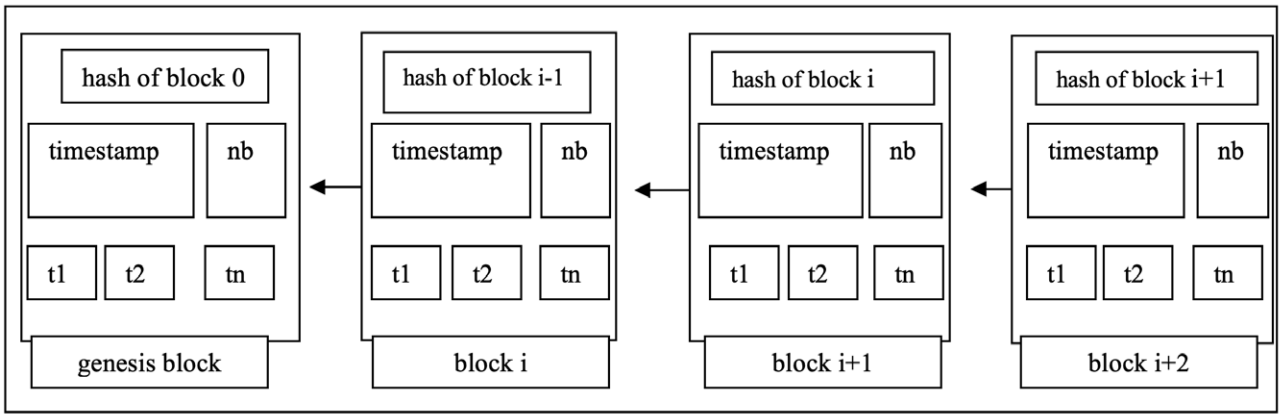
Blockchain is the technological basis of cryptocurrencies, i.e. it is a technology that has proven to be excellent in preserving large databases, as it simultaneously allows mass access and prevents malicious attacks (Tomić et al., 2020a, 41). The most significant advantages of blockchain technology in business are the costs reduction, transaction settlement speed, data verification speed and capabilities, data protection, the possibility to verify end-user and transaction reliability (Hadžić & Nedeljković, 2018, 153). Compared to conventional, centralized solutions, blockchain, which is characterized by decentralization, offers several significant advantages such as immutability, enhanced security, fault tolerance, and transparency (Fan et al., 2020, 126927).

The efficiency of the blockchain system is based on three elements - a decentralized network, consensus and cryptography (Shetty et al., 2019, 5). The functioning of a blockchain system implies the absence of a central authority and the need to reach a consensus for transaction validation and adding blocks to the blockchain. Additionally, cryptography ensures security in the functioning of the blockchain system. The two components of a blockchain system are the consensus protocol and the transaction mechanism (Kearney & Perez-Delgado, 2021, 2).

The consensus protocol refers to making decisions about adding blocks to the system and their validation. The transaction mechanism involves the method by which information is transmitted within the system. Hadžić and Nedeljković (2018, 154) summarize the basic characteristics of blockchain technology important for business implementation as follows: distributed data; the ability for all participants to conduct transactions through direct communication, which are mutually validated on the chain; anonymity; immutability of records; the ability to embed computational logic and program the execution of events or transactions within the chain structure, which are carried out upon meeting specified conditions and become instantly verified – "smart contracts". Blockchain technology enables digital information to be distributed among all participants, with each participant maintaining their own copy of all relevant information (Bolanča et al., 2018, 112). Each participant has access to the entire database, and there is no central place where data is stored, nor is there a need for a central institution to mediate and control transactions. Transactions recorded in the blockchain system are public to participants.

Figure 1 illustrates a blockchain consisting of a sequence of blocks. From Figure 1, it can be seen that each new block contains the hash of the previous block, a timestamp, and multiple transactions (from t1 to tn), as well as a random number for hash verification (nb). A hash function is mathematical function that can be efficiently calculated and transforms an input message of any size into an output message of a fixed size (Narayanan et al., 2016, 23). Using an output, fixed size increases the security of the blockchain system, i.e. attempting to decrypt the hash value based on the output size alone will not reveal the input size (Frankenfield, 2022). In fact, the hash cannot be used to obtain input data, but only to check its validity.

Figure 1 – The Blockchain System and a Sequence of Blocks



Source: Zheng et al., 2018, 355

Each block, except for the first block in the blockchain system, points to its immediately preceding block (called parent block) via a reference that is essentially the hash value of the parent block (Dai et al., 2019, 8078). Hash values are unique, and fraud can be effectively prevented since block changes in the chain would immediately change the corresponding hash value (Nofer et al., 2017, 184). A complex validation mechanism makes it almost impossible for a node to control the majority of the network, moreover, the fact that each validated block contains a reference to the previous block (secured using cryptography methods) prevents malicious modifications of recorded transactions (Gatteschi et al., 2018, 64).

Consensus Protocols in Blockchain Systems

It can be said that the development of consensus protocols is similar to the engineering of cryptographic systems and that blockchain developers should consider the established experience in cryptography, security, and distributed systems theory to building trust-based systems (Cachin & Vukolić, 2017, 20). A key characteristic of a blockchain system is that nodes do not trust each other, with some potentially behaving inappropriately (Dinh et al., 2018, 1368). In line with this possibility, there is a need for consensus. To maintain the integrity of the system, data must be confirmed and accepted by the majority of users, if not all, which means that every blockchain must have an embedded consensus protocol (Tomić et al., 2020b, 366). Consensus is a protocol in the blockchain network, which specifies the temporal validity and rules that must be followed by all participants to perform various tasks or associated transactions in the blockchain network (Bodkhe et al., 2020, 79772). Therefore, the very existence of a consensus enables blockchain system members to work as a group and to pursue a common goal, even in the presence of malicious participants.

The consensus is in line with the decentralization of the blockchain system, that is, it removes the need for a central institution that would guarantee the validity of transactions and maintain the security of the blockchain system. Narayanan et al. (2016, 54) explain how consensus is actually reached. According to them, at regular intervals, such as every 10 minutes, each node in the system proposes its own set of transactions as the next block. Then the nodes execute a consensus protocol, where each node's

input is its own proposed block. Some nodes may be malicious and may put invalid transactions in their blocks, but in such a situation it should be considered that other nodes will be honest. If the consensus protocol succeeds, a valid block will be chosen as the output. Even if the chosen block was proposed by just one node, it is a valid output as long as the block is valid. If there is a valid unexecuted transaction that was not included in the block, it can simply wait and be included in the next block

The two main types of blockchain systems are permissionless blockchains and permissioned blockchains (Dinh et al., 2018, 1366). In the first case, the state of the blockchain and its transactions, along with the stored data, is transparent and accessible to everyone, while in the case of permissioned blockchains, only authorized entities are allowed to participate in activities within the blockchain (Ferdous et al., 2020, 5). In line with the previously mentioned classification of blockchain systems, there are several consensus protocols. Some of the protocols applied in permissioned blockchain systems are: Paxos, Raft, Proof-of-authority, Practical Byzantine Fault Tolerance, Delegated Byzantine fault tolerance and Federated Byzantine Fault Tolerance (Tomić, 2021). On the other hand, the protocols applied in permissionless blockchain systems are: Proof-of-Work, Proof-of-Stake, Proof-of-Burn, Proof-of-Capacity, Proof-of-Importance, Proof-of-Activity (Tomić et al., 2020b). It can be said that the Proof-of-Work consensus protocol is the most frequently mentioned, but also the most frequently applied one. This consensus algorithm is used in the most famous cryptocurrency - Bitcoin.

Attacks on Blokchain Systems

Along with all the advantages associated with blockchain systems, there are also certain shortcomings that arise in connection with them. When there are flaws in blockchain systems, there is a possibility for attacks and abuses in them. Blockchain is a platform aimed at ensuring security and safety, while minimizing exposure to malicious attacks (Jiang et al., 2022, 1087).

In one of the research (Chen et al., 2022, 5-6), which deals with the topic of attacks on blockchain systems, it is stated that there are three forms of attack: the attack of consensus protocol, the attack of the middle protocol, and the attack of application service. In an attack of consensus protocol, the attacker's goal is to achieve additional income through involvement in the blockchain consensus results. Within this group of attacks, some of the methods include: block withholding attack, 51% attack, pool hopping attack, selfish mining attack and FAW attack. An attack of the middle protocol involves the attacker's influence on node communication and smart contracts. In the case of attacks on the communication of nodes, the methods are: DdoS attack, Eclipse attack and Sybil attack, while in the case of attacks on smart contracts, a reentrancy attack can be mentioned. An attack of application service involves the attacker's behavior that targets the user's privacy. The attack methods in this case are: identity privacy and transaction information attacks.

Attacks on blockchain systems are classified into two groups in one of the studies (Kausar et al., 2022, 4301): core-oriented attacks and client-oriented attacks. The group of core-oriented attacks includes the following methods: Eclipse attack, Sybil attack, DNS attack, BGP hijacking and spatial partitioning, DDoS attack, Stress testing attack, Memory pool flooding attack, block withholding attack, Finney attack, FAW attack, 51% attack, Selfish mining attack, Consensus delay and Timejacking attack. On the other hand, client-oriented attacks include wallet theft, cryptojacking attack, double spending attack, transaction malleability and liveness attack.

One of the research projects (Narayanan et al., 2016, 161) explains that, in a situation where a new block is found, the default behavior is to publish it to the network immediately. However, a *block with-*

holding attack involves deviating from that behavior and having the attacker continue to mine in the hope of finding two blocks in a row before the rest of the network finds one. So, the attacker keeps the information secret all the time.

Through a *51% attack*, attackers can create a longer chain of blocks in the system, which results in the invalidation of the blocks produced by honest participants. Sayeed and Marco-Gisbert (2019, 5-6) describe a 51% attack as an attack that occurs when the attacker possesses 51% of the hashing power. This attack begins with creating a private block chain that is completely isolated from the legitimate version of the chain. In the later stage, the isolated chain is introduced to the network in an attempt to establish it as the longest chain, and thus as the valid one. With this form of attack, it is not necessary to obtain 51% of the hashing power, that is, if the attackers get a smaller percentage of the power, the attack is possible, but with a lower probability of success.

In a *pool hopping attack*, the attacker joins the mining pool with the highest income after analyzing the income of multiple mining pools, thus increasing their own income and influencing the effective computational power within the mining pool (Chen et al., 2022, 12). In other words, pool hopping implies affiliating with a mining pool in a situation when its attractiveness is high and leaving it when it is not, i.e. redirecting computing power to another alternative (Belotti et al., 2018, 2). This means that an attacker can get more from a mining pool than their actual contribution. In one study (Rosenfeld, 2011), pool hopping is explained as a situation in which the attacker mines in one pool for a certain period and then switches to another, receiving the mining reward from the first pool. This implies that based on the actions taken, the attacker will receive a reward before leaving the first pool, even though honest miners have completed mining and found a new block after the attacker exits the given mining pool. Miners leaving one mining pool affect the reduction of its total hash power, which affects further mining in terms of reducing the success of this process (Singh et al., 2019, 1). A situation where there is a large number of participants moving from one mining pool to another is unsustainable. Any mining pool from which participants can exit in this manner will become less attractive, and when this happens, the number of participants who mine in it will decrease and it will permanently retain this status (Rosenfeld, 2011, 23).

In the case of *selfish mining attacks*, dishonest miners hide data and thereby harm other honest miners (Vokerla et al., 2019, 5). One research (Kausar et al., 2022, 4303) explains that in the case of a selfish mining attack, the attacker secretly mines new blocks and does not announce it to other system participants. Then, when the attacker's blockchain becomes longer than the one created by the honest participants, they broadcast it. This kind of attack actually invalidates the blocks of honest participants. In other words, in a situation where an attacker first mines a block, he will not broadcast that block to the chain, but when honest miners successfully mines a new block, they will also broadcast their block and cause the network to fork (Chen et al., 2022, 12). Then, since the attacker has hidden blocks, the blockchain they propose will be longer, and the chain extension will continue along the path proposed by the attacker during the fork.

DDoS is one of the most common attacks in the blockchain network used by attackers to disrupt authentic transactions allowing invalid transactions to be executed (Sayeed & Marco-Gisbert, 2019, 5). The attacker overloads the network with a large number of requests, i.e., information, which makes network resources unavailable to users, that is, which leads to a state that it does not respond to transactions (Aggarwal & Kumar, 2021, 406). In this situation, due to system congestion, the attacker can launch other types of attacks, such as, for example, a double spending attack (Shetty et al., 2019, 58).

Aggarwal and Kumar (2021, 404) describe a *Sybil attack* as a situation in which an attacker is behind multiple participants simultaneously, that is, an attacker manipulates the network and controls the entire network by creating multiple false identities. The created identities appear as legitimate participants, but in reality, an unknown attacker controls all these fake participants. Through these false identities, the attacker manages to validate inadequate transactions and add new blocks to the blockchain (Sayeed & Marco-Gisbert, 2019, 5). In this case, the attacker manages to outvote the honest participants of the network, that is, through the created false identities, the attacker gains a great influence on the blockchain system. A Sybil attack is a situation in which the attacker controls as many identities as they need to influence the consensus and cause an outcome that benefits them (Ferdous et al., 2020, 8) and for which they launched the attack. The attacker uses fake identities to communicate with honest participants, these participants then use time and resources to communicate with the attacker and do not receive valid information in time (Chen et al., 2022, 14). Thus, in the case of a Sybil attack, attackers can prevent the validation of certain transactions.

In the case of an *eclipse attack*, the attacker isolates the victim from the rest of its peers at the network level, controlling its incoming and outgoing connections (Nayak et al., 2016, 305). The attacker first affects the communication process between the target node and the surrounding honest nodes, and when the target node only connects to the malicious node, the attacker can further manipulate it and control the effective computational power of the target node (Chen et al., 2022, 14). An eclipse attack means isolation and control of the target node, which can lead to the realization of other attacks (Yves-Christian, 2018, 4), i.e. the essence of this attack is in creating the possibility to execute other types of attacks on blockchain systems (academy.binance.com). Based on the activities described, the attacker can easily execute a double-spending attack (Aggarwal & Kumar, 2021, 405), that is, based on an inadequate view of the network that the target node has, a double spending attack is enabled (Conti et al., 2018, 3431). Also, performing eclipse attacks can be used to create conditions for easier execution of attacks 51% (academy.binance.com).

When malicious actors target user privacy there are two approaches. As Chen et al. (2022, 15-16) explain, an *identity privacy attack* involves a situation in which the attacker gains information about other system participants. In this type of attack, the attacker can spoof the identity of honest participants and thereby endanger them. The same authors explain the *transaction information attack* as a situation in which malicious participants access the history of transactions, on the basis of which they gain knowledge about the behavior of the participants.

A double spending attack is a problem where the same cryptocurrency is spent twice, and to prevent this problem it is essential for the network to remain decentralized so that no single party can take control of all transactions within it (Aggarwal and Kumar, 2021, 400). A study explaining the types of blockchain attacks (Kausar et al., 2022, 4303) indicates that double spending involves using a single transaction two or more times. An example of this type of attack is a situation where person A wants to pay people X and Y with the same coin.

An Overview of Historical Attacks on Blockchain Systems

For the research conducted, the authors used previous works, academic studies, and articles that dealt with attacks on blockchain systems and focused on various cryptocurrencies. The research that examined these attacks was analyzed, and sources that provide detailed descriptions of specific types of attacks were also considered. The observed cases were categorized according to the type of attack

(51% attack, DDoS attack, and others), and their severity, attack trends, and the resulting consequences were analyzed. Systemic thinking was applied in the research, meaning that, based on the theoretical foundations of the investigated problem area, conclusions were drawn about the connection of all elements of the blockchain system. Inductive and deductive methods were also used. Starting from individual attacks, a conclusion was drawn that relates to the entire problem area, while, on the other hand, generally accepted theoretical knowledge was used to better understand individual forms of attacks. Qualitative economic analysis was employed in the study to gain a better understanding of the causes and effects of attacks on blockchain systems.

Table 1 - Overview of 51% Attacks Throughout History

Attack Type	Year	Attack Target - Cryptocurrencies	Consequences
51% attack	2012	CoiledCoin	Double spending
	2013	Terracoin and Feathercoin	Double spending
	2016	Shift and Krypton	Double spending
	2018	Bitcoin gold	18 milion dollars of double spending
	2018	ZenCash	550,000 dollars of double spending
	2018	Vertcoin	100,000 dollars of double spending
	2019	Vertcoin	Double spending
	2020	Ethereum Classic - through three attacks	The first attack reorganized 3,693 blocks, the second 4,000 blocks, and the third 7,000 blocks
	2020	Bitcoin gold	70,000 dollars of double spending
	2021	Verge	More than 560,000 blocks were reorganized, and the estimated theft amount is 1.7 million dollars
	2021	Firo (formerly known as Zcoin)	Blockchain reorganization and double spending

Source: Author's overview

Table 1 shows some of the 51% attacks that occurred between 2012 and 2021. The 51% attack was extremely rare before 2018, some of the attacks were CoiledCoin in 2012, Terracoin and Feathercoin in 2013, as well as smaller projects Shift and Krypton in 2016 (Shanaev et al., 2019, 69). The damages caused by these attacks are of smaller value compared to those that occurred later. After 2018, the number of these attacks is increasing. Some of them are attacks on Bitcoin gold, ZenCash, Bitcoin SV, Vertcoin, Ethereum Classic, Verge, Firo (Zcoin).

Attacks after 2018 include those on Bitcoin Gold. Information about these attacks (Redman, 2018; Redman, 2020) shows that the Bitcoin gold (BTG) system suffered this type of attack in May 2018. The attack resulted in a total loss of 388,000 BTG ($18 million). The attack was repeated in January 2020.

In this attack, 29 blocks were removed through blockchain reorganization, that is, first 14 blocks were removed, and 13 new ones were added, while on the second day 15 blocks were removed, and 16 blocks were added. These attacks resulted in a double spending of the BTG cryptocurrency, i.e. more than 7,000 BTG ($70,000) were spent in two days. The lack of hash power behind the BTG network makes the blockchain extremely vulnerable to 51% attacks. A solution to this issue is seen in changing the consensus algorithm, which would improve the system's security. After the attack, the price of Bitcoin Gold rose by 9%, which was contrary to expectations.

A 51% attack was carried out in June 2018 on the ZenCash network (Hrones, 2018; Avan-Nomayo, 2018). This attack resulted in a loss estimated at $550,000 through two transactions. The attacker reorganized blockchain several times, that is, the attack covered about 110 blocks, which lasted less than four hours. It is estimated that the attacker spent around $30,000 to carry out this attack. The amount spent refers to the costs of electricity and the maintenance of the mining equipment required for the attack (Molchan, 2018).

The Vertcoin network was also the target of 51% attacks on two occasions in 2018 and 2019 (Redman, 2019). During the first attack, 300 blocks were reorganised by the attackers, resulting in $100,000 worth of double spending. This attack was followed by a revision of the algorithm by which the network operated. During the second attack, 603 blocks were removed from the chain and replaced with 553 attack blocks. In the case of the second attack, the attackers did not benefit significantly from the attack, so it is assumed that the aim was not to make money, but to prove the weakness of the system itself.

An example of a 51% attack is also Ethereum Classic - ETC (Voell, 2020a). Attacks on this system were carried out three times during August 2020. The first attack reorganized 3,693 blocks, the second attack reorganized 4,000 blocks, while the third reorganized 7,000 blocks. In these attacks, the cryptocurrency was not significantly affected, the price after all the attacks was $6.86, while during August it was in the range of $6 to $8. After the attacks, measures taken to prevent further attacks focused primarily on increased monitoring and changes to the algorithm. In the case of the first attack, a double spending occurred in the amount of 5.6 million dollars (Foxley, 2020). In the second attack, the attacker attempted to double 465,444 ETC, worth approximately $3.3 million, but successfully doubled 238,306 ETC worth approximately $1.68 million (Voell, 2020b).

Another cryptocurrency network that was targeted by a 51% attack is Verge (Redman, 2021). The attack occurred in 2021 and resulted in the theft of $1.7 million. It is considered one of the deepest blockchain reorganizations to date, with more than 560,000 blocks being reorganized. The fact that makes the Verge network more vulnerable to attacks is the lower cost required to achieve 51% attacker power compared to other blockchain systems. The reason for the lower price for achieving the majority of the attacker's power is the lower required hashrate compared to stronger systems such as, for example, Bitcoin.

As reported (Garg, 2021) Firo, formerly known as Zcoin, was subject to a 51% attack in January 2021. It is stated that the main motives of the attack were not financial, but the aim was to damage the reputation of the system. The attack was discovered when previously confirmed transactions became unconfirmed. This situation was a result of a blockchain reorganization carried out by the attacker, affecting 306 blocks.

Common to all mentioned 51% attack cases is that the attackers rented the hashrate. This increased their power relative to the honest participants in the system, enabling the execution of the attack.

Hashrate represents the number of hashes calculated per second, where isolation of more than 50% of the network's hashrate creates the opportunity for a 51% attack (Kausar et al., 2022, 4302). NiceHash is frequently cited as the platform used for renting cryptocurrency mining power in many of these attacks. In the case of a 51% attack, attackers manipulate timestamps and produce blocks, thereby earning mining rewards. In such situations, attackers can combine these activities with a double spending attack to achieve greater benefits. The size of the blockchain can be a barrier to a 51% attack, that is, smaller blockchain systems are more vulnerable to this type of attack. An attack on large networks would require high amounts of financial resources, which could either discourage malicious actors or fail to yield the desired outcomes for the attackers. Also, the primary barriers to this form of attack can be cost of electricity and hardware maintenance (Avan-Nomayo, 2018). It has been established that an indicator of the risk of a 51% attack is the higher concentration of hash power among a small number of participants, as well as a certain behavioral pattern exhibited by participants intending to carry out such an attack (Aponte-Novoa et al., 2021). Additionally, if an intent for double-spending is detected, honest participants will reject the attacker's blockchain, creating an environment without double-spending and preventing the overall 51% attack (Babur et al., 2024).

Table 2 - Overview of Other Attacks on Blockchain Systems Throughout History

Attack Type	Year	Attack Target - Cryptocurrencies	Consequences
DdoS attacks	2021	Arbitrum	Reducing the speed of transactions, reducing trust
	2021	Solana	Temporary network outage, decrease in trust
Selfish mining attack	2018	Minacoin	The damage of 90,000 dollars
Sybil attack	2020	Monero	Temporary transaction delays

Source: Author's

Table 2 shows previously executed DDoS, Selfish mining and Sybil attacks. During 2021, there were two DDoS attacks on the Arbitrum and Solana blockchain systems (Muchoki, 2021). In the case of the Arbitrum system, during the attack, the sequencer was overwhelmed with transactions and was offline for 45 minutes due to overload. The sequencer is a node responsible for receiving transactions and sorting them into a queue for inclusion in the blockchain. In this situation, all other transactions were put on hold until the network recovered, that is, new transactions were not included and the blockchain did not grow through the creation of new blocks. The attack on the Solana system was carried out by flooding it with 400,000 transactions per second, which overwhelmed the system and made it difficult for it to function further. The system was blocked for hours, and the attack was only concluded after developers rebooted the entire system. The consequences of this attack are the reduction of trust in the blockchain system. One of the main reasons for conducting DDoS attacks is the existence of protocols designed without considering security issues (Chaganti et al., 2022). Proposed measures for protection against this type of attack include decentralization, as well as tracking and storing the IP addresses of attackers (Ibrahim et al., 2022).

A selfish mining attack was carried out in May 2018 on the Minacoin cryptocurrency (Gutteridge, 2018). The attacker successfully mined and upgraded the blockchain system with new blocks, and

that information was not available to other miners. The attacker created a new branch of the chain before the attack was discovered. As in blockchain systems the chain with the most blocks has more power, all blocks of other miners are invalidated. In this case, the attacker tried to exchange the mined cryptocurrency for other currencies before his secret chain was discovered. The attacker had enough computing power to take as much as 57% of the hashrate. The estimated amount of damage to the blockchain network as a result of this attack is $90,000. In one study (Zhou et al., 2023), two strategies are proposed to deter dishonest attackers and increase system resilience to this type of attack: increasing mining difficulty when dishonest mining is detected and limiting the acceptance rate when a large number of blocks are broadcast simultaneously. The selfish mining attack causes a loss of mining power for honest participants, creating significant security challenges in the blockchain system targeted by the attack (Wang et al., 2021).

Monero was subject to a Sybil attack in 2020, but this attack had no significant consequences. It is reported that the attacker tried to obtain information about the participants of the blockchain system (Chipolina, 2020). Namely, the attacker tried to connect the transactions with participants' IP addresses in the system, which would threaten their privacy. The attacker deliberately rejected certain transactions, which made them fail in the system itself. The conclusion is that this attack was not strong enough to deal a major blow to the Monero blockchain system. A Sybil attack can undermine the credibility of the system it targets, while identifying the real identities of malicious participants and verifying those identities can prevent the initiation of such an attack (Ul Haq & Saqlain, 2023).

Conclusion

The previous considerations in the paper highlight the functioning of blockchain systems and the basic postulates on which these systems are based. Blockchain systems are still in development, and it can be said that there is a greater interest in understanding the basic purpose of blockchain, but also in the possible potential benefits that such systems bring. Blockchain systems today are certainly more widespread than at the beginning, but it can be said that their application is only beginning to expand, recognizing the vast potential of blockchain technology. Consensus, as an important feature of any blockchain system, significantly affects decision-making and the creation of the chain itself. Based on theoretical assertions, it can be concluded that under regular circumstances, in decision-making processes, honest participants in the blockchain system will prevail over malicious actors, and thus, invalid transactions will not be accepted or included in the system's blocks.

Throughout history, blockchain systems have been the target of attacks numerous times, and these attacks were carried out in different ways. Over time, the number of attacks increased, and it can be said that the intensity of these attacks increased. It should be noted that it was easier to attack systems that were smaller and where attackers needed less computing power to carry out their malicious actions. The most common form of attack that in the public is the 51% attack. The most well-known examples of this type of attack are the attacks on Bitcoin Gold and Ethereum Classic. In these cases, malicious participants gained majority control, significantly affecting transactions and block creation in the system. Attacks of this type are most often combined with a double spending attack. Their aim was to seize funds, and the amounts were several thousand dollars.

Based on the observed historical attacks on blockchain systems, an answer to the research question can be provided, that is, attacks on blockchain systems did not affect their stability in the long-term. From the examples of the observed historical attacks, it can be concluded that they primarily caused

temporary fluctuations in cryptocurrency prices and a loss of trust in them. In addition, the abuses carried out did not have long-term consequences for the existence of cryptocurrencies and the functioning of the blockchain system. After the end of each of the analyzed attacks, the functioning of the blockchain system returned to its regular state, with efforts for improvements and future refinements in their operation. The ongoing efforts to enhance blockchain systems primarily relate to changes in algorithms.

The main contribution of the paper is reflected in the comprehensive presentation of various theoretical bases for the observed problem area. Different attacks that have affected blockchain systems in the past are presented. The facts presented may indicate the importance of blockchain systems, but also the possible significant consequences of attacks on these systems. The main limitations of the paper relate to the number and types of attacks on blockchain systems that were observed. Different methods of attack have been discovered, that is, different approaches of attackers in malicious actions on blockchain systems. The paper addresses specific forms of attacks, such as 51% attack, DDoS attack and other. To gain a broader perspective and draw more comprehensive conclusions regarding the strength and consequences of attacks, it is necessary to observe a greater number of attacks. In accordance with the nature and characteristics of blockchain technology and the characteristics of the attacks, a limitation of the conducted research is the inability to involve all aspects of the observed abuses and attacks. Additionally, a shortcoming of the analysis lies in the lack and unavailability of all relevant data. Due to the nature of blockchain, privacy policies, and other hidden information, it was not possible to include all aspects in the research that would enable the drawing of more comprehensive conclusions. Future research could include a larger variety of approaches to attacks on blockchain systems. This would enable a comparison of the consequences caused by malicious individuals challenge with its entry into blockchain systems. As attacks on blockchain systems continue to evolve, future research could focus on new forms of attacks, particularly those that have been most frequent in the recent period or those that have appeared for the first time. Additionally, a significant area of research could involve techniques and tools for protecting blockchain systems, specifically identifying the methods and mechanisms that should be developed to prevent or at least mitigate attacks. This raises the question of whether defensive mechanisms are universal for all types of attacks or whether there are specific differences. Another important issue is the adaptation of legislation and regulations in the field of cryptocurrencies and blockchain technology, as well as the identification and sanctioning of attackers targeting blockchain systems.

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STRATEGIJA I TAKTIKA PISANJA NALAZA INTERNIH REVIZORA - IZMEĐU DISKRECIJE I GRUBE STVARNOSTI

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Rezime

U naporu da se u praksu sprovede moderni pristup po kome interna revizija postaje 'savetnik od poverenja', rad razmatra prepreke koje se na tom putu pojavljuju. Nudi se konceptualni strateški model za pisanje revizorskih nalaza tako što se primećeni problemi definišu kao nestabilnosti koje je potrebno stabilizovati, a sastoje se iz: situacije (nestabilnosti), realno mogućih konsekvenci situacije (rizika), kao i perspektive okrenute ka zajednici. Takav model nudi četiri taktička pristupa definisanju revizorskog nalaza: pristup fokusiran na štetu koju nestabilnost donosi zajednici (odnosno korist koju donosi rešavanje problema), pristup koji se bazira na destabilizovanju status quo, pristup baziran na propustu u radu ili regulativi i pristup baziran na grešci. Dobro odabranim i uravnoteženim poentiranjem suštine primećenog problema interni revizori pomažu zajednici da napravi dalje korake u svom razvoju.

Ključne reči: interna revizija, nalaz interne revizije, preporuka interne revizije, definisanje problema, izveštavanje interne revizije.

JEL klasifikacija: M49, H83.

Uvod

Obično se misli da je pisanje jedna od „osnovnih" veština. Međutim, interni revizori nalaze da je potrebno mnogo prakse da bi se postigla istinska efikasnost u pisanju. Razlog za ovo leži u činjenici da cilj revizorskog pisanja nije da informišemo, zaintrigiramo ili pridobijemo čitaoca za neku ideju, već da putem napisanog promenimo način na koji ljudi gledaju na svoj rad. A to je ekstremno težak zadatak.

Drugim rečima, svrha s kojom interna revizija piše je da pomogne da se pomeri za korak unapred način na koji zajednica radi, razmišlja i posluje. I naravno, interni revizori su svesni da je teško naći zajednički jezik sa zajednicom kojoj se obraćamo, kao i da će ubrzo svako unapređenje radnog procesa koje postignemo u zajednici biti prevaziđeno novim tehnološkim inovacijama u sve ubrzanijem poslovnom svetu.

Dakle, zašto je pisanje nalaza i izveštaja tako teško za interne revizore? Generalno gledano, interna revizija u svojim izveštajima daje nalaze koji lociraju probleme u procesima jedne zajednice i daje revizorske preporuke koji pomažu u njihovom rešavanju. Ali u stvarnom svetu naši klijenti (kojima su ti nalazi i preporuke namenjeni), s punim pravom pitaju: zašto bi ja trebalo da mislim da su stvari takve – kakvim ih ti vidiš? To je normalno, nijedna zajednica ne želi da joj se mešaju u posao, ma koliko da su interni revizori u svom radu dobronamerni, taktični i korisni. I to je razumljivo: puke „dobre namere" nikada nikome nisu donele ništa dobro.

Interni revizori su poslednjih dvadeset godina tražili puteve i načine da se približe zajednicama kojima se obraćaju i povećaju uticaj svog rada. U početku su ti pristupi ličili na inspekcijski nadzor (Stanišić, 2008), a danas Institut internih revizora (Institute of Internal Auditors, IIA) zagovara pristup koji od internih revizora traži da budu 'savetnici od poverenja' zajednici kojoj se obraćaju (Chambers, 2017). To je, naravno, mudar pristup – ukoliko interni revizori pronađu način da ga sprovedu.

Problem koji komplikuje primenu ovog modernog pristupa radu internih revizora leži u dugogodišnjem nasleđu strogosti, nefleksibilnosti i samoubeđenja po kojoj su interni revizori postali zloglasni. U tom smislu, Institut internih revizora u svakoj narednoj verziji globalnih standarda interne revizije (i naročito propratnim komentarima) teži da ublaži te oštre ivice (IIA, 2024). Ali, na delu je i tvrdoglava i žilava činjenica da zajednicu interesuje samo jedno - da li im donosite nešto važno i vredno? Danas to izgleda ovako: ako uspete da ubedite zajednicu da donosite nešto što je njima važno i vredno, dobićete mesto za stolom (Chambers, 2024).

Kad smo već kod „mesta za stolom" – to govori o ljudskoj kolektivnosti i našoj potrebi da budemo prihvaćeni u okviru zajednice. Ono što se dešava za 'zajedničkim stolom' je razumevanje, sporazum i dogovor (Chambers, 2024). I ako napravimo korak dalje: mesto za stolom je mesto za ljude od poverenja.

I tu dolazimo do problematičnog dela, budući da praktično sva literatura o internoj reviziji 'poverenje' stavlja u kontekst etičkog kodeksa i revizorske etike (Chambers, 2017). Reklo bi se da interna revizija već dvadesetak godina pokušava da pronađe odgovor na to jedno pitanje: kako interni revizori dobijaju mesto za stolom? Dovoljno je pogledati ponudu različitih savetovanja, konferencija, obuka i treninga, pa da se zaključi da je odgovor na pitanje kako zadobiti mesto za stolom predstavlja revizorski Sveti gral. U tu svrhu nudimo konceptualni strateški pristup pisanju nalaza interne revizije koji povezuje revizorsko definisanje „problema" sa izborom između četiri perspektive „viđenja" tog problema kojima se zajednici pomaže da taj problem bolje razume i uspešno ga reši.

Dakle, ovom radu ćemo izložiti konceptualni model koji se oslanja na ideju korišćenja strategija i taktika pisanja za uspostavljanje razumevanja i efikasne komunikacije između internih revizora i njihovih klijenata. Drugim rečima, u nastavku ovog rada ponudićemo ideju korišćenja strategija i taktika pisanja u svrhu upostavljanja razumevanja i efikasne komunikacije među internih revizora i klijenata kojima se obraćaju. U tom smislu, poverenje proističe iz ambijenta razumevanja koje se gradi (između ostalog) načinom na koji se u revizorskom nalazu ukazuje na primećene probleme ili manjkavosti u procesima klijenta.

Konceptualno-strateški model koji predlažemo na prvi pogled deluje prilično jednostavno: primećenu nestabilnost stavljamo u kontekst rizika - ali nikada ne gubimo iz vida zajednicu kojoj se obraćamo i pomognemo joj da bolje razume locirani problem. Ovakav pristup može zvučati kao preterana simplifikacija (iako to nije), ali se zapravo suštinski podudara sa pristupom Globalnih standarda interne revizije koji integrišu etički kodeks interne revizije sa principima prakse interne revizije (IIA, 2024).

Iako Globalni standardi podrazumevaju vrlo integrisan pristup, za potrebe ovog rada nećemo ulaziti u metodologiju ocene rizika, već ćemo isključivo govoriti o strategiji pisanja nalaza i preporuka koji su se u praksi pokazali kao veoma uspešni. Prvo ćemo razmotriti razloge zašto se moramo odreći nekih starih, štetnih navika iz školskih dana, pa ćemo ponuditi konceptualni okvir i četiri moguća taktička pristupa formulisanju revizorskog nalaza i objasniti njihove specifičnosti, i na kraju, u zaključku rada, osvrnućemo se na važnost pažljivog usaglašavanja revizorskog nalaza sa osnovnom svrhom revizorskog delovanja.

Opasne navike iz školskih dana i jezik stabilnosti

Najteže je osloboditi se rđavih starih navika: recimo, navike da pišemo uvode. Funkcija tog uvoda je da se napravi okvir za ono što će se objasniti u daljem tekstu. U tu svrhu mi zamišljamo da čitalac ne zna ništa ili skoro ništa o toj temi, i onda je cilj uvoda da obezbedi dovoljno temeljnih informacija da bi čitalac mogao da ga prati kroz dalju razradu ideja. Međutim, u stvarnom životu to izaziva kontra-efekat, jer interni revizori svoje nalaze (i preporuke) pišu zajednici stručnjaka.

Pre dvadesetak godina takav način pisanja nalaza i preporuka interne bio je prilično rasprostranjen. Gledajući unazad, interni revizori su svoje nalaze najčešće započinjali sledećim uvodima:

1. Tehnikom „okvira" (najčešće putem istorijske hronologije) – koji nudi kraći ili duži istorijski osvrt i obezbeđuje stabilnu bazu odakle čitalac može da razume trenutnu situaciju – ali koji vrlo brzo iscrpi i pažnju i interesovanje osobe kojoj je nalaz namenjen.

2. Početnom definicijom – za koju interni revizor smatra da će poslužiti da se utemelji međusobno razumevanje – ali koja zapravo najčešće otvara više pitanja, nego što obezbeđuje saglasnost oko poznatog, opštepoznatog i nekontroverznog.

3. Generalizacijama koje zvuče blago pohvalno, ali koje odmah izazivaju skepticizam čitaoca. Ili korak dalje, interni revizori ponekad imaju običaj da nakon uvodne generalizacije naprave sendvič onog što zajednica dobro radi, pa nastave sa onim što ocenjuju kao manjkavost – što automatski priziva potrebu sa druge strane da odgovori na izazov „nedovoljne preciznosti".

U svakom slučaju, sva ova tri pristupa su najčešće sasvim jalova, jer vode ka istom ishodu: otvara se put raspravi o tome ko zna više o tom konkretnom pitanju. U revizorskom pisanju, takvi pristupi su potpu-

no beskorisni zato što nijedan od tih uvoda ne pokazuje zašto bi to što sledi bilo vredno čitaocu, a bez ponuđene vrednosti nema ni poverenja. U poslu interne revizije poverenje se stiče tako što se klijentu pomogne da bolje razume problem koji možda do tada nije ni primetio.

Uviđanje problema

Dakle, konceptualni pristup pisanju nalaza interne revizije modelirali smo na sledećem stavu Instituta internih revizora koji kaže ovako: kada pred sobom imamo nalaz i preporuku interne revizije, njihova vrednost se ogleda u „boljem razumevanju problema" (IIA, 2023). To je slično kao kad nam neko pokaže dve fotografije – recimo, pre i posle preuređenja dvorišta. Da bi nalaz i preporuka odgovarali svrsi, moraju biti toliko kratki i toliko „dobro skrojeni" da kada ih pročita, čitalac stiče utisak da taj problem bolje razume. To znači da nalaz u par rečenica dovodi čitaoca u situaciju da oseti sumnju da je ipak postojalo nešto neadekvatno u njegovom pređašnjem razumevanju. Upravo tu je trenutak magije: da bi nakon čitanja teksta čitalac osetio da bolje razume neko pitanje, mora se pojaviti trenutak kada shvati da ranija situacija nije bila adekvatna.

U ovom modelu funkciju ukazivanja na „rupe" u razumevanju možemo nazvati „građenjem problema". U tom smislu, odmah na početku nalaza (i onda još na nekim mestima), ukazujemo čitaocu na problem – koji je za njega bitan i koji on želi da razume. Videćemo da se ovo ukazivanje može postići na nekoliko načina, opet u zavisnosti od situacije: ponekad je dovoljno da se osvrnemo na zastarelost procesa, ponekad moramo da ukažemo na regulatornu ili drugu perspektivu koja je čitaocu do tada bila van vidokruga, ponekad moramo da dokazujemo neadekvatnost koju čitalac poriče. Postoji i mnogo izukrštanih varijanti ovih načina.

Drugim rečima, da bi služilo svojoj svrsi i imalo vrednost za čitaoca, nalaz mora obezbediti bolje razumevanje primećenog problema. Strukturalno gledano, ovako postavljen nalaz interne revizije obično sadrži dva dela:

Prvo, mora postojati jasna situacija nestabilnosti. Mada su nas u školi učili da za „ozbiljne" teme koristimo jezik generalizacija, stabilnosti i kontinuiteta, u stvarnom životu naši klijenti zapravo traže reči koje govore o nestabilnosti i tenziji – da bi utvrdili da li ono o čemu pišemo donosi vrednost za njih (npr. iako, mada, suprotno tome, zapravo, itd.).

Ako u revizorskom nalazu o problemu govorimo jezikom stabilnosti – to je teško čitati, a još teže razumeti, jer se od čitaoca traži da on sam „prekodira'' rečenice u jezik „problema". (Čitalac se pita: jeli ovo što piše zapravo pozitivno ili negativno - ili ja to treba da odgonetnem sam?! U svakom slučaju, vrednost za čitaoca = 0).

Drugo, mora jasno izraziti štetu koju problem podrazumeva (interni revizori to kodiraju kao „rizik"), kao i zašto interni revizori smatraju da taj rizik nije pokriven kontrolinim mehanizmima i time šteti zajednici.

Naravno, uvek valja imati u vidu da je konkretni primećeni problem samo jedan mali deo velike slagalice – i da u tom konkretnom kontekstu može imati važnost ili čak urgentnost - a može i nemati, i da ta važnost u protoku vremena može rasti ili se smanjivati (IIA, 2021). Takođe, možda stvarno postoji rizik, ali možda je to privremeno, jer se pripremaju promene u organizaciji koje će i onako rešiti taj problem. Pitanje je, dakle, koji problem u stvari vidimo, a koji pokušavamo da rešimo?

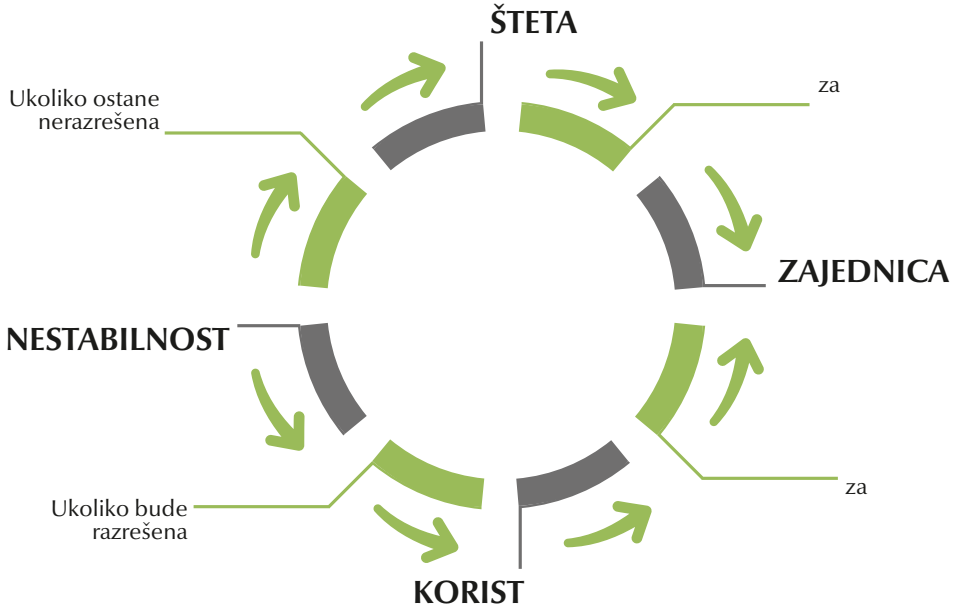
Strategija definisanja problema: lociranje nestabilnosti

Za razliku od nekih drugih vrsta pisanja, pisanje nalaza interne revizije se nikako ne svodi samo na to da angažujemo pažnju ili zaintrigiramo čitaoca. Umesto toga, osnovni kriterijum vrednosti nalaza za čitaoca je da on govori o problemu do kojeg je zajednici stalo. Ma koliko da zvuči paradoksalno, ova ideja se tek sada polako probija u revizorskim krugovima i trebaće neko vreme dok ne postane deo vladajuće revizorske (i akademske) paradigme.

U tom smislu, problem do koga je zajednici stalo možemo da definišemo koristeći tri obavezna elementa:

1. Situaciju (nestabilnost),
2. Konsekvence (rizici) i
3. Zajednicu.

Slika 1: Šema definisanja problema



Ilustracija je delo autora

Dakle, kako se definiše problem? U ovom modelu, počnemo od situacije nestabilnosti.

Da bi čitalac uočio problem, prvo mora videti situaciju kao nestabilnu. Dakle, mora videti da se nešto ne uklapa, da je nešto viška, ili da postoji manjak, ili je nešto pogrešno, ili ne odgovara svrsi, ili je necelovito, ili nije razrešeno, ili je kontradiktorno, ili postoji nešto drugo što izaziva logičku tenziju, ili nešto što izaziva konflikt, i slično.

U ovom modelu, problem je nestabilnost, a preporuka će dovesti do postizanja stabilnosti: ukazaće na to šta i kako treba dopuniti, uklopiti, ispraviti, promeniti, razrešiti, uskladiti, i sl. Dakle, tekst nalaza i preporuke projektujemo tako da se početno stanje nestabilnosti - dovede u stanje stabilnosti.

Međutim, u stvarnom svetu stvari često nisu jednostavne, što zahteva upotrebu različitih taktika definisanja problema. Ranije su interni revizori uglavnom oblikovali nalaze u pravcu identifikacije značajnijih grešaka ili propusta u radu zajednice, i to je neminovno vodilo ka viđenju interne revizije kao neke vrste inspekcijskog nadzora. U međuvremenu su interni revizori uvideli značaj stalnog unapređenja odnosa sa klijentima čiji rad razmatraju i u tu svrhu smo iskustveno razvili četiri pristupa koji uključuju i greške i propuste, ali ih pomeraju način na koji se na nih gleda. Koji će taktički pristup biti odabran za svaki pojedinačan nalaz naravno zavisi od niza faktora kao što su predmet revizije, vrsta problema koji je prepoznat, i naravno različitih specifičnosti poslovne zajednice kojoj se obraćamo.

Taktika 1: osnovna varijanta (nestabilnost + šteta/korist)

U nekim slučajevima vrednost nalaza leži u tome što je on odgovor na nestabilnosti kojih su čitaoci već svesni ali za koju nemaju jasno rešenje. Ponekad zajednica u toku revizije sama ukaže na neke probleme sa kojima se suočavaju i često se desi da se interni revizori nakon razmatranja situacije slože sa njihovom ocenom da postoji određeni rizik koji je potrebno umanjiti.

Međutim, šta ako klijent nije svestan problema ili ne vidi situaciju kao problematičnu? Tada naš posao postaje teži jer zajednici nije očigledno šta su moguće posledice zatečene situacije. Za tu svrhu moramo da ih ubedimo da će, ukoliko ne razreše nestabilnost, to imati posledica (u smislu neke vrste štete) - a da će razrešenje nestabilnosti doneti koristi.

Sasvim jasno, tu štetu (ili te koristi) će osećati i deo kompanije u kojoj je problem uočen, kao i potencijalno cela kompanija. To mora biti odmah očigledno iz nalaza. Nalaz mora biti tako napisan da odjekne u svesti klijenta. Drugim rečima, ako rizici postoje samo u oku interne revizije - zašto bi se čitalac uopšte osvrtao na takav problem?

U ovoj varijanti modela, sve se svodi na eliminaciju nestabilnosti; dakle, nakon nalaza sledi preporuka koja rešava primećeni problem. Sve što se promenilo u odnosu na osnovnu varijantu je to što sada čitaoci mogu bolje da vide vrednost nalaza – za njih same i za zajednicu.

Primer iz prakse: Na osnovu informacija objavljenih na zvaničnom sajtu institucije, kandidati ne mogu lako da razumeju koju dokumentaciju treba da dostave prilikom prijave, tako da često dostavljaju pogrešne potvrde i moraju da ih zamenjuju ispravnim kako bi kompletirali potrebnu dokumentaciju. Zbog toga veliki broj kandidata probija definisani rok za dostavljanje dokumentacije i postupak se produžava.

Preporuka koja bi odgovarala ovako definisanom nalazu, govorila bi o potrebi da zaposleni zaduženi za taj proces dopune sajt dodatnim informacijama koje će kandidatima pomoći da lakše prikupe i dostave potrebnu dokumentaciju. Iako je verovatno da je do te problematične situacije došlo usled toga što su zaposleni bili fokusirani na druge aspekte procesa, interni revizori su u tom nalazu pomerili fokus na potrebu da se početne informacije prezentovane javnosti učine jasnim, preciznim, konkretnim i korisnim za potencijalne kandidate, budući da inače postoji rizik od nepotpunog i neadekvatnog izvršenja posla.

Taktika 2: destabilizovanje status quo

Sa druge strane, zajednica može biti nesvesna ili poricati ili odbijati da vidi da postoji nestabilnost. U tim slučajevima, pred internim revizorima je jedan dodatni korak: potrebno je da ubedimo

čitaoce da postoji nestabilnost koju oni nisu primetili zato što insistiraju na posmatranju situacije samo iz jednog ugla. Dakle, moramo izgraditi situaciju nestabilnosti. tako što ćemo destabilizovati ono što naši čitaoci smatraju da je stabilno i pokazati da se radi o „eho komori", odnosno da ih njihov sopstveni ugao sagledavanja problema sprečava da vide problem. Drugim rečima: neophodno je staviti „status quo" u kontekst rizika.

„Status quo" je pojam koji ume da zavara, i zapravo ga treba shvatiti ironično, kao „promenljivu kategoriju" koja opisuje anahronost u kontekstu protoka vremena ili faze tehnološkog razvoja. Opis situacije status quo služi svrsi samo da čitalac uvidi da ono što je on smatrao za stabilno stanje zapravo nije tako stabilno. Status quo u prvom trenutku uvoda deluje celovito, ali odmah počinju da se vide pukotine. Drugim rečima, postaje jasno da je status quo zapravo izvor problema i da bi nastavak te situacije predstavljalo namerno žmurenje ili zajedničko slepilo.

Primer iz prakse: ako neki pružalac usluga stručnih obuka ili seminarskih usavršavanja ohrabruje kompanije da u što većem broju prijavljuju svoje zaposlene na te obuke, interna revizija bi mogla doći do, recimo, ovakvog nalaza: kada kompanije unapred uplaćuju naknadu za više zaposlenih jednom uplatnicom, dešava se da neko od slušalaca izostane na konkretnom događaju, ali da se, uprkos tome, prihodi (računovodstveno) priznaju i za zaposlene koji su izostali sa obuke/seminara, a kojima će se pohađanje obuke omogućiti nekom sledećom prilikom (bez naknade). Iako grupne uplate same po sebi nisu problematične, ako takva praksa dovede do pogrešnog priznavanja prihoda od naknade u poslovnim knjigama, to uvodi rizik od nepoštovanja računovodstvene regulative. U tom slučaju preporuka interne revizije (koja bi odgovarala destabilizovanju ovakve rizične prakse) govorila bi o potrebi da se obezbedi izrada pojedinačnih računa za učesnike, što će povratno dovesti do pojedinačnih uplata. Jasno je da se radi o pomeranju ugla gledanja na neophodnu usklađenost sa računovodstvenom regulativom, jer u suprotnom postoji rizik od kršenja regulative i nastanak posledica po kompaniju.

Taktika 3: propust

Ponekad, međutim, interni revizori mogu problem definisati tako što ukažu na nešto što predstavlja propust u internoj regulativi ili praksi zajednice. Međutim, iako je ovaj pristup ponekad svrsishodan, često se događa da (ukazivanje na jaz ili propust) omane u svrsi da doprinese vrednosti nalaza. Evo zašto:

U naporu da budu temeljni i objektivni veliki broj revizora teži da govori jezikom utvrđivanja propusta, ili jaza u odnosu na normativu ili proceduru. Tu interni revizori padaju u specifičnu zamku da rizike i koristi odmeravaju u odnosu na nultu bazu ili pak u odnosu na idealnu situaciju. Međutim, u stvarnom svetu ne postoje ni nulta baza, ni idealna situacija. Naš zadatak je da pomognemo da se dostigne naredni nivo razvoja, a ne idealno stanje. Takođe, ako propust ili jaz nema konsekvenci koje se ogledaju u nekom konkretnom problemu - kakva je njihova vrednost za čitaoca?

Drugo, često interni revizori koriste jezik „propusta", a u stvari govorimo o grešci. Postoji nekoliko razloga zašto se ovo događa. Prvo, čini nam se da je terminologija koju jezik propusta koristi „diskretnija". Drugim rečima, taktičnije je čitaocu reći da postoji propust u njegovom radu, nego da pravi greške.

Kada već govorimo o pritisku diskrecije, on je za interne revizore sasvim realna stvar, pa se formulisanje nalaza u modelu propusta ponekad nameće kao dobro rešenje. Ali stvar je u tome što u

stvarnom svetu propusti često donose realnu štetu veću nego greške i čitaoci revizorskih nalaza to jako dobro znaju. Dakle, „diskretnost" može poslužiti „taktici" - ali valja znati: razliku, svrhu i meru.

Obrnuto takođe važi: zajednica može našu taktičku i ublaženu formulaciju shvatiti kao cepidlačenje: davanje preteranog značaja nečemu što zapravo ne odgovara redu veličine problema. Ovo posebno važi kada nalaz „zaogrćemo" elementima koji su pohvalni za zajednicu. Dakle, taktiku diskretnog ublažavanja u definisanju propusta valja vrlo oprezno koristiti.

Prema tome, ako govorimo o propustu, moramo biti spremni da jasno iscrtamo konsekvence koji iz takvog problema proističu. Najčešće će biti neophodno da napravimo jak argument da će, ukoliko se propust ne ispravi - zajednica pretrpeti štetu. Ili pak obrnuto, potreban nam je jak argument u pravcu nečeg što propust sprečava - a zajednica zapravo želi da postigne (i želi da to bude celovito ili dobro uređeno ili vrlo efikasno i sl.).

I, kad već govorimo o snazi argumenata, često neće biti dovoljno da rizik od nekakve vrste realne štete bude implicitan, već moramo da imamo sasvim konkretne argumente. Mnoge zajednice su veoma skeptične pred navodima da u njihovom delokrugu (regulativi/praksi/metodologijama i sl.) postoje propusti koje je neophodno popuniti. Oni internim revizorima odmah daju do znanja da su u nekim trenucima razmišljali o raznim izmenama, ali da se vremenom pokazalo da čitav proces pouzdano funkcioniše i bez toga.

Dakle, ako se vratimo na primere iz prakse, taktiku „propusta" bismo mogli primeniti, recimo, na situacije predugog čuvanja nepotrebne dokumentacije ili blagu zastarelost nekih koraka u okviru procedura. U tom smislu, postavlja se metodološko pitanje procene rizika da li bi takvi propusti uopšte dobacili do nivoa nalaza (odnosno davanja revizorske preporuke) ili ostali na nivou pisanog skretanja pažnje ili napomene - što naravno zavisi od predmeta revizije i primećenog odstupanja od prihvaćenog kriterijuma kvaliteta radnog procesa.

Taktika 4: greška

U svom najgrubljem obliku, osnovna alternativa problemu baziranom na 'propustu' je problem baziran na 'grešci'. Zapravo, neke zajednice lakše prihvataju kada nalaz uobličimo tako da govori o 'grešci'.

Kada nalaz formulišemo kao grešku, kažemo da zajednica kojoj se obraćamo smatra ispravnim ono što je pogrešno, (a ne pokušavamo da kažemo da „postoji jaz u znanju ili praksi zajednice" – što bi bilo propust). Drugim rečima, dok problem „propusta" podrazumeva da van domašaja zajednice postoji nešto što bi on trebalo da zna ili ima (a ona ne zna i nema), problem „greške" govori o tome da nešto što zajednica zna i radi – zapravo nije dobro, da je pogrešno.

Ovde valja voditi računa o dve stvari. Prvo, problem baziran na grešci traži manje argumentacije u smislu štete i koristi. Ukoliko se čitalac uveri da postoji problem koji se odnosi na njegovo trenutno razumevanje o tome kako bi proces trebalo da se odvija, lakše će prihvatiti da postoji potreba da se taj problem reši. Ali to ne znači da formulacije u pravcu viđenja problema kao greške ukidaju potrebu da se razmišlja o šteti/koristi za zajednicu. Nisu sve greške isto značajne. Postoje one koje su trivijalne. A nalaz kojim se ispravljaju trivijalne greške ne vodi ka uspostavljanju odnosa poverenja.

Drugo, na problem koji je konstruisan kao greška, čitalac najčešće odgovara sumnjom da greška postoji. Dakle, dok se kod propusta najčešće susrećemo sa potrebom argumentacije štete i koristi, kod problema greške otvara se pitanje dokaza da postoji takvo nešto što smatramo greškom, ili pak dokaza da se zapravo radi o grešci, a ne nečem drugom.

Primer iz prakse: u cilju efikasnosti, a mimo procedure procesa obavljanja posla, zaposleni (iz neznanja o mogućim rizicima), prima poslovnu dokumentaciju na poslovnu mejl adresu. Preporuke koje bi odgovarale takvoj „grešci" vodila bi traženju bezbednijeg kanala komunikacije (npr. kroz skenirane kanale), kao i podizanju svesti zaposlenih o neophodnosti sprovođenja mera sajber-bezbednosti.

Pa ipak, ne bi valjalo ishitreno zaključiti da je lakše izgraditi problem taktikom „greške", nego u taktici „propusta". Razlike između ovih taktika su stvarne i služe tome da lakše predvidimo kako će zajednica reagovati na njih i pritiske sa kojima ćemo se susresti. U suštini, najčešće odluka pada na onaj pristup sa čijim pritiscima imamo više izgleda da uspešno zaobiđemo rizike i/li uspostavimo adekvatne interne kontrole.

Zaključak

Naravno, uvek moramo imati na umu da funkcija našeg pisanja nije da razrešimo svaku nestabilnost. Drugim rečima, konstrukcija problema je korisna ukoliko je oblikovana tako da je čitalac i njegova zajednica vide kao svoje - i mogu je rešiti (IIA, 2023). Interna revizija je uspešna onda kada njeni nalazi dovode do razumevanja situacije nestabilnosti koju zatim zajednica uspešno razreši.

Takođe, ne bi valjalo iz ove diskusije izvući zaključak da je za svrhu i vrednost nalaza uvek neophodno pisati samo o velikim problemima. Sjajno je ako smo u prilici da primetimo i rešimo neki sistemski bitan problem, ali takvi problemi najčešće ne bivaju rešeni jednim revizorskim nalazom ili revizorskim izveštajem. U stvarnom životu obično težimo da rešimo one probleme koji će omogućiti zajednici da napravi dalje korake u svom razvoju.

Drugim rečima: sve o čemu interna revizija piše usmereno je ka zajednici čije vrednosti interna revizija štiti – a to (pored pomenutih pritisaka) ima i svoje prednosti - jer na rešavanju tih problema radi čitava zajednica, a ne samo interna revizija.

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STRATEGY AND TACTICS OF WRITING INTERNAL AUDITORS' FINDINGS – BETWEEN DISCRETION AND HARSH REALITY

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Summary

In an effort to put into practice a modern approach whereby internal audit becomes a 'trusted advisor', the article discusses the obstacles that internal auditors face. A conceptual strategic model is then offered in which internal auditors can write their findings by defining observed problems as instabilities that need to be stabilized and as such consists of: a situation (instability), realistically possible consequences of the situation (risk), and a community-oriented perspective. Proposed model offers four tactical approaches to defining an audit finding: an approach focused on the detriment that instability brings to the community (that is, the benefits brought by solving the problem), an approach based on destabilizing the status quo, an approach based on an omission in practice or regulation, and an approach based on error. Through well-chosen and balanced formulation, the essence of the observed problem, internal auditors help the community to take further steps in its development.

Keywords: internal audit, internal audit finding, internal audit recommendation, problem definition, internal audit reporting.

JEL classification: M49, H83

Introduction

Writing is usually thought of as one of the 'basic' skills. However, internal auditors find that it takes a lot of practice to achieve true writing efficiency. The reason for this lies in the fact that the goal of audit writing is not to inform, intrigue or win the reader over to an idea, but to change the way people look at their work through what is written. However, that is an extremely difficult task.

In other words, the purpose of writing internal audit findings is to help move one step forward the way the community works, thinks and does business. And of course, internal auditors know that it is very difficult to find a common ground with the community we address, and that every improvement we achieve within the community will soon be overrun by new technological innovations in an increasingly fast-paced business world.

So, why is it that writing findings and reports is so difficult for internal auditors? In general, internal audit reports provide findings that locate problems in a community's processes and provide audit recommendations to help resolve them. But in real life our clients (to whom your findings and recommendations are intended), have every right to ask: why should I think that things are the way you see them? That kind of thinking is to be expected as no community wants anybody to interfere in their work, no matter how well-intentioned, tactful and useful the internal auditors might be in their work. And that's understandable: mere 'good intentions' have never brought anyone any good.

Over the past twenty years, internal auditors have been looking for ways and means to get closer to the communities they address and increase the impact of their work. In the beginning, these interventions resembled inspection supervision (Stanišić, 2008), but today the Institute of Internal Auditors (IIA) advocates an approach that requires internal auditors to be 'trusted advisors' to the community they address (Chambers, 2017). That is, of course, a wise approach – if only internal auditors could find a way to put it into practice.

The problem that complicates the application of this modern approach lies in the long-standing legacy of rigidity, inflexibility and self-belief for which internal auditors have become notorious. To be fair, the Institute of Internal Auditors has been trying to smooth over those rough edges in every successive version of the Global Internal Audit Standards (GIAS) and especially the accompanying commentaries (IIA, 2024). However, there is also an old and stubborn fact that the community is interested only in value and importance of what internal auditors bring to the table. In other words: if you manage to convince the community that you bring along something that is of importance and value to them, you will be granted a seat at the table (Chambers, 2024).

The notion of 'seat at the table' speaks of human collectivism and our need to be accepted within a community. What happens at the 'common table' includes: understanding, cooperation and agreement (Chambers, 2024). And if we take it a step further, it might be said that a place at the table is a place for the trustworthy.

At that point we come to the problematic part, since practically all literature on internal audit places 'trust' in the context of audit ethics (Chambers 2017). It seems that internal audit has been trying to find an answer to that one singular question for twenty years. One look at the plentiful offer of conferences, trainings and workshops throughout the year speaks to the conclusion that getting a proverbial 'seat at the table' is the auditor's Holy Grail. To this end we offer a conceptual strategic approach to writing internal audit findings that brings together auditors' definition of a 'problem' with a choice between four perspectives of 'seeing' that problem aimed at helping the community to better understand it and then solve that problem.

In this article, we will outline a conceptual model that relies on the idea of using writing strategies and tac-

tics to establish understanding and effective communication between internal auditors and the clients they address. In other words, in the remainder of this paper, we will offer the idea of using writing strategies and tactics to establish understanding and effective communication between internal auditors and the clients they address. Trust, therefore, comes then from an environment of mutual understanding that is built (among other things) by tactfully and clearly pointing out the observed problems or deficiencies in the business processes of our clients.

At first glance the proposed conceptual model seems quite simple: the idea is to put the observed instability in the context of risk - but never to lose sight of the community we are addressing and to help them better understand the located problem. Although this approach might seem overly simplistic (although it is not), it operationalizes the idea of integrating the Code of Ethics of Internal Auditing with the main principles of internal audit practice - as reflected in the current Global Internal Audit Standards (IIA, 2024).

The Global Internal Audit Standards call for a highly integrated approach, but for the purposes of this article we will not go into the risk assessment methodology, but will exclusively focus on the strategy of writing internal audit findings and recommendations that were proven as successful. To this end, first we must give up some old, harmful habits from our school days. Then we offer four possible tactical approaches to writing auditing findings and their characteristics, and finally in the conclusion we will tie up the importance of aligning the audit finding with the basic aim of the internal audit function.

Dangerous Habits from School Days and the Language of Stability

The most difficult thing is to get rid of the old and faulty habits: for example, the habit of writing introductions. The function of an introduction is to create a framework for all that is going to be explained later. To this end, we most often imagine that the reader knows next to nothing about the topic. The aim of such an introduction is to provide enough background so that the reader could follow the elaboration of the ideas. In real life, this can easily backfire, as internal auditors write their findings (and recommendations) to a community of experts.

However, about twenty years ago, this way of writing internal findings and recommendations was quite widespread. In retrospect, internal auditors often began their findings with the following introductions:

1. Using the 'framing' technique (most often by offering chronology) - which includes a shorter or longer historical introduction and provides a stable base from which the reader can understand the current situation. This kind of introduction quickly exhausts the attention and interest of the reader to whom the finding is intended.

2. Initial definitions - which were meant to serve as a means of establishing understanding on what is well established, non-controversial, common knowledge, but sometimes raise more issues than they settle.

3. Common generalizations - they sound mildly laudatory but immediately provoke the scepticism of the reader. Also, internal auditors sometimes make a sandwich of praising the business community for what they are doing well, and then follow with perceived shortcoming - which automatically provokes the business community to respond to the challenge the internal auditors' claims as 'lacking in precision'.

For the most part these approaches are completely fruitless, because they lead to the same outcome: a debate between internal auditors and the auditees about who knows more about that particular issue. Also,

they fail to show how and why the auditors' observations bring value to the reader, and failing that, there is no trust. In the business of internal auditing, trust is gained by helping the clients to better understand a problem that they may not have noticed so far.

Problem Identification

The position taken by the Institute of Internal Auditors says that the value of an internal audit finding, and recommendation is reflected in a 'better understanding of the problem' (IIA, 2023). It's similar to the situation when someone shows us two photos - say, before and after a backyard makeover. For the audit finding and recommendation to fit the purpose, they must be so brief and so well 'tailored' that when reading them, the reader gets an immediate impression that he understands that problem better. This means that the audit finding encapsulates a situation so well that a reader instantly feels a pang of doubt that there really might have been something inadequate in their previous understanding of the issue at hand. The moment of magic is this: for the reader to feel that they understand a question better after reading the text, there must be a moment of realization that the previous situation was not adequate.

In this model, the function of pointing out 'gaps' in readers' understanding can be viewed as 'building a problem'. In this sense, right at the beginning of the audit finding (and then in some other places), we point out what the internal auditors see as the problem – which must not be immaterial and must be such that the reader really wants to understand it. We will see that this indication can be achieved in several ways, depending on the situation: sometimes it is enough to refer to the obvious obsolescence of the process, sometimes we must point out a regulatory or other perspective that was not considered, and sometimes we must prove an inadequacy that the reader denies. There are also many crossover variants of these modes.

In other words, to serve its purpose and be of value to the reader, an internal audit finding must provide a reader with a better understanding of the located problem. Structurally speaking, an internal audit finding constructed with this end in mind usually contains two parts:

First, there must be a clear situation of instability. Although in school we were taught that for 'serious' topics we should use the language of generalizations, stability and continuity, in real life our clients are actually looking for words that speak of instability and tension, since it is those tension- ridden words that signal the place where they should pay attention (although, even though, contrary to, in contrast to, etc.).

When we write a finding, if we talk about the problem in the language of stability - it is difficult to read, and even more difficult to understand, because the reader is asked to 'recode' the sentences into the language of the 'problem'. (The reader wonders: is what they wrote positive or negative - or do I have to figure it out myself?! Either way, the value to the reader = 0).

Second, it must clearly express the harm that the problem implies (internal auditors code it as 'risk'), as well as why the internal auditors believe that this risk is not covered by control mechanisms and thus might harm the community.

Of course, it should always be kept in mind that a particular problem is only one small part of a bigger puzzle - and that in that context it may have importance or even urgency - and it may not, and that this importance may increase or decrease over time (IIA, 2021). Also, there really might exist a degree of

risk, but perhaps that risk is only temporary, because changes are underway in the company that will solve that problem anyway. The question is: which problem do we see, and which problem are we trying to solve?

Problem-Defining Strategy: Locating Instability

Unlike some other types of professional writing, writing internal audit findings is by no means just about engaging the reader's attention or intriguing the reader. The basic criterion of the value of the internal audit writing is that it speaks about a problem that the readers' community cares about. Paradoxical as it may sound, this idea is only now slowly making its way in audit circles, and it will take some time until it becomes part of the ruling audit (and academic) paradigm.

In this sense, we can define a problem that the community cares about using three mandatory elements:

1. The situation (instability),
2. Consequences (risks) and
3. The community.

Image 1: Problem Definition Scheme

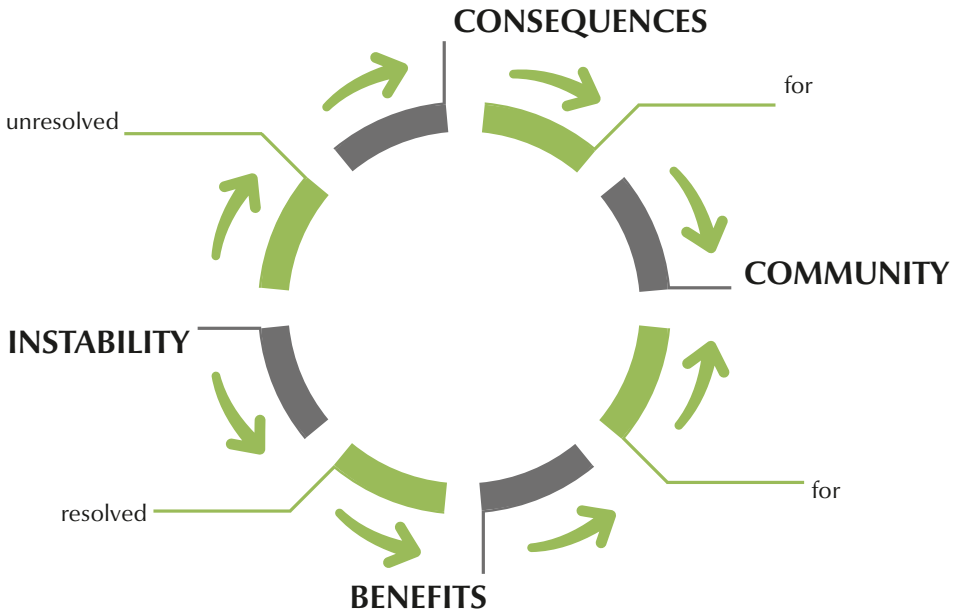

Illustration by the author.

So how do internal auditors define a problem? In this model, we start from a situation of instability.

In order for the reader to see the problem, they must see the situation as unstable. Therefore, the reader must see that something does not fit, that something is redundant, or that there is a deficiency, or that something is wrong, or that it does not fit the purpose, or that it is incomplete, or that it is not resolved, or that it is contradictory, or that there is something else that causes logical tension, or something that causes conflict, etc.

So, in this model, the problem is viewed as instability, and the recommendation is viewed as the path leading to the achievement of stability. Likewise, the corresponding internal audit recommendation reflects what and how should be supplemented, incorporated, corrected, changed, resolved, harmonized, etc. Therefore, the internal auditors structure the text of their finding and recommendation in such a way that the initial state of instability is brought to a state of stability.

However, in real life things are often not simple, requiring the use of different problem definition tactics. Previously, internal auditors had generally shaped findings in the direction of identifying significant errors or omissions in the work of the community, and this inevitably led to internal audit being seen as a kind of inspection. Meanwhile, internal auditors have realized the importance of constantly improving the relationship with the clients whose work they review, and to that end we have empirically developed four approaches that include errors and omissions but shift the way they are viewed. The choice of approach for each individual finding depends on a number of factors, such as subject of the audit, type of problem that is recognized, and of course, various specificities of the community of business we are addressing.

Tactics 1: Basic Approach (Instability + Detriment/Benefit)

In some cases, the value of the internal audit finding lies in the fact that it locates an instability that the readers were already aware of, but unable to solve. Sometimes the client comes forward and willingly points out some of the problems and, following a review, the internal auditors often agree that there is some risk involved that needs to be mitigated.

However, what happens if the client is unaware of a problem or does not see the situation as a problem? Then the task of internal auditors becomes more difficult as the client is unaware of the possible consequences of the situation. In this case, internal auditors need to point out in a convincing way the potential detriment coming from the unresolved risk, and alternatively, the benefits of resolving the instability.

Clearly, the potential detriment (as well as the benefits) will be felt first within the business line where the problem was located, and then potentially throughout the whole company. Internal audit findings must be fine-tuned in such a way that they resonate with the client. Otherwise, if the client remains unaware of the risks, or if the risks exist only in the eye of the internal audit - why should the client even bother with such a problem?

In this basic approach, it is all about eliminating instability: the findings are followed by a recommendation that solve the observed problems. The value of the internal audit finding is in zeroing in on the instability in such a way that it becomes clear that resolving it would bring clear benefits for the specific line of work and for the company.

Example from practice: Candidates who follow the guidelines on the institution's official website find it difficult to understand what documents they need to submit when applying for a (specific) certification course. They often submit wrong documents and then must replace them with correct ones to gather and send the necessary documentation. That is why many candidates break the defined deadline for submitting documentation and/or the timeline must be prolonged.

An internal audit recommendation that would correspond to the audit finding defined in this way would speak of the need for the employees in charge of that process to supplement the site with addi-

tional information that will help candidates to more easily collect and submit the necessary documentation. It is likely that this problematic situation occurred due to employees being focused on other aspects of the process, so internal auditors should point out the need to make the initial information presented to the public clear, precise, concrete and useful for potential candidates. Otherwise, the process might suffer or fail in its aim.

Tactics 2: Destabilizing the *Status Quo*

Also, the community might be honestly unaware or willingly refuse to see or even deny that instability exists. In these cases, internal auditors need to make an additional step: we need to convince readers that there is an instability that they have failed to notice since they insisted on looking at the situation from only one angle. In this case, we must build a situation of instability by means of destabilizing their 'echo chamber', which is to say we need to prove that their own angle of seeing the problem prevents them from realizing it. In other words, we need to place the *'status quo'* within the context of risk.

'Status quo' could be a misleading term, and should be understood ironically, as a 'shapeshifting category' that describes an anachronism or outdatedness in terms of technological or other type of development. The description of the *status quo* situation serves the purpose only if it makes the reader see that what he had previously considered to be a stable state might not be so stable after all. The *status quo* seems intact at first moment, but cracks immediately begin to appear. In other words, it becomes clear that the *'status quo'* is the source of the problem and that to continue with that situation would be to willfully turn a blind eye to the problem.

For example: a provider of professional training services encourages various companies to register as many of their employees as possible for these professional courses. Internal audit could bring to light a following finding: when a customer company pays in advance bulk fee for several of its employees and one of the attendees fails to show at the event, the training provider processes the advance payment as if everything went as planned and makes it up to the customer later by accepting one participant extra from that company free of charge. Bulk advance payments as such are not the issue. However, if they lead to incorrect income recognition in the account books, internal auditor's finding would first need to destabilize the notion that the practice is acceptable. The audit recommendation that would destabilize this faulty practice might call for changing the practice towards issuing individual payment receipts in order to encourage individual payments instead of bulks. Clearly, the focus is on shifting the perspective towards ensuring compliance with accounting regulations, since otherwise there arises a risk violating the accounting regulations and possible consequences for the company.

Tactics 3: Omissions

Sometimes, however, internal auditors can define the problem by pointing to deviations from internal regulations or business practice. However, while this approach sometimes has its merits, its overall value is often questionable. Here's why:

First, striving to be thorough and objective, internal auditors sometimes see the world in terms of omissions, blunders and deviations of practice in relation to norms or procedures. Here internal auditors often fall into a common trap of weighing risks and benefits in relation to a zero base or in relation to an ideal situation. However, in real life there is neither a zero base nor an ideal situation. Our task is to help the company reach the next level of development, not the ideal state. Also, if an omission

or gap has no consequence that amounts to a problem - what value do we bring to the reader on the business line that we address our findings and recommendations to?

Second, internal auditors often use the language of 'omissions', when in fact they are talking about blunders. The difference is not simply semantics, and there are several reasons why this happens. First, it seems to us that the terminology used to describe omissions or slip-ups is more 'discreet'. In other words, it is more tactful to tell the client that there was a slip-up, than a blunder.

For internal auditors, the pressure of discretion is a real thing, so sometimes discretion seems like a viable solution. However, in real life, omissions often do more real damage than honest errors, and readers know this very well. Therefore, 'discretion' can serve 'tactics' - but you should know the difference between the two, the purpose we pursue when we choose one over the other and the true measure of justified 'discretion'.

The reverse is also true: the client may take our tactful and toned-down wording of an audit finding as hair-splitting. They may view it as giving excessive importance to something that does not really correspond to what is in their view a minute-size of the problem. This is especially true when the audit findings 'sandwich' elements that describe the commendable practices with problematic ones. In any case, the tactics of discrete down-toning should be applied with caution.

Therefore, if we are talking about an omission, we must be ready to clearly outline the consequences that arise from such a problem. Most often, it will be necessary to make a strong argument that, if the omission is not corrected, the client will in some way suffer from it down the road. Or vice versa, we need a strong argument in the direction of something that the client wanted to achieve (to complete or organize or make it more efficient, etc.) and the omission prevented it from happening.

Also, speaking of the strength of internal audit arguments, it will often not be enough only to implicitly include a risk of some kind. We must have very concrete arguments in place, since many communities are very skeptical when faced with findings described as omissions or deviations in their work (either in internal procedures or practices or methodologies, etc.) that need to be addressed. They waste no time letting the internal auditors know that they have already thought it over at some point or another and concluded that the whole process works reliably regardless.

To come back to providing examples from auditing practice, if the business line stores unnecessary or outdated documentation for a longer period of time than regulations require, in most cases there would be very little risk involved in such a practice and it is questionable whether the situation would merit an internal audit finding (and a recommendation), or otherwise remain at the level of a sidenote or a footnote. The decision depends on the subject of the audit, the magnitude of the deviation and the applied criteria.

Tactics 4: Errors

In its crudest form, the basic alternative to the blunder or deviation is the 'error'. Paradoxically, some communities find it easier to accept the internal audit finding that is structured as an 'error-based problem' than as 'omission-based problem'.

When we formulate a finding as an error-based problem, we are saying that the client considers something right, but that it is wrong. To make the difference clear: if we said that "there is a gap in the knowledge or practice of the client" - that would be an omission-based problem, and not an error. In other

words, while the problem of 'omission' implies that there is something outside the reach of the client that they should know or have (but they do not know and do not have), the problem of 'error' refers to the fact that something that the client knows and does is not good and is actually wrong.

Two things should be considered here. First, the error-based problem requires less argumentation than omission-based problem in terms of detriments and benefits. If the reader is convinced that there is a problem that relates to their current understanding of how the process should work, they will more easily accept that there is a need to solve that problem. But this does not mean that internal audit finding set as error-based problem does not need to include detriment/benefit arguments. Not all blunders or errors of understanding are equally significant. There are those that are trivial. And an internal audit finding that corrects trivial errors does not lead to the establishment of a relationship of trust.

Second, when faced with an error-based problem, the reader most often responds by doubting that the error exists. So, whereas in the case of omission-based problems we commonly need to argue detriments and benefits, in the case of error-based ones we more often need to argue that it was indeed an error that had occurred and provide adequate evidence.

Example from practice: unaware of security risks, an employee allows clients to send in business-related documents through e-mail to their business address in order to foster expediency (but outside of business procedure). Seeing this as an error-of-judgement case, internal auditors could recommend looking for a safer channel of communication (e.g. through scanned channels), as well as raising the employees' awareness about the necessity of implementing cyber-security measures.

A word of caution: one should not hastily conclude that it is easier to build an error-based problem than with the one based on omission. The differences between these tactics are real and serve to help us predict and face the reactions and pressures coming from the business line we are addressing. In general, most often the decision falls on the approach more likely to successfully circumvent the risks and/or establish adequate internal controls within the business.

Conclusion

Of course, we must always remember that the function of internal audit writing is not to resolve each and every problem we encounter. In other words, the internal audit finding that points to a problem is useful if it is shaped so that the reader and his community see it as their own - and can solve it (IIA, 2023). Internal audit function is successful when its findings lead to an understanding of the situations of instability, that are subsequently successfully resolved by the community.

Also, please be aware that for the purpose and value of the internal audit findings it is not always necessary to write only about big problems. It is great if we are able to notice and resolve systemically important problems, but such issues are rarely resolved by a single audit finding or a single audit report. In real life, we usually strive to resolve those problems that will allow the business to take further steps in its development.

In other words: everything that the internal audit writes about is aimed at protecting the value of the business – which (along with the mentioned pressures) also has its advantages - since it is the whole community that works to solve the located problems, and not just the internal audit.

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GENERALNI SEKRETAR UDRUŽENJA BANAKA – LUJO MOR

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Rezime

Enigma ko je bio Lujo Mor dugo je čekala na odgovor. Ideja da se istraži njegov život i rad nastala je prilikom prikupljanja relevantnih podataka o postojanju i radu Udruženja banaka od njegovog osnivanja 1921. do 2006. godine za knjigu o ovoj bankarskoj asocijaciji pod naslovom Udruženje banaka: Zajednička kuća svih banaka. Tada dostupni podaci ukazivali su samo na činjenicu da je Lujo Mor bio generalni sekretar Udruženja banaka od 1926. do 1941. godine. Rezultat dugogodišnjeg istraživanja i prikupljanja dostupnih podataka o njegovom životu ukazuje na nepravedno zaboravljenom pomorcu, bankaru, humanisti, ljubitelju sporta, zaslužnom sekretaru koji je svojim radom doprineo ugledu Udruženja banaka čiji rad je s pravom prepoznao i kralj Aleksandar I Karađorđević odlikujući njega i druge zaslužne ordenima Svetog Save i Belog orla. Uspešnu karijeru pratile su brojne aktivnosti i van Udruženja, a sve sa očiglednom željom da Kraljevina Jugoslavija bude prosperitetna zemlja u kojoj će njeni žitelji živeti u miru i blagostanju. Sve to prekinuo je Drugi svetski rat u kome je, na njegovom početku, surovo prekinut život Luja Mora od ruku Gestapoa u logoru Banjica.

Ključne reči: Dubrovnik, Kaiseriche und Koniliche Kriegmarine, Logor Banjica, Gestapo, Austrougarska, Država SHS, poručnik fregate, Kraljevina SHS, poručnik bojnog broda II klase, Dunavsko-Kreditni zavod, Dobrila Mor, Stefanija Mor, Udruženje banaka, orden Belog orla V reda, Vlada T. Marković, Aleksandar Karađorđević, Ežen Deroko, Aleksandar Dimitrijević.

JEL klasifikacija: N24, B31.

Lujo Mor, generalni sekretar Udruženja banaka od 1926. do 1941. godine, svojim životom i radom svakako je zaslužio da bude među najznačajnijim ličnostima koje su svoja znanja i sposobnosti utkali u razvoj Udruženja banaka i sticanje njegovog ugleda u zemlji. Međutim, Lujo Mor nije svoju ogromnu radnu energiju trošio samo u bankarstvu već je bio uključen i u privredne aktivnosti svoje zemlje, sportska dešavanja i humanitarne akcije.

Ovaj Dubrovčanin po rođenju, a Beograđanin po opredeljenju tragično je nastradao od ruke Gestapoa 1941. godine.

Lujo Mor

Logor Banjica

Oskudne podatke, kako je i kada nastradao od Gestapoa nalazimo jedino zahvaljujući spisku žrtava rata 1941-1945. god. Muzeja žrtava genocida u Beogradu i Simi Begoviću koji je uz pomoć Instituta za savremenu istoriju, objavio potresna svedočenja o zlostavljanju uhapšenih u logoru Banjica od 1941. do 1944. godine.

U spisku žrtava rata (Opština Beograd Savski venac na strani 144) Muzeja žrtava genocida navodi se: Mor (Josip) Lujo, rođen 1894. Hrvat, umro 1941. u zatvoru, Beograd (0866091060).

U knjizi Logor Banjica 1941~1944. Sime Begovića saznajemo:

„U svim navedenim zatvorima je primenjivan „isledni postupak", koji se sastojao od upotrebe najbrutalnijih metoda za iznuđivanje priznanja. Zato je za mnoge uhapšenike boravak u zatvorima bio predvorje pakla, to jest ponekad gore i od logora. Ma kako čudno zvučalo, za najteže mučene zatvorenike odlazak u logor je značio izbavljenje od muka.

Od mnogobrojnih svedočenja o zlostavljanjima uhapšenika u zatvorima Gestapoa biće na čelnom mestu pomenuta izjava dr Dragomira Karajovića, lekara iz Kraljeva, data pred Državnom komisijom za istraživanje zločina okupatora i njihovih pomagača. Dr Karajović je bio lekar po zanimanju, pa je prema tome njegovo svedočenje u isto vreme i mišljenje medicinskog stručnjaka. Uhapšen je 30. oktobra 1941. godine. U gestapovskom zatvoru u Aleksandrovoj ulici (u Beogradu) ostao je do 14. februara 1942. godine. Kao lekar bilo mu je dozvoljeno da vrši povremeni pregled bolesnika i da se uz pratnju kreće od ćelije do ćelije. Jednog dana pozvali su ga da ukaže pomoć zatvoreniku Nikoliću iz Jagodine, iznad koga su kao mumije stajali namrgođeni Henig i Urlih. Nikolić je ležao u lokvi krvi, polusvestan. Koža mu je bila odlepljena od ostalog tkiva, a glava i lice potpuno deformisani. Na celoj glavi su se videle

rane iskrzanih ivica. Doktor Karajović je previo pretučenog uhapšenika, ali je on za 48 sati izdahnuo. Drugom prilikom kraljevački lekar je spazio iste gestapovce kako žestoko tuku zatvorenika Luja Mora. Tukli su ga danima. Tek kad je pao u agoniju sproveden je u bolnicu".

Gestapo u Aleksandrovoj ulici, Beograd

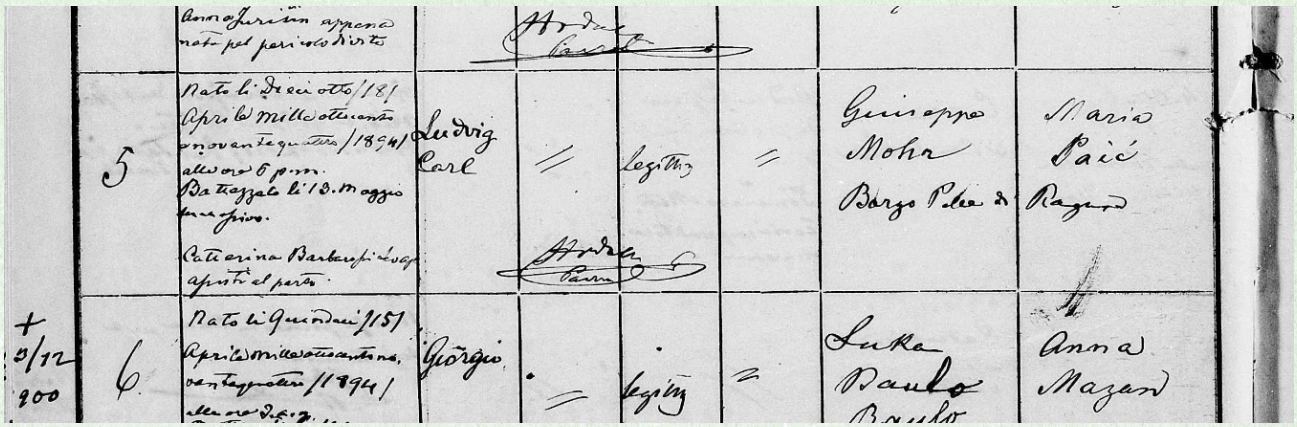
Logor Banjica formiran je 5. jula 1941. godine na inicijativu nemačkih okupacionih organa koji su imali izvršnu vlast nad logorom, u čemu im je pomogla kolaborionistička vlast, pre svega specijalna policija Uprave grada Beograda. Prvi zatvorenici su došli četiri dana kasnije, a kroz logor je prema zvaničnim podacima prošlo blizu 24.000 ljudi, najviše Srba dok je ubijeno oko 4.200 zatvorenika. Banjički logor je imao obeležje velikog političkog zatvora i ljudi su na taj način ovde i bili smeštani. Među memljivim zidovima iz kojih je zimi izbijala hladnoća i ledila krv u žilama, u sobama je boravilo od 50 – 100 pa i više zatvorenika. Najgore je bilo na zimu 1941 – 42. godine, ističe istoričar Darko Ćirić, kustos Muzeja Banjičkog logora za BBC News na srpskom. Najveći deo logoraša bili su politički zatvorenici, predratni komunisti, aktivni borci i saradnici Narodnooslobodilačkog pokreta, borci stranih vojnih jedinica i pokreta, kao i pristalice Ravnogorskog pokreta Draže Mihailovića. Nemačke vlasti su početkom novembra 1941. godine pohapsile i grupu intelektualaca i uglednih Beograđana u svojstvu taoca, proglasivši ih za masone. Neki od njih su bili i članovi Srpske kraljevske akademije, poput biologa, fiziologa, filozofa, pisaca i akademika. Među njima su bili: Ivan Đaja, akademik, Siniša Stanković, biolog, Tihomir Đorđević, etnolog, Veljko Petrović, književnik, Aleksandar Deroko, arhitekta, profesor i kasnije akademik i mnogi drugi. Najverovatnije je u ovoj grupi zatočenika priveden i Lujo Mor.

Gestapo

Naziv Gestapo je nastao kao kovanica početnih slogova nemačkih reči Geheime Staatspolizei što znači državna tajna policija. Osnovan je 26. april 1933. godine, tri meseca nakon dolaska nacista na vlast u Nemačkoj. Osnovao ga je Herman Gering ubrzo nakon što ga je Hitler imenovao pruskim ministrom unutrašnjih poslova. Pod okriljem Himlerovog SS-a postao je glavna tajna policija za celu Nemačku i osvojena područja.

Porodica

Tragičan kraj Luja Mora usledio je posle neobičnog, turbulentnog života i uspešne poslovne karijere. Rođen je 18. aprila 1894. godine u Dubrovniku od majke Marije Peić udate Mor (Mohr) i oca Josipa (Đuzepe) Mora (Mohr) koji su imali još dva sina Viktora i Karla. Marija Mor je rođena 3. marta 1855. godine kao pravoslavka u Petrinji (Hrvatska). Umrla je 24. decembra 1926. godine i sahranjena je na Mirogoju u Zagrebu gde je u porodičnoj grobnici sahranjen i njen sin Karlo. Josip Mor je rođen, verovatno, 1845. godine dok mu je nepoznata godina smrti. Marija i Josip venčali su se 4. februara 1875. godine u crkvi Svetog Lovra u Petrinji. Tokom istraživanja nisu pronađeni podaci o Josipovom mestu rođenja, odrastanja i rada sve do njegovog zaposlenja kao profesora „Ženskog preparandija u Dubrovniku".



Preparandija ili ženska učiteljska škola u Dubrovniku počela je sa radom u januaru 1875. godine. Pre toga su obuke za učiteljice održavane u privatnoj osnovnoj školi Službenica milosrđa u samostanu na Pilama. Odluku o otvaranju državne ženske učiteljske škole (Preparandije) donelo je Ministarstvo za bogoštovanje i nastavu 6. januara 1875. godine. To je bila jedina ženska srednja škola na prostoru današnje Dalmacije. Od osnivanja do 1920. godine 54 posto devojaka te škole dolazilo je iz drugih krajeva van Dubrovnika, a najviše iz mesta koja su se nalazila od Zadra do Kotora i Budve, ali i iz mesta koja su pripadala Austro-Ugarskoj.

Preparandija u Dubrovniku

Najstariji sin Marije i Josipa bio je Karlo, rođen 14. marta 1876. godine a umro 3. septembra 1917. godine. O srednjem bratu Luja Mora zna se mnogo više. On je Viktor Pavo rođen 18. juna 1885. godine na Pilama (Dubrovnik) a umro je 12. avgusta 1966. godine. Bio je pre Drugog svetskog rata poručnik žandarmerije i aktivan član, a potom i poslednji meštar promoter Družbe Braća hrvatskog zmaja koja je osnovana 1905. godine a ukinuta odlukom Ministarstva unutrašnjih poslova Narodne Republike Hrvatske 1946. godine. Autor je i knjige „Ljetopis Družbe braće hrvatskog zmaja 1940-1941." koja je u Zagrebu štampana 1941. godine. U knjizi su izneti podaci o Družbi iz raznih novina i publikacija kako bi se veličao „rodoljubivi i kulturni rad Družbe". Ivo Kerdić (1881-1953.), medaljar i vajar i Viktorov prijatelj je izradio nadgrobnu bronzanu ploču na njegovom grobu. Zabeležena je i njegova izjava da je

Viktor „mešanac, od oca Italijana ili Nemca i majke pravoslavke“. Viktor se ženio dva puta: prva žena mu je bila Marina sa kojom je dobio ćerke Maru Long i Mirjanu Puškaš, a druga žena mu je bila Marija sa kojom je u brak stupio 12.5.1958. godine.

Ludvig Karl Mohr iz godišnjih izveštaja Udruženja banaka poznat kao Lujo Mor detinjstvo je proveo u Dubrovniku. Njegovo poreklo, ali pre svega poreklo njegovih roditelja može se bolje razumeti ako se zna da je Dubrovnik krajem 19. i početkom 20 veka bio grad u kome su živeli: katolici, pravoslavci, evangelisti i Jevreji. Dubrovnik je 1890. godine imao 11.177 stanovnika u naseljima: Gruž- Lapad, Brgat Gornji, Brgat Donji, Grbavac, Martinovići, Makoše, Buići, Petrača, Čelopeci, Čibača, Brašina, Zavelje, Soline i Plat. Od tog ukupnog broja stanovnika njih 9.713 je govorilo srpski, 716 italijanski, 384 mađarski, 285 nemački, 52 slovenski, 6 poljski i 2 ruski jezik. Zbirni podaci daju ove brojke. Međutim, jedino Dubrovnik, Gruž- Lapad, Čibača i Brašina sem srpskog imaju zastupljene i ostale navedene jezike dok su stanovnici ostalih nabrojanih naselja govorili jedino srpskim jezikom.

Dubrovnik

Poznato je da je Dubrovnik nastao iz dva naselja: slovenskog brdskog Dubrovnika i romanskog Raguziuma koji se digao na malom ostrvu naseljenom izbeglicama iz Epidaura. Posle izvesnog vremena Sloveni i Romani zasuli su uski morski kanal između grebena kod današnjih Pila a kasnije i Stradun i stvorili zajednički grad Dubrovnik-Raguzium, odnosno Raguzu. Grad se potom širio ka humskom i trebinjskom području. Kao luka Dubrovnik i njegov Gruž svoj razvoj mogu da zahvale trgovini sa Humom, Travunijom i Raškom koja se proširila i na veći deo Srbije i Bosne. Dubrovnik se naročito razvio u 12 veku posle trgovačkih ugovora sa velikim županom Stefanom Nemanjom (vladao od 1168-1196. godine) i banom Kulinom (vladao Bosnom od 1180 -1204. godine). Od 13. veka u Dubrovnik su dolazili iz Italije činovnici, trgovci i zanatlije, ali je široki puk bio pretežno slovenskog porekla. U gradu se postepeno gomilalo bogatstvo koje je donosila trgovina po Balkanu i sa značajnom trgovačkom flotom po celom Sredozemlju.

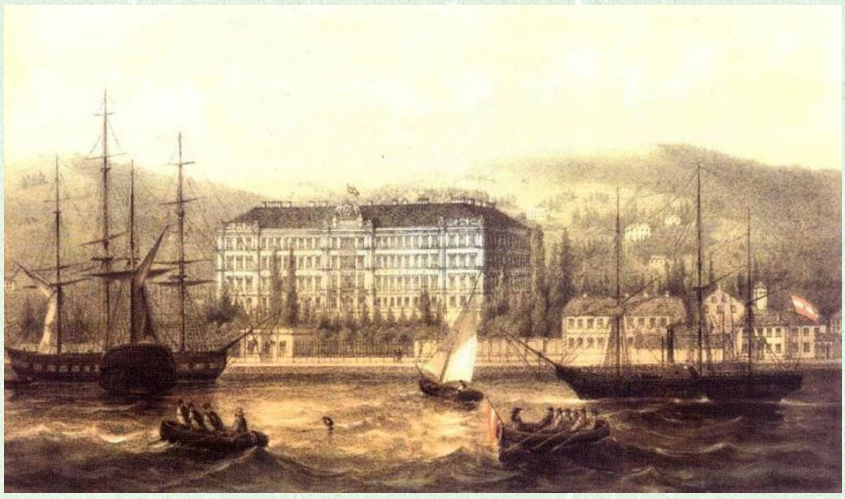
Kada je 1526. godine pala mađarska država, Dubrovnik je morao da se opredeli za vrhovnog gospodara: Mletačka republika ili Turska. Dubrovnik je bio trgovački toliko razvijen da bi ih Mleci, zbog sopstvenog interesa, kao konkurenti, mogli ekonomski da unazade. Znali su da im turska vrhovna vlast neće biti laka, ali i da nikada nisu bili dobri trgovci pa im neće ni poslovno smetati. Turci su im dali povlašćen položaj da trguju po celom svom prostranom carstvu uz plaćanje godišnjeg danka sultanu.

Francuske trupe su 1806. godine zaposele Dubrovnik prekršivši obećanje da će neutralnost Dubrovačke republike biti poštovana. Režim okupacije trajao je do 1808. godine kada je ukinuta Dubrovačka republika. Njene teritorije su anektirane i uključene u sastav napoleonske Kraljevine Italije, a 1809. priključene su francuskim ilirskim provincijama. Nakon poraza Napoleonove Francuske teritorije nekadašnje Dubrovačke republike pripojene su 1815. godine Austrougarskom carstvu. U sastavu ove carevine Dubrovnik sa okolinom ostaje sve do njenog raspada 1918. godine.

Obrazovanje

Lujo Mor je svoje detinjstvo i mladalačke dane provodio u Dubrovniku pod Austrougarskom vlašću. U njemu je dobio i osnovno obrazovanje. Poznato je da je 2. oktobra 1817. godine osnovana Glavna škola u Dubrovniku koja je bila prva muška „pučka" škola. Nastava se izvodila na italijanskom jeziku. Ona je imala tri razreda da bi 1923. godine odlučeno da škola traje četiri godine. Te godine je donet i propis da je pohađanje Glavne škole u Dubrovniku obavezno za svu decu od šeste do dvanaeste godine. Nekoliko godina kasnije ustanovljeni su i tečajevi četvrtih razreda koji su potom prerasli u nižu realku, školu za obrazovanje pomoraca i školu za buduće učitelje koji su činili jezgro Preparandije u kojoj je radio i Lujov otac. Osnovana je, takođe, i ženska škola 1837. godine.

Nautička škola je počela sa radom 15. marta 1852. godine. Nastava je trajala 2 godine da bi 1871. godine ona postala trogodišnja kada se uvodi i matura. Od 1876. godine odvaja se od građanske škole. Realno je pretpostaviti da je Lujo Mor u Dubrovniku završio Nautičku školu, a pouzdano se zna da je potom upisao u Rijeci Mornaričku akademiju - Kaiseriche und Konigliche Marine Akademie, školu za obuku podoficira i oficira za potrebe Austrougarske mornarice.



Mornarička akademija, Rijeka

Kaiseriche und Konigliche Marine Akademie

Mornarička carska i kraljevska akademija je neprekidno obučavala pomorce od 1866. do 1914. godine. Školovanje je trajalo četiri godine i bilo je podeljeno na više smerova na kojima su se obrađivali sledeći predmeti: matematika, fizika, mehanika, praktična geometrija, parni strojevi, brodogradnja, nautika, metodologija, fizika mora, pomorsko pravo, istorija, geografija, prirodopis, itd. Zajedničke aktivnosti za sve smerove sadržale su: mačevanje, plivanje, ples, pevanje, sviranje i društveno ophođenje. U završnom delu školovanja koji se odnosio na istraživanje mora i meteoroloških merenja nastava se sprovodila u saradnji sa pulskim Hidrografskim zavodom, Mornaričkom bibliotekom i Mornaričkom zvezdarnicom. Nastava se odvijala na nemačkom jeziku, a proučavao se i italijanski, francuski, engleski i „ilirski" (od 1899. godine srpski/hrvatski jezik). Nastavnici Akademije bili su pretežno kontraadmirali i admirali, vrsni stručnjaci i naučnici.

U početku su Akademiju upisivali kadeti od 12-15 godina, a razvojem civilnog osnovnog školstva granica je bila 15 godina pa su je upisivali učenici sa završenom nižom gimnazijom ali i oni sa završenom realkom. Po završetku Akademije raspoređivani su pretežno za brodske podoficire i mlađe oficire u zavisnosti od potreba Austrougarskog vojnog pomorstva. Od oficira koji su završili ovu vojnu akademiju očekivalo se da znaju četiri jezika: nemački, mađarski, italijanski i srpski/hrvatski jezik. Procenjuje se da je na riječkoj Akademiji obrazovano oko 1000 kadeta sa područja današnje Hrvatske, pretežno iz njenog priobalja. Iz liste popisa svih oficira Kraljevske mornarice Austrougarske koju je u emigraciji 1970. godine sastavio kapetan fregate Rene Podhorski doznajemo da je Lujo J. Mor završio mornaričku akademiju K. u K. Kriegsmarine 11.6.1914. godine. Unapređen je 1.11.1916. godine, po svoj prilici vanredno od poručnika korverte (bar tri godine se ostajalo u tom rangu) u poručnika fregate, ali se to može objasniti i ratnim uslovima.

Austrijska mornarica je 1867. godine transformisana u austrougarsku K.u K. Kriegsmarine (Carska i kraljevska ratna mornarica) da bi početkom 20 veka postala jedna od najvećih mornarica. Ona je 1914. godine u svom sastavu imala preko 20.000 ljudi od toga su 34,1% bili stanovnici današnje Hrvatske, Slovenije, Crne Gore i Bosne i Hercegovine, 20% su bili Mađari, 16,3% Nemci i Austrijanci, 14% Italijani, 11% Česi i Slovaci i 4,6% Poljaci i Rumuni.

Ujedinjenje

Država Slovenaca, Hrvata i Srba osniva se 29. oktobra 1918. godine na teritoriji na kojima su živeli ovi južnoslovenski narodi koji su nekada bili u sastavu Austrougarske monarhije. Mesec dana kasnije, tačnije 1. decembra 1918. godine osniva se Kraljevstvo Srba, Hrvata i Slovenaca. Ujedinjenje Kraljevine Srbije, osnovane 1882. godine, sa Državom Slovenaca, Hrvata i Srba proglasio je regent Aleksandar Karađorđević, delujući u ime svoga oca, kralja Petra I Karađorđevića. Država je zasnovana na punoj ravnopravnosti između Kraljevine Srbije i Države SHS. (izvor: Muzej Jugoslavije, Beograd).

Krah Austrougarske

Oktobra 1918. godine Prvi svetski rat je bio u završnoj fazi. Austrougarska višenacionalna država raspadala se i na pomolu je bilo nastajanje novih država. Austrougarski car Karlo (rođen 1887. umro 1922. godine) doneo je 30. oktobra 1918. odluku da se kompletna Kaiseriche und Konigliche Kriegsmarine

zvanično preda u ruke Narodnom veću države Srba, Hrvata i Slovenaca. Potpisivanje zapisnika o primopredaji Austrougarske flote u Puli, Šibeniku i Boki Kotorskoj obavljeno je 31. oktobra u 11 časova na bojnom brodu VIRIBUS UNITIS u Puli. Njegovi potpisnici su bili članovi komisije Narodnog veća SHS i Mikloš Horti, kontraadmiral i komandant ratne mornarice Austrougarske. Na osnovu tog dokumenta austrougarske ratne brodove stacionirane u Puli i Šibeniku preuzeli su oficiri države SHS među kojima su, osim onih koji su bili sa područja nove države SHS, bili i mornari i podoficiri iz Češke, Slovačke i Poljske. Tog istog dana na brodovima je svečano podignuta zastava SHS, a spuštena austrougarska.

Primopredaju u Boki Kotorskoj, drugoj po veličini i važnosti austrougarskoj vojnoj pomorskoj bazi, obavio je opunomoćenik Komande i načelnik štaba flote, poručnik bojnog broda Dimitrije Konjević. Ona je obavljena istog dana kada i u Puli, ali u 16 časova na krstarici Kaiser Franz Joseph I. Tog dana je održan i sastanak sa Slovencima, Hrvatima i Srbima - oficirima Austrougarske vojne mornarice na kojem je odlučeno da komandant tog pomorskog saveza bude kapetan fregate Jozef Levi, dok su na brodovima određeni novi komandanti SHS.

U ruke Države SHS u Boki Kotorskoj prešla je kompletna impozantna austrougarska vojna baza i flota koja se tu zatekla. Ona je sadržala; 3 bojna broda, 1 oklopni krstaš, stražarski brod, obalsku oklopnjaču, 4 krstarice, 3 razarača, 17 torpiljarki, 7 podmornica, 13 remorkera, 5 manjih transportnih parobroda, 2 plutajuća doka, 3 hulka i 3 pontona. U Kumboru je predata hidroplanska baza sa 6 hangara i 47 hidroaviona.

Austrougarska ratna mornarica prestala je da postoji pre nego što je zvanično potpisano primirje u Prvom svetskom ratu 4. novembra 1918. godine i pre nego što su u Boku Kotorsku kopnenim putem 6. novembra 1918. došle prve jedinice srpske vojske i 5. novembra 1918. uplovio prvi ratni brod snaga Antante, francuski razarač Kabyle. Već 10.11.1918. godine u Boku dolaze veće savezničke: italijanske, francuske i britanske vojno-pomorske snage pod komandom francuskog kontraadmirala Luja Kobea. Oni preduzimaju mere da sve brodove i druge bogate materijalne resurse pobeđenih stave pod svoju komandu. Nemci, Austrijanci i Mađari odlaze brodovima i vozovima u svoju domovinu.

Od poručnika fregate mornarice Kraljevine SHS do sekretara Udruženja banaka

Jasno je da je Lujo Mor sa ostalim Srbima, Hrvatima i Slovencima, ali i Česima, Poljacima i Slovacima koji su bili na vojnim brodovima Austrougarske prešao u vojnu mornaricu buduće Kraljevine SHS. Nepoznato je jedino gde se tih dana nalazio, da li u Puli, Šibeniku ili Boki Kotorskoj. Zvanično u mornaricu Kraljevine SHS Lujo je primljen 24. juna 1919. godine.

U Službenom vojnom listu 28.6.1919. godine objavljeno je da je ukazom Aleksandra Karađorđevića, a u ime kralja Petra I, na predlog ministra vojnog i mornarice, a „po saslušanju Našeg Ministarskog Saveta“ rešeno da se u mornaricu SHS prime:

- u čin kapetana bojnog broda: Miroslav Grund, Eugen Malinarić, Adolf Mladić; u čin kapetana fregate Nikola Stanković;
- u čin kapetana korvete: Mijo Kovačić, Mavro Vikerhauzer i Slavomir Drahsler;
- u čin poručnika bojnog broda I klase: Antun Labaš, Gaston Rosi Sabatini, August Kuster, Emil Mariašević i Stevan Drakulić;
- u čin poručnika bojnog broda II klase: Ivan Ulmanski i Dragutin Reman;

– u čin poručnika fregate: Nikša Nardeli, Đuro Pani, Vladimir Andoljšek, Metod Pirc, Dražen Elija, Vladimir Crnadak, LUJO MOR, Hiacint Mundorfer, Vladimir Labaš i Vladimir Trost.

Osim njih, nabrojana su i lica koja su primljena u čin rezervnog poručnika korvete, pomorskog kadeta, rezervnog pomorskog kadeta, tehničkog upravitelja I i III klase. U potpisu je naveden ministar Vojni i Mornarice, đeneral Stevan Hadžić.

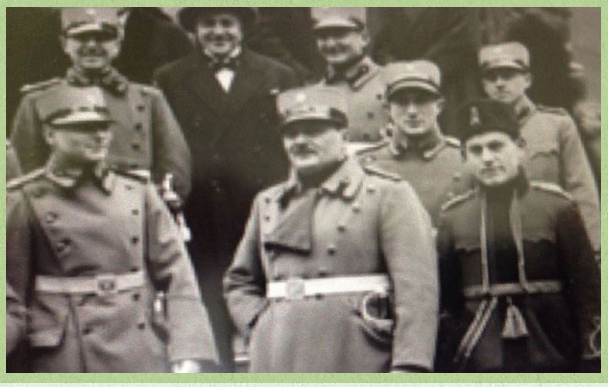
Nakon ovog imenovanja Lujo Mor je izvesno vreme proveo u mornarici, ali se iz te službe povukao zbog direktorskog posla u Dunavsko-kreditnom zavodu. Nepoznanica je kada je tačno preuzeo direktorske poslove u ovoj kreditnoj ustanovi ali je poznat podatak da je ove poslove obavljao u 1925. godini. Na ovoj poziciji se očigledno nije duže zadržao jer je 28. februara 1926, godine ukazom kralja Aleksandra I a na predlog ministra vojske i mornarice vraćen u aktivnu službu (Službeni vojni list 26.6.1926.). Veoma brzo, samo posle tri i po meseca, Lujo odlazi u penziju i odlukom Aleksandra I Karađorđevića prevodi se u rezervu. Ovu odluku 19. juna 1926. godine potpisao je ministar vojske i mornarice, divizijski đeneral Dušan Trifunović (Službeni vojni list 28.6.1926.). Lutanja u izboru profesije svakako je bilo do njegovog konačnog izbora te iste godine za generalnog sekretara Udruženja banaka u Beogradu, mlade bankarske institucije koja je osnovana 4. decembra 1921. godine i pod njegovim rukovodstvo doživela veliki ugled među bankarima, ministrima i drugim predstavnicima Vlade.

Dobrila i Stefanija

Ovih sedam godina, od stupanja u mornaricu Kraljevine SHS do sekretarskog mesta u Udruženju banaka, za Luja su bile izuzetno dinamične na poslovnom ali i na privatnom planu. U bračne vode uplovio je 4. juna 1925. godine venčavši se sa Dobrilom Dimitrijević koja potiče iz ugledne porodice, od oca Radovana (1852-1899), blagajnika u Upravi monopola i narodnog poslanika u Kraljevini Srbiji i majke Stane. Dobrilini roditelji su u braku dobili tri sina i dve ćerke. Nažalost, ćerka Danica umrla je u devetnaestoj godine 1900. potom 1911. godine sinovi Milan (rođen 1880.) i Miodrag (rođen 1890. godine) a ćerka Dobrila umrla je u 31. godini (1896-1927). Majka Stana (devojačko prezime Grujić) rođena je 1853. u Kragujevcu, a umrla 7.6.1943. godine u Beogradu. Rano ostavši udovica preživela je i gubitak četvoro svoje dece i jedino joj je sin Aleksandar ostao kao uteha.

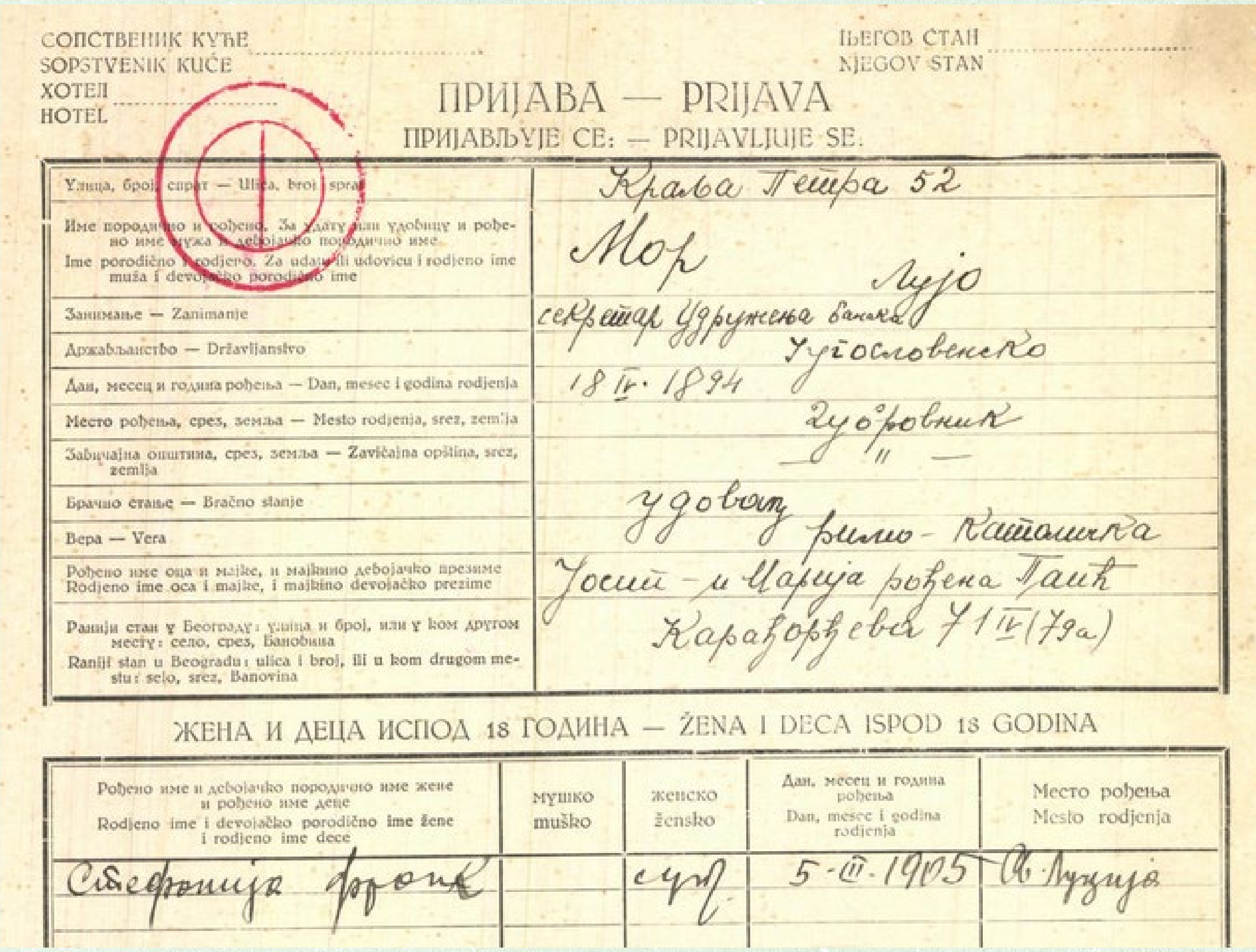
Maršal dvora

Aleksandar Dimitrijević rođen je 6. februara 1884. godine u Nišu. Vojnu karijeru započeo je kao pitomac 34 klase Niže vojne akademije a kasnije se školovao u 19 klasi Više vojne akademije. U Balkanskim ratovima bio je vodnik u Dunavskom artiljerijskom puku, kao komandir voda i komandir baterije. Tokom Prvog svetskog



rata obavljao je dužnost komandira 3. baterije i diviziona Dunavskog artiljerijskog puka. Od 1917. do 1920. godine bio je ordonans oficir regenta Aleksandra Karađorđevića. Potom odlazi na usavršavanje u Francusku. Stažirao je u Grenoblu i Nansiju tokom 1921. godine da bi te iste godine, vrativši se u zemlju, radio kao nastavnik Taktike na Nižoj školi Vojne akademije. Od marta 1926. bio je vojni izaslanik u Parizu. Od aprila 1927. do oktobra 1934. godine obavljao je dužnost maršala dvora kralja Aleksandra Karađorđevića koji mu je bio venčani i kum troje njegove dece. Bio je član tajne organizacije Bela ruka zahvaljujući kojoj je imao vidan uticaj na izbor ljudi u vojnom i političkom vrhu zemlje. Nosilac je brojnih priznanja, a Karađorđevu zvezdu sa mačevima IV reda dobio je dva puta.

Oženio se 1924. godine Savkom (1895-1961), ćerkom Dimitrija Živadinovića, trgovca iz Beograda i predsednika Upravnog odbora Beogradske zadruge. U braku su dobili ćerku Milicu, udatu Skiner (1929-2017), antropologa, koja je radila u Antropološkom muzeju u Njujorku, sina Petra (1925-2014) koji je završio univerzitet u Harvardu i bio ekonomista i sina Pavla (1927-1945). Aleksandar je otišao iz zemlje početkom II svetskog rata. Umro je 1963. godine u Njujorku a njegovi, njegovog sina Petra i ćerke Milice posmrtni ostaci preneti su u porodičnu grobnicu na Novom groblju u Beogradu (parcela 4). Na prvom spomeniku ove grobnice su uklesana imena Aleksandrovog oca Radovana i njegove dece: Danice, Milana, Miodraga i Dobrile. Ovde je sahranjena i Aleksandrova majka Stana, ali joj ime nije uklesano. Na drugom spomeniku nalaze se imena Aleksandra i Savke a na trećem su imena njihove dece: Pavla, Petra i Milice Skiner.


СОПСТВЕНИК КУЋЕ
SOPSTVENIK KUĆE
ХОТЕЛ
HOTEL

ЊЕГОВ СТАН
NJEGOV STAN

ПРИЈАВА — PRIJAVA
ПРИЈАВЉУЈЕ СЕ: — PRIJAVLJUJE SE:

Улица, број, спрат — Ulica, broj, sprat	Краља Петра 52
Име породично и рођено. За удату или удовицу и рођено име мужа и девојачко породично име / Ime porodično i rodjeno. Za udatu ili udovicu i rodjeno ime muža i devojačko porodično ime	Мор Лујо
Занимање — Zanimanje	секретар Удружења банака
Држављанство — Državljanstvo	Југословенско
Дан, месец и година рођења — Dan, mesec i godina rodjenja	18 IV 1894
Место рођења, срез, земља — Mesto rodjenja, srez, zemlja	[illegible]
Завичајна општина, срез, земља — Zavičajna opština, srez, zemlja	— " —
Брачно стање — Bračno stanje	удовац
Вера — Vera	римо-католичка
Рођено име оца и мајке, и мајкино девојачко презиме / Rodjeno ime oca i majke, i majkino devojačko prezime	Јосип и Марија рођена [illegible]
Ранији стан у Београду: улица и број, или у ком другом месту: село, срез, Бановина / Raniji stan u Beogradu: ulica i broj, ili u kom drugom mestu: selo, srez, Banovina	Карађорђева 71 IV (79а)

ЖЕНА И ДЕЦА ИСПОД 18 ГОДИНА — ŽENA I DECA ISPOD 18 GODINA

Рођено име и девојачко породично име жене и рођено име деце / Rodjeno ime i devojačko porodično ime žene i rodjeno ime dece	мушко / muško	женско / žensko	Дан, месец и година рођења / Dan, mesec i godina rodjenja	Место рођења / Mesto rodjenja
Стефанија [illegible]		[illegible]	5-III-1905	[illegible]

Образац бр. 6

Подносилац пријаве Мор Л. Стефанија
занимање домаћица
из Београда, Палмотићева 13 (III рејон)

Пријава
лишења живота или нестанка лица

А. Подаци о лицу лишеном живота или несталом

Презиме, очево име и име лишеног живота или несталог лица	Године старости	Занимање	Боравиште	Народност	Да ли је лишени живота или нестали грађанско лице или борац Југ. војске, НОВ-а, ПОЈ а и Југ. армије	Смрт — нестанак: Када	Смрт — нестанак: Где	Смрт — нестанак: Како	Сума коју би привредио: Попуњава пријавилац	Сума коју би привредио: Попуњава Среска комисија	Ако је био окупатор у време лишења живота — нестанка Немачка, Италија, Бугарска, Мађарска	Проузроковач
1	2	3	4	5	6	7	8	9	10	11	12	13
Мор Хошића Лујо	47	чиновник	Београд	хрват	грађанин	16 XI 1941	Београд	убијен у Београду	6.000 дин. месечно	864.000	Немачка	немци

Б. Подаци о лицима која су била на терету лишеног живота — несталог

Ред. број	Презиме, очево име и име	Године старости	Занимање	Боравиште	У ком је сродству са лишеним живота — несталим	Примерна сума за издржавање од дана смрти — нестанка (попуњава): подносилац пријаве	Примерна сума за издржавање од дана смрти — нестанка (попуњава): Среска комисија	Трошкови лечења и сахране (попуњава): подносилац пријаве	Трошкови лечења и сахране (попуњава): Среска комисија
1	2	3	4	5	6	7	8	9	10
1	Мор Венцеслава Стефанија	40	домаћица	Београд	супруга	3000.- дин. месечно	300.000	—	—

У Београду
27. јула 1945 год.

Подносилац пријаве (својеручни потпис)
Мор Л. Стефанија

Nažalost, Lujov brak trajao je nepune dve godine. Ostavši sam naredne godine mu protiču u radu u Udruženju banaka i u brojnim drugim poslovnim aktivnostima. Ono što se posebno ističe u svim

ОПШТИНСКЕ НОВИНЕ Стр. 459

СПИСАК

Лица којима су издате грађевинске дозволе за зидање нових зграда или одлуке претседника Општине града Београда за равне грађевинске радове у месецу јулу и то: од 1 јула до 15 јула 1936 године закључно

ГОБр.	Презиме и име сопственика	Улица и број	Пројектант	Вредност	Шта зграда садржи
2965	Штајнер Фани и Матилда	Угао Вршачке и Француске 48	Реља Поповић	700000	сут. приз. и 3 спрат
3251	Текс. Фабрика К. Илића Синова А. Д.	Угао Нове и Књегиње Олге парцела	Божид. Живадиновић	30000	подизање ограде
2722	Михаиловић Душан	Хаџи Милентијева 15	Момчило Белобрк	200000	подр. призем. 1 спр.
2766	Трифковић Живка	Беличка бр. 8	Валерије Сташевски	65000	подрум и приземље
2644	Ђурђевић Драгомир	Сплитска 10	Фрања Урбан	40000	приземље
3080	Симоновић Живојин	Душана Алимпића 5	Миодраг Татовић	25000	измена плана
5052	Вељановић Јован	Алексе Ненадовића 12	Јован Вељановић	1000	преправка зграде
2142	Огњеновић Иван	Зелени Венац 6	Божидар Божић	50000	измена плана
3155	Мор Луј и Стефанија	Нова бр. 281 парц. 897	Александар Јаковљев	150000	подрум и приземље
2942	Кукић Милан и Марија	прод. Сушилове парц. 2280/5	Дујан Грапић	100000	подрум и приземље
2182	Миловановић Љубица	Романијска 3	Валерије Стешевски	85000	подрум и приземље

tim godinama je neobično plodna humanitarna angažovanost koja podrazumeva i novčane donacije. Veličina njegove humanosti biva razumljivija ako se zna da Lujo Mor sve do 1936, godine nije imao sopstveni dom. Od 1924. pa do 1936. godine stanovao je u iznajmljenim stanovima na ukupno 11 adresa: Kralja Petra 52, Kosmajska 30, Topličin venac 23, Knez Mihajlova 27, Bogojavljenska 7, Kosovska 41, Dobričina 44, Karađorđeva 79, Žorža Klemansoa 8, Vlajkovićeva 5 i Braće Jugovića 2.

U svoj dom Lujo će se useliti 1936. godine, nakon što je na kupljenom placu, koji se nalazio na dalekoj periferiji Beograda, izgradio prizemnu kuću, na adresi Nova ulica, XII kvart (danas Palackova ulica, Savski venac). To će biti i dom njegove druge žene Stefanije (Štefanija) Fran. Njome se oženio 11. oktobra 1932. godine u crkvi Župa Sv. Petra u Beogradu. Stefanija je bila ćerka Marije i Venceslava Fran, rođena 16. februara 1896. godine u Svetoj Luciji, u današnjoj Istri, Hrvatska. Na osnovu podataka Uprave grada Beograda - Kartoteka žitelja grada može se pretpostaviti da je Stefanija u Beograd došla 1926. godine i da se zaposlila kao činovnica. Stefanija je nadživela Luja Mora i do smrti je živela u Beogradu. U prijavi lica lišenih života ili nestalih u godinama Drugog svetskog rata ona je 27. jula 1945. godine navela da je njen suprug Lujo Mor ubijen od strane Gestapoa 1941. godine. Tom prilikom zabeležena je njena i Lujina godinu života i njeno imovno stanje kao domaćice. Stefanija je umrla 1977. godine, kremirana je i urna je preneta iste godine u Milano.

Skloništе Društva za pomaganje sirotinje i suzbijanje prosjačenja

Lujo Mor je bio oličenje humanog čoveka i to je potvrđivao u brojnim akcijama, bezrezervno poklanjajući potrebnima svoje vreme, svoje znanje, svoje saosećanje i na kraju i svoja materijalna sredstva. Humanost je jedna od najvrednijih i najcenjenijih karakteristika ličnosti. To je sposobnost čoveka da pomogne i saoseća sa drugima a da nema koristi od toga. To bi ukratko bila definicija humanosti koja na najbolji način oslikavala Lujovu ličnost.

Društvo za pomaganje sirotinje i suzbijanje prosjačenja

List Pravda je 31. marta 1927. godine izvestila svoje čitaoce da su Lujo Mor, sekretar Udruženja banaka, i Aleksandar Dimitrijević, general, izdvojili 2000 dinara svojih sredstava za budući hram Sv. Save u Beogradu na ime Dobrile Mor, kako bi bila upisana kao jedna od njegovih dobrotvorki. To je očigledno bio početak njegovog budućeg humanitarnog rada koji se ogledao u pomoći siromašnima bolesnima i postradalima.

List Vreme 13. januara 1930. godine donosi spisak „priložnika“ koji su učestvovali u „Božičnim prilozima za beogradsku sirotinju“ na kojem se nalazi i Lujo Mor sa prilogom od 100 dinara. Ova sredstva otišla su Društvu protiv prosjačenja koje je osnovano aprila 1929. godine. Nekoliko meseci kasnije, odnosno 23. avgusta, Društvo za suzbijanje prosjačenja u listu Vreme uputilo je zahvalnost Ministarstvu za socijalnu politiku i narodno zdravlje u Beogradu za pomoć od 1000 dinara kao i manjem broju firmi i pojedinaca među kojima je i Lujo Mor sa izdvojenim iznosom od 50 dinara. U ovom tekstu se navodi da je oko desetak lica izabrano za počasne članove Društva. To su bili načelnici nekoliko ministarstava, inženjeri, potpredsednik opštine Beograd, a među njima i sekretar Udruženja banaka Lujo Mor. Ovi viđeni Beograđani prihvatili su da pomognu otvaranje kancelarije koja će se baviti suzbijanjem prosjačenja. Oni će se, takođe, angažovati da se do njenog otvaranja sredi privremena prostorija u Dalmatinskoj ulici u Beogradu.

Na vanrednoj Skupštini, 19. septembra 1930. godine, izmenjen je njegov naziv u Društvo za pomaganje sirotinje i suzbijanje prosjačenja. Deviza Društva postaje : „Posrnulog prihvatiti, palog podići a nevoljnog nahraniti“. Svetitelj Jovan Milostivi koji je za života kao patrijarh aleksandrijski sve svoje prihode trošio za pomaganje sirotinje uzet je za „društvenog patrona“ i kao slava Društva (25. novembra). Marta 1932. godine Lujo Mor je darivao 500 dinara ovom Društvu i postao njegov počasni član – „utemeljač“ Društva.

U sali Društva crvenog krsta 12. februara 1933. godine održana je skupština Društva za pomaganje sirotinje i suzbijanje prosjačenja. Sa ovog skupa upućen je telegram kralju Aleksandru u kome se pozdravlja „najveći prijatelj i priložnik sirotinje“. Telegramima su pozdravljeni i ministar socijalne politike i narodnog zdravlja i predsednik Beogradske opštine. Na sednici je pohvaljena uprava Društva koja je radila marljivo i predano. U diskusiju se uključio i Lujo Mor predloživši da se uklone sa ulice kasice za prikupljanje novčane pomoći sirotinji i da se preduzmu mere protiv dečjeg prosjačenja i prosjačenja po kućama. Njegovi predlozi, međutim, nisu prihvaćeni jer je kroz diskusiju istaknuto da Društvo nema drugu alternativu za prikupljanje pomoći, da sklanjanje dece prosjaka sa ulice za sada nije moguće značajnije ostvariti jer ne postoje adekvatni smeštajni kapaciteti, a prosjačenje po kućama je teško kontrolisati. Na sednici su izabrani članovi Upravnog i Nadzornog odbora. Jedan od članova Nadzornog odbora postao je i Lujo Mor.

Društvo za pomaganje sirotinje i suzbijanje prosjačenja obavilo je 25. novembra 1933. godine svečano otvaranje i osvešćenje novog vrlo velikog i udobnog skloništa za priličan broj starih prosjaka. To je bila prilika da se obeleži slava Društva - Sveti Jovan Milostivi. Episkop Vićentije Vujić osveštao je ovaj dom i sekao slavski kolač uz pomoć dvojice sveštenika i hora studenata Teološkog fakulteta. Tom prilikom episkop Vujić je održao prigodan govor u kome je istakao značaj humanog rada i zbrinjavanja onih koji su upućeni na prosjačenje. Izrazio je veliku zahvalnost inicijatorima ove akcije: članovima uprave, među kojima je bio i Lujo Mor kao potpredsednik Nadzornog odbora Društva, kao i drugim brojnim zvanicama koje su svojim radom, podrškom i prilozima doprineli otvaranju ovog skloništa i sprovođenju drugih humanitarnih aktivnosti. Otvaranju skloništa prisustvovali su: izaslanik kralja Aleksandra pukovnik Leko koji je tom prilikom predao prilog od 10.000 dinara, predstavnici Beogradske opštine, izaslanik Ministarstva socijalne politike, predstavnica Društva za zaštitu devojaka i dr.

Deset dana po otvaranju novog doma Društva list Vreme informiše svoje čitaoce ko je sve sem kralja Aleksandra na pomenutoj svečanosti dao prilog. To su: ministar unutrašnjih poslova Žika Lazić - 300 dinara, potpredsednik Opštine Dobre Bogdanović - 300 dinara, Društvo za zaštitu životinja i rastinja - 100 dinara, Udruženje ruskih ratnih vojnih invalida - 100 dinara, Materinsko udruženje - 50 dinara, Rusko dobrotvorno društvo - 50 dinara, episkop Vićentije - 100 dinara kao i drugi brojni pojedinci, profesori, arhitekte, inženjeri, inspektori i td. Među pojedincima nalazi se i Lujo Mor, sekretar Udruženja banaka, koji je donirao 50 dinara.

Dom društva „Kralj Dečanski", Beograd

Verovatno je posvećenost Luja Mora Društvu za pomaganje sirotinje i suzbijanje prosjačenja bila mnogo veća nego što nam dostupne informacije to pokazuju. Naime, dnevni listovi o donacijama ovom Društvu govore sporadično, odnosno kada su godišnje skupštine, slava , otvaranje skloništa ili kada je u pitanju veća donacija institucija ili pojedinaca a onda se navode i novčane pomoći ostalih darodavaca. Primer je i tekst u Pravdi objavljen 8. marta 1934. godine pod naslovom Prilozi. U njemu se navodi da je Emil Roza Abraham iz Pariza preko Ministarstva spoljnih poslova priložila 500 francuskih franaka Društvu za pomaganje sirotinje i suzbijanje prosjačenja. U daljem delu članka pominju se i drugi darodavci: arhitekta Janko Šafarik (300 dinara), Društvo za ulepšavanje Zelenog venca i savske padine (250 din.), direktor Anglo- čehoslovačke i Praške kreditne banke dr Manojlo Lesić (200 din.) i mnogi drugi a među njima i Lujo Mor sa priloženih 20 dinara.

Pomoć slepima i nastradalima u zemljotresu

Listovi Pravda i Vreme povodom obeležavanja četrdeset godina rada Društva „Kralj Dečanski" Zavoda za obrazovanje i vaspitanje gluvoneme dece, pod pokroviteljstvom kraljice Marije Karađorđević, prenose zahvalnicu plemenitim darodavcima među kojima je i Lujo Mor (30 dinara).

Nažalost, vremenska distanca i nepostojanje direktnih Morovih potomaka onemogućava uvid u sve njegove humanitarne akcije. One koje su ovde navedene poznate su zahvaljujući objavljenim tekstovima u listovima Vreme i Pravda. Tako na primer, u Vremenu je 5. maja 1932. godine objavljena informacija o akciji prikupljanja sredstava za pomoć nastradalima u poplavama u Bosanskoj Dubici. Iznosi se podatak da je do tada prikupljeno skoro 306 hiljada dinara. Darodavaca je bilo mnogo i činili su ih i pojedinci i institucije. Najveći pojedinačni darodavci bili su Panta Tadić, rentijer iz Beograda sa 1500 dinara i ministri: pravde, građevine, šuma i rudnika, poljoprivrede, finansija, trgovine i industrije i fizičkog vaspitanja sa po 1000 dinara. Od institucija najveći darodavci bili su: Sud opštine grada Skoplja sa 10.000 dinara, Velikobečkerečka fabrika šećera sa 1000 dinara i Udruženje banaka, Beograd sa 1000 dinara. Na ovom spisku među pojedincima nalazi se i Lujo Mor sa 50 dinara.

Doprinos razvoju veslačkog sporta

Pored angažovanja u humanitarnim akcijama Lujo Mor je svoje slobodno vreme koristio pomažući razvoj sporta u Beogradu, konkretno veslanja. Odrastajući na obali Jadranskog mora ali i izborom škole i prve profesije Lujo je posedovao dovoljno znanja i sposobnosti da na najbolji način pomogne razvoju ove sportske discipline. U Kraljevini Jugoslaviji, u Ljubljani, 13. avgusta 1922. godine 12 veslačkih klubova iz Beograda, Zagreba, Ljubljane, Splita, Sušaka, Osjeka, Karlovca, Velikog Bečkereka i Vukovara osnovalo je Jugoslovenski veslački savez. Tada je dogovoreno da sedište saveza bude u Beogradu. Već naredne godine kada je reprezentacija Jugoslavije prvi put učestvovala na Evropskom prvenstvu Jugoslovenski veslački savez je kao vanredni član primljen u Svetsku veslačku federaciju. Član ovog Jugoslovenskog veslačkog saveza bio je i veslački klub Beograd koji je osnovan 6. juna 1922. godine, istog dana kada je održano i venčanje kralja Aleksandra Karađorđevića i rumunske princeze Marije. Od svog osnivanja ovaj klub je bio pod najvišom zaštitom kraljice Marije. Zgrada ovog veslačkog kluba nalazila se na desnoj obali Save, na mestu današnjeg keja Beogradskog sajma. U istoriji evropskih veslačkih prvenstava zabeleženo je da je u Kraljevini Jugoslaviji 1932. godine održano na Adi Ciganliji evropsko prvenstvo u veslanju koje je otvorio kralj Aleksandar.

Svakako da su evropsko prvenstvo održano u Beogradu i pokroviteljstvo kraljice Marije bili vetar u leđa veslačkom klub Beograd. Posebna pažnja poklanjala se godišnjim skupštinama kluba i izboru njegove uprave koji su pored veslača, kao najdominantnijih činilaca, značajno doprinosili njegovom usponu. O ugledu ovog kluba govori i kratak tekst objavljen u listu Vreme o održanoj sednici skupštine veslačkog kluba Beograd 12. decembra 1937. godine: „U klupskim prostorijama u Inženjerskom domu održana je redovna godišnja skupština našeg elitnog veslačkog kluba Beograd [...]. Skupština je protekla u radu kao što dolikuje ovom starom i popularnom beogradskom sportskom klubu“. Na sednici skupštine izabrani su novi članovi Upravnog i Nadzornog odbora. Među članovima novoizabranog

Evropsko prvenstvo u veslanju 1932. god. u Beogradu

Nadzornog odbora je i Lujo Mor, čime mu je, na adekvatan način, odato priznanje za angažovanje u klubu u proteklom periodu.

Bridž na brodu „Kraljica Marija“

Bridž je očigledno bio još jedna Lujeva pasija. Kada se uz tu ljubav doda i more užitak je za njega bio verovatno potpun. O moru i plovidbi brodom duž dalmatinskih obala nova je živopisna priča iz života Luja Mora. Zbog toga joj je posvećeno više prostora. Novinar Vremena sa inicijalima SK, putnik na brodu „Kraljica Marija“ bio je oduševljen ovim „plovećim turističkim gradom“:

„Brže nego što je iko slutio, lepši nego što ga je iko zamišljao, pod jugoslovenskom zastavom sa imenom kraljice Marije [...] zaplovio je jedan takav i to naš brod [...]. I kada smo se onomad uspeli uz stepenice sa keja u Splitu kao na krov oblakodera, na palubu 22 metra visoku iznad mora (ispod vode je još 9 metara) prvo što smo spazili na međuspratu između kabina, palube i komandnog mosta bila je velika piscina (bazen) puna morske vode po kojoj su plivala dva velika konja od gume [...]

Ilustracija lista Vreme o putnicima na brodu „Kraljica Marija“

U ranim martovskim danima nije bilo dovoljno sunca, a široko je donosio i suviše svežine da bi se prvi putnici mogli kupati u ovoj piscini pod vedrim nebom, ali će zato možda već oni koji početkom aprila budu pošli na krstarenje duž naših i grčkih obala, pretvoriti naš najveći i najlepši brod u jednu veselu, ploveću plažu. Jer brod „Kraljica Marija“ nije samo ploveći hotel, on je i više. Jedan veseli turistički grad na vodi [...].

Putovanje se trećeg dana vožnje već svršavalo kada su prvi stanovnici ovog plovećeg grada uspeli da se orijentišu u njemu. I pored toga svaki je imao plan celog broda u svojoj kabini uz pojas za spasavanje, uputstvo kako se stavlja na grudi i broj čamaca kome u slučaju napuštanja broda pripada [...]

U skoro 300 kabina prve klase sa 400 postelja i nekoliko desetina kupatila pored onih u luksuznim

kabinama koji su bili mali apartmani, sve ovo smešteno je na 4 palube, četiri sprata, više kojih se na petom moglo sunčati a ispod kojih je tek počinjala utroba broda sa svojim mašinama, pećima, magacinima, stanovima za posadu i poslugu".

U nastavku teksta novinar govori o mestima na brodu gde su mogli da se kupe suveniri, svi domaći listovi, da se razviju i kopiraju fotografije, promeni novac, kupe cigarete, dopisnice i marke. Na brodu se nalazio biro za informacije, frizerski salon, lekar, štamparija, perionica rublja itd.

„Pred podne je bio korzo na širokoj D palubi ili sunčanje na E palubi gde se obično fotografisalo ili tražila usamljenost u dvoje. U holu se pio vermut pred ručak. U velikoj trpezariji na V palubi više koje se dizala staklena kupola visoka tri sprata bilo je 200 mesta. Ručalo se u dve serije čiji je početak oglašavao zvuk gonga. Kao u kakvom nemačkom filmu povorka kelnera u belom, jedan za drugim, gurali su pred sobom stočiće na kojima su bile kamenice – dalmatinske ostrige i or d 'evr ili koračajući kao vojnici nosili su na ramenu činije iz kojih se dizala para kuvanog zubatca ili ćurećeg pečenja [...].

Po ručku se pila kafa ili likeri u smoking rumu, gde je dr Dežman već počinjao partiju šaha, a gde su se na galeriji okupljali igrači bridža, među kojima su dr Slavko Grujan, bivši kraljev izaslanik, dr Roki Lučić i Lujo Mor, sekretar Udruženja banaka, bili neka vrsta šampiona."

Novinar daje sled zabavnih dešavanja, u 5 časova služio se čaj uz zvuke džeza. Za večeru bilo je obavezno biti u smokingu i večernjoj toaleti. Posle večere u velikoj sali igralo se više kola. Dok se u sredini sale igralo, okolo su se u grupicama opažali najveći funkcioneri države, najistaknutiji predstavnici privrede, najpoznatiji članovi beogradskog i zagrebačkog društva. Tu su između ostalih bili: Milan Nedić, Dušan Subotić, Dušan Simović, Mihajlo Protić, gradonačelnik Zagreba dr Srkulj, potpredsednik Beogradske opštine dr Stojadinović, grof Bombelos, markiz i markiza Bona i mnogi drugi a među

Konstitutivna Skupština filatelističkog saveza 1933. god., Beograd

njima, kao što je već pomenut, i Lujo Mor. Kraj ove za sve putnike lepe plovidbe označio je dolazak broda u Split.

Bridž

Da bi se još bolje oslikala ličnost Luja Mora potrebno je nešto reći i o bridžu - igri sa 52 karte i 4 igrača. Evo kako je kratko definišu poznavaoci ove igre: to je misaona i džentlmenska igra koja razvija logičko razmišljanje. Čovek koji je individualist po prirodi ima male šanse da bude dobar igrač. Svaka partija je poput jednog problema koji treba da se reši, a ko najbolje reši ima najbolji rezultat. Igra se u parovima, par protiv para. Suština igre je most koji igrači treba da uspostave. Igra u kojoj i kroz koju možete steći puno prijatelja, ali i koja oduzima puno vremena. Ona u sebi ima elemente statistike, ekonomije i psihologije. U Francuskoj bridž se izučava na fakultetima a u Kini u školama. Bridž koji se danas igra uspostavljen je 1926. godine. U Srbiji prvi bridž klub osnovan je pre Prvog svetskog rata.

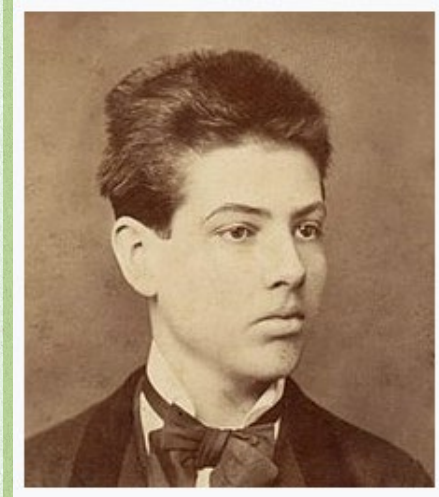
Filatelija

Svojom velikom radnom energijom i ogromnim entuzijazmom Lujo Mor je zajedno sa drugim istomišljenicima pokretao nove organizacije i udruženja sa željom da njegova zemlja uhvati korak sa drugim evropskim razvijenim zemljama koje su imale, zahvaljujući istorijskim okolnostima, mogućnost da brže napreduju u privredi, kulturi i umetnosti. Takav primer nalazimo i u njegovom angažovanju da se stvori jedno jugoslovensko udruženje filatelista. Naime, 2. decembra 1933. godine, u sali Industrijske komore, održana je prva, konstitutivna Skupština filatelističkog saveza u organizaciji privremene uprave u kojoj je bez sumnje bio i Lujo Mor. Predsedavajući na Skupštini, i jedan od najznačajnijih inicijatora ovog saveza, Evžen (Evgenije) Deroko pročitao je izveštaj privremene uprave, a potom saopštio da se u savez prijavilo 13 filatelističkih društava i klubova od kojih su 11 iz unutrašnjosti zemlje. Delegati skupštine iz Beograda i unutrašnjosti sastavili su listu uprave: četiri iz Beograda a to su : Evžen Deroko, Lujo Mor , Milan Ilić i Radivojević. U upravu su ušli i predstavnici Zagreba, Ljubljane, Sarajeva, Novog Sada, Skoplja i Subotice. Takođe su izabrani i predstavnici nadzornog odbora. Po završetku sednice organizovana je filatelistička berza a zatim je u sali Univerziteta održano predavanje iz oblasti filatelije. Nakon toga, u večernjim časovima, priređen je banket za sve učesnike skupštine u hotelu Srpski kralj. Sledećeg dana organizovan je rad na plenarnoj sednici i filatelističkoj berzi.

Lujo Mor je i sledećih godina svojim angažovanjem doprineo razvoju filatelije u zemlji što pokazuje i podatak da je 1937. u Jugoslovenski filatelistički savez učlanjeno 32 društva sa 3000 članova. On je bio i jedan od izabranih za pripremu prve Zemaljske filatelističke izložbe u Beogradu koja je organizovana od 12. do 19. septembra 1937. godine. Izložba je bila na Pravnom fakultetu i odgovorila je zadatku koji su organizatori sebi postavili prilikom njenog osmišljavanja i realizacije: da istakne značaj filatelije i da pokaže šta je kod nas na tom polju postignuto. U zemlji je u ovom periodu priređeno nekoliko lokalnih izložbi te vrste ali je ova bila na nivou cele zemlje uz učešće i stranih izlagača i posetilaca. Izložba je bila pod protektoratom kraljevića Tomislava Karađorđevića. Odbor koji je učestvovao u realizaciji ove izložbe činili su: Evžen Deroko, predsednik Jugoslovenskog filatelističkog saveza, potpredsednici, sekretar saveza, blagajnik Lujo Mor, članovi uprave i predstavnici učlanjenih društava.

Deroko i Mor

Filatelija je bila samo jedna od hobija i ljubavi koja je povezala Mora sa Derokom. Njih su povezale i mnoge druge slične životne prilike i intelektualne sposobnosti. Po svemu sudeći jedino ih je razlikovala razlika u godinama ali i tu je bilo neverovatne slučajnosti da je Eženov sin Aleksandar rođen iste godine kada i Lujo. Dubrovnik je bio zajedničko mesto rođenja njihovih očeva, majke su im bile pravoslavke, imali su velikog dara za jezike i, nažalost, Evžen i Lujo umrli su u Beogradu za vreme Drugog svetskog rata .



Evžen Deroko

Porodica Deroko potiče iz Venecije koja se potom preselila u Dubrovnik da bi joj krajnje mesto boravka bio Beograd. Evženov otac Jovan se rodio u Dubrovniku, a majka Katarina, rođena Vuković, u Beču. Evžen Deroko, rođen 1860. godine u Beogradu, bio je jedan od najvećih srpskih filatelista. Posle gimnazije završio je Prirodno - matematički odsek Filozofskog fakulteta. Kao pitomac Ministarstva građevine 1883, odlazi u Beč u austrijske državne železnice a potom u Belgiju na studije na tamošnjim železnicama. Po završetku usavršavanja vraća se u zemlju i stupa u službu Društva za građenje i eksploataciju srpskih železnica. Posle Prvog svetskog rata bio je pomoćnik generalnog direktora novostvorenog ministarstva saobraćaja. Sa tog mesta odlazi u penziju. Bio je poliglota, pisao je i govorio nemački, francuski, italijanski, engleski a služio se i ruskim, španskim i bugarskim jezikom.

Tokom celog života radio je na proučavanju jugoslovenske i srpske filatelije. Bio je predsednik Jugoslovenskog filatelističkog saveza i nosilac međunarodnih odlikovanja, uključujući i Lindbergovu medalju. Autor je knjiga: Poštanski žigovi Srbije 1840 – 1931, Građa za istoriju pošta u Srbiji, Specijalni katalog jugoslovenskih maraka opšteg izdanja i td. Umro je 18. maja 1944. godine, dva dana posle prvog američkog bombardovanja Beograda na pravoslavni Uskrs, potresen obimom razaranja i nevinim ljudskim žrtvama. Sin Evžena je Aleksandar Deroko, srpski arhitekta, umetnik, pilot, pisac i akademik (1894 -1988).

Privredna saradnja sa Grčkom

Poznato je da je Dubrovnik kroz istoriju bio pod mađarskom, francuskom, turskom, austrougarskom vlašću i da se u njemu govorilo više jezika a pre svega srpski/hrvatski, italijanski, mađarski. Plodno podneblje za obrazovanje poliglota. Lujo Mor je rastao u takvoj sredini i već u detinjstvu imao je prilike da sluša razne jezike kojima su govorili stanovnici grada u kojem je proveo detinjstvo i mladalaštvo. Osim toga, završio je i Mornaričku akademiju gde se učilo četiri jezika: italijanski, nemački, mađarski i srpski/hrvatski. Danas ne možemo znati koliko se dobro Lujo služio svim ovim jezicima, ali na osnovu njegovog angažovanja u stvaranju boljih privrednih kontakata Jugoslavije sa drugim zemljama možemo zaključiti da je bio poznavalac vojne doktrine, bankarstva i finansija i više svetskih jezika. Država je to prepoznala i već početkom juna 1930. godine bio je uključen u organizaciju dočeka solunskih privrednika u Beogradu. Na dočeku, ali i u poslovnim razgovorima sa grčkom delegacijom iskazano je i istorijsko prijateljstvo i spremnost za veću poslovnu saradnju. U to su bili uključeni naši najznačajniji privrednici, bankari, profesori univerziteta, predstavnici vojske i udruženja Rige od Fere, Društva Knjeginje Zorke i dr.

Solunski privrednici u Beogradu

Poseta grčkih privrednika očigledno je dobro ocenjena u zemlji uz konstataciju da je otvorila brojne mogućnosti privredne i kulturne saradnje. Sa takvim optimizmom i jugoslovenska delegacija je 26. septembra 1930. godine uzvratila posetu. U brojčano velikoj delegaciji koja je stigla u Solun bili su predstavnici Industrijske, Trgovačke i Zanatske komore, Privilegovanog društva za izvoz, Beogradske berze, kao i predstavnici Udruženja banaka Milivoje Šićarević, direktor Jadransko Podunavske banke i Lujo Mor, generalni sekretar, i mnogi drugi. Brojni su bili i predstavnici iz Zagreba i Skoplja što je ukupno činilo delegaciju od 60 ljudi. Program boravka je bio bogat i tako koncipiran da su se gosti upoznali sa glavnim privrednim centrima Grčke i sastali sa njenim najvažnijim državnim funkcionerima. U Solunu delegacija je ostala tri dana i osim poslovnih susreta obišla je naše vojničko groblje na Zejtinliku. U Atini boravak je trajao takođe tri dana da bi se posle brodom preko Korinskog kanala naši privrednici uputila za Patras kao poslednjoj destinaciji u Grčkoj.

Počasni zastupnik na sajmu u Bariju

List Vreme objavljuje informaciju da je 18. jula 1931. godine država izabrala Luja Mora za počasnog delegata na Međunarodnom sajmu uzoraka u Bariju, Italija, koji se održava od 6. do 21. septembra 1931. godine. Naša država je na ovom sajmu imala svoj paviljon. Od tada pa do 1937. godine Lujo će sa istim zvanjem svake godine biti zadužen da na najbolji način predstavi Jugoslaviju. Inače, sajam u Bariju je iz godine u godinu menjao ime od međunarodnog do istočnog i levantskog velesajma.

U Politici je 28. avgusta 1937. godine izašao oglas u kome se naši privrednici pozivaju da najveći međunarodni sajam za trgovinu sa Orijentom – VIII Levantski velesajam posete i na njemu učestvuju. U oglasu se navodi da sva potrebna obaveštenja daje počasni zastupnik velesajma Lujo Mor.


VIII. ЛЕВАНТСКИ ВЕЛЕСАЈАМ
у Бари (Италија)
4 до 21 септембра
Највећи међународни сајам за трговину са Оријентом.
Учествујте
Посетите велесајам.
Обавештења даје почасни заступник велесајма:
Љујо Ј. Мор
БЕОГРАД Поштан. фах 23

Politika, oglas objavljen 28.08.1937. god.

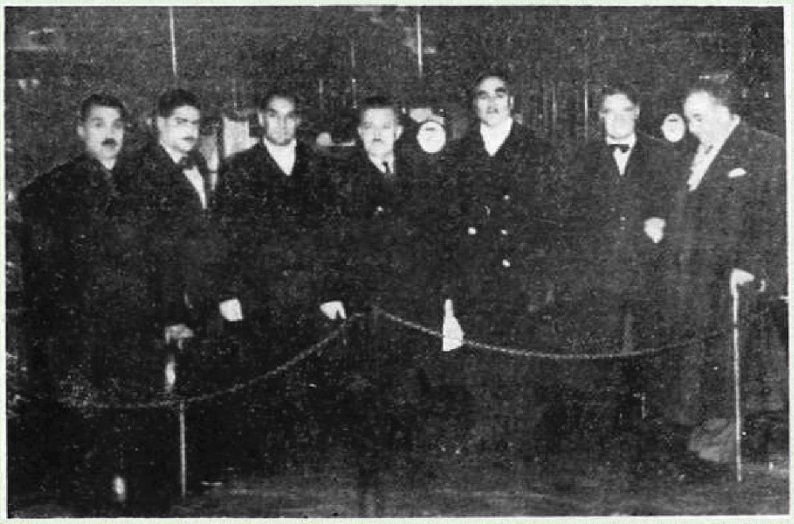
Unapređenje saradnje sa Španijom

Osim Grčke i Italije, Lujo Mor je bio uključen i u uspostavljanju bolje saradnje privrednika Jugoslavije i Španije. Naime, nekoliko godina pre Drugog svetskog rata jedno od glavnih tržišta Jugoslavije na Sredozemnom moru bila je Španija. Privredni odnosi su bili u usponu sve dok nije došlo do blokiranja naših potraživanja, kao što je to bio slučaj i sa zemljama Srednje Evrope, a posebno sa Austrijom u kojoj je Jugoslavija najviše izvozila svoje proizvode. Do blokada je došlo usled potraživanja koja su nastala kao saldo kliringa sa tim državama pošto je Jugoslavija sa većinom tih država imala aktivan trgovinski bilans.

U nameri da se ovi problemi u poslovanju sa Španijom otklone ali i da se poveća trgovinska saradnja i sa ostalim zemljama u sredozemlju osnovan je Komitet za unapređenje privrednih odnosa između Jugoslavije i Španije. Osnivačkoj sednici u Beogradu, u prostorijama Zavoda za unapređenje spoljne trgovine, 16. maja 1938. godine, prisustvovao je veliki broj zainteresovanih privrednika i predstavnika naše zemlje. To su, između ostalih, bili predstavnici Ministarstva inostranih poslova, Ministarstva industrije i trgovine, Zavoda za unapređenje spoljne trgovine, Industrijske komore, brojnih banaka iz zemlje kao i sekretar Udruženja banaka Lujo Mor. Sa španske strane sednici su prisustvovali poslanik na našem dvoru grof de Torihos i trgovački ataše poslanstva Garcia Guihar.

Osnivanje privredne komore sa Bugarskom

U nedostatku informacija danas možemo samo da pretpostavimo da je Lujo Mor kao sekretar Udruženja banaka i učesnik mnogih privrednih i bankarskih događaja pokazao da je čovek od akcije, stručnosti, širokog znanja i odgovornosti i da je zbog toga bio angažovan i u drugim poslovnim kontaktima sa inostranstvom. Verovatno među poslednjim, na početku Drugog svetskog rata, bilo je njegovo učešće



Bugarski privrednici u Beogradu

u pripremama za osnivanje Jugoslovensko-bugarske privredne komore. Kako bi se pripremilo njeno osnivanje obrazovana su dva akciona odbora, u Jugoslaviji i Bugarskoj, u kojima su ušli najugledniji privrednici dve zemlje. U jugoslovenski akcioni odbor ušli su između ostalih: Vlada Ilić, predsednik Industrijske komore, Voja Petković, predsednik Trgovinske komore, Milan Stojanović, predsednik Zanatske komore, dr Miljenko Marković, generalni direktor Poštanske štedionice, Živan Nešić, direktor Vajfertovih preduzeća, brojni direktori banaka kao i Lujo Mor, sekretar Udruženja banaka. U bugarski akcioni odbor ušli su predsednici brojnih komora i trgovci iz te zemlje.

Osnivačka skupština Jugoslovensko - bugarske privredne komore održana je 11. februara 1940. godine u svečanoj sali Trgovinske komore u Beogradu. Tom prilikom iz Bugarske je došla velika delegacija na čelu sa ministrom trgovine Slavčom Zagorovim. Na sednici su izabrani članovi uprave Jugoslovensko-bugarske privredne komore. To su bili poznati privrednici, predsednici komora, zadružnih saveza, industrijalci, bankari, inženjeri iz Beograda, Ljubljane, Sarajeva, Skoplja, Paraćina, Splita itd. Osnovan je i jugoslovenski Nadzorni odbor koga su takođe činili predstavnici komora i banaka, trgovci, advokati ali i Lujo Mor, generalni sekretar Udruženja banaka. Osim učešća na osnivačkoj sednici ove komore predstavnici bugarske delegacije posetili su i Beogradsku berzu, redakciju lista Vreme i prisustvovali banketu kod Srpskog kralja i prijemu u Bugarskom poslanstvu. Tom prilikom dr Zagorov, bugarski ministar trgovine, razgovarao je sa predsednikom Kraljevske vlade Dragišom Cvetković i ministrom inostranih poslova dr Aleksandrom Cincar- Markovićem. Svi učesnici iskazali su veliko zadovoljstvo radom na sednici i toplim prijemom u Beogradu. O tome izjavu za list Vreme dao je i ministar Zagorov: „Molim vas da saopštite moju najtopliju zahvalnost na tako iskrenom prijemu na koji smo naišli u vašoj sredini. Bugarski privrednici i ja nosimo iz Beograda najlepše utiske sa željom da iste ovakve utiske ponesu i vaši privrednici po završenom poslu u Sofiji".

Sledeći susret jugoslovenskih i bugarskih privrednika upriličen je 25. februara u Sofiji kada je osnovana Bugarsko- jugoslovenska privredna komora i na kojoj su izabrani članovi uprave i članovi nadzornog odbora Bugarske. Ova dva skupa protekla su u dominantnom isticanju jugoslovensko- bugarskog bratstva i iskrenog prijateljstva koji će se veoma brzo, ulaskom Bugarske na stranu Osovine u Drugom svetskom ratu, pretvoriti u borbu dva suprotstavljena naroda. Reči Vlade Ilića, predsednika Jugoslovensko - bugarske komore, na pomenutom banketu u Beogradu, bile su odraz poslednje nade da se mogu zaustaviti buduća nesrećna dešavanja: „Glavno je da smo se složili u jednom da samo sloga spašava i da će, ako se tako nastavi, ujedinjenje dati snagu. Tada možemo da kažemo da smo potpuno spremni da sa najvećim uspehom branimo ono što je naše". Vlada Ilić kao i mnogi drugi učesnici ova dva skupa, na početku Drugog svetskog rata, ni slutili nisu kakva će biti sva tragična dešavanja u sledećih četiri godina u Jugoslaviji. Toga nije bio svestan ni Lujo Mor koga će ubiti Gestapo u gradu u kojem je izabrao da živi i to samo 20 meseci nakon skupa u Sofiji.

Sudski sporovi banaka

Tokom 15 godina rada kao sekretar Udruženja banaka Lujo Mor je bio angažovan i na rešavanju problematičnog poslovanja pojedinih banaka čiji su se predstavnici našli na sudu. To je bio slučaj sa Palanačkom kreditnom bankom i Srpskom obrtnom bankom.

Maja 1932. godine članovi Upravnog i Nadzornog odbora Palanačke kreditne banke iz Smederevske Palanke našli su se pred sudom u Smederevu zbog nepravilnog rada čime su učinili da banka postane nesolventna i da se nad bančinom imovinom otvori stečajni postupak. Pre nego što je sudija pozvao okrivljene da daju svoje izjave naložio je pregled bančinih knjiga koji će uraditi poznati stručnjaci iz

Претседништво конференције: (с лева на десно) г. г. Луjo Мор, секретар, Миливоје Шиљаревић, потпретседник, др. Влада Марковић, претседник, Жарко Слепчевић, потпретседник и др. Роберт Паулович, секретар; на говорници г. Сава Дубљевић

Beograda: Lujo Mor, generalni sekretar Udruženja banaka, Aleksandar Duridi, prokurista i šef knjigovodstva Jadransko - podunavske banke i Dušan Crnogorac, šef knjigovodstva u penziji.

Lujo Mor je zajedno sa još dvojicom veštaka pružio pomoć u sudskom sporu sa Srpskom obrtnom bankom septembra 1932. godine. Predstavnici banke odgovarali su na sudu po tužbi akcionara zato što nisu upravi banke verno prikazali stanje banke a izvesne poslove nisu ni proknjižili u knjigama.

Nažalost, ostaje nepoznato kakve su ocene dali veštaci tokom sudskih sporova koji su se vodili za ove dve banke i koliko su svojim učešćem doprineli pravednoj sudskoj presudi. Takođe, nepoznato je da li je Lujo Mor učestvovao i u sudskim procesima drugih banaka jer za to ne postoje podaci u materijalima Udruženja banaka.

Konferencija banaka

O ugledu i stručnosti Luja Mora među bankarima, državnim predstavnicima i privrednicima govori i Konferencija bankara iz čitave Jugoslavije o zaštiti zemljoradnika, saniranju novčanih zavoda i kreditnih odnosa koja je održana 3. decembra 1933. godine. U sali hotela Central 480 delegata i predstavnika novčanih zavoda prisustvovalo je ovom sastanku sa željom da se razmotre i nađu rešenja za „privredne nevolje i nedaće". Ovako veliki odziv kao i pristiglih osamdeset telegrama i pisama kojima se pozdravljaju teme Konferencije i njen značaj pokazuje zajedničku brigu o problemima sa kojima se suočavala domaća privreda. Konferenciju je otvorio predsednik Udruženja banaka iz Beograda dr Vlada Marković. On je u ime upravnih odbora svih udruženja banaka koji su bili inicijatori ove konferencije pozdravio prisutne i poželeo im uspešan rad. Na njegov predlog izabrano je predsedništvo i sekretarijat konferencije. Predsedništvo su činili: dr Vlada Marković iz Beograda, dr Branko Privelić iz Zagreba, dr Ivan Slokar iz Ljubljane, Žarko Slepčević iz Novog Sada i Vasa Ristić iz Sarajeva. Sekretarijat su činili: dr Milenko Marković iz Zagreba, dr Robert Paulović iz Novog Sada, Antun Filipičević iz Zagreba i Lujo Mor iz Beograda.

Na konferenciji je prihvaćena Deklaracija u kojoj se ističe „da je kriza postala oštra i ljuta obuhvativši sve grane naše privrede i sve slojeve našeg naroda, i kada su usled toga naši kreditni odnosi teško poremećeni, nije urađeno što je potrebno a što bi moglo pripomoći ublažavanju ove privredne i kreditne situacije [...]. Naša se odbrana ima zasnivati na samopomoći, dok se popravkom međunarodne političke situacije ne stvori povoljnost za međunarodnu saradnju protiv zajedničkog neprijatelja – krize. A samopomoć ima biti dobro smišljena i dobro izvedena. Organizacija rada na samopomoći ima obuhvatiti sve privredne grane i kreditne odnose. Autonomne mere, koje bi se preduzele posle svestranog proučavanja i prosuđivanja imale bi da olakšaju i ublaže tešku privrednu krizu i kreditnu situaciju i da dadu podstrek za oživljavanje privrede [...]. Izvođenje plana ima biti u rukama najboljih, najstručnijih i najenergičnijih."

Pravda, Konferencija banaka održana 3.12.1933. god. u Beogradu

Nakon usvojene deklaracije o tome šta je sve po pitanju zaštite zemljoradnika uradilo Udruženje banaka u Beogradu govorio je Lujo Mor. Istakao je da čim se saznalo da kraljevska vlada namerava definitivno rešiti pitanje dugova poljoprivrednika Vlada Marković, predsednik Udruženja banaka iz Beograda, je više puta u listu Pravda izneo gledište u kom bi pravcu trebalo da se ide u rešavanju tog pitanja. Uradio je i projekat o tome i objavio ga u tom listu. Naglasio je da predstavnici Udruženja banaka nisu mogli ništa da saznaju tokom izrade vladine uredbe a kada je ona objavljena svoje primedbe i napomene dostavili su Vladi, narodnim poslanicima i senatorima. Prisutnim učesnicima je potom izneo te primedbe i napomene. O primedbama na uredbu govorili su i predstavnici Vojvođanskog udruženja banaka i Saveza novčanih zavoda u Zagrebu. Nakon diskusije izabran je odbor za donošenje rezolucije koja će biti dostavljena nadležnima. U odbor su ušli svi članovi predsedništva i sekretarijata Konferencije uz još naknadno dodate predstavnike iz Zagreba, Novog Sada, Kraljeva, Novog Bečeja Sarajeva, Šapca i Foče. To je značilo da će u tom stručnom timu, među izabranim najstručnijim, najsposobnijim i najenergičnijim, učestvovati i Lujo Mor.

Udruženje banaka

Verovatno u svojim budućim planovima mladi Lujo Mor nije bankarstvo birao kao posao kojim će se baviti u životu. Sudbina, slučajnost, afiniteti ili sled nepredviđenih okolnosti učinili su da baš bankarstvo bude oblast u kojoj će na najbolji način pokazati svoja umeća, znanja i sposobnosti. Poslovno sarađujući sa najpoznatijim bankarima, političarima i privrednicima isticao se svojom obrazovanošću, kulturom i komunikativnošću. Stečeno znanje na pomorskoj akademiji iz matematike, geometrije, fizike, istorije, geografije, prirodopisa i drugih veština kao što su plivanje, mačevanje, pevanje, ples, sviranje na nekom instrumentu, društveno ophođenje a pored toga i učenje više jezika učinili su ga rado viđenim u visokim jugoslovenskim krugovima, čoveka od poverenja koji imponuje svojim znanjem i umećem. Bankarsku karijeru započeo je u Dunavskoj Kreditnoj banci verovatno negde oko 1921. godine kada je i osnovano Udruženje banaka u Beogradu, ali o tome do sada nisu pronađeni pouzdani podaci. Poznato je da je jedna od 29 banaka osnivača Udruženja banaka bila i Dunavska Kreditna banka, koja će svoje članstvo u ovoj bankarskoj asocijaciji zadržati do 1941. godine.

Osnivačka sednica Udruženja banaka održana je u Prometnoj banci u Beogradu

Osnivačka sednica Udruženja banaka održana je 4. decembra 1921. godine u uzavrelim političkim prilikama i pod snegom obelelim Beogradom. Ostavka Pašićeve Vlade primljena u političkim i parlamentarnim krugovima sa pažnjom i uznemirenjem. Kralj Aleksandar pozvao je predsednika Narodne skupštine dr Ribara da se sa njim posavetuje o nastaloj političkoj situaciji. Odlučeno je da se mandat za obrazovanje nove vlade ponovo poveri Pašiću. U ovakvim vremenskim i političkim (ne)prilikama održana je tog nedeljnog prepodneva u sali Prometne banke osnivačka sednica skupštine Udruženja banaka. Skupštini su prisustvovali predstavnici sledećih banaka: Izvozne banke, Beogradske Ban-

ke Merkur, Opšte Privredne banke, Zemaljske banke, Komisione Banke, Prometne Banke, Eskontne Banke, Poslovne Banke, Mesarske Banke, Građanske Banke, Balkanske Kreditne Banke, Kolonijalne Banke, Beogradskog Kreditnog Zavoda, Prve Srpske Zemljoradničke Banke, Rusko Slovenske Banke, Srpsko Švajcarske Banke, Viner Bankferajna, Bankarske Trgovačke A.D., Vračarske Založne Banke, Jugoslovenske Banke, Centralne Kreditne Banke, Banke N. Boškovića A.D., Beogradske Trgovačke Banke, Beogradske Trgovačke Štedionice, Prve Hrvatske Štedionice, Engleske Trgovinske Banke, Banke Vardar, Jugoslovenske Trgovačke Banke i Dunavske Kreditne Banke. Na Skupštini su usvojena Pravila Udruženja banaka, izabrani članovi Upravnog, Nadzornog i Izvršnog odbora. Za predsednika Upravnog odbora izabran je Mihailo Dragićević, direktor Prometne Banke i potpredsednici Radivoje Glumac, direktor filijale Prve Hrvatske Štedionice i dr Milan Stojadinović, predstavnik Engleske Trgovinske Banke. Za generalnog sekretara Udruženja izabran je Nikola Stanarević. Ideja o osnivanju jednog ovakvog udruženja nije bila nova jer se već od ranije pokazala potreba osnivanja bankarskog udruženja koje će punovažno predstavljati sve banke i u njihovo ime preduzimati potrebne korake radi zaštite zajedničkih interesa kao što su: regulisanje moratorijuma, poreza, prometa deviza i sl.

Udruženje banaka je već u prvim godinama svoga rada postiglo vidne rezultate i uživalo je veliki autoritet kod novčanih zavoda. U 1922. godini Udruženje banaka već ima 131 članicu što već dovoljno govori o njegovom ugledu i statusu. U toj godini Udruženje je bilo angažovano na uvođenju više sloboda u berzanskom radu i postavljanju devizne politike na zdravu osnovicu. Te godine Udruženje je po svojoj dužnosti uzimalo u zaštitu svoje članove tražeći da se više povede računa o njihovim interesima koji su bili ugroženi deviznom politikom ograničenja. U toku godine, po raznim pitanjima, Udruženje je bilo u kontaktu i prepisci sa Narodnom bankom, često u ime banaka oštro kritikujući neke njene odluke. Ministarstvo finansija i Trgovačka komora su se često obraćali Udruženju radi saradnje, mišljenja ili za dobijanje podataka o pojedinim bankama.

U 1923. godini Udruženje je bilo angažovano na izmeni pojedinih zakona iz finansijske oblasti kao što su Zakon o taksama i Zakon o neposrednim porezima. Pravilima Udruženja banaka precizirano je da glavnog sekretara Udruženja bira Upravni odbor. Od 1921. do 1922. godine posao glavnog sekretara obavljao je Nikola Stanarević, direktor Mesarske Banke, kao član Uprave. Do 1926. godine generalni sekretar je bio dr Dušan Mišić dok je za predsednika Upravnog odbora nakon Mihajla Dragićevića od 1924 bio dr Vlada Marković. Novčani zavodi u 1925. godini su sistem pun neizvesnosti, zapisano je u Izveštaju Upravnog odbora o radu Udruženja u toj godini. Mada dinar ima izvesnu stabilnost u odnosu prema stranim devizama ipak njegova kupovna moć u zemlji nije se povećala. Novčani zavodi koji rade sa tuđim sredstvima moraju da pokažu veliku opreznost u odobravanju kredita. Ističe se da je Narodna banaka dužna da sprovodi politiku povećanja kredita a ne obrnuto i da se „samo povećanjem kredita može olakšati domaćoj privredi, a nikako stvaranjem otežica da bi se ti krediti mogli koristiti".

Vlada T. Marković

Izvozna banka je bila među bankama osnivačima Udruženja banaka. Njen dugogodišnji direktor i poznati bankar dr Vlada T. Marković bio je član i prvog Upravnog odbora Udruženja banaka. Inače, predsednik Upravnog odbora Udruženja banaka bio je 1924. god. i od 1926. do 1941. godine.

Vlada Marković je rođen 23.9.1873. god. u Smederevu. Završivši Pravni fakultet u Beogradu odlazi u Nemačku gde doktorira. Svoju profesionalnu karijeru je počeo kao činovnik u Ministarstvu narodne privrede i Ministarstvu finansija. Kao njihov komesar nadgledao je rad Izvozne banke sve do početka Prvog svetsk-

og rata. Bio je sekretar Srpskog trgovačkog udruženja, urednik Trgovinskog glasnika, sekretar Beogradske berze, član uprave više beogradskih banaka i Upravnog odbora Narodne banke. Autor je brojnih članaka o trgovinskim, političkim i finansijskim pitanjima. Nosilac je brojnih odlikovanja: Orden Svetog Save, Takovski krst, Gvozdena kruna, Zlatna i Srebrna medalja za hrabrost, Rumunska kruna itd.

Od trenutka kada je stao na čelo Udruženja banaka nastojao je da se okruži ljudima koji su svojim profesionalnim ugledom mogli da doprinesu dobroj reputaciji ove ustanove. Nesporno, to je za njega bio i Lujo Mor sa kojim je tesno sarađivao skoro 20 godina.

G. dr Vlada Marković

U 1926. godini Udruženje banaka je imalo 95 članica i cele godine bilo je aktivno na izmeni poreske politike, pre svega za privredu i štednju građana. Takođe je svojim predlozima učestvovalo u izmenama zakona o menici i čeku kako bi zemlja dobila jedan savremen zakon. U izradi novog zakona o javnim berzama Udruženje je sagledavši predloge Beogradske i Zagrebačke berze uradilo svoj predlog i dostavilo ga Ministarstvu trgovine i industrije. U ovoj godini iz Udruženja banaka je potekao predlog Narodnoj banci da se oformi institucija koja će zainteresovanim bankama, Narodnoj banci i drugim institucijama pružati informacije o kreditnoj sposobnosti lica i firmi, a naročito koliko su pojedine firme ukupno angažovane kod svih kreditnih ustanova u zemlji. Ovaj predlog naišao je na sveukupnu privrednu i državnu saglasnost tokom sledećih godina da bi 28. februara 1928. godine počeo sa radom Obaveštajni kreditni odsek u okviru Narodne banke.

Redovna godišnja Skupština Udruženja banaka na kojoj se usvajao Izveštaj Upravnog i Nadzornog odbora o radu Udruženja u 1926. godini, izbor novih članova Upravnog i Nadzornog odbora održana je 27. marta 1927. godine. U materijalu za ovu, šestu po redu, sednicu Skupštine navedeni su kao potpisnici predsednik Upravnog odbora dr Vlada T. Marković i potpredsednik Milivoje Šićarević, predsednik Nadzornog odbora Dobra Bakić i potpredsednik Nikola Đorđević i Lujo J. Mor kao sekretar. Kada je Lujo Mor postao sekretar Udruženja ne može se tačno utvrditi, najverovatnije u periodu od juna 1926. do marta 1927. godine.

Nakon dolaska Luja Mora za sekretara Udruženja banaka iz godine u godinu raste ugled i značaj ove bankarske asocijacije u zemlji. Potvrda tome je i proslava desetogodišnjice njenog rada. U sali Beogradske berze u Beogradu, 30. novembra 1930. godine, održana je svečana sednica na kojoj su prisustvovale mnoge znamenite ličnosti: izaslanik kralja Aleksandra Karađorđevića, ministri i pomoćnici ministara, predstavnici brojnih udruženja i komora, Beogradske berze, Narodne banke, profesionalnih novčanih zavoda i osiguravajućih društava iz Zagreba, Ljubljane, Sarajeva, Novog Sada, Cetinja, brojni direktori banaka i drugih finansijskih institucija itd. Pozdravni govor održao je dr Vlada T. Marković, predsednik Izvršnog i Upravnog odbora Udruženja banaka:

„Udruženje banaka pokazalo je u svom desetogodišnjem radu da je uz zaštitu zajedničkih interesa svojih članova imalo vazda u vidu unapređenje našeg novčarstva i narodne privrede [...]. Banke nisu same sebi cilj i svrha, nego one imaju da vrše svoju nacionalno-ekonomsku funkciju. Moderna privreda ne može da bude bez valjanih kreditnih ustanova, a ni kreditne ustanove ne mogu da napreduju ako su privredne prilike rđave i nezdrave. Da je svesna toga pokazalo je Udruženje banaka uzimajući inicijativu u mnogim pitanjima opšteg privrednog značaja“.

Odlikovanja

Povodom desetogodišnjice Udruženja banaka, ceneći njegov rad, kralj Aleksandar je izdao ukaz o odlikovanju brojnih članova Udruženja ordenom Belog orla trećeg, četvrtog i petog reda i ordenom Svetog Save trećeg i četvrtog reda. Među odlikovanim bio je i sekretar Udruženja Lujo Mor koji je za svoje zasluge dobio orden Belog orla petog reda. O značaju ovog odlikovanja najbolje govori lista svih onih koji su ovog puta odlikovani.

Dobitnici ordena

Dr Vlada T. Marković, predsednik Udruženja banaka, Milivoje Šićarević, direktor Jadransko Podunavske banke, Jezdimir Đokić, direktor Beogradskog kreditnog zavoda, Nikola Đorđević, direktor banke, Dimitrije Blagojević, direktor Beogradske trgovačke banke, dr Janko Hacin, direktor Privilegovane Agrarne banke, Rudolf Pilc, direktor Francusko-Srpske banke, Petar Mladenović, direktor Činovničke banke, Aleksa Martinović, direktor Trgovačke banke, Aleksandar Blagojević, direktor filijale Prve Hrvatske Štedionice u Beogradu, Boža Milosavljević, direktor Beogradske založne banke, Jovan Živanović, direktor Tehničke banke, Maksa Alkalaj, direktor Beogradske trgovačke štedionice, Milan Dragić, direktor Zanatske banke, Pavle Hadži Pavlović, direktor Srpsko-Amerikanske banke, Svetislav Jelić, direktor Izvozne banke, Srbislav Jevrić, direktor Bankarskog i Trgovačkog d.a., Živorad Lazić, direktor Valjevske štedionice, Milan D. Stojadinović, direktor Požarevačke trgovačke banke, Nikola Panić, direktor Izvozne i Prometne banke iz Skoplja, Sima Milutinović, direktor Pančevačke kreditne banke, Đoka Stefanović, direktor Jugoslovenske banke i Mihailo Janković, direktor Beogradske banke i Lujo Mor, sekretar Udruženja banaka.

Nakon Juraja Demetrovića, ministra trgovine i industrije, koji je pročitao imena svih odlikovanih usledilo je izlaganje brojnih učesnika ove svečane sednice. Dr Slokar, predstavnik novčanih zavoda u Sloveniji, ističe: „Ako pogledamo na vaš dosadašnji rad, pun napora, inicijative i uspeha, moramo se diviti vašoj upravi [...]. Radite već deset godina na usavršavanju našeg novčarstva i njegove organizacije u korist ulagača i svih grana narodne privrede i delatnosti. U tom pogledu zauzimate u domaćem novčarstvu važno mesto". Vlada Ilić, predsednik Industrijske komore, takođe se obratio rečima: „Već deset godina oseća se rad Udruženja na svim poljima. Naše monetarne prilike iziskivale su ozbiljan i mnogostruki rad". Milivoje Smiljanić, predstavnik Inženjerske komore, između ostalog je rekao: „Rad Udruženja za ovih deset godina nije bio lak [...]. U narednim godinama rad Udruženja neće biti nimalo lakši, i zato je srećna ideja da se Udruženje, po isteku deset godina svoga rada, osvrne na rezultate toga rada i na sve teškoće koje je imalo da savlada, da bi bilo snažnije i pribranije za svoj rad u budućnosti. „Ljuba Stojadinović Segedinac, predstavnik Udruženja izvoznika bio je poslednji govornik: „Čestitam današnju proslavu Udruženju banaka i njenom predsedniku i želim da i dalje dela onako kako je za ovih deset godina delalo, na dobro naše privrede i našeg naroda."

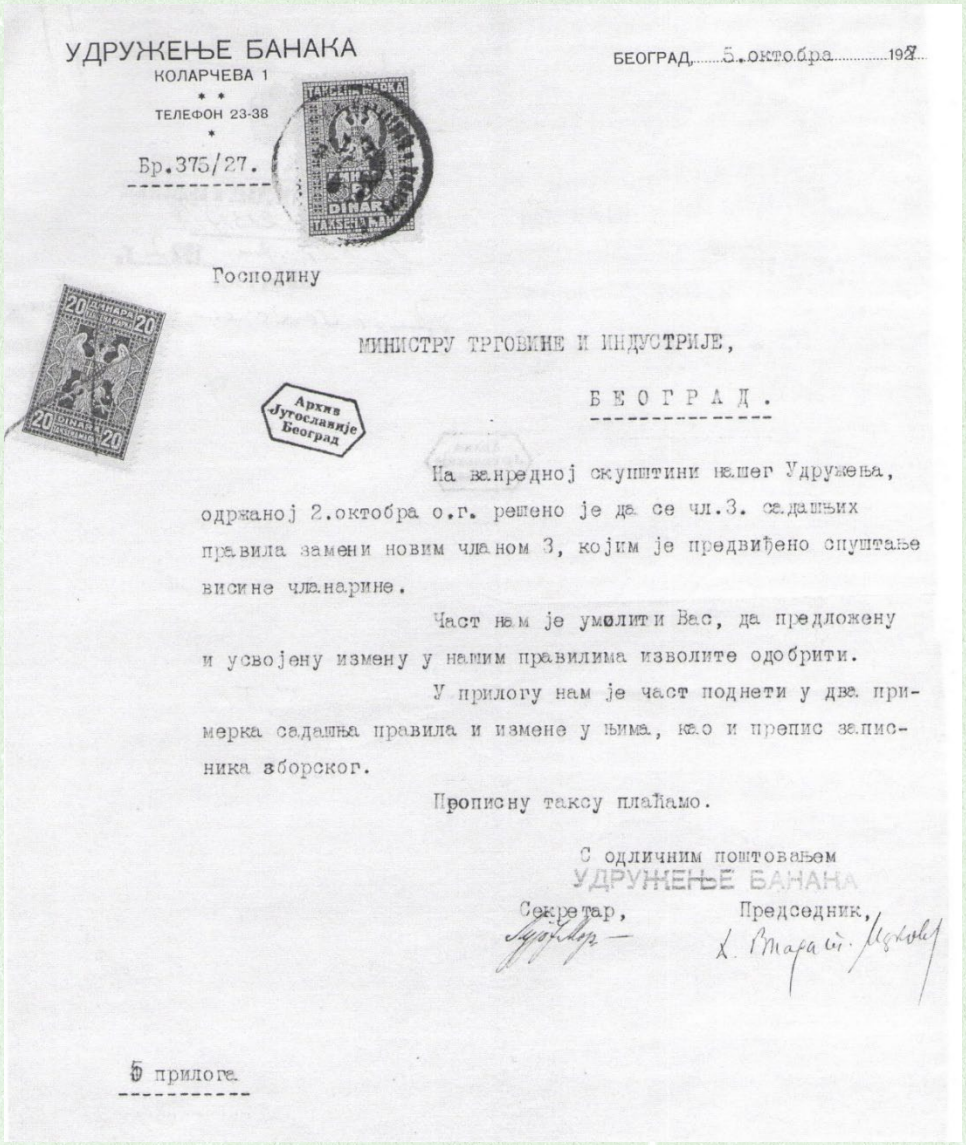
Istog dana, nakon sednice u sali Beogradske berze, održan je banket u hotelu Srpski kralj. Pored domaćina prisutne su bile ugledne zvanice iz cele zemlje. Na banketu je izmenjeno više zdravica. Goste su pozdravili dr Vlada Marković, predsednik i Milivoje Šićarević i Jezdimir Đokić, potpredsednici Udruženja. Među domaćinima bio je i Lujo Mor, odlikovani sekretar Udruženja. Tom prilikom guverner Narodne banke Ignjat Bajloni obratio se zvanicama rečima: „Meni je jako žao što sprečeni poslom nismo mogli, kao predstavnici Narodne banke, prisustvovati vašoj svečanosti. Ali ja vas molim da nam verujete da zbog toga nisu ni najmanje umanjene naše simpatije i naše priznanje za vaš svekoliki težak i koristan rad u toku poslednjih deset godina. Iz vaših izveštaja koje smo imali prilike da pročitamo, mi smo videli samo jedan deo toga vašeg rada. Posmatrajući stalno sve što se iz dana u

dan činilo, slobodno možemo reći da je mnogo toga više učinjeno nego što je zabeleženo, a ono što je zabeleženo tačno je i ja vam zahvaljujem od strane Narodne banke što ste uvek bili predusretljivi i voljni da i njoj pomognete u izvršavanju njene zadaće, u cilju olakšanja teške situacije. Ja vam gospodo svesrdno želim da sve vaše ideje i svi vaši dalji radovi, koje imate pred sobom, uspevaju i da uspeju onako kako i vi to u vašem izveštaju i danas ovde sasvim lojalno i stvarno iznosite i na ime da sve što radite bude na korist i napredak naše lepe domovine."

Hotel „Srpski kralj", Beograd

Sledećeg dana, 1. decembra 1930. godine održana je u Beogradu Konferencija svih profesionalnih organizacija novčanih zavoda i osiguravajućih društava Jugoslavije. Na toj konferenciji prisustvovali su predstavnici ovih organizacija iz Zagreba, Ljubljane, Sarajeva, Cetinja i drugih gradova u zemlji kao i domaćina iz Beograda koji su bili i najbrojniji. Među oko 25 učesnika iz Beograda bio je i generalni sekretar Lujo Mor. Konferenciju je otvorio dr Vlada Marković, predsednik Udruženja banaka. Na skupu su dominirale sledeće teme; likvidacija agrarne reforme (izlaganje Ivana Galića iz Zagreba), o saradnji svih organizacija novčanih zavoda (dr Ivan Slokar, Ljubljana), novi zakon o javnim berzama (Milivoje Šićarević, Beograd), poresko opterećenje akcionarskih društava (dr Robert Paulović, Novi Sad), nacrt zakona o samoupravnim finansijama (Antun Filipančić, Sarajevo) itd.

U slavljeničkoj godini Udruženje banaka ima 130 članica: 53 iz Beograda i 77 iz unutrašnjosti. U godišnjem izveštaju za 1930. godinu na desetoj sednici Skupštine održane 7. juna 1931. godine navodi se: „Svet nam siromaši,...I pored štednje, pa čak i lišavanja mnogih prešnih potreba, ipak se oseća veliki manjak potrebnih sredstava usled slabe ili nikakve zarade. Kada se pri tome uzme u obzir da su javne dažbine teške, onda se taj teret oseća u ovakvim prilikama još jače. Nije u pitanju oskudica novca, odnosno kredita, Novca je bilo kod nas ne samo dovoljno, već i u suvišku, Nije ni postojala, u potrebnoj meri, tražnja kredita, jer nije bilo dovoljno poslova u koje bi se taj novac rentabilno plasirao, Šta više, novac se izvlačio iz nerentabilnih poslova i ulagao u novčane zavode [...]. Prilike pod kojima su



УДРУЖЕЊЕ БАНАКА
КОЛАРЧЕВА 1
ТЕЛЕФОН 23-38
Бр.375/27.

БЕОГРАД, 5. октобра 192[illegible]

Господину

МИНИСТРУ ТРГОВИНЕ И ИНДУСТРИЈЕ,

Б Е О Г Р А Д .

Архив Југославије Београд

На ванредној скупштини нашег Удружења, одржаној 2.октобра о.г. решено је да се чл.3. садашњих правила замени новим чланом 3, којим је предвиђено спуштање висине чланарине.

Част нам је умолити Вас, да предложену и усвојену измену у нашим правилима изволите одобрити.

У прилогу нам је част поднети у два примерка садашња правила и измене у њима, као и препис записника зборског.

Прописну таксу плаћамо.

С одличним поштовањем

УДРУЖЕЊЕ БАНАКА

Секретар, Председник,

5 прилога.

новčani zavodi radili nisu, dakle, bile kako je želeti. Bilo je dosta neplasiranog novca. Krediti su davani pod relativno vrlo povoljnim uslovima. Ulozi su uvećani i pored snižene kamatne stope. Otpisi su kod banaka bili relativno veći no u normalnim prilikama. ..Naplate su po izvršenjima slabo priticale. Poresko opterećenje banaka je uvećano. Režije su i pored svih štednji, ipak relativno visoke. Pa ipak, banke mogu biti zadovoljne, da su svojim radom olakšavale, koliko je to moguće, privrednu situaciju, iako je to ispadalo često puta na štetu akcionara."

Svi materijali i izveštaji Udruženja banaka, kao i pisma upućena Narodnoj banci i raznim ministarstvima, najčešće naslovljena na guvernera i ministre bili su potpisani od predsednika Upravnog odbora i generalnog sekretara Luja Mora. Autor svih tih izveštaja, informacija i pisama bio je verovatno Lujo Mor u saradnji sa Vladom Markovićem, predsednikom Udruženja. Ovo je važno istaći zbog činjenice da su svi navedeni materijali izuzetno pismeno, jasno, kulturno i odmereno napisani što dodatno oslikava ličnost Luja Mora. Osim toga, treba istaći još jednu osobinu Luja Mora a to je njegovu izrazitu

skromnost. I pored poslovnog ugleda i napredovanja u poslu nije želeo da se ističe. To potvrđuje i Spomenica koja je urađena za obeležavanje 10 godina uspešnog rada Udruženja gde se nalazi spisak sa imenima članova Upravnog, Izvršnog i Nadzornog odbora i sekretara Luja Mora. Uz imena nalaze se i slike odlikovanih, jedino nema slike Luja Mora. Zbog toga i pored velikog angažovanja tokom prikupljanja podataka o životu i radu Luja Mora nije pronađena ni jedna njegova fotografija.

Kao što je već rečeno, Lujo Mor kao sekretar ni jednom se u skupštinskim materijalima ne citira ali je uz potpis predsednika uvek stajao i njegov potpis. I ovo je očigledna potvrda njegove skromnosti i jasno izraženog poštovanja poslovne hijerarhije. Da je na skupštinama Udruženja banaka aktivno učestvovao i imao izlaganja saznajemo tek iz novina koje su ga u sklopu informacija sa održanih sednica skupština ponekad citirali. Primera za to ima više.

Politika, Pravda i Vreme citiraju sekretara Mora

Pravda povodom održane sednice Skupštine Udruženja banaka u sali Izvozne banke 27. marta 1933. godine prenosi govor dr Vlade Markovića, predsednika Udruženja koji se odnosio na ekonomske prilike u zemlji i svetu sa posebnim osvrtom na prilike u domaćem bankarstvu. Potom je sekretar Udruženja banaka Lujo Mor izneo završni račun i predlog budžeta za tu godinu koji iznosi 267.500 dinara. Izveštaj i predlog budžeta su jednoglasno prihvaćeni.

U sali Izvozne banke na 14. redovnoj sednici Skupštine Udruženja, 25. maja 1935. godine, nakon pozdravnog govora Vlade T. Marković, predsednika, prisutnima se obratio Lujo Mor, sekretar Udruženja. Njegovo izlaganje prenela je u celosti Politika 27. maja 1935. godine:

„Preživeli smo i 1934. godinu u oštroj privrednoj krizi, a ne znamo, koliko će se još godina nizati, dok se ne završi period te krize, i dok po stagnaciji ne nastupi željeni period prosperiteta. Za sve vreme trajanja ove krize svi su slojevi našega naroda osetili njeno razorno dejstvo i pomisao da takva situacija može još dugo trajati izaziva veliko nespokojstvo. I volja i energija našega radnoga sveta nisu dovoljni, da se izađe iz sadašnjih nedaća. Sa zvanične strane slabo je šta preduzeto, da bi se ova situacija ublažila, a i što je učinjeno, to je bilo delimično, bez utvrđenog programa i bez veze sa rešavanjem ukupnih privrednih problema [...], ovo tim dalje što su neki od preduzetih mera kao eksperimenti bile osnovane na pogreškama, koje su čak i pooštravale krizu [...]. Dobro prosuđenim programskim radom na oživljavanju privrede ima se jednovremeno rešiti i bankarska kriza kod nas [...]. Zabluda je verovati da je za bankarsku krizu lek uredba o zaštiti novčanih zavoda i njihovih verovnika. Rad na njegovom ozdravljenju mora biti dvojak. Prvi obuhvata nove potrebne zakonske mere, koje se imaju ustanoviti radi postavljanja čvrstih temelja za organizaciju bankarstva. Drugi obuhvata preduzimanje mera za oživljavanje rada naših novčanih ustanova u korist narodne privrede. Međutim, do sada nije ništa urađeno. Stojimo tako u jednoj situaciji, koja je očajna i gledamo kako se ruši naše bankarstvo. Do kraja 1934. godine 105 novčanih zavoda tražilo je razne vrste zaštita, 170 njih je tražilo odlaganje plaćanja, a 10 sanaciju. Taj broj je ogroman prema ukupnom broju novčanih zavoda kojih je u zemlji sada 620 [...]". Lujo Mor je svoje izlaganje završio podacima o štednim ulozima u bankama i njihovom povećanju u državnim bankama kao rezultat pre svega njihovog odliva iz privatnih banaka.

Pravda i Vreme informišu svoje čitaoce 24. maja 1937. godine o održanoj godišnjoj Skupštini Udruženja banaka, ističući veliki broj prisutnih članova i gostiju. Pored pozdravnog govora navode i da je Lujo Mor, sekretar Udruženja, prezentirao prisutnima završni račun i predlog budžeta za iduću godinu koji su jednoglasno prihvaćeni.

Beograd aprila 1941. god.

Skupština Udruženja održana u bombardovanom Beogradu

Dvadeseta sednica Skupštine Udruženja banaka održana je 21. aprila 1941. godine, petnaest dana nakon bombardovanja Beograda. Iz skupštinskog materijala saznajemo da je u Udruženju ukupno 131 članica: banaka, štedionica i zadruga. Predsednik Upravnog odbora je dr Vlada T. Marković, potpredsednici dr Milorad Đorđević i Rudolf Pilc, a sekretar Lujo J. Mor. Osim toga, Udruženje ima i Izvršni odbor sa pet članova i Nadzorni odbor sa četiri člana.

U izveštaju za prethodnu godinu ističe se da je cela bila ratna. Novčano tržište je u 1940. bilo likvidno i pod uticajem inflacije. Novčanica u opticaju bilo je u izobilju. Ogromno zaduživanje države kod Narodne banke izazvalo je i ogromnu porast novčanica u opticaju. U odnosu na kraj 1938. na kraju

1940. godine bilo je duplo više novčanica u opticaju. U vremenu u kome živimo, kaže se između ostalog u izveštaju, država ima svojih vanrednih potreba ali njih nije trebalo finansirati najgorim načinom - zaduživanjem države kod Narodne banke i stvaranjem inflacije. Bilo je u jačoj meri, ističe se u Izveštaju, i tezauriranja novca koje nije bilo izraz poverenja u dinar. Dinar je usled inflacije mnogo izgubio od svoje kupovne moći, ali on je bio platežno sredstvo i kao takvo je i skrivano za svaki slučaj i nevolju.

Najviše polemika i protivljenja među bankarima a tako i u Udruženju banaka proizvela je Uredba o izmenama i dopunama u zakonu o Narodnoj banci Kraljevine Jugoslavije, objavljene 16. septembra 1940. godine. Uredba je protumačena kao namera da se izvrši etatiziranje Narodne banke. Udruženje ga je nazvalo pravnim hermafroditizmom. Time su uništena prava akcionara i poništen ugovor između države i akcionara. Na ovaj način je ministar finansija u ime države postao svemoćan u Narodnoj ban-

ci. I ta njegova svemoćnost predstavlja stvarnu etatizaciju. I na kraju, zaključuje se u Izveštaju Upravnog odbora Udruženja banaka prezentiranog na sednici Skupštine, ova Uredba nema ustavne podloge niti zakonske važnosti.

Potrebno je istaći da je Izveštaj Upravnog odbora Udruženja banaka o radu u 1940. godini veoma obiman, podeljen u više zasebnih celina kao što su: Novčano tržište, Tezauriranje novca, Kriza kredita, Srednjestaleški dugovi, Kamate na kredite i uloge, Likvidacija zemljoradničkih dugova, Savetodavni odbor za bankarstvo, Narodna banka Kraljevine Jugoslavije, Inflacija- skupoća, Predlog budžeta za 1941. godinu, Izbor članova Upravnog odbora i Završni račun za 1940. godinu koga potpisuje sekretar Lujo J. Mor i predsednik dr Vlada T. Marković. Međutim, o neizvesnoj budućnosti Udruženja banaka ali pre svega i zemlje, potresne su reči na samom početku ovog Izveštaja:

„Cela 1940. godina bila je ratna. I ako rat nije obuhvatio sve države u Evropi, u stvari su se ratne posledice osetile svuda, negde više, negde manje.

Bilo je država zaraćenih, nezaraćenih, neutralnih, pobeđenih i pokorenih, delom ili u celosti pokorenih, teritorijalno oštećenih ratom ili arbitražom – i svima njima nije bilo lako. Svaka je od njih na svoju ruku trpela poteškoće i nedaće. Tako je i naša zemlja skupo platila, i još plaća svoju neutralnost. Ti se izdaci ravnaju samim ratnim troškovima. A sem toga imala je i drugih svojih nevolja.

Mi živimo u vremenu trošenja ljudske krvi, skučenosti ishrane, skupoće i poremećaja u proizvodnji, potrošnji, trgovini, finansijama, saobraćaju i drugim delatnostima. To su u glavnome posledice rata, ali i posledice drugih radnji u pojedinim državama.

Prema nama stoji puna neizvesnost. Ona obuhvata i našu zemlju obimnim delom.

Ne zna se, kada će se, i kako, završiti rat, i šta će biti po svršetku rata.

Ta neizvesnost ne samo što veoma negativno dejstvuje u pogledu privrednog i drugog poslovanja, već stvara i zabrinutost.

Pod takvim se prilikama razvijala 1940. godina, i pod takvim se i završila. Šta više ona je takvo obeležje dala i početku 1941. godine“.

Beograd u bajkovito beloj zimskoj decembarskoj nedelji na početku priče o osnivanju Udruženja banaka i Beograd nekoliko godina kasnije kada je Lujo Mor postao generalni sekretar Udruženja polako se pretvorio u Beograd, okupiran, rušen i ranjavan. U takvom Beogradu, samo nekoliko meseci kasnije, prestalo je da kuca srce čoveka koji je u svom kratkom životu pokazao bezgraničnu humanost za uboge i nevoljnike ali i bezrezervnu angažovanost u razvoju ekonomije, bankarstva, diplomatije, sporta i filatelije. Odnosno, sve te aktivnosti rezultat su želje da se stvore i unapređuju međuljudski odnosi u zemlji opterećenoj brojnim političkim, ekonomskim i društvenim problemima. U takvoj je zemlji od njenog osnivanja izabrao da živi i bio joj je lojalan, odgovoran i savestan podanik. Iako Dubrovčanin po rođenju postao je Beograđanin po opredeljenju. Nepoznanica je kada je te 1941. prestalo da radi Udruženje banaka kao što je još mnogo toga ostalo nepoznato, pre svega zbog čega je Lujo Mor stradao od Gestapoa i gde su sahranjeni njegovi posmrtni ostaci. Ne manje važno je i gde i kada je stekao bankarska znanja da postane direktor Dunavsko-kreditnog zavoda čije se ime kao članice pominje od osnivanja Udruženja pa do njenih poslednjih dana 1941. godine i koji su bili razlozi da direktorsko mesto zameni sekretarskim. Vreme je učinilo da nepravedno izblede sećanja na ovog čoveka neobičnog životnog puta. Ovo je samo mali pokušaj da se ova nepravda bar malo ublaži.

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*Veliku zahvalnost za pomoć u pronalaženju podataka o životu i radu Luja Mora dugujem Bojani Nešić, tehničkoj urednici časopisa Bankarstvo, sada penzionerki Udruženja banaka.

Expert Article

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SECRETARY GENERAL OF THE ASSOCIATION OF BANKS – LUJO MOR

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Summary

The enigma of who Lujo Mor was has been waiting for an answer for a long time. The idea to research his life and work arose during the collection of relevant data on the existence and operations of the Association of Banks from its establishment in 1921 to 2006, for the purposes of writing a book about this banking association entitled The Association of Banks: The Common House of All Banks (Udruženje banaka: Zajednička kuća svih banaka). The data available at the time only pointed to the fact that Lujo Mor was Secretary General of the Association of Banks from 1926 to 1941. The result of many years of research and collection of available data on his life points to an unjustly forgotten sailor, banker, humanist, sports lover, honorary Secretary General whose work contributed to the reputation of the Association of Banks, whose work was rightly recognised by King Alexander I Karađorđević by awarding him, and others deserving, with the Orders of St. Sava and the White Eagle. His successful career was accompanied by numerous activities outside the Association, all with an obvious desire for the Kingdom of Yugoslavia to be a prosperous country in which its inhabitants would live in peace and prosperity. All this was interrupted by the Second World War, in which, at the beginning of the war, Lujo Mor's life was cruelly cut short by the Gestapo in the Banjica Concentration Camp.

Keywords: Dubrovnik, Kaiseriche und Koniliche Kriegmarine, Banjica Concentration Camp, Gestapo, Austria-Hungary, State of Serbs, Croats and Slovenes, Lieutenant of the frigate, Kingdom of Serbs, Croats and Slovenes, Lieutenant of the battleship II class, Danube-Credit Institute, Dobrila Mor, Stefanija Mor, Association of Banks, Order of the White Eagle V Class, Vlada T. Marković, Aleksandar Karađorđević, Eugen Deroko, Aleksandar Dimitrijević.

JEL classification: N24, B31.

Lujo Mor, Secretary General of the Association of Banks from 1926 to 1941, certainly deserved to be among the most important people who have woven their knowledge and abilities into the development of the Association of Banks and garnering its reputation in the country. However, Lujo Mor did not spend his enormous work en-ergy only in the field of banking, but was also involved in his country's economic activities, sporting events and humanitarian work.

Born in Dubrovnik and a native of Belgrade, he was tragically killed by the Gestapo in 1941.

Lujo Mor

Banjica Concentration Camp

Scarce information on how and when he was killed by the Gestapo can only be found thanks to the list of victims of the war of 1941-1945, stored at the Museum of Genocide Victims in Belgrade, and Sima Begović, who, with the help of the Institute for Contemporary History, published shocking testimonies about the abuse of those kept in the Banjica Concentration Camp from 1941 to 1944.

In the list of war victims (Municipality of Belgrade, Savski Venac, page 144) of the Museum of Genocide Victims, it is stated: Mor (Josip) Lujo, born in 1894, Croat, died in 1941 in prison, Belgrade (0866091060).

In the book Banjica Concentration Camp 1941~1944 by Simo Begović we learn:

"In all these prisons, an 'interrogation procedure' was applied, which consisted of the use of the most brutal methods to extract confessions. That is why the stay in prisons was the vestibule of hell for many detainees, sometimes worse than the camp itself. Strange as it may sound, for the most severely tortured prisoners, going to the camp meant deliverance from torment.

Of the many testimonies about the abuse of detainees in Gestapo prisons, we will first include the statement of Dr Dragomir Karajović, a doctor from Kraljevo, given before the State Commission for Investigation of the Crimes of the Occupiers and Their Accomplices. Dr. Karajović was a doctor by profession, so his testimony was at the same time the opinion of a medical expert. He was arrested on 30 October 1941. He remained in the Gestapo prison in Aleksandrova Street (in Belgrade) until 14 February 1942. As a doctor, he was allowed to periodically examine patients and move from cell to cell with an escort. One day, he was called to help a prisoner Nikolić from Jagodina, over whom a frowning Henig and Urlih loomed like mummies. Nikolić was lying in a pool of blood, half-conscious. His skin was peeled off from the rest of the tissue, and his head and face were completely deformed. Tere wounds with jagged edges across the entirety of his head. Dr. Karajović bandaged the beaten detain-

ee, but the man passed away within 48 hours. On another occasion, a doctor from Kraljevo spotted the same Gestapo men brutally beating an imprisoned Lujo Mor. The beating lasted for days. It was only when he succumbed to agony that he was taken to the hospital."

Gestapo in Aleksandrova Street, Belgrade

The Banjica Concentration Camp was established on 5 July 1941 on the initiative of the German occupation authorities who had executive power over the camp, in which they were helped by the collaborationist authorities, primarily the special police of the Belgrade City Administration. The first prisoners arrived four days later, and according to official data, close to 24,000 people, predominantly Serbs, passed through the camp, while about 4,200 prisoners were killed. The Banjica Concentration Camp had the hallmarks of a large political prison and people were accommodated there accordingly. The rooms held 50-100, and even more prisoners, and their damp walls let cold in during the winter, chilling the prisoners to the bone. The worst was in the winter of 1941-42, says historian Darko Ćirić, curator of the Banjica Concentration Camp Museum, for BBC News in Serbian. Most of the inmates were political prisoners, pre-war communists, active fighters and collaborators of the People's Liberation Movement, fighters of foreign military units and movements, as well as supporters of Draža Mihailović's Ravna Gora Movement. At the beginning of November 1941, the German authorities arrested a group of intellectuals and prominent Belgrade citizens as hostages, labelling them as Freemasons. Some of them were also members of the Serbian Royal Academy, such as biologists, physiologists, philosophers, writers, and academics. Among them were: Ivan Djaja, academic, Siniša Stanković, biologist, Tihomir Đorđević, ethnologist, Veljko Petrović, writer, Aleksandar Deroko, architect, professor and later academic and many others. It is likely that Lujo Mor was also arrested in this group.

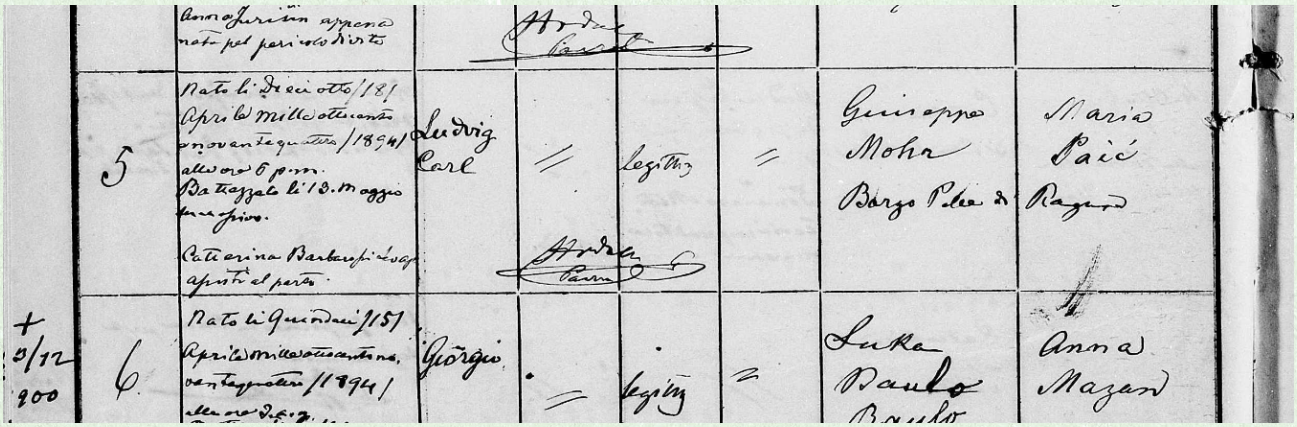
Gestapo

The name Gestapo originated as a coin of the initial syllables of the German words Geheime Staatspolizei, which means state secret police. It was founded on 26 April 1933, three months after the Nazis came to power in Germany. It was founded by Hermann Göring shortly after Hitler appointed him Prussian Minister of

the Interior. Under the auspices of Himmler's SS, it became the main secret police for all of Germany and the conquered territories.

Family

Lujo Mor's tragic end came after an unusual, turbulent life and a successful business career. He was born on 18 April 1894 in Dubrovnik, to his mother Marija Mor (Mohr) nee. Peić and his father Josip (Guiseppo) Mohr, who had two more sons, Viktor and Karlo. Marija Mor was born on 3 March 1855 as an Orthodox Serb in Petrinja, Croatia. She died on 24 December 1926 and was buried at Mirogoj in Zagreb, where her son Karlo was also buried in the family tomb. Joseph More was probably born in 1845, and the year of his death is unknown. Marija and Josip were married on 4 February 1875 in the Church of St. Lawrence in Petrinja. During the research, no information was found about Josip's place of birth, early years and work until his employment as a professor of the "Women's School of Education (Preparandija) in Dubrovnik".



The Preparandija or Women's School of Education in Dubrovnik began its work in January 1875. Prior to that, trainings for teachers were held in the private elementary school of the Servants of Mercy in the convent in Pile. The decision to open a state women's school of education (Preparandija) was made by the Ministry of Worship and Education on 6 January 1875. It was the only girls' high school in the area of today's Dalmatia. From its founding until 1920, 54 percent of the school's students came from other parts of Dubrovnik, mostly from the region from Zadar to Kotor and Budva, but also from places that belonged to the Austro-Hungarian Empire.

The eldest son of Marija and Josip was Karlo, born on 14 March 1876 and died on 3 September 1917. Much more is known about Lujo Mor's middle brother, Viktor Pavo, who was born on 18 June 1885 in Pile (Dubrovnik) and died on 12 August 1966. Before World War II, he was a lieutenant of the gendarmerie and an active member, and then the last Master Promoter of the Society of the Brethren of the Croatian Dragon, which was founded in 1905 and abolished by the decision of the Ministry of the Interior of the People's Republic of Croatia in 1946. He was also the author of the book "Chronicle of the Society of the Brothers of the Croatian Dragon 1940-1941," which was printed in Zagreb in 1941. The book features information about the Society from various newspapers and publications in order to glorify the "patriotic and cultural work of the Society". Ivo Kerdić (1881-1953), a medal maker and sculptor and Viktor's friend, made a bronze tombstone on his grave. His statement that Victor was "a

mix, from an Italian or German father and an Orthodox mother" was also recorded. Viktor was married twice: his first wife was Marina, with whom he had daughters Mara Long and Mirjana Puškaš, and his second wife was Marija, with whom he married on 12 May 1958.

Preparandija in Dubrovnik

Ludvig Karl Mohr, known as Lujo Mor in the annual reports of the Association of Banks, spent his childhood in Dubrovnik. His origin, but primarily the origin of his parents, can be better understood if we know that Dubrovnik in the late 19th and early 20th centuries was a city where Catholics, Orthodox, Evangelicals and Jews lived together. In 1890, Dubrovnik had 11,177 inhabitants in the following settlements: Gruž-Lapad, Brgat Gornji, Brgat Donji, Grbavac, Martinovići, Makoše, Buići, Petrača, Čelopeci, Čibača, Brašina, Zavelje, Soline and Plat. Of this total population, 9,713 people spoke Serbian, 716 spoke Italian, 384 spoke Hungarian, 285 spoke German, 52 spoke Slovenian, 6 spoke Polish and 2 spoke Russian. These figures were extracted from aggregate data. However, only Dubrovnik, Gruž-Lapad, Čibača and Brašina had other languages in addition to Serbian, while the inhabitants of the other settlements spoke only Serbian.

Dubrovnik

It is known that Dubrovnik originated from two settlements: the Slavic mountainous Dubrovnik and the Romanesque Ragusium, which rose on a small island inhabited by refugees from Epidaurus. After some time, the Slavs and Romans filled the narrow sea channel between the reefs at today's Pile, and later Stradun, and created a joint city of Dubrovnik-Ragusium, or Ragusa. The city then expanded to the Hum and Trebinje areas. As a port, Dubrovnik and its Gruž can thank their development to trade with Hum, Travunia and Raška, which then spread to most of Serbia and Bosnia. Dubrovnik developed notably in the 12th century after trade treaties with the great prefect Stefan Nemanja (ruled from 1168 to 1196) and Ban Kulin (ruled Bosnia from 1180 to 1204). Starting from the 13th century, clerks, merchants and craftsmen came to Dubrovnik from It-

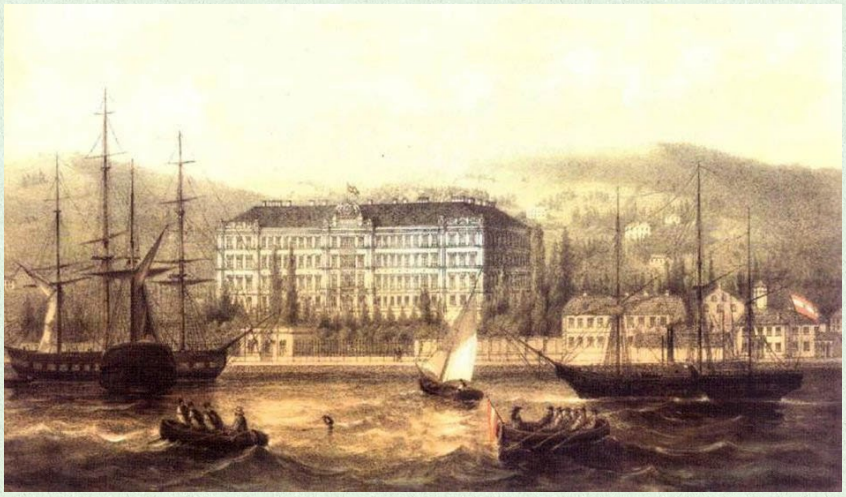
aly, but the general population was of predominantly Slavic origin. The city gradually accumulated wealth, stemming from trade in the Balkans, with a significant merchant fleet throughout the Mediterranean.

When the Hungarian state fell in 1526, Dubrovnik had to choose a supreme lord: the Venetian Republic or Turkey. Dubrovnik was so commercially developed that the Venetians, due to their own interest, as competitors, could economically regress them. They knew that the Turkish supreme government would not be lenient, but also that they had never been good merchants, so they would not endanger their business. The Turks gave them a privileged position to trade throughout their vast empire while paying an annual tribute to the sultan.

In 1806, French troops occupied Dubrovnik, breaking their promise that the neutrality of the Dubrovnik Republic would be respected. The occupation lasted until 1808, when the Republic of Dubrovnik was abolished. Its territories were annexed and included in the Napoleonic Kingdom of Italy, and in 1809 they were annexed to the French Illyrian provinces. After the defeat of Napoleon's French territories, the former Dubrovnik Republic was annexed to the Austro-Hungarian Empire in 1815. Dubrovnik and its surroundings remained part of this empire until its dissolution in 1918.

Education

Lujo Mor spent his childhood and youth in Dubrovnik, under Austro-Hungarian rule. He also received his primary education there. It is known that on 2 October 1817, the Main School in Dubrovnik (Glavna škola) was founded, which was the first male "public" school. Classes were conducted in Italian. The school had three grades, and in 1923 it was decided that the school would last four years. That year, a regulation was passed that attendance at the Main School in Dubrovnik was mandatory for all children from the ages of six to twelve. A few years later, fourth-grade courses were established, the school then became a lower secondary school, a school for the education of seafarers and a school for future teachers, which formed the core of the Preparandija where Lujo's father also worked. A girls' school was also founded in 1837.



Naval Academy, Rijeka

The Nautical School began its work on 15 March 1852. Classes lasted 2 years, and in 1871 it became a three-year school when the graduation exam was introduced. In 1876 it was separated from the public school. It is realistic to assume that Lujo Mor graduated from the Nautical School in Dubrovnik, and it is known for certain that he then enrolled in the Naval Academy in Rijeka - Kaiseriche und Konigliche Marine Akademie, a school for the training of non-commissioned officers and officers for the needs of the Austro-Hungarian Navy.

Kaiseriche und Königliche Marine Akademie

The Imperial and Royal Naval Academy continuously trained sailors from 1866 to 1914. Schooling lasted four years and was divided into several fields of study in which the following subjects were covered: mathematics, physics, mechanics, practical geometry, steam engines, shipbuilding, nautical, methodology, physics of the sea, maritime law, history, geography, natural history, etc. Common activities for all departments included: fencing, swimming, dancing, singing, playing and social behaviour. In the final part of the education, which was related to sea research and meteorological measurements, classes were conducted in cooperation with the Hydrographic Institute of Pula, the Naval Library and the Naval Observatory. Classes were conducted in German, while Italian, French, English and "Illyrian" (from 1899 Serbian/Croatian language) were also studied. The Academy's teachers were predominantly Rear Admirals and Admirals, excellent experts and scientists.

Initially, cadets aged 12-15 were enrolled at the Academy, and with the development of civilian primary education, the age limit was set to 15 years, so students with a lower high school diploma, but also by those with a high school diploma could enrol. Upon graduation from the Academy, they were assigned mainly to non-commissioned officers and junior officers, depending on the needs of the Austro-Hungarian Navy Corps. Officers who graduated from this military academy were expected to know four languages: German, Hungarian, Italian and Serbian/Croatian. It is estimated that about 1000 cadets from the territory of today's Croatia, mostly the coastal area, were educated at the Rijeka Academy. From the list of all officers of the Royal Austro-Hungarian Navy, compiled in exile in 1970 by the Frigate Captain Rene Podhorski, we learn that Lujo J. Mor graduated from the Naval Academy K. u. K. Kriegsmarine on 11 June 1914. On 1 November 1916, he was promoted from Corvette Lieutenant to Frigate Lieutenant, seemingly faster than usual (the rank was usually held for at least three years), but this can also be explained by the war conditions.

In 1867, the Austrian Navy was transformed into the Austro-Hungarian K.u K. Kriegsmarine (Imperial and Royal Navy) and became one of the largest navies in the early 20th century. In 1914, it had over 20,000 people, of which 34.1% were inhabitants of today's Croatia, Slovenia, Montenegro and Bosnia and Herzegovina, 20% were Hungarians, 16.3% were Germans and Austrians, 14% were Italians, 11% were Czechs and Slovaks and 4.6% were Poles and Romanians.

Unification

The State of Slovenes, Croats and Serbs was founded on 29 October 1918, on the territory of these South Slavic peoples who were once part of the Austro-Hungarian Monarchy. A month later, on 1 December 1918, the Kingdom of Serbs, Croats and Slovenes was founded. The unification of the Kingdom of Serbia, founded in 1882, with the State of Slovenes, Croats and Serbs was proclaimed by Regent Aleksandar Karađorđević, acting on behalf of his father, King Petar I Karađorđević. The State was based on full equality between the Kingdom of Serbia and the State of Serbs, Croats and Slovenes. (source: Museum of Yugoslavia, Belgrade).

The Collapse of the Austro-Hungarian Empire

In October 1918, the First World War was in its final stages. The Austro-Hungarian multinational state was collapsing, and the emergence of new states was on the horizon. On 30 October 1918, the Austro-Hungarian Emperor Charles (born 1887 - died 1922) made a decision to officially hand over the entire Kaiseriche und Konigliche Kriegsmarine to the National Council of the State of Serbs, Croats and Slovenes. The signing of the minutes on the handover of the Austro-Hungarian fleet in Pula, Šibenik, and the Bay of Kotor, took place on 31 October at 11 a.m. on the battleship VIRIBUS UNITIS in Pula. The signatories were members of the Commission of the National Council of Serbs, Croats and Slovenes and Mikloš Horti, Rear Admiral and Commander of the Austro-Hungarian Navy. On the basis of this document, the Austro-Hungarian warships stationed in Pula and Šibenik were taken over by officers of the state of Serbs, Croats and Slovenes, among whom, in addition to those who were from the territory of the new state of Serbs, Croats and Slovenes, there were also sailors and non-commissioned officers from the Czech Republic, Slovakia and Poland. On the same day, the flag of the Serbs, Croats and Slovenes was ceremoniously raised on the ships, and the Austro-Hungarian flag was lowered.

The handover in the Bay of Kotor, the second largest and most important Austro-Hungarian naval base, was carried out by the Command's Plenipotentiary and the Fleet's Chief of Staff, Captain Lieutenant Dimitrije Konjević. It was held on the same day as in Pula, but at 4 p.m. on the cruiser Kaiser Franz Joseph I. On that day, a meeting was held with Slovenes, Croats and Serbs - officers of the Austro-Hungarian Navy, at which it was decided that the commander of that naval alliance would be the Frigate captain Jozef Levi, while the new commanders of the Serbs, Croats and Slovenes were appointed on the ships.

The entire imposing Austro-Hungarian military base and the fleet that was there passed into the hands of the State of Serbs, Croats and Slovenes in the Bay of Kotor. It contained; 3 battleships, 1 armoured cruiser, a guard ship, a coastal battleship, 4 cruisers, 3 destroyers, 17 torpedo boats, 7 submarines, 13 tugboats, 5 smaller transport steamships, 2 floating docks, 3 hulks and 3 pontoons. A seaplane base with 6 hangars and 47 seaplanes was handed over in Kumbor.

The Austro-Hungarian Navy ceased to exist before the armistice in World War I was officially signed on 4 November 1918 and before the first units of the Serbian Army arrived in the Bay of Kotor by land on 6 November 1918 and the first warship of the Entente forces, the French destroyer Kabyle, sailed into the Bay of Kotor on 5 November 1918. On 10 November 1918, major allied forces arrived in the Bay: Italian, French and British naval forces under the command of French Rear Admiral Louis Kobe. They take measures to place all the ships and other valuable material resources of the vanquished under their command. Germans, Austrians and Hungarians then leave by ship and rail for their homeland.

From Frigate Lieutenant in the Navy of the Kingdom of Serbs, Croats and Slovenes to the Secretary General of the Association of Banks

It is clear that Lujo Mor, along with other Serbs, Croats and Slovenes, but also Czechs, Poles and Slovaks who were on the military ships of the Austro-Hungarian Empire, joined the navy of the future Kingdom of Serbs, Croats and Slovenes. The only thing that is unknown is where he was stationed in those days, whether in Pula, Šibenik or Boka Kotorska. Lujo was officially accepted into the Royal Navy on 24 June 1919.

In the Official Military Gazette as of 28 June 1919, it was announced that by the decree of Aleksandar

Karađorđević, and on behalf of King Petar I, at the proposal of the Minister of the Army and Navy, and "after hearing our Ministerial Council," it was decided to admit the following to the Navy of Serbs, Croats and Slovenes:

- to the rank of Captain: Miroslav Grund, Eugen Malinarić, Adolf Mladić; to the rank of Frigate Captain Nikola Stanković;
- to the rank of Corvette Captain: Mijo Kovačić, Mavro Vikerhauzer and Slavomir Drahsler;
- to the rank of Captain Lieutenant, I class: Antun Labaš, Gaston Rosi Sabatini, August Kuster, Emil Mariašević and Stevan Drakulić;
- to the rank of Captain Lieutenant, class II: Ivan Ulmanski and Dragutin Reman;
- to the rank of Frigate Lieutenant: Nikša Nardeli, Đuro Pani, Vladimir Andoljšek, Metod Pirc, Dražen Elija, Vladimir Crnadak, LUJO MOR, Hiacint Mundorfer, Vladimir Labaš and Vladimir Trost.

In addition to them, the persons who were accepted to the rank of reserve corvette lieutenant, naval cadet, reserve naval cadet, technical managers I and III class are also listed. The decision was signed by the Minister of the Army and Navy, General Stevan Hadžić.

After this appointment, Lujo Mor spent some time in the Navy, but retired from that service due to a position as Director at the Danube-Credit Institute. It is unknown exactly when he took over the directorial duties in this credit institution, but it is known that he held that position in 1925. He apparently did not stay there for long, because on 28 February 1926, by decree of King Aleksandar I and at the suggestion of the Minister of the Army and Navy, he returned to active service (Official Military Gazette of 26 June 1926). Very soon, after only three and a half months, Lujo retired and, by the decision of Aleksandar I Karađorđević, he was transferred to the reserve. This decision was signed on 19 June 1926 by the Minister of Army and Navy, Division General Dušan Trifunović (Official Military Gazette as of 28 June 1926). He took some time to choose his profession until his final election that same year as Secretary General of the Association of Banks in Belgrade, a young banking institution that was founded on 4 December 1921, and which, under his leadership, enjoyed a great reputation among bankers, ministers and other representatives of the Government.

Dobrila and Stefanija

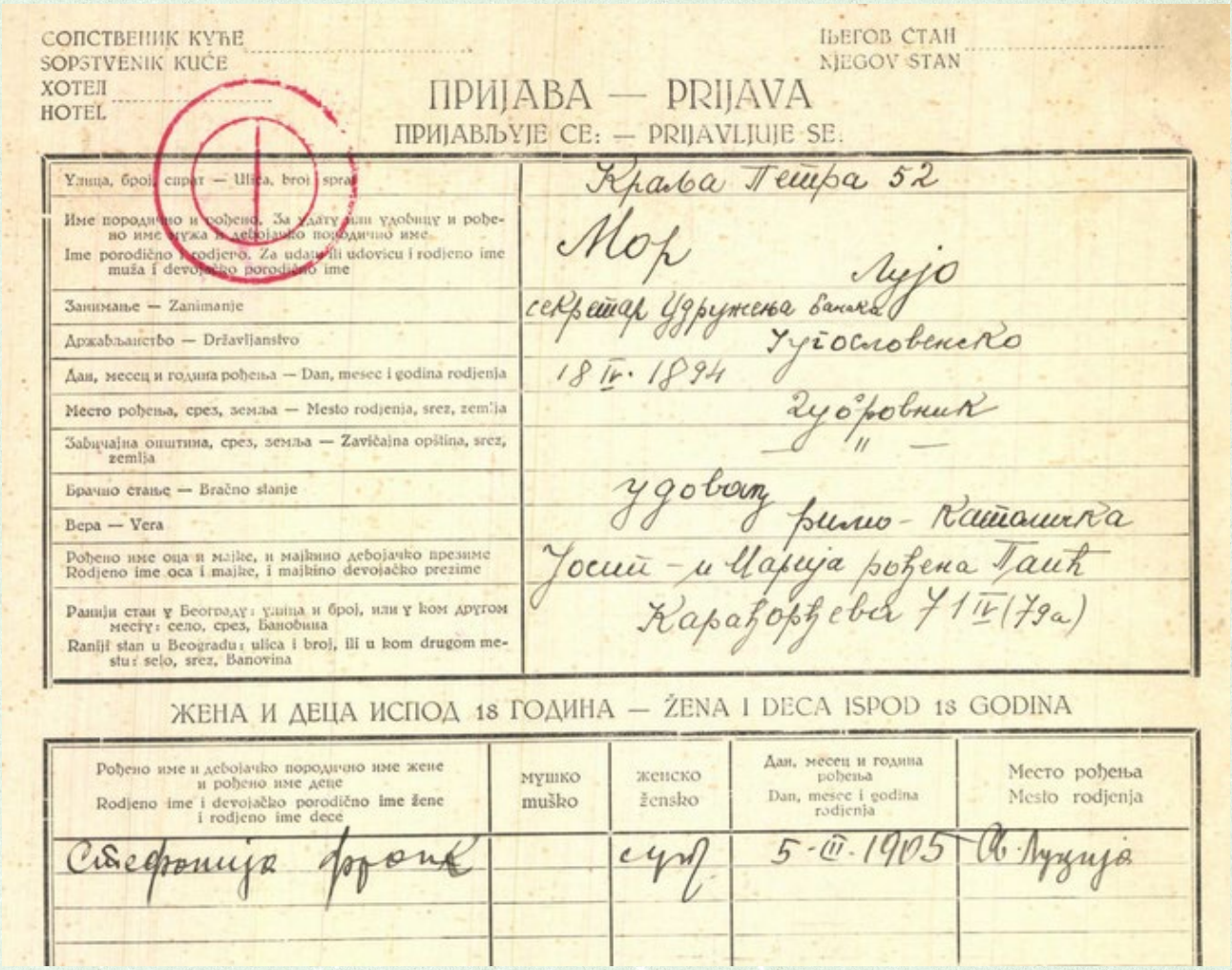
These seven years, from his entry into the navy of the Kingdom of Serbs, Croats and Slovenes to the position of Secretary General in the Association of Banks, were extremely dynamic for Lujo, both in business and in his private life. On 4 June 1925, he married Dobrila Dimitrijević, a woman from a respectable family. Her father Radovan (1852-1899) was a treasurer in the Monopoly Administration and a Member of Parliament in the Kingdom of Serbia, and her mother was named Stana. Dobrila's parents had three sons and two daughters in the marriage. Unfortunately, one of the daughters, Danica, died at the age of nineteen, in 1900, then in 1911 both sons passed away, Milan (born in 1880) and Miodrag (born in 1890), and Dobrila died at the age of 31 (1896-1927). Stana (maiden name Grujić) was born in 1853 in Kragujevac and died on 7 June 1943 in Belgrade. Left a widow at an early age, she survived the loss of four of her children, and only her son, Aleksandar, remained to console her.

Marshal of the Court

Aleksandar Dimitrijevic was born on 6 February 1884 in Niš. He began his military career as a cadet in the 34th class of the Lower Military Academy, and later he was educated in the 19th class of the Higher Military Academy. During the Balkan Wars, he was a sergeant in the Danube Artillery Regiment, as a platoon commander and battery commander. During World War I, he served as commander of the 3rd Battery and a Division of the Danube Artillery Regiment. From 1917 to 1920 he was a batman (ordonnance) of the regent Aleksandar Karađorđević. He, then, went to France for training. He interned in Grenoble and Nancy in 1921 and returned to the country in the same year to teach tactics at the Lower School of the Military Academy. From March 1926 he was a military envoy in Paris. From April 1927 to October 1934, he served as Marshal of the Court of King Aleksandar Karađorđević, who was the best man at his wedding, and the godfather of three of his children. He was a member of the secret organization White Hand, thanks to which he had a visible influence on the choice of people in the military and political leadership of the country. He is the holder of numerous awards, and he received the Order of Karađorđe Star with Swords 4th Grade twice.

In 1924, he married Savka (1895-1961), daughter of Dimitrije Živadinović, a merchant from Belgrade and president of the Board of Directors of the Belgrade Cooperative. They had a daughter, Milica, married name Skinner (1929-2017), an anthropologist who worked at the Museum of Anthropology in New York, a son called Peter (1925-2014), a Harvard University graduate and an economist, and a son named Pavle (1927-1945). Aleksandar left the country at the beginning of World War II. He died in 1963 in New York, and his remains, as those of his son Petar and daughter Milica, were transferred to the family grave at the New Cemetery in Belgrade (plot 4). The first tombstone bears an engraving of the names of Aleksandar's father Radovan and his children: Danica, Milan, Miodrag and Dobrila. Aleksandar's mother, Stana, is also buried here, but her name is not engraved. The second monument features the names of Aleksandar and Savka, and the third features the names of their children: Pavle, Petar and Milica Skinner.

Unfortunately, Lujo's marriage lasted less than two years. Having remained on his own, over the next few years he worked in the Association of Banks and in many other business activities. What stands out especially in all these years is his unusually fruitful humanitarian engagement, which also included monetary donations. The magnitude of his humanitarianism is more clear when we know that Lujo Mor did not have a home of his own until 1936. From 1924 to 1936, he lived in rented apartments at a total of 11 addresses: Kralja Petra 52, Kosmajska 30, Topličin venac 23, Knez Mihajlova 27, Bogojavljenska 7, Kosovska 41, Dobričina 44, Karađorđeva 79, Žorža Klemansoa 8, Vlajkovićeva 5 and Braće Jugovića 2.



СОПСТВЕНИК КУЋЕ
SOPSTVENIK KUĆE
ХОТЕЛ
HOTEL

ЊЕГОВ СТАН
NJEGOV STAN

ПРИЈАВА — PRIJAVA
ПРИЈАВЉУЈЕ СЕ: — PRIJAVLJUJE SE:

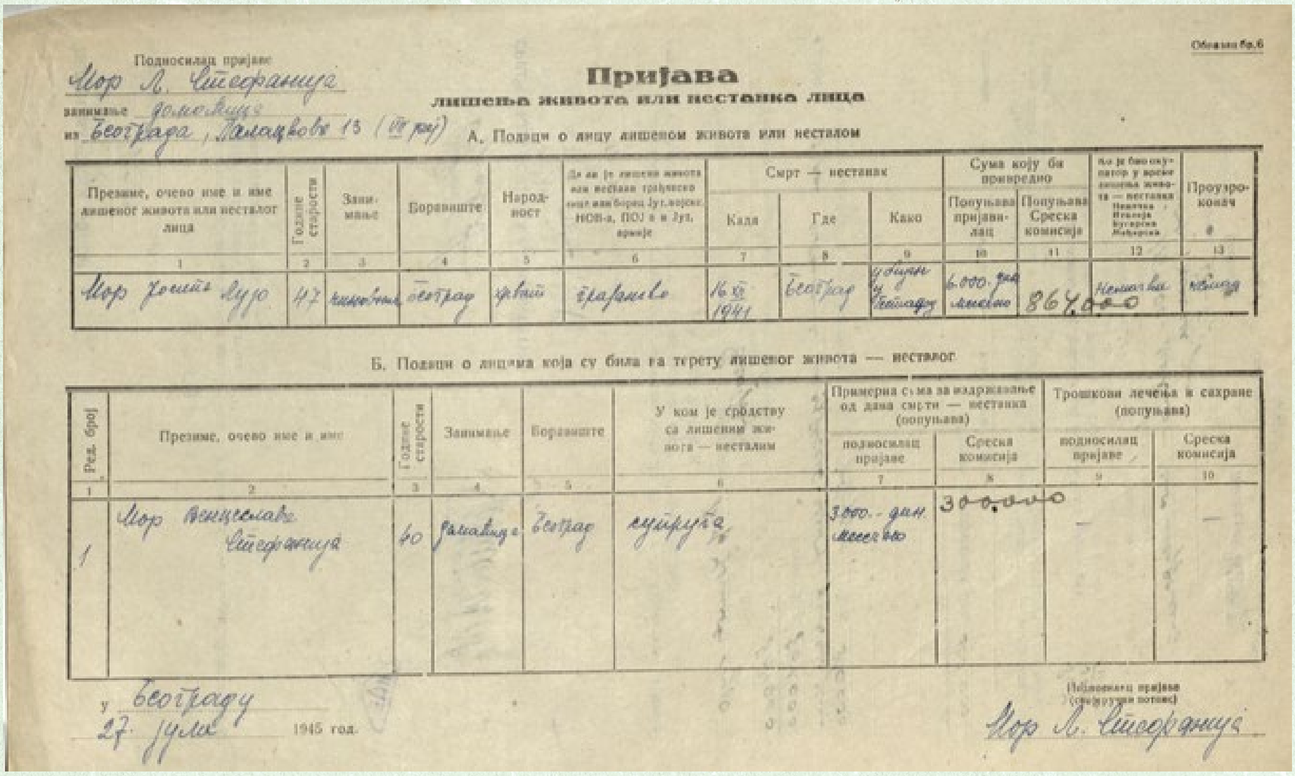
Улица, број, спрат — Ulica, broj i sprat	Краља Петра 52
Име породично и рођено. За удату или удовицу и рођено име мужа и девојачко породично име Ime porodično i rodjeno. Za udatu ili udovicu i rodjeno ime muža i devojačko porodično ime	Мор Лујо
Занимање — Zanimanje	секретар Удружења банака
Држављанство — Državljanstvo	Југословенско
Дан, месец и година рођења — Dan, mesec i godina rodjenja	18 IV. 1894
Место рођења, срез, земља — Mesto rodjenja, srez, zemlja	Дубровник " " —
Завичајна општина, срез, земља — Zavičajna opština, srez, zemlja	
Брачно стање — Bračno stanje	удовац
Вера — Vera	римо - Католичка
Рођено име оца и мајке, и мајкино девојачко презиме Rodjeno ime oca i majke, i majkino devojačko prezime	Јосип - и Марија рођена Паић
Раније стан у Београду: улица и број, или у ком другом месту: село, срез, Бановина Ranији stan u Beogradu: ulica i broj, ili u kom drugom mestu: selo, srez, Banovina	Карађорђева 71 IV (79а)

ЖЕНА И ДЕЦА ИСПОД 18 ГОДИНА — ŽENA I DECA ISPOD 18 GODINA

Рођено име и девојачко породично име жене и рођено име деце Rodjeno ime i devojačko porodično ime žene i rodjeno ime dece	мушко muško	женско žensko	Дан, месец и година рођења Dan, mesec i godina rodjenja	Место рођења Mesto rodjenja
Стефанија Франк		супр	5 · III · 1905	В. Лужја

Lujo moved into a home of his own in 1936, after he built a single-storey house on a purchased plot, which was located on the far outskirts of Belgrade, at the address Nova ulica, XII kvart (today Palackova Street, Savski Venac). It will also be the home of his second wife, Stefanija (Štefanija) Fran. He married her on 11 October 1932 in the church of St. Peter's Parish in Belgrade. Stefanija was the daughter of Marija and Wenceslaus Fran, born on 16 February 1896 in Saint Lucia, in present-day Istria, Croatia. Based on the data of the Belgrade City Administration - Register of City Residents, it can be assumed that Stefanija came to Belgrade in 1926 and that she was employed as a clerk. Stefanija survived Lujo Mor and lived in Belgrade until her death. On 27 July 1945, she reported that her husband, Lujo Mor, had been killed by the Gestapo in 1941. On that occasion, a record was made of their single year of married life and of her financial status as a housewife. Stefanija died in 1977, was cremated and the urn was transferred to Milan the same year.

Lujo Mor was the embodiment of a humanitarian, and he affirmed this repeatedly, unreservedly donating his time, his knowledge, his compassion and, finally, his material resources to those in need. Charity is one of the most valuable and appreciated characteristics of a person. It is the ability to help



Образац бр. 6

Подносилац пријаве Мор Л. Стефанија
занимање домаћица
из Београда, Палацкова 13 (III рај)

Пријава
лишења живота или нестанка лица

А. Подаци о лицу лишеном живота или несталом

Презиме, очево име и име лишеног живота или несталог лица	Године старости	Занимање	Боравиште	Народност	Да ли је лишени живота или нестали грађанско лице или борац Југ. војске, НОВ-а, ПОЈ-а и Југ. армије	Смрт — нестанак: Када	Где	Како	Сума коју би привредио: Попуњава пријавилац	Попуњава Среска комисија	Ко је био окупатор у време лишења живота — нестанка	Проузроковач
1	2	3	4	5	6	7	8	9	10	11	12	13
Мор Хоштв Лујо	47	[illegible]	Београд	јеврејин	грађанско	16 XII 1941	Београд	убијен у Бањици	6.000 дин. месечно	864.000	Немачка	Немци

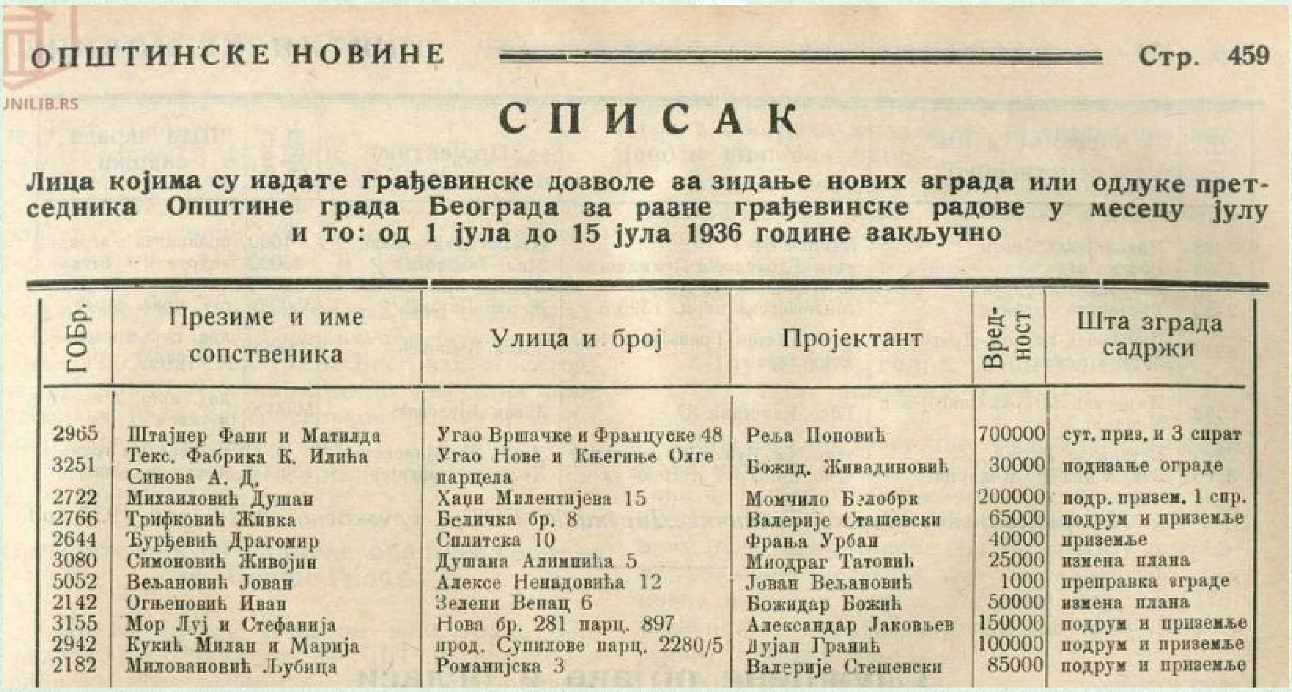
Б. Подаци о лицима која су била на терету лишеног живота — несталог

Ред. број	Презиме, очево име и име	Године старости	Занимање	Боравиште	У ком је сродству са лишеним живота — несталим	Примерна сума за издржавање од дана смрти — нестанка (попуњава): подносилац пријаве	Среска комисија	Трошкови лечења и сахране (попуњава): подносилац пријаве	Среска комисија
1	2	3	4	5	6	7	8	9	10
1	Мор Венцеслава Стефанија	40	домаћица	Београд	супруга	3000.- дин. месечно	300.000	—	—

У Београду 27. јула 1945 год.

Подносилац пријаве (својеручни потпис)
Мор Л. Стефанија

and empathise with others without benefiting from it. That would be the definition of charity that best reflects Lujo's personality.



ОПШТИНСКЕ НОВИНЕ Стр. 459

СПИСАК

Лица којима су издате грађевинске дозволе за зидање нових зграда или одлуке претседника Општине града Београда за равне грађевинске радове у месецу јулу и то: од 1 јула до 15 јула 1936 године закључно

ГОБр.	Презиме и име сопственика	Улица и број	Пројектант	Вредност	Шта зграда садржи
2965	Штајнер Фани и Матилда	Угао Вршачке и Француске 48	Рећа Поповић	700000	сут. приз. и 3 спрат
3251	Текс. Фабрика К. Илића Синова А. Д.	Угао Нове и Књегиње Олге парцела	Божид. Живадиновић	30000	подизање ограде
2722	Михаиловић Душан	Хаџи Милентијева 15	Момчило Белобрк	200000	подр. призем. 1 спр.
2766	Трифковић Живка	Беличка бр. 8	Валерије Сташевски	65000	подрум и приземље
2644	Ђурђевић Драгомир	Сплитска 10	Фрања Урбан	40000	приземље
3080	Симоновић Живојин	Душана Алимпића 5	Миодраг Татовић	25000	измена плана
5052	Вељановић Јован	Алексе Ненадовића 12	Јован Вељановић	1000	преправка зграде
2142	Огњеновић Иван	Зелени Венац 6	Божидар Божић	50000	измена плана
3155	Мор Луј и Стефанија	Нова бр. 281 парц. 897	Александар Јаковљев	150000	подрум и приземље
2942	Кукић Милан и Марија	прод. Супилове парц. 2280/5	Дујан Грапић	100000	подрум и приземље
2182	Миловановић Љубица	Романијска 3	Валерије Стешевски	85000	подрум и приземље

Society for Helping the Poor and Supressing Begging

On 31 March 1927, the newspaper Pravda reported to its readers that Lujo Mor, Secretary of the Association of Banks, and Aleksandar Dimitrijević, general, had allocated 2,000 dinars of their funds for the future church of St. Sava in Belgrade in the name of Dobrila Mor, so that she would be registered as one of its benefactors. This was obviously the beginning of his future humanitarian work, which was reflected in helping the poor, the sick and the suffering.

Shelter of the Society for Helping the Poor and Supressing Begging

On 13 January 1930, the newspaper Vreme published a list of "donors" who participated in the "Christmas Offerings for the Belgrade Poor", which also included Lujo Mor with a contribution of 100 dinars. These funds went to the Anti-Begging Society, which was founded in April 1929. A few months later, on 23 August, the Society for the Suppression of Begging in the newspaper Vreme, thanked the Ministry of Social Policy and Public Health in Belgrade for the help of 1,000 dinars, as well as a small number of companies and individuals, including Lujo Mor, with a separate amount of 50 dinars. In this article, it is stated that about a dozen persons have been elected as honorary members of the Society. These were the heads of several ministries, engineers, the Vice President of the Municipality of Belgrade, and among them the Secretary of the Association of Banks, Lujo Mor. These prominent Belgrade citizens have agreed to help open an office that will deal with the suppression of begging. They will also be engaged in arranging a temporary room in Dalmatinska Street in Belgrade until its opening.

At the Extraordinary Assembly on 19 September 1930, its name was changed to the Society for Helping the Poor and Supressing Begging. The motto of the Society becomes: "Accept the stumbling, raise the fallen and feed the unfortunate". Saint John the Merciful, who during his lifetime as Patriarch of Alexandria spent all his income on helping the poor, was taken as a "social patron" and as a patron saint of the Society (November 25). In March 1932, Lujo Mor donated 500 dinars to this Society and became its honorary member – a "founder" of the Society.

On 12 February 1933, in the hall of the Red Cross Society, an assembly of the Society for Helping the Poor and Supressing Begging was held. From this meeting, a telegram was sent to King Aleksandar greeting "the greatest friend and donor of the poor". The Minister of Social Policy and Public Health and the President of the Belgrade Municipality were also greeted by telegrams. At the meeting, the

management of the Society was commended on their diligent and dedicated work. Lujo Mor also joined the discussion, proposing to remove piggy banks from the streets that the poor used to beg and that measures be taken against child begging and begging door-to-door. His proposals, however, were not accepted because it was pointed out through the discussion that the Society has no other alternative for collecting aid, that the removal of beggars' children from the streets cannot be significantly achieved for the time being because there are no adequate accommodation capacities, and begging door-to-door is difficult to control. Members of the Management and Supervisory Boards were elected at the meeting. Lujo Mor also became one of the members of the Supervisory Board.

On 25 November 1933, the Society for Helping the Poor and Supressing Begging held a ceremonial opening and consecration of a new, extensive and comfortable shelter for a considerable number of older beggars. It was an occasion to celebrate the Society's patron saint - St. John the Merciful. Bishop Vićentije Vujić consecrated this home and cut the Slavski kolač with the help of two priests and a choir of students of the Faculty of Theology. On that occasion, Bishop Vujic gave a speech in which he emphasised the importance of charity work and care for those who are sent to begging. He expressed great gratitude to the initiators of this deed: members of the Board, including Lujo Mor as Vice President of the Supervisory Board of the Society, as well as other numerous guests who contributed to the opening of this shelter and the implementation of other humanitarian activities with their work, support and contributions. The opening of the shelter was attended by: King Aleksandar's envoy, Colonel Leko, who handed over a donation of 10,000 dinars, representatives of the Belgrade Municipality, an envoy of the Ministry of Social Policy, a representative of the Society for the Protection of Girls, etc.

Ten days after the opening of the new home of the Society, the newspaper Vreme, informed its readers on who made a contribution to the ceremony aside from King Aleksandar. These are: Minister of the Interior Žika Lazić - 300 dinars, Vice President of the Municipality of Dobre Bogdanović - 300 dinars, Society for the Protection of Animals and Vegetation - 100 dinars, Association of Russian War Invalids - 100 dinars, Maternity Association - 50 dinars, Russian Charity Society - 50 dinars, Bishop Vićentije - 100 dinars, as well as many other individuals, professors, architects, engineers, inspectors, etc. Among the individuals is Lujo Mor, Secretary of the Association of Banks, who donated 50 dinars.

It is likely that Lujo Mor's commitment to the Society for Helping the Poor and Supressing Begging was much greater than the available information indicates. Namely, daily newspapers talk about donations to this Society sporadically, that is, when there are annual assemblies, celebrations, the opening of shelters or when it comes to a larger donation from institutions or individuals, and then financial assistance from other donors is also mentioned. An example is an article published in Pravda on 8 March 1934 under the title Contributions. It alleges that Emile Rosa Abraham of Paris, through the Ministry of Foreign Affairs, donated 500 French francs to the Society for Helping the Poor and Supressing Begging. Further in the article, other donors are also mentioned: architect Janko Šafarik (300 dinars), the Society for the Beautification of the Zeleni Venac and Savska Padina (250 dinars), the director of the Anglo-Czechoslovak and Prague Credit Bank, Dr Manojlo Lesić (200 dinars) and many others, among them Lujo More with a donation of 20 dinars.

Help for the Blind and Earthquake Victims

On the occasion of marking forty years of work of the Society "Kralj Dečanski" of the Institute for Education and Upbringing of Deaf-Mute Children, under the auspices of Queen Marija Karađorđević, the newspapers Pravda and Vreme, convey a letter of thanks to noble donors, including Lujo Mor (30 dinars).

House of the Society "Kralj Dečanski", Belgrade

Unfortunately, the distance in time and the absence of direct descendants of Mor makes it impossible to see all his charitable deeds. The ones listed here are known thanks to the articles published in the newspapers Vreme and Pravda. For example, on 5 May 1932, Vreme, published information about collecting funds to help the victims of the floods in Bosanska Dubica. It is estimated that nearly 306,000 dinars had been collected thus far. There were many donors, and they were both individuals and institutions. The largest individual donors were Panta Tadić, a rentier from Belgrade with 1,500 dinars, and the ministers of justice, construction, forests and mining, agriculture, finance, trade and industry, and physical education with 1,000 dinars each. Of the institutions, the largest donors were: the Municipal Court of the City of Skopje with 10,000 dinars, the Sugar Factory of Veliki Bečkerek with 1,000 dinars and the Association of Banks, Belgrade with 1,000 dinars. On this list of individuals is also Lujo Mor with 50 dinars.

Contribution to the Development of Rowing as a Sport

In addition to engaging in humanitarian activities, Lujo Mor used his free time to aid the development of sports in Belgrade, specifically rowing. Growing up on the coast of the Adriatic Sea, but also with his choice of school and his first profession, Lujo had enough knowledge and skills to help the development of this sports discipline in the best way. In the Kingdom of Yugoslavia, in Ljubljana, on 13 August 1922, 12 rowing clubs from Belgrade, Zagreb, Ljubljana, Split, Sušak, Osjek, Karlovac, Veliki Bečkerek and Vukovar founded the Yugoslav Rowing Federation. At that time, it was agreed that the headquarters of the alliance would be in Belgrade. The following year, when the Yugoslav national team participated in the European Championships for the first time, the Yugoslav Rowing Federation was admitted to the World Rowing Federation as an extraordinary member. A member of this Yugoslav Rowing Federation was the Belgrade Rowing Club, which was founded on 6 June 1922, the same day as the wedding of King Aleksandar Karađorđević and the Romanian Princess Marija. Since its inception, the club has been under the highest protection of Queen Marija. The building of this rowing club was located on the right bank of the Sava River, on the site of today's quay of the Belgrade Fair. In the history of European rowing championships, it is recorded that in the Kingdom of Yugoslavia in 1932, the European Rowing Championship were held at Ada Ciganlija, which was opened by King Aleksandar.

European Rowing Championship in 1932, in Belgrade

The European Championship held in Belgrade and the patronage of Queen Marija were certainly beneficial for the Rowing Club Belgrade. Special attention was paid to the annual assemblies of the club and the election of its management, which, in addition to rowers, as the most dominant factors, significantly contributed to its rise. The reputation of this club is also evidenced by a short text published in the newspaper Vreme, about the session of the Assembly of the Rowing Club Belgrade on 12 December 1937: "In the club premises in the Engineering Hall, the regular Annual Assembly of our elite Rowing Club Belgrade was held [...]. The Assembly proceeded in its work as befits this old and popular Belgrade sports club." At the session of the Assembly, new members of the Management and Supervisory Boards were elected. Among the members of the newly elected Supervisory Board is Lujo Mor, which adequately acclaimed him for his engagement in the club in the past period.

Bridge on Board the "Kraljica Marija"

Bridge was evidently another of Lujo's interests. When coupled with his love of the sea, Lujo was probably at his best. There is a vivid story about the sea and boating along the Dalmatian coasts from the life of Lujo Mor, which is why more space is dedicated to it. A journalist of Vreme, with the initials SK, a passenger on the ship "Kraljica Marija" was delighted with this "floating tourist city":

"Faster than anyone had imagined, more beautiful than anyone had imagined, under the Yugoslav flag with the name of Kraljica Marija [...] such a ship sailed and it was one of ours [...]. And when we climbed the stairs from the quay in Split as if to the roof of a skyscraper, to a deck 22 meters high above the sea (there is another 9 meters under the water), the first thing we noticed on the mezzanine between the cabins, deck and the command bridge was a large piscina (pool) full of sea water on which two large rubber horses floated [...]

Illustration of the newspaper Vreme about passengers on board the ship "Kraljica Marija"

In the early days of March, there was not enough sun, and it was too fresh for the first passengers to swim in this outside pool, but perhaps those who will go on a cruise along our and Greek coasts at the beginning of April, will turn our largest and most beautiful ship into a cheerful, floating beach. Because the ship "Kraljica Marija" is not only a floating hotel, but more. A cheerful tourist town on the water [...].

The journey was already nearing its end on the third day of sailing, when the first inhabitants of this floating city managed to orientate themselves in it. In addition, each of them had a plan of the entire ship in their cabin with a life jacket, instructions on how to put it on, and the number of boats to which they were assigned in case of abandoning the ship [...].

It had almost 300 first-class cabins with 400 beds and several dozen bathrooms in addition to those in luxury cabins that were small suites, all this is located on 4 decks, four floors, with the fifth floor offering space for sunbathing and with the bowels of the ship holding its machines, furnaces, warehouses, apartments for crew and servants."

In the continuation of the text, the journalist talks about the places on the ship where you could buy souvenirs, all local newspapers, develop and copy photos, exchange currency, buy cigarettes, postcards and stamps. On board there was an information bureau, a hairdresser, a doctor, a printing house, a laundry room, etc.

"In the morning, there was a promenade on the wide D deck or sunbathing on the E deck, where we usually took photos or where couples sought solitude. We drank vermouth in the hall before lunch. In the large dining room on the V deck, which was a three-storey high glass dome, there were 200 seats. Lunch was served in two series, the beginning of which was announced by the sound of gongs. Like in a German movie, a procession of waiters in white entered, one after the other, pushing in front of them tables with oysters on them – Dalmatian oysters and or hors d'oeuvres, or marching like soldiers, they carried bowls on their shoulders from which steam of boiled dentex or turkey roast rose [...].

After lunch, coffee or liqueurs were drunk in the smoking room, where Dr Dežman was already starting a game of chess, and where bridge players gathered in the gallery, among whom Dr Slavko Grujan, the king's former envoy, Dr. Roki Lučić, and Lujo Mor, the Secretary of the Association of Banks, were champions of a kind."

The journalist then gives a sequence of entertainment events, at 5 o'clock tea was served with the sounds of jazz. For dinner, it was mandatory to be in a tuxedo and evening dress. After dinner, more rounds were played in the great hall. While the game was being played in the middle of the hall, the greatest officials of the state, the most prominent representatives of the economy, the most famous members of Belgrade and Zagreb society, were observed in small groups. Among them were: Milan Nedić, Dušan Subotić, Dušan Simović, Mihajlo Protić, the Mayor of Zagreb Dr Srkulj, the Vice President of the Belgrade Municipality Dr Stojadinović, Count Bombelos, Marquis and Marquess Bona and many others, among them, as already mentioned, Lujo Mor. The end of this beautiful voyage for all passengers was marked by the arrival of the ship in Split.

Bridge

To better reflect the personality of Lujo Mor, it is necessary to say something about bridge - a game with 52 cards and 4 players. Here's how it is briefly defined by connoisseurs of this game: it is a thought game and gentleman's game that develops logical thinking. A man who is an individualist by nature has little chance of being a good player. Every game is like a problem that needs to be solved, and whoever solves it best has the best outcome. The game is played in pairs, one pair against the other. The essence of the game is the bridge that players need to establish. A game in which and through which you can make a lot of friends, but which also takes a lot of time. It has elements of statistics, economics and psychology. In France, bridge is taught in colleges and in China, it is taught in schools. The bridge that is played today was established in 1926. In Serbia, the first bridge club was founded before the First World War.

Philately

With his great work energy and enormous enthusiasm, Lujo Mor, together with other like-minded people, founded new organisations and associations with the desire for his country to catch up with other developed European countries that, thanks to historical circumstances, had the opportunity to advance faster with regards to economy, culture and art. Such an example can be found in his engagement to create a Yugoslav association of philatelists. Namely, on 2 December 1933, in the hall of the Chamber of Industry, the first, constituent Assembly of the Philatelic Union was held, organised by the provisional administration, in which Lujo Moro was undoubtedly a member. The Chairman of the Assembly, and one of the most important initiators of this Association, Evžen (Evgeny) Deroko, read the report of the Provisional Administration, and then announced that 13 philatelic societies and clubs had applied for the Association, 11 of which were from the interior of the country. Delegates of the Assembly from Belgrade and the interior compiled a list of the administration: four from Belgrade, namely: Evžen Deroko, Lujo Mor, Milan Ilić and Radivojević. Representatives of Zagreb, Ljubljana, Sarajevo, Novi Sad, Skopje and Subotica also entered the administration. Members of the Board of Directors were also elected. At the end of the session, a philatelic exchange was organised, and a lecture on philately was then held in the hall of the University. In the evening, a banquet was held for all participants of the Assembly at the Srpski Kralj Hotel. The next day, work was organised at the plenary session and the philatelic exchange.

Constituent Assembly of the Philatelic Association, 1933, Belgrade

In the following years, Lujo Mor contributed to the development of philately in the country with his engagement, which is shown by the fact that in 1937 32 societies with 3000 members were members of the Yugoslav Philatelic Association. He was also one of those selected for the preparation of the first National Philatelic Exhibition in Belgrade, which was organised on 12-19 September 1937. The exhibition was held at the Faculty of Law, and it met the challenge that the organisers set for themselves during its design and realisation: to emphasise the importance of philately and to show what has been achieved in our country in this field. Several local exhibitions of this kind were organised in the country during this period, but this one was at the level of the whole country with the participation of both foreign exhibitors and visitors. The exhibition was under the protectorate of Prince Tomislav Karađorđević. The committee that participated in the organisation of this exhibition consisted of: Evžen Deroko, President of the Yugoslav Philatelic Association, Vice-Presidents, Secretary of the Association, Treasurer Lujo Mor, members of the board and representatives of member societies.

Deroko and Mor

Philately was just one of the hobbies and interests that connected Mor with Daroko. They were connected by many other similar life opportunities and intellectual abilities. Apparently, the only difference between them was the difference in age, but even here it was an incredible coincidence that Evžen's son, Aleksandar, was born in the same year as Lujo. Dubrovnik was the common birthplace of their fathers, their mothers were both Orthodox, they had a great gift for languages and, unfortunately, Evžen and Lujo both died in Belgrade during World War II.

The Deroko family originates from Venice, moving to Dubrovnik, and finally settling in Belgrade. Evžen's father Jovan was born in Dubrovnik, and his mother Katarina, née Vuković, was born in Vienna. Evžen Deroko,

Evžen Deroko

born in 1860 in Belgrade, was one of the greatest Serbian philatelists. After high school, he graduated from the Department of Natural Sciences and Mathematics at the Faculty of Philosophy. In 1883, as a cadet at the Ministry of Construction, he went to Vienna to join the Austrian State Railways and then to Belgium to study the local railways. Upon completion of his training, he returned to the country and entered the service of the Society for the Construction and Utilisation of Serbian Railways. After the First World War, he was assistant director general of the newly created Ministry of Transport. From there, he retired. He was a polyglot, wrote and spoke German, French, Italian, English, and Russian, Spanish, and Bulgarian.

Throughout his life, he worked on the study of Yugoslav and Serbian philately. He was the president of the Yugoslav Philatelic Union and the recipient of international decorations, including the Lindberg Medal. He is the author of the books: Postal Stamps of Serbia 1840 – 1931, Material for the History of Post Offices in Serbia, Special Catalogue of Yugoslav Stamps, General Edition, etc. He died on 18 May 1944, two days after the first American bombing of Belgrade on Orthodox Easter, shaken by the extent of the destruction and innocent human casualties. Evžen's son, Aleksandar Deroko, was a Serbian architect, artist, pilot, writer and academic (1894-1988).

Economic Cooperation with Greece

It is known that throughout history Dubrovnik was under Hungarian, French, Turkish, and Austro-Hungarian rule and that several languages were spoken in it, primarily Serbian/Croatian, Italian, and Hungarian. That provided a favourable environment for the education of polyglots. Lujo Mor grew up in such an environment and already in his childhood he had the opportunity to listen to various languages spoken by the inhabitants of the city where he spent his childhood and adolescence. In addition, he graduated from the Naval Academy, where four languages were taught: Italian, German, Hungarian and Serbian/Croatian. Today we cannot know how well Lujo spoke all these languages but, based on his engagement in creating better economic contacts between Yugoslavia and other countries, we can conclude that he was a connoisseur of military doctrine, banking and finance, and spoke several world languages. The state recognised this and, at the beginning of June 1930, he was involved in organising the welcome of Thessaloniki businessmen in Belgrade. At the reception, as well as in business talks with the Greek delegation, historical friendship and readiness for greater business cooperation were expressed. This included our most important businessmen, bankers, university professors, representatives of the army and the Rigas Feraios Association, the Society of Princess Zorka and others.

Thessaloniki businessmen in Belgrade

The visit of Greek businessmen was obviously well appreciated in the country, as it was noted that it opened up numerous opportunities for economic and cultural cooperation. On 26 September 1930, the Yugoslav delegation visited Greece in turn. The large delegation that arrived in Thessaloniki included representatives of the Chamber of Industry, Commerce and Crafts, the Privileged Export Society, the Belgrade Stock Exchange, as well as representatives of the Association of Banks, Milivoje Šićarević, director of the Adriatic Danube Bank, and Lujo Mor, Secretary General, and many others. There were also numerous representatives from Zagreb and Skopje, which made up a delegation of 60 people. The program of their stay was rich and designed in such a way that the guests got acquainted with the main economic centres of Greece and met with its most important state officials. The delegation stayed in Thessaloniki for three days and, in addition to business meetings, visited the Serbian military cemetery in Zejtinlik. Their stay in Athens also lasted three days, and then our businessmen headed by boat across the Corinth Canal, to Patras as the last destination in Greece.

Honorary Representative at the Bari Fair

The Vreme newspapers published that on 18 July 1931, the state elected Lujo Mor as an honorary delegate to the International Sample Fair in Bari, Italy, which was to be held from 6-21 September 1931. Our country had its own pavilion at this fair. From then until 1937, Lujo, with the same title, would be in charge of presenting Yugoslavia in the best possible way every year. The Bari Fair changed its name from year to year from International to Eastern and Levantine Fair.

Politika, advertisement published on 28.08.1937.

Politika published an advertisement on 28 August 1937 in which our businessmen are invited to visit and participate in the largest inter-

national fair for trade with the Orient – the VIII Levantine Fair. The announcement states that all the necessary information is to be provided by the honorary representative of the Fair, Lujo Mor.

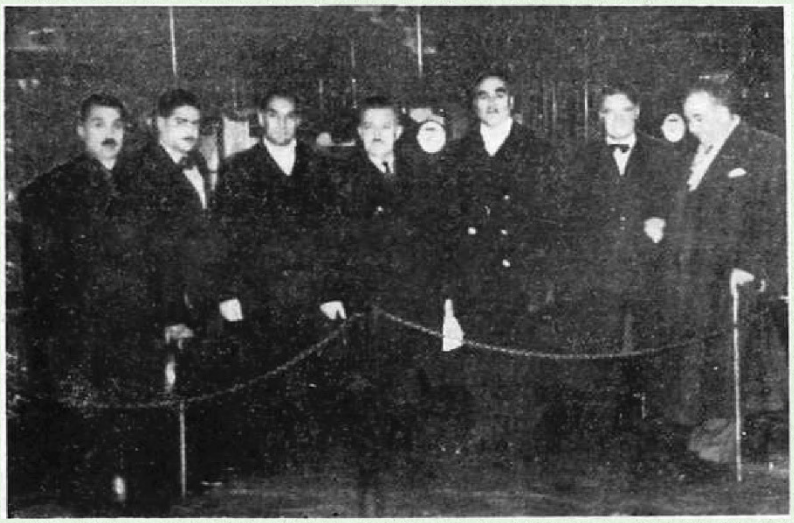
Expanding Cooperation with Spain

In addition to Greece and Italy, Lujo Mor was also involved in establishing better cooperation between the businessmen of Yugoslavia and Spain. A few years before the Second World War, one of Yugoslavia's main markets in the Mediterranean Sea was Spain. Economic relations were on the rise until our claims were blocked, as was the case with the countries of Central Europe, and especially with Austria, where Yugoslavia exported most of its products. The blockades were due to claims that arose as a balance of clearing with these countries, since Yugoslavia had an active trade balance with most of these countries.

In order to eliminate these problems in business with Spain, but also to increase trade cooperation with other countries in the Mediterranean, the Committee for the Improvement of Economic Relations between Yugoslavia and Spain was established. The founding session in Belgrade, in the premises of the Institute for the Promotion of Foreign Trade, on 16 May 1938, was attended by a large number of interested businessmen and representatives of our country. These were, among others, representatives of the Ministry of Foreign Affairs, the Ministry of Industry and Trade, the Institute for the Promotion of Foreign Trade, the Chamber of Industry, numerous banks from the country, as well as the Secretary of the Association of Banks, Lujo Mor. On the Spanish side, the session was attended by the representative at our court, Count of Torrijos, and the commercial attaché of the embassy, Garcia Guijar.

In the absence of information today, we can only assume that Lujo Mor, as the Secretary of the Association of Banks and a participant in many economic and banking events, and who has shown to be a man of action, expertise, broad knowledge and responsibility, was engaged in other business contacts with foreign countries. Probably among the last of his appearances, at the beginning of the Second World War, was his participation in the preparations for the establishment of the Yugoslav-Bulgarian Chamber of Commerce. In order to prepare for its establishment, two action committees were formed, in Yugoslavia and Bulgaria, which included the most prominent businessmen of the two countries. The Yugoslav Action Committee included, among others: Vlada Ilić, President of the Chamber of Industry, Voja Petković, President of the Chamber of Commerce, Milan Stojanović, President of the Chamber of Crafts, Dr Miljenko Marković, General Manager of the Postal Savings Bank, Živan Nešić, Director of Weifert's companies, numerous bank directors, as well as Lujo Mor, Secretary of the Association of Banks. The Bulgarian Action Committee was joined by the presidents of numerous chambers and merchants from that country.

The founding assembly of the Yugoslav-Bulgarian Chamber of Commerce was held on 11 February 1940 in the ceremonial hall of the Chamber of Commerce in Belgrade. On that occasion, a large delegation headed by the Minister of Trade, Slavčo Zagorov, arrived from Bulgaria. Members of the Board of Directors of the Yugoslav-Bulgarian Chamber of Commerce were elected at the meeting. These were well-known businessmen, presidents of chambers, cooperative associations, industrialists, bankers, engineers from Belgrade, Ljubljana, Sarajevo, Skopje, Paraćin, Split, etc. The Yugoslav Supervisory Board was established, which also consisted of representatives of chambers and banks, traders, lawyers, as well as Lujo Mor, Secretary General of the Association of Banks. In addition to participating in the founding session of this Chamber, representatives of the Bulgarian delegation also visited the Belgrade Stock Exchange, the editorial office of the newspaper Vreme, and attended a banquet with



Bulgarian businessmen in Belgrade

the Serbian King and a reception at the Bulgarian Embassy. On this occasion, Dr. Zagorov, Minister of Commerce of Bulgaria, met with the Royal Prime Minister, Dragiša Cvetković, and the Minister of Foreign Affairs, Dr. Aleksandar Cincar-Marković. All participants expressed great satisfaction with the work of the session and the warm reception in Belgrade. Minister Zagorov also gave a statement to the newspaper Vreme: "I ask you to express my warmest gratitude for such a kind reception that we have received here. Bulgarian businessmen and I bring home the most beautiful impressions from Belgrade, with the desire that your businessmen will feel the same way after completing their work in Sofia".

The next meeting of Yugoslav and Bulgarian businessmen was held on 25 February in Sofia, when the Bulgarian-Yugoslav Chamber of Commerce was established and at which members of the Management Board and members of the Supervisory Board of Bulgaria were elected. These two gatherings were dominated by the emphasis on Yugoslav-Bulgarian brotherhood and sincere friendship, which very soon, with Bulgaria's entry on the side of the Axis in the Second World War, would turn into a struggle between two opposing peoples. The words of Vlado Ilić, president of the Yugoslav-Bulgarian Chamber, at the aforementioned banquet in Belgrade, were a reflection of the last hope that future unfortunate events can be stopped: "The main thing is that we agreed on one thing, that only accord can save us and that, if this continues, unification will provide strength. Then we can say that we are fully prepared to defend what is ours with the greatest success." At the beginning of the Second World War, Vlada Ilić, as well as many other participants in these two gatherings, had no idea what how tragic the events of the next four years would be in Yugoslavia. Lujo Mor, was also unaware of this, and he ended up being killed by the Gestapo in the city where he chose to live, just 20 months after the gathering in Sofia.

Bank Litigation

During his 15 years as Secretary of the Association of Banks, Lujo Mor was also engaged in resolving the problematic operations of some banks whose representatives found themselves in court. This was the case with Palanačka kreditna banka and Srpska obrtna banka.

In May 1932, members of the Management and Supervisory Board of the Palanačka kreditna banka from Smederevska Palanka found themselves before the court in Smederevo for improper work, which caused the bank to become insolvent and to open bankruptcy proceedings over the bank's property. Before the judge called on the defendants to give their statements, he ordered a review of the bank's books to be carried out by well-known experts from Belgrade: Lujo Mor, Secretary General of the Association of Banks, Aleksandar Duridi, procurator and head of accounting of the Adriatic-Danube Bank, and Dušan Crnogorac, retired Head of Accounting.

Lujo Mor, together with two other experts, provided assistance in a court dispute with the Serbian Obrtna banka in September 1932. The bank's representatives responded to the lawsuit filed by the shareholders in court for failing to faithfully present the bank's condition to the bank's management, and for failing to record certain transactions in the books.

Unfortunately, it remains unknown what assessments were given by the experts during the court disputes that were conducted for these two banks and how much they contributed to a fair court verdict with their participation. It is also unknown whether Lujo Mor participated in the court proceedings of other banks, as there is no information for this in the materials of the Association of Banks.

Bank Conference

The reputation and expertise of Lujo Mor among bankers, state representatives and businessmen are also reflected in the Bank Conference with participants from all over Yugoslavia on the protection of farmers, the rehabilitation of financial institutions and credit relations, which was held on 3 December 1933, in the hall of the Central Hotel, where 480 delegates and representatives of financial institutions attended this meeting with the desire to consider and find solutions to "economic troubles and hardships". Such a large response, as well as the eighty telegrams and letters acknowledging the topics of the Conference and its importance, shows the common concern for the problems faced by the

Претседништво конференције: (с лева на десно) г. г. Луjо Мор, секретар, Миливоје Шиљаревић, потпретседник, др. Влада Марковић, претседник, Жарко Слепчевић, потпретседник и др. Роберт Паулович, секретар; на говорници г. Сава Дубљевић

domestic economy. The conference was opened by the President of the Association of Banks from Belgrade, Dr. Vlada Marković. On behalf of the boards of directors of all banks that were the initiators of this conference, he greeted the attendees and wished them success in their work. On his proposal, the Presidency and the Secretariat of the Conference were elected. The Presidency consisted of: Dr Vlada Marković from Belgrade, Dr Branko Privelić from Zagreb, Dr Ivan Slokar from Ljubljana, Žarko Slepčević from Novi Sad and Vasa Ristić from Sarajevo. The Secretariat consisted of: Dr Milenko Marković from Zagreb, Dr Robert Paulović from Novi Sad, Antun Filipičević from Zagreb and Lujo Mor from Belgrade.

The Conference adopted a Declaration in which it is emphasised that "the crisis has become dire and vicious, encompassing all branches of our economy and all strata of our people, and when our credit relations are severely disturbed as a result, what is necessary, and what could help alleviate this economic and credit situation has not been done [...]. Our defence should be based on self-help, until an improvement of the international political situation creates an advantage for international cooperation against the common enemy – the crisis. And self-help should be well thought out and well executed. The organisation of work on self-help should include all branches of the economy and credit relations. Autonomous measures, to be taken after comprehensive study and judgment, would be intended to alleviate and alleviate the severe economic crisis and credit situation and to give impetus to the revival of the economy [...]. The execution of the plan should be in the hands of the best, the most professional and the most energetic."

Pravda, Bank Conference held on 3 December 1933, in Belgrade

After the adopted declaration on what the Association of Banks in Belgrade has done in terms of the protection of farmers, Lujo More spoke. He pointed out that as soon as it became known that the royal government intends to definitively resolve the issue of farmers' debts, Vlada Marković, president of the Association of Banks from Belgrade, repeatedly presented his view in the Pravda newspaper on the direction in which the issue should be resolved. He also wrote a project about it and published it in

that newspaper. He emphasised that the representatives of the Association of Banks could not find out anything during the drafting of the government decree, and when it was published, they submitted their remarks to the Government, MPs and senators. He then made these remarks to the attendees. Representatives of the Vojvodina Association of Banks and the Association of Monetary Institutes in Zagreb also spoke about the objections to the regulation. After the discussion, a committee was elected to adopt a resolution that will be submitted to the authorities. All members of the Presidency and the Secretariat of the Conference joined the Committee, with representatives from Zagreb, Novi Sad, Kraljevo, Novi Bečej, Sarajevo, Šabac and Foča. This meant that Lujo Mor would also participate in this expert team, among the most professional, capable and energetic.

Association of Banks

In his plans for the future, the young Lujo Mor did not choose banking as a job he would do in life. Fate, coincidence, affinities or a sequence of unforeseen circumstances have made banking the area in which he will best show his skills, knowledge and abilities. Doing business with the most famous bankers, politicians and businessmen, he stood out for his education, culture and communicativeness. The knowledge he gained at the Naval Academy in mathematics, geometry, physics, history, geography, natural history and other skills such as swimming, fencing, singing, dancing, playing an instrument, social behaviour and, in addition, learning several languages, made him a respected member of the high Yugoslav circles, a trustworthy man who impresses with his knowledge and skills. He began his banking career at Dunavska Kreditna Banka, probably sometime around 1921, when the Association

The founding session of the Association of Banks was held at the Prometna Banka in Belgrade

of Banks was founded in Belgrade, but no reliable information has been found about this so far. It is known that one of the 29 founding banks of the Association of Banks was the Dunavska Kreditna Banka, which would retain its membership in this banking association until 1941.

The founding session of the Association of Banks was held on 4 December 1921 in heated political circumstances, in snow-covered Belgrade. The resignation of the Pašić government was received in political and parliamentary circles with attention and alarm. King Aleksandar invited the Speaker of the National Assembly, Dr. Ribar, to consult with him about the political situation. It was decided that the mandate for the formation of a new government should be entrusted to Pašić again. In such a political climate and circumstances, the founding session of the Assembly of the Association of Banks was held that Sunday morning in the hall of Prometna banka. The Assembly was attended by representatives of the following banks: Export Bank, Belgrade Bank Merkur, Opšta Privredna Bank, Zemaljska Bank, Komisiona Bank, Prometna Bank, Eskontna Bank, Poslovna Bank, Mesarska Bank, Građanska Bank, Balkanska Kreditna Bank, Kolonijalna Bank, Beogradski Kreditni Zavod, Prva Srpska Zemljoradnička Bank, Rusko Slovenska Bank, Srpsko Švajcarska Banke, Wiener Bankverein, Bankarska Trgovačka A.D., Vračarska Založna Bank, Jugoslovenska Bank, Centralna Kreditna Bank, N. Bošković A.D. Bank, Beogradska Trgovačka Bank, Beogradska Trgovačka Štedionica, First Croatian Savings Bank, English Commercial Bank, Vardar Bank, Yugoslav Commercial Bank and Dunavska Kreditna Bank. At the General Meeting, the Rules of the Association of Banks were adopted, and members of the Board of Directors, Supervisory Board and Executive Board were elected. Mihailo Dragičević, Director of Prometna Bank, was elected Chairman of the Board of Directors, and Radivoje Glumac, Director of the First Croatian Savings Bank Branch, and Dr. Milan Stojadinović, representative of the English Commercial Bank, were elected Chairman of the Board of Directors. Nikola Stanarević was elected Secretary General of the Association. The idea of establishing such an association was not new, because the need had previously arisen to establish a banking association that would represent all banks and take the necessary steps on their behalf to protect common interests such as: regulation of moratoria, taxes, foreign exchange transactions, etc.

In the first years of its work, the Association of Banks achieved visible results and enjoyed great authority with financial institutions. In 1922, the Association of Banks already had 131 members, which already speaks volumes about its reputation and status. In that year, the Association was engaged in introducing more freedoms in stock exchange work and setting the exchange policy on a healthy basis. That year, the Association took its members under its the protection, demanding that more attention be paid to their interests, which were endangered by the foreign exchange policy of restrictions. During that year, the Association was in contact and correspondence with the National Bank on various issues, often sharply criticising some of its decisions on behalf of the banks. The Ministry of Finance and the Chamber of Commerce have often turned to the Association for cooperation, opinions or to obtain data on individual banks.

In 1923, the Association was engaged in the amendment of certain laws in the financial field, such as the Law on Fees and the Law on Direct Taxes. The Rules of the Association of Banks specify that the Secretary General of the Association is elected by the Board of Directors. From 1921 to 1922, the work of the Secretary General was performed by Nikola Stanarević, director of Masarska Bank, as a member of the Board of Directors. Until 1926, Dr. Dušan Mišić was the Secretary General, while Dr. Vlada Marković was the President of the Board of Directors after Mihajlo Dragičević from 1924. Monetary institutions in 1925 were a system full of uncertainty, according to the Report of the Board of Directors

on the work of the Association in that year. Although the dinar had some stability against foreign exchange, its purchasing power in the country had not increased. Financial institutions that work with other people's funds must show great caution in approving loans. It is emphasised that the National Bank is obliged to implement the policy of increasing loans, and not the other way around, and that "only by increasing loans can the domestic economy be relieved, and not by creating difficulties for these loans to be used".

Vlada T. Marković

The Export Bank was one of the founding banks of the Association of Banks. Its long-time director and well-known banker, Vlada T. Marković, PhD, was a member of the first Board of Directors of the Association of Banks. In 1924, he was Chairman of the Board of Directors of the Association of Banks, as well as later, from 1926 to 1941.

Vlada Marković, PhD

Vlada Marković was born on 23 September 1873, in Smederevo. After graduating from the Faculty of Law in Belgrade, he went to Germany where he received his doctorate. He began his professional career as a clerk in the Ministry of National Economy and the Ministry of Finance. As their commissioner, he supervised the work of the Export Bank until the beginning of the First World War. He was the Secretary of the Serbian Trade Association, editor of the Trade Gazette, Secretary of the Belgrade Stock Exchange, member of the management boards of several Belgrade banks and the Board of Directors of the National Bank. He is the author of numerous articles on trade, political and financial issues. He is the holder of numerous decorations: the Order of St. Sava, the Takovo Cross, the Iron Crown, the Gold and Silver Medal for Courage, the Romanian Crown, etc.

From the moment he became the head of the Association of Banks, he tried to surround himself with people who could contribute to the good reputation of this institution with their professional reputation. Among them was also Lujo Mor, with whom he worked closely for almost 20 years.

In 1926, the Association of Banks had 95 members and was active throughout the year in changing tax policy, primarily for the economy and the savings of citizens. He also participated in the amendments to the Law on Bills of Exchange and Cheques with his proposals in order to give the country a more modern law. In the drafting of the new Law on Public Stock Exchanges, the Association, having reviewed the proposals of the Belgrade and Zagreb Stock Exchanges, made its proposal and submitted it to the Ministry of Trade and Industry. This year, the Association of Banks proposed to the National Bank to form an institution that will provide interested banks, the National Bank and other institutions with information on the creditworthiness of persons and companies, and in particular how much individual companies are engaged in all credit institutions in the country. This proposal met with the overall economic and state approval over the following years, and on 28 February 1928, the Intelligence Credit Department within the National Bank began its work.

The Regular Annual Assembly of the Association of Banks, at which the Report of the Management and Supervisory Board on the work of the Association in 1926 was adopted, and the election of new members of the Board of Directors and the Supervisory Board was made, took place on 27

March 1927. In the material for this, sixth in a row, session of the Assembly, the signatories are listed as Chairman of the Board of Directors Dr. Vlada T. Marković and Vice President Milivoje Šićarević, Chairman of the Supervisory Board Dobra Bakić and Vice President Nikola Đorđević and Lujo J. Mor as Secretary. The date when Lujo Mor became Secretary of the Association cannot be determined exactly, but it was most likely between June 1926 and March 1927.

After the arrival of Lujo Mor as Secretary of the Association of Banks, the reputation and importance of this banking association in the country grew from year to year. This is also confirmed by the celebration of the tenth anniversary of its operation. On 30 November 1930, a gala session was held in the hall of the Belgrade Stock Exchange in Belgrade, which was attended by many prominent personalities: the envoy of King Aleksandar Karađorđević, ministers and assistant ministers, representatives of numerous associations and chambers, the Belgrade Stock Exchange, the National Bank, professional financial institutions and insurance companies from Zagreb, Ljubljana, Sarajevo, Novi Sad, Cetinje, numerous directors of banks and other financial institutions, etc. The welcome speech was given by Vlada T. Marković, President of the Executive and Management Board of the Association of Banks:

"The Association of Banks has shown in its ten years of work that, in addition to protecting the common interests of its members, it has always had in mind the improvement of our finances and the national economy [...]. Banks are not an end in themselves, they have a national economic function. A modern economy cannot exist without good credit institutions, and credit institutions cannot thrive if economic conditions are bad and unhealthy. The Association of Banks has shown that it is aware of this, taking the initiative in many issues of general economic importance."

Decorations

On the occasion of the tenth anniversary of the Association of Banks, appreciating its work, King Aleksandar issued a decree awarding numerous members of the Association with the Order of the White Eagle of the third, fourth and fifth grade and the Order of St. Sava of the third and fourth grade. Among those honoured was the Secretary of the Association, Lujo Mor, who received the Order of the White Eagle, fifth grade, for his merits. The significance of this decoration is best illustrated by the list of all those who were decorated at that time.

Winners of the Order

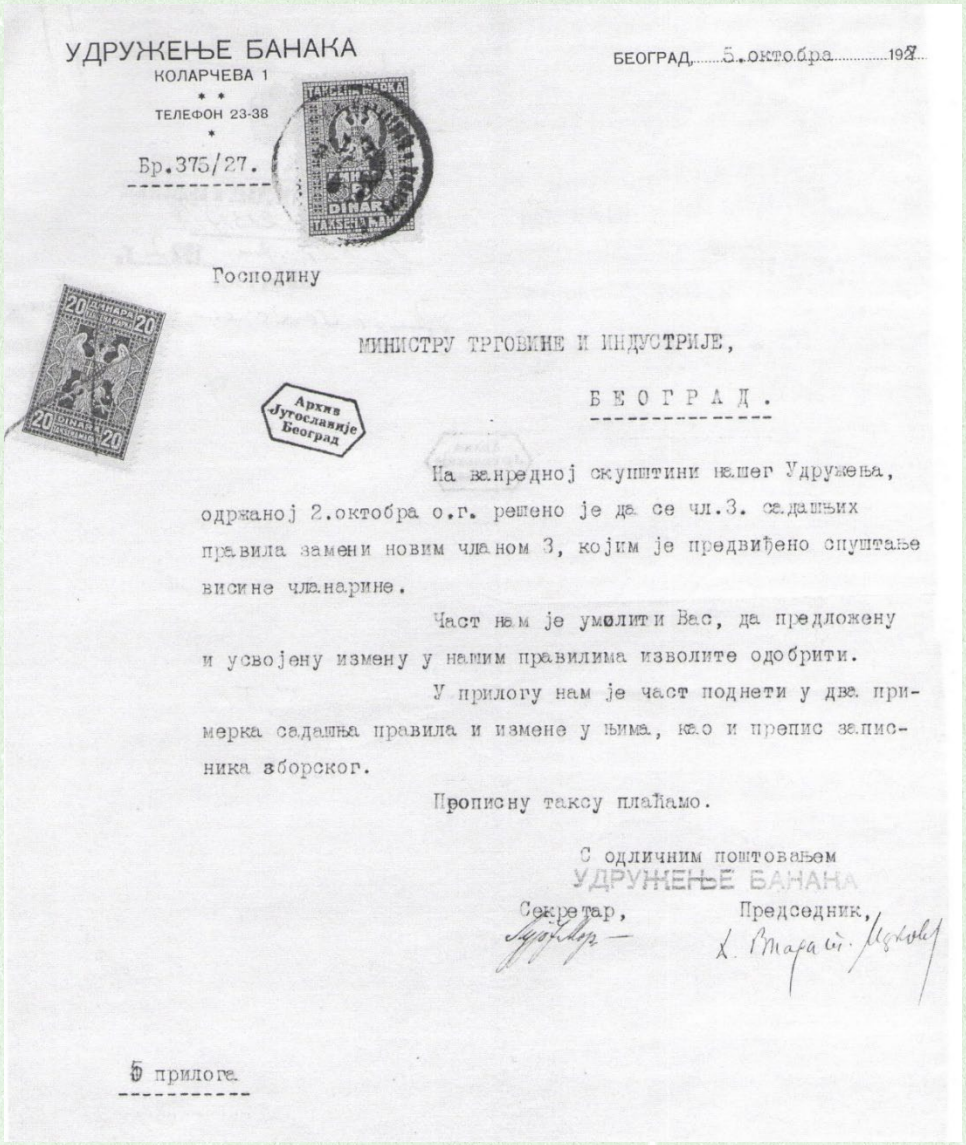
Dr Vlada T. Marković, President of the Association of Banks, Milivoje Šićarević, Director of the Adriatic Danube Bank, Jezdimir Đokić, Director of the Belgrade Credit Institute, Nikola Đorđević, Director of the Bank, Dimitrije Blagojević, Director of the Belgrade Commercial Bank, Dr Janko Hacin, Director of the Privileged Agrarian Bank, Rudolf Pilc, Director of the Franco-Serbian Bank, Petar Mladenović, Director of Činovnička Bank, Aleksa Martinović, Director of Trgovačka Bank, Aleksandar Blagojević, Director of the First Croatia Branch Savings Bank in Belgrade, Boža Milosavljević, Director of Beogradska Založna Bank, Jovan Živanović, Director of Tehnička Bank, Maksa Alkalaj, Director of Belgrade Commercial Savings Bank, Milan Dragić, Director of Zanatska Bank, Pavle Hadži Pavlović, Director of Srpsko-Amerikanska Bank, Svetislav Jelić, Director of Export Bank, Srbislav Jevrić, Director of Banking and Commercial Company, Živorad Lazić, Director of Valjevo Savings Bank, Milan D. Stojadinović, Director of Požarevačka trgovačka banka, Nikola Panić, Director of the Export and Transport Bank from Skopje, Sima Milutinović, Director of Pančevo Credit

Bank, Đoka Stefanović, Director of Jugoslovenska Bank, Mihailo Janković, Director of Beogradska Bank and Lujo Mor, Secretary of the Association of Banks.

After Juraj Demetrović, Minister of Trade and Industry, read the names of all the awardees, there were presentations by numerous participants of this gala session. Dr Slokar, a representative of the financial institutions in Slovenia, points out: "If we look at your work so far, full of effort, initiative and success, we have to admire your management [...]. You have been working for ten years to improve our economy and its organisation for the benefit of investors and all branches of the national economy and activities. In this respect, you hold an important place in the domestic economy." Vlada Ilić, President of the Chamber of Industry, also addressed the audience: "For ten years, the work of the Association in all fields has been apparent. Our monetary conditions required serious and multifaceted work." Milivoje Smiljanić, a representative of the Chamber of Engineers, said, among other things: "The work of the Association in these ten years has not been easy [...]. In the coming years, the work of the Association will not be any easier, and that is why it is good that the Association, after the ten years of its work, will look back on the results of that work and all the difficulties it had to overcome, in order to be stronger and more composed for its work in the future". Ljuba Stojadinović Szeged, representative of the Association of Exporters, was the last speaker: "I congratulate today's celebration of the Association of Banks and its president and I wish it to continue to act as it has done for these ten years, for the good of our economy and our people."

On the same day, after the session in the hall of the Belgrade Stock Exchange, a banquet was held at the Srpski Kralj Hotel. In addition to the hosts, distinguished guests from all over the country were present. Several toasts were exchanged at the banquet. The guests were greeted by Dr Vlada Marković, President and Milivoje Šićarević and Jezdimir Đokić, Vice Presidents of the Association. Among the hosts was Lujo Mor, the decorated Secretary of the Association. On that occasion, the Governor of the National Bank, Ignjat Bajloni, addressed the guests with the following words: "I am very sorry that we

Hotel "Srpski Kralj", Belgrade



УДРУЖЕЊЕ БАНАКА
КОЛАРЧЕВА 1
ТЕЛЕФОН 23-38
Бр.375/27.

БЕОГРАД, 5. октобра 1927.

Господину

МИНИСТРУ ТРГОВИНЕ И ИНДУСТРИЈЕ,

Б Е О Г Р А Д .

Архив Југославије Београд

На ванредној скупштини нашег Удружења, одржаној 2.октобра о.г. решено је да се чл.3. садашњих правила замени новим чланом 3, којим је предвиђено спуштање висине чланарине.

Част нам је умолити Вас, да предложену и усвојену измену у нашим правилима изволите одобрити.

У прилогу нам је част поднети у два примерка садашња правила и измене у њима, као и препис записника зборског.

Прописну таксу плаћамо.

С одличним поштовањем

УДРУЖЕЊЕ БАНАКА

Секретар, Председник,

5 прилога.

could not attend your ceremony as representatives of the National Bank. But I beg you to believe us that this does not diminish our sympathy and our recognition of all your hard and useful work during the last ten years. From your reports that we have had the opportunity to read, we have seen only one part of your work. Looking at everything that has been done from day to day, we can freely say that much more has been done than has been recorded, and what has been recorded is true, and I thank you from the National Bank for always being accommodating and willing to help it in the performance of its operations, in order to alleviate difficult situations. I wholeheartedly wish you, gentlemen, that all your ideas and all your further works, which you have in front of you, succeed and succeed in the same way that you present it in your report and today quite loyally and in the name that everything you do will be for the benefit and progress of our beautiful homeland."

The next day, on 1 December 1930, a conference of all professional organisations of financial institutions and insurance companies of Yugoslavia was held in Belgrade. The conference was attended by representatives of these organisations from Zagreb, Ljubljana, Sarajevo, Cetinje and other cities in the country, as well as the hosts from Belgrade, who were the most numerous. Among the 25 participants from Belgrade was Secretary General Lujo Mor. The conference was opened by Dr Vlada Marković, President of the Association of Banks. The meeting was dominated by the following topics; liquidation of the agrarian reform (presentation by Ivan Galić from Zagreb), on the cooperation of all organisations of financial institutions (Dr Ivan Slokar, Ljubljana), the new law on public stock exchanges (Milivoje Šićarević, Belgrade), the tax burden on joint-stock companies (Dr Robert Paulović, Novi Sad), the draft Law on Self-Governing Finances (Antun Filipančić, Sarajevo), etc.

At the tenth anniversary of its establishment, the Association of Banks has 130 members: 53 from Belgrade and 77 from the interior. The Annual Report for 1930, at the tenth session of the Assembly held on 7 June 1931, stated: "Our world is impoverished,... In spite of the austerity, and even the deprivation of many pressing needs, there is still a great shortage of the necessary funds due to poor or no earnings. When you take into account that public duties are substantial, then this burden is felt even more strongly in such circumstances. It was not a question of a scarcity of money, that is, of credit, there was not only enough money in our country, but also an excess of it, there was no demand for credit, to the extent necessary, because there were not enough jobs in which this money would be profitably placed. Furthermore, money was extracted from unprofitable jobs and invested in financial institutions [...]. The circumstances under which the financial institutions worked, therefore, were not as one would have wished. There was a lot of unplaced money. The loans were granted on relatively favourable terms. The placements were increased in addition to the reduced interest rate. Write-downs at banks were relatively higher than in normal circumstances... Payments after executions were slow. The tax burden on banks has increased. Despite all the savings, the utilities are still relatively high. Nevertheless, the banks can be satisfied that their work has facilitated the economic situation, as far as possible, although this has often turned out to be to the detriment of shareholders."

All materials and reports of the Association of Banks, as well as letters addressed to the National Bank and various ministries, most often addressed to the Governor and Ministers, were signed by the Chairman of the Board of Directors and Secretary General, Lujo Mor. The author of all these reports, information and letters was probably Lujo Mor in cooperation with Vlado Marković, the president of the Association. This is important to point out that all of the above materials are extremely well-written, clear, cultured and measured, which further reflects the personality of Lujo Mor. In addition, one more feature of Lujo Mor should be highlighted, and that is his extreme modesty. Despite his business reputation and advancement in business, he did not desire to stand out. This is confirmed by the Memorial that was made to mark 10 years of successful work of the Association, featuring a list with the names of the members of the Board of Directors, Executive and Supervisory Boards and Secretary Lujo Mor. Along with the names of these people who were awarded there are also pictures of the honourees, only there is no picture of Lujo Mor. That is why, despite the great involvement in collecting data on the life and work of Lujo Mor, not a single photograph of him has been found.

As already mentioned, Lujo Mor as Secretary is not quoted once in the parliamentary materials, but his signature has always been placed with the president's signature. And this is an obvious confirmation of his modesty and clearly expressed respect for the business hierarchy. We learn that he actively participated in the assemblies of the Association of Banks and gave presentations only from newspapers that sometimes quoted him as part of the reports from the sessions of the assemblies. There are several examples of this.

Politika, Pravda and Vreme Quote Secretary Mor

On the occasion of the session of the Assembly of the Association of Banks, held in the hall of the Export Bank on 27 March 1933, Pravda reported the speech of Dr Vlado Marković, President of the Association, which referred to the economic conditions in the country and the world, with a special emphasis on the opportunities in domestic banking. Afterwards, the Secretary of the Association of Banks, Lujo Mor, presented the final account and the draft budget for that year, which amounts to 267,500 dinars. The report and the draft budget were approved unanimously.

On 25 May 1935, in the hall of the Export Bank, at the 14th regular session of the Assembly of the Association, after the welcome speech of Vlada T. Markovic, the President, Lujo Mor, Secretary of the Association, addressed the attendees. His statement was reported in full by Politika on 27 May 1935:

"We survived 1934 in a sharp economic crisis, and we do not know how many more years will follow, until the period of crisis ends, and until the desired period of prosperity follows this stagnation. Throughout this crisis, all layers of our people have felt its devastating effect, and the thought that such a situation can last for a long time causes great unease. Both the will and the energy of our working people are not enough to get out of the current predicament. On the official side, there is little that has been done to alleviate this situation, and what has been done has been partial, without an established program and without any connection with the solution of the overall economic problems [...], all the more so because some of the measures taken as experiments were based on mistakes, which even exacerbated the crisis [...]. With a well-judged program work on the revival of the economy, the banking crisis in our country is to be solved at the same time [...]. It is a fallacy to believe that the cure for the banking crisis is a regulation on the protection of financial institutions and their creditors. The work on his healing must be twofold. The first includes the new necessary legal measures, which are to be established in order to lay a solid foundation for the organisation of banking. The second involves taking measures to revive the work of our financial institutions for the benefit of the people's economy. So far, however, nothing has been done. We are standing in a desperate situation, and we are watching our banking collapse. By the end of 1934, 105 financial institutions were requesting various types of protection, 170 of them were requesting deferral of payment, and 10 were asking for rehabilitation. This number is enormous compared to the total number of financial institutions, of which there are now 620 in the country [...]". Lujo Mor concluded his presentation with data on savings deposits in banks and their increase in state-owned banks as a result of their outflow from private banks.

On May 24, 1937, Pravda and Vreme informed its readers about the Annual General Meeting of the Association of Banks, emphasising the large number of members and guests present. In addition to the welcome speech, they also state that Lujo Mor, the Secretary of the Association, presented the final account and the budget proposal for the next year, which were unanimously accepted.

The Assembly of the Association Held in Bombed Belgrade

The twentieth session of the Assembly of the Association of Banks was held on 21 April 1941, fifteen days after the bombing of Belgrade. From the Assembly material we learn that there were 131 members in the Association: banks, savings banks and cooperatives. The President of the Board of Directors is Dr Vlada T. Marković, the Vice-Presidents are Dr Milorad Đorđević and Rudolf Pilc, and the Secretary is Lujo J. Mor. In addition, the Association has an Executive Committee with five members and a Supervisory Board with four members.

Belgrade, April 1941

In the previous year's report, it was said that the whole year was marked by war. In the 1940s, the money market was liquid and influenced by inflation. The money in circulation was plentiful. The government's enormous borrowing from the National Bank has also caused a huge increase in banknotes in circulation. By the end of 1940, there were twice as many banknotes in circulation than at the end of 1938. In the time we live in, the report says, among other things, the state has its extraordinary needs, but they should not have been financed in the worst way - by the state borrowing from the National Bank and creating inflation. To a greater extent, the Report points out, there was also an accumulation of money, which was not an expression of confidence in the dinar. The dinar has lost a lot of its purchasing power due to inflation, but it was a means of payment and as such it was hidden just in case of trouble.

The most controversy and opposition among bankers, as well as in the Association of Banks, was caused by the Decree on Amendments to the Law on the National Bank of the Kingdom of Yugoslavia, published on 16 September 1940. The decree was interpreted as an intention to carry out the statisation of the National Bank. The Association called it legal hermaphroditism. This destroyed the rights of shareholders and annulled the contract between the state and the shareholders. In this way, the Minister of Finance on behalf of the state became all-powerful in the National Bank. And this omnipotence represents a real statisation. And finally, according to the Report of the Board of Directors of the Association of Banks presented at the session of the Assembly, this Regulation has no constitutional basis or legal importance.

It should be noted that the Report of the Board of Directors of the Association of Banks on the Work in 1940 is very extensive, divided into several separate units such as: Money Market, Accumulation of

Money, Credit Crisis, Middle-Class Debts, Interest on Loans and Deposits, Liquidation of Agricultural Debts, Advisory Board for Banking, National Bank of the Kingdom of Yugoslavia, Inflation - Expensiveness, Draft Budget for 1941, Election of Members of the Board of Directors and Final Account for 1940, signed by Secretary Lujo J. Mor and President Dr Vlado T. Marković. However, the uncertain future of the Association of Banks, and above all the country, were summed up at the very beginning of this Report, in a several poignant passages:

"The whole year of 1940 was a war year. And although the war did not cover all the countries in Europe, in fact the consequences of the war were felt everywhere, somewhere more, somewhere less.

There were states warring, non-warring, neutral, defeated and conquered, partially or wholly conquered, territorially damaged by war or arbitration – and it was not easy for any of them. Each of them suffered difficulties and adversities on their own. Thus, our country has paid dearly and is still paying for its neutrality. These expenses are governed by the war costs themselves. And besides that, we had other troubles of our own.

We live in a time when human blood is wasted, where there is food scarcity, depreciation and disruption of production, consumption, trade, finance, transport and other activities. These are mainly the consequences of the war, but also the consequences of other actions in some countries.

There is a lot of uncertainty ahead of us. That also includes our country in a significant way.

We don't know when or how the war will end, and what will happen after the war ends.

This uncertainty not only has a very negative effect on business and the economy, but it also creates concerns.

The year 1940 unfolded under such circumstances, and under such circumstances it came to an end. Moreover, the beginning of 1941 will begin on a similar note."

The Belgrade from a fairytale, white-winter December week at the beginning of the story of the founding of the Association of Banks, slowly turned into the Belgrade of a few years later, occupied, destroyed and wounded, when Lujo Mor became the Secretary General of the Association. In such a Belgrade, only a few months later, the heart of a man who in his short life showed boundless humanity for the poor and needy, but also unreserved engagement in the development of the economy, banking, diplomacy, sports and philately, stopped beating. That is, all these activities are the result of the desire to create and improve interpersonal relations in a country burdened with numerous political, economic and social problems. From the time of the foundation of that country, he chose to live in it and was its loyal, responsible and conscientious subject. Although he was born in Dubrovnik, he became a citizen of Belgrade. It is unknown when the Association of Banks ceased to operate in 1941, and many other things also remain unknown, primarily why Lujo Mor was killed by the Gestapo and where his remains were buried. It is also important to find out where and when he acquired the banking knowledge needed to become the director of the Dunavsko-Kreditni Zavod, whose name is mentioned as a member from the founding of the Association until its last days in 1941, and what were the reasons for replacing the director's position with a secretarial one. Time has made the memories of this man, and his unusual life path unjustly fade. This is just a small attempt to alleviate this injustice at least somewhat.

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*I owe a great debt of gratitude for the help in finding information about the life and work of Lujo Mor to Bojana Nešić, technical editor of Bankarstvo Journal, now a pensioner of the Association of Banks.

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PRIKAZ KNJIGE „MENADŽMENT FINANSIJSKIH USLUGA U SAVREMENIM USLOVIMA POSLOVANJA“

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Rezime

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Ključne reči: prikaz knjige, finansijske usluge, savremeni uslovi poslovanja

JEL klasifikacija: G10, G20

Uvod

Knjiga **„Menadžment finansijskih usluga u savremenim uslovima poslovanja“** čiji su autori akademik prof. dr Nenad M. Vunjak, prof. dr Miloš M. Dragosavac, prof. dr Jelena Lukić Nikolić, doc. dr Tatjana Davidov, doc. dr Milan Mihajlović, sastoji se od devet delova. Na kraju knjige se nalazi spisak korišćene literature i biografije autora.

Ova knjiga predstavlja značajno štivo za sve koji se bave finansijskim uslugama, posebno u kontekstu savremenih ekonomskih izazova, tehnologija i globalizacije. Specifičnost ove knjige proističe iz detaljnog razmatranja širokog spektra finansijskih tema, od platnog prometa do savremenih instrumenata finansiranja i digitalnih rešenja u oblasti finansijskih usluga. Knjiga obrađuje ključne aspekte finansijskih usluga, od teorijskih osnova do praktičnih primera, pružajući čitaocima holistički uvid u dinamičnu sferu finansijskih usluga.

Struktura knjige

Prvi deo „**Menadžment unutrašnjeg platnog prometa u funkciji finansijskih usluga**“ posvećen je definisanju i ključnim karakteristikama platnog prometa, kao i načelima organizacije platnog prometa. Detaljno su opisani nosioci i učesnici u domaćem platnom prometu, počevši od Narodne banke Srbije pa do poslovnih banaka. U ovom delu knjige su predstavljeni i ključni instrumenti unutrašnjeg platnog prometa kao što su: nalog za uplatu, nalog za isplatu, nalog za prenos i nalog za naplatu.

Drugi deo **„Menadžment specijalnih instrumenata unutrašnjeg platnog prometa u funkciji finansijskih usluga“** posvećen je najčešće korišćenim instrumentima u domaćem platnom prometu: menicama, čekovima, akreditivima i garancijama. Pre svega, ukazano je na vrste i karakteristike menica kao instrumenta unutrašnjeg platnog prometa i na ključne karakteristike menično-pravnih poslova. Zatim su predstavljena osnovna obeležja i vrste čekova, a takođe je ukazano i na suštinske sličnosti i razlike koje postoje između čekova i menica.

Treći deo **„Menadžment instrumenata međunarodnog platnog prometa u funkciji finansijskih usluga“** bavi se pojmovima i karakteristikama sistema međunarodnih plaćanja, počevši od njihovih specifičnosti, različitih vrsta međunarodnih plaćanja, pa do korespondentskih odnosa poslovnih banaka u međunarodnim platnim transakcijama. Ovaj deo knjige obrađuje i međunarodne čekove i menice kao instrumente platnog prometa, međunarodne bankarske garancije, kao i dokumentarne akreditive. Poseban akcenat stavljen je na bankarske doznake i kreditno pismo kao specijalizovane instrumente međunarodnog platnog prometa, kao i na međunarodnu dokumentarnu inkaso naplatu.

Četvrti deo **„Karakteristike obračunskih oblika plaćanja u platnom prometu“** ističe osnovne karakteristike platnih transakcija, zatim proces transfera odobrenja i zaduženja, kao i ključne karakteristike internih i međubankarskih plaćanja. Poseban fokus ovog dela knjige je na asignaciji, cesiji i kompenzaciji kao obračunskim oblicima plaćanja u finansijskim uslugama uz korisne primere iz prakse. Na ovaj način, u knjizi je ukazano na ključne karakteristike obračunskih modela plaćanja u platnom prometu.

Peti deo **„Krediti u funkciji finansijskih usluga“** bavi se strategijama i analizom ročne strukture kreditnih plasmana, kao i njihovim značajem u realizaciji finansijskih usluga. Opisana je ocena kreditne sposobnosti (boniteta) tražioca kredita, kao i različiti oblici obezbeđenja kreditnih plasmana. Detaljno je prikazan proces odobravanja kredita, počevši od podnošenja zahteva za kredit, razmatranja i obrade kreditnog zahteva, donošenja kreditnog mišljenja, zaključivanja ugovora o odobrenom kredi-

tu, pa sve do postupka korišćenja i otplate kredita. Predstavljene su strategije naplate, sekjuritizacije kreditnih plasmana, kao i strategije upravljanja nenaplativim potraživanjima. Dalje, ukazano je na strategije ročne strukture kamatnih stopa, vrste kamatnih stopa, inflaciju i moralni hazard. Na kraju ovog dela knjige su predstavljene ključne karakteristike eskontnih, akceptnih, avalnih, kontokorentnih, lombardnih, rambursnih, vinkulacionih, hipotekarnih, konzorcijalnih i forfeting kredita.

Šesti deo **„Specifični oblici finansiranja u funkciji finansijskih usluga“** posvećen je lizingu, faktoringu i franšizingu. Ukazano je na pojam i vrste lizing aranžmana, specifičnosti direktnog, indirektnog i drugih oblika lizinga, kalkulaciju lizing aranžmana i zakonsku regulativu finansijskog lizinga. Takođe, istaknute su specifičnosti međunarodnih lizing aranžmana i njihovi modaliteti. U ovom delu knjige detaljno je predstavljen i faktoring kao specifičan oblik finansiranja usluga, počevši od karakteristika faktoring aranžmana, vrsta i specifičnosti faktoring aranžmana, kao i finansiranja uz primenu faktoring aranžmana u domicilnim uslovima privređivanja. Na kraju ovog dela objašnjen je franšizing, njegove ključne karakteristike, vrste, specifičnosti ugovora o franšiznim aranžmanima i ključni elementi tih ugovora.

Sedmi deo **„Elektronski oblici realizacije finansijskih usluga“** posvećen je specifičnostima realizacije finansijskih usluga u digitalnom dobu. Pre svega, ukazano je na elektronske oblike bankarstva i faktore koji su uticali na razvoj elektronskog bankarstva. Zatim su opsežno predstavljene platne kartice kao sredstva plaćanja finansijskih usluga (kreditne, debitne kartice, American Express, Eurocard, Diners, Visa, MasterCard, Dina). Nakon toga, objašnjene su ključne karakteristike kreditnog biroa i prateći primer korišćenja izveštaja kreditnog biroa. Poseban značaj ovog dela knjige je u tome što je prikazan konkretan primer procedure odobravanja platnih kartica, sa grafičkim prikazom svih koraka i faza tog procesa. Na kraju ovog dela knjige ukazano je na celokupnu distributivnu mrežu elektronskog bankarstva, počevši od karakteristika POS terminala, bankomata, kao i mobilnog bankarstva i internet bankarstva.

Osmi deo **„Elektronsko poslovanje, elektronska trgovina i elektronski platni promet“** posvećen je pre svega osnovnim karakteristikama elektronskog poslovanja i elektronske trgovine. Nakon toga je predstavljen elektronski platni promet, njegove specifičnosti, modeli, kao i digitalni sistemi plaćanja. Značajan segment ovog dela knjige čini i prikaz komunikacije koja se odvija između učesnika u robnom prometu i pružanja finansijskih usluga, kao i uloga i značaj informacione tehnologije u robnom prometu i finansijskim uslugama. Na kraju ovog dela dat je opis praktične upotrebe elektronskog bankarstva i procesa plaćanja računa pomoću funkcije „IPS skeniraj“ i kupovine pomoću funkcije „IPS pokaži“.

Deveti deo **„Menadžment i liderstvo u funkciji finansijskih usluga“** posvećen je posebnom segmentu koji se odnosi na upravljanje finansijskim uslugama iz perspektive ljudskih resursa. Pre svega, ukazano je na značaj menadžera u upravljanju finansijskim uslugama i značaj lidera u procesu realizacije i koncipiranja novih vrsta finansijskih usluga. Poseban akcenat stavljen je na savremene pristupe liderstvu i na lidere koji se bave menadžmentom finansijskih usluga.

Zaključak

Knjiga je korisna za studente koji se obrazuju u oblasti finansija, ekonomije, bankarstva i menadžmenta, jer nudi sveobuhvatan pregled ključnih koncepata i teorija koje oblikuju moderni finansijski sektor. Studenti mogu da razumeju kako se različiti oblici platnog prometa, kreditnih instrumenata, lizing aranžmana, faktoringa i franšizinga primenjuju u realnom svetu, kao i kako se razvijaju i koriste

elektronski oblici plaćanja i bankarske usluge. Takođe, knjiga može da se koristi i kao priručnik za studente koji se bave istraživačkim radom u ovoj oblasti, jer je temeljna i obuhvata savremene globalne trendove.

Za praktičare u oblasti bankarstva, finansija i osiguranja, knjiga nudi dragoceno znanje koje može da unapredi njihov svakodnevni rad. Od menadžera i zaposlenih u bankama do finansijskih savetnika i analitičara, ova knjiga pruža praktičnu primenu teorijskih znanja i nudi detaljne informacije o procedurama i instrumentima koje koriste finansijske institucije. Na primer, proces odobravanja kreditnih kartica, modeli elektronskog plaćanja ili oblici finansiranja kao što su lizing, faktoring i franšizing, predstavljeni su na vrlo detaljan i prijemčiv način, što omogućava profesionalcima da primene naučeno u svakodnevnom poslovanju.

Menadžeri i lideri koji upravljaju finansijskim uslugama, kao i oni koji se bave strateškim donošenjem odluka u sektoru finansija, mogu da pronađu vredna znanja u ovoj knjizi. Poseban akcenat stavljen je na menadžment i liderstvo, što je ključna tema za svakog menadžera u finansijskom sektoru. Knjiga nudi dublje razumevanje izazova s kojima se suočavaju lideri u procesu koncipiranja i realizacije novih finansijskih usluga, kao i u upravljanju timovima i projektima u dinamičnom finansijskom okruženju. Ovaj deo knjige je od posebnog značaja za menadžere koji žele da unaprede svoje liderske veštine i poboljšaju efikasnost organizacije.

Dodatno, knjiga je korisna preduzetnicima i vlasnicima privatnih preduzeća koja se bave različitim vrstama finansijskih usluga, kao i onima koji razmatraju upotrebu digitalnih tehnologija i elektronskog bankarstva u svom poslovanju. Razumevanje digitalnih sistema plaćanja, mobilnog bankarstva, platnih kartica i drugih savremenih instrumenata može pomoći privrednim subjektima da unaprede svoje usluge, prošire tržište i povećaju konkurentnost.

Knjiga **„Menadžment finansijskih usluga u savremenim uslovima poslovanja“** je od neprocenjive vrednosti za širok spektar čitalaca - od studenata, preko finansijskih stručnjaka, menadžera i lidera u finansijskim institucijama, pa sve do preduzetnika. Nudi teorijska i praktična znanja koja mogu doprineti stručnom razvoju svakog pojedinca i organizacije u sektoru finansijskih usluga.

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BOOK REVIEW "MANAGEMENT OF FINANCIAL SERVICES IN CONTEMPORARY BUSINESS CONDITIONS"

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Abstract

Book review: Vunjak, N. M., Dragosavac, M. M., Lukić Nikolić, J., Davidov, T., Mihajlović, M. (2024). Management of Financial Services in Contemporary Business Conditions. Belgrade: Modern Business School. ISBN - 978-86-87677-33-3 COBISS.SR-ID - 152899593

Keywords: book review, financial services, contemporary business conditions

JEL classification: G10, G20.

Introduction

The book **"Management of Financial Services in Contemporary Business Conditions"**, authored by academic Prof. Nenad M. Vunjak, Prof. Miloš M. Dragosavac, Prof. Jelena Lukić Nikolić, Assoc. Prof. Tatjana Davidov, and Assoc. Prof. Milan Mihajlović, is structured into nine parts. The book concludes with a comprehensive list of references and the authors' biographies.

This book is an essential resource for professionals in the financial services sector, especially in the context of contemporary economic challenges, technological advancements, and globalization. Its uniqueness lies in the thorough exploration of a wide range of topics, from payment transactions to contemporary financing instruments and digital solutions within the financial services sector. The book spans key areas of financial services, offering both theoretical foundations and practical examples, providing readers with a comprehensive understanding of this dynamic field.

Book Structure

The first part, **"Management of Internal Payment Transactions in the Function of Financial Services**", explored the definition and key characteristics of payment transactions, as well as the principles of organizing payment transactions. The actors and participants in domestic payment transactions were thoroughly examined, starting with the National Bank of Serbia and extending to commercial banks. This part of the book also addressed the fundamental instruments of internal payment transactions such as: payment orders, withdrawal orders, transfer orders, and collection orders.

The second part, **"Management of Special Instruments of Internal Payment Circulation in the Function of Financial Services"**, is dedicated to the most commonly used instruments in domestic payment transactions: bills of exchange, checks, letters of credit and guarantees. First, an overview was given of the types and characteristics of bills of exchange as an instrument of internal payment transactions and the key characteristics of checks and legal affairs. Then the basic characteristics and types of checks were presented, and the essential similarities and differences between checks and bills of exchange were also pointed out.

The third part, **"Management of International Payment Instruments in the Context of Financial Services"**, examined the concepts and characteristics of international payment systems, beginning with their specificities and various types of international payments, and concluding with the correspondent relationships between commercial banks in international payment transactions. This part of the book also explored international checks and bills of exchange as payment mechanisms, international bank guarantees, and documentary letters of credit. Bank transfers and letters of credit were highlighted as specialized instruments for international payment operations, along with international documentary collections.

The fourth part, **"Characteristics of Accounting Forms of Payment in Payment Transactions"**, focused on the fundamental features of payment transaction, followed by the approval and debit transfer process, and the essential characteristics of both internal and interbank payments. This part of the book primarily concentrated on assignment, cession, and compensation as accounting methods of remuneration in financial services. Thus, this part of the book highlighted the key aspects of payment calculation models in payment transactions.

The fifth part, **"Loans in the Function of Financial Services"**, examined the tactics and maturity structure of credit placements, along with their role in the delivery of financial services. The creditworthi-

ness assessment of loan applicants was then discussed, followed by the most common methods of obtaining loan placements. The process of loan approval was described in detail, starting with the submission of a loan application, followed by the evaluation and processing of the application, decision-making, and reporting. This process concluded with an agreement on the approved loan, followed by the procedures for its utilization and repayment schedule. This part of the book also covered debt collection techniques, the securitization of credit placements, and strategies for managing non-performing loans. Additionally, it discussed solutions related to term structure, types of interest rates, inflation, and moral hazard. This part of the book concluded with an analysis of the key characteristics and elements of discount, acceptance, guarantee, overdraft, lombard, reimbursement, pledge, mortgage, syndicate, and forfaiting loans.

The sixth part, "**Specific Forms of Financing in the Context of Financial Services**", covered leasing, factoring, and franchising. It began with an exploration of the concept and types of leasing arrangements, including the specifics of direct, indirect, and other leasing forms, the calculation of leasing arrangements, and the legal regulation of financial leasing. Additionally, this part of the book examined international leasing arrangements and their mechanisms. The focus then shifted to factoring, discussing its characteristics, the various types of factoring arrangements, and how factoring was used for financing in domestic business environments. This part of the book ended with an in-depth view at franchising, covering its essential characteristics, types, the specifics of franchise agreements, and the key elements of those agreements.

The seventh part, "**Electronic Forms of Realization of Financial Services**", discussed the specifics of delivering financial services in the digital age. First, electronic banking forms were examined, along with the factors that drove their development. This part of the book then focused on payment cards as a method of payment for financial services, thoroughly covering credit cards, debit cards, American Express, Eurocard, Diners, Visa, MasterCard, and Dina cards. The basic elements of Credit Bureaus were then introduced, including an example of how to use a Credit Bureau report. This part of the book was particularly important, as it provided a concrete example of the payment card approval process, complete with a graphic representation of all the procedures and phases involved. At the end of this segment, the entire network of electronic banking was described, starting with the characteristics of POS terminals, ATMs, mobile banking, and online banking.

The eighth part, "**Electronic Business, Electronic Trade, and Electronic Payment Transactions**", focused on the fundamental aspects of electronic business and electronic trade. It then moved on to electronic payment transactions, discussing their features, models, and digital payment systems. This part of the book was particularly significant as it highlighted the communication that takes place between participants in the trade of products and the provision of financial services, as well as the role and importance of information technology in the exchange of goods and financial services. This part of the book concluded with a description of how to use electronic banking in practice, including how to pay bills using the "IPS Scan" function and make purchases through the "IPS Show" function.

The ninth part, "**Management and Leadership in the Function of Financial Services**", focused on a specific aspect of financial service management. First and foremost, the necessity of managers in financial service management was emphasized, as well as the importance of leaders in the process of implementing and conceptualizing new types of financial services. This part of the book placed special emphasis on contemporary leadership techniques and the role of leaders in managing financial services.

Conclusion

The book is highly valuable for students studying finance, economics, banking, and management, as it provides a thorough understanding of the key principles and theories that shape the current financial sector. Through this book, students can learn how various types of payment transactions, credit instruments, leasing agreements, factoring, and franchising are applied in practice, as well as how electronic payment and banking services are developed and utilized. Additionally, the book serves as an excellent reference for students conducting research on this topic, as it is both comprehensive and up-to-date on global trends.

The book provides banking, finance, and insurance professionals with essential information that can support their daily work. It offers comprehensive details on the procedures and tools used by financial institutions, as well as practical applications of theoretical knowledge for managers, bank officers, financial advisors, and analysts. For example, the credit card acceptance process, electronic payment models, and contemporary financial instruments such as leasing, factoring, and franchising are explained clearly and understandably, enabling professionals to apply what they have learned in their daily operations.

This book will benefit managers and leaders in the financial services sector, as well as anyone involved in strategic decision-making within the finance sector. Special emphasis is placed on management and leadership, as these are crucial topics for all financial managers. The book offers a deeper understanding of the challenges executives face when developing and implementing new financial services, as well as managing teams and projects in a fast-paced financial environment. This is particularly valuable for managers looking to enhance their leadership skills and organizational effectiveness.

Furthermore, the book is also valuable for entrepreneurs and business owners who engage with various forms of financial services, as well as those considering incorporating digital technology and electronic banking into their operations. Understanding digital payment systems, mobile banking, payment cards, and other modern tools can help entrepreneurs enhance their services, expand their markets, and improve their competitiveness.

The book **"Management of Financial Services in Contemporary Business Conditions"** is beneficial to a wide range of readers, including students, financial professionals, managers and executives in financial institutions, and entrepreneurs. It offers a wealth of both practical and theoretical knowledge that can support the professional development of individuals and organizations in the field of financial services.

BEOGRADSKA BERZA
BELGRADE STOCK EXCHANGE

BAROMETAR / BAROMETER

Januar 2025 – April 2025.

1. PROMET / TURNOVER

Mesec/ Month	Listing	Open Market	Regulisano tržište/ Regulated market	MTP/MTF	Ukupno/Total	Broj transakcija/ Number of transactions
Januar 2025	802.709.552,00	87.903.981,00	890.613.533,00	12.350,00	890.625.883,00	1.165,00
Februar 2025	814.937.375,00	154.867.171,00	969.804.546,00	0,00	969.804.546,00	1.396,00
Mart 2025	810.090.210,00	57.946.823,00	868.037.033,00	1.701,00	868.038.734,00	1.111,00
April 2025	2.228.067.743,00	361.797.562,00	2.589.865.305,00	729.000,00	2.590.594.305,00	1.320,00
	4.655.804.880,00	662.515.537,00	5.318.320.417,00	743.051,00	5.319.063.468,00	4.992,00

*RSD

2. INDEKSI / INDICES

Januar 2025. April 2025		BELEX15	BELEXline
	Poslednja vrednost / Last value	1.142,31	2.557,29
	Promena (abs) / Change (abs)	-4,45	103,61
	Promena (%) / Change (%)	-0,39%	4,22%
	Najviša vrednost / Maximum value	1.173,32	2.557,29
	Najniža vrednost / Minimum value	1.102,07	2.421,49
	Istorijski max / History maximum value	3335,2	5007,34
	Istorijski min / History minimum value	347,46	841,99
	Vrednost prometa / Value of turnover	293.599.838	767.944.365

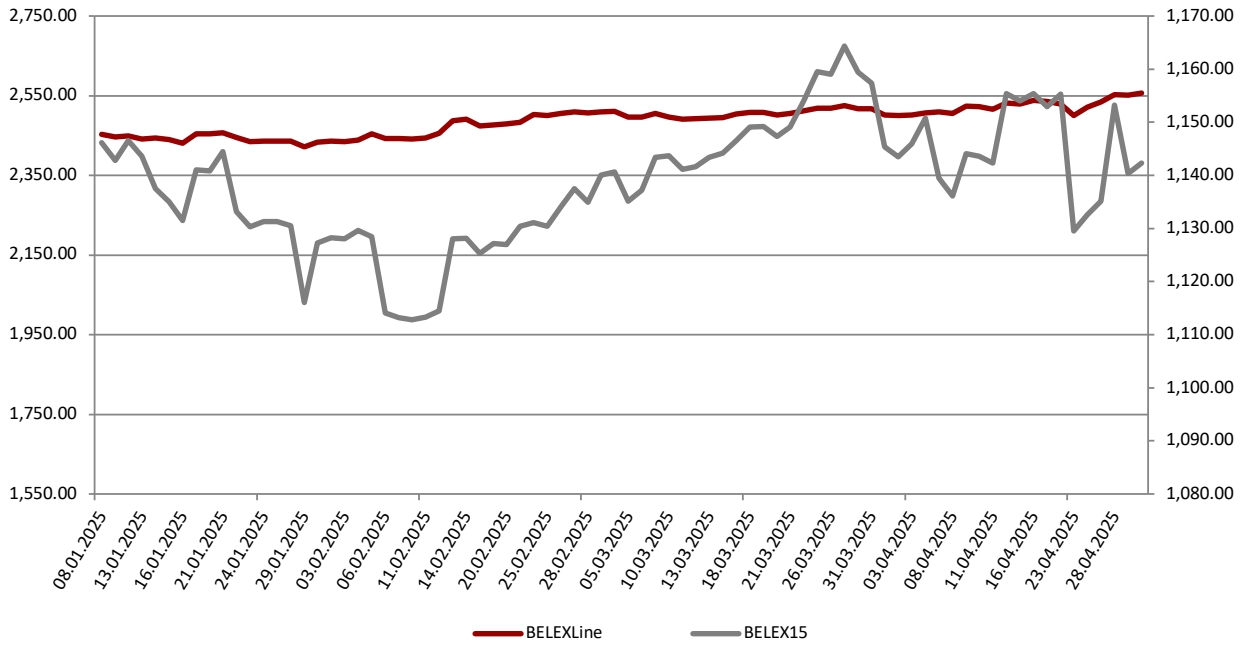
3. TRŽIŠNA KAPITALIZACIJA / MARKET CAPITALISATION

	Januar	Februar	Mart	April
Ukupna tržišna kapitalizacija/ Total market capitalisation	474.298.048.683	477.418.834.791	478.168.008.536	478.820.904.699
Regulisano tržište/ Regulated Market	465.939.354.574	469.097.198.010	469.844.823.615	470.559.654.744
Prime Listing – akcije/ Prime Listing – shares	210.442.138.560	209.841.391.741	209.282.872.956	216.270.016.674
Open Market	255.497.216.014	259.255.806.269	260.561.950.659	254.289.638.070
MTP/MTF	8.358.694.109	8.321.636.781	8.323.184.921	8.261.249.955
BELEX15	277.657.496.766	278.742.365.337	280.346.554.547	283.533.627.360
BELEXline	296.875.753.373	300.882.793.893	301.995.884.730	306.424.661.352

*u hiljadama RSD / in RSD thousands

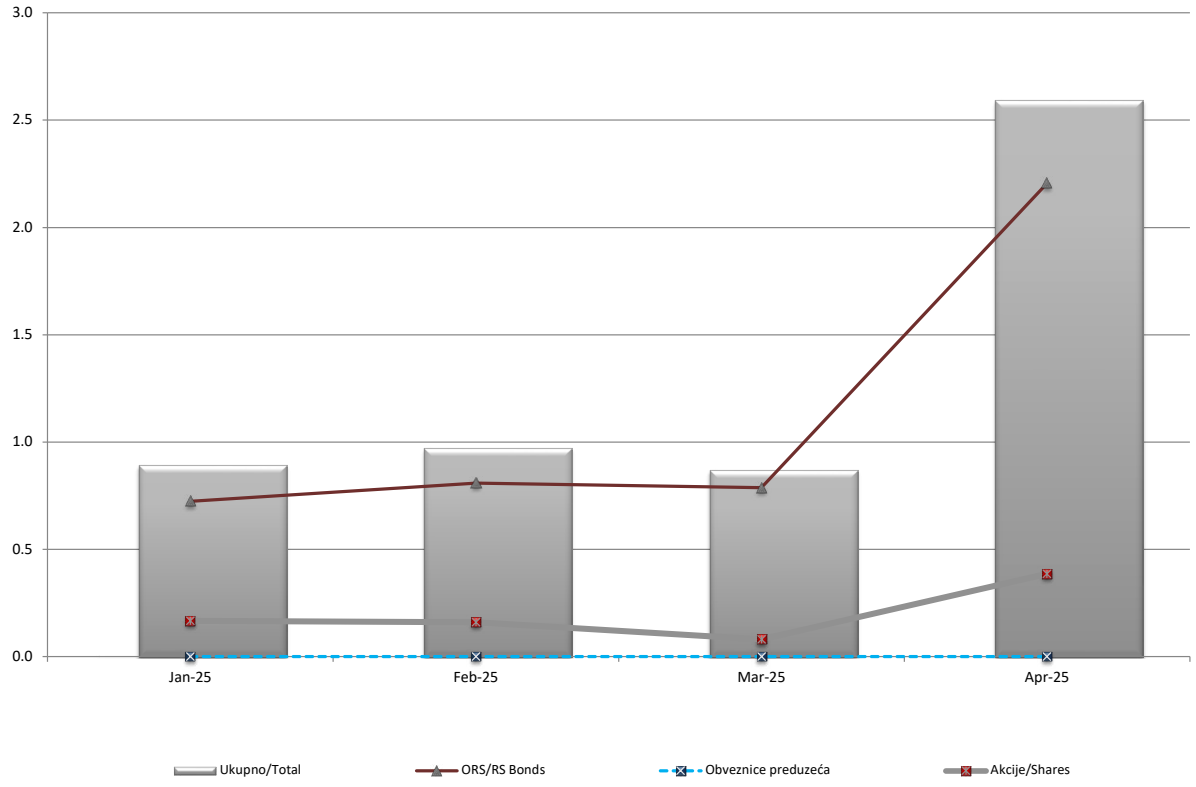
4. UČEŠĆE STRANIH INVESTITORA / FOREIGN INVESTORS PARTICIPATION

Jan 2025 – Apr 2025	Učešće stranih investitora / Foreign Investors Participation		
	FIS	total	25,08%
		b-FIS	39,26%
		s-FIS	10,89%
	FIB		1,75%
	FIT		3,71%



JAN 2025 - APR 2025.

U mlrd dinarima / RSD.



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