

Udruženje banaka Srbije

BANKARSTVO

1/2022

ISSN 2466-5495 | COBISS.SR-ID 109903884



Izjave o obavezama redakcije, autora i recenzenata u cilju poštovanja etičkih načela u postupcima svih učesnika na realizaciji časopisa *Bankarstvo* nalaze se na veb stranici časopisa www.casopisbankarstvo.rs.

The relevant statements of obligations to be fulfilled by the Editorial Office, authors and reviewers for the purpose of ethical conduct of all participants in the process of *Bankarstvo* Journal publication can be found at the Journal's webpage www.casopisbankarstvo.rs.

Odlukom Matičnog naučnog odbora za pravo, ekonomiju i političke nauke Ministarstva prosvete, nauke i tehnološkog razvoja časopis *Bankarstvo* je registrovan na listi naučnih časopisa u kategoriji M52.

According to the Decision of the Central Scientific Committee for Law, Economics and Political Sciences, within the Ministry of Education, Science and Technological Development, *Bankarstvo* Journal is registered in the list of scientific journals in the category M52.

Svi radovi podležu dvema nezavisnim stručnim recenzijama.
All papers undergo double blind peer review.

Časopis *Bankarstvo* je registrovan u bazama /
***Bankarstvo* Journal is registered in the following databases**

SCIndeks

<http://scindeks.ceon.rs/journaldetails.aspx?issn=1451-4354>

EBSCO

<http://www.ebscohost.com/corporate-research/business-source-corporate-plus>

DOAJ

<https://doaj.org/toc/2466-5495>

CEEOL

<https://www.ceeol.com/search/journal-detail?id=2494>

EconBiz

<https://www.econbiz.de/Record/bankarstvo/10010373502> - online
<https://www.econbiz.de/Record/bankarstvo/10001863330> - print

ERIH PLUS

<https://dbh.nsd.uib.no/publiseringsskanaler/erihplus/periodical/info?id=496397>

ISSN 2466-5495 (Online)

Bankarstvo

Broj / Issue No.

1/2022

Godina izdanja / Year of Publishing

51

Redovni brojevi časopisa, na srpskom i engleskom jeziku, izlaze četiri puta godišnje - tromesečno /
Regular issues of the journal, in Serbian and in English, are published four times per year - quarterly.

Izdavač / Publisher

Udruženje banaka Srbije p.u. / Association of Serbian Banks b.a.

11000 Beograd, Bulevar kralja Aleksandra 86

bankarstvo@ubs-asb.com

www.ubs-asb.com

Glavni i odgovorni urednik / Editor-in-Chief

Vladimir Vasić

Redakcioni odbor / Editorial Board

Prof. dr Radovan Kovačević, Ekonomski fakultet Beograd / Faculty of Economics Belgrade

Prof. dr Miloš Božović, Ekonomski fakultet Beograd / Faculty of Economics Belgrade

Prof. dr Dušan Marković, Ekonomski fakultet Beograd / Faculty of Economics Belgrade

Prof. dr Aleksandar Živković, Ekonomski fakultet Beograd / Faculty of Economics Belgrade

Prof. dr Velimir Lukić, Ekonomski fakultet Beograd / Faculty of Economics Belgrade

Prof. dr Vladimir Vučković, Fiskalni savet Republike Srbije / Fiscal Council of the Republic of Serbia

Prof. dr Nebojša Savić, FEFA - Fakultet za Ekonomiju, Finansije i Administraciju / FEFA - Faculty of Economics, Finance and Administration

Prof. dr Goran Pitić, FEFA - Fakultet za Ekonomiju, Finansije i Administraciju / FEFA - Faculty of Economics, Finance and Administration

Prof. dr Snežana Knežević, vanredni profesor, Fakultet organizacionih nauka, Beograd / Associate Professor, Faculty of Organizational Sciences, Belgrade

Prof. dr Vesna Aleksić, Institut ekonomskih nauka Beograd / Institute of Economic Sciences Belgrade

Dr Jelena Minović, Institut ekonomskih nauka Beograd / Institute of Economic Sciences Belgrade

Prof. dr Miloš Živković, Pravni fakultet Beograd / Faculty of Law Belgrade

Dr Aleksandra Mitrović, Fakultet za hotelijerstvo i turizam, Vrnjačka Banja / Faculty of Hotel Management and Tourism, Vrnjačka Banja

Prof. dr Mladen Mrdan, EBS Business School, Wiesbaden

Prof. dr Marko Malović, Fakultet poslovne ekonomije, Univerzitet Educons Sremska Kamenica / Faculty of Business, Educons University S. Kamenica

Dr Milko Štimac, Konsultant za finansijska tržišta / Financial markets consultant

Dr Nataša Kožul, Samostalni ekspert i konsultant za investiciono Bankarstvo / Independent expert and investment banking consultant

Dr Miloš Janković, Ekspert za bankarsku i finansijsku regulaciju / Banking and financial regulation expert

Dr Miloš Vujnović, Finansijski konsultant / Financial consultant

Siniša Krneta, Beogradska berza / Belgrade Stock Exchange

Gordana Dostanić, AMS osiguranje / AMS Insurance

Dr Slađana Sredojević, Udruženje banaka Srbije / Association of Serbian Banks

Dr Milan Brković, Udruženje banaka Srbije / Association of Serbian Banks

Prof. dr Milena Ilić, Visoka škola strukovnih studija za informacione tehnologije ITS - Beograd / High School of Vocational Studies for Information Technology ITS - Belgrade

Dr Vesna Matić, Udruženje banaka Srbije, u penziji / Association of Serbian Banks, retired

Svetlana Pantelić, Udruženje banaka Srbije, u penziji / Association of Serbian Banks, retired

Dr Boško Mekinjić, Komercijalna banka a.d. Banja Luka, BiH

Doc. dr Džafer Alibegović, Ekonomski fakultet Sarajevo, BiH / Faculty of Economics Sarajevo, B&H

Prof. dr Slobodan Lakić, Ekonomski fakultet Podgorica, Crna Gora / Faculty of Economics Podgorica, Montenegro

Prof. dr Žarko Lazarević, Inštitut za novejšo zgodovino Ljubljana, Slovenija / Institute of Contemporary History Ljubljana, Slovenia

Dr Boštjan Ferk, Inštitut za javno-zasebno partnerstvo, Ljubljana, Slovenija / Institute for Public-Private Partnership, Ljubljana, Slovenia

Prof. dr János Száz, Institute for Training and Consulting in Banking, Budapest, Hungary

Dr Andrei Radulescu, Banca Transilvania, Bucharest, Romania

Prof. Roger Claessens, R.J. Claessens & Partners, Luxembourg

Prof. dr Nikolay Nenovsky, CRIISEA, Université de Picardie Jules Verne, Amiens, France

Dr Aaron Presnall, Jefferson Institute, Washington, USA

Redakcija/Editorial Office

Marina Kostadinović - Urednik 011 30 20 777

Sonja Grbić - Prevodilac i lektor za engleski jezik / Translator and English Proofreader

Vesna Milkova - Sekretar 011 30 20 541

Svi članci podležu dvema recenzijama / All articles are reviewed by two independent reviewers

SADRŽAJ

6.	<i>Uvodna reč</i>
10.	<i>Jovana Lazarević</i> Unapređenje kvaliteta bankarskih usluga: primer mobilnog bankarstva
32.	<i>Prof. dr Bojan S. Đorđević</i> Razvoj instrumenta za merenje kvaliteta usluga E-bankarstva u Republici Srbiji: E-BSrb-QUAL
70.	<i>Prof. dr Almir Alihodžić</i> Da li profitabilnost banaka utiče na privredni rast: primeri banaka pojedinih zemalja Zapadnog balkana
100.	<i>Prof. dr Nikola Radivojević, Ana Dukić i Sanja M. Dončić</i> Uticaj intelektualnog kapitala na finansijske performanse: Studija slučaja finansijskog sektora Srbije
126.	<i>Prof. dr Ljiljana Kontić i Jovan Kontić</i> Primena sistema Balanced Scorecard (BSC) u poslovnoj banci
144.	Barometar / JANUAR 2021 – JUN 2022.
154.	Uputstvo za autore

TABLE OF CONTENTS

21.	<i>Editorial</i>
21.	<i>Jovana Lazarević</i> Improving Banking Services Quality: Example of Mobile Banking
51.	<i>Prof. Bojan S. Đorđević, PhD</i> Development of the Instruments for Measuring the Quality of E-Banking Services in the Republic of Serbia: E-BSrb-QUAL
85.	<i>Prof. Almir Alihodžić, PhD</i> Does Bank Profitability Affect Economic Growth: Examples of Banks in Some Western Balkan Countries
113.	<i>Prof. Nikola Radivojević, PhD, Ana Dukić and Sanja M. Dončić</i> The Impact of Intellectual Capital on Financial Performance – Case Study: the Serbian Financial Sector
134.	<i>Prof. Ljiljana Kontić, PhD and Jovan Kontić</i> Implementation of Balanced Scorecard in Domestic Commercial Bank
144.	Barometer / JANUARY 2021 – JUNE 2022
157.	Instructions for the authors



UVODNIK

Vladimir Vasić,
Urednik časopisa Bankarstvo

Krize poput ove koja trenutno potresa planetu, trenutak su kada ceo svet – hteo, ne hteo - uči osnovne lekcije iz ekonomije. I oni koji slabo poznaju ovu oblast, i stručnjaci koji često negiraju tržišne zakonitosti, počinju da se pitaju šta se to događa, šta izaziva događaje čije posledice ovako snažno osećamo.

A događaju se ekonomske neminovnosti.

Banke, kao sistemi suštinski involvirani u ekonomiju i njen finansijski segment, ovu oblast, naravno, dobro poznaju i ne samo to – naša pozicija je da ove zakonitosti i tumačimo, odnosno time pomažemo da ih dobro protumače i oni koji su sa tržišnom logikom daleko slabije upoznati.

Ekonomija nam je, na primer, vrlo drastično pokazala koliko su globalizacijom povezana tržišta i šta znači prekid proizvodnje ili snabdevanja u jednom delu planete. Sukob na istoku izazvao je poremećaj na tržištu hrane, delom zbog smanjene proizvodnje u važnoj poljoprivrednoj regiji, a delom i zbog zatvaranja jednog ogromnog tržišta koje je prihvatilo velike količine proizvoda iz mnogih zemalja.

Energetska kriza je još očiglednija. Porast tražnje na velikim tržištima, poput kineskog, a zatim i snažan šok na istoku Evrope doveli su do nezapamćenog skoka energenata, pa i rizika za normalno snabdevanje elementarnih potreba građanstva i privrede.

Kada su se svemu pridružili i prekinuti lanci snabdevanja, postalo je jasno da dosadašnja više godina duga politika ohrabrenja privrednih aktivnosti mora biti završena, jer čovečanstvo se posle dužeg vremena suočilo sa baukom inflacije.

Tako se i najšira javnost – neželjeno ali nužno – zainteresovala za objašnjenja kako i zašto se sve ovo zbiva i ono još važnije: šta nas čeka u budućnosti?

Banke su naravno vrlo brzo reagovala na zbivanja na tržištu, ali istovremeno i davale tumačenja nove ekonomske situacije.

Centralne banke reagovala su povećanjem referentnih kamatnih stopa. Period ekstremno jeftinog novca je završen, bar za ovaj period, euribor posle dužeg vremena ponovo ima

pozitivnu vrednost. Građani pitaju kako će se to odraziti na njihove obaveze prema bankama, sadašnje i buduće.

Inflacija, odnosno skok cena doslovno svih proizvoda i usluga neminovno se dotiču i banaka. Povećani su troškovi poslovanja, raste cena poslovnog prostora, energenata, potrošnog materijala, nije zanemarljiv ni udeo radne snage, odnosno razumljivog i poželjnog podizanja standarda zaposlenih u bankama. Sve zajedno nužno vodi ka razmatranju politike cena bankarskih usluga, a to je opet tema za koju najšira javnost želi objašnjenje.

Za ekonomiste ili one koji koliko-toliko poznaju ovu oblast, sve navedeno predstavlja složenu, ali objašnjivu kriznu situaciju. Za mnoge oko nas stanje je takođe složeno, ali i teško razumljivo. Zbog toga je pred nama bankarima nimalo lak period i obaveza da svoje poslovanje prilagodimo novim okolnostima, ali i da istovremeno sve nove ekonomske signale tumačimo ljudima oko nas, a pre svega našim partnerima i klijentima.



EDITORIAL

Vladimir Vasić,
Editor of Bankarstvo Journal

In crises like the one that is currently shaking the planet, the whole world - willingly or unwillingly - learns the basic lessons of economics. Both those who know little about this field, and experts who often deny the laws of the market, are beginning to wonder what is happening, and what is causing the events whose consequences we feel so strongly.

And what is happening is economic inevitability.

Banks, as systems essentially involved in the economy and its financial segment, are, of course, well acquainted with this field and, moreover, our position is to interpret these laws, i.e., to help those less acquainted with market logic to interpret them, as well.

The economy, for example, has shown us quite drastically how much markets are connected by globalisation, and what it means to cut off production or supply in one part of the planet. The conflict in the east has caused a disruption in the food market, partly due to reduced production in an important agricultural region, and partly due to the closure of a huge market that accepted large quantities of products from many countries.

The energy crisis is even more obvious. Rising demand in large markets, such as China, and then a strong shock in Eastern Europe have led to an unprecedented jump in energy costs, and even jeopardising the normal supply of basic needs of citizens and the economy.

When we add to this the disruption of supply chains, it becomes clear that the long-standing policy of encouraging economic activities must come to an end, because humanity is now facing the spectre of inflation, after a long while.

Thus, the general public – not out of desire but out of necessity - became interested in explaining how and why all this is happening, and more importantly: what awaits us in the future?

Banks, of course, reacted very quickly to market developments, while simultaneously providing interpretations of the new economic situation.

Central banks responded by raising benchmark interest rates. The period of extremely cheap money is over, at least for now, and Euribor again has a positive value, after a long while. Citizens are wondering how this will affect their obligations to banks, both present and future.

Inflation, i.e., the increase in the prices of literally all products and services inevitably affects banks. Business costs have increased, the price of business premises, energy, and consumables is rising, and the issue of the labour force is not negligible either, i.e., an understandable and desirable raising of the standards of employees in banks. Altogether, this necessarily leads to the reconsideration of the banking services' price policy, and that is again a topic for which the general public wants an explanation.

For economists, or those who know this field to some extent, all of the above is a complex crisis situation, but one that can be explained. For many of those around us, though, the situation is complex, but also difficult to understand. Therefore, we bankers have a challenging period ahead of us, as well as an obligation to adapt our business to new circumstances, and to interpret all new economic signals to people around us, especially to our partners and clients.

Primljeno: 31.01.2022.
Odobreno 20.02.2022.

DOI: 10.5937/bankarstvo2201010L

UNAPREĐENJE KVALITETA BANKARSKIH USLUGA: PRIMER MOBILNOG BANKARSTVA

Jovana Lazarević, istraživač saradnik, Ekonomski fakultet,
Univerziteta u Kragujevcu
email: jsavic@kg.ac.rs

Rezime

Primena savremenih informacionih tehnologija obezbedila je bankama mogućnost komunikacije sa klijentima putem mobilnog bankarstva. U cilju unapređenja kvaliteta navedene usluge, banke moraju da prate i analiziraju komponente koje determinišu nameru klijenata da komunikaciju sa svojom bankom obavljaju putem ovog kanala. Cilj rada podrazumeva identifikovanje ključnih determinanti namere klijenata da koriste usluge mobilnog bankarstva putem empirijskog istraživanja sprovedenog na uzorku od 196 ispitanika. U radu se analizira efekat percipirane korisnosti i lakoće upotrebe kao glavnih komponenti TAM modela, uz proširivanje istog sa još dve komponente: poverenje i kredibilitet. Obradom podataka u softveru SPSS došlo se do rezultata da sve posmatrane komponente, izuzev poverenja, utiču na nameru klijenata da koriste mobilno bankarstvo. Dobijeni rezultati proširuju naučna saznanja u oblasti savremenih bankarskih komunikacija i obezbeđuju korisna saznanja za unapređenje kvaliteta bankarskih usluga.

Ključne reči: mobilno bankarstvo; namera korišćenja; TAM model; banke; kvalitet usluge

JEL klasifikacija: G21, M31, C83

Uvod

Spoj interneta i mobilnih telefona u značajnoj meri je promenio život ljudi prethodnih godina, naročito danas kada su mogućnosti pametnih telefona znatno veće u odnosu na prvobitne modele istih. Među prvima koje su iskoristili ovu kombinaciju bile su kompanije koje su počele sa razvojem i primenom elektronske trgovine. Ugledajući se na njihov primer, banke su u svom poslovanju počele sa novom komercijalnom primenom mobilnog interneta poznatijom kao mobilno bankarstvo. Mobilno bankarstvo klijentima omogućava da izvršavaju svoje bankarske transakcije u virtuelnom okruženju, odnosno bez potrebe za fizičkim kontaktom sa bankom. Usluge mobilnog bankarstva u poređenju sa tradicionalnim bankarskim uslugama obezbeđuju velike uštede, kako bankama, tako i klijentima (Baabdullah et al., 2019). Drugim rečima, klijenti dobijaju gotovo sve vrste prilagođenih bankarskih usluga koje mogu obavljati gde god da se nalaze, dok banke ostvaruju značajne uštede po osnovu redukcije troškova pružanja istih (Asnakew, 2020).

Srbija kao zemlja u razvoju ulaže značajne napore u razvoj i korišćenje novih tehnologija kako bi podigla svoju konkurentnost u poređenju sa ostatkom sveta, naročito razvijenim zemljama. Evidentno je da bankarski sektor pomno radi na praćenju promena koje se dešavaju na globalnom tržištu kako bi ponudio svojim klijentima usluge koje će im omogućiti brzo i kvalitetno završavanje bankarskih transakcija. Shodno tome, važno je konstantno raditi na unapređenju kvaliteta bankarskih usluga koji se smatra ključnom determinantom uspešnog odnosa banke sa svojim klijentima (Naumovska Saveska et al., 2021). Kvalitet usluge je, između ostalog, moguće postići ukoliko se redovno prate i analiziraju potrebe i stavovi klijenata, kao i faktori koji mogu uticati na njihovo ponašanje. Osim toga, u svetu je i dalje evidentan broj klijenata koji zbog lošeg kvaliteta usluge ili nedovoljno razvijene tehnologije odbijaju da koriste usluge mobilnog bankarstva (Priya et al., 2018). Još jedan od razloga zabrinutosti klijenata u vezi korišćenja mobilnog bankarstva kao novog kanala komunikacije sa bankom može se povezati sa mogućnošću napada sajber prostora i kompromitovanja ličnih podataka o klijentima koje banke poseduju (Šehović, 2017).

Polazeći od prethodno navedenog, u radu je sprovedeno empirijsko istraživanje u cilju identifikovanja komponenti koje su ključne za podsticanje namere klijenata da koriste mobilno bankarstvo kao novi kanal komunikacije sa bankom. Istraživanje je sprovedeno na teritoriji Kragujevca i okoline, polazeći od metodologije TAM modela (eng. Technology Acceptance Model - TAM), uz sagledavanje dve dodatne komponente: kredibilitet i poverenje. Struktura rada obuhvata nekoliko delova. Nakon uvodnih razmatranja, u prvom delu rada ukazano je na značaj i karakteristike mobilnog bankarstva, dato je obrazloženje TAM modela i pregled radova autora u prethodnom periodu u pogledu efekata komponenti mobilnog bankarstva na nameru korišćenja istog. Nakon ovog dela prikazana je metodologija istraživanja i struktura uzorka, slede rezultati istraživanja, dok su na kraju rada izneta zaključna razmatranja, ukazano je na glavne doprinose, ograničenja rada i preporuke za buduća istraživanja.

1. Mobilno bankarstvo i TAM model

Mobilno bankarstvo predstavlja nov kanal koji klijentima omogućava da sa bankom ostvare interakciju putem mobilnih uređaja kao što su mobilni telefoni ili lični digitalni asistenti (eng. Personal digital assistant - PDA) (Barnes & Corbitt, 2003). Karakteristike po kojima se mobilno bankarstvo izdvaja u odnosu na druge kanale koje banka koristi odnose se na mogućnost obavljanja transakcija, nezavisno

od mesta gde se klijent nalazi i vremena, kao i automatsko povezivanje sa bankom i dobijanje personalizovanih obaveštenja o svakoj aktivnosti na računu (Sanader, 2014). Drugim rečima, mobilno bankarstvo omogućava klijentima da imaju pristup svojim računima i da kontrolišu svoje transakcije bilo kada i bilo gde. Korišćenje mobilnog bankarstva klijentima pruža niz finansijskih i nefinansijskih usluga poput plaćanja računa, prenosa sredstava, kupovine, promene PIN koda, lociranje bankomata i dr. (Shaikh & Karjaluoto, 2015). Mobilno bankarstvo ima visok potencijal razvoja u budućnosti, ne samo jer predstavlja korak u evoluciji elektronskog bankarstva, već i bolju digitalnu alternativu za ostale kanale koje banka koristi za komunikaciju sa svojim klijentima kao što su bankomati, filijale, internet bankarstvo i sl. (Püschel et al., 2010).

Mobilno bankarstvo je godinama unazad predmet istraživanja velikog broja autora. Kao rezultat toga, u literaturi su razvijeni različiti modeli koji se koriste kako bi se dao odgovor na pitanje koji su faktori najznačajniji za prihvatanje mobilnog bankarstva kao novog kanala komunikacije sa bankama i nameru korišćenja istog. Jedan od tih modela je model prihvatanja tehnologije u literaturi poznat kao TAM model (eng. Technology Acceptance Model - TAM) koji obuhvata dve osnovne komponente označene kao percipirana korisnost i lakoća upotrebe (Davis, 1989). Ovaj model primenjen je u velikom broju istraživanja, ali najčešće u modifikovanoj formi dodavanjem novih komponenti koje se smatraju značajnim sa stanovišta prihvatanja tehnologije (Koenig-Lewis et al., 2010; Al Khasawneh, 2015; Liébana-Cabanillas et al., 2017; Muñoz-Leiva et al., 2017; Malaquias&Hwang, 2019; Suhartanto et al., 2020; Singh&Srivastava, 2020). Shodno navedenom, istraživački model u radu polazi od TAM modela koji je modifikovan dodavanjem dve komponente označene kao poverenje i kredibilitet, u skladu sa metodologijom prethodnih studija (Wang et al., 2006; Koenig-Lewis et al., 2010; Al Khasawneh, 2015; Priya et al., 2018).

H1: Percipirana korisnost ima pozitivan efekat na nameru korišćenja mobilnog bankarstva.

Percipirana korisnost se odnosi na benefite koje klijenti očekuju da će ostvariti korišćenjem mobilnog bankarstva kao što su ušteda vremena, lakše obavljanje bankarskih operacija i dr. (Pavlović & Savić, 2017). Prema Kalinic et al. (2019), ukoliko korisnik percipira da mu tehnologija pomaže da obavi svoje transakcije brže i lakše, verovaće da mu ista donosi benefite u vidu uštede vremena i energije, pa će biti više motivisan da je koristi. Muñoz-Leiva et al. (2017) dolaze do rezultata da percipirana korisnost ima statistički značajan uticaj na formiranje stava korisnika prema mobilnom bankarstvu, ali ne i na nameru korišćenja istog. S druge strane, u studiji autora Gu et al. (2009) percipirana korisnost se izdvojila kao najjača determinanta namere korišćenja mobilnog bankarstva. Shodno navedenom, u radu će se ispitati sledeća hipoteza:

H2: Lakoća upotrebe ima pozitivan efekat na nameru korišćenja mobilnog bankarstva.

Kada se posmatra lakoća upotrebe, Al Khasawneh (2015) ističe da ova komponenta podrazumeva da mobilno bankarstvo ne bi smelo da zahteva preveliki mentalni napor za korišćenje, kao i da bi trebalo da koristi interfejs koji je blizak korisnicima. Drugim rečima, ukoliko aplikacija mobilnog bankarstva ima jednostavan i jasan interfejs, korisnici će pre biti motivisani da probaju mobilno bankarstvo (Singh & Srivastava, 2020). Lakoća upotrebe ukazuje na stepen u kome pojedinac veruje da je lako naučiti kako da se koristi sistem, odnosno tehnologija. Percipirana lakoća upotrebe se u ranijim studijama istakla kao jedna od najvažnijih determinanti korišćenja mobilnog bankarstva. S tim u vezi, Malaquias&Hwang (2019) u svom istraživanju dolaze do zaključka da lakoća upotrebe predstavlja najvažniju determinantu korišćenja mobilnog bankarstva. Autori Singh & Srivastava (2018) takođe stižu do rezultata da je lakoća upotrebe jedna od ključnih determinanti namere korišćenja mobilnog bankarstva. U skladu sa prethodnim studijama, u radu se testira sledeća istraživačka hipoteza:

H3: Poverenje ima pozitivan efekat na nameru korišćenja mobilnog bankarstva.

Jedna od najvažnijih komponenti koja određuje spremnost klijenata da prihvate i koriste mobilno bankarstvo je poverenje (Barnes & Corbitt, 2003), te se tako u radovima ista često koristi kao dodatna komponenta TAM modela. Prema autoru Zhou (2012), poverenje može biti vezano za sposobnost provajdera usluga da imaju adekvatna znanja i veštine da ispune svoje zadatke, njihov integritet u vidu držanja obećanja korisnicima, i dobronamernost koja prvenstveno podrazumeva brigu o interesima korisnika, a tek onda o ličnim interesima. Iz ugla mobilnog bankarstva, poverenje se odnosi na sposobnost usluge da odgovori na zahteve klijenata i izvrši sve neophodne operacije, kao i da brine o njihovim interesima. Potencijalni korisnici mobilnog bankarstva procenjuju uslugu u zavisnosti od poverenja koje osećaju, na osnovu čega donose odluku o budućoj nameri u vidu korišćenja iste. Polazeći od navedenog, u radu se postavlja istraživačka hipoteza:

H4: Kredibilitet ima pozitivan efekat na nameru korišćenja mobilnog bankarstva.

Kredibilitet mobilnog bankarstva se odnosi na stepen u kome pojedinci veruju da korišćenjem mobilnog bankarstva neće biti ugrožena sigurnost ili privatnost njihovih podataka (Wang et al., 2003). Nedostatak kredibiliteta dovodi do zabrinutosti korisnika da će sistem mobilnog bankarstva odati njihove lične podatke ili prebaciti novac nekoj trećoj strani bez njegove dozvole i znanja (Luarn & Lin, 2005), što može nepovoljno uticati na nameru korišćenja mobilnog bankarstva. U pogledu rezultata prethodnih studija uočeno je da je kredibilitet značajna determinanta namere korišćenja mobilnog bankarstva (Wang et al., 2006; Priya et al., 2018). S tim u vezi, u radu će se testirati hipoteza.

2. Metodologija

Za potrebe analize uticaja komponenti mobilnog bankarstva na nameru klijenata da isto koriste, sprovedeno je empirijsko istraživanje. U te svrhe primenjen je metod ankete i prikupljeni su primarni podaci od 196 ispitanika koji čine prigodan uzorak. Prikupljanje podataka izvršeno je tokom oktobra i novembra 2021. godine ličnim putem na teritoriji grada Kragujevca i okoline. Kao sredstvo za prikupljanje podataka primenjen je upitnik koji obuhvata 17 sedmostepenih Likertovih konstatacija (1-apsolutno se ne slažem; 7-apsolutno se slažem) i četiri pitanja kojima su obuhvaćene demografske karakteristike ispitanika. Prve tri konstatacije odnose se na percipiranu korisnost kao prvu komponentu TAM modela (preuzeto iz: Al-Jabri, 2015), naredne četiri konstatacije vezuju se za lakoću upotrebe odnosno drugu komponentu TAM modela (preuzeto iz: Yu, 2012; Al-Jabri, 2015; Gašević et al., 2016), sa po tri konstatacije merene su varijable poverenje (preuzeto iz: Zhou, 2012) i kredibilitet (preuzeto iz: Yu, 2012), dok je varijabla namera korišćenja merena pomoću četiri konstatacije (preuzeto iz: Yu, 2012; Hanafizadeh et al., 2014; Al-Jabri, 2015). U cilju analize prikupljenih primarnih podataka primenjene su odgovarajuće statističke analize u softveru SPSS. Najpre je sprovedena analiza frekvencije kako bi se odredila struktura uzorka. Zatim je primenom deskriptivne statistike ispitana povoljnost i homogenost stavova ispitanika u pogledu konstatacija iz upitnika. Analizom pouzdanosti određena je pouzdanost varijabli istraživanja, zatim je sprovedena korelaciona analiza kako bi se utvrdilo prisustvo linearnih veza između varijabli, dok je višestruka regresija sprovedena u cilju analize efekata posmatranih komponenti mobilnog bankarstva na nameru korišćenja istog.

3. Rezultati istraživanja i diskusija

Deskriptivna statistička analiza, preciznije analiza frekvencije, primenjena je za obradu demografskih pitanja, gde je utvrđeno da uzorak većinom čine ispitanici ženskog pola (112 tj. 57,1%), dok je 84 ispitanika (42,9%) muškog pola. U uzorku ima najviše ispitanika starosti od 26 do 45 godina (103 tj. 52,6%), slede najmlađi ispitanici, njih 42 ili 21,4%, nakon toga ispitanici starosti od 46 do 55 godina (34 tj. 17,3%), dok je najmanje najstarijih ispitanika sa 56 ili više godina (17 tj. 8,7%). Kada je u pitanju obrazovanje, najviše ispitanika ima visoko obrazovanje (101 tj. 51,5%), zatim je njih 63 sa srednjim stepenom obrazovanja (32,1%), dok 32 ispitanika ima više obrazovanje (16,3%). U uzorku dominiraju zaposleni ispitanici (105 tj. 53,6%), slede nezaposleni (49 tj. 25%), nešto je manje studenata (27 tj. 13,8%), a najmanje penzionera (15 tj. 7,6%).

U narednom koraku sprovedena je deskriptivna statistička analiza koja omogućava da se utvrdi stepen povoljnosti i homogenosti stavova ispitanika u pogledu konstatacija koje se odnose na komponente mobilnog bankarstva i nameru korišćenja istog, a rezultati su prikazani u Tabeli 1.

Tabela 1. Rezultati deskriptivne statistike

Konstatacija	Aritmetička sredina	Standardna devijacija
1. Korišćenje mobilnog bankarstva bi mi omogućilo da brže završavam svoje obaveze.	5,95	1,42
2. Korišćenje mobilnog bankarstva bi mi omogućilo da lakše završavam svoje obaveze.	5,94	1,42
3. Smatram da je mobilno bankarstvo korisno.	5,80	1,46
4. Mobilno bankarstvo je lako za upotrebu.	5,72	1,41
5. Lako mi je da naučim da koristim usluge mobilnog bankarstva.	5,85	1,39
6. Smatram da korišćenje usluga mobilnog bankarstva ne zahteva preteran mentalni napor.	5,89	1,34
7. Usluge mobilnog bankarstva su lako dostupne.	5,56	1,52
8. Kada koristim usluge mobilnog bankarstva verujem da su moje informacije sačuvane kao poverljive.	4,74	1,96
9. Kada koristim usluge mobilnog bankarstva verujem da su moje transakcije sigurne.	4,98	1,94
10. Kada koristim usluge mobilnog bankarstva verujem da moja privatnost neće biti narušena.	4,72	1,93
11. Mobilno bankarstvo može da obavi sve neophodne operacije.	5,26	1,67
12. Mobilno bankarstvo ispunjava svoja obećanja.	4,96	1,75
13. Mobilno bankarstvo vodi računa o interesima klijenata.	4,94	1,85
14. Nameravam da koristim usluge mobilnog bankarstva.	5,18	1,90
15. Koristiću usluge mobilnog bankarstva za svoje bankarske potrebe.	4,94	2,05
16. Vidim sebe kao korisnika mobilnog bankarstva.	5,12	1,97
17. S obzirom da imam pristup internetu na mobilnom telefonu, pretpostavljam da ću koristiti mobilno bankarstvo.	5,09	2,07

Izvor: autor

Na osnovu rezultata deskriptivne statistike može se zaključiti da ispitanici pretežno smatraju da bi im korišćenje mobilnog bankarstva omogućilo da brže i lakše završavaju svoje obaveze, na šta ukazuju najviše vrednosti aritmetičkih sredina kod prve dve konstatacije ($AS=5,95$ i $AS=5,94$, respektivno). S druge strane, ispitanici najmanje smatraju da njihova privatnost neće biti narušena kao i da su njihove informacije sačuvane kao poverljive kada koriste mobilno bankarstvo, što se može zaključiti na osnovu najnižih vrednosti aritmetičkih sredina ($AS=4,72$ i $AS=4,74$, respektivno). Generalno, dobijene vrednosti aritmetičkih sredina ukazuju na prisustvo pretežno povoljnih stavova ispitanika u pogledu komponenti mobilnog bankarstva, kao i namere korišćenja istog.

Što se tiče homogenosti stavova ispitanika, najniže vrednosti standardnih devijacija iz Tabele 1 ukazuju na prisustvo najvišeg stepena slaganja stavova ispitanika kada je u pitanju sposobnost istih da lako nauče da koriste mobilno bankarstvo, kao i da im to ne zahteva preveliki mentalni napor ($SD=1,39$ i $SD=1,34$, respektivno). Suprotno, najmanji stepen slaganja stavova ispitanika prisutan je kod konstatacija koje se odnose na nameru korišćenja mobilnog bankarstva, preciznije kada je u pitanju stav ispitanika da će koristiti usluge mobilnog bankarstva za svoje bankarske potrebe i da će verovatno koristiti mobilno bankarstvo jer imaju pristup internetu na mobilnom telefonu ($SD=2,05$ i $SD=2,07$, respektivno).

Sledeća analiza odnosi se na utvrđivanje interne konzistentnosti konstatacija koje čine posmatrane varijable čiji su rezultati prikazani u Tabeli 2.

Tabela 2. Rezultati analize pouzdanosti

Varijabla	Cronbach's alpha
Percipirana korisnost	0,937
Lakoća upotrebe	0,920
Kredibilitet	0,962
Poverenje	0,901
Namera korišćenja	0,986

Izvor: autor

U Tabeli 2 prikazane su vrednosti koeficijenta pouzdanosti Cronbach'a alpha koji pokazuje da li su varijable koje se koriste u istraživanju sačinjene od interno konzistentnih konstatacija. Pritom, varijabla je pouzdana ukoliko je vrednost ovog koeficijenta veća od 0,7 (Nunnally, 1978). Shodno dobijenim rezultatima, može se najpre zaključiti da sve varijable koje su obuhvaćene istraživanjem ispoljavaju izuzetno visok nivo pouzdanosti jer je vrednost koeficijenta Cronbach's alpha kod svake varijable znatno veća od preporučene granične vrednosti 0,7. Takođe, može se ustanoviti da najviši stepen pouzdanosti ispoljava varijabla namera korišćenja zbog najviše vrednosti Cronbach's alpha koeficijenta, dok je najmanje pouzdana varijabla poverenje.

U nastavku rada (Tabela 3) prikazani su rezultati korelacione analize.

Tabela 3: Rezultati korelacione analize

Varijabla	Percipirana korisnost	Lakoća upotrebe	Kredibilitet	Poverenje	Namera korišćenja
Percipirana korisnost	1	0,806*	0,669*	0,738*	0,729*
Lakoća upotrebe	0,806*	1	0,649*	0,710*	0,713*
Kredibilitet	0,669*	0,649*	1	0,796*	0,747*
Poverenje	0,738*	0,710*	0,796*	1	0,718*
Namera korišćenja	0,729*	0,713*	0,747*	0,718	1

*Korelacija je signifikantna na nivou 0,01
Izvor: autor

Kada se posmatra stepen linearne zavisnosti između varijabli istraživanja, vrednosti Pearson-ovog koeficijenta korelacije iz Tabele 3 ukazuju na prisustvo jakih korelacionih veza u svim parovima varijabli. Navedeno potvrđuje rezultat prema kome su sve vrednosti Pearson-ovog koeficijenta u intervalu od 0,6 do 1. Takođe, rezultati pokazuju da su sve vrednosti koeficijenta korelacije statistički značajne sa verovatnoćom od 99% ($p < 0,01$). Kada se posmatraju parovi varijabli, može se utvrditi da je najjači stepen korelacije prisutan između glavnih varijabli TAM modela, odnosno lakoće upotrebe i korisnosti ($r = 0,806$, $p < 0,01$). S druge strane, najslabije su korelirane varijable lakoća upotrebe i kredibilitet ($r = 0,649$, $p < 0,01$).

U cilju testiranja postavljenih istraživačkih hipoteza, u radu je primenjena višestruka regresiona analiza čiji su rezultati dati u Tabeli 4.

Tabela 4: Rezultati višestruke regresione analize (zavisna varijabla: namera korišćenja)

Varijable	β	t	sig	VIF	R ²
Percipirana korisnost	0,239	3,111	0,002*	3,434	0,672
Lakoća upotrebe	0,211	2,874	0,005*	3,147	
Kredibilitet	0,377	5,381	0,000*	2,865	
Poverenje	0,091	1,168	0,244	3,562	

Izvor: autor

U pogledu rezultata višestruke regresione analize, najpre se može uvideti da je 67,7% varijabiliteta namere korišćenja opisano posmatranim regresionim modelom, što pokazuje vrednost koeficijenta determinacije R² koja iznosi 0,672. Takođe, podaci se mogu smatrati prikladnim za sprovođenje

analize s obzirom da su vrednosti VIF koeficijenta u svim parovima varijabli ispod preporučenog praga 5 (Field, 2000), što pokazuje da ne postoji problem multikolinearnosti u posmatranom regresionom modelu. Kada su u pitanju efekti komponenti mobilnog bankarstva na nameru korišćenja istog, prema rezultatima se može uvideti da sve komponente, izuzev poverenja, ispoljavaju statistički značajan efekat na nameru klijenata da koriste mobilno bankarstvo. Navedeno se može zaključiti na osnovu p vrednosti (sig) koja je kod svih komponenti, osim poverenja, manja od praga 0,1. Prema vrednostima koeficijenta β može se videti da najjače efekte na nameru klijenata da koriste mobilno bankarstvo ima kredibilitet istog ($\beta = 0,377$), sledi komponenta percipirana korisnost ($\beta = 0,239$), dok najslabije efekte na nameru korišćenja ispoljava komponenta lakoća upotrebe ($\beta = 0,211$).

Zaključak

U cilju unapređenja komunikacije sa svojim klijentima banke pribegavaju sve savremenijim uslovima i mogućnostima, između ostalih mobilnom bankarstvu kao novom distributivnom kanalu. Istraživanje je sprovedeno kako bi se identifikovale ključne komponente koje utiču na nameru klijenata da koriste usluge mobilnog bankarstva, polazeći najpre od TAM modela, uz proširivanje istog sa dve dodatne komponente. Na taj način sagledan je efekat lakoće upotrebe, percipirane korisnosti, kredibiliteta i poverenja na nameru klijenata da koriste mobilno bankarstvo. Obradom primarnih podataka utvrđeno je najpre da između glavnih komponenti TAM modela, odnosno percipirane korisnosti i lakoće upotrebe, postoji najjača korelaciona veza koja potvrđuje pretpostavke i značaj TAM modela za analizu spremnosti klijenata da prihvate nove tehnologije u komunikaciji sa svojom bankom. U pogledu efekata posmatranih komponenti na nameru korišćenja, utvrđeno je da lakoća upotrebe, percipirana korisnost i kredibilitet ispoljavaju statistički značajne efekte na istu, dok jedino komponenta poverenje nema statistički značajan efekat. Generalno se može zaključiti da su klijenti najjače motivisani kredibilitetom mobilnog bankarstva da isto koriste, zatim procenjuju korisnost koju im nudi, dok im se namera najslabije razvija pod uticajem lakoće korišćenja mobilnog bankarstva. U poređenju sa prethodnim studijama, može se zaključiti da postoje sličnosti sa rezultatima studija koje su sveli Gu et al. (2009), Malaquias & Hwang (2017), Singh & Srivastava (2018), Wang et al. (2006) ili Priya et al. (2018) u pogledu efekata percipirane korisnosti, lakoće upotrebe i kredibiliteta na nameru korišćenja mobilnog bankarstva. S druge strane, rezultati u pogledu prisustva efekata percipirane korisnosti mobilnog bankarstva na nameru korišćenja istog ne podudaraju se sa rezultatima do kojih su došli Muñoz-Leiva et al. (2017).

Moguće je identifikovati nekoliko teorijskih i praktičnih implikacija rada. Najpre, rad omogućava proširivanje dosadašnjih saznanja o determinantama namere klijenata da koriste usluge mobilnog bankarstva. Shodno navedenom, u radu je empirijski potvrđen značaj primene TAM modela za analizu spremnosti klijenata da prihvate mobilno bankarstvo. Takođe, proširena su postojeća saznanja u pogledu efekata kredibiliteta i poverenja u vezi sa mobilnim bankarstvom na nameru korišćenja ovog kanala prilikom obavljanja bankarskih operacija. Kada se posmatraju praktične implikacije rada, moguće je izvesti preporuke za banke namenjene unapređenju kvaliteta usluga mobilnog bankarstva. Pritom, ukoliko se pođe od rezultata da kredibilitet mobilnog bankarstva najjače determiniše nameru klijenata da isto koriste, potrebno je da banke obezbede maksimalnu garanciju zaštite podataka i računa. Da bi se navedeno izvršilo, neophodno je osigurati adekvatnu zaštitu sistema mobilnog bankarstva i enkripciju podataka klijenata u cilju zaštite od eventualnih hakerskih napada. Takođe, u ugovorima sa klijentima neophodno je precizno definisati da banka preuzima potpunu odgovornost

za svaki problem u funkcionisanju sistema, kao i korake koje mora preduzeti kako bi nadoknadila eventualnu štetu ukoliko bi je klijent pretrpeo. Kada se posmatra percipirana korisnost kao sledeća značajna determinanta, banke bi trebalo da se potrude da svojim klijentima stave na raspolaganje dovoljno informacija o pogodnostima koje mobilno bankarstvo pruža, uz mogućnost pružanja besplatnog probnog perioda korišćenja aplikacije od nekoliko dana kako bi se klijent upoznao sa istom i stekao uvid u pogodnosti koje može dobiti. Navedena preporuka se dodatno podržava rezultatom da lakoća upotrebe ima najslabiji uticaj na nameru korišćenja mobilnog bankarstva, zbog čega se može pretpostaviti da klijentima rukovanje aplikacijom neće predstavljati prepreku da probaju da istu koriste tokom probnog perioda, a eventualno i nakon toga.

Osim prednosti, rad ispoljava i određena ograničenja. Prvo, uzorak na kome je sprovedeno istraživanje nije dovoljno reprezentativan. Istraživanje je sprovedeno samo na teritoriji grada Kragujevca. Zatim, analizom su obuhvaćene samo komponente TAM modela, kredibilitet i poverenje, kao nezavisne varijable, i namera korišćenja kao zavisna varijabla. U skladu sa ograničenjima, preporuke za buduća istraživanja su da se poveća uzorak i proširi teritorija istraživanja. U budućim radovima poželjno je primeniti neki od novijih modela za analizu komponenti mobilnog bankarstva kao što su UTAUT ili UTAUT 2 model. U pogledu zavisnih varijabli, poželjno bi bilo analizirati efekte komponenti mobilnog bankarstva na nameru korisnika istog da nastave sa njegovim korišćenjem, na stav prema mobilnom bankarstvu, na trenutno ponašanje odnosno korišćenje mobilnog bankarstva i dr. Dodatno, u skladu sa trenutnom pandemijskom situacijom, buduća istraživanja bi trebalo da uzmu u obzir efekte virusa COVID 19 na perspektive razvoja i primene mobilnog bankarstva.

Literatura

1. Al-Jabri, I. (2015). The intention to use mobile banking: Further evidence from Saudi Arabia. *South African Journal of Business Management*, 46(1), 23-34. doi: 10.10520/EJC168468
2. Al Khasawneh, M. H. (2015). An empirical examination of consumer adoption of mobile banking (M-Banking) in Jordan. *Journal of Internet Commerce*, 14(3), 341-362. doi: 10.1080/15332861.2015.1045288
3. Asnakew, Z. S. (2020). Customers' continuance intention to use mobile banking: development and testing of an integrated model. *The Review of Socionetwork Strategies*, 14(1), 123-146. doi: 10.1007/s12626-020-00060-7
4. Baabdullah, A. M., Alalwan, A. A., Rana, N. P., Kizgin, H., Patil, P. (2019). Consumer use of mobile banking (M-Banking) in Saudi Arabia: Towards an integrated model. *International Journal of Information Management*, 44, 38-52. doi: <https://doi.org/10.1016/j.ijinfomgt.2018.09.002>
5. Barnes, S. J., Corbitt, B. (2003). Mobile banking: concept and potential. *International journal of mobile communications*, 1(3), 273-288. doi: 10.1504/IJMC.2003.003494
6. Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, 13(3), 319-340. doi: <https://doi.org/10.2307/249008>
7. Field, A. (2000). *Discovering statistics using SPSS for Windows*. Thousand Oaks, USA: Sage Publication.
8. Gašević, D., Vranješ, M., Drinić, D. (2016). Identification of Key Determinants of Satisfaction of Users of Electronic Banking Services. *Economic Themes*, 54(2), 301-321.
9. Gu, J. C., Lee, S. C., Suh, Y. H. (2009). Determinants of behavioral intention to mobile banking. *Expert Systems with Applications*, 36(9), 11605-11616. doi: 10.1016/j.eswa.2009.03.024

10. Hanafizadeh, P., Behboudi, M., Koshksaray, A., Tabar, M. (2014). Mobile-banking adoption by Iranian bank clients. *Telematics and Informatics*, 31(1), 62-78. doi: <https://doi.org/10.1016/j.tele.2012.11.001>
11. Kalinic, Z., Marinkovic, V., Molinillo, S., Liébana-Cabanillas, F. (2019). A multi-analytical approach to peer-to-peer mobile payment acceptance prediction. *Journal of Retailing and Consumer Services*, 49, 143-153. doi: <https://doi.org/10.1016/j.jretconser.2019.03.016>
12. Koenig Lewis, N., Palmer, A., Moll, A. (2010). Predicting young consumers' take up of mobile banking services. *International journal of bank marketing*, 28(5), 410-432. doi: 10.1108/02652321011064917
13. Liébana-Cabanillas, F., Marinković, V., Kalinić, Z. (2017). A SEM-neural network approach for predicting antecedents of m-commerce acceptance. *International Journal of Information Management*, 37(2), 14-24. doi: <http://dx.doi.org/10.1016/j.ijinfomgt.2016.10.008>
14. Luarn, P., Lin, H. H. (2005). Toward an understanding of the behavioral intention to use mobile banking. *Computers in human behavior*, 21(6), 873-891. doi: 10.1016/j.chb.2004.03.003
15. Malaquias, R. F., Hwang, Y. (2019). Mobile banking use: A comparative study with Brazilian and US participants. *International Journal of Information Management*, 44, 132-140. doi: <https://doi.org/10.1016/j.ijinfomgt.2018.10.004>
16. Muñoz-Leiva, F., Climent-Climent, S., Liébana-Cabanillas, F. (2017). Determinants of intention to use the mobile banking apps: An extension of the classic TAM model. *Spanish Journal of Marketing-ESIC*, 21(1), 25-38. doi: <http://dx.doi.org/10.1016/j.sjme.2016.12.001>
17. Naumovska Saveska, M., Tomovska, A., Efremov, K., Petrovska, I. (2021). Uticaj kvaliteta i karakteristika usluge na zadovoljstvo klijenata u bankarskom sektoru Severne Makedonije. *Bankarstvo*, 50(2), 34-63. doi: 10.5937/bankarstvo2102034N
18. Nunnally, J. C. (1978). *Introduction to psychological measurement*. New York: McGraw-Hill Inc.
19. Pavlović, G., Savić, J. (2017). Determinante namera potrošača u pogledu korišćenja usluga mobilnog bankarstva. *Marketing*, 48(2), 96-106. doi: 10.5937/Markt1702096P
20. Priya, R., Gandhi, A. V., Shaikh, A. (2018). Mobile banking adoption in an emerging economy: An empirical analysis of young Indian consumers. *Benchmarking: An International Journal*, 25(2), 743-762. doi: 10.1108/BIJ-01-2016-0009
21. Püschel, J., Mazzon, J. A., & Hernandez, J. M. C. (2010). Mobile banking: proposition of an integrated adoption intention framework. *International Journal of bank marketing*, 28(5), 389-409. doi: 10.1108/02652321011064908
22. Sanader, D. (2014). Mobile banking: New trend in the contemporary banking sector. *Bankarstvo*, 43(5), 86-109.
23. Shaikh, A. A., Karjaluoto, H. (2015). Mobile banking adoption: A literature review. *Telematics and informatics*, 32(1), 129-142. doi: <http://dx.doi.org/10.1016/j.tele.2014.05.003>
24. Singh, S., Srivastava, R. K. (2018). Predicting the intention to use mobile banking in India. *International Journal of Bank Marketing*, 36(2), 357-378. doi: 10.1108/IJBM-12-2016-0186
25. Singh, S., Srivastava, R. K. (2020). Understanding the intention to use mobile banking by existing online banking customers: an empirical study. *Journal of Financial Services Marketing*, 25(3), 86-96. doi: <https://doi.org/10.1057/s41264-020-00074-w>
26. Suhartanto, D., Dean, D., Ismail, T. A. T., Sundari, R. (2020). Mobile banking adoption in Islamic banks: Integrating TAM model and religiosity-intention model. *Journal of Islamic Marketing*, 11(6), 1405-1418. doi: 10.1108/JIMA-05-2019-0096
27. Šehović, D. (2017). Sajber otpornost finansijskih institucija. *Bankarstvo*, 46(4), 134-151.

28. Wang, Y. S., Lin, H. H., Luarn, P. (2006). Predicting consumer intention to use mobile service. *Information systems journal*, 16(2), 157-179. doi: <https://doi.org/10.1111/j.1365-2575.2006.00213.x>
29. Wang, Y. S., Wang, Y. M., Lin, H. H., Tang, T. I. (2003). Determinants of user acceptance of Internet banking: an empirical study. *International journal of service industry management*, 14(5), 501-519. doi: 10.1108/09564230310500192
30. Yu, C. S. (2012). Factors affecting individuals to adopt mobile banking: Empirical evidence from the UTAUT model. *Journal of electronic commerce research*, 13(2), 104-121.
31. Zhou, T. (2012). Understanding users' initial trust in mobile banking: An elaboration likelihood perspective. *Computers in Human Behavior*, 28(4), 1518-1525. doi: <https://doi.org/10.1016/j.chb.2012.03.021>

Received: 31.01.2022.
Accepted: 20.02.2022.

DOI: 10.5937/bankarstvo2201010L

IMPROVING BANKING SERVICES QUALITY: EXAMPLE OF MOBILE BANKING

Jovana Lazarević, research associate, Faculty of Economics,
University of Kragujevac
email: jsavic@kg.ac.rs

Summary

Implementation of contemporary information technology provided banks with the possibility to communicate with clients through mobile banking. To improve this service quality, banks must monitor and analyse components that determine clients' intention to communicate with their bank through this channel. The goal of the paper is to identify key determinants of clients' intention to use mobile banking through empirical research conducted on a sample containing 196 clients. The paper analyses effects of the perceived usefulness and ease of use as the main components of the TAM model, by expanding the same with two more components: trust and credibility. By processing the data in SPSS software research obtained the results that all observed components, except trust, influence clients' intention to use mobile banking. The obtained results expand existing scientific knowledge in the contemporary banking communication research area and provide valuable knowledge for improving banking services quality.

Keywords: mobile banking; intention to use; TAM model; banks; service quality

JEL classification: G21, M31, C83

Introduction

The combination of the Internet and mobile phones has significantly changed peoples' lives in previous years, especially today when the capabilities of smartphones are much greater compared to their original models. Among the first to take advantage of this combination were companies that began developing and implementing e-commerce. Following their example, banks started a new commercial application of mobile internet in their business, better known as mobile banking. Mobile banking enables clients to perform their banking transactions in a virtual environment, i.e., without the need for physical contact with the bank. Mobile banking services provide significant savings to both banks and clients compared to traditional banking services (Baabdullah et al., 2019). In other words, clients receive almost all types of customized banking services that they can perform wherever they are, while banks achieve significant savings by reducing the cost of providing these services (Asnakew, 2020).

As a developing country, Serbia is making significant efforts to develop and use new technologies in order to increase its competitiveness compared to the rest of the world, especially developed countries. It is evident that the banking sector is carefully working to monitor the changes in the global market to offer its clients services that will enable them to quickly and efficiently complete their banking transactions. Consequently, it is important to constantly work on improving the banking services quality, which is considered to be a key determinant of a banks' successful relationship with its clients (Naumovska Saveska et al., 2021). The service quality can, among other things, be achieved if the needs and attitudes of clients are regularly monitored and analyzed, as well as factors that may influence their behaviour. In addition, the number of clients who refuse to use mobile banking services due to poor service quality or insufficiently developed technology is still evident in the world (Priya et al., 2018). Another reason for clients' concerns regarding the use of mobile banking as a new channel of communication with the bank can be related to the possibility of cyberspace attacks and compromising personal data about clients that banks possess (Šehović, 2017).

Based on the above, it was conducted an empirical study to identify components that are key to encouraging clients' intention to use mobile banking as a new communication channel with the bank. The research was conducted on the territory of Kragujevac, starting from the TAM model methodology (Technology Aceptance Model - TAM), with two additional components: credibility and trust. The work structure includes several parts. After the introductory part, the first part of the paper points out the importance and characteristics of mobile banking, gives an explanation of the TAM model and an overview of the authors work in the previous period regarding the effects of mobile banking components on clients' intention to use it. After this part, the research methodology and sample structure are presented, followed by the research results, while at the end of the paper concluding remarks are presented, as well as the main contributions, work limitations and recommendations for future research.

1. Mobile Banking and TAM Model

IMobile banking is a new channel that allows clients to interact with the bank through mobile devices such as mobile phones or personal digital assistants (Barnes & Corbitt, 2003). The characteristics that distinguish mobile banking from other channels used by the bank relate to the ability to perform transactions regardless of where the client is located and time, as well as automatic connection to the bank and receiving personalized notifications about each activity on the account (Sanader, 2014

). In other words, mobile banking allows clients to have access to their accounts and to control their transactions anytime and anywhere. The use of mobile banking provides clients with financial and non-financial services such as bill payment, funds transfer, purchases, PIN code changes, ATM location, etc. (Shaikh & Karjaluoto, 2015). Mobile banking has a high potential for future development, not only because it represents a step in the evolution of electronic banking, but also a better digital alternative to other channels that the bank uses to communicate with its clients such as ATMs, branches, internet banking, etc. (Püschel et al., 2010).

For years, mobile banking has been the subject of research by a large number of authors. As a result, various models that are used to answer the question which factors are most important for the acceptance of mobile banking as a new communication channel with banks and the intention to use it have been developed in the literature. One of these models is the Technology Acceptance Model (TAM), which includes two basic components labelled as perceived usefulness and ease of use (Davis, 1989). This model has been applied in a large number of studies, but most often in a modified form by adding new components that are considered significant for technology acceptance (Koenig-Lewis et al., 2010; Al Khasawneh, 2015; Liébana-Cabanillas et al., 2017; Muñoz -Leiva et al., 2017; Malaquias & Hwang, 2019; Suhartanto et al., 2020; Singh & Srivastava, 2020). Accordingly, the research model in the paper starts from the TAM model, which was modified by adding two components marked as trust and credibility, which is in line with previous studies methodology (Wang et al., 2006; Koenig-Lewis et al., 2010; Al Khasawneh, 2015; Priya et al., 2018).

H1: Perceived usefulness has positive influence on intention to use mobile banking

Perceived usefulness refers to the benefits that clients expect to achieve by using mobile banking, such as saving time, easier banking operations, etc. (Pavlović & Savić, 2017). According to Kalinic et al. (2019), if the user perceives that technology helps him perform his transactions faster and easier, he will believe that it brings him benefits in terms of saving time and energy, so he will be more motivated to use it. Muñoz-Leiva et al. (2017) concluded that perceived usefulness has a statistically significant impact on clients' attitudes towards mobile banking, but not on the intention to use it. On the other hand, in a study conducted by Gu et al. (2009) perceived usefulness emerged as the strongest determinant of intention to use mobile banking. Accordingly, the paper will test the following hypothesis:

H2: Ease of use has positive influence on intention to use mobile banking

When looking at ease of use, Al Khasawneh (2015) points out that this component implies that mobile banking should not require too much mental effort to use and that it should use a user-friendly interface. In other words, if the mobile banking application has a simple and clear interface, users will be more motivated to try mobile banking (Singh & Srivastava, 2020). Ease of use indicates the degree to which an individual believes that it is easy to learn how to use the system or technology. Perceived ease of use has been highlighted in previous studies as one of the most important determinants of using mobile banking. In this regard, Malaquias & Hwang (2019) in their research concluded that ease of use is the most important determinant of mobile banking use. The authors Singh & Srivastava (2018) also concluded that ease of use is one of the key determinants of the intention to use mobile banking. Following previous studies, the paper investigates the following research hypothesis:

H3: Trust has positive influence on intention to use mobile banking

One of the most important components that determine the willingness of clients to accept and use mobile banking is trust (Barnes & Corbitt, 2003), so it is often used in papers as an additional component of the TAM model. According to the author Zhou (2012), trust can be related to the

ability of service providers to have adequate knowledge and skills to fulfil their tasks, their integrity in keeping promises to clients, and benevolence that primarily means caring for clients interests and then personal interests. From the mobile banking point of view, trust refers to the ability of a service to respond to clients' requests and perform all necessary operations, as well as to take care of their interests. Potential users of mobile banking evaluate the service depending on the trust, based on which they decide on the future intention to use it. Starting from the above, the paper presents a research hypothesis:

H4: Credibility has positive influence on intention to use mobile banking

The credibility of mobile banking refers to the degree to which individuals believe that the use of mobile banking will not compromise the security or privacy of their data (Wang et al., 2003). Lack of credibility leads users to worry that the mobile banking system will disclose their personal data or transfer money to a third party without their permission and knowledge (Luarn & Lin, 2005), which may negatively affect the intention to use mobile banking. Regarding the results of previous studies, it has been observed that credibility is a significant determinant of the intention to use mobile banking (Wang et al., 2006; Priya et al., 2018). In this regard, the paper will test the hypothesis.

2. Methodology

Empirical research was conducted to analyse the impact of mobile banking components on clients' intention to use mobile banking. For these purposes, the survey method was applied, and primary data were collected from 196 respondents who form a convenience sample. Data collection was performed during October and November 2021 in person on the territory of the city of Kragujevac. For data collection purposes, a questionnaire was used, which includes 17 statements measured on a seven-point Likert's scale (1-absolutely disagree; 7-absolutely agree) and four questions related to the demographic characteristics of the respondents. The first three statements refer to the perceived usefulness as the first component of the TAM model (taken from: Al-Jabri, 2015), the next four statements relate to ease of use as the second component of the TAM model (taken from: Yu, 2012; Al-Jabri, 2015, Gašević et al., 2016), the variables trust (taken from: Zhou, 2012) and credibility (taken from: Yu, 2012) were measured with three statements, while the variable intention to use was measured using four statements (taken from: Yu, 2012; Hanafizadeh et al., 2014; Al-Jabri, 2015). In order to analyse the collected primary data, appropriate statistical analyses were applied in the SPSS software. Frequency analysis was first performed to determine the sample structure. Then, by applying descriptive statistics, the favourableness and homogeneity of the respondents' attitudes regarding the statements from the questionnaire were examined. Reliability analysis determined the reliability of research variables, then correlation analysis was performed to determine the presence of linear relationships between variables, while multiple regression was performed to analyse the effects of observed components of mobile banking on the intention to use it.

3. Research Results and Discussion

Descriptive statistics, precisely frequency analysis, was performed for analysing demographic questions, where it was found that the sample consists mostly of female respondents (112, i.e., 57.1%), while 84 respondents (42.9%) are male. The sample has the most respondents aged from 26 to 45 (103, i.e., 52.6%), followed by the youngest respondents, 42 or 21.4%, followed by respondents aged

from 46 to 55 (34, i.e., 17.3%), while the least number of the respondents are 56 or older (17, i.e., 8.7%). When it comes to education, most respondents have higher education (101, i.e., 51.5%), followed by 63 respondents with secondary education (32.1%), while 32 respondents have higher education (16.3%). The sample is dominated by employed respondents (105, i.e., 53.6%), followed by the unemployed ones (49, i.e., 25%), slightly fewer are students (27, i.e., 13.8%) and the least number are pensioners (15, i.e., 7.6%).

In the next step, a descriptive statistical analysis was conducted to determine the degree of favourableness and homogeneity of respondents' attitudes regarding the statements related to the components of mobile banking and the intention to use it, and the results are shown in Table 1.

Table 1. *Results of the Descriptive Statistics*

Statements	Mean	Standard deviation
1. Using mobile banking would allow me to complete my transactions faster.	5.95	1.42
2. Using mobile banking would allow me to complete my obligations easier.	5.94	1.42
3. I believe that mobile banking is useful.	5.80	1.46
4. Mobile banking is easy to use.	5.72	1.41
5. It is easy for me to learn how to use mobile banking services.	5.85	1.39
6. I believe that using mobile banking services does not require excessive mental effort.	5.89	1.34
7. Mobile banking services are easily available.	5.56	1.52
8. When I use mobile banking services, I believe that my information is kept confidential.	4.74	1.96
9. When I use mobile banking services, I believe that my transactions are secure.	4.98	1.94
10. When I use mobile banking services, I believe that my privacy will not be violated.	4.72	1.93
11. Mobile banking has the ability to fulfil its tasks.	5.26	1.67
12. Mobile banking will keep its promises.	4.96	1.75
13. Mobile banking will keep clients' best interests in mind.	4.94	1.85
14. I intend to use mobile banking services.	5.18	1.90
15. I will use mobile banking services for my banking transactions.	4.94	2.05
16. I see myself as a user of mobile banking.	5.12	1.97
17. Since I have access to the Internet, I suppose that I will use mobile banking.	5.09	2.07

Source: author

Based on the results of descriptive statistics, it can be concluded that respondents mostly believe that using mobile banking would allow them to complete their transactions faster and easier, as indicated by the highest values of arithmetic means for the first two statements ($M=5.95$ and $M=5.94$, respectively). On the other hand, respondents least believe that their privacy will not be violated and that their information is kept confidential when using mobile banking, which can be concluded based

on the lowest values of arithmetic means ($M=4.72$ i $M=4.74$, respectively). In general, the obtained values of arithmetic means indicate the presence of mostly favourable attitudes of respondents regarding the components of mobile banking, as well as the intention to use it.

Regarding the homogeneity of respondents' attitudes, the lowest values of standard deviations from Table 1 indicate the highest degree of agreement of respondents' attitudes when it comes to their ability to easily learn to use mobile banking, and that it does not require too much mental effort ($SD=1.39$ i $SD=1.34$, respectively). Conversely, the lowest degree of respondents' attitudes agreement is present in the statements related to the intention to use mobile banking, more precisely when it comes to the attitude of respondents that they will use mobile banking services for their banking needs and will probably use mobile banking because they have access to the Internet on mobile phone ($SD=2.05$ i $SD=2.07$, respectively).

The following analysis refers to determining the internal consistency of the statements included in the observed variables, the results of which are shown in Table 2.

Table 2. *Results of the Reliability Analysis*

Variable	Cronbach's alpha
Perceived usefulness	0.937
Ease of use	0.920
Credibility	0.962
Trust	0.901
Intention to use	0.986

Source: author

Table 2 gives the values of the Cronbach's alpha reliability coefficient which shows whether the variables used in the study include internally consistent statements. The variable is reliable if the value of this coefficient is greater than 0.7 (Nunnally, 1978). According to the obtained results, it can first be concluded that all variables included in the research show high level of reliability because the value of the Cronbach's alpha coefficient for each variable is significantly higher than the recommended 0.7 threshold value. Also, it is evident that the highest degree of reliability has variable intention to use due to the highest value of Cronbach's alpha coefficient, while the least reliable variable is trust.

The results of the correlation analysis are presented below (Table 3).

Table 3. Results of the correlation analysis

Variable	Perceived usefulness	Ease of use	Credibility	Trust	Intention to use
Perceived usefulness	1	0.806*	0.669*	0.738*	0.729*
Ease of use	0.806*	1	0.649*	0.710*	0.713*
Credibility	0.669*	0.649*	1	0.796*	0.747*
Trust	0.738*	0.710*	0.796*	1	0.718*
Intention to use	0.729*	0.713*	0.747*	0.718	1

*Correlation is significant at 0,01 level

Source: author

When observing the degree of linear dependence between the research variables, the values of the Pearson correlation coefficient in Table 3 indicate the presence of strong correlations between all variables. This confirms the result according to which all values of the Pearson coefficient are in the range of 0.6 to 1. Also, the results show that all values of the correlation coefficient are statistically significant with a 99% probability ($p < 0,01$). When looking at pairs of variables, it can be concluded that the strongest degree of correlation is between the main variables of the TAM model, i.e. ease of use and perceived usefulness ($r = 0,806$, $p < 0,01$). On the other hand, the weakest correlated variables are ease of use and credibility ($r = 0.649$, $p < 0.01$).

In order to test research hypotheses multiple regression analysis was applied, which results are given in Table 4.

Table 4. Results of the Multiple Regression Analysis (Dependant Variable: Intention to Use)

Variable	β	t	sig	VIF	R ²
Perceived usefulness	0.239	3.111	0.002*	3.434	0.672
Ease of use	0.211	2.874	0.005*	3.147	
Credibility	0.377	5.381	0.000*	2.865	
Trust	0.091	1.168	0.244	3.562	

Source: author

Regarding the results of multiple regression analysis, it can first be seen that 67.7% of the intention to use variability is described by the observed regression model, which shows the value of the determination coefficient R^2 which is 0.672. Also, the data can be considered suitable for conducting the analysis since the values of the VIF coefficient in all pairs of variables are below the recommended threshold 5 (Field, 2000), which shows that there is no problem of multicollinearity in the observed regression model. When it comes to the effects of mobile banking components on the intention to use it, the results show that all components, except trust, have a statistically significant effect on the

intention of clients to use mobile banking. This can be concluded on the basis of p value (sig) which is lower than the threshold 0.1 for all components, except trust. According to the β coefficient values, it can be seen that the strongest effects on the clients intention to use mobile banking has credibility ($\beta = 0.377$), followed by the component perceived usefulness ($\beta = 0.239$), while the weakest effects on the intention to use mobile banking has the component ease of use ($\beta = 0.211$).

Conclusion

In order to improve communication with their clients, banks are using modern conditions and opportunities, including mobile banking as a new distribution channel. The research was conducted in order to identify key components that affect clients' intention to use mobile banking services, starting primarily with the TAM model, with the extension of the same with two additional components. In that way, the effect of ease of use, perceived usefulness, credibility, and trust on the clients' intention to use mobile banking was considered. By processing primary data, it was determined that between the main components of the TAM model, i.e., perceived usefulness and ease of use, there is the strongest correlation that confirms the assumptions and importance of the TAM model for analysing clients' readiness to accept new technologies in communication with their bank. Regarding the effects of the observed components on the intention to use, it was found that ease of use, perceived usefulness and credibility have statistically significant effects on it, while trust has no statistically significant effect. In general, it can be concluded that clients are most motivated by the credibility of mobile banking to use it, then assess the usefulness it offers them, while their intention develops least under the influence of ease of use of mobile banking. Compared to previous studies, it can be concluded that there are similarities with the results of studies conducted by Gu et al. (2009), Malaquias & Hwang (2017), Singh & Srivastava (2018), Wang et al. (2006) or Priya et al. (2018) regarding the effects of perceived usefulness, ease of use and credibility on the intention to use mobile banking. On the other hand, the results regarding the presence of the perceived usefulness effects on the intention to use mobile banking do not coincide with the results obtained by Muñoz-Leiva et al. (2017).

It is possible to identify several theoretical and practical implications of the paper. First of all, the paper enables the expansion of the current knowledge about the determinants of the clients' intention to use mobile banking services. Accordingly, the paper empirically confirms the importance of applying the TAM model for the analysis of clients' readiness to accept mobile banking. Also, the existing knowledge regarding the effects of credibility and trust related to mobile banking on the intention to use this channel when conducting banking operations has been expanded. When the practical implications of the work are observed, it is possible to make recommendations to banks aimed at improving the mobile banking services quality. If we start from the result that the credibility of mobile banking strongly determines the intention of clients to use it, it is necessary for banks to provide the maximum guarantee of data and account protection. To do this, it is necessary to ensure adequate protection of the mobile banking system and encryption of clients' data to protect against possible hacker attacks. Also, in contracts with clients, it is necessary to precisely define that the bank takes full responsibility for every problem in the functioning of the system, as well as the steps it must take to compensate for any damage the client suffers. Related to perceived usefulness as the next important determinant, banks should make effort to provide their clients with sufficient information on the benefits of mobile banking, with the possibility of providing a free trial period of several days to familiarize the client with the same and gain insight into the benefits that can get. This recommendation is further supported by

the fact that ease of use has the weakest impact on the intention to use mobile banking, which is why it can be assumed that handling the application will not be an obstacle for clients to try to use it during the trial period and possibly after.

In addition to the advantages, the work also has certain limitations. First, the research sample is not sufficiently representative. The research was conducted only on the territory of the city of Kragujevac. Then, only the components of the TAM model, credibility and trust, as independent variables, and intention to use as a dependent variable were included in the analysis. In line with the limitations, recommendations for future research are to increase the sample and expand the research territory. In future papers, it is desirable to apply some of the newer models for the analysis of mobile banking components such as UTAUT or UTAUT 2 model. Related to dependent variables, it would be desirable to analyse the effects of mobile banking components on the intention of users to continue using it, the attitude towards mobile banking, the current behaviour or actual use of mobile banking, etc. In addition, in line with the current pandemic situation, future research should take into account the effects of the COVID 19 virus on the possibilities for the development and implementation of mobile banking.

References:

1. Al-Jabri, I. (2015). The intention to use mobile banking: Further evidence from Saudi Arabia. *South African Journal of Business Management*, 46(1), 23-34. doi: 10.10520/EJC168468
2. Al Khasawneh, M. H. (2015). An empirical examination of consumer adoption of mobile banking (M-Banking) in Jordan. *Journal of Internet Commerce*, 14(3), 341-362. doi: 10.1080/15332861.2015.1045288
3. Asnakew, Z. S. (2020). Customers' continuance intention to use mobile banking: development and testing of an integrated model. *The Review of Socionetwork Strategies*, 14(1), 123-146. doi: 10.1007/s12626-020-00060-7
4. Baabdullah, A. M., Alalwan, A. A., Rana, N. P., Kizgin, H., Patil, P. (2019). Consumer use of mobile banking (M-Banking) in Saudi Arabia: Towards an integrated model. *International Journal of Information Management*, 44, 38-52. doi: <https://doi.org/10.1016/j.ijinfomgt.2018.09.002>
5. Barnes, S. J., Corbitt, B. (2003). Mobile banking: concept and potential. *International journal of mobile communications*, 1(3), 273-288. doi: 10.1504/IJMC.2003.003494
6. Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, 13(3), 319-340. doi: <https://doi.org/10.2307/249008>
7. Field, A. (2000). *Discovering statistics using SPSS for Windows*. Thousand Oaks, USA: Sage Publication.
8. Gašević, D., Vranješ, M., Drinić, D. (2016). Identification of Key Determinants of Satisfaction of Users of Electronic Banking Services. *Economic Themes*, 54(2), 301-321.
9. Gu, J. C., Lee, S. C., Suh, Y. H. (2009). Determinants of behavioral intention to mobile banking. *Expert Systems with Applications*, 36(9), 11605-11616. doi: 10.1016/j.eswa.2009.03.024
10. Hanafizadeh, P., Behboudi, M., Koshksaray, A., Tabar, M. (2014). Mobile-banking adoption by Iranian bank clients. *Telematics and Informatics*, 31(1), 62-78. doi: <https://doi.org/10.1016/j.tele.2012.11.001s>
11. Kalinic, Z., Marinkovic, V., Molinillo, S., Liébana-Cabanillas, F. (2019). A multi-analytical approach to peer-to-peer mobile payment acceptance prediction. *Journal of Retailing and Consumer Services*, 49, 143-153. doi: <https://doi.org/10.1016/j.jretconser.2019.03.016>

12. Koenig Lewis, N., Palmer, A., Moll, A. (2010). Predicting young consumers' take up of mobile banking services. *International journal of bank marketing*, 28(5), 410-432. doi: 10.1108/02652321011064917
13. Liébana-Cabanillas, F., Marinković, V., Kalinić, Z. (2017). A SEM-neural network approach for predicting antecedents of m-commerce acceptance. *International Journal of Information Management*, 37(2), 14-24. doi: <http://dx.doi.org/10.1016/j.ijinfomgt.2016.10.008>
14. Luarn, P., Lin, H. H. (2005). Toward an understanding of the behavioral intention to use mobile banking. *Computers in human behavior*, 21(6), 873-891. doi: 10.1016/j.chb.2004.03.003
15. Malaquias, R. F., Hwang, Y. (2019). Mobile banking use: A comparative study with Brazilian and US participants. *International Journal of Information Management*, 44, 132-140. doi: <https://doi.org/10.1016/j.ijinfomgt.2018.10.004>
16. Muñoz-Leiva, F., Climent-Climent, S., Liébana-Cabanillas, F. (2017). Determinants of intention to use the mobile banking apps: An extension of the classic TAM model. *Spanish Journal of Marketing-ESIC*, 21(1), 25-38. doi: <http://dx.doi.org/10.1016/j.sjme.2016.12.001>
17. Naumovska Saveska, M., Tomovska, A., Efremov, K., Petrovska, I. (2021). Uticaj kvaliteta i karakteristika usluge na zadovoljstvo klijenata u bankarskom sektoru Severne Makedonije. *Bankarstvo*, 50(2), 34-63. doi: 10.5937/bankarstvo2102034N
18. unnally, J. C. (1978). *Introduction to psychological measurement*. New York: McGraw-Hill Inc.
19. Pavlović, G., Savić, J. (2017). Determinante namera potrošača u pogledu korišćenja usluga mobilnog bankarstva. *Marketing*, 48(2), 96-106. doi: 10.5937/Markt1702096P
20. Priya, R., Gandhi, A. V., Shaikh, A. (2018). Mobile banking adoption in an emerging economy: An empirical analysis of young Indian consumers. *Benchmarking: An International Journal*, 25(2), 743-762. doi: 10.1108/BIJ-01-2016-0009
21. Püschel, J., Mazzon, J. A., & Hernandez, J. M. C. (2010). Mobile banking: proposition of an integrated adoption intention framework. *International Journal of bank marketing*, 28(5), 389-409. doi: 10.1108/02652321011064908
22. Sanader, D. (2014). Mobile banking: New trend in the contemporary banking sector. *Bankarstvo*, 43(5), 86-109.
23. Shaikh, A. A., Karjaluoto, H. (2015). Mobile banking adoption: A literature review. *Telematics and informatics*, 32(1), 129-142. doi: <http://dx.doi.org/10.1016/j.tele.2014.05.003>
24. Singh, S., Srivastava, R. K. (2018). Predicting the intention to use mobile banking in India. *International Journal of Bank Marketing*, 36(2), 357-378. doi: 10.1108/IJBM-12-2016-0186
25. Singh, S., Srivastava, R. K. (2020). Understanding the intention to use mobile banking by existing online banking customers: an empirical study. *Journal of Financial Services Marketing*, 25(3), 86-96. doi: <https://doi.org/10.1057/s41264-020-00074-w>
26. Suhartanto, D., Dean, D., Ismail, T. A. T., Sundari, R. (2020). Mobile banking adoption in Islamic banks: Integrating TAM model and religiosity-intention model. *Journal of Islamic Marketing*, 11(6), 1405-1418. doi: 10.1108/JIMA-05-2019-0096
27. Šehović, D. (2017). Sajber otpornost finansijskih institucija. *Bankarstvo*, 46(4), 134-151.
28. Wang, Y. S., Lin, H. H., Luarn, P. (2006). Predicting consumer intention to use mobile service. *Information systems journal*, 16(2), 157-179. doi: <https://doi.org/10.1111/j.1365-2575.2006.00213.x>

29. Wang, Y. S., Wang, Y. M., Lin, H. H., Tang, T. I. (2003). Determinants of user acceptance of Internet banking: an empirical study. *International journal of service industry management*, 14(5), 501-519. doi: 10.1108/09564230310500192
30. Yu, C. S. (2012). Factors affecting individuals to adopt mobile banking: Empirical evidence from the UTAUT model. *Journal of electronic commerce research*, 13(2), 104-121.
31. Zhou, T. (2012). Understanding users' initial trust in mobile banking: An elaboration likelihood perspective. *Computers in Human Behavior*, 28(4), 1518-1525. doi: <https://doi.org/10.1016/j.chb.2012.03.021>

Primljeno: 23.03.2022.
Odobreno: 08.04.2022. god.

DOI: 10.5937/bankarstvo2201032D

RAZVOJ INSTRUMENTA ZA MERENJE KVALITETA USLUGA E-BANKARSTVA U REPUBLICI SRBIJI: E-BSRB-QUAL

Prof. dr Bojan S. Đorđević, redovni profesor,
Fakultet za menadžment Zaječar
email: bojan.djordjevic@fmz.edu.rs

Rezime

Za merenje kvaliteta elektronskih usluga, najčešće se primenjuje model E-Service Quality - E-SQ (E-S-QUAL i E-RecS-QUAL). Uvažavajući rezultate dosadašnjih istraživanja i pokušaje da se formira jedinstveni model za merenje kvaliteta e-usluga, osnovni cilj rada je izmeriti kvalitet usluga e-bankarstva u Republici Srbiji uz testiranje primenljivosti dimenzija E-SQ modela. Pomoću empirijskog istraživanja, uz dizajniranje i distribuiranje jedinstvenog upitnika korisnicima e-bankarskih usluga na području centralne i jugoistočne Srbije, dobijeni rezultati su sistematizovani i statistički obrađeni primenom Faktorske analize sa analizom glavnih komponenti (PCA). Na osnovu dobijenih rezultata definisan je inicijalni instrument nazvan E-BSrb-QUAL, sa sedam dimenzija kvaliteta e-bankarstva u Srbiji i to: 1. Personalizacija, 2. Sigurnost, 3. Pristupačnost, 4. Kontakt, 5. Efikasnost/Odziv, 6. Poverenje, i 7. Pouzdanost. Analiza Važnost-Performansa (IPA) je pokazala snagu srpskih banaka i potvrdila da se kao najznačajnije i najvažnije dimenzije kvaliteta usluga e-bankarstva, izdvajaju Poverenje, Sigurnost i Pouzdanost. Kao preterane dimenzije usluga e-bankarstva ocenjene su Personalizacija, Pristup, Odziv i Efikasnost.

Ključne reči: kvalitet usluge; E-SQ; e-bankarstvo; faktorska analiza; PCA; važnost-performansa

JEL klasifikacija: G21, M31, C13, C83

Uvod

Kvalitet usluga je jedan od najvažnijih faktora uspeha poslovanja u bankarskom sektoru. Za banku, kao najznačajnijeg posrednika na tržištu finansijskih usluga, imperativ je pružanje usluga visokog kvaliteta, što omogućava ostvarenje osnovnih poslovnih ciljeva kao što su profitabilnost, likvidnost/solventnost, rast tržišnog učešća, povećanje baze klijenata itd. Značaju kvalitetu usluga i naučnoj operacionalizaciji istraživanja potrošača doprineli su najviše Parasuraman et al. (1988) razvojem modela SERVQUAL, koji je postao najšire primenjivani model merjenja percepcije potrošača o kvalitetu pruženih usluga, koji se sastoji od pet dimenzija kvaliteta – opipljivosti, pouzdanosti, poslovnosti i odgovornosti, poverenja i ljubaznosti, sa 22 test-pitanja svrstanih u ove dimenzije. Tokom vremena bilo je više modifikacija dimenzija, ali je model ostao najčešće primenjivan i danas najbolji dostupni instrument merjenja kvaliteta usluge (Đorđević, 2009; Radojević, Marjanović, 2011; Ahmed et al. 2017; Maksimović et al., 2017). Osnovna kritika modela SERVQUAL odnosi se na održivost njegove dimenzijske strukture. Naime, u mnogobrojnim istraživanjima došlo se do različitih dimenzija koje osporavaju univerzalnost SERVQUAL dimenzija. Smatra se da je takva priroda dimenzija modela SERVQUAL rezultat kulturnih razlika između zemalja porekla i nacionalnosti potrošača. Vrednosti i uverenja, koji se razlikuju među potrošačima iz različitih zemalja, najvećim delom određuju važnost i percepciju kvaliteta usluge. Isto tako, i druga istraživanja govore o uticaju kulture na kvalitet usluge i percepciju usluge (Safakli, 2007; Đorđević, 2009; Sangeetha, 2021). U istraživanjima kvaliteta i satisfakcije korisnika bankarskih usluga, do danas je razvijeno više instrumenata merjenja baziranih na modelu SERVQUAL, od kojih se izdvajaju BANKQUAL, BANKPERF, BSQ, SYSTRA-SQ (Bahia, Nantel, 2000; Zeithaml et al., 2002; Aldlaigan, Buttle, 2002; Liaciono et al. 2007; Radojević, Marjanović, 2011; Marković et al, 2015).

Istraživanja kvaliteta elektronskih usluga (u daljem tekstu: e-usluga) je novijeg datuma. Autori Parasuraman et al. (2005) razvijaju model E-SQ (sa dva podmodela - E-S-QUAL i E-RecS-QUAL), koji je nastao na bazi SERVQUAL. Prva verzija modela je predstavljena 2000. godine, uz nekoliko revizija, gde je 2002. godine predstavljen model za merenje kvaliteta e-usluga sa sledećim dimenzijama: pouzdanost, održivost, pristup, fleksibilnost, lakoća navigacije, efikasnost, sigurnost/poverenje, bezbednost/privatnost, znanje o ceni, estetika sajta, prilagođavanje/personalizacija. Konačan model je definisan sa 22 stavke u prethodno navedene četiri dimenzije. E-S-QUAL podržava merenje nivoa kvaliteta pre i posle korišćenja e-usluge. Dimenzije E-S-QUAL su razvijene na bazi podataka koje su dali kvalifikovani ispitanici, koji su imali iskustvo u kupovini na internetu. E-S-QUAL uključuje sledeće četiri dimenzije (Amin, 2016; Ghosh, 2018; Raza, 2020; Baqai et al. 2021): (1) Efikasnost (Efficiency); (2) Ispunjenje (Fulfillment); (3) Dostupnost Sistema (System availability); (4) Privatnost (Privacy).

Prateći navedenu metodologiju, isti autori razvijaju još jedan model koga nazivaju E-RecS-QUAL ili model kvaliteta oporavka e-usluga, koji je isključivo prilagođen merenju usluga u e-trgovini (Parasuraman et al. 2005). Navedeni model ima 11 stavki koje su svrstane u 3 dimenzije: 1. Responzivnost; 2. Kompenzacija, i 3. Kontakt.

Konačni model E-SQ sa mernim skalama E-S-QUAL i e-RecS-QUAL koje su predložili Parasuraman et al. (2005) sastoji se od sledećih sedam dimenzija:

1. Efikasnost (pristup i korišćenje sajta lako i brzo);
2. Ispunjenje (održavanje obećanja o isporuci porudžbine i dostupnosti artikla);
3. Dostupnost sistema (ispravno tehničko funkcionisanje sajta);

4. Privatnost (sajt je bezbedan, podaci o klijentima su zaštićeni);
5. Responzivnost (efikasno rešavanje problema);
6. Kompenzacija (sajt kompenzuje klijente za probleme), i
7. Kontakt (pomoć preko telefona ili predstavnika preko interneta).

Tokom vremena, razvijen je veliki broj modela i skala za merenje kvaliteta e-usluga. Najznačajniji su prikazani u Tabeli 1. Navedeni modeli su našli svoju široku primenu u merenju kvaliteta različitih vidova e-usluga (trgovina, turizam, hotelijerstvo, bankarstvo, osiguranje, obrazovanje, zdravstvo, javna administracija itd. (Loiacono et al. 2007; Jundillah et al., 2019).

Tabela 1. Osnovni modeli za merenje kvaliteta e-usluga

Model	Autori	Opis
E-S-QUAL	Parasuraman, Zeithaml & Malhotra (2005)	Instrument za ispitivanje 22 stavke koji se koristi za procenu kvaliteta elektronskih usluga. Instrument uključuje četiri dimenzije: efikasnost, dostupnost sistema, privatnost i ispunjenost.
E-RecS-QUAL	Parasuraman, Zeithaml & Malhotra (2005)	Instrument za ispitivanje 11 stavki koji se koristi za procenu kvaliteta usluga u smislu reklamacije (npr. vraćanja proizvoda) povezanih sa e-trgovinom. Instrument uključuje tri dimenzije: odziv, kompenzaciju i kontakte.
SITEQUAL:	Web & Web (2004)	Instrument za ispitivanje 9 stavki koji se koristi za procenu kvaliteta web sajta za e-trgovinu. Instrument uključuje četiri dimenzije: estetski dizajn, lakoću upotrebe, brzinu obrade i sigurnost.
eTailQ	Wolfenbarger & Gilly (2003)	Instrument za istraživanje 14 stavki koji se koristi za procenu kvaliteta elektronske trgovine na malo. Instrument uključuje četiri dimenzije: dizajn web stranice, bezbednost/privatnost, ispunjenje/pouzdanost i korisničku podršku.
WebQual (4.0)	Loiacono, Watson & Goodhue (2007)	Instrument za ispitivanje 22 stavke koji se koristi za procenu kvaliteta web sajta za e-trgovinu. Instrument uključuje tri dimenzije: upotrebljivost, kvalitet informacija i interakciju sa korisnicima.

Izvor: istraživanje autora

Elektronsko bankarstvo (u daljem tekstu: e-bankarstvo) predstavlja sistem koga čine različiti elektronski kanali za obavljanje bankarskih transakcija putem interneta, telefona, mobilnog telefona i računara. Želje i očekivanja savremenih klijenata banaka u pogledu usluga se šire, kako tehnologija napreduje. Danas, klijenti žele da posluju i obavljaju svoje bankarske transakcije na bilo kojoj lokaciji

bez odlaska u banku, u bilo kom trenutku bez ograničenja na radno vreme banke (24x7x365), i da izvrše svoja plaćanja (kupovina, računi) na brz i isplativ način. Shodno tome, kvalitet savremenih finansijskih usluga treba da bude na visokom nivou, e-usluge treba da budu nezavisne, fleksibilne, sigurne i pouzdane, kako bi se ispunila očekivanja klijenata (Đorđević, 2011). U Republici Srbiji, elektronsko bankarstvo je zadnjih godina na visokom nivou, sa dominacijom internet i mobilnog bankarstva. Prema podacima Narodne Banke Srbije (NBS) za treći kvartal 2021. godine, broj korisnika e-bankarstva (B2C, B2B, C2C segmenti), u odnosu na isti period 2020. godine je porastao za 11,69% (2020. - 3.040.674 korisnika; 2021. - 3.396.064 korisnika) (NBS, 2021). Takođe, prema istom izveštaju, broj korisnika mobilnog bankarstva je takođe u porastu od 32,2% (2020. - 2.036.765 korisnika; 2021. - 2.692.552 korisnika). Rast broja korisnika doprineo je i rastu broja transakcija, što je posebno vidljivo kod mobilnog bankarstva gde je zabeležen rast od 30,45%.

Predmet istraživanja u ovom radu jeste kvalitet usluga e-bankarstva u Republici Srbiji, sa fokusom na ritejl segment i ocene fizičkih lica – korisnika usluga on-lajn i mobilnog bankarstva. Postavljena su tri osnovna cilja istraživanja: 1) izmeriti kvalitet pruženih usluga e-bankarstva u našoj zemlji; 2) identifikovati ključne dimenzije kvaliteta usluga e-bankarstva i razvoj modela, i 3) predstaviti analizu važnost – performansa (IPA) kao efikasan alat menadžmenta za unapređenje kvaliteta e-usluga. Na osnovu dobijenih rezultata, slabe dimenzije kvaliteta i potencijalno ne/zadovoljstvo korisnika pruženim uslugama postaće vidljivo, što predstavlja ključnu informaciju za menadžere banaka u cilju unapređenja kvaliteta njihovih e-usluga.

Rad je strukturiran na sledeći način. Nakon uvodnog dela, sledi pregled izabrane relevantne literature. U narednoj sekciji predstavljena je metodologija istraživanja, sa opisom podataka i ključnih metoda istraživanja. Slede rezultati sa diskusijom i zaključci sa preporukama za dalja istraživanja.

Pregled literature

Iz velikog obima dostupne literature, u nastavku rada izdvojen je kraći prikaz značajnih i novijih rezultata istraživanja u primeni različitih modela za merenje kvaliteta e-usluga i analize važnosti performansa u različitim zemljama, sa fokusom na rezultate merenja kvaliteta usluga e-bankarstva.

Joseph et al. (1999) istražuju ulogu koju tehnologija igra u Australijskom bankarstvu i njen uticaj na percepciju pruženog kvaliteta usluga, na uzorku od 440 klijenata e-bankarstva. Koristeći analizu važnost – performansa (IPA), rezultati su pokazali da korisnici usluga imaju problema sa percepcijom nekih aspekata e-bankarstva u Australiji. Autori zaključuju da je analiza važnost-performansa jednostavan i veoma efikasan model koji u mnogome može pomoći menadžerima banaka u razvijanju njihovih poslovnih strategija.

Sun et al. (2009) su izmerili percipiran kvalitet e-usluga korisnika internet bankarstva i izveli povezanost sa lojalnošću klijenata u Kini, na bazi E-S-QUAL skale. Modeliranje strukturne jednačine (SEM) je korišćeno za analizu podataka prikupljenih od klijenata kineskih banaka. Glavni nalazi autora su sledeći: istraživanje je podržalo da su četiri dimenzije E-SERVQUAL – efikasnost, ispunjenost, dostupnost sistema i privatnost determinante kvaliteta e-usluga kineskog internet bankarstva; kvalitet e-usluge pozitivno utiče na percipiranu vrednost, zadovoljstvo e-korisnika; Kvalitet e-usluge ima i direktan uticaj na e-lojalnost i indirektan uticaj na e-lojalnost kroz percipiranu vrednost i zadovoljstvo e-korisnika.

Sindwani i Goel (2012) daju pregled literature sa fokusom na metode i dimenzije za merenje kvaliteta e-bankarstva. Zaključuju da među istraživačima ne postoji konsenzus u pogledu dimenzija kvaliteta usluga e-bankarstva. Za potrebe merenja kvaliteta usluga, najčešće se koriste SERVQUAL i SERVPERF skale. Ali ne postoje opšte prihvaćene dimenzije i standardna skala za merenje kvaliteta usluge u slučaju e-bankarstva. Autori sugerišu da postoji potreba za daljim istraživanjem, kako bi se razvila skala zasnovana na standardnim dimenzijama koja se može univerzalno primeniti za merenje kvaliteta e-bankarskih usluga.

Zavereh et al. (2012) ispituju dimenzije kvaliteta i satisfakciju korisnika usluga internet bankarstva u Iranu na bazi E-SQ modela. Nalaz je pokazao da efikasne i pouzdane usluge, ispunjenje, sigurnost/poverenje, estetika sajta, odziv/kontakt i lakoća korišćenja predstavljaju E-SQ za usluge internet bankarstva u Iranu. Autori ukazuju na to da dimenzije i pitanja E-SERVQUAL-a treba da se reorganizuju i reinterpretiraju kada se koriste za merenje kvaliteta internet bankarstva. Značajan pozitivan odnos postoji između E-SQ i E-CS (e-satisfakcija) u internet bankarstvu. Urađena regresiona analiza je pokazala da bezbednost/poverenje, estetika sajta i jednostavnost korišćenja usluga internet bankarstva imaju pozitivne efekte na E-CS.

Amin (2016) je ispitivao kvalitet usluga internet bankarstva i implikacije na zadovoljstvo i lojalnost e-korisnika u zemljama u razvoju. Rezultati pokazuju da viši nivo kvaliteta usluge internet bankarstva značajno utiče na zadovoljstvo e-korisnika i dovodi do lojalnosti. Rezultati su potvrdili da su sve četiri dimenzije (lične potrebe, organizacija sajta, prilagođenost korisnicima i efikasnost web stranice) različite konstrukcije. Rezultati su takođe pokazali da kvalitet usluge internet bankarstva koji se sastoji od četiri dimenzije ima odgovarajuću pouzdanost i da svaka dimenzija ima pozitivan značajan odnos sa kvalitetom usluge internet bankarstva. Efikasnost bankarske web stranice je važan aspekt kvaliteta usluge internet bankarstva. Nalaz je otkrio da je odnos između kvaliteta usluge internet bankarstva, zadovoljstva i lojalnosti e-korisnika značajan.

Jun i Palacios (2016), otkrivaju 17 dimenzija kvaliteta usluge mobilnog bankarstva: kvalitet aplikacije m-bankarstva (1. sadržaj, 2. tačnost, 3. lakoća korišćenja, 4. brzina, 5. estetika, 6. bezbednost, 7. raznovrsne karakteristike usluga mobilnih aplikacija i 8. mobilna pogodnost) i klijent - kvalitet usluge (9. pouzdanost, 10. odživost, 11. kompetentnost, 12. ljubaznost, 13. kredibilitet, 14. pristup, 15. komunikacija, 16. razumevanje korisnika i 17. stalno poboljšanje). Od ovih 17 dimenzija, 5 dimenzija, kao što su pogodnost za mobilne uređaje, tačnost, raznovrsne karakteristike usluga mobilnih aplikacija, lakoća korišćenja i kontinuirano poboljšanje, autori smatraju glavnim izvorima zadovoljstva/nezadovoljstva korisnika.

Ulkhaq et al. (2017) vrše procenu kvaliteta e-usluga korišćenjem popularnih skala E-S-QUAL i E-RecS-QUAL u Indoneziji, u jednoj od najvećih on-lajn modnih prodavnica Zalora. Od maksimalnih 5, rezultati studije pokazuju da je Zalora Indonesia postigla 2,695 u pružanju kvaliteta e-usluga i 2,787 u oporavku kvaliteta e-usluga. Autori ukazuju da još uvek postoji mnogo prostora za poboljšanje, kako bi se postiglo zadovoljstvo kupaca, određujući prioritete putem analize važnost – performansa (IPA).

Hammoud et al. (2018) su ispitivali odnos između dimenzija kvaliteta usluge e-bankarstva i satisfakcije korisnika da bi se utvrdilo koja dimenzija potencijalno može imati najjači uticaj na zadovoljstvo korisnika u bankarskom sektoru Libana. Nalazi pokazuju da pouzdanost, efikasnost/lakoća upotrebe, odziv/komunikacija, i bezbednost/privatnost imaju značajan uticaj na zadovoljstvo korisnika, pri čemu je pouzdanost dimenzija sa najvećim uticajem.

Hosseini et al. (2018) primenjuju Grey sistem zasnovan na modifikovanom E-S-QUAL modelu za analizu kvaliteta e-usluga u Iranu. Nakon primene metode i izračunavanja rezultata u svakoj dimenziji, izračunat je jaz između očekivanja i percepcije. Rezultati pokazuju da među 7 dimenzija postoje 4 pozitivne i 3 negativne praznine. U skladu sa tim, uz pomoć analize važnost-performanse (IPA), rezultati ukazuju na ključne dimenzije za poboljšanje i unapređenje kvaliteta e-usluga.

Jundillah et al. (2019) vrše evaluaciju web lokacija za e-učenje na osnovu rezultata WEBQUAL upitnika i proračuna metodom analize važnost-performansa (IPA). Rezultati obračuna IPA metode ukazuju da je prosečan student u Indoneziji zadovoljan kvalitetom web-stranice za e-učenje sa 86,75%. Autori ukazuju da još uvek postoje neki delovi koji se mogu poboljšati na web lokacijama za e-učenje, kao što su jasna uputstva, tačne informacije i lakoća komunikacije.

Widodo et al. (2019) razvijaju model za merenje kvaliteta bankarskih usluga u Indoneziji. Kombinujući SERVQUAL model i analizu važnost-performansa (IPA), izdvajaju ključne dimenzije kvaliteta: 1. Pouzdanost (jedan atribut); 2. Kvalitet interakcije (dva atributa), i 3. Empatija (tri atributa).

Ahmed et al. (2020) ispituju kvalitet usluga e-bankarstva i zadovoljstva korisnika u Pakistanu. U tu svrhu ispitali su direktan uticaj E-S-QUAL dimenzija na zadovoljstvo, korišćenjem multivarijantnog pristupa zasnovanog na strukturnom modelu (SEM), uključujući konfirmatorsku i eksplorativnu faktorsku analizu. Rezultati su pokazali da uočena vrednost i poverenje posreduju u E-S-QUAL dimenzijama i zadovoljstvu korisnika.

Raza et al. (2020) istražuju dimenzije kvaliteta usluga u Internet bankarstvu u Pakistanu i njihov uticaj na zadovoljstvo i lojalnost e-korisnika. Rezultati ove studije sugerišu model koji na kraju povećava lojalnost korisnika prema kvalitetu usluga internet bankarstva kroz zadovoljstvo korisnika u Pakistanu. Uključuje modifikovani model E-SERVQUAL-a (prijateljstvo za korišćenje, efikasnost web-sajtova, lične potrebe i organizacija sajta) koji ga povezuje sa e-zadovoljstvom i e-lojalnošću korisnika.

Khatoon et al. (2020) istražuju odnos između dimenzija kvaliteta usluga e-bankarstva i namera korisnika sa posredničkom ulogom zadovoljstva korisnika u bankarskom sektoru Katara. Rezultati studije ukazuju da pouzdanost, efikasnost, odziv, komunikacija, bezbednost i privatnost imaju značajan i pozitivan uticaj na namere kupaca za kupovinu. Namere za kupovinom usluge se značajno povećavaju kada su klijenti zadovoljni kvalitetom usluge e-bankarstva.

Baqai et al. (2021) istražuju efekat četiri dimenzije modela E-S-QUAL (efikasnost, ispunjenost, privatnost i dostupnost sistema) na nameru kupovine i ispituju odnos E-S-QUAL-a sa elektronskim glasom kupca (E-Word-Of-Mouth: EWOM), imidžom brenda i namerom kupovine. U istraživanju koriste modeliranje strukturnih jednačina (SEM) za empirijsku analizu. Rezultati pokazuju da E-S-QUAL model pozitivno i značajno utiče na nameru kupovine, a efekat E-S-QUAL modela se relativno povećava kada se posreduje EWOM i imidžom brenda. Autori ukazuju da trgovci u praksi mogu da privuku pažnju kupaca poboljšanjem kvaliteta svojih web lokacija i obezbeđivanjem efikasnosti, privatnosti, dostupnosti sistema i ispunjavanjem obećanja o isporuci proizvoda. Takođe treba da uzmu u obzir EWOM i imidž brenda, jer pozitivno utiču na nameru kupovine putem interneta, što može dovesti do razvoja organizacije.

Shankar et al. (2021) identifikuju kritične faktore uspeha održive aplikacije za mobilno bankarstvo koristeći pristup Latentne semantičke analiza (LSA). Rezultati su pokazali da su privatnost i bezbednost, navigacija, korisnička podrška, udobnost i efikasnost ključni faktori uspeha i kvaliteta usluga mobilnog bankarstva.

Metodologija istraživanja

Podaci

Za potrebe istraživanja, izrađen je kombinovani upitnik na osnovu dimenzijske strukture iz nekoliko modela E-S-QUAL, SITEQUAL i WEBQUAL, sa 7 dimenzija i 40 pitanja (atributa), na bazi Likertove skale (1-7) u dve kategorije odgovora ispitanika – percepcija i očekivanje. Ocena 1 znači da ocenjivani atribut nema nikakvo značenje, dok ocena 7 znači veoma značajan atribut usluge e-bankarstva. Drugi deo upitnika odnosio se na ocenu važnosti ponuđenih dimenzija. Ispitanici su zamoljeni da svaku dimenziju ocene od 1 -7, gde ocena 1 ima značenje NEVAŽNO, dok ocena 7 – NAJVAŽNIJE. U ovom radu, rezultati očekivanja korisnika neće biti razmatrani i biće ostavljeni za dalja istraživanja u vezi sa satisfakcijom i lojalnošću korisnika usluga e-bankarstva. Upitnik je distribuiran korisnicima usluga e-bankarstva na prostoru centralne i jugoistočne Srbije, u gradovima Kragujevac, Požarevac, Niš, Zaječar i Bor, u periodu 01.06.-15.06.2021. godine. Ukupan broj ispitanika je bio 350, gde je 328 anketa (93,71%) bilo pogodno za dalju analizu. Struktura uzorka ispitanika prikazana je u Tabeli 2, dok je Anketni upitnik prikazan u Tabeli 3.

Faktorska analiza sa PCA

Faktorska analiza kao statistički metod primenjuje se u mnogim marketinškim istraživanjima, i to prvenstveno kada je potrebno veliki broj varijabli svesti na manji broj, identifikovati njihovu povezanost i efikasno izvesti zaključke. Pored korišćenja u otkrivanju karakteristika proizvoda i usluga, ovaj model se koristi i u razvoju i vrednovanju anketa, testova i različitih skala za merenje u eksplorativnim studijama (Thompson, 2004; Fabrigar, Wegener, 2012; Brown, 2015).

Cilj primene faktorske analize u ovom istraživanju jeste grupisanje većeg broja atributa/promenljivih u faktore koji nisu u korelaciji, u odnosu na promenljive unutar njih (otklanjanje problema multikolinearnosti). Izdvojeni faktori predstavljaju dimenzije kvaliteta usluge e-bankarstva. U tu svrhu biće primenjena analiza glavnih komponenti (engl. Principal Component Analysis - PCA). Pre njenog sprovođenja, potrebno je dobiti rezultate deskriptivne statistike, korelacione analize i izmeriti pouzdanosti mernog instrumenta (koeficijenti Cronbach's Alpha - i Kaiser-Meyer Olkin - KMO). Očekuje se viši nivo koeficijenata korelacije među varijablama (većina varijabli u korelaciji sa $r > 0,40$), kao i koeficijent pouzdanosti uzorka $KMO / \sqrt{\lambda} > 0,50$, što će uputiti na primenu Faktorske analize. Za metodu ekstrakcije faktora uzeta je analiza glavnih komponenti (PCA), dok je za rotaciju faktora uzeta Oblimin rotacija.

Faktorska analiza sa PCA se, nakon ispitivanja pouzdanosti mernog instrumenta i redukcije podataka primenom PCA, sastoji dalje od prikaza faktorske matrice nakon rotacije, interpretacije izvedenih faktora i merenja pouzdanosti izvedenih faktora/dimenzija (Cronbach' Alpha koeficijent).

Tabela 2. *Struktura uzorka*

Godine starosti	%
18-24	10,97
25-34	13,41
35-44	32,01
45-54	26,52
55 i više	17,09
Mesečni prihodi (RSD)	%
35 - 44.000 28	8,53
45 - 54.000 63	19,22
55.000 i više 204	62,19
Ne želim da odgovorim 33	10,06
Korišćenje E-Bankarstva	%
1-2 puta mesečno 118	35,97
3-5 puta mesečno 174	53,15
Više od 5 puta mesečno 36	11,98
Tip E-Bankarstva	
Internet/Onlajn (putem računara)	57,31
Mobilno bankarstvo	28,05
I jedno i drugo	14,64

Izvor: Autor

Tabela 3. Anketni upitnik sa dimenzijama i pitanjima (atributima)

Pouzdanost D1 (6)	P1: E-Banka uvek pruža tačne i pravovremene informacije
	P2: Informacije se uvek lako dobijaju od E-Banke
	P3: E-Banka usluge pruža u predviđenom roku
	P4: E-Banka pruža potpune informacije
	P5: Na web sajtu E-Banke postoji mogućnost ocene pružene usluge
	P6: Na web sajtu E-Banke ocene klijenata su prikazane na vidljivom mestu
Odziv D2 (5)	P7: E-Banka pruža različite opcije za onlajn kontakt koje su jednostavne za korišćenje
	P8: E-Banka brzo izlazi u susret potrebama klijenata
	P9: E-Banka preuzima odgovornost u slučaju loše e-usluge
	P10: E-Banka obezbeđuje fer nadoknadu klijentima u slučaju loše e-usluge
Pristup D3 (7)	P11: E-Banka pruža informacije šta preduzeti u slučaju neizvršenja transakcije
	P12: E-Banka nudi širok spektar e-usluga na jednom mestu
	P13: E-Banka je dostupna korisnicima u svako doba svih sedam dana u nedelji
	P14: Web sajt E-Banke je brz i bez zagušenja
	P15: Web sajtu E-Banke je brzo i jednostavno pristupiti
	P16: Web sajt E-Banke je pregledan
Efikasnost D4 (5)	P17: Na web sajtu E-Banke se može lako naći kontakt telefon i e-mail
	P18: E-Banka pruža mogućnost kontaktiranja menadžera u slučaju problema
	P19: E-Banka ne zahteva logovanje za pristup web sajtu
	P20: E-Banka pruža konkretne informacije o uslugama
	P21: Usluge su grupisane na logičan način na sajtu E-Banke
Poverenje D5 (7)	P22: Usluge su pregledno prikazane i opisane
	P23: Uslovi korišćenja/kupovine su jasno definisani i prikazani na vidnom mestu
	P24: E-Banka ima dobar korporativni imidž
	P25: E-Banka je na dobrom glasu
	P26: E-Banka sebe predstavlja u najboljem svetlu
	P27: E-Banka je društveno odgovorna
Sigurnost D6 (5)	P28: E-Banka ima dobru poslovnu reputaciju
	P29: E-Banka učestvuje u humanitarnim akcijama
	P30: Informacije o uslugama E-Banke u reklamama su uvek istinite
	P31: Sve onlajn transakcije su sigurne
	P32: Klijenti E-Banke se osećaju sigurno prilikom davanja ličnih podataka
Personalizacija D7 (5)	P33: Sve onlajn transakcije su transparentne klijentu
	P34: Klijenti E-Banke se osećaju sigurno prilikom korišćenja platnih kartica za plaćanje
	P35: E-Banka zahteva logovanje prilikom pristupa sistemima onlajn plaćanja
	P36: E-Banka prilagođava svoje usluge potrebama klijenata
	P37: E-Banka formira svoju ponudu na osnovu prethodnog iskustva sa klijentima
	P38: Klijent E-Banke ima mogućnost učestvovanja u kreiranju sopstvene usluge
	P39: E-Banka vodi računa o bitnim datumima klijenta
	P40: E-Banka šalje sva potrebna obaveštenja klijentu

VAŽNOST DIMENZIJA KVALITETA (1 - 7) (1-najmanje značajno; 7 - Najznačajnije)	
POUZDANOST	
ODZIV	
PRISTUP	
EFIKASNOST	
POVERENJE	
SIGURNOST	
PERSONALIZACIJA	

Napomena: Upitnik je formiran sa dve kategorije ocena ispitanika:
 1 – percepcija; 2 – očekivanja; primenjena je skala Likertovog tipa sa ocenama od 1 – 7.
 Izvor: Autor

Analiza važnost – performansa (IPA)

Analiza važnost – performansa (IPA) predstavlja tehniku poslovnog istraživanja razvijenu od strane Martilla i James-a (1977), kao alat za ispitivanje i predlaganje strategija upravljanja. Iako je prvobitno ovaj model razvijen u marketinške svrhe, njegova primena se proširila na različite oblasti, uključujući: trgovinu, turizam, bankarstvo, javne usluge i sl. (Dwyer et al., 2012; Sever, 2015;).

Ključni cilj ove analize je da se identifikuje učinak različitih atributa proizvoda/usluge, uz olakšavanje interpretacije podataka i izvođenje praktičnih sugestija za upravljanje (Dwyer et al., 2012). Identifikovanjem najvažnijih atributa, odnosno snaga i slabosti, analiza daje uvid u to na koje oblasti proizvoda/usluga treba da se fokusiraju menadžeri (Joseph et al., 1999). Stoga analiza daje prioritet akcijama menadžmenta kako bi predložio optimalnu alokaciju ograničenih resursa koji bi trebalo da poboljšaju i održe zadovoljstvo kupaca (Abalo et al., 2007; Sever, 2015).

Analiza važnost – performansa (IPA) je korišćena u ovom istraživanju kako bi se pružila vizuelna analiza „procene klijenata” o kvalitetu usluga e-bankarstva u Srbiji, kao i o značaju dimenzija kvaliteta. Ocene klijenata se svrstavaju u jedan od četiri kvadranta sa oznakama: 1. „nastavi dobar posao”, 4. „moguće preterivanje”, 3. „nizak prioritet” i 2. „koncentriši se ovde” (Slika 1). Kvadrant 1 „Nastavi dobar posao” predstavlja područje od velike važnosti za klijente i visokih performansi pruženih usluga. Kada je u pitanju manja važnost, ali visoke performanse, područje je kvadrant 4 „moguće preterivanje”. Kvadrant 3 „nizak prioritet” označava oblast sa niskim značajem i niskim performansama. Konačno, atributi kvaliteta koji su visoke važnosti, ali niskih performansi u kvadrantu 2 „koncentriši se ovde”, impliciraju da je došlo do loše usluge i da je potrebna hitna akcija menadžmenta kompanije (Joseph et al., 1999; Đorđević, 2009; Dwyer et al., 2012; Deng, Pierskalla, 2018).

Slika 1. Matrica Analize važnost – performansa (IPA)

VAŽNOST (1-7)	Visoka	KVADRANT 2 Koncentriši se ovde	KVADRANT 1 Nastavi dobar posao
	Niska	KVADRANT 3 Nizak prioritet	KVADRANT 4 „Moguće preterivanje”
		Nizak	Visok
		PERFORMANS (1-7)	

Izvor: Autor na osnovu Martilla and James (1977); Joseph et al.(1999); Abalo et al. (2007)

Za sprovođenje svih potrebnih statističkih analiza biće korišćen softver XLSTAT Premium.

Rezultati i diskusija

Korelaciona matrica je pokazala da skoro svaki od originalnih atributa (40) ima barem jedan i više koeficijenata korelacije $r > 0,40$. Koeficijent Kaiser-Meyer-Olkin (KMO) za sve varijable zajedno je 0,401 što nam ukazuje da merni instrument nije pogodan za faktorsku analizu ($KMO \leq 0,5$). Pošto je dobijen i KMO za svaki atribut, pristupljeno je redukciji atributa sa koeficijentom $KMO \leq 0,50$. Izbačeni su atributi: D1P1, D1P5, D2P7, D2P10, D3P13, D3P14, D5P25, D5P26, D5P29, D7P36, D7P38. Sa 29

atributa urađena je nova analiza pouzdanosti i validnosti mernog instrumenta i dobijene su vrednosti koeficijena:

KMO = 0,661; Cronbach's alpha (α) = 0,941

Dobijeni rezultati pokazuju da je sada moguće sprovesti faktorsku analizu.

Na osnovu redukcije originalnih varijabli, za atribute novog mernog instrumenta urađena je deskriptivna statistika prema postavljenim dimenzijama. Najnižu srednju vrednost percepcije ispitanika (Psv) beleži dimenzija Pouzdanost (4,884), dok je najviše ocenjena percepcija dimenzije Pristup (5,419). Srednja vrednost ocena percepcije svih dimenzija modela iznosi 5,121. Rezultati deskriptivne statistike dimenzija i atributa novog modela dati su u Tabeli 4.

Tabela 4. Deskriptivna statistika – percepcija (P)

	Atributi	Obs.	Psred.vred.	Std. devijacija
POUZDANOST	D1P2	328	4,878	1,065
	D1P3	328	5,293	1,111
	D1P4	328	5,049	1,363
	D1P6	328	4,317	1,776
			4,884	
ODZIV	D2P8	328	5,195	1,294
	D2P9	328	4,756	1,607
	D2P11	328	5,268	1,468
			5,073	
PRISTUP	D3P12	328	5,537	1,151
	D3P15	328	5,780	1,073
	D3P16	328	5,341	1,204
	D3P17	328	5,854	1,223
	D3P18	328	4,585	1,655
			5,4194	
EFIKASNOST	D4P19	328	4,951	1,483
	D4P20	328	5,195	1,089
	D4P21	328	5,488	1,254
	D4P22	328	5,293	1,216
	D4P23	328	5,128	1,252
			5,211	
POVERENJE	D5P24	328	5,220	1,050
	D5P27	328	5,171	1,362
	D5P28	328	4,951	1,148
	D5P30	328	4,299	1,389
			4,91025	
SIGURNOST	D6P31	328	5,610	1,209
	D6P32	328	4,963	1,376
	D6P33	328	5,088	1,212
	D6P34	328	5,171	1,563
	D6P35	328	5,341	1,542
			5,2346	
PERSONALIZACIJA	D7P37	328	4,889	1,364
	D7P39	328	5,366	1,480
	D7P40	328	5,537	1,418
			5,264	
Percepcija kvaliteta usluga e-bankarstva:			5,121	

Izvor: Autor

Prema Kajzerovom kriterijumu karakterističnih vrednosti (engl. Eigenvalue), izdvojeno je 16 faktora, koji pokazuje da je potrebno uzeti u obzir koeficijente do F7 (vrednost veća od 1). Prema Tabeli 5., faktori od F1-F7 objašnjavaju 70,546% varijanse, što je prihvatljivo za istraživanja u društvenim naukama.

Tabela 5. Tabela karakterističnih vrednosti po Kajzerovom kriterijumu

Eigenvalues:							
	F1	F2	F3	F4	F5	F6	F7
Eigenvalue	10,955	2,567	2,274	1,744	1,549	1,189	1,085
Variability (%)	36,516	8,558	7,581	5,814	5,163	3,963	2,951
Cumulative %	36,516	45,074	52,656	58,469	63,632	67,595	70,546

Izvor: Autor

Faktorskom analizom i primenom Oblimin rotacije, dobijena je tabela faktorskih koeficijenata, uz naznaku da su iz dalje analize izbačene stavke sa faktorskim zasićenjem $F_z \leq 0,50$. Svi izvedeni faktori pokazuju visoku meru pouzdanosti Cronbach s Alpha (α) (Tabela 6.).

Tabela 6. Faktorska struktura nakon rotacije

Factor pattern after Oblimin rotation:							
	D1	D2	D3	D4	D5	D6	D7
D1P3	0,159	-0,041	0,189	0,087	0,248	-0,109	0,563
D1P4	0,053	0,046	0,163	0,020	0,098	0,015	0,802
D1P6	0,040	-0,121	-0,149	0,017	0,074	0,013	0,803
D2P8	-0,329	0,018	0,219	0,152	0,697	0,075	0,172
D2P9	-0,093	0,058	0,105	-0,018	0,670	0,122	0,272
D3P15	0,011	-0,027	0,815	-0,072	0,144	-0,082	0,149
D3P16	0,154	0,070	0,685	-0,127	0,019	0,234	0,241
D3P18	0,355	-0,153	0,094	0,503	-0,014	0,348	0,058
D4P19	0,044	0,064	-0,015	-0,062	0,686	-0,022	0,001
D4P20	0,239	-0,045	0,072	-0,079	0,567	0,305	-0,015
D4P23	0,281	-0,005	-0,120	0,256	-0,182	0,563	0,210
D5P27	0,026	0,102	0,024	-0,065	0,082	0,757	-0,123
D5P28	0,036	0,170	-0,045	0,035	0,082	0,872	-0,148
D6P31	0,346	0,647	0,155	-0,116	-0,151	0,056	0,102
D6P32	-0,066	0,816	-0,020	-0,121	-0,085	0,176	0,056
D6P33	0,241	0,639	-0,424	-0,144	0,216	0,037	0,361
D6P34	-0,019	0,845	0,254	0,139	-0,083	0,059	-0,031
D6P35	0,132	0,766	0,000	0,181	0,281	-0,093	-0,111
D7P37	0,789	-0,207	0,037	-0,002	0,034	0,089	0,324
D7P39	0,505	-0,151	-0,357	0,247	0,262	0,228	0,213
D7P40	0,669	0,045	0,083	-0,025	0,047	0,060	0,193
Cronbach's alpha:	0,801	0,883	0,832	0,738	0,828	0,885	0,797

Izvor: Autor

Tabela 7. Dimenzije inicijalnog modela E-BSrb-QUAL

D1 – PERSONALIZACIJA (3)	Fz*	Kom.**	Sr.vred.***
P37: E-Banka formira svoju ponudu na osnovu prethodnog iskustva sa klijentima	0,789	0,908	4,889
P39: E-Banka vodi računa o bitnim datumima klijenta	0,505	0,798	5,366
P40: E-Banka šalje sva potrebna obaveštenja klijentu	0,669	0,700	5,537
			5,264
D2 – SIGURNOST (5)			
P31: Sve onlajn transakcije su sigurne	0,647	0,755	5,610
P32: Klijenti E-Banke se osećaju sigurno prilikom davanja ličnih podataka	0,816	0,731	4,963
P33: Sve onlajn transakcije su transparentne klijentu	0,639	0,883	5,088
P34: Klijenti E-Banke se osećaju sigurno prilikom korišćenja platnih kartica za plaćanje	0,845	0,934	5,171
P35: E-Banka zahteva logovanje prilikom pristupa sistemima onlajn plaćanja	0,766	0,785	5,341
			5,234
D3 – PRISTUPAČNOST (2)			
P15: Web sajtu E-Banke je brzo i jednostavno pristupiti	0,815	0,774	5,780
P16: Web sajt E-Banke je pregledan	0,685	0,869	5,341
			5,560
D4 – KONTAKT (1)			
P18: E-Banka pruža mogućnost kontaktiranja menadžera u slučaju problema	0,503	0,714	4,585
			4,585
D5 – EFIKASNOST / ODZIV (4)			
P8: E-Banka brzo izlazi u susret potrebama klijenata	0,697	0,884	5,195
P9: E-Banka preuzima odgovornost u slučaju loše e-usluge	0,670	0,737	4,756
P19: E-Banka ne zahteva logovanje za pristup web sajtu	0,686	0,520	4,951
P20: E-Banka pruža konkretne informacije o uslugama	0,567	0,653	5,195
			5,024
D6 – POVERENJE (3)			
P23: Uslovi korišćenja/kupovine su jasno definisani i prikazani na vidnom mestu	0,563	0,742	5,128
P27: E-Banka je društveno odgovorna	0,757	0,613	5,171
P28: E-Banka ima dobru poslovnu reputaciju	0,872	0,927	4,951
			5,083
D7 – POUZDANOST (3)			
P3: E-Banka usluge pruža u predviđenom roku	0,563	0,625	5,293
P4: E-Banka pruža potpune informacije	0,802	0,855	5,049
P6: Na web sajtu E-Banke ocene klijenata su prikazane na vidljivom mestu	0,803	0,689	4,317
			4,886

*Fz – faktorsko opterećenje; **Kom. – finalni komunalitet; ***Sr.vred. – srednja vrednost ocena ispitanika

Izvor: Autor

Na osnovu dobijene strukture faktorskih koeficijenata, pristupilo se definisanju osnovnih faktora tj. dimenzija novog modela koji je po slobodnoj interpretaciji autora nazvan E-BSrb-Qual. Uzimajući u obzir faktorska opterećenja viša od 0,50 izdvojeno je sedam dimenzija kvaliteta sa ukupno dvadeset i jednom stavkom tj. atributom. Dimenzije novog modela E-BSrb-Qual, sačinjenog pre svega na oceni kvaliteta usluga e-bankarstva korisnika iz centralne i jugoistočne Srbije su: 1) Personalizacija, 2) Sigurnost, 3) Pristupačnost, 4) Kontakt, 5) Efikasnost/Odziv, 6) Poverenje, i 7) Pouzdanost. Dobijeni rezultati potvrđuju primenljivost modela E-SQ za merenje kvaliteta usluga e-bankarstva u Srbiji, što

ukazuje na mogućnost daljih istraživanja, redukcije dimenzijske strukture i modifikacije domaćeg modela u cilju formiranja opšteg domaćeg instrumenta i skale za merenje kvaliteta e-usluga, generalno.

Posmatrajući faktorska zasićenja i komunalitet tj. objašnjenje varijanse, u odnosu na srednju vrednost ocena ispitanika po izdvojenim atributima iz Tabele 6., zapažamo visoku značajnost atributa modela, ali i određeni broj niskih prosečnih ocena ispitanika (≤ 5) po tim stavkama. Iz dimenzije Personalizacija (stavka P37) vidimo da korisnici smatraju da banke ne formiraju svoju buduću ponudu na bazi iskustva sa klijentima u dovoljnoj meri. Iz dimenzije Sigurnost (P32) vidimo da korisnici nisu baš najsigurniji kada ostavljaju svoje lične podatke na sajtu banke. Dimenzija Kontakt (P18) nam pokazuje da korisnici slabo ocenjuju mogućnost kontaktiranja ovlašćene osobe banke u slučaju problema, na šta se nadovezuje i stavka P9 iz dimenzije Efikasnost/Odziv u vezi preuzimanja odgovornosti banke u slučaju usluge niskog kvaliteta. Najnižu ocenu ispitanika dobila je stavka P6 iz dimenzije Pouzdanost, što je po mišljenju autora ipak visoka ocena, jer analizom sajtova banaka i sistema za on-lajn i mobilna plaćanja većine domaćih banaka, vidljivo je da ne postoji transparentnost u ocenama klijenata, sem periodičnih izveštaja istraživanja angažovanih marketing agencija.

Generalno posmatrano, ispitani korisnici su dali visoke ocene kvaliteta usluga e-bankarstva. Vidljiva je niža ocena atributa dimenzija kvaliteta koja se odnosi na komunikaciju i odziv u slučaju problema i isporuke usluge niskog kvaliteta, na šta bi marketing sektor banke u domenu e-bankarstva trebao da obrati pažnju.

Drugi deo anketnog upitnika se odnosio na ocenu važnosti svake od originalnih dimenzija kvaliteta (1- nevažno; 7-najvažnije). Cilj je bio da se na osnovu ocena važnosti i ocena percepcije tj. performansi izradi matrica važnost-performansa koja će pokazati gde je potrebno reagovati po pitanju kvaliteta pruženih usluga e-bankarstva. Iz Tabele 7. vidimo da korisnici najveću važnost daju dimenzijama Pouzdanost i Sigurnost (sa preko 40% od ukupnog broja ispitanika). Iz Tabele 8. vidimo da dimenzija Pouzdanost ima visoku važnost (6,120), ali niže performanse (4,884). Dimenzija Sigurnost ima najvišu ocenu važnosti (6,270) i zadovoljavajuću performansu (5,235).

Tabela 8. Ocena ispitanika po pitanju važnosti dimenzija (1-7) u % od ukupnog broja

	Važnost dimenzija - % odgovora ispitanika						
	7	6	5	4	3	2	1
POUZDANOST	43,9	33,53	14,02	8,53	0	0	0
ODZIV	2,13	12,8	7,31	1,21	33,84	33,53	9,14
PRISTUP	2,13	6,09	7,31	7,31	36,58	33,84	6,7
EFIKASNOST	6,09	5,48	7,31	1,21	40,54	36,89	2,43
POVERENJE	0	4,87	48,47	46,64	0	0	0
SIGURNOST	45,73	37,19	15,54	1,52	0	0	0
PERSONALIZACIJA	0	0	0	33,53	47,25	10,06	9,14

Izvor: Autor

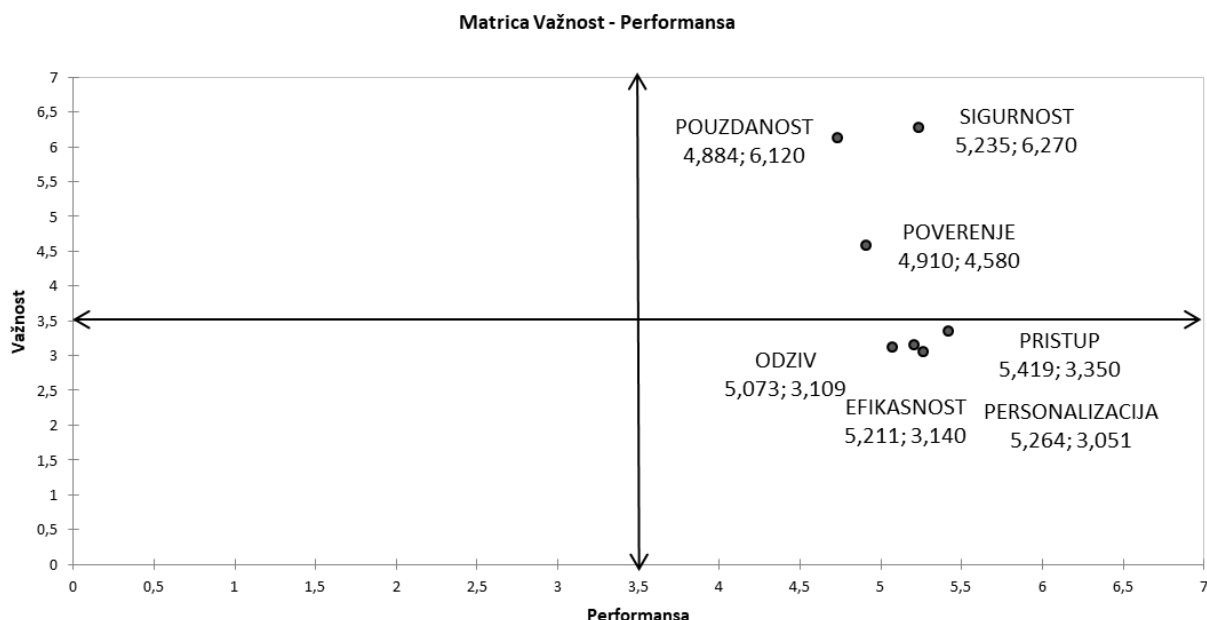
Tabela 9. Srednje vrednosti ocena važnosti dimenzija i percepcije (performansa)

	Performansa	Važnost
POUZDANOST	4,884	6,120
ODZIV	5,073	3,109
PRISTUP	5,419	3,350
EFIKASNOST	5,211	3,140
POVERENJE	4,910	4,580
SIGURNOST	5,235	6,270
PERSONALIZACIJA	5,264	3,051

Izvor: Autor

Na osnovu dobijenih srednjih vrednosti ocena važnosti i percepcija iz originalnog upitnika, formirana je matrica važnost – performansa (Slika 3). Vidimo da su kvadrantu 1 – Nastavi dobar posao, dimenzije Pouzdanost, Sigurnost i Poverenje. Očigledno je da su banke u Srbiji prepoznale važnost ovih dimenzija, na čemu rade i da korisnici usluga to vrednuju. Iznenađenje za autora predstavlja nalaz da u kvadrantima 2 i 3 – Koncentriši se ovde i Nizak prioritet, nema nijedne dimenzije, kao i da se u kvadrantu 4 – Preterana usluga (Moguće samoubistvo) nalaze četiri dimenzije kvaliteta – Pristup, Odziv, Efikasnost i Personalizacija. Korisnici usluga ocenjuju visoke performanse po atributima iz ovih dimenzija, ali istovremeno i daju relativnu važnost ovim dimenzijama kvaliteta. Generalno, ocena je da su banke u našoj zemlji dosta toga uradile po pitanju razvoja usluga e-bankarstva. Razvojem novih tehnologija, pre svega mobilnih telefona najnovije generacije, raste i broj korisnika usluga mobilnog bankarstva u zemlji. Srazmerno razvoju interneta i web tehnologija, kao i rastu broja klijenata, raste i broj rizika sa kojima se banke i klijenti mogu suočiti na mreži. Očigledno je da banke i ovom segmentu rade dobar posao u Srbiji. Ipak, potrebno je da u ovom segmentu, tj. dimenzijama Sigurnosti i Pouzdanosti sistema banke ostanu u kvadrantu 1, što će opredeliti poverenje klijenata i dalje korišćenje usluga e-bankarstva.

Slika 2. Matrica Važnost - Performansa



Izvor: Autor

Zaključak

Ovim istraživanjem su utvrđene ključne dimenzije kvaliteta usluga e-bankarstva u Republici Srbiji. Za testiranje primenljivosti dimenzija modela E-SQ primenom faktorske analize sa analizom glavnih komponenti (PCA), originalni upitnik je značajno redukovao u cilju dizajniranja pouzdanog i validnog mernog instrumenta. Dobijeni inicijalni model koji je od strane autora nazvan E-BSrb-QUAL, sastoji se od 7 ključnih dimenzija sa 21 stavkom - atributom, i to: 1) Personalizacija, 2) Sigurnost, 3) Pristupačnost, 4) Kontakt, 5) Efikasnost/Odziv, 6) Poverenje i 7) Pouzdanost. Dobijeni rezultati ukazuju na primenljivost dimenzija u sastavu E-S-QUAL i E-RecS-QUAL, uz potrebu modifikacija atributa dimenzija.

Korisnici usluga e-bankarstva u centralnoj i jugoistočnoj Srbiji, kao najznačajnije dimenzije kvaliteta percipiraju dimenzije pouzdanosti, sigurnosti i poverenja. Mišljenje autora je da kvalitet usluga e-bankarstva pre svega zavisi od tehničkih karakteristika usluge, u ovom slučaju, inženjeringa i performansi web sajta i platformi za onlajn i mobilna plaćanja. Pouzdanost i Sigurnost su najznačajnije dimenzije koju vrednuju korisnici. Ovo potvrđuju i sva ostala istraživanja u svetu. Takođe, komunikacija i interakcija banke sa korisnicima usluga e-bankarstva je očekivano ocenjena važnom, ali sa slabijim ocenama u percepciji usluge, posebno u slučaju problema u realizaciji transakcija i brze komunikacije sa ovlašćenim menadžerom banke. Analiza važnost-performansa (IPA) pokazuje mišljenje korisnika usluga o kvalitetu e-bankarstva i ukazuje na snage i slabosti domaćih banaka u ovom domenu. Za autora je predstavljalo iznenađenje da korisnici kao manje važne dimenzije usluga ocenjuju Personalizaciju, Pristup, Efikasnost i Odziv, ali ih visoko percipiraju, što ih svrstava u kvadrant preterane usluge. Generalno, zaključak je da korisnici e-bankarstva sa prostora dela centralne i jugoistočne Srbije, visoko ocenjuju pružene e-usluge svojih banaka.

Predstavljena studija jeste prvi korak u istraživanju kvaliteta usluga e-bankarstva u Srbiji. Podaci dobijeni u izvedenoj anketi po pitanju očekivanja korisnika, koji ovde nisu predstavljeni u daljoj analizi sa ovde dobijenim rezultatima mogu pokazati nivo satisfakcije korisnika usluga, kao i nivo lojalnosti. Rezultati ove studije sa inicijalnim modelom ukazuju na mogućnost formiranja domaćeg modela za merenje kvaliteta i satisfakcije korisnika usluga e-bankarstva u Srbiji, uz budući reprezentativni uzorak najmanje 500 - 1000 ispitanika iz svih delova zemlje (Zapadna i Centralna Srbija sa velikim gradovima, Vojvodina, južna Srbija). Primenjena metodologija i rezultati istraživanja ukazuju na mogućnost formiranja modela za merenje kvaliteta e-usluga generalno, kao i na mogućnost dizajniranja nacionalnog indeksa satisfakcije korisnika e-usluga. Uz uvažavanje prostornog ograničenja i broja ispitanika, dobijeni rezultati mogu biti korisni menadžerima banaka u razvijanju budućih strategija e-marketinga finansijskih usluga u Republici Srbiji, kao i stručnoj javnosti koja je zainteresovana za dalja istraživanja u ovoj oblasti.

Literatura

1. Abalo, J., Varela, J., Manzano, V. (2007). Importance values for Importance-Performance Analysis: A formula for spreading out values derived from preference rankings. *Journal of Business Research* 60, 115-121. <https://doi.org/10.1016/j.jbusres.2006.10.009>
2. Ahmed, R. R., Vveinhardt, J., Štreimikienė, D., Ashraf, M., Channar, Z. A. (2017). Modified SERVQUAL model and effects of customer attitude and technology on customer satisfaction in banking industry: mediation, moderation and conditional process analysis. *Journal of Business Economics and Management* 18(5). <https://doi.org/10.3846/16111699.2017.1368034>
3. Ahmed, R. R., Romeika, G., Kauliene, R., Streimikis, J., Dapkus, R. (2020). ES-QUAL model and customer satisfaction in online banking: evidence from multivariate analysis techniques. *Oeconomia Copernicana* 11(1), 59-93. <https://doi.org/10.24136/oc.2020.003>
4. Aldlaigan, A. H., Buttle, F. A. (2002). SYSTRA-SQ: a new measure of bank service quality. *International Journal of Service Industry Management* 13(4), 362-381. <https://doi.org/10.1108/09564230210445041>
5. Amin, M. (2016). Internet banking service quality and its implication on e-customer satisfaction and e-customer loyalty. *International Journal of Bank Marketing* 34 (3), 280-306. <https://doi.org/10.1108/IJBM-10-2014-0139>
6. Bahia, K., Nantel, J. (2000). A reliable and valid measurement scale for the perceived service quality in banks. *International Journal of Bank Marketing* 18(2), 84-91. <https://doi.org/10.1108/02652320010322994>
7. Baqai, S., Qureshi, J. A., Morah, E. I. M. (2021). The Relationship Between ES-QUAL Model and Online Purchase Intention in the Context of Rising Global Marketplace of E-Commerce. *Etikonomi* 20(2), xx-xx. <https://doi.org/10.15408/etk.v20i2.20677>
8. Brown, T. A. (2015). *Confirmatory Factor Analysis for Applied Research*. 2nd ed., New York: Guilford Press
9. Deng, J., Pierskalla, C.D. (2018). Linking Importance-Performance Analysis, Satisfaction, and Loyalty: A Study of Savannah, GA. *Sustainability* 10(3):704 <https://doi.org/10.3390/su10030704>
10. Dwyer, L., Cvelbar, Lj.K., Edwards, D., Mihalic, T. (2012). Fashioning a destination tourism future: The case of Slovenia. *Tourism Management* 33, 305-316, <https://doi.org/10.1016/j.tourman.2011.03.010>
11. Đorđević, B.S. (2009) Merenje kvaliteta bankarskih usluga. *Finansije* 64 (1-6), 256-271.
12. Đorđević, B.S. (2011). *Bankarski menadžment i marketing*. Zaječar: Fakultet za menadžment, ISBN978-86-7747-448-5 (MU)

13. Fabrigar, L.R., Wegener, D.T. (2012). *Exploratory Factor Analysis*. Oxford: University Press
14. Ghosh, M. (2018). Measuring Electronic Service Quality in India Using ES-QUAL. *International Journal of Quality & Reliability Management* 35(2), 430-445. <https://doi.org/10.1108/IJQRM-07-2016-0101>.
15. Hammoud, J., Bizri, R.M., ElBaba, I. (2018). The Impact of E-Banking Service Quality on Customer Satisfaction: Evidence From the Lebanese Banking Sector. *Sage Open* 8(3), <https://doi.org/10.1177/2158244018790633>
16. Hosseini, S.H., Sour, M.E., Sajjadin, F. (2018). Applying Grey E-S-QUAL Model to Evaluate the Gaps between Expectation and Perception of the Customer Based on E-services Quality: A Case Study of an Iranian Online Retailer. *Journal of quality engineering and production optimization*, 3(1), 67-80.
17. Jun, M., Palacios, S. (2016). Examining the key dimensions of mobile banking service quality: an exploratory study. *International Journal of Bank Marketing* 34 3, 307-326. <https://doi.org/10.1108/IJBM-01-2015-0015>
18. Jundillah, M.L., Suseno, J.E., Surarso, B. (2019). Evaluation of E-learning Websites Using the Webqual Method and Importance Performance Analysis E3S Web of Conferences 125, ICENIS 2019 Khatoon, S., Zhengliang, X., Hussain, H. (2020). The Mediating Effect of Customer Satisfaction on the Relationship Between Electronic Banking Service Quality and Customer Purchase Intention: Evidence From the Qatar Banking Sector. *Sage Open*, <https://doi.org/10.1177/2158244020935887>
19. Loiacono, E. T., Watson, R. T., Goodhue, D. L. (2007). WebQual: An Instrument for Consumer Evaluation of Web Sites. *International Journal of Electronic Commerce* 11(3), 51-87. <http://www.jstor.org/stable/27751221>
20. Maksimović, M. V., Đorđević, B. S., Brzaković, M. D., Grahovac, M. M. (2017). Merenje kvaliteta transportnih usluga primenom SERVQUAL modela. *Tehnika*, 72(6), 928-935. <https://doi.org/10.5937/tehnika1706928M>
21. Marković, S., Dorčić, J., Katušić, G. (2015). Service Quality Measurement in Croatian Banking Sector: Application of SERVQUAL Model. *Proceedings of Management International Conference, Portorož, Slovenia*, 209-218. Dostupno na: <https://www.fm-kp.si/zalozba/ISBN/978-961-266-181-6/83.pdf>
22. Martilla, J. A., James, J. C. (1977). Importance-Performance Analysis. *Journal of marketing* 41(1), 77-79. <https://doi.org/10.2307/1250495>
23. Joseph, M., McClure, C., Joseph, B. (1999). Service quality in the banking sector: the impact of technology on service delivery. *International Journal of Bank Marketing* 17(4), 182-193. <https://doi.org/10.1108/02652329910278879>
24. Narodna Banka Srbije (2021) Nastavlja se rast korišćenja savremenih oblika plaćanja (02.09.2021) Dostupno na: <https://www.nbs.rs/sr/scripts/showcontent/index.html?id=17304>
25. Parasuraman, A., Zeithaml, V. A., Berry, L. L. (1988). SERVQUAL: a multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing* 64(1), 12-40.
26. Parasuraman, A., Zeithaml, V. A., Malhotra, A. (2005). E-S-QUAL: a multiple-item scale for assessing electronic service quality. *Journal of Service Research* 7(3), 213-233. <https://doi.org/10.1177/1094670504271156>.
27. Radojević, P., Marjanović, D. (2011). Kvalitet usluga u bankarstvu: nesaglasnosti, odrednice i istraživačke tehnike za unapređenje kvaliteta. *Bankarstvo* 40(7-8), 34-59.
28. Raza, S.A., Umer, A., Qureshi, M.A., Dahri, A.S. (2020). Internet banking service quality, e-customer satisfaction and loyalty: the modified e-SERVQUAL model. *The TQM Journal* 32 (6), 1443-1466. <https://doi.org/10.1108/TQM-02-2020-0019>
29. Safakli, V. O. (2007). Specifičnosti kvaliteta usluga u bankarstvu - SERVQUAL model. *Marketing* 38(4), 139-146.
30. Sangeetha, J. (2021). Uticaj dimenzija kvaliteta usluge, zadovoljstva korisnika i namera ponašanja na odgovarajuće konstrukcije u poslovanju sa stanovništvom - kontekst Bliskog istoka. *Serbian Journal of Engineering Management* 6(2), 54-62. <https://doi.org/10.5937/SJEM2102054S>

31. Sever, I. (2015). Importance-performance analysis: A valid management tool? *Tourism Management* 48, 43-53. <https://doi.org/10.1016/j.tourman.2014.10.022>
32. Shankar, A., Tiwari, A.K., Gupta, M. (2021). Sustainable mobile banking application: a text mining approach to explore critical success factors. *Journal of Enterprise Information Management*, Vol. ahead-of-print No. ahead-of-print. <https://doi.org/10.1108/JEIM-10-2020-0426>
33. Sindwani, R., Goel, M. (2012). Online Banking Service Quality: A Review. *International Journal of Marketing and Technology*, 2(7), 114-124.
34. Sun, Q., Wang, C., Cao, H. (2009). Applying ES-QUAL scale to analysis the factors affecting consumers to use Internet banking services. In *Proceeding IITA international conference on services science, management and engineering (SSME'09)*, July. IEEE. <https://doi.org/10.1109/ssme.2009.41>.
35. Thompson, B. (2004). *Exploratory and Confirmatory Factor Analysis – Understanding Concepts and Applications*. Washington, DC: American Psychological Association
36. Ulkhaq, M.M., Rabbani, M., Wibowo, A.T., Rachmania, B.A. (2017). Assessing Electronic Service Quality using E-S-QUAL and E-RecS-QUAL Scales. *TMSOC-Transactions on Innovation & Business Engineering* 02, 20-26.
37. Webb, H.W. and Webb, L.A. (2004). SiteQual: an integrated measure of Web site quality. *Journal of Enterprise Information Management* 17(6), 430-440. <https://doi.org/10.1108/17410390410566724>.
38. Widodo, A.K., Selvina, O., Widhiyaningrum, Olivia Ester R. Siregar (2019). Assessing Service Quality of Bank using Combined SERVQUAL Scale and Importance-Performance Analysis: A Case Study *Proceedings of the 2019 2nd International Conference on Information Management and Management Sciences - IMMS 2019*, 193-197 <https://doi.org/10.1145/3357292.3357327>
39. Wolfinbarger, M., Gilly, M.C. (2003). eTailQ: Dimensionalizing, measuring and predicting retail quality. *Journal of Retailing* 79(3), 183-198. [https://doi.org/10.1016/S0022-4359\(03\)00034-4](https://doi.org/10.1016/S0022-4359(03)00034-4)
40. Wu, X. (2013). Importance-performance analysis for niche marketing: the case of a museum exhibition. A thesis submitted to the Kent State University College and Graduate School of Education, Health, and Human Services. Dostupno na: https://etd.ohiolink.edu/apexprod/rws_etd/send_file/send?accession=kent1384148679&disposition=inline
41. Zavareh, F.B., MdAriff, S., Jusoh, A., Zakuan, N., Bahari, A.Z., Ashourian, M. (2012). E-Service Quality Dimensions and Their Effects on E-Customer Satisfaction in Internet Banking Services. *Procedia - Social and Behavioral Sciences* 40, 441-445 <https://doi.org/10.1016/j.sbspro.2012.03.213>
42. Zeithaml, V. A., Parasuraman, A., Malhotra, A. (2002). Service quality delivery through web sites: a critical review of extant knowledge. *Journal of Academy of Marketing Science* 30(4). 362-375 <https://doi.org/10.1177/009207002236911>

Received: 23.03.2022
Approved: 08.04.2022

DOI: 10.5937/bankarstvo2201032D

DEVELOPMENT OF THE INSTRUMENTS FOR MEASURING THE QUALITY OF E-BANKING SERVICES IN THE REPUBLIC OF SERBIA: E-BSRB-QUAL

Prof. Bojan S. Đorđević, PhD, Faculty of Management in Zaječar
email: bojan.djordjevic@fmz.edu.rs

Summary

The most commonly used model to measure the quality of electronic services is the E-Service Quality - E-SQ (E-S-QUAL and E-RecS-QUAL). Acknowledging the results of existing research and the attempts to create a unique model for measuring the quality of e-services, the main goal of this paper is to rate the quality of e-banking in Serbia by testing the applicability of the E-SQ model. The results, gained through empirical research, design, and distribution of a distinctive questionnaire to the users of e-banking services in central and southeast Serbia, were systematized and statistically processed by factor analysis of the principal components (PCA). The outcome defined an initial instrument called E-BSrb-QUAL, with seven dimensions of e-banking quality in Serbia, and they are 1. Personalization, 2. Safety, 3. Accessibility, 4. Contact, 5. Efficiency/Response, 6. Trust, and 7. Reliability. The Importance-Performance analysis (IPA) showed the strength of Serbian banks and confirmed the most significant and crucial dimensions of e-banking service quality are Trust, Safety, and Reliability. On the other hand, Personalization, Accessibility, and Efficiency/Response dimensions are estimated as overrated.

Keywords: service quality; E-SQ; e-banking; factor analysis; PCA; importance-performance

JEL classification: G21, M31, C13, C83

Introduction

The quality of service is one of the most important factors of successful operation in the banking sector. To a bank, as the key intermediary in the financial market, providing high-quality service is imperative, thus securing the achievement of the principal business goals, such as profitability, liquidity/solvency, market share growth, client data increase, and the like. The most valuable contribution to the importance of quality service and scientific deployment of consumers' research was made by Parasuraman et al. (1988), who developed the SERVQUAL model. That model became the most applied one to measure the consumers' perception about the quality of provided services, consisting of five dimensions of quality – tangibility, reliability, business and responsibility, trust, and kindness, with 22 questions classified in these dimensions. Multiple modifications of dimensions occurred over time, but the model was often used and remained the best available instrument for measuring the quality of service (Đorđević, 2009; Radojević, Marjanović, 2011; Ahmed et al. 2017; Maksimović et al., 2017). The fundamental criticism of the SERVQUAL model refers to the sustainability of its dimensional structure. Much research led to different dimensions which dispute the universality of SERVQUAL dimensions. Such nature of the SERVQUAL model dimensions is considered a result of the cultural differences between the countries of origin and consumers' nationalities. Values and beliefs, which differ between the consumers from various countries, set the importance and perception of the service quality. Likewise, other studies discuss the cultural influence on the quality of the service and its perception (Safakli, 2007; Đorđević, 2009; Sangeetha, 2021). Many measuring instruments based on the SERVQUAL model have been developed so far to study the quality of banking services and the satisfaction of their users, with a few standing out, such as BANKQUAL, BANKPERF, BSQ, SYSTRA-SQ (Bahia, Nantel, 2000; Zeithaml et al., 2002; Aldlaigan, Buttle, 2002; Liaciono et al. 2007; Radojević, Marjanović, 2011; Marković et al. 2015).

Analyzing the quality of electronic services (herein referred to as e-services) is a recent invention. The authors Parasuraman et al. (2005) developed the model E-SQ (with two submodels - E-S-QUAL and E-RecS-QUAL), based on the SERVQUAL. The original version of the model was presented in 2000, and after several revisions, in 2002, they introduced a model for measuring the quality of e-services with the following dimensions: reliability, responsiveness, accessibility, flexibility, easy navigation, efficiency, security/trust, safety/privacy, price visibility, site esthetics, adaptation/personalization. The final model is defined with 22 items in the previously mentioned four dimensions. E-S-QUAL supports measuring the quality level before and after the use of an e-service. Its dimensions are developed from the data provided by qualified examinees with prior experience in online shopping. E-S-QUAL includes the following four dimensions: (Amin, 2016; Ghosh, 2018; Raza, 2020; Baqai et al. 2021): (1) Efficiency; (2) Fulfillment; (3) System availability; (4) Privacy.

In accordance with the mentioned methodology, the same authors developed another model named E-RecS-QUAL, or the model of e-service recovery quality, which is solely adjusted to measuring services in e-trade. (Parasuraman et al. 2005). The model has 11 items, classified into three dimensions: 1. Responsiveness; 2. Compensation; 3. Contact.

The final E-SQ model with the measure scales E-S-QUAL and E-RecS-QUAL, suggested by Parasuraman et al. (2005), consists of the following seven dimensions:

1. Efficiency (to access and use the site easily and quickly);
2. Fulfillment (to maintain the delivery terms/article availability);

3. System availability (technically functional site);
4. Privacy (the site is safe, clients' data are protected);
5. Responsiveness (efficient problem solving);
6. Compensation (the site compensates for clients' troubles), and
7. Contact (help via phone or internet representative).

A great number of models and scales for measuring the quality of e-service have been developed over time. The most significant ones are shown in Table 1, finding their wide application in measuring different forms of e-services, such as trade, tourism, hotel business, banking, insurance, education, health sector, public administration, and the like (Loiacono et al. 2007; Jundillah et al., 2019).

Table 1. *Basic Models for Measuring E-Service Quality*

Model	Authors	Description
E-S-QUAL	Parasuraman, Zeithaml & Malhotra (2005)	An instrument to inspect 22 items, used for evaluation of e-service quality. It includes four dimensions: efficiency, system availability, privacy, and fulfillment.
E-RecS-QUAL	Parasuraman, Zeithaml & Malhotra (2005)	An instrument to assess 11 items, used to rate the quality of e-services in terms of complaints (for example, returning the product) regarding the e-commerce. It includes three dimensions: responsiveness, compensation, and contacts.
SITEQUAL:	Web & Web (2004)	An instrument to estimate 9 items, used for evaluation of the e-trade website quality. It includes four dimensions: esthetic design, easy use, processing speed, and safety.
eTailQ	Wolfinbarger & Gilly (2003)	An instrument to explore 14 items, used to rate the quality of the retail e-trade. It includes four dimensions: website design, safety/privacy, fulfillment/trust, and customer support.
WebQual (4.0)	Loiacono, Watson & Goodhue (2007)	An instrument to evaluate 22 items, used to rate the e-trade website quality. It includes three dimensions: usability, information quality, and interaction with users.

Source: The author's research

Electronic banking (herein referred to as e-banking) presents a system of various electronic channels for conducting banking transactions through the internet, telephone, mobile phone, and computer. As technology progresses, so do the demands and expectations of the bank's contemporary clients. Today, clients want to do business and complete their financial transactions from any place, without going to the bank, at any time, regardless of the bank's working hours (24x7x365), and to make their payments (shopping, paying bills) quickly and cost-effectively. Thus, the quality of modern financial

services should be on a high level, with e-services independent, flexible, safe, and reliable to fulfill the clients' expectations (Đorđević, 2011). Nowadays, e-banking in Serbia is at a high level, with online and mobile banking domination. According to the National Bank of Serbia (NBS) data for the third quarter of 2021, the number of e-banking users (B2C, B2B, C2C segments) has increased by 11.69% compared to the same period in 2020 (2020 – 3,040,674 users; 2021 – 3,396,064 users) (NBS, 2021). Also, per that same report, the number of mobile banking users has grown by 32.2% (2020 – 2,036,765 users; 2021 – 2,692,552 users). The rise in the number of users contributed to an increase in the number of transactions, which is particularly visible in mobile banking, with growth of 30.45%.

The subject of this paper is the quality of e-banking service in the Republic of Serbia, focusing on the retail segment and evaluation by the individuals – users of online and mobile banking. Three basic research goals are set: 1) to measure the quality of provided e-banking services in our country; 2) to identify the key dimensions of e-banking service quality and model development, and 3) to present the importance-performance analysis (IPA) as an efficient management tool for promotion of e-service quality. Based on the results, weak dimensions of quality and potential dis/satisfaction with the provided services will become visible, giving the bank managers essential information on how to improve the quality of their e-services.

The paper is structured as follows. After the introduction, a literature review is given. The next section deals with the research methodology, data description, and research key methods. Next, there are results with discussion and conclusions with references for further research.

Literature Review

Out of the voluminous literature available, the paper distinguishes a short overview of significant and newer research results in the application of different models for measuring the quality of e-service and analysis of performance in diverse countries, focusing on the results of measuring e-banking service quality.

Joseph et al. (1999) looked into the role of technology in the Australian banking sector and its influence on the perception of the provided service quality in a sample of 440 e-banking clients. With the importance-performance analysis (IPA), the results showed that clients have issues perceiving some of the e-banking aspects in Australia. The authors concluded that IPA is a simple and highly efficient model, which can help bank managers at large to develop their business strategies.

Sun et al. (2009) measured the perceived quality of internet banking e-service and connected it with the clients' loyalty in China based on the E-S-QUAL scale. Structural equation modeling (SEM) is used to analyze data gathered from the Chinese banks' clients. The main outcomes are as follows: the research showed that four E-SERVQUAL dimensions – efficiency, fulfillment, system availability, and privacy are the determinants of the Chinese internet banking e-service quality; the quality of e-service positively affected the perceived value and satisfaction of e-users. The quality of e-service had both a direct influence on e-loyalty and an indirect influence on e-loyalty through the perceived value and e-users satisfaction.

Sindwani and Goel (2012) gave a literature review with a focus on methods and dimensions for measuring the quality of e-banking. They concluded there is no consensus among the researchers in terms of the dimensions of e-banking service quality. SERVQUAL and SERVPERF scales are commonly used for measuring service quality. However, there are no generally accepted dimensions and standard

scales for measuring the quality of service when it comes to e-banking. The authors suggested there is a need for further research to develop a scale based on the standard dimensions, which can be universally applied for measuring e-banking service quality.

Zavereh et al. (2012) questioned the quality dimensions and satisfaction of the internet banking users in Iran based on the E-SQ model. The findings showed that efficient and reliable services, fulfillment, security/trust, site esthetics, responsiveness/contact, and the ease-of-use present E-SQ for internet banking services in Iran. The authors pointed out that the E-SERVQUAL dimensions and questions ought to be reorganized and reinterpreted when used for measuring internet banking quality. There is significant positive correlation between E-SQ and E-CS (e-satisfaction) in internet banking. Regression analysis proved that security/trust, site esthetics, and the ease of using internet banking services had positive effects on E-CS.

Amin (2016) investigated the quality of internet banking services and their implications for the satisfaction and loyalty of e-users in developing countries. The results indicated that a higher quality level of internet banking service significantly affects the satisfaction of e-users and leads to loyalty. The results confirmed that all four dimensions (personal needs, site organization, adjustment to users, and web page efficiency) are differently constructed. They also revealed that the four-dimension quality of internet banking service has adequate reliability, and each dimension has a significant positive correlation with the quality of internet banking service. Web page efficiency is a vital aspect of internet banking service quality. The findings show that the relation between internet banking service quality, satisfaction, and e-users loyalty is significant.

Jun and Palacios (2016) discovered 17 dimensions of mobile banking service quality: the quality of m-banking application (1. Contents, 2. Accuracy, 3. Ease of use, 4. Speed, 5. Esthetics, 6. Safety, 7. Various characteristics of mobile application services, and 8. Mobile benefits) and client-quality services (9. Reliability, 10. Responsiveness, 11. Competence, 12. Kindness, 13. Credibility, 14. Approach, 15. Communication, 16. User understanding, and 17. Constant improvement). Out of these 17 dimensions, five are considered the head sources of users' satisfaction/dissatisfaction. They are benefits for mobile devices, accuracy, various characteristics of mobile application services, ease of use, and constant improvement.

Ulkhag et al. (2017) estimated e-service quality in Indonesia by using popular scales E-S-QUAL and E-RecS-QUAL in one of the biggest online fashion stores Zalora. Out of a maximum of five, the results show Zalora Indonesia reached 2.695 in providing e-service quality and 2.787 in the recovery of e-service quality. The authors indicate there is still plenty of room for improvement to reach the satisfaction of users, deciding priorities by importance-performance analysis (IPA).

Hammoud et al. (2018) examined the relations between e-banking service quality and users' satisfaction to establish which dimension can potentially have the most significant influence on the contentment of users in the Lebanese banking sector. The findings show that reliability, efficiency/ease of use, responsiveness/communication, and safety/privacy have a crucial influence on users' satisfaction, with reliability being the most influential.

Hosseini et al. (2018) applied the Grey system based on the modified E-S-QUAL model for the e-service quality analysis in Iran. Upon the application of the method and calculation of results in each dimension, a gap between expectations and perceptions was calculated. The results show four positive and three negative voids among seven dimensions. Accordingly, with the help of importance-performance analysis (IPA), results point to the core dimensions for the e-service quality enhancement.

Jundillah et al. (2019) evaluated web locations for e-learning based on the results of the WEBQUAL survey and importance-performance analysis (IPA). The results of the IPA method show the average student in Indonesia is 86.75% pleased with the quality of the e-learning web page. The authors indicate there is still some room for improvement, such as clear instructions, precise information, and ease of communication.

Widodo et al. (2019) developed a model for measuring banking services quality in Indonesia. Combining the SERVQUAL model and importance-performance analysis (IPA), key dimensions of quality stand out: 1. Reliability (one attribute); 2. Interaction quality (two attributes), and 3. Empathy (three attributes).

Ahmed et al. (2020) inspected the quality of e-banking service and users' satisfaction in Pakistan. For that purpose, they used a multivariant approach based on the structural model (SEM), including the confirmatory and exploratory factor analysis, to examine the direct influence of the E-S-QUAL dimension on satisfaction. The results showed spotted value and trust intervene in E-S-QUAL dimensions and users' satisfaction.

Raza et al. (2020) researched the dimensions of services quality in Internet banking in Pakistan and their influence on the satisfaction and loyalty of e-users. The results of this study suggest a model that eventually increases the loyalty of users to the quality of internet banking services through the users' satisfaction in Pakistan. It includes a modified E-SERVQUAL model (user-friendly, website efficiency, personal needs, and site organization), which connects it to e-satisfaction and e-loyalty of users.

Khatoon et al. (2020) explored the relations between the dimensions of e-banking service quality and users' intentions with the mediation role of users' satisfaction in the Qatar banking sector. The study's outcome implied that reliability, efficiency, responsiveness, communication, safety, and privacy have a principal and positive effect on buyers' shopping intentions. Intentions to purchase a service significantly increase when the clients are pleased with the quality of the e-banking service.

Baqai et al. (2021) study the effects of the four E-S-QUAL model dimensions (efficiency, fulfillment, privacy, and system availability) on purchasing intentions and question the relation of E-S-QUAL to an electronic word-of-mouth (E-Word-Of-Mouth: EWOM), brand image, and purchasing intentions. In their research, they used structural equation modeling (SEM) for empirical analysis. The results indicated that the E-S-QUAL model positively and significantly affects the purchasing intentions, while the E-S-QUAL model effect relatively increases with the mediation of EWOM and brand image. The authors implied that, in practice, traders could draw the attention of buyers by improving the quality of their websites and providing efficiency, privacy, system availability, and fulfilling delivery statements. EWOM and brand image should also be accounted for because they positively affect the intention to shop on the internet, which might lead to organization development.

Shankar et al. (2021) identified critical factors for the success of a sustainable mobile banking application using the latent semantic analysis (LSA) approach. The results showed that privacy and safety, navigation, customer support, comfort, and efficiency are the major factors in the success and quality of mobile banking services.

Research Methodology

Data

For this research, a combined questionnaire was made based on the dimensional structure from several E-S-QUAL, SITEQUAL, and WEBQUAL models, with seven dimensions and 40 questions (attributes), relying on the Likert scale (1-7) in two answer categories – perception and expectation. On the Likert scale, grade 1 means the evaluated attribute has no significance, while grade 7 stands for a highly significant attribute of e-banking service. The second part of the questionnaire referred to the importance of offered dimensions. The examinees were asked to evaluate each dimension from 1 to 7, where 1 means IRRELEVANT, while 7 means THE MOST RELEVANT. In this paper, the results of users' expectations will not be considered but left for future research concerning the satisfaction and loyalty of e-banking services users. The survey was distributed to the users of e-banking services in the region of central and southeast Serbia, in the cities of Kragujevac, Požarevac, Niš, Zaječar, and Bor, in the period 01.06-15.06.2021. The total number of examinees was 350, out of which 328 (93.71%) were suitable for further analysis. The structure of the examinee sample is shown in Table 2, and the survey in Table 3.

PCA Factor analysis

Factor analysis is a statistical method applied in numerous marketing research, namely when it is necessary to reduce the number of variables to a smaller number, identify their connections and efficiently make conclusions. Besides its use to detect characteristics of goods and services, this model is used in the development and evaluation of surveys, tests, and various scales in exploratory studies (Thompson, 2004; Fabrigar, Wegener, 2012; Brown, 2015).

The reason to apply factor analysis in this study is to group a greater number of attributes/changeable into factors that are not correlated, in relation to changeable ones within (to eliminate the multicollinearity problem). Gained factors represent the dimensions of e-banking service quality, and for that purpose, PCA will be implemented (Principal Component Analysis – PCA). Before implementation, it is necessary to get the results of descriptive statistics and correlation analysis and to measure the reliability of the measuring instrument (Cronbach's Alpha and Kaiser-Mayer Olkin – KMO coefficients). A higher level of coefficient correlation among variables is expected (most variables correlated with $r > 0.40$), as well as coefficient of sample reliability $KMO / < > 0.50$, which will refer to the use of factor analysis. For the factor extraction method, we used PCA (principal component analysis), while factor rotation required Oblimin rotation.

After testing the reliability of measuring instrument and data reduction, PCA factor analysis is further displayed as a factor matrix after rotation, interpretation of derived factors, and measuring the reliability of derived factors/dimensions (Cronbach's Alpha coefficient).

Table 2. Sample Structure

Age range	%
18-24	10.97
25-34	13.41
35-44	32.01
45-54	26.52
55 and more	17.09
Monthly income (RSD)	%
35 - 44,000 28	8.53
45 - 54,000 63	19.22
55,000 and more 204	62.19
I don't want to answer 33	10.06
E-Banking usage	%
1-2 times a month 118	35.97
3-5 times a month 174	53.15
More than 5 times a month 36	11.98
E-Banking type	
Internet/Online (via computer)	57.31
Mobile banking	28.05
Both	14.64

Source: The author

Table 3. *The Survey with Dimensions and Questions (Attributes)*

Reliability D1 (6)	P1: E-Bank always provides accurate and timely information
	P2: Information is easily gotten from the E-Bank
	P3: E-Bank provides services within the prescribed period
	P4: E-Bank provides complete information
	P5: E-Bank website allows rating of the given service
	P6: E-Bank website displays clients' ratings in plain sight
Responsiveness D2 (5)	P7: E-Bank provides different, easy-to-use options for an online contact
	P8: E-Bank is quick to meet the clients' needs
	P9: E-Bank takes responsibility in case of a poor e-service
	P10: E-Bank provides fair compensation to clients in case of a poor e-service
Accessibility D3 (7)	P11: E-Bank gives information on what to do in the case of a failed transaction
	P12: E-Bank offers a wide range of e-services in one place
	P13: E-Bank is available to users at any time, seven days a week
	P14: E-Bank website is fast and without congestion
	P15: E-Bank website is quickly and easily accessible
	P16: E-Bank website is transparent
	P17: E-Bank website provides visible contact phone and mail
	P18: E-Bank offers to contact a manager if a problem occurs
Efficiency D4 (5)	P19: E-Bank doesn't require login to assess the site
	P20: E-Bank provides specific information on services
	P21: Services are logically grouped on the E-Bank site
	P22: Services are transparently listed and described
	P23: The terms of use are clearly defined and displayed
Trust D5 (7)	P24: E-Bank has a good corporate image
	P25: E-Bank has a fine reputation
	P26: E-Bank presents itself in the best possible light
	P27: E-Bank is socially responsible
	P28: E-Bank has a solid business reputation
	P29: E-Bank participates in humanitarian actions
Safety D6 (5)	P30: Information in commercials about E-Bank is always true
	P31: All online transactions are secure
	P32: E-Bank clients feel safe when giving personal information
	P33: All online transactions are transparent to a client
	P34: E-Bank clients feel comfortable when using cards for payment
Personalization D7 (5)	P35: E-Bank requires login when assessing the online paying system
	P36: E-Bank adjusts its services to clients' needs
	P37: E-Bank creates its offer based upon previous experience with clients
	P38: E-Bank clients can participate in creating their own services
	P39: E-Bank attends to clients' important dates
	P40: E-Bank sends all necessary notices to clients

THE IMPORTANCE OF QUALITY DIMENSIONS (1 - 7) (1-least relevant; 7 - most relevant)	
RELIABILITY	
RESPONSIVENESS	
ACCESSIBILITY	
EFFICIENCY	
TRUST	
SAFETY	
PERSONALIZATION	

Note: The survey is created with two categories of evaluation: 1 – perception; 2 – expectation; the Likert type scale with grades from 1 to 7 is used

Source: The author

Importance-Performance Analysis (IPA)

Importance-Performance analysis (IPA) presents a business research technique developed by Martilla and James (1977) as a tool for inspecting and suggesting management strategies. Although the model was originally created for marketing purposes, its implementation spread to various fields, including trade, tourism, banking, public services, and the like (Dwyer et al., 2012; Sever, 2015).

The main goal of this analysis is to identify the effect of various attributes of goods/services, with simplified data interpretation and execution of practical suggestions for management (Dwyer et al., 2012). By identifying the most significant attributes, strengths and weaknesses, the analysis gives an insight into the aspects of goods/services on which managers should focus (Joseph et al., 1999). The analysis prioritizes management's actions to suggest an optimal allocation of limited resources to improve and maintain clients' satisfaction (Abalo et al., 2007; Sever, 2015).

Importance-Performance analysis (IPA) is used in this study to provide a visual analysis of "clients' evaluations" about e-banking service quality in Serbia, as well as about the importance of the quality dimension. Clients' evaluations classify in one out of four quadrants labeled 1. "keep up the good work", 4. "possible exaggeration", 3. "low priority", and 2. "focus here" (Figure 1). Quadrant 1 "keep up the good work" presents an area of great importance to clients and high performance of provided services. Quadrant 4 "possible exaggeration" is the area for minor importance but high performance. Quadrant 3 "low priority" marks the area of low importance and low performance. Finally, quality attributes of high importance but low performances in quadrant 2 "focus here" imply poor service and the company's management urgent action is required (Joseph et al., 1999; Đorđević, 2009; Dwyer et al., 2012; Deng, Pierskalla, 2018).

Figure 1. Importance-Performance Analysis Matrix (IPA)

IMPORTANCE (1-7)	High	QUADRANT 2 Focus here	QUADRANT 1 Keep up the good work
	Low	QUADRANT 3 Low priority	QUADRANT 4 Possible exaggeration
		Low	High
		PERFORMANCE (1-7)	

Source: The author, based on Martila and James (1977); Joseph et al. (1999); Abalo et al. (2007)

For conducting all necessary statistical analyses, XLSTAT Premium software will be used.

Results and Discussion

The correlation matrix proved that almost all original attributes (40) had at least one or more correlation coefficients $r > 0.40$. Kaiser-Meyer-Olkin (KMO) coefficient for all variables is 0.401, which shows that the measuring instrument is not suitable for factor analysis ($KMO \leq 0.5$). Since we gained KMO for

each attribute, we reduced the attributes with coefficient $KMO \leq 0.50$. The following attributes were expelled: DIP1, DIP5, D2P7, D2P10, D3P13, D3P14, D5P25, D5P26, D5P29, D7P36, D7P38. With 29 attributes, a new analysis of reliability and validity of the measuring instrument was conducted, and coefficient values were acquired:

$KMO = 0.661$; Cronbach's $\alpha (<) = 0.941$

The gained results show it is now possible to conduct factor analysis.

Based on the reduction of original variables, descriptive statistics according to set dimensions were done for attributes of the new measuring instrument. The lowest mean value of examinees' perception was noted for the Reliability dimension (4.884), while the Accessibility dimension perception was the highest rated (5.419). The mean value of perception of all model dimensions is 5.121. The results of the descriptive statistics dimension and new model attribute are given in Table 4.

Table 4. Descriptive Statistics – Perception (P)

	Attributes	Obs.	P mean val.	Std. deviation
RELIABILITY	DIP2	328	4.878	1.065
	DIP3	328	5.293	1.111
	DIP4	328	5.049	1.363
	DIP6	328	4.317	1.776
			4.884	
RESPONSIVENESS	D2P8	328	5.195	1.294
	D2P9	328	4.756	1.607
	D2P11	328	5.268	1.468
			5.073	
ACCESSIBILITY	D3P12	328	5.537	1.151
	D3P15	328	5.780	1.073
	D3P16	328	5.341	1.204
	D3P17	328	5.854	1.223
	D3P18	328	4.585	1.655
			5.4194	
EFFICIENCY	D4P19	328	4.951	1.483
	D4P20	328	5.195	1.089
	D4P21	328	5.488	1.254
	D4P22	328	5.293	1.216
	D4P23	328	5.128	1.252
			5.211	
TRUST	D5P24	328	5.220	1.050
	D5P27	328	5.171	1.362
	D5P28	328	4.951	1.148
	D5P30	328	4.299	1.389
			4.91025	
SAFETY	D6P31	328	5.610	1.209
	D6P32	328	4.963	1.376
	D6P33	328	5.088	1.212
	D6P34	328	5.171	1.563
	D6P35	328	5.341	1.542
			5.2346	
PERSONALIZATION	D7P37	328	4.889	1.364
	D7P39	328	5.366	1.480
	D7P40	328	5.537	1.418
			5.264	
Perception of e-banking service quality:			5.121	

Source: The author

Per Kaiser's characteristic value criterion (Eigenvalue), 16 factors were separated, showing that it is necessary to take into account coefficients up to F7 (values greater than 1). By Table 5, factors from F1 to F7 explain 70.546% variance, which is acceptable for research in social sciences.

Table 5. *Characteristic Values per Kaiser Criterion*

Eigenvalues:							
	F1	F2	F3	F4	F5	F6	F7
Eigenvalue	10.955	2.567	2.274	1.744	1.549	1.189	1.085
Variability (%)	36.516	8.558	7.581	5.814	5.163	3.963	2.951
Cumulative %	36.516	45.074	52.656	58.469	63.632	67.595	70.546

Sourcer: The author

With the factor analysis and Oblimin rotation, a table of factor coefficients is gained, indicating that items with factor saturation $F_z \leq 0.50$ were expelled from further analysis. All derived factors point out Cronbach's Alpha (>) high-level reliability (Table 6).

Table 6. *Factor structure after rotation*

Factor pattern after Oblimin rotation:							
	D1	D2	D3	D4	D5	D6	D7
D1P3	0.159	-0.041	0.189	0.087	0.248	-0.109	0.563
D1P4	0.053	0.046	0.163	0.020	0.098	0.015	0.802
D1P6	0.040	-0.121	-0.149	0.017	0.074	0.013	0.803
D2P8	-0.329	0.018	0.219	0.152	0.697	0.075	0.172
D2P9	-0.093	0.058	0.105	-0.018	0.670	0.122	0.272
D3P15	0.011	-0.027	0.815	-0.072	0.144	-0.082	0.149
D3P16	0.154	0.070	0.685	-0.127	0.019	0.234	0.241
D3P18	0.355	-0.153	0.094	0.503	-0.014	0.348	0.058
D4P19	0.044	0.064	-0.015	-0.062	0.686	-0.022	0.001
D4P20	0.239	-0.045	0.072	-0.079	0.567	0.305	-0.015
D4P23	0.281	-0.005	-0.120	0.256	-0.182	0.563	0.210
D5P27	0.026	0.102	0.024	-0.065	0.082	0.757	-0.123
D5P28	0.036	0.170	-0.045	0.035	0.082	0.872	-0.148
D6P31	0.346	0.647	0.155	-0.116	-0.151	0.056	0.102
D6P32	-0.066	0.816	-0.020	-0.121	-0.085	0.176	0.056
D6P33	0.241	0.639	-0.424	-0.144	0.216	0.037	0.361
D6P34	-0.019	0.845	0.254	0.139	-0.083	0.059	-0.031
D6P35	0.132	0.766	0.000	0.181	0.281	-0.093	-0.111
D7P37	0.789	-0.207	0.037	-0.002	0.034	0.089	0.324
D7P39	0.505	-0.151	-0.357	0.247	0.262	0.228	0.213
D7P40	0.669	0.045	0.083	-0.025	0.047	0.060	0.193
Cronbach's alpha:	0.801	0.883	0.832	0.738	0.828	0.885	0.797

Source: The author

Table 7. E-BSrb-QUAL Initial Model Dimensions

D1 – PERSONALIZATION (3)	Fl*	Com**	Mean***
P37: E-Bank creates its offer based upon previous experience with clients	0.789	0.908	4.889
P39: E-Bank attends to clients' important dates	0.505	0.798	5.366
P40: E-Bank sends all necessary notices to clients	0.669	0.700	5.537
			5.264
D2 – SAFETY (5)			
P31: All online transactions are secure	0.647	0.755	5.610
P32: E-Bank clients feel safe when giving personal information	0.816	0.731	4.963
P33: All online transactions are transparent to a client	0.639	0.883	5.088
P34: E-Bank clients feel comfortable when using cards for payment	0.845	0.934	5.171
P35: E-Bank requires login when assessing the online paying system	0.766	0.785	5.341
			5.234
D3 – ACCESSIBILITY (2)			
P15: E-Bank website is quickly and easily approachable	0.815	0.774	5.780
P16: E-Bank website is transparent	0.685	0.869	5.341
			5.560
D4 – CONTACT (1)			
P18: E-Bank offers to contact a manager if a problem occurs	0.503	0.714	4.585
			4.585
D5 – EFFICIENCY/RESPONSIVENESS (4)			
P8: E-Bank is quick to meet the clients' needs	0.697	0.884	5.195
P9: E-Bank takes responsibility in case of a poor e-service	0.670	0.737	4.756
P19: E-Bank doesn't require login to assess the site	0.686	0.520	4.951
P20: E-Bank provides specific information on services	0.567	0.653	5.195
			5.024
D6 – TRUST (3)			
P23: The terms of use are clearly defined and displayed	0.563	0.742	5.128
P27: E-Bank is socially responsible	0.757	0.613	5.171
P28: E-Bank has a solid business reputation	0.872	0.927	4.951
			5.083
D7 – RELIABILITY (3)			
P3: E-Bank provides services within the prescribed period	0.563	0.625	5.293
P4: E-Bank provides complete information	0.802	0.855	5.049
P6: E-Bank website displays clients' ratings in plain sight	0.803	0.689	4.317
			4.886

*Fl – factor loading; **Com. – final communality; ***Mean – survey mean value

Source: The author

Upon gaining the structure of factor coefficient, the definition of fundamental factors, that is, new model dimensions were attempted, named E-BSrb-Qual by the author's free interpretation. Seven quality dimensions with a total of 21 items, i.e. attributes, were isolated, considering factor loadings higher than 0.50. The dimensions of the E-BSrb-Qual new model, created namely based on the e-banking service quality evaluation of users from central and southeast Serbia, are: 1) Personalization, 2) Safety, 3) Accessibility, 4) Contact, 5) Efficiency/Responsiveness, 6) Trust and 7) Reliability. The acquired results confirmed the E-SQ model applicability for measuring e-banking service quality in

Serbia, which indicates the possibility of further research, reduction of dimensional structure, and modification of the domestic model to form a universal domestic instrument and scale for measuring e-service quality in general.

Comparing factor saturation and communality, that is, variance explanation, to the mean value of the survey per derived attributes from Table 7, we note the high significance of model attributes but also a certain number of low average ratings (≤ 5). From the Personalization dimension (item P37), we see the users consider that banks do not create their offers based on previous experience with clients sufficiently. From the Safety dimension (P32), we note the users are not quite safe when leaving their personal information on the bank's site. The Contact dimension (P18) shows the users poorly rated the possibility to contact an authorized person in case of a problem, following the item P9 from the Efficiency/Responsiveness dimension regarding the bank taking responsibility in the case of poor-quality service. The lowest grade was given to P6 from the Reliability dimension, which is, in the author's opinion, still a high grade because by analyzing banks' sites and online and mobile payment systems of most domestic banks, there is clearly no transparency in clients' ratings, apart from periodical reports by hired marketing agencies.

Generally speaking, the survey highly rated the quality of e-banking services. A lower grade of quality dimension attributes referring to communication and responsiveness in the case of a problem and low-quality service delivery is notable, which is something the marketing sector in the e-banking domain should focus on.

The second part of the survey refers to the importance of each quality dimension (1-irrelevant; 7-the most relevant). The aim was to, based on the ratings of importance and perception, that is, performance, create an importance-performance matrix, which will address the issues that need tending to in terms of the quality of the given e-banking services. Table 8. shows users give the highest importance to the Reliability and Safety dimensions (with a total of over 40%). We can also notice that Reliability has high importance (6.120) but low performance (4.884). The Safety dimension has the highest importance rate (6.270) and satisfying performance (5.235).

Table 8. *Examinees' Assessment in Terms of Dimension Importance (1-7) in % Out of Total*

	Dimension importance - % of the examinees' assessment						
	7	6	5	4	3	2	1
RELIABILITY	43.9	33.53	14.02	8.53	0	0	0
RESPONSIVENESS	2.13	12.8	7.31	1.21	33.84	33.53	9.14
ACCESSIBILITY	2.13	6.09	7.31	7.31	36.58	33.84	6.7
EFFICIENCY	6.09	5.48	7.31	1.21	40.54	36.89	2.43
TRUST	0	4.87	48.47	46.64	0	0	0
SAFETY	45.73	37.19	15.54	1.52	0	0	0
PERSONALIZATION	0	0	0	33.53	47.25	10.06	9.14

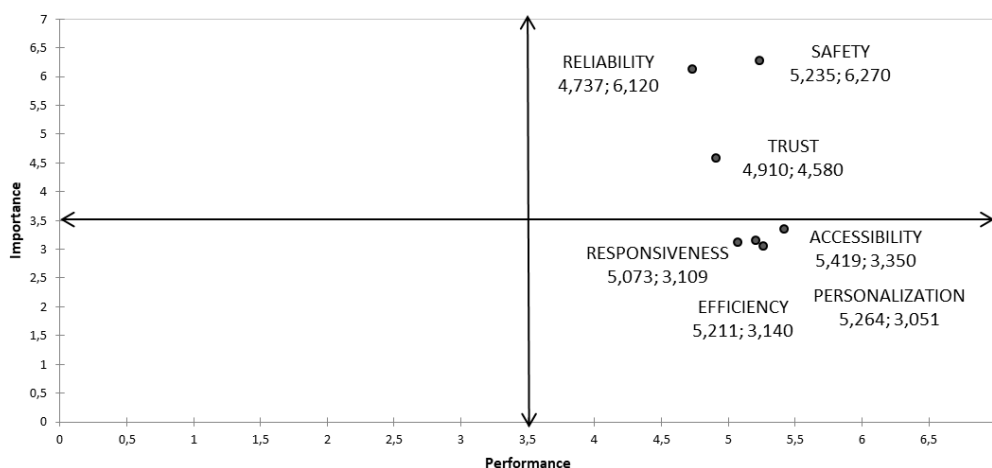
Source: The author

Table 9. Dimensions and Perception (Performance) Importance Ratings – Mean Value

	Performance	Importance
RELIABILITY	4.884	6.120
RESPONSIVENESS	5.073	3.109
ACCESSIBILITY	5.419	3.350
EFFICIENCY	5.211	3.140
TRUST	4.910	4.580
SAFETY	5.235	6.270
PERSONALIZATION	5.264	3.051

Source: The author

Importance-performance matrix (Figure 2) is formed based on the gained mean values of importance and perception ratings from the original survey. Evident dimensions in quadrant 1, Keep up the good work, are Reliability, Safety, and Trust. It is obvious banks in Serbia recognized the importance of these dimensions, worked on them, and the users appreciated that. The author found it surprising that quadrants 2 and 3, Focus here and Low priority, have no dimensions at all, as well as that quadrant 4, Possible exaggeration (Potential suicide), has four quality dimensions – Accessibility, Responsiveness, Efficiency, and Personalization. The users evaluate high performances by the attributes from these dimensions but, at the same time, give them relative importance. Overall, the assessment is that the banks in Serbia did plenty for the development of e-banking services. With the progress of new technologies, the latest generation mobile phones in the first place, the number of mobile banking users also grows. In proportion to the internet and web technologies development, as well as the increase in the number of clients, the number of risks that banks and clients encounter online is rising. Clearly, banks are doing a fine job in Serbia in this segment. However, banks must remain in quadrant 1 in this segment, with the Safety and Reliability dimensions, which will instill clients' trust and further use of e-banking services.

Figure 2. Importance-Performance Matrix*Source: The author*

Conclusion

This study establishes the principal dimensions of e-banking service quality in the Republic of Serbia. The original survey was significantly reduced to test the applicability of E-SQ model dimensions by implementing factor analysis with principal components analysis (PCA) to create a reliable and valid measuring instrument. The initial model, gained and dubbed E-BSrb-QUAL by the author, consists of the following seven chief dimensions with 21 items – attributes: 1) Personalization, 2) Safety, 3) Accessibility, 4) Contact, 5) Efficiency/Responsiveness, 6) Trust and 7) Reliability. The results indicate the applicability of dimensions belonging to E-S-QUAL and E-RecS-QUAL, with the need to modify the dimensions' attributes.

As the most significant quality dimensions, users of e-banking services in central and southeast Serbia perceived the dimensions of Reliability, Safety, and Trust. The author's opinion is that the quality of e-banking services depends, above all, on the technical characteristics of the service, in this case, engineering and website performances and online and mobile platforms. Reliability and Safety are the most significant dimensions valued by the users, which is confirmed by all other research in the world. Likewise, the bank's communication and interaction with e-banking service users is expectedly highly rated, but with the weaker ratings in the service perception, especially in the case of transaction realization and quick communication with the bank's authorized manager. Importance-Performance analysis (IPA) implies the users' opinion about e-banking service quality and indicates the strengths and weaknesses of the domestic banks in this domain. Another surprise for the author was that users rate Personalization, Accessibility, Efficiency, and Responsiveness as less significant dimensions but highly perceive them, putting them into the possible exaggeration quadrant. Generally, we can conclude the users of e-banking from central and southeast Serbia highly rate their banks' provided e-services.

The suggested study is a first step in the probe of e-banking service quality in Serbia. The data gained from the modified survey in terms of users' expectations, which are not presented here, could show the clients' level of satisfaction and loyalty in some further analysis using the findings from this research. The results of this study with the initial model indicate the possibility to create a domestic model for measuring the quality and satisfaction of e-banking service users in Serbia, with a representative sample of at least 500 to 1000 examinees from all parts of the country (west and central Serbia with major cities, Vojvodina, south Serbia). The applied methodology and research findings imply the possibility to form a model for measuring e-service quality in general, and an option to design a national index of e-service users' satisfaction. With due regard to the area limitations and the number of examinees, the obtained results could be useful to banks' managers for developing future strategies for e-marketing financial services in the Republic of Serbia, as well as for the professional public interested in further studies in this field.

References

1. Abalo, J., Varela, J., Manzano, V. (2007). Importance values for Importance-Performance Analysis: A formula for spreading out values derived from preference rankings. *Journal of Business Research* 60, 115-121. <https://doi:10.1016/j.jbusres.2006.10.009>
2. Ahmed, R. R., Vveinhardt, J., Štreimikienė, D., Ashraf, M., Channar, Z. A. (2017). Modified SERVQUAL model and effects of customer attitude and technology on customer satisfaction in banking industry: mediation, moderation and conditional process analysis. *Journal of Business Economics and Management* 18(5). <https://doi:10.3846/16111699.2017.1368034>

3. Ahmed, R. R., Romeika, G., Kauliene, R., Streimikis, J., Dapkus, R. (2020). ES-QUAL model and customer satisfaction in online banking: evidence from multivariate analysis techniques. *Oeconomia Copernicana* 11(1), 59–93. <https://doi.org/10.24136/oc.2020.003>
4. Aldlaigan, A. H., Buttle, F. A. (2002). SYSTRA-SQ: a new measure of bank service quality. *International Journal of Service Industry Management* 13(4), 362–381. <https://doi.org/10.1108/09564230210445041>
5. Amin, M. (2016). Internet banking service quality and its implication on e-customer satisfaction and e-customer loyalty. *International Journal of Bank Marketing* 34 (3), 280–306. <https://doi.org/10.1108/IJBM-10-2014-0139>
6. Bahia, K., Nantel, J. (2000). A reliable and valid measurement scale for the perceived service quality in banks. *International Journal of Bank Marketing* 18(2), 84–91. <https://doi.org/10.1108/02652320010322994>
7. Baqai, S., Qureshi, J. A., Morah, E. I. M. (2021). The Relationship Between ES-QUAL Model and Online Purchase Intention in the Context of Rising Global Marketplace of E-Commerce. *Etikonomi* 20(2), xx–xx. <https://doi.org/10.15408/etk.v20i2.20677>
8. Brown, T. A. (2015). *Confirmatory Factor Analysis for Applied Research*. 2nd ed., New York: Guilford Press
9. Deng, J., Pierskalla, C.D. (2018). Linking Importance–Performance Analysis, Satisfaction, and Loyalty: A Study of Savannah, GA. *Sustainability* 10(3):704 <https://doi.org/10.3390/su10030704>
10. Dwyer, L., Cvelbar, Lj.K., Edwards, D., Mihalic, T. (2012). Fashioning a destination tourism future: The case of Slovenia. *Tourism Management* 33, 305–316, <https://doi.org/10.1016/j.tourman.2011.03.010>
11. Đorđević, B.S. (2009) Merenje kvaliteta bankarskih usluga. *Finansije* 64 (1-6), 256–271.
12. Đorđević, B.S. (2011). *Bankarski menadžment i marketing*. Zaječar: Fakultet za menadžment, ISBN 978-86-7747-448-5 (MU)
13. Fabrigar, L.R., Wegener, D.T. (2012). *Exploratory Factor Analysis*. Oxford: University Press
14. Ghosh, M. (2018). Measuring Electronic Service Quality in India Using ES-QUAL. *International Journal of Quality & Reliability Management* 35(2), 430–445. <https://doi.org/10.1108/IJQRM-07-2016-0101>
15. Hammoud, J., Bizri, R.M., El Baba, I. (2018). The Impact of E-Banking Service Quality on Customer Satisfaction: Evidence From the Lebanese Banking Sector. *Sage Open* 8(3), <https://doi.org/10.1177/2158244018790633>
16. Hosseini, S.H., Souri, M.E., Sajjadin, F. (2018). Applying Grey E-S-QUAL Model to Evaluate the Gaps between Expectation and Perception of the Customer Based on E-services Quality: A Case Study of an Iranian Online Retailer. *Journal of quality engineering and production optimization*, 3(1), 67–80.
17. Jun, M., Palacios, S. (2016). Examining the key dimensions of mobile banking service quality: an exploratory study. *International Journal of Bank Marketing* 34 3, 307–326. <https://doi.org/10.1108/IJBM-01-2015-0015>
18. Jundillah, M.L., Suseno, J.E., Surarso, B. (2019). Evaluation of E-learning Websites Using the Webqual Method and Importance Performance Analysis E3S Web of Conferences 125, ICENIS 2019 Khatoon, S., Zhengliang, X., Hussain, H. (2020). The Mediating Effect of Customer Satisfaction on the Relationship Between Electronic Banking Service Quality and Customer Purchase Intention: Evidence From the Qatar Banking Sector. *Sage Open*, <https://doi.org/10.1177/2158244020935887>
19. Loiacono, E. T., Watson, R. T., Goodhue, D. L. (2007). WebQual: An Instrument for Consumer Evaluation of Web Sites. *International Journal of Electronic Commerce* 11(3), 51–87. <http://www.jstor.org/stable/27751221>
20. Maksimović, M. V., Đorđević, B. S., Brzaković, M. D., Grahovac, M. M. (2017). Merenje kvaliteta transportnih usluga primenom SERVQUAL modela. *Tehnika*, 72(6), 928–935. <https://doi.org/10.5937/tehnika1706928M>
21. Marković, S., Dorčić, J., Katušić, G. (2015). Service Quality Measurement in Croatian Banking Sector:

- Application of SERVQUAL Model. Proceedings of Management International Conference, Portorož, Slovenia, 209-218. Dostupno na: <https://www.fm-kp.si/zalozba/ISBN/978-961-266-181-6/83.pdf>
22. Martilla, J. A., James, J. C. (1977). Importance-Performance Analysis. *Journal of marketing* 41(1), 77-79. <https://doi.org/10.2307/1250495>
 23. Joseph, M., McClure, C., Joseph, B. (1999). Service quality in the banking sector: the impact of technology on service delivery. *International Journal of Bank Marketing* 17(4), 182-193. <https://doi.org/10.1108/02652329910278879>
 24. Narodna Banka Srbije (2021) Nastavlja se rast korišćenja savremenih oblika plaćanja (02.09.2021) Dostupno na: <https://www.nbs.rs/sr/scripts/showcontent/index.html?id=17304>
 25. Parasuraman, A., Zeithaml, V. A., Berry, L. L. (1988). SERVQUAL: a multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing* 64(1), 12-40.
 26. Parasuraman, A., Zeithaml, V. A., Malhotra, A. (2005). E-S-QUAL: a multiple-item scale for assessing electronic service quality. *Journal of Service Research* 7(3), 213-233. <https://doi.org/10.1177/1094670504271156>.
 27. Radojević, P., Marjanović, D. (2011). Kvalitet usluga u bankarstvu: nesaglasnosti, odrednice i istraživačke tehnike za unapređenje kvaliteta. *Bankarstvo* 40(7-8), 34-59.
 28. Raza, S.A., Umer, A., Qureshi, M.A., Dahri, A.S. (2020). Internet banking service quality, e-customer satisfaction and loyalty: the modified e-SERVQUAL model. *The TQM Journal* 32 (6), 1443-1466. <https://doi.org/10.1108/TQM-02-2020-0019>
 29. Safakli, V. O. (2007). Specifičnosti kvaliteta usluga u bankarstvu - SERVQUAL model. *Marketing* 38(4), 139-146.
 30. Sangeetha, J. (2021). Uticaj dimenzija kvaliteta usluge, zadovoljstva korisnika i namera ponašanja na odgovarajuće konstrukcije u poslovanju sa stanovništvom - kontekst Bliskog istoka. *Serbian Journal of Engineering Management* 6(2), 54-62. <https://doi.org/10.5937/SJEM2102054S>
 31. Sever, I. (2015). Importance-performance analysis: A valid management tool? *Tourism Management* 48, 43-53. <https://doi.org/10.1016/j.tourman.2014.10.022>
 32. Shankar, A., Tiwari, A.K., Gupta, M. (2021). Sustainable mobile banking application: a text mining approach to explore critical success factors. *Journal of Enterprise Information Management*, Vol. ahead-of-print No. ahead-of-print. <https://doi.org/10.1108/JEIM-10-2020-0426>
 33. Sindwani, R., Goel, M. (2012). Online Banking Service Quality: A Review. *International Journal of Marketing and Technology*, 2(7), 114-124.
 34. Sun, Q., Wang, C., Cao, H. (2009). Applying ES-QUAL scale to analysis the factors affecting consumers to use Internet banking services. In *Proceeding IITA international conference on services science, management and engineering (SSME'09)*, July. IEEE. <https://doi.org/10.1109/ssme.2009.41>.
 35. Thompson, B. (2004). *Exploratory and Confirmatory Factor Analysis - Understanding Concepts and Applications*. Washington, DC: American Psychological Association
 36. Ulkhaq, M.M., Rabbani, M., Wibowo, A.T., Rachmania, B.A. (2017). Assessing Electronic Service Quality using E-S-QUAL and E-RecS-QUAL scales. *TMSOC-Transactions on Innovation & Business Engineering* 02, 20-26.
 37. Webb, H.W. and Webb, L.A. (2004). SiteQual: an integrated measure of Web site quality. *Journal of Enterprise Information Management* 17(6), 430-440. <https://doi.org/10.1108/17410390410566724>.
 38. Widodo, A.K., Selvina, O., Widhiyaningrum, Olivia Ester R. Siregar (2019). Assessing Service Quality of Bank

using Combined SERVQUAL Scale and Importance-Performance Analysis: A Case Study Proceedings of the 2019 2nd International Conference on Information Management and Management Sciences - IMMS 2019, 193-197 <https://doi.org/10.1145/3357292.3357327>

39. Wolfinbarger, M., Gilly, M.C. (2003). eTailQ: Dimensionalizing, measuring and predicting retail quality. *Journal of Retailing* 79(3), 183-198. [https://doi.org/10.1016/S0022-4359\(03\)00034-4](https://doi.org/10.1016/S0022-4359(03)00034-4)
40. Wu, X. (2013). Importance-performance analysis for niche marketing: the case of a museum exhibition. A thesis submitted to the Kent State University College and Graduate School of Education, Health, and Human Services. Dostupno na: https://etd.ohiolink.edu/apexprod/rws_etd/send_file/send?accession=kent1384148679&disposition=inline
41. Zavareh, F.B., MdAriff, S., Jusoh, A., Zakuan, N., Bahari, A.Z., Ashourian, M. (2012). E-Service Quality Dimensions and Their Effects on E-Customer Satisfaction in Internet Banking Services. *Procedia - Social and Behavioral Sciences* 40, 441-445 <https://doi.org/10.1016/j.sbspro.2012.03.213>
42. Zeithaml, V. A., Parasuraman, A., Malhotra, A. (2002). Service quality delivery through web sites: a critical review of extant knowledge. *Journal of Academy of Marketing Science* 30(4). 362-375 <https://doi:10.1177/009207002236911>

Primljeno: 26.03.2022.
Odobreno: 25.04.2022

DOI: 10.5937/bankarstvo2201070A

DA LI PROFITABILNOST BANAKA UTIČE NA PRIVREDNI RAST: PRIMERI BANAKA POJEDINIH ZEMALJA ZAPADNOG BALKANA

Prof. dr Almir Alihodžić, redovni profesor, Ekonomski fakultet
Univerziteta u Zenici
email: almir.dr2@gmail.com

Rezime

Banke imaju važnu ulogu u privredi jedne zemlje zato što povećanje štednje i akumulacije kapitala pozitivno utiče na privredni rast i zaposlenost kroz funkciju transfera resursa banke. Svrha ovog istraživanja je da se utvrdi uzročno-poslijedična veza između profitabilnosti banaka i ekonomskog rasta u tri odabrane zemlje, uključujući Bosnu i Hercegovinu, Srbiju i Hrvatsku. U ovom istraživanju se primenjuje panel test uzročnosti za ispitivanje uzročno-posledične veze za vremenski period od prvog kvartala 2008. godine do četvrtog kvartala 2020. godine. Empirijski nalazi u ovom istraživanju su pokazali da profitabilnost banaka u odabranim zemljama u razvoju (Bosna i Hercegovina, Srbija i Hrvatska) utiče pozitivno na ekonomski rast. Takođe, ovo istraživanje daje uvid u dubinsku analizu u kontekstu razmatranja nekoliko zemalja putem korišćenja panel testa uzročnosti, a za potrebe proučavanja odnosa između profitabilnosti banaka i ekonomskog rasta.

Ključne reči: Ekonomski rast; profitabilnost banaka; Grendžerova kauzalnost

JEL klasifikacija: G21, O43, C23

Uvod

Banke igraju centralnu ulogu u funkcionisanju privredne aktivnosti. Pored toga, zdrav bankarski sistem je od velikog značaja za održivi ekonomski razvoj. Bankarski sektor ispunjava važnu ekonomsku funkciju u obezbeđivanju finansijskog posredovanja i ekonomskog zamaha pretvaranjem depozita u produktivne investicije. U datom kontekstu banke su bitni finansijski i važne su za stabilnost bankarskog sektora (Menicucci ve Paolucci, 2016). I eksterni faktori i faktori specifični za zemlju utiču na strukturu i učinak bankarskog sektora. Zdrav i profitabilan bankarski sektor povećava otpornost banaka na negativne šokove, te doprinosi stabilnosti finansijskog sistema. Posmatrano u kontekstu ekonomske krize iz 2007-2008. godine, pokazalo se da negativnosti u bankarskom sektoru mogu destabilizovati finansijski sistem pretvarajući se u sistematski rizik, izazivajući usporavanje ekonomske aktivnosti, te povećanje nezaposlenosti. S tim u vezi, determinante poslovanja banke i to posebno profitabilnosti izložene su sve većoj pažnji ne samo akademske javnosti, već i kreatora politike, regulatornih i nadzornih institucija, te posebno rukovodstva banaka koji donose odluke o politici banke.

Teorija koja ispituje doprinos finansijskih institucija ekonomskom rastu nastavlja da se razvija u cilju analiziranja karakteristika koje moraju imati banke da bi obezbedile dobru ulogu u finansijskom sistemu. Usluge koje pružaju banke će stvoriti šire otvaranje privrede smanjenjem rizika ulaganja i transakcija, te povećavanjem operativne efikasnosti pružanjem dobrih informacija zainteresovanim stranama. Dakle, uloga banke mora biti dobro definisana kako bi postala jedan od motora ekonomskog rasta (Yudistira i Ike, 2014).

Bankarski sektor omogućava prikupljanje sredstava i štednje potrebnih za ekonomski rast, te pojavu novih inicijativa u većini sektora. Povećanje štednje pozitivno utiče na akumulaciju kapitala obezbeđujući privredni rast, te otvaranje novih radnih mesta putem kreditnog mehanizma. Nekoliko studija pokušava da ispita značaj finansijskog sektora u kontekstu ekonomskog rasta. Osnovna uloga finansijskog sistema je stvaranje likvidnosti i uspostavljanje povoljnog i efikasnog platnog sistema. Dakle, finansijski sektor je danas najznačajniji pokretač koji doprinosi ekonomskom rastu.

U ovoj studiji, zemlje regiona, poput Bosne i Hercegovine, Srbije i Hrvatske biće istražene. Posmatrane zemlje su relativno homogene i geografski bliske. Takođe, one imaju slične institucije i ekonomije, i njihovi bankarski sektori imaju važne zajedničke karakteristike. Određeni makroekonomski i bankarski indikatori su dati u tabeli 1.

Tabela 1: *Određeni makroekonomski i bankarski pokazatelji posmatranih zemalja za period: 2012-2020. god.*

Zemlja	Naziv pokazatelja	2012	2013	2014	2015	2016	2017	2018	2019	2020
Bosna i Hercegovina	Stopa rasta realnog BDP (godišnje u %)	-0,8	2,3	1,1	3,0	3,1	3,1	3,7	2,8	-3,1
	Domaći krediti realnom sektoru (% BDP)	61,7	60,8	60,2	58,6	57,8	58,3	57,5	57,9	58,4
Srbija	Stopa rasta realnog BDP (godišnje, u %)	-0,6	2,8	-1,5	1,8	3,3	2,1	4,5	4,3	-0,9
	Domaći krediti realnom sektoru (% BDP)	46,5	40,9	40,7	40,6	40,8	40,2	41,4	41,9	45,5
Hrvatska	Stopa rasta realnog BDP (godišnje, u %)	-2,2	-0,3	-0,3	2,5	3,5	3,4	2,9	3,4	-8,0
	Domaći krediti realnom sektoru (% BDP)	69,9	68,6	67,2	63,6	59,4	56,3	54,6	53,1	59,7

Izvor: <http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators#>
(Pristupljeno: 02,03,2022)

Lako se može primetiti da su, kako globalna finansijska kriza, tako i kriza izazvana COVID-19 uticale na negativne vrednosti BDP i to u 2012. godini nakon perioda oporavka ekonomske aktivnosti i u 2020. godini. Dakle, BDP svih posmatranih zemalja bio je negativan u posmatranim godinama. Počeo je da raste i da se stabilizuje od 2013. godine. Krediti privatnog sektora u ovim zemljama su bili veoma visoki, što znači da su posmatrane zemlje bile zavisne od bankarskih kredita. Dakle, osnovni cilj ovog istraživanja je da se ispita odnos između razvoja bankarskog sektora i ekonomskog rasta u Bosni i Hercegovini, Srbiji i Hrvatskoj. Ovde se ograničavamo na istraživanje bankarskog sektora zbog njegove dominacije u finansijskom sektoru.

Rad je struktuiran iz četiri dela. Prvi deo odnosi se na uvodna razmatranja. Drugi deo opisuje dosadašnja istraživanja u kontekstu uticaja indikatora profitabilnosti banaka na ekonomski rast, i obrnuto uticaja indikatora ekonomskog rasta na profitabilnost banaka. Treći deo opisuje izabranu metodologiju istraživanja. Četvrti deo elaborira dobijene rezultate istraživanja, kao i određena zapažanja i preporuke.

Pregled relevantne literature

Bankarski sektor je veoma važna komponenta finansijskog sistema. Banke stvaraju dodatno bogatstvo u privredi privlačeći sredstva od strane štediša i kanališući ta sredstva prema investitorima. Levine i Zervos (1998) sugerišu da banke podstiču ekonomski rast finansiranjem produktivnih projekata, te da su preduslov za ekonomski rast.

Ayadi i ostali (2010) istražuju posledice prisustva lokalnih zadružnih banaka na regionalni ekonomski rast, koristeći regionalne podatke za sedam evropskih zemalja od 2000. do 2008. godine. Oni tvrde da prisustvo zadružnih banaka ima značajan pozitivan uticaj na stope rasta u većini zemalja kroz kreditiranje malog i srednjeg biznisa, i da je efekat znatno jači u siromašnijim regionima. Takođe, ovi autori pokazuju da su pored koegzistiranja sa drugim bankama pod sličnim uslovima kooperativne banke reagovalе na promene u tržišnim kretanjima, istovremeno ispunjavajući integralnu ulogu doprinosa stabilnosti i regionalnom rastu u svojim privredama.

Studija sprovedena od strane Gul i ostali (2011) ispitala je uticaj specifičnih i makroekonomskih faktora na profitabilnost poslovanja 15 najvećih palestinskih banaka tokom perioda 2005-2009. god. U istraživanju su koristili objedinjenu metodu procene najmanjih kvadrata da bi istražili uticaj imovine, kredita, kapitala, depozita, ekonomskog rasta, inflacije i tržišne kapitalizacije na glavne pokazatelje profitabilnosti, tj, prinos na uloženi kapital (ROE) i neto kamatnu marginu (NIM). Empirijski rezultati su pokazali da postoje jaki dokazi da unutrašnji i eksterni faktori imaju snažan uticaj na profitabilnost poslovanja banaka.

Tan i Floros (2012) pokušali su da istraže odnos između profitabilnosti banaka i ekonomskog rasta za period od 2003. do 2009. godine, koristeći uzorak od 101 kineske banke. Primena generalizovane metode momenata dala je dokaze u prilog činjenici da postoji negativna veza između rasta BDP i profitabilnosti banaka merenih kao ROA i NIM.

Awdeh (2012) je proučavao pravac uzročnosti između razvoja bankarskog sektora i ekonomskog rasta u Libanu tokom perioda 1992-2011. god., te pronašao jednosmernu uzročnost koja se proteže od ekonomskog rasta do mera bankarskog sektora, kao što su rast depozita i krediti lokalnom privatnom sektoru.

Trujillo-Ponce (2013) ističe da je profitabilnost banaka takođe od suštinskog značaja za održivost bankarskog sistema, te da su profitabilne banke u mogućnosti da ubrizgavaju sredstva u privredu davanjem kredita. Petkouski i Kiosevski (2014) su ispitivali vezu između razvoja bankarskog sektora i ekonomskog rasta u 16 tranzicionih ekonomija iz Centralne i Jugoistočne Evrope, i pokazali su da su krediti privatnom sektoru i kamatne margine negativno povezani sa ekonomskim rastom.

Javid (2016) je ispitivao interne (specifične) i eksterne (makroekonomske) determinante profitabilnosti banaka za period: 2006 – 2013. god. Koristeći uzorak od 34 komercijalne banke koje posluju u Pakistanu, indikator ROA je korišćen kao indikator profitabilnosti banke, dok su veličina banke, depoziti, likvidnost, nekamatni prihod, godišnja stopa inflacije, stopa rasta BDP i realna kamatna stopa razmatrani kao nezavisne varijable. Rezultati regresione analize panel podataka su pokazali da su veličina banke i nekamatni prihodi imali pozitivan uticaj na profitabilnost banke, dok su depoziti imali negativan uticaj. Takođe, uočeno je da makroekonomski pokazatelji nisu imali uticaja na profitabilnost banke.

Klein i Weill (2017) koristili su globalne podatke da bi istražili uticaj profitabilnosti banaka na ekonomski rast. S obzirom da banke širom sveta posluju po različitim politikama i propisima, nalazi njihove studije ne mogu se generalizovati na azijsko-pacifički region. Takođe, istraživali su uzročno-posledičnu vezu između profitabilnosti banaka i ekonomskog rasta, i identifikovali su da uticaj profitabilnosti banaka varira u različitim ekonomijama.

Alev (2018) je ispitao dugoročnu vezu između profitabilnosti banaka i ekonomskog rasta turskih banaka primenom klasične Engle Granger kointegracije i Grendžerovog testa uzročnosti tokom perioda 1992-2017. god. U istraživanju je stopa rasta BDP uzeta kao varijabla rasta, dok su ROA i ROE korišćeni kao indikatori profitabilnosti banaka. Empirijski rezultati su pokazali da profitabilnost banaka, odnosno indikatori ROA i ROE pozitivno utiču na privredni rast.

Moussa i Hdidar (2019) su koristili model analize panel podataka da istraže odnos između profitabilnosti banaka i ekonomskog rasta na uzorku od ukupno 18 tuniskih banaka u periodu od 2000. do 2017. godine. ROA i ROE su posmatrani kao indikatori profitabilnosti banaka, dok su nekoliko indikatora specifičnih za bankarsko poslovanje, zatim stopa rasta BDP-a, i stopa inflacije korišćene kao nezavisne promenljive. Kao rezultat istraživanja, oni su zaključili da postoji pozitivna veza između ekonomskog rasta i profitabilnosti banaka.

Metodologija i regresioni model

U ovom istraživanju ekonomski rast i profitabilnost procenjeni su u okviru regresione analize sa VAR ocenom za kvartalne podatke tri odabrane zemlje (Bosna i Hercegovina, Srbija i Hrvatska) i za period 2008 – 2020. god. U ovoj studiji stopa realnog rasta BDP se koristi kao varijabla ekonomskog rasta, a prinos na aktivu (ROA) kao i prinos na vlasničku glavnici se koriste kao indikatori profitabilnosti banaka. Podaci korišćeni u ovoj studiji su dobijeni od strane Centralne banke BiH, Narodne banke Srbije, Narodne banke Hrvatske, Agencije za statistiku u BiH, Republičkog zavoda za statistiku Republike Srbije, Državnog zavoda za statistiku Republike Hrvatske i Međunarodnog monetarnog fonda. Pored toga, programski paket STATA 13.1 je korišćen za dobijanje rezultata procene u studiji. Ekonometrijski modeli procenjeni u ovoj studiji su sledeći:

$$ROA_{i,t} = \beta_0 + \beta_1 GDP_{i,t} + \mu_{it} \quad (1)$$

$$ROE_{i,t} = \beta_0 + \beta_1 GDP_{i,t} + \mu_{it} \quad (2)$$

Jednačina (1) i (2) pokazuje uticaj privrednog rasta na profitabilnost banaka. Dok β_0 izražava konstantan član, β_1 – označava koeficijent nagiba GDP-a, a $\mu_{i,t}$ je slučajna greška u modelu. Na sličan način efekat uticaja profitabilnosti banaka na privredni rast je modeliran na sledeći način:

$$GDP_{i,t} = \alpha_0 + \alpha_1 ROA_{i,t} + \varepsilon_{i,t} \quad (3)$$

$$GDP_{i,t} = \alpha_0 + \alpha_1 ROE_{i,t} + \varepsilon_{i,t} \quad (4)$$

Dok se β_0 u modelu 3 i 4 odnosi na konstantan član, β_1 odnosi se na koeficijent nagiba ROA i ROE, $\mu_{i,t}$ – je slučajna greška u modelu 3 i 4. U oba modela i , ($i=1,2,...,N$) predstavlja veličinu podataka poprečnog preseka varijabli, a t ($t=1,2,...,T$) predstavlja dimenziju vremenske serije.

U ovom istraživanju biće istražena uzročna veza između varijabli ROA, ROE i BDP. Prije svega biće primenjen Dumitrescu – Hurlin (2012) test uzročnosti koji je razvio tradicionalni Granger (1969) model, koji se koristi u vremenskim serijama i usvojio ga za panelne modele podataka. Da bi se ovaj test mogao primeniti serija mora biti stacionirana na istom nivou.

Rezultati istraživanja

Sumarna statistika obuhvaćena ovim istraživanjem uključena je u tabeli 2.

Tabela 2: Rezultati deskriptivne statistike za period: 2008:Q1-2020:Q4

Zemlja	Varijabla	Broj posmatranja	Srednja vrednost	Std, Dev,	Minimalna vrednost	Maksimalna vrednost
Bosna i Hercegovina	BDP	52	-0,10961	3,393145	-9,3	4,4
	ROA	52	0,84423	0,648804	-0,60	2,0
	ROE	52	6,07692	4,589229	-5,5	13,6
Srbija	BDP	52	2,02884	2,878135	-4,2	8,8
	ROA	52	1,45961	0,59779	-0,07	2,77
	ROE	52	7,26346	3,02948	-0,36	12,72
Hrvatska	BDP	52	-0,00576	2,49975	-14,2	4,0
	ROA	52	1,11731	0,65670	-1,5	2,0
	ROE	52	8,03846	4,76923	-10,9	14,5

Izvor: Proračun autora

Najveću srednju vrednost stope rasta povrata na vlasnički kapital je ostvarila Hrvatska (8,04), zatim Srbija (7,26) i Bosna i Hercegovina (6,08). Takođe, i standardna devijacija kao prva mera volatilnosti je sledila isti obrazac u kretanju. Ovako visoke srednje vrednosti stope rasta povrata na vlasnički kapital su direktna posledica porasta troškova i povećanih odbitaka od tekućih prihoda da bi se pokrili gubici po kreditima u 2010. godini (Plakalović i Alihodžić, 2015). Kada je u pitanju ekonomska aktivnost za posmatrani period najveću srednju vrednost je ostvarila Srbija od oko 2,03. Tabela u nastavku teksta ilustruje rezultate testa jediničnog korena.

Tabela 3: Rezultati Diki-Fulerovog testa jediničnog korena za zemlje:
Bosna i Hercegovina, Srbija i Hrvatska 2012-2020. god.

Naziv serije	Nivo		Prva diferencija	
	Probability (P) vrednost	Vrednost t- statistike	Probability (P) vrednost	Vrednost t- statistike
BDP	0,000	-5,612	0,000	-15,638
ROA	0,000	-5,816	0,0001	-4,896
ROE	0,000	-5,521	0,000	-11,019

Izvor: Proračun autora

Iz prethodne tabele se da zaključiti da su sve serije stacionarne, nultog reda integrisanosti. Pod stacioniranošću podataka podrazumeva se situacija gde su statističke osobine indikatora kao što su aritmetička sredina, varijansa i ostali konstantni tokom vremena. U toku ocene modela jako je bitno da se koriste stacionarne serije jer se na taj način jednostavnije vrši prognoza na osnovu modela.

Tabela 4 ilustruje rezultate multivarijantne vremenske serije (vektorske autoregresije) – VAR na slučaju Bosne i Hercegovine za period: 2008 – 2020. god.

Tabela 4: Multivarijantna vremenska serija - vektorska autoregresija - VAR - slučaj Bosna i Hercegovina

		Koeficijent	Standardna greška	t	P> t	[95% Interval poverenja]	
GDP	GDP						
	L1.	-0,3241	0,16697	-1,94	0,059	-0,66165	0,01328
	L2.	-0,04122	0,15912	-0,26	0,797	-0,36280	0,28037
	ROA						
	L1.	15,779	5,989	2,63	0,012	3,6739	27,884
	L2.	4,559	6,289	0,72	0,473	-8,151	17,271
	ROE						
	L1.	-2,155	0,836	-2,58	0,014	-3,846	-0,4646
	L2.	-0,572	0,883	-0,65	0,521	-2,358	1,2135
	_cons	-0,7760	1,021	-0,76	0,452	-2,8412	1,2891
ROA							
ROE	GDP						
	L1.	-0,02131	0,0352	-0,60	0,549	-0,0925	0,04996
	L2.	0,0045	0,0336	0,14	0,892	-0,0633	0,07251
	ROA						
	L1.	2,1009	1,2652	1,66	0,105	-0,4560	4,6579
	L2.	0,2386	1,3284	0,18	0,858	-2,4462	2,9235
	ROE						
	L1.	-0,2906	0,1767	-1,64	0,108	-0,6478	0,0665
	L2.	-0,0168	0,1866	-0,09	0,928	-0,3941	0,3603
	_cons	0,7997	0,21583	3,71	0,001	0,36356	1,2360
ROE							
	GDP						
	L1.	-0,1529	0,253	-0,61	0,548	-0,6639	0,3579
	L2.	0,0701	0,240	0,29	0,773	-0,4167	0,5570
	ROA						
	L1.	13,914	9,068	1,53	0,133	-4,415	32,242
	L2.	2,0956	9,522	0,22	0,827	-17,14	21,341
	ROE						
	L1.	-1,913	1,266	-1,51	0,139	-4,473	0,6473
	L2.	-0,203	1,338	-0,15	0,880	-2,907	2,5011
	_cons	5,8213	1,547	3,76	0,001	2,694	8,948

Izvor: Proračun autora

Napomena: Relacija L1. i L2. se odnose na linearne podprostore primenjene VAR metodologije za ocenu linearne regresije.

Prema tabeli 4 rezultati primenjene VAR metodologije za ocenu linearne regresije prema linearnim podprostorima L1 i L2 razlikuju se između indikatora ekonomske aktivnosti i profitabilnosti banaka u BiH. Najveća pozitivna vrednost koeficijenta prema linearnom podprostoru L1 je ostvarena između bruto domaćeg proizvoda i indikatora menadžerske efikasnosti banaka, tj. povrata na aktivu (15,779), i između povrata na vlasničku glavnica i povrata na aktivu (13,914). S druge strane, najveće vrednosti bazirane prema linearnom podprostoru L2 su ostvarene takođe između indikatora ekonomske

aktivnosti tj. bruto domaćeg proizvoda i povrata na aktivu (4,559), kao i između indikatora povrata na vlasničku glavnica i povrata na aktivu (2,095).

Uzročna veza između varijabli utvrđenih u skladu sa podacima korišćenih u ovom istraživanju analizirani su u skladu sa Dumitrescu-Hurlin (2012) testom uzročnosti. U cilju utvrđivanja koja od ovih veza postoji, ovo istraživanje pokušava da analizira odnos između ekonomskog rasta i profitabilnosti banaka korišćenjem Grendžerovog testa uzročnosti. Rezultati Grendžer testa uzročnosti su prikazani u tabeli 9.

Tabela 5 ilustruje rezultate multivarijantne vremenske serije (vektorske autoregresije) – VAR na slučaju Srbije za period: 2008 – 2020.

Tabela 5: Multivarijantna vremenska serija - vektorska autoregresija - VAR - slučaj Srbija

		Koeficijent	Standardna greška	t	P> t	[95% Interval poverenja]	
GDP	GDP						
	L1.	0,211287	0,2054	1,03	0,316	-0,21711	0,63969
	L2.	0,396636	0,2147	1,85	0,080	-0,05139	0,84466
	L3.	0,224328	0,3079	-0,73	0,475	0,86670	0,41804
	L4.	0,898001	0,1970	-4,56	0,000	-1,30905	-0,48694
	L5.	0,092549	0,2476	0,43	0,675	-0,36148	0,54658
	L6.	0,291953	0,2476	1,18	0,252	0,224648	0,80855
	ROA						
	L1.	-10,1781	3,5967	-2,83	0,010	-17,6807	-2,6754
	L2.	6,3131	4,4096	1,43	0,168	-2,8852	15,5114
	L3.	5,4881	4,7725	1,15	0,264	-4,4673	15,4436
	L4.	-6,6012	3,6249	-1,82	0,084	-14,162	0,96033
	L5.	-5,7061	3,8231	-1,49	0,151	-13,681	2,26868
	L6.	-4,3807	3,7962	-1,15	0,262	-12,299	3,53808
	ROE						
	L1.	1,70668	0,6830	2,50	0,021	0,28194	3,131
	L2.	-1,21689	0,8402	-1,45	0,163	-2,96969	0,535
	L3.	-0,96163	0,9102	-1,06	0,303	-2,86034	0,937
	L4.	1,64508	0,7665	2,15	0,044	0,04606	3,244
	L5.	1,20273	0,8204	1,47	0,158	-0,50860	2,914
	L6.	0,73156	0,8330	0,88	0,390	-1,00607	2,469
	_cons	2,10246	1,40843	1,49	0,151	-0,83546	5,0403
ROA							
	GDP						
	L1.	0,05109	0,0725	0,70	0,489	-0,10022	0,20241
	L2.	0,05960	0,0758	0,79	0,441	-0,09864	0,21785
	L3.	-0,14614	0,1087	-1,34	0,194	-0,37304	0,08074
	L4.	-0,13154	0,0696	-1,89	0,073	-0,27673	0,01364
	L5.	0,06125	0,0768	0,80	0,435	-0,09911	0,22162
	L6.	0,09655	0,0874	1,10	0,283	-0,08592	0,27902

ROA	ROA						
	L1.	-1,20981	1,27041	-0,95	0,352	-3,8598	1,44022
	L2.	0,89378	1,5575	0,57	0,572	-2,3552	4,14275
	L3.	0,30010	1,6857	0,18	0,860	-3,2163	3,81651
	L4.	-0,85250	1,2803	-0,67	0,513	-3,5233	1,81833
	L5.	-0,76809	1,35037	-0,57	0,576	-3,5849	2,04873
	L6.	-1,11445	1,34088	-0,83	0,416	-3,91148	1,68256
	ROE						
	L1.	0,17268	0,2412	0,72	0,482	-0,33055	0,67592
	L2.	-0,14308	0,29679	-0,48	0,635	-0,76220	0,47602
	L3.	0,03011	0,32150	0,09	0,926	-0,64053	0,70076
	L4.	0,28875	0,27076	1,07	0,299	-0,27604	0,85355
	L5.	0,11140	0,28977	0,38	0,705	-0,49305	0,71587
	L6.	0,18233	0,29423	0,62	0,542	-0,43142	0,79608
	_cons	0,94365	0,49747	1,90	0,072	-0,09406	1,98137
ROE	ROE						
	GDP						
	L1.	0,274122	0,36775	0,75	0,465	-0,493005	1,04125
	L2.	0,288748	0,38460	0,75	0,462	-0,513514	1,09101
	L3.	-0,744095	0,55143	-1,35	0,192	-1,894368	0,40617
	L4.	-0,746305	0,35286	-2,12	0,047	-1,482364	-0,01024
	L5.	0,424919	0,38975	1,09	0,289	-0,388102	1,23794
	L6.	0,526236	0,44346	1,19	0,249	-0,3988195	1,45129
	ROA						
	L1.	-6,38502	6,4405	-0,99	0,333	-19,81967	7,04962
	L2.	5,61798	7,89612	0,71	0,485	-10,85303	22,089
	L3.	1,03447	8,54607	0,12	0,905	-16,7923	18,861
	L4.	-3,307004	6,49106	-0,51	0,616	-16,8471	10,233
	L5.	-3,845851	6,84586	-0,56	0,581	-18,12607	10,434
	L6.	-3,552876	6,79773	-0,52	0,607	-17,73271	10,626
	ROE						
	L1.	0,987003	1,22304	0,81	0,429	-1,56422	3,538226
	L2.	-0,875980	1,50465	-0,58	0,567	-4,01464	2,26268
	L3.	0,1851068	1,629905	0,11	0,911	-3,214816	3,585029
	L4.	1,256572	1,372655	0,92	0,371	-1,606735	4,11988
	L5.	0,477339	1,469065	0,32	0,749	-2,587077	3,541755
	L6.	0,398714	1,49164	0,27	0,792	-2,712793	3,510222
	_cons	5,244699	2,522006	2,08	0,051	-0,0161139	10,50551

Izvor: Proračun autora

Prema tabeli 5 rezultati primenjene VAR metodologije za ocenu linearne regresije prema linearnim podprostorima L1 i L6 razlikuju se između indikatora ekonomske aktivnosti i profitabilnosti banaka u Srbiji. Najveća pozitivna vrednost koeficijenata prema linearnom podprostoru L2 je ostvarena između bruto domaćeg proizvoda i indikatora menadžerske efikasnosti banaka, tj. povrata na aktivu (6,313),

te prema linearnom podprostoru L2 je ostvarena između povrata na vlasničku glavnici i povrata na aktivu (5,617).

Tabela 6 ilustruje rezultate multivarijantne vremenske serije (vektorske autoregresije) – VAR na slučaju Hrvatske za period: 2008 – 2020. god.

Tabela 6: Multivarijantna vremenska serija - vektorska autoregresija - VAR - slučaj Hrvatska

		Koeficijent	Standardna greška	t	P> t	[95% Interval poverenja]	
GDP	GDP						
	L1.	-0,16553	0,14053	-1,18	0,246	-0,44955	0,11848
	L2.	-0,01533	0,1411	-0,11	0,914	-0,3006	0,26993
	ROA						
	L1.	-11,464	5,683	-2,02	0,050	-22,95197	0,02323
	L2.	19,502	7,397	2,64	0,012	4,55234	34,4523
	ROE						
	L1.	1,50384	0,7845	1,92	0,062	-0,08188	3,08957
	L2.	-2,69004	1,0047	-2,68	0,011	-4,720802	-0,65928
	_cons	0,488332	0,87108	0,56	0,578	-1,272201	2,248866
ROA							
ROA	GDP						
	L1.	-0,04675	0,04074	-1,15	0,258	-0,12909	0,035586
	L2.	0,03195	0,04092	0,78	0,439	-0,05074	0,114661
	ROA						
	L1.	0,55178	1,6478	0,33	0,739	-2,77858	3,882147
	L2.	-2,03242	2,1444	-0,95	0,349	-6,36656	2,30173
	ROE						
	L1.	-0,08875	0,22746	-0,39	0,698	-0,54847	0,370959
	L2.	0,25003	0,29129	0,86	0,396	-0,33870	0,838767
	_cons	1,46067	0,25253	5,78	0,000	0,950277	1,97106
ROE							
ROE	GDP						
	L1	-0,36602	0,29175	-1,25	0,217	-0,95567	0,22363
	L2.	0,20630	0,29304	0,70	0,486	-0,38596	0,79857
	ROA						
	L1.	4,76921	11,8005	0,40	0,688	-19,08055	28,61899
	L2.	-12,6231	15,3572	-0,82	0,416	-43,66135	18,41498
	ROE						
	L1.	-0,78943	1,62892	-0,48	0,631	-4,08162	2,502753
	L2.	1,50566	2,08607	0,72	0,475	-2,71045	5,72177
	_cons	10,920	1,8084	6,04	0,000	7,26535	14,57555

Izvor: Proračun autora

Prema tabeli 6 rezultati primenjene VAR metodologije za ocenu linearne regresije prema linearnim podprostorima L1 i L2 razlikuju se između indikatora ekonomske aktivnosti i profitabilnosti banaka

u Hrvatskoj. Najveća pozitivna vrednost koeficijenata prema linearnom podprostoru L2 je ostvarena između bruto domaćeg proizvoda i indikatora menadžerske efikasnosti banaka, tj. povrata na aktivu (19,502), te prema linearnom podprostoru L1 najjača pozitivna veza je ostvarena između povrata na vlasničku glavnici i povrata na aktivu (4,769).

Tabela 7 ilustruje rezultate multivarijantne vremenske serije (vektorske autoregresije) – VAR na slučaju Bosne i Hercegovine, Srbije i Hrvatske za period: 2008 – 2020. god.

Tabela 7 : *Multivarijantna vremenska serija - vektorska autoregresija - VAR - slučaj Bosna i Hercegovina, Srbija i Hrvatska*

		Koeficijent	Standardna greška	t	P> t	[95% Interval poverenja]	
GDP	GDP						
	L1.	0,0142	0,0976	0,15	0,884	-0,1771	0,20567
	L2.	-0,0750	0,0931	-0,81	0,420	-0,2575	0,10752
	ROA						
	L1.	-2,5296	0,9113	-2,78	0,006	-4,3159	-0,74344
	L2.	2,6571	0,9190	2,89	0,004	0,8557	4,45850
	ROE						
	L1.	0,36940	0,1362	2,71	0,007	0,10242	0,63638
	L2.	-0,36692	0,1375	-2,67	0,008	-0,6364	-0,09737
	_cons	0,52614	0,48209	1,09	0,275	-0,41874	1,47104
ROA							
ROE	GDP						
	L1.	-0,0490	0,0274	-1,79	0,074	-0,10284	0,00480
	L2.	0,0126	0,0261	0,48	0,629	-0,03867	0,06398
	ROA						
	L1.	0,32671	0,2562	1,27	0,202	-0,1755	0,82895
	L2.	0,25911	0,2584	1,00	0,316	-0,2473	0,7656
	ROE						
	L1.	-0,0112	0,0383	-0,29	0,768	-0,0863	0,06377
	L2.	-0,0481	0,0386	-1,25	0,213	-0,12398	0,02759
	_cons	0,9169	0,1355	6,76	0,000	0,65126	1,18261
ROE							
_cons	GDP						
	L1	-0,3532	0,1747	-2,02	0,043	-0,6956	-0,01071
	L2.	0,1001	0,1666	0,60	0,548	-0,2264	0,42675
	ROA						
	L1.	1,8756	1,6305	1,15	0,250	-1,3201	5,0715
	L2.	-0,3038	1,6443	-0,18	0,853	-3,5267	2,9190
	ROE						
	L1.	0,0450	0,2437	0,18	0,853	-0,4326	0,5227
	L2.	-0,0963	0,2460	-0,39	0,695	-0,5786	0,38590
	_cons	5,84998	0,86254	6,78	0,000	4,1594	7,54053

Izvor: Proračun autora

Prema tabeli 7 rezultati primenjene VAR metodologije za ocenu linearne regresije prema linearnim podprostorima L1 i L2 razlikuju se između indikatora ekonomske aktivnosti i profitabilnosti banaka za sve tri posmatrane zemlje (Bosna i Hercegovina, Srbija i Hrvatska). Najveća pozitivna vrednost koeficijenta prema linearnom podprostoru L2 je ostvarena između bruto domaćeg proizvoda i indikatora menadžerske efikasnosti banaka, tj. povrata na aktivu (2,657), te prema linearnom podprostoru L1 najjača pozitivna veza je ostvarena između povrata na vlasničku glavnica i povrata na aktivu (1,875).

U statistici se Breusch-Paganov test koji su 1979. godine razvili Trevor Breusch i Adrian Pagan koristi za testiranje heteroskedastičnosti u modelu linearne regresije. Ako testna statistika ima p-vrednost ispod odgovarajućeg praga (na primer $p < 5\%$) tada se nulta hipoteza homoskedastičnosti odbacuje i pretpostavlja se heteroskedastičnost. Ako Breusch-Pagan test pokazuje da postoji uslovna heteroskedastičnost može se koristiti ili ponderisani najmanji kvadrat (ako je izvor heteroskedastičnosti poznat) ili standardna pogreška dosledne heteroskedastičnosti. Tabela u nastavku teksta prikazuje dobijene rezultate Breusch i Pagan Lagrangian multiplier testa između random efekt modela i modela fiksnih efekata.

Dobijeni rezultati pokazuju da model fiksnih efekata bolje objašnjava uticaj nezavisnih varijabli na zavisnu varijablu, odnosno stopu rasta bruto domaćeg proizvoda u odnosu na random efekt model. S obzirom da je p-vrednost veća od 5% onda se prihvata nulta hipoteza, odnosno model fiksnih efekata koji bolje objašnjava uticaj nezavisnih na zavisnu promenljivu i pretpostavlja se homoskedastičnost.

Tabela 8: Rezultati Breusch i Pagan Lagrangian multiplier testa

Procenjeni rezultati	Var	Sd=sqrt(Var)
GDP	6,604149	2,569854
e	5,098638	2,258016
u	0	0

Test: $\text{Var}(u) = 0$

Chibar2(01) = 0.00

Prob>chibar2 = 1.0000

Grendžerova kauzalnost predstavlja putanju testa uzročnosti između dve posmatrane varijable za niz vremenskih serija. Dakle, metoda je probabilistički kalkulator uzročnosti koji koristi empirijske podatke da bi se pronašao određen oblik korelacije. Na primer, ako posmatramo dve varijable X i Y, i ako promenljiva X može da utiče na predviđanje promenljive Y onda Grendžer može da izazove Y i obrnuto. Ako promenljiva Y može uticati na predvidivost promenljive X onda dolazimo do zaključka da Y Grendžer uzrokuje X. U ovom slučaju se radi o dvostrukoj uzročnosti. S druge strane, ako samo jedna od varijabli uzrokuje drugu varijablu, a ne obrnuto onda je to jednostruka uzročnost. Tabela 9 prikazuje dobijene rezultate Grendžerove kauzalnosti primenom Wald testa između varijabli GDP, ROA i ROE za period: 2008 – 2020. god.

Tabela 9: Rezultati Grendžer kauzalnosti Wald testa za BiH, Srbiju i Hrvatsku za period: 2008 – 2020. god.

Zemlja	Equation	Excluded	F	df	df_r	Prob>F
BiH	GDP	ROA	4,3762	2	40	0,0191
	GDP	ROE	4,0168	2	40	0,0257
	GDP	ALL	2,3947	4	40	0,0664
	ROA	GDP	0,21543	2	40	0,8071
	ROA	ROE	1,4425	2	40	0,2484
	ROA	ALL	0,77943	4	40	0,5452
	ROE	GDP	0,26868	2	40	0,7658
	ROE	ROA	1,3432	2	40	0,2725
	ROE	ALL	0,71962	4	40	0,5836
Srbija	GDP	ROA	2,8052	6	20	0,0380
	GDP	ROE	2,4611	6	20	0,0602
	GDP	ALL	1,6056	12	20	0,1686
	ROA	GDP	0,78242	6	20	0,5936
	ROA	ROE	0,45814	6	20	0,8308
	ROA	ALL	0,81659	12	20	0,6328
	ROE	GDP	1,0057	6	20	0,4490
	ROE	ROA	0,42822	6	20	0,8514
	ROE	ALL	0,85215	12	20	0,6023
Hrvatska	GDP	ROA	5,0538	2	40	0,0110
	GDP	ROE	5,0761	2	40	0,0108
	GDP	ALL	3,24	4	40	0,0215
	ROA	GDP	1,2824	2	40	0,2695
	ROA	ROE	0,4225	2	40	0,6583
	ROA	ALL	0,86462	4	40	0,4935
	ROE	GDP	1,3552	2	40	0,2695
	ROE	ROA	0,39168	2	40	0,6785
	ROE	ALL	0,87476	4	40	0,4876

Izvor: Proračun autora

Rezultati istraživanja su pokazali za Bosnu i Hercegovinu da postoji jednostrana kauzalnost između indikatora profitabilnosti i ekonomskog rasta merenog preko realnog BDP. Sposobnost banaka da uspešno funkcionišu u velikoj meri zavisi od nivoa njihove profitabilnosti, gde se može očekivati da banke sa željenim nivoom profitabilnosti mogu imati pozitivan efekat na privredni rast. Dakle, indikator profitabilnosti banaka, tj. povrat na aktivu utiče na privredni rast meren preko realnog BDP. Različita teorijska i empirijska istraživanja su potvrdila da finansijski razvoj može imati pozitivan uticaj na privredni rast (Guiso, i ostali, 2004). Odnos između bankarskog sektora i ekonomskog rasta je izuzetno važan za sve zemlje, gde pravac ili stepen ovog odnosa može varirati. U nekim slučajevima se

navodi da razvoj bankarskog sektora izaziva rast, a u drugim slučajevima rast izaziva razvoj bankarskog sektora. Takođe, rezultati istraživanja su pokazali za Srbiju da postoji jednostrana kauzalnost između prvog indikatora profitabilnosti (povrat na aktivu - ROA) i ekonomskog rasta merenog preko realnog BDP. Isto tako, rezultati istraživanja za Hrvatsku su pokazali da postoji jednostrana kauzalnost između prvog i drugog indikatora profitabilnosti (povrat na aktivu - ROA i povrat na vlasničku glavnica - ROE) sa indikatorom ekonomskog rasta izraženog preko realnog BDP-a. Dakle, ovo znači da visok nivo učinaka banaka preko performansi banaka utiče na promociju ekonomskog razvoja, u skladu sa nalazima Ayadi i ostali. (2010) i Yudistira i Ike (2014). Profitabilne banke su ključni pokretači ekonomskog rasta. Rezultati istraživanja sugerisu pozitivnu vezu između profitabilnosti banaka i privrednog rasta. Dakle, rezultati istraživanja sugerisu da se sa povećanjem profitabilnosti banaka povećava i ekonomski rast. Takođe, ovi rezultati pokazuju da tržišta sa većim prisustvom banaka imaju značajno veću stopu rasta. To dalje znači da kooperativne banke imaju značajan tržišni udeo u kreditiranju malih i srednjih preduzeća koje se često prepoznaju kao pokretači ekonomskog razvoja i to posebno u tranzicionim ekonomijama.

Zaključak

Ovo istraživanje analizira uticaj banaka pojedinih zemalja Zapadnog Balkana na realni ekonomski rast. Takođe, se razmatra kroz empirijsko istraživanje odnos između indikatora poslovanja banaka i rasta realnog BDP-a. Dakle, ovo istraživanje imalo je za cilj da proceni uzročno-posledičnu vezu između profitabilnosti banaka i ekonomskog rasta sa skupom podataka od tri odabrane zemlje koje pokrivaju Bosnu i Hercegovinu, Srbiju i Hrvatsku u periodu od 2008 do 2020. godine. Uzimajući u obzir nekoliko zapažanja i kritika iznesenih u literaturi ovo istraživanje pruža nove uvide u vezu između profitabilnosti banaka i ekonomskog rasta.

Rezultati uzročnosti dati po zemljama potvrđuju tezu da postoji jednosmerna uzročnost koja se kreće od profitabilnosti banaka do privrednog rasta. Dobijeni empirijski rezultati potvrđuju argument da trenutni obrazac profitabilnosti banaka potiče ekonomski rast u odabranim zemljama u razvoju (Bosna i Hercegovina, Srbija i Hrvatska). Dakle, rezultati istraživanja sugerisu da postoji pozitivna veza i korelacija između profitabilnosti banaka i privrednog rasta.

Ovo istraživanje može da predstavlja dobru osnovu za buduća istraživanja. Buduća istraživanja bi mogla obuhvatiti uticaj finansijskih pokazatelja poput bankovnih plasmana, bankovnih depozita na privredni rast sledeći sličnu empirijsku metodu. Takođe, duži vremenski horizont kao i različita metodologija mogli bi proizvesti različite rezultate.

Literatura

1. Alev, N. (2018). 'Profitability of the activity bank found in Turkey banking system and economic growth', ASSAM International Refereed Journal, No. 5 (12), pp. 32-43.
2. Awdeh, A. (2012). Banking Sector Development and Economic growth in Lebanon, International Research Journal of Finance and Economics, ISSN 1450- 2887, Issue 100, pp. 53-62.
3. Ayadi, R., Llewellyn, D.T., Schmid, R.H., Arbak, E., De Groen, G.W. (2010). Investigating Diversity in the Banking Sector in Europe: Key Developments, Performance and Role of Cooperative Banks. Brussels: Centre for European Policy Studies.

4. Dumitrescu, E.-I. & Hurlin, C., (2012). Testing for granger non-causality in heterogeneous panels, *Economic Modelling*, 29, pp. 1450–1460.
5. Guiso, L., Sapienza, P., Zingales, L. (2004). Does local financial development matter? *Quarterly Journal of Economics*, 119(3), pp. 929-969.
6. Gul, Sehrish, Irshad Faiza and Zaman Khalid (2011). Factors Affecting Bank Profitability in Pakistan, *The Romanian Economic Journal*, Year XIV, No.39, pp. 61-84.
7. Javid, M. E. (2016). Bank specific and macroeconomic determinants of bank profitability, *Journal of Management Info*, 3 (2), pp. 14-18.
8. Klein, P. O. Laurent, W. (2017). Bank Profitability: Good for Growth? Working Paper 2017-02. Paris: Institut de France.
9. Levine, R., Zervos, S. (1998). Stock markets, banks, and economic growth. *American Economic Review* 88, pp. 537–58.
10. Menicucci, E., & Paolucci, G. (2016). The determinants of bank profitability: Empirical evidence from European banking sector. *Journal of Financial Reporting and Accounting*, 14(1), pp. 86-115.
11. Moussa, M. A. B., Hdidar, Z. (2019). Bank profitability and economic growth: evidence from Tunisia, *European Journal of Economic and Financial Research*, 3 (4), pp. 81-96.
12. Petkouski, M., Kjosevski, J. (2014) "Does Banking Sector Development Promote Economic Growth? An Empirical Analysis for Selected Countries in Central and South Eastern Europe" *Economic Research-Ekonomska Istrazivanja*, ISSN:1331-677X, pp. 54-66.
13. Plakalović, N., Alihodžić, A. (2015). *Novac, banke i finansijska tržišta*, Ekonomski fakultet u Banjaluci: Banjaluka.
14. Tan, Y. & Floros, C. (2012). Bank profitability and GDP growth in china: a note', *Journal of Chinese Economic and Business Studies*, 10 (3), pp. 267-273.
15. Trujillo-Ponce, A. (2013). What determines the profitability of banks? Evidence from Spain. *Accounting & Finance* 53, pp. 561–86.
16. Yudistira, H.P., Ike, Y.A. (2014). Financial efficiency performance of regional development bank (RDB) to support regional economy in Indonesia. *International Journal of Economic Sciences*, 3(4), pp. 53-69.

Received: 26.03.2022
Accepted: 25.04.2022

DOI: 10.5937/bankarstvo2201070A

DOES BANK PROFITABILITY AFFECT ECONOMIC GROWTH: EXAMPLES OF BANKS IN SOME WESTERN BALKAN COUNTRIES

Prof. dr Almir Alihodžić, Faculty of Economics,
University of Zenica
email: almir.dr2@gmail.com

Summary

Banks play an important role in a country's economy because increasing savings and capital accumulation has a positive effect on economic growth and employment through the banks' resource transfer function. The purpose of this study is to establish a cause-and-effect relationship between bank profitability and economic growth in three selected countries, including Bosnia and Herzegovina, Serbia, and Croatia. In this research, a panel causality test is applied to examine the cause-and-effect relationship for the time period from the first quarter of 2008 to the fourth quarter of 2020. Empirical findings in this study showed that the profitability of banks in selected developing countries (Bosnia and Herzegovina, Serbia and Croatia) has a positive effect on economic growth. Also, this research provides insight into in-depth analysis in terms of considering several countries through the use of a panel causality test, for the purpose of studying the relationship between bank profitability and economic growth.

Keywords: Economic growth; bank profitability; Granger causality.

JEL classification: G21, O43, C23

Introduction

Banks play a central role in the functioning of economic activity. In addition, a healthy banking system is of great importance for sustainable economic development. The banking sector fulfils an important economic function in providing financial intermediation and economic momentum by converting deposits into productive investments. In this context, banks are important financiers and are important for the stability of the banking sector (Menicucci ve Paolucci, 2016). Both external and country-specific factors affect the structure and performance of the banking sector. A healthy and profitable banking sector increases banks' resilience to negative shocks and contributes to the stability of the financial system. Observed in terms of the economic crisis of 2007-2008., it has been shown that negativity in the banking sector can destabilize the financial system, turning it into a systematic risk, causing a slowdown in economic activity and rising unemployment. In this regard, the determinants of the banks' operations, especially profitability, are receiving increasing attention not only from the academic public, but also from policy makers, regulatory and supervisory institutions, and especially bank management who make decisions on bank policy.

The theory examining the contribution of financial institutions to economic growth continues to evolve in order to analyze the characteristics that banks must have in order to ensure a good role in the financial system. The services provided by banks will create a wider opening of the economy by reducing the risk of investments and transactions and increasing operational efficiency by providing good information to stakeholders. Therefore, the role of the bank must be well defined in order to become one of the engines of economic growth (Yudistira i Ike, 2014).

The banking sector enables the collection of funds and savings needed for economic growth, as well as the emergence of new initiatives in most sectors. Increasing savings has a positive effect on the accumulation of capital by ensuring economic growth and job creation through the credit mechanism.

Several studies attempt to examine the importance of the financial sector in terms of economic growth. The main role of the financial system is to create liquidity and establish a favorable and efficient payment system. Therefore, the financial sector is today the most important driver contributing to economic growth.

In this study, countries in the region, such as Bosnia and Herzegovina, Serbia, and Croatia will be investigated. The observed countries are relatively homogeneous and geographically close. They also have similar institutions and economies, and their banking sectors have important common features. Certain macroeconomic and banking indicators are given in Table 1.

Table 1: *Certain Macroeconomic and Banking Indicators of the Observed Countries for the Period: 2012-2020*

Country	Indicators	2012	2013	2014	2015	2016	2017	2018	2019	2020
Bosnia and Herzegovina	Real GDP growth rate (annually, in%)	-0.8	2.3	1.1	3.0	3.1	3.1	3.7	2.8	-3.1
	Domestic loans to the real sector (% of GDP)	61.7	60.8	60.2	58.6	57.8	58.3	57.5	57.9	58.4
Serbia	Real GDP growth rate (annually, in%)	-0.6	2.8	-1.5	1.8	3.3	2.1	4.5	4.3	-0.9
	Domestic loans to the real sector (% of GDP)	46.5	40.9	40.7	40.6	40.8	40.2	41.4	41.9	45.5
Croatia	Real GDP growth rate (annually, in%)	-2.2	-0.3	-0.3	2.5	3.5	3.4	2.9	3.4	-8.0
	Domestic loans to the real sector (% of GDP)	69.9	68.6	67.2	63.6	59.4	56.3	54.6	53.1	59.7

Source: <http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators#>
(Accessed: 02.03.2022)

It is easy to see that both the global financial crisis and the crisis caused by COVID-19 affected the negative values of GDP in 2012 after the recovery period of economic activity in 2020. Therefore, the GDP of all observed countries was negative in the observed years. It has started to grow and stabilize since 2013. Private sector loans in these countries were very high, which means that the observed countries were dependent on bank loans. Therefore, the main goal of this research is to examine the relationship between the development of the banking sector and economic growth in Bosnia and Herzegovina, Serbia, and Croatia. Here we limit ourselves to researching the banking sector due to its dominance in the financial sector.

The paper is structured in four parts. The first part deals with introductory considerations. The second part describes previous research in terms of the impact of bank profitability indicators on economic growth, and vice versa, the impact of economic growth indicators on bank profitability. The third part describes the chosen research methodology. The fourth part elaborates the obtained research results, as well as certain observations and recommendations.

Review of Relevant Literature

The banking sector is a very important component of the financial system. Banks create additional wealth in the economy by attracting funds from savers and channeling those funds to investors. Levine and Zervos (1998) suggest that banks stimulate economic growth by financing productive projects, and that they are a prerequisite for economic growth.

Ayadi et al. (2010) investigate the implications of the presence of local cooperative banks on regional economic growth, using regional data for seven European countries from 2000 to 2008. They argue that the presence of cooperative banks has a significant positive impact on growth rates in most countries, through lending to small and medium-sized businesses, and that the effect is much stronger in poorer regions. Also, these authors show that, in addition to coexisting with other banks

under similar conditions, cooperative banks reacted to changes in market trends, while fulfilling the integral role of contributing to stability and regional growth in their economies.

A study conducted by Gul et al. (2011) examined the impact of specific and macroeconomic factors on the profitability of the 15 largest Palestinian banks during the period 2005-2009. In the research, they used a unified method of estimating the smallest squares to investigate the impact of assets, loans, capital, deposits, economic growth, inflation and market capitalization on the main indicators of profitability, i.e., return on invested capital (ROE) and net interest margin (NIM). Empirical results have shown that there is strong evidence that internal and external factors have a strong impact on banks profitability.

Tan and Floros (2012) tried to investigate the relationship between bank profitability and economic growth for the period from 2003 to 2009, using a sample of 101 Chinese banks. The application of the generalized method of moments provided evidence in favor of the fact that there is a negative link between GDP growth and the profitability of banks measured as ROA and NIM.

Awdeh (2012) studied the causal direction between banking sector development and economic growth in Lebanon during the period 1992-2011, and found a one-way causality that extends from economic growth to banking sector measures such as deposit growth and lending to the local private sector.

Trujillo-Ponce (2013) points out that the profitability of banks is also essential for the sustainability of the banking system, and that profitable banks are able to inject funds into the economy by lending. Petkouski and Kjosevski (2014) examined the relationship between banking sector development and economic growth in 16 transition economies in Central and Southeast Europe, and showed that private sector loans and interest margins are negatively associated with economic growth.

Javid (2016) examined internal (specific) and external (macroeconomic) determinants of bank profitability for the period: 2006-2013. Using a sample of 34 commercial banks operating in Pakistan, the ROA indicator was used as an indicator of bank profitability, while bank size, deposits, liquidity, non-interest income, annual inflation rate, GDP growth rate and real interest rate considered as independent variables. The results of the regression analysis of the panel data showed that the size of the bank and non-interest income had a positive impact on the banks profitability, while deposits had a negative impact. It was also noted that macroeconomic indicators did not affect the banks profitability.

Klein and Weill (2017) used global data to investigate the impact of bank profitability on economic growth. Given that banks around the world operate under different policies and regulations, the findings of their study cannot be generalized to the Asia-Pacific region. They also investigated the cause-and-effect relationship between bank profitability and economic growth, and identified that the impact of bank profitability varies across economies.

Alev (2018) examined the long-term relationship between bank profitability and economic growth of Turkish banks by applying the classic Engle Granger cointegration and the Granger causality test during the period 1992-2017. In the research, the GDP growth rate was taken as a growth variable, while ROA and ROE were used as indicators of bank profitability. Empirical results have shown that the profitability of banks, i.e., ROA and ROE indicators have a positive effect on economic growth.

Moussa and Hdidar (2019) used a panel data analysis model to investigate the relationship between

bank profitability and economic growth on a sample of a total of 18 Tunisian banks between 2000 and 2017. The ROA and ROE were viewed as indicators of bank profitability, while several indicators specific to banking operations, then GDP growth rate, and inflation rate were used as independent variables. As a result of the research, they concluded that there is a positive link between economic growth and bank profitability.

Methodology and the Regression Model

In this research, economic growth and profitability were assessed as part of a regression analysis with VAR score for quarterly data of three selected countries (Bosnia and Herzegovina, Serbia, and Croatia) and for the period 2008-2020. In this study, the real GDP growth rate is used as a variable of economic growth, and the return on assets (ROA) as well as the return on equity are used as indicators of banks profitability. The data used in this study were obtained from the Central Bank of B&H, the National Bank of Serbia, the National Bank of Croatia, the Agency for Statistics in B&H, the Republic Statistical Office of the Republic of Serbia, the Central Bureau of Statistics, and the International Monetary Fund. In addition, the STATA 13.1 software package was used to obtain the evaluation results in the study. The econometric models evaluated in this study are as follows:

$$ROA_{i,t} = \beta_0 + \beta_1 GDP_{i,t} + \mu_{it} \quad (1)$$

$$ROE_{i,t} = \beta_0 + \beta_1 GDP_{i,t} + \mu_{it} \quad (2)$$

Equation (1) and (2) show the impact of economic growth on bank profitability. With β_0 expressing a constant term, β_1 denotes the slope coefficient of GDP, and $\mu_{i,t}$ is a random error in the model. In a similar way, the effect of banks profitability on economic growth is modeled as follows:

$$GDP_{i,t} = \alpha_0 + \alpha_1 ROA_{i,t} + \varepsilon_{i,t} \quad (3)$$

$$GDP_{i,t} = \alpha_0 + \alpha_1 ROE_{i,t} + \varepsilon_{i,t} \quad (4)$$

While β_0 in models 3 and 4 refers to the constant term, β_1 refers to the slope coefficient ROA and ROE, $\mu_{i,t}$ is a random error in models 3 and 4. In both models i , ($i = 1, 2 \dots N$) represents the data size of the cross section of the variables, at ($t = 1, 2, \dots, T$) represents the dimension of the time series.

This study will investigate the causal relationship between the variables ROA, ROE and GDP. First of all, the Dumitrescu - Hurlin (2012) causality test developed by the traditional Granger (1969) model, which is used in time series and adopted for panel data models, will be applied. In order for this test to be applicable the series must be stationned at the same level.

Research Results

The summary statistics covered by this survey are included in Table 2.

Table 2: Results of Descriptive Statistics for the Period: 2008: Q1-2020: Q4

Country	Variable	Obs	Mean	Std. Dev.	Min	Max
Bosnia and Herzegovina	BDP	52	-0.10961	3.393145	-9.3	4.4
	ROA	52	0.84423	0.648804	-0.60	2.0
	ROE	52	6.07692	4.589229	-5.5	13.6
Serbia	BDP	52	2.02884	2.878135	-4.2	8.8
	ROA	52	1.45961	0.59779	-0.07	2.77
	ROE	52	7.26346	3.02948	-0.36	12.72
Croatia	BDP	52	-0.00576	2.49975	-14.2	4.0
	ROA	52	1.11731	0.65670	-1.5	2.0
	ROE	52	8.03846	4.76923	-10.9	14.5

Source: Calculation by the author

The highest average value of the growth rate of return on equity was achieved by Croatia (8.04), followed by Serbia (7.26) and Bosnia and Herzegovina (6.08). Also, the standard deviation as the first measure of volatility followed the same pattern in movement. Such high average growth rates of return on equity are a direct consequence of rising costs and increased deductions from current income to cover loan losses in 2010 (Plakaločić and Alihodžić, 2015). When observing economic activity for the observed period, the highest average value was achieved by Serbia of around 2.03. The table below illustrates the results of the unit root test.

Table 3: Results of the Dickie-Fuller Unit Root Test for Countries: Bosnia and Herzegovina, Serbia, and Croatia

Series name	Level		The first difference	
	Probability (P) value	The value of t-statistics	Probability (P) value	The value of t-statistics
BDP	0.000	-5.612	0.000	-15.638
ROA	0.000	-5.816	0.0001	-4.896
ROE	0.000	-5.521	0.000	-11.019

Source: Calculation by the author

From the previous table, it can be concluded that all series are stationary, with zero order of integration. Stationing of data means a situation where the statistical properties of indicators such as arithmetic mean, variance and others are constant over time. During the evaluation of the model, it is very important to use stationary series, because in that way it is easier to make a forecast based on the model.

Table 4: Multivariate Time Series - Vector Autoregression - VAR - Case Bosnia and Herzegovina

		Coefficient	Standard error	t	P> t	[95%Confidence interval]	
GDP	GDP						
	L1.	-0.3241	0.16697	-1.94	0.059	-0.66165	0.01328
	L2.	-0.04122	0.15912	-0.26	0.797	-0.36280	0.28037
	ROA						
	L1.	15.779	5.989	2.63	0.012	3.6739	27.884
	L2.	4.559	6.289	0.72	0.473	-8.151	17.271
	ROE						
	L1.	-2.155	0.836	-2.58	0.014	-3.846	-0.4646
	L2.	-0.572	0.883	-0.65	0.521	-2.358	1.2135
	_cons	-0.7760	1.021	-0.76	0.452	-2.8412	1.2891
ROA							
ROA	GDP						
	L1.	-0.02131	0.0352	-0.60	0.549	-0.0925	0.04996
	L2.	0.0045	0.0336	0.14	0.892	-0.0633	0.07251
	ROA						
	L1.	2.1009	1.2652	1.66	0.105	-0.4560	4.6579
	L2.	0.2386	1.3284	0.18	0.858	-2.4462	2.9235
	ROE						
	L1.	-0.2906	0.1767	-1.64	0.108	-0.6478	0.0665
	L2.	-0.0168	0.1866	-0.09	0.928	-0.3941	0.3603
	_cons	0.7997	0.21583	3.71	0.001	0.36356	1.2360
ROE							
ROE	GDP						
	L1.	-0.1529	0.253	-0.61	0.548	-0.6639	0.3579
	L2.	0.0701	0.240	0.29	0.773	-0.4167	0.5570
	ROA						
	L1.	13.914	9.068	1.53	0.133	-4.415	32.242
	L2.	2.0956	9.522	0.22	0.827	-17.14	21.341
	ROE						
	L1.	-1.913	1.266	-1.51	0.139	-4.473	0.6473
	L2.	-0.203	1.338	-0.15	0.880	-2.907	2.5011
	_cons	5.8213	1.547	3.76	0.001	2.694	8.948

Source: Calculation by the author

Note: Relation L1, and L2, refer to the linear subspaces of the applied VAR methodology for estimating linear regression.

According to Table 4, the results of the applied VAR methodology for estimating the linear regression according to the linear subspaces L1 and L2 differ between the indicators of economic activity and profitability of banks in B&H. The highest positive value of the coefficient according to the linear subspace L1 was achieved between the gross domestic product and the indicator of managerial efficiency of banks, i.e., return on assets (15.779), and between return on equity and return on assets (13.914). On the other hand, the highest values based on the linear subspace L2 were also achieved between the indicators of economic activity, i.e., gross domestic product and return on assets (4.559), as well as between the indicators of return on equity and return on assets (2.095).

The causal relationship between the variables determined according to the data used in this study was analyzed according to the Dumitrescu-Hurlin (2012) causality test. In order to determine which of these links exists, this study attempts to analyze the relationship between economic growth and bank profitability using Granger causality test. The results of the Granger causality test are shown in Table 9.

Table 5 illustrates the results of the multivariate time series (vector autoregression) - VAR in the case of Serbia for the period: 2008 - 2020.

		Coefficient	Standard error	t	P> t	[95% Confidence interval]	
GDP	GDP						
	L1.	0.211287	0.2054	1.03	0.316	-0.21711	0.63969
	L2.	0.396636	0.2147	1.85	0.080	-0.05139	0.84466
	L3.	-0.224328	0.3079	-0.73	0.475	-0.86670	0.41804
	L4.	-0.898001	0.1970	-4.56	0.000	-1.30905	-0.48694
	L5.	0.092549	0.2476	0.43	0.675	-0.36148	0.54658
	L6.	0.291953	0.2476	1.18	0.252	-0.224648	0.80855
	ROA						
	L1.	-10.1781	3.5967	-2.83	0.010	-17.6807	-2.6754
	L2.	6.3131	4.4096	1.43	0.168	-2.8852	15.5114
	L3.	5.4881	4.7725	1.15	0.264	-4.4673	15.4436
	L4.	-6.6012	3.6249	-1.82	0.084	-14.162	0.96033
	L5.	-5.7061	3.8231	-1.49	0.151	-13.681	2.26868
	L6.	-4.3807	3.7962	-1.15	0.262	-12.299	3.53808
	ROE						
	L1.	1.70668	0.6830	2.50	0.021	0.28194	3.131
	L2.	-1.21689	0.8402	-1.45	0.163	-2.96969	0.535
	L3.	-0.96163	0.9102	-1.06	0.303	-2.86034	0.937
	L4.	1.64508	0.7665	2.15	0.044	0.04606	3.244
	L5.	1.20273	0.8204	1.47	0.158	-0.50860	2.914
	L6.	0.73156	0.8330	0.88	0.390	-1.00607	2.469
	cons	2.10246	1.40843	1.49	0.151	-0.83546	5.0403
ROA							
ROA	GDP						
	L1.	0.05109	0.0725	0.70	0.489	-0.10022	0.20241
	L2.	0.05960	0.0758	0.79	0.441	-0.09864	0.21785
	L3.	-0.14614	0.1087	-1.34	0.194	-0.37304	0.08074
	L4.	-0.13154	0.0696	-1.89	0.073	-0.27673	0.01364
	L5.	0.06125	0.0768	0.80	0.435	-0.09911	0.22162
	L6.	0.09655	0.0874	1.10	0.283	-0.08592	0.27902
	ROA						
	L1.	-1.20981	1.27041	-0.95	0.352	-3.8598	1.44022
	L2.	0.89378	1.5575	0.57	0.572	-2.3552	4.14275
	L3.	0.30010	1.6857	0.18	0.860	-3.2163	3.81651
	L4.	-0.85250	1.2803	-0.67	0.513	-3.5233	1.81833
	L5.	-0.76809	1.35037	-0.57	0.576	-3.5849	2.04873
	L6.	-1.11445	1.34088	-0.83	0.416	-3.91148	1.68256
	ROE						
	L1.	0.17268	0.2412	0.72	0.482	-0.33055	0.67592

	L2.	-0.14308	0.29679	-0.48	0.635	-0.76220	0.47602
	L3.	0.03011	0.32150	0.09	0.926	-0.64053	0.70076
	L4.	0.28875	0.27076	1.07	0.299	-0.27604	0.85355
	L5.	0.11140	0.28977	0.38	0.705	-0.49305	0.71587
	L6.	0.18233	0.29423	0.62	0.542	-0.43142	0.79608
	cons	0.94365	0.49747	1.90	0.072	-0.09406	1.98137
ROE							
	GDP						
	L1.	0.274122	0.36775	0.75	0.465	-0.493005	1.04125
	L2.	0.288748	0.38460	0.75	0.462	-0.513514	1.09101
	L3.	-0.744095	0.55143	-1.35	0.192	-1.894368	0.40617
	L4.	-0.746305	0.35286	-2.12	0.047	-1.482364	-0.01024
	L5.	0.424919	0.38975	1.09	0.289	-0.388102	1.23794
	L6.	0.526236	0.44346	1.19	0.249	-0.3988195	1.45129
	ROA						
	L1.	-6.38502	6.4405	-0.99	0.333	-19.81967	7.04962
	L2.	5.61798	7.89612	0.71	0.485	-10.85303	22.089
	L3.	1.03447	8.54607	0.12	0.905	-16.7923	18.861
	L4.	-3.307004	6.49106	-0.51	0.616	-16.8471	10.233
	L5.	-3.845851	6.84586	-0.56	0.581	-18.12607	10.434
	L6.	-3.552876	6.79773	-0.52	0.607	-17.73271	10.626
	ROE						
	L1.	0.987003	1.22304	0.81	0.429	-1.56422	3.538226
	L2.	-0.875980	1.50465	-0.58	0.567	-4.01464	2.26268
	L3.	0.1851068	1.629905	0.11	0.911	-3.214816	3.585029
	L4.	1.256572	1.372655	0.92	0.371	-1.606735	4.11988
	L5.	0.477339	1.469065	0.32	0.749	-2.587077	3.541755
	L6.	0.398714	1.49164	0.27	0.792	-2.712793	3.510222
	cons	5.244699	2.522006	2.08	0.051	-0.0161139	10.50551

Source: Calculation by the author

According to Table 5 the results of the applied VAR methodology for estimating the linear regression according to the linear subspaces L1 and L6 differ between the indicators of economic activity and profitability of banks in Serbia. The highest positive value of the coefficient according to the linear subspace L2 was achieved between the gross domestic product and the indicator of managerial efficiency of banks, i.e., return on assets (6.313), and according to the linear subspace L2 was realized between return on equity and return on assets (5.617).

Table 6 illustrates the results of the multivariate time series (vector autoregression) - VAR in the case of Croatia for the period: 2008 - 2020.

Table 6: *Multivariate Time Series - Vector Autoregression - VAR - Case Croatia*

		Coefficient	Standard error	t	P> t	[95% Confidence interval]	
GDP	GDP						
	L1.	-0.16553	0.14053	-1.18	0.246	-0.44955	0.11848
	L2.	-0.01533	0.1411	-0.11	0.914	-0.3006	0.26993
	ROA						
	L1.	-11.464	5.683	-2.02	0.050	-22.95197	0.02323
	L2.	19.502	7.397	2.64	0.012	4.55234	34.4523
	ROE						
	L1.	1.50384	0.7845	1.92	0.062	-0.08188	3.08957
	L2.	-2.69004	1.0047	-2.68	0.011	-4.720802	-0.65928
	_cons	0.488332	0.87108	0.56	0.578	-1.272201	2.248866
ROA							
ROA	GDP						
	L1.	-0.04675	0.04074	-1.15	0.258	-0.12909	0.035586
	L2.	0.03195	0.04092	0.78	0.439	-0.05074	0.114661
	ROA						
	L1.	0.55178	1.6478	0.33	0.739	-2.77858	3.882147
	L2.	-2.03242	2.1444	-0.95	0.349	-6.36656	2.30173
	ROE						
	L1.	-0.08875	0.22746	-0.39	0.698	-0.54847	0.370959
	L2.	0.25003	0.29129	0.86	0.396	-0.33870	0.838767
	_cons	1.46067	0.25253	5.78	0.000	0.950277	1.97106
ROE							
ROE	GDP						
	L1	-0.36602	0.29175	-1.25	0.217	-0.95567	0.22363
	L2.	0.20630	0.29304	0.70	0.486	-0.38596	0.79857
	ROA						
	L1.	4.76921	11.8005	0.40	0.688	-19.08055	28.61899
	L2.	-12.6231	15.3572	-0.82	0.416	-43.66135	18.41498
	ROE						
	L1.	-0.78943	1.62892	-0.48	0.631	-4.08162	2.502753
	L2.	1.50566	2.08607	0.72	0.475	-2.71045	5.72177
	_cons	10.920	1.8084	6.04	0.000	7.26535	14.57555

Source: Calculation by the author

According to Table 6, the results of the applied VAR methodology for estimating the linear regression according to the linear subspaces L1 and L2 differ between the indicators of economic activity and profitability of banks in Croatia. The highest positive value of the coefficient according to the linear subspace L2 was achieved between the gross domestic product and the indicator of managerial efficiency of banks, i.e., return on assets (19.502), and according to the linear subspace L1, the strongest positive relationship was achieved between return on equity and return on assets (4.769).

Table 7 illustrates the results of the multivariate time series (vector autoregression) - VAR in the case of Bosnia and Herzegovina, Serbia, and Croatia for the period: 2008 - 2020.

Table 7: *Multivariate Time Series - Vector Autoregression - VAR -
Case Bosnia and Herzegovina, Serbia and Croatia*

		Coefficient	Standard error	t	P> t	[95% Confidence interval]	
GDP	GDP						
	L1.	0.0142	0.0976	0.15	0.884	-0.1771	0.20567
	L2.	-0.0750	0.0931	-0.81	0.420	-0.2575	0.10752
	ROA						
	L1.	-2.5296	0.9113	-2.78	0.006	-4.3159	-0.74344
	L2.	2.6571	0.9190	2.89	0.004	0.8557	4.45850
	ROE						
	L1.	0.36940	0.1362	2.71	0.007	0.10242	0.63638
	L2.	-0.36692	0.1375	-2.67	0.008	-0.6364	-0.09737
	_cons	0.52614	0.48209	1.09	0.275	-0.41874	1.47104
ROA							
	GDP						
	L1.	-0.0490	0.0274	-1.79	0.074	-0.10284	0.00480
	L2.	0.0126	0.0261	0.48	0.629	-0.03867	0.06398
	ROA						
	L1.	0.32671	0.2562	1.27	0.202	-0.1755	0.82895
	L2.	0.25911	0.2584	1.00	0.316	-0.2473	0.7656
	ROE						
	L1.	-0.0112	0.0383	-0.29	0.768	-0.0863	0.06377
	L2.	-0.0481	0.0386	-1.25	0.213	-0.12398	0.02759
	_cons	0.9169	0.1355	6.76	0.000	0.65126	1.18261
ROE							
	GDP						
	L1	-0.3532	0.1747	-2.02	0.043	-0.6956	-0.01071
	L2.	0.1001	0.1666	0.60	0.548	-0.2264	0.42675
	ROA						
	L1.	1.8756	1.6305	1.15	0.250	-1.3201	5.0715
	L2.	-0.3038	1.6443	-0.18	0.853	-3.5267	2.9190
	ROE						
	L1.	0.0450	0.2437	0.18	0.853	-0.4326	0.5227
	L2.	-0.0963	0.2460	-0.39	0.695	-0.5786	0.38590
	_cons	5.84998	0.86254	6.78	0.000	4.1594	7.54053

Source: Calculation by the author

According to Table 7, the results of the applied VAR methodology for estimating the linear regression according to the linear subspaces L1 and L2 differ between the indicators of economic activity and profitability of banks for all three observed countries (Bosnia and Herzegovina, Serbia, and Croatia). The highest positive value of the coefficient according to the linear subspace L2 was achieved between the gross domestic product and the indicator of managerial efficiency of banks, i.e., return on assets (2.657), and according to the linear subspace L1, the strongest positive relationship was achieved between return on equity and return on assets (1.875).

In statistics, the Breusch-Pagan test developed in 1979 by Trevor Breusch and Adrian Pagan is used to test heteroskedasticity in a linear regression model. If the test statistic has a p-value below the appropriate threshold (for example $p < 5\%$) then the null hypothesis of homoskedasticity is rejected and heteroskedasticity is assumed. If the Breusch-Pagan test shows that there is conditional heteroskedasticity, either a weighted least square can be used (if the source of heteroskedasticity is known) or the standard error of consistent heteroskedasticity can be used. The table below shows the results of the Breusch and Pagan Lagrangian multiplier tests between the random effect model and the fixed effect model.

The obtained results show that the model of fixed effects better explains the influence of independent variables on the dependent variable, i.e., the growth rate of gross domestic product in relation to the random effect model. Since the p-value is greater than 5%, then the null hypothesis is accepted, i.e., the model of fixed effects, which better explains the influence of independents on the dependent variable and homoskedasticity is assumed.

Table 8: *Breusch and Pagan Lagrangian multiplier test results*

Estimated results	Var	Sd=sqrt(Var)
GDP	6.604149	2.569854
e	5.098638	2.258016
u	0	0

Test: $\text{Var}(u)=0$

Chibar2(01)= 0.00

Prob>chibar2= 1.0000

Granger's causality represents the path of the causality test between two observed variables for a series of time series. Therefore, the method is a probabilistic causality calculator that uses empirical data to find a particular form of correlation. For example, if we look at two variables X and Y, and if the variable X can affect the prediction of the variable Y then Granger can cause Y and vice versa. If the variable Y can affect the predictability of the variable X then we come to the conclusion that Y Granger causes X. In this case, it is a matter of double causality. On the other hand, if only one of the variables causes the other variable and not the other way around then it is a single causality. Table 9 shows the obtained results of Granger causality using the Wald test between the variables GDP, ROA, and ROE for the period: 2008 - 2020.

Table 9: Results of the Granger Causality of the Wald Test for BiH, Serbia and Croatia for the Period:
2008 - 2020

Country	Equation	Excluded	F	df	df_r	Prob>F
Bosnia and Herzegovina	GDP	ROA	4.3762	2	40	0.0191
	GDP	ROE	4.0168	2	40	0.0257
	GDP	ALL	2.3947	4	40	0.0664
	ROA	GDP	0.21543	2	40	0.8071
	ROA	ROE	1.4425	2	40	0.2484
	ROA	ALL	0.77943	4	40	0.5452
	ROE	GDP	0.26868	2	40	0.7658
	ROE	ROA	1.3432	2	40	0.2725
	ROE	ALL	0.71962	4	40	0.5836
Serbia	GDP	ROA	2.8052	6	20	0.0380
	GDP	ROE	2.4611	6	20	0.0602
	GDP	ALL	1.6056	12	20	0.1686
	ROA	GDP	0.78242	6	20	0.5936
	ROA	ROE	0.45814	6	20	0.8308
	ROA	ALL	0.81659	12	20	0.6328
	ROE	GDP	1.0057	6	20	0.4490
	ROE	ROA	0.42822	6	20	0.8514
	ROE	ALL	0.85215	12	20	0.6023
Croatia	GDP	ROA	5.0538	2	40	0.0110
	GDP	ROE	5.0761	2	40	0.0108
	GDP	ALL	3.24	4	40	0.0215
	ROA	GDP	1.2824	2	40	0.2695
	ROA	ROE	0.4225	2	40	0.6583
	ROA	ALL	0.86462	4	40	0.4935
	ROE	GDP	1.3552	2	40	0.2695
	ROE	ROA	0.39168	2	40	0.6785
	ROE	ALL	0.87476	4	40	0.4876

Source: Calculation by the author

The results of the research showed for Bosnia and Herzegovina that there is a one-sided causality between the indicators of profitability and economic growth measured through real GDP. The ability of banks to function successfully depends largely on the level of their profitability, where it can be expected that banks with the desired level of profitability can have a positive effect on economic growth. Therefore, the indicator of bank profitability, i.e., return on assets affects economic growth measured in real GDP. Various theoretical and empirical studies have confirmed that financial development can have a positive impact on economic growth (Guiso, et al., 2004). The relationship between the banking sector and economic growth is extremely important for all countries, where the direction or degree of this relationship may vary. In some cases it is stated that the development of the banking sector causes growth, and in other cases the growth causes the development of the banking sector. Also, the results of the research showed for Serbia that there is a one-sided causality between the first indicator of profitability (return on assets - ROA) and economic growth measured over real GDP. Also, the survey results for Croatia showed that there is a one-sided causality between

the first and second profitability indicators (return on assets - ROA and return on equity - ROE) with the indicator of economic growth expressed in real GDP. Therefore, this means that a high level of bank performance through bank performance affects the promotion of economic development, in line with the findings of Ayadi et al. (2010) and Yudistira and Ike (2014). Profitable banks are key drivers of economic growth. The results of the research suggest a positive relationship between bank profitability and economic growth. Therefore, the research results suggest that with an increasing the profitability of banks affects the increase in economic growth. Also, these results show that markets with a higher bank presence have a significantly higher growth rate. This further means that cooperative banks have a significant market share in lending to small and medium-sized enterprises, which are often recognized as drivers of economic development, especially in transition economies.

Conclusion

This research analyzes the impact of banks in some Western Balkan countries on real economic growth. Also, the relationship between bank performance indicators and real GDP growth is considered through empirical research. Therefore, this research aimed to assess the cause-and-effect relationship between bank profitability and economic growth with a set of data from three selected countries covering Bosnia and Herzegovina, Serbia and Croatia in the period from 2008 to 2020. Taking into account several observations and critiques presented in the literature, this research provides new insights into the relationship between bank profitability and economic growth.

The results of causality given by countries confirm the thesis that there is a one-way causality ranging from bank profitability to economic growth. The obtained empirical results confirm the argument that the current pattern of bank profitability encourages economic growth in selected developing countries (Bosnia and Herzegovina, Serbia, and Croatia). Therefore, the results of the research suggest that there is a positive relationship and correlation between bank profitability and economic growth.

This research can be a good basis for future research. Future research could cover the impact of financial indicators such as bank placements, bank deposits on economic growth following a similar empirical method. Also, a longer time horizon as well as different methodologies could produce different results.

References

1. Alev, N. (2018). 'Profitability of the activity bank found in Turkey banking system and economic growth', ASSAM International Refereed Journal, No. 5 (12), pp. 32-43.
2. Awdeh, A. (2012). Banking Sector Development and Economic growth in Lebanon, International Research Journal of Finance and Economics, ISSN 1450-2887, Issue 100, pp. 53-62.
3. Ayadi, R., Llewellyn, D.T., Schmid, R.H., Arbak, E., De Groen, G.W. (2010). Investigating Diversity in the Banking Sector in Europe: Key Developments, Performance and Role of Cooperative Banks. Brussels: Centre for European Policy Studies.
4. Dumitrescu, E.-I. & Hurlin, C., (2012). Testing for granger non-causality in heterogeneous panels, Economic Modelling, 29, pp. 1450-1460.
5. Guiso, L., Sapienza, P., Zingales, L. (2004). Does local financial development matter? Quarterly Journal of Economics, 119(3), pp. 929-969.
6. Gul, Sehrish, Irshad Faiza and Zaman Khalid (2011). Factors Affecting Bank Profitability in Pakistan, The Romanian Economic Journal, Year XIV, No.39, pp.61-84.
7. Javid, M. E. (2016). Bank specific and macroeconomic determinants of bank profitability, Journal of Management Info, 3 (2), pp. 14-18.
8. Klein, P. O. Laurent, W. (2017). Bank Profitability: Good for Growth? Working Paper 2017-02. Paris: Institut de France
9. Levine, R., Zervos, S. (1998). Stock markets, banks, and economic growth. American Economic Review 88, pp. 537-58.
10. Menicucci, E., & Paolucci, G. (2016). The determinants of bank profitability: Empirical evidence from European banking sector. Journal of Financial Reporting and Accounting, 14(1), pp. 86-115.
11. Moussa, M. A. B., Hdidar, Z. (2019). Bank profitability and economic growth: evidence from Tunisia, European Journal of Economic and Financial Research, 3 (4), pp. 81-96.
12. Petkouski, M., Kjosevski, J. (2014) "Does Banking Sector Development Promote Economic Growth? An Empirical Analysis for Selected Countries in Central and South Eastern Europe" Economic Research-Ekonomska Istrazivanja, ISSN:1331-677X, pp.54-66.
13. Plakalović, N., Alihodžić, A. (2015). Novac, banke i finansijska tržišta, Ekonomski fakultet u Banjaluci: Banjaluka.
14. Tan, Y. & Floros, C. (2012). Bank profitability and GDP growth in china: a note', Journal of Chinese Economic and Business Studies, 10 (3), pp. 267-273.
15. Trujillo-Ponce, A. (2013). What determines the profitability of banks? Evidence from Spain. Accounting & Finance 53, pp. 561-86.
16. Yudistira, H.P., Ike, Y.A. (2014). Financial efficiency performance of regional development bank (RDB) to support regional economy in Indonesia. International Journal of Economic Sciences, 3(4), pp. 53-69.

Primljeno: 23.03.2022.
Odobreno: 06.05.2022.

DOI: 10.5937/bankarstvo2201100R

UTICAJ INTELEKTUALNOG KAPITALA NA FINANSIJSKE PERFORMANSE: STUDIJA SLUČAJA FINANSIJSKOG SEKTORA SRBIJE

Dr Nikola Radivojević, profesor strukovnih studija, Akademija
strukovnih studija Šumadija
email: nradivojevic@asss.edu.rs

Ana Dukić, profesor strukovnih studija, Akademija strukovnih
studija Šumadija
email: adukic@asss.edu.rs

Sanja M. Dončić, viši predavač, Beogradska akademija poslovnih i
umetničkih strukovnih studija
email: sanja.doncic@bpa.edu.rs

Rezime:

Iako postoji mnogo radova koji ispituju uticaj intelektualnog kapitala (IK) na performanse finansijskih institucija, gotovo da nema radova koji tretiraju tržišta u razvoju. Prema saznanjima autora, niko u Srbiji nije proučavao efekte IK na finansijske institucije koje posluju u finansijskom sektoru. Ovaj sektor je izuzetno značajan za srpsku privredu, jer je vodeći sektor u kome se najviše iskorišćavaju efekti savremenih informacionih tehnologija i u kome se teži da se novi klijenti privuku nuđenjem inovativnih rešenja i usluga. Stoga je cilj ovog rada da identifikuje i analizira uticaj IK na finansijske performanse, kako bi se odgovorilo da li uticaj IK na finansijske performanse finansijskih institucija koje posluju na tržištima u razvoju ima isti značaj kao uticaj na finansijske institucije koje posluju na razvijenim tržištima, a koje karakteriše visok stepen inovativnosti i IT opreme. Dobijeni rezultati pokazuju da ljudski i angažovani kapital imaju statistički značajan uticaj na finansijske performanse, dok strukturalni kapital nema.

Keywords: Intelektualni kapital; nematerijalna ulaganja; HCE; SCE; CEE; VAIC

JEL klasifikacija: M41, O34, C23

Uvod

U Za razliku od industrijske ere, u informacionoj eri značajno raste vrednost fizički nematerijalnih resursa, a nematerijalna imovina postaje glavni izvor konkurentske prednosti (Ivanović et al. 2021). Ovo je naročito važno za finansijski sektor, koji je usled povećanja konkurencije pod stalnim pritiskom da radi na razvoju novih usluga, finansijskih instrumenata, tehnika, strategija i finansijskog inženjeringa. U ovakvim okolnostima neophodno je da se maksimalno iskoristi ljudski kapital. Međutim, sa druge strane neprestani tehnološki razvoj utiče da na to da su finansijske institucije primorane da budu efikasne u eksploataciji i svojih fizičkih resursa, ali i da koriste svoj imidž i reputaciju i sl. u privlačenju novih klijenata. Kako su ovo elementi intelektualnog kapitala (IK), otuda se nameće potreba da se ispita značaj IK na uspeh poslovanja finansijskih institucija. Kako je ovakva vrsta istraživanja bila retka za srpski finansijski sektor, to je cilj da se ovakvo istraživanje sprovede na primeru finansijskih institucija koje posluju u Republici Srbiji.

Cilj ovog rada je da se identifikuju i analiziraju efekti ključnih komponenti IK na finansijske performanse, kako bi se odgovorilo da li uticaj IK, odnosno njegovi elementi imaju isti uticaj na finansijske performanse finansijskih institucija koje posluju na tržištima u razvoju kao na performanse finansijskih institucija koje posluju na razvijenim tržištima.

Rad je strukturiran na sledeći način. Prvi deo rada je uvodnog karaktera. U drugom delu rada prikazani su rezultati dosadašnjih istraživanja u ovoj oblasti. Treći deo rada posvećen je analizi teorijske osnove za merenje efekata IK na finansijske performanse, gde su prikazani metodologija i uzorak podataka, kao i rezultati originalnog empirijskog istraživanja. Četvrti deo rada je završnog karaktera i u njemu se sumiraju nalazi i izlažu se zaključci ovog istraživanja.

Pregled literature

Različite studije koje se bave finansijskim sektorom ukazuju na to da je uticaj IK od velikog značaja za postizanje finansijskih performansi preduzeća. Mahesh et al. (2012) ispitali su uticaj IK na 40 kompanija sa najvećom tržišnom kapitalizacijom u finansijskom sektoru Australije, u periodu 2006-2008 godine. Njihovi nalazi ukazuju da kod investicionih kompanija, vrednost koeficijenta dodane vrednosti intelektualnog kapitala (VAIC) je veća zbog višeg nivoa efikasnosti ljudskog kapitala (HCE) u poređenju sa bankama i osiguravajućim društvima. U osiguravajućim kompanijama, vrednost VAIC je niža jer su više fokusirane na fizički kapital, a manje na ljudski i strukturni kapital. Prema ovoj studiji, samo efikasnost angažovanog kapitala (CEE) ima značajan i pozitivan uticaj na ROA, dok je uticaj efikasnost strukturalnog kapitala (SCE) beznačajan. Goh (2005) je sproveo istraživanje uticaja efikasnosti IC kod komercijalnih banaka u Maleziji, u periodu od 2001. do 2003.godine. Zaključio je da kreiranje vrednosti zavisi isključivo od HCE. Al-Musalli i Ku Ismail (2014) sproveli su studiju u kojoj su analizirali banke u Saudijskoj Arabiji, u periodu od 2008. do 2010. godine. Prema ovoj studiji, kreiranje vrednosti zavisi, takođe, od HCE, što pozitivno utiče na finansijske performanse. Kaupelite i Kairite (2016) su se, takođe, bavili bankarskim sektorom i analizirali uticaj IK na finansijski učinak 118 banaka (52 male i 66 velikih), u periodu od 2005. do 2014. godine. Autori zaključuju da je IK imao negativan uticaj na finansijske performanse kod velikih banaka nakon finansijske krize, dok je imao negativan uticaj na male banke, pre finansijske krize. Prema ovoj studiji, male banke bi imale veću finansijsku korist od efikasne eksploatacije IK, nego velike banke. Nalazi njihovog istraživanja, takođe, impliciraju da velike banke treba da ulažu u strukturni kapital, dok male banke treba da ulažu u ljudski

kapital. Jafarnežad i Tabari Jadolahzade (2016) sprovedi su studiju, u periodu od 2009 do 2013, na primeru banaka koje su kotirane na berzi u Teheranu. Rezultati njihovog istraživanja su pokazali da je IK pozitivno uticao na finansijske performanse banaka. Takođe, otkrili su da je IK imao najveći uticaj na stopu prinosa na aktivu, prinos na kapital i zaradu po akciji. Meles et al. (2016) istraživali su uticaj IK na finansijske performanse na uzorku od 5749 komercijalnih banaka u Sjedinjenim Američkim Državama, u periodu 2005. do 2012. godine. Efikasnost IK je merena korišćenjem VAIC modela, dok je finansijski učinak meren kroz prinos na aktivu (ROA) i prinos na kapital (ROE). Rezultati pokazuju da HCE pozitivno utiče na oba pokazatelja finansijskog učinka banaka, dok SCE nema značajan uticaj. Autori su zaključili da veće vrednosti VAIC rezultiraju poboljšanim finansijskim performansama banaka. Ozkan i dr. (2017) su posmatrali 44 banke u Turskoj, u periodu od 2005. do 2014. godine. Posmatrajući komponente VAIC, autori zaključuju da CEE i HCE imaju pozitivan uticaj na finansijske performanse banaka, pri čemu CEE ima veći uticaj od HCE. Javed i Jahan (2017) posmatrali su pakistansku berzu (komercijalne banke, mikrofinansijske i investicione banke). Došli su do spoznaje da efikasnost ljudskog kapitala značajno utiče na finansijske performanse mikrofinansijskih i investicionih banaka, dok komercijalne banke poboljšavaju svoje finansijske performanse kroz efikasnu eksploataciju strukturnog kapitala. Tran i Vo (2018) su sprovedi studiju u kojoj su posmatrali banke na Tajlandu u periodu od 1997. do 2016. godine. Rezultati njihovog istraživanja pokazuju da profitabilnost banaka primarno zavisi od efikasnosti upotrebe finansijskog kapitala. Poh et al. (2018) ispitivali su uticaj IK na finansijske performanse lokalnih banaka u Maleziji, u periodu od 2011. do 2016. i od 2007. do 2016. godine. Rezultati regresione analize, koju su sprovedi, ukazuju na to da sve komponente IK imaju uticaj na pokazatelje finansijskog poslovanja banke. Otkrili su da značaj komponenti IK variraju u zavisnosti od perioda posmatranja.

Alipour (2012) je analizirao uticaj IK na performanse 39 osiguravajućih kompanija u Iranu u periodu od 2005 do 2007. godine. Rezultati istraživanja su otkrili da VAIC i njegove komponente imaju značajan pozitivan uticaj na profitabilnost osiguravajućih kompanija. Lu et al. (2014) sprovedi su istraživanje na primeru 34 kineske kompanije za životno osiguranje u periodu od 2006. do 2010. godine. Otkrili su da sve komponente IK utiču na poslovanje osiguravajućih društava, ali da najveći uticaj ima HCE. Hidaia et al. (2016) su u svojoj studiji ispitivali odnos između IK i finansijskih performansi na uzorku od 9 indonežanskih osiguravajućih kompanija, koje su kotirane na berzi. Istraživanje su sprovedi za period od 2009. do 2013. godine. Rezultati njihove analize potvrđuju da postoji pozitivan uticaj IK na finansijske performanse ovih kompanija. Arifa i Ahmar (2016) ispitali su, na uzorku od 10 osiguravajućih kompanija, efekte VAIC i njegovih komponenti na ROA i ROE u Indoneziji za period 2010-2013. godine. Rezultati njihovog istraživanja pokazuju da HCE i CEE pozitivno utiču na ROA i ROE, dok SCE nema značajan uticaj. Nourani et al. (2017) su ispitali uticaj IK na performanse osiguravajućih kompanija u Maleziji i došli do zaključka da IK nema značajan uticaj na finansijske performanse ovih kompanija.

Ono što je zajedničko ovim studijama jeste da ne postoji saglasnost o tome koja komponenta IK ima najveći uticaj na finansijske performanse banaka. Postavlja se pitanje koja je ključna komponenta IK, koja ima najveći uticaj finansijske performanse finansijskih institucija koje posluju u Republici Srbiji.

Metodologija istraživanja i empirijski rezultati

Kao što je već spomenuto u prethodnim delovima rada, glavni cilj jeste da se ispita uticaj VAIC i njegovih komponenti, HCE, SCE i CEE na finansijske performanse institucija koje posluju na tržištima u razvoju. HCE predstavlja koeficijent efikasnosti ljudskog kapitala koji se može definisati kao

kombinovanje ljudskih sposobnosti za rešavanje poslovnih problema. Čine ga četiri komponente: 1) elementi koje svaki zaposleni unosi u radni proces (inteligencija, energija, entuzijazam, iskustvo, veštine, emotivna inteligencija i sl.), 2) sposobnosti učenja (unapređenje, inteligencija i kreativnost), 3) sposobnost delovanja (konverzija podataka i informacija za akciju) i 4) motivacija (podela informacija i znanja i razvoj timskog duha i ciljne orijentacije). SEC je koeficijent strukturalnog kapitala koji se može definisati kao skup nematerijalne imovine i znanja koji proizilaze iz organizacionih procesa u vlasništvu i vlasništvu preduzeća iako zaposleni napuštaju preduzeće. CEE je koeficijent efikasnosti upotrebe angažovanog kapitala koji se može definisati kao uloženi kapital. Matematički ovi koeficijenti se mogu iskazati na sledeći način:

$$VAIC = HCE + SCE + CEE \quad (1)$$

$$HCE = \frac{VA}{HC} \quad (2)$$

$$SCE = \frac{VA - HC}{VA} \quad (3)$$

$$CEE = \frac{VA}{CE} \quad (4)$$

Pri čemu su:

VA	-	Dodata vrednost - zbir operativne dobiti, troškova rada, otpisane vrednosti i amortizacije
HC	-	Plate i druga lična primanja
CE	-	Fizički i finansijski kapital
HEC	-	Efikasnost ljudskog kapitala
SCE	-	Efikasnost strukturnog kapitala
CEE	-	Efikasnost uloženog kapitala

Istraživanje je sprovedeno na primeru finansijskog sektora Republike Srbije. U radu se ispituje uticaj komponenti VAIC na jedan od ključnih indikatora finansijskih performansi finansijskih institucija, a to je ROE. Matematički model se može prikazati na sledeći način, uz napomenu da je reč o linearnom modelu panel podataka:

$$ROE_{i,t} = \alpha_i + \beta X_{i,t} + \varepsilon_{i,t} \quad (5)$$

pri čemu je $ROE_{i,t}$ prinos na kapital i -te jedinice posmatranja u trenutku (t) , $X_{i,t}$ je $1 \times k$ vektor nezavisnih promenljivih (HCE , SCE , CEE), dok je α_i je $k \times 1$ vektor parametara. α_i je vremenski nepromenljiva i specifična za svaku jedinicu posmatranja komponenta, dok $\varepsilon_{i,t}$ predstavlja grešku modela specifičnu za svaku jedinicu posmatranja u periodu t . Imajući u vidu ovakvu specifikaciju modela

(1), za potrebe analize korišćen je metoda Fiksni efekata za ocenu parametara modela (1). Pored glavnih varijabli, u model su uključene i tri kontrolne varijable, što je u skladu sa preovlađujućom literaturom. Kontrolne varijable su: veličina finansijske institucije (VEL), koja predstavlja logaritam iznosa ukupne aktive, starost finansijske institucije (AGE), koja predstavlja prirodni logaritam broja godina od osnivanja kompanije i koeficijent leveridža (LEV).

Upotreba analize panel podataka omogućava kontrolu pristrasnosti, koju generiše potencijalna heterogenost (Radivojević & Jovović, 2017). U radu se koriste izbalansirani panel podaci. Panel se sastoji iz 22 banke, 12 osiguravajućih društava, 6 lizing kompanija i 6 brokerskih društava. Podaci su prikupljeni od HR sektora ovih kompanija, za period od 2011. do 2018. godine.

U tabeli 1 prikazani su rezultati destruktivne statistike za izabrane varijable.

Tabela 1. Rezultati deskriptivne analize izabranih varijabli

Variable	Observ.	Mean	St. Dev.	Min	Max
HCE	368	1.540	2.390	-11.30	18.80
SCE	368	0.614	2.421	-9.610	38.90
CEE	368	0.100	0.513	-3.510	3.400
ROE	368	-0.025	0.411	-2.480	0.325
VEL	368	13.40	2.990	18.20	22.11
AGE	368	2.910	0.448	0.410	3.960
LEV	368	0.544	0.313	0.004	2.981

Izvor: (Autori)

Kao što se može videti iz tabele 1, prosečna vrednost HCE u posmatranom periodu iznosi 1.540, uz izraženu neravnotežu između institucija u pogledu raspona HCE. U posmatranom periodu HCE se kreće od -11.300 do 18.800. Prosečna vrednost HCE je značajno niža u poređenju sa vrednostima ove komponente koju su predstavili Alipur, (2012), Mahesh et al. (2013), Al-Musalli & Ismail (2014), Lu et al. (2014), Ozkan et al. (2017), Javed & Jahan, (2017), Arifa & Ahmar (2016) i Melesu et al. (2016), ali veća od vrednosti HCE, koju su predstavili Tran & Vo (2018). U slučaju SCE prisutan je još veći disparitet. Vrednost ove varijable kreće se od -9.610 do 38.900, dok je prosečna vrednost SCE iznosi 0.614, što je slično rezultatima istraživanja Mahesh et al. (2013), Al-Musalli & Ku Ismail (2014), Ozkan et al. (2017) i Javed & Jahan (2017), ali i veće od zabeleženih vrednosti kod Melesu et al. (2016). Nasuprot ovome, vrednost SCE je niža od vrednosti koje su prijavili Alipur (2012); Arifa & Ahmar (2016) i Tran & Vo (2018). Prosečna vrednost CEE je oko 0.100, a njegova vrednost se kretala od -3.510 do 3.400. Vrednost ovog elementa niža je od one koja je zabeležena u finansijskom sektoru u Australiji (Mahesh et al., 2013), Pakistanu (Javed & Jahan, 2017), Kini (Lu et al. (2014) ili Indoneziji (Arifa & Ahmar, 2016), ali je znatno veća od vrednosti koju je ostvario finansijski sektori u turskoj Turska (Ozkan et al., 2017) ili na Tajlandu (Tran & Vo, 2018).

Vrednost standardnih devijacija za HCE i SCE iznose 2.390, odnosno 2.421, što implicira relativno veliku varijabilnost. S druge strane, vrednost standardne devijacije za CEE od 0.513 ukazuje na relativno nisku varijabilnost u pogledu vrednosti ovog koeficijenta po godinama.

Prosečna vrednost ROE je približno -0.025, što znači da su posmatrane kompanije u posmatranom periodu, u proseku, ostvarile negativne finansijske rezultate. Podaci pokazuju relativno visok disparitet između finansijskih institucija u pogledu ovog indikatora performansi. Njegova vrednost se kretala u rasponu od -2.480 do 0.325. Visoka standardna devijacija ROE može se tumačiti kao posledica velikih oscilacija u finansijskim performansama odabranih institucija. Prosečna vrednost LEV je približno 0.554, što implicira da svoja poslovanja uglavnom finansiraju iz duga. Međutim, visoka vrednost standardne devijacije LEV, takođe ukazuje na velike razlike između kompanija. Vrednost ovog indikatora kreće se od 0.04 do 2.981. To ukazuje na nejednakost u finansijskoj moći izabranih kompanija, što je bilo i očekivano, jer panel čine i velike banke, ali male brokerske kuće. Vrednost varijable VEL je velika jer se u panelu nalaze najveće banke i investicioni fondovi koji posluju u Srbiji. Visoka vrednost standardne devijacije ukazuje na postojanje velikih razlika u finansijskoj snazi između odabranih kompanija. Slično je i sa varijablom AGE. Panel uključuje banke sa dugom tradicijom, ali finansijske institucije koje su relativno nedavno osnovane.

Kako prvi korak u radu sa vremenskim serijama podrazumeva testiranje stacionarnosti panel podataka, to je testirano prisustvo jediničnog korena primenom Choi-meta test. Rezultati testa prikazani u tabeli 2.

Tabela 2. Test jediničnog korena

Varijable	Choi meta test		
	Test	Vrednost	p-value
HCE	Inverse $\chi^2(94)$	171.315	0.000
	Inverse normal test	-3.152	0.001
	Logit test: t(239)	-2.624	0.005
SCE	Inverse $\chi^2(94)$	495.655	0.000
	Inverse normal test	-7.833	0.000
	Logit test: t(239)	-17.072	0.000
CEE	Inverse $\chi^2(94)$	271.896	0.000
	Inverse normal test	-5.749	0.000
	Logit test: t(239)	-7.690	0.000
ROE	Inverse $\chi^2(94)$	374.578	0.000
	Inverse normal test	-5.555	0.000
	Logit test: t(239)	-11.729	0.000
VEL	Inverse $\chi^2(94)$	461.783	0.000
	Inverse normal test	-5.085	0.000
	Logit test: t(239)	-14.359	0.000
AGE	Inverse $\chi^2(94)$	631.784	0.000
	Inverse normal test	-7.688	0.000
	Logit test: t(239)	-22.030	0.000
LEV	Inverse $\chi^2(94)$	626.648	0.000
	Inverse normal test	-10.116	0.000
	Logit test: t(239)	-23.207	0.000

Izvor: (Autori)

Kao što se može videti iz tabele 2, nijedna serija nema problem sa nestacionarnošću. Kako naredni korak u radu sa podacima panela podrazumeva analiza korelacione matrice, to je u sledećem koraku izvršeno. Rezultati su prikazani u tabeli 3.

Tabela 3. Matrica korelacije i VIF koeficijenata

HCE	SCE	CEE	ROE	VEL	AGE	LEV		VIF
1,000	-0,140	0,381	0,461	0,193	0,161	-0,109	HCE	1,701
	1,000	-0,084	-0,202	0,024	0,098	0,162	SCE	1,011
		1,000	0,755	-0,311	-0,225	-0,214	CEE	1,323
			1,000	-0,111	0,172	-0,313	ROE	-
				1,000	0,320	0,711	VEL	1,137
					1,000	0,091	AGE	2,211
						1,000	LEV	1,553

*Napomena: VIF koeficijent izračunat na osnovu procene jednačine (1) korišćenjem OLS metode.
Izvor: (Autori)*

Rezultati prikazani u tabeli 3 ukazuju na to da ne postoji jaka korelacija između bilo koja dva para varijabli. Iz tog razloga nijedna varijabla nije isključena iz daljeg istraživanja. Analiza je dalje sprovedena ispitivanjem prisustva multikolinearnosti. Iako ne postoji jaka korelacija između varijabli, ne veća od 0.8, u radu je urađen test multikolinearnosti. U tu svrhu korišćen je test faktora inflacije varijanse (VIF). Rezultati ovog testa prikazani su u drugom delu tabele 3. Kao što se i moglo očekivati, nema multikolinearnosti između izbranih varijabli.

U tabeli 4 prikazani su rezultati ocene parametara modela (5) dobije primenom metoda Fiksni efekata.

Tabela 4. Ocene parametara modela (5)

	Koeficijent	Std. greška	t-ratio	p-vrednost
konstanta	-1,383	0,243	-5,686	0,0001***
HCE	0,050	0,007	6,930	0,0001***
SCE	-0,004	0,004	-1,028	0,305
CEE	0,659	0,041	16,170	0,0001***
VEL	0,045	0,011	3,935	0,000***
AGE	0,083	0,037	2,265	0,024**
LEV	-0,111	0,057	-1,956	0,051*
LSDV R ² : 0,752			Within R ² : 0,709	
Log-likelihood: 127,986			Akaike kriterijum: -149,972	
Zajednički test izabranih regresora: F(6, 323) = 131,021 (1,98e-083)				
Test različitih odsečaka: F(46, 323) = 3,043 (4,50e-009)				
Hausman-ov test: H = 27,4548 (0,0001)				

*Napomena: *, **, *** odnosi se na nivo poverenja 1%, 5% i 10%.
Veštačke varijable su izostavljene
Izvor: (Autori)*

Budući da veštačka varijabla nije uključena u model, Within R2 je prava pokazatelj validnosti modela. Kako vrednost ovog pokazatelja iznosi oko 0,709, to znači da je oko 71%, varijacija u zavisnoj varijabli objašnjeno korišćenjem u model uključenih nezavisnih varijabli. U prilog dobro specificiranom modelu jeste i p-vrednost zajedničkog testa izabranih regresora, koja je manje od 5%, što znači da beta koeficijenti nisu jednaki nuli, ali imaju uticaj na zavisnu promenljivu. Drugim rečima, to znači da su u modelu odabrane prave varijable. Test za različite odsečke otkriva da finansijske kompanije imaju svoje specifičnosti koje utiču na finansijske performanse, kao što su organizaciona klima i kultura, kvalitet menadžmenta, averzija prema riziku, način upravljanja ljudskim resursima itd. Sve ove karakteristike utiču na rezultate poslovanja izabranih kompanija. Ovo opravdava primenu FE modela. Takođe, Hausmanov test opravdava primenu ovog procenitelja. Rezultati FE ukazuju da su HCE i CEE značajne varijable, ali nije pronađena statistički značajna veza između SCE i ROE. Drugim rečima, rezultati pokazuju da postoji pozitivna i značajna korelacija između HCE i CEE i ROE. Zapravo, rezultati impliciraju da će za svaki porast u efikasnosti upotrebe ljudskog kapitala od 1% uticati na povećanje ROE za oko 0,05%, dok će svako povećanje u CIE od 1% dovesti do povećanja finansijskog učinka odabranih kompanija za oko 0,66%. Ovi nalazi su u skladu sa istraživanjima koja su sprovedi Arifa & Ahmar (2016), Jafarnezhad & Iadollahzade (2016), Meles et al. (2016); Ozkan et al. (2017), Tran & Vo (2018), Poh et al. (2018).

Veličina kompanije ima značajan i pozitivan uticaj na ROE, što znači da se finansijske performanse ovih institucija poboljšavaju sa povećanjem njihove veličine, izražene kroz vrednost ukupne aktive. Ovakav nalaz je i očekivan kada se ima u vidu odnos između profitabilnosti i veličine, iskazane kroz vrednost aktive, finansijskih institucija koje posluju u Republici Srbiji. Rezultati ukazuju da starost ovih kompanija ima značajan uticaj na njihove finansijske performanse. Rezultati ukazuju ne negativan uticaj leveridža na finansijske performanse poslovanja ovih institucija. Međutim, ovaj nalaz u suprotnosti je sa teorijskim postulatima finansijskog leveridža, prema kojima svako povećanje duga će dovesti do povećanja stope prinosa na sopstveni kapital. Stoga prilikom, tumačenja ovog nalaza treba biti oprezan i uzeti u obzir strukturu panel podataka.

Imajući u vidu da je starost preduzeća značajna komponenta, postavlja se pitanje da li se specifičnosti preduzeća tokom vremena menjaju. FE ocenjivač je koristan kada svaka kompanija ima jedinstvene karakteristike koje su skrivene i konstantne tokom vremena (tzv. neopažena vremenski invarijantna heterogenost). Međutim, da bi se ispitalo da li jedinstvene karakteristike finansijskih institucija variraju tokom vremena, u jednačinu (5) uključene su vremenske lažne varijable. Otuda, model (5) postaje:

$$ROE_{i,t} = \alpha_{i,t} + \beta X_{i,t} + \varepsilon_{i,t} \quad (6)$$

Rezultati ocene parametara modela (6), takođe dobijene primenom FE ocenjivača su prikazane u tabeli 5.

Tabela 5. *Ocene parametara modela (6)*

	Koeficijent	Std. greška	t-ratio	p-vrednost
konstanta	-1,449	0,244	-5,931	0,0001***
HCE	0,048	0,007	6,648	0,0001***
SCE	-0,004	0,004	-0,977	0,329
CEE	0,661	0,041	16,300	0,0001***
VEL	0,045	0,011	3,985	0,000***
AGE	0,088	0,037	2,411	0,016**
LEV	-0,126	0,057	-2,219	0,027**
dt2	0,037	0,038	0,959	0,338
dt3	0,093	0,038	2,446	0,015**
dt4	0,075	0,038	1,958	0,051*
dt5	0,105	0,038	2,759	0,006***
dt6	0,042	0,038	1,093	0,275
dt7	0,033	0,038	0,854	0,394
dt8	0,037	0,035	0,979	0,328
LSDV R ² : 0,760			Within R ² : 0,72	
Log-likelihood: 134,940			Akaike kriterijum: -149,828	
Zajednički test izabranih regresora: F(6, 316) = 128,802 (8,3e-083)				
Test različitih odsečaka: F(46, 316) = 3,37 (5,27e-009)				
Wald-ov test: χ^2 (7) = 11,862 (0,105)				

Izvor: (Autori)

Rezultati potvrđuju gore navedene nalaze i ukazuju da nema vremenskog efekta. Ovo ukazuje na validnost izabranog ocenjivača i potvrđuje početnu pretpostavku u vezi vremenski nepromenljivih efekata. Da bi se dobile robusne procene i potvrdili nalazi, model (5) je procenjen metodom lažnih promenljivih najmanjih kvadrata (LSDV). Rezultati ovog ocenjivača dati su u prilogu i takođe potvrđuju prethodno iznete nalaze.

Zaključak

U ovom radu se ispituje uticaj IK, odnosno njenih ključnih komponenti, u skladu sa VAIC modelom, na performanse finansijskih institucija koje posluju u Republici Srbiji, kako bi se odgovorilo na pitanje da li IK i njegove komponente imaju isti uticaj i značaj na performanse ovih institucija, kao kod finansijskih institucija koje posluju na razvijenim tržištima, koja imaju visok stepen inovativnosti, kreativnosti i primene savremenih IT.

U radu je korišćena analiza panel podataka. Za ocenu parametara modela korišćena FE metoda. Da bi se dobile robusne procene, korišćen je LSDV ocenjivač panel podataka. Rezultati ukazuju da su HCE i CEE značajne varijable, ali nije pronađeno da postoji statistički značajna veza između SCE i ROE. Drugim rečima, rezultati pokazuju da postoji pozitivna i značajna korelacija između HCE i CIE i ROE. Zapravo, rezultati govore da će za svaki porast HCE od 1% stopa ROE porasti za oko 0,05%, dok će svako povećanje u CIE od 1% dovesti do povećanja finansijskih performansi odabranih kompanija za oko 0.66%. Ovi nalazi su u skladu sa istraživanjima koja su sproveli Arifa & Ahmar (2016), Jafarnezhad & Iadollahzade (2016), Meles et al. (2016), Ozkan i dr. (2017), Tran & Vo (2018), Poh et al. (2018).

Rezultati istraživanja otkrivaju da veličina finansijskih institucija ima značajan i pozitivan uticaj na ROA, što znači da se finansijske performanse mogu poboljšati povećanjem veličine kompanija, iskazane kroz vrednost ukupne aktive. To je razumljivo kada se uzme u obzir odnos između profitabilnosti i veličine finansijskih institucija, iskazanih kroz vrednost ukupne aktive, koje posluju u Republici Srbiji. Starost je takođe varijabla koja značajno utiče na finansijske performanse. Imajući u vidu strukturu panel podataka, nalaz vezan za uticaj leveridža na finansijske performanse zahteva dublju analizu.

Literatura

1. Agostini L., Nosella, A., Filippini, R. (2017). Does intellectual capital allow improving innovation performance? A quantitative analysis in the SME context. *Journal of Intellectual Capital* 18(2), 400-418.
2. Alipour, M. (2012). The effect of intellectual capital on firm performance: an investigation of Iran insurance companies. *Measuring Business Excellence* 16(1), 53-66.
3. Al-Musalli M.A., Ku Ismail N.I. (2014). Intellectual capital and its effect on financial performance of banks: evidence from Saudi Arabia. *Procedia e Social and Behavioral Sciences* 164, 201-207.
4. Arifa P.A., Ahmar N. (2016). The effect of intellectual capital on the financial performance of insurance companies listed on the Indonesia Stock Exchange (ISE). *The Indonesian Accounting Review* 6(1), 45-54.
5. Chan K.H. (2009). Impact of intellectual capital on organisational performance: An empirical study of companies in the Hang Seng Index (Part 1 & 2). *The Learning Organization* 16(1), 4-21.
6. Choong K.K. (2008). Intellectual capital: definitions, categorization and reporting models", *Journal of Intellectual Capital* (9)4, 609-638.
7. Cardoza K., Basara, J. Cooper, L., Conroy R. (2006). The power of intangible assets: an analysis of the S&P 500. *Les Nouvelles*.
8. Chu K.W.S., Chan H.K., Wu, W.W.Y. (2011). Charting intellectual capital performance of the gateway to China", *Journal of Intellectual Capital* 12(2), 249-276.
9. Goh P.C. (2005). Intellectual capital performance of commercial banks in Malaysia. *Journal of Intellectual Capital* 6(3), 385-396.

10. Hidayat C., Putong I., Puspokusumo, R. (2016). The Interrelationship between Intellectual Capital and Financial Performance: A Case Study of Indonesian Insurance Companies. *Pertanika Journal of Social Sciences & Humanities* 24, 83-97.
11. Ivanovic T., Maksimovic G., Mandaric, M., Radivojevic, N., Jovic, M. (2021). The impact of intellectual capital on the financial performance of agricultural enterprises: evidence from the West Balkans Counties. *Custos e @gronegocio on line* 17(2), 350-376.
12. Javed, I., Jahan, Z. (2017). Corporate Governance, Intellectual Capital and Financial Performance of Banks listed in Pakistan Stock Exchange. *Pakistan Administrative Review* 1(3), 175-196.
13. Jafarnezhad M., Tabari Y. (2016). The Effect of Intellectual Capital on Financial Performance: Evidence from Iranian Banks Listed in Tehran's Stock Exchange. *International Journal of Management, Accounting and Economics* 3(1), 1-14.
14. Kaupelytė, D. and Kairytė, K. (2016). Intellectual capital efficiency impact on european small and large listed banks financial performance. *International Journal of Management, Accounting and Economics* 3(6), 367-377.
15. Khalique M., Bontis N., Abdul, J., Abu, S., Isa, H. (2015). Intellectual capital in small and medium enterprises in Pakistan. *Journal of Intellectual Capital* 16(1) 224-238.
16. Lu W.M., Wang W.K, Kweh, Q. L. (2014). Intellectual capital and performance in the Chinese life insurance industry. *Omega* 42(1), 65-74.
17. Mahesh J., Daryll C., Jasvinder, S., Monika, K. (2013). Intellectual capital and financial performance: an evaluation of the Australian financial sector. *Journal of Intellectual Capital* 14(13), 266-285.
18. Meles A., Porzio C., Sampagnaro, G., Verdoliva, V. (2016). The impact of the Intellectual Capital Efficiency on Commercial Banks Performance: Evidence from the US. *Journal of Multinational Financial Management* 36, 64-74.
19. Mohamed, I.A.H. (2017). Methods of measuring intellectual capital and the efficiency of investment it: advantages and disadvantages. *Analytical comparative study. Imperial journal of Interdisciplinary research* 3(2), 1083-1092.
20. Nourani M., Chandran V., Kweh, Q. L., Lu, W.M. (2017). Measuring Human, Physical and Structural Capital Efficiency Performance of Insurance Companies. *Social Indicators Research* 137(1), 281-315.
21. Ozkan N., Cakan, S., Kayacan M. (2017). Intellectual capital and financial performance: A study of the Turkish Banking Sector. *Borsa Istanbul Review* 17(3), 190-198.
22. Osinski M., Selig M.P., Matos, F., Roman D.J. (2017). Methods of evaluation of intangible assets and intellectual capital. *Journal of Intellectual Capital* 18(3), 470-485.
23. Pasher, E., Ronen T. (2011). *The Complete Guide to Knowledge Management-A Strategic Plan to Leverage Your Company's Intellectual Capital*. John Wiley & Sons, Inc., Hoboken, New Jersey.
24. Pulic A. (1998). Measuring the performance of intellectual potential in knowledge economy". In 2nd McMaster World Congress on Measuring and Managing Intellectual Capital by the Austrian Team for Intellectual Potential.
25. Radivojevic N., Jovovic, J. (2017). Examining of determinants of non-performing loans. *Prague Economic Paper* 26(3). 300-316.

26. Sidharta I., Affandi, A. (2016). The Empirical Study on Intellectual Capital Approach toward Financial Performance on Rural Banking Sectors in Indonesia. *International Journal of Economics and Financial Issues* 6(3), 1247-1253.
27. Sullivan P.H. (2000). *Value-Driven Intellectual Capital: How to Convert Intangible Corporate Assets into Market Value*, Wiley, New York.
28. Poh T.L., Adem K., Siti Nur Iqmal, I. (2018). On intellectual capital and financial performances of banks in Malaysia. *Cogent Economics & Finance* 6(1), 1-15.
29. Teo S., Reed, K.K., Ly, K. (2014). Human resource involvement in developing intellectual capital", *The Service Industries Journal* 34(15), 1219-1233.
30. Tran D.B. Vo, D.H. (2018). Should bankers be concerned with Intellectual capital? A study of the Thai banking sector. *Journal of Intellectual Capital* 19(5), 897-914.
31. Yanga J., Brashear, T., Asare, A. (2015). The value relevance of brand equity, intellectual capital and intellectual capital management capability. *Journal of Strategic Marketing* 23(6), 543-559.

Appendix

Tabela 1A. *Ocene parametara modela (1) dobijene primenom LSDV ocenjivača*

	Koeficijent	Std. greška	t-ratio	p-vrednost
konstanta	-1.604	0.285	-5.633	<0.0001
HCE	0.050	0.007	6.930	<0.0001
SCE	-0.004	0.004	-1.028	0.305
CEE	0.659	0.041	16.170	<0.0001
VEL	0.045	0.011	3.935	0.000
AGE	0.083	0.037	2.265	0.024
LEV	-0.111	0.057	-1.956	0.051
du_1	0.134	0.135	0.990	0.323
du_2	0.481	0.124	3.865	0.000
du_3	0.471	0.126	3.746	0.000
du_4	0.404	0.126	3.209	0.002
du_5	0.530	0.127	4.156	<0.0001
du_6	0.359	0.109	3.294	0.001
du_7	0.467	0.121	3.868	0.000
du_8	0.172	0.122	1.409	0.160
du_9	0.133	0.106	1.256	0.210

du_10	0.081	0.103	0.790	0.430
du_11	0.279	0.107	2.615	0.009
du_12	0.307	0.107	2.877	0.004
du_13	0.221	0.106	2.090	0.037
du_14	0.303	0.109	2.793	0.006
du_15	0.353	0.107	3.300	0.001
du_16	0.497	0.131	3.784	0.000
du_17	0.299	0.130	2.303	0.022
du_18	0.451	0.128	3.524	0.001
du_19	0.291	0.110	2.657	0.008
du_20	0.203	0.104	1.955	0.052
du_21	0.194	0.108	1.798	0.073
du_22	-0.225	0.098	-2.301	0.022
du_23	-0.041	0.102	-0.4000	0.689
du_24	0.121	0.099	1.220	0.223
du_25	0.349	0.112	3.125	0.002
du_26	-0.005	0.104	-0.050	0.960
du_27	0.227	0.103	2.218	0.027
du_28	0.371	0.108	3.431	0.001
du_29	0.154	0.097	1.579	0.115
du_30	0.032	0.096	0.336	0.737
du_31	0.062	0.098	0.629	0.530
du_32	0.148	0.096	1.544	0.124
du_33	0.135	0.096	1.414	0.158
du_34	0.175	0.098	1.791	0.074
du_35	0.171	0.099	1.719	0.087
du_36	0.232	0.102	2.264	0.024
du_37	0.220	0.102	2.159	0.032
du_38	0.238	0.100	2.375	0.018
du_39	0.282	0.100	2.827	0.005
du_40	0.222	0.099	2.236	0.026
du_41	0.165	0.096	1.717	0.087
du_42	0.133	0.102	1.301	0.194
du_43	0.179	0.101	1.773	0.077
du_44	0.169	0.099	1.695	0.091
du_45	0.166	0.100	1.670	0.096
du_46	0.081	0.096	0.840	0.401
R ² :0.752				

Izvor: (Autori)

Received: 23.03.2022
Approved: 06.05.2022

DOI: 10.5937/bankarstvo2201100R

THE IMPACT OF INTELLECTUAL CAPITAL ON FINANCIAL PERFORMANCE – CASE STUDY: THE SERBIAN FINANCIAL SECTOR

Nikola Radivojević, PhD, professor of vocational studies,
Academy of Vocational Studies Šumadija
email: nradivojevic@asss.edu.rs

Ana Đukić, professor of vocational studies, Academy of Vocational
Studies Šumadija
email: adukic@asss.edu.rs

Sanja M. Dončić, senior lecturer, Belgrade Academy of Business
and Art Vocational Studies
email: sanja.doncic@bpa.edu.rs

Abstract:

Although there are many papers that examine the impact of intellectual capital on the performance of financial institutions, there are almost no papers that deal with developing markets. According to the author's knowledge, no one in Serbia has studied the effects of IC on financial institutions operating in the financial sector. This sector is extremely important for the Serbian economy since it is the leading sector in which the effects of modern information technologies are the most exploited and in which competitiveness is pursued by attracting new clients, by offering innovative solutions and services. Hence, the aim of this paper is to identify and analyze the IC's impact on financial performance in order to answer whether the impact of IC on the financial performance of financial institutions operating in developing markets has the same importance as the impact on financial institutions operating on developed markets, characterized by a high degree of innovation and IT equipment. The obtained results show that human and engaged capital have a statistically significant impact on financial performance, while structural capital does not.

Keywords: Intellectual capital; Intangible assets; HCE; SCE; CEE; VAIC; financial performance; financial sector; Serbia.

JEL classification: M41, O34, C23

Introduction

Unlike the industrial era, the value of physically intangible resources is growing significantly in the information age, and intangible assets are becoming the main source of competitive advantage (Ivanović et al. 2021). This is particularly important for the financial sector, which is under constant pressure to work on the development of new services, financial instruments, techniques, strategies, and financial engineering due to increased competition. In such circumstances, it is necessary to make the most of human capital. However, on the other hand, the constant technological development influences the fact that financial institutions are forced to be efficient in the exploitation of their physical resources, but also to use their image and reputation and the like, in attracting new customers. As these are elements of Intellectual Capital (IC), there is a need to examine the importance of IC on the business success of financial institutions. As this type of research was rare for the Serbian financial sector, the goal is to conduct this kind of research on the example of financial institutions operating in the Republic of Serbia.

The aim of this paper is to identify and analyze the effects of key components of IC on financial performance, to answer whether the impact of IC or elements of IC have the same impact on the financial performance of financial institutions operating in emerging markets as on the performance of financial institutions in developed markets.

The paper is structured as follows. The first part of the paper is of introductory character. The second part of the paper presents the results of previous research in this field. The third part of the paper is devoted to the analysis of the theoretical basis for measuring the effects of IC on financial performances, where the methodology and data sample, as well as the results of the original empirical research, are presented. The fourth part of the paper is a summary, as it summarizes the findings and outlines the conclusions of this study.

Literature Review

Different studies dealing with the financial sector are indicative of the fact that the impact of IC is of great importance for achieving the financial performance of the company. Mahesh et al. (2012) examined the impact of IC on 40 companies with the largest market capitalization in the financial sector of Australia in the period 2006-2008. With investment companies, the VAIC value is higher due to the higher level of human capital efficiency (HCE) in comparison with banks and insurance companies. In insurance companies, the VAIC (Value Added Intellectual Coefficient) value is lower because they are more focused on physical capital rather than on human and structural ones. According to this study, only the efficiency of employed capital (CEE) has a significant and positive impact on ROA, while the impact of SCE is insignificant. Goh (2005) conducted a study of the impact of IC efficiency in commercial banks in Malaysia, in the period from 2001 to 2003. He concluded that value creation depends exclusively on HCE. Al-Musalli and Ku Ismail (2014) conducted a study in which they analyzed banks in Saudi Arabia in the period 2008-2010. According to this study, also, value creation depends on HCE which positively affects financial performance. Kaupelytė and Kairytė (2016) also dealt with the banking sector and analyzed the impact of IC on the financial performance of 118 banks (52 small and 66 large) in the period from 2005 to 2014. The authors conclude that IC had a negative impact on the financial performance of large banks after the financial crisis, while it had a negative impact on small banks before the financial crisis. According to this study, small banks would

have a greater financial benefit from IC than large banks. The findings of their research also imply that large banks should invest in structural capital, while small banks should invest in human capital. Jafarnezhad and Tabari Yadollahzade (2016) conducted a study in the period from 2009 to 2013 at the Stock Exchange in Tehran observing banks. The results showed that the intellectual capital had a positive effect on the financial performance of banks listed on Tehran Stock Exchange. They also found that IC had the greatest impact on the rate of return on assets, return on equity and earnings per share. Meles et al. (2016) investigated the impact of IC on financial performance on a sample of 5749 commercial banks in the United States in the period from 2005 to 2012. The IC efficiency was measured using the VAIC model, while financial performance was measured through return on assets (ROA) and return on equity (ROE). The results show that HCE has a positive effect on both financial performance indicators, while the SCE does not have a significant impact. The authors concluded that higher VAIC values result in improved financial performance of banks. Ozkan et al. (2017) had observed 44 banks in Turkey in the period from 2005 to 2014. By observing VAIC components, the authors conclude that CEE and HCE have a positive impact on the financial performance of banks, with CEE having a greater impact than HCE. Javed and Jahan (2017) observed the Pakistan Stock Exchange (commercial banks, microfinance and investment banks). They came to the realization that human capital efficiency significantly effects financial performance in Microfinance and investment banks, whereas commercial banks improve their financial performance through structural capital efficiency. Tran and Vo (2018) did a study where they observed banks in Thailand between 1997 and 2016. The results show that bank profitability is driven mainly by capital employed efficiency to make a profit. Poh et al. (2018) examined the impact of IC on the financial performance of local banks in Malaysia in the period from 2011 to 2016 and from 2007 to 2016. The results of the regression analysis they conducted indicate that all components of the IC have an impact on the bank's financial performance indicators. They found that the importance of IC components on bank performance varies depending on the observation period.

Alipour (2012) analyzed the impact of IC on the performance of 39 insurance companies in Iran in the period 2005-2007. years. The results of the research revealed that VAIC and its components have a significant positive impact on the profitability of insurance companies. Lu et al. (2014) conducted a study on the example of 34 Chinese life insurance companies in the period 2006-2010. years. They found that all components of IC affect the business of insurance companies, but that HCE has the greatest impact. Hidaïat et al. (2016) in their study examined the relationship between IC and financial performance on a sample of 9 listed Indonesian insurance companies. The research was conducted for the period from 2009 to 2013. The results of their analysis confirm that there is a positive impact of IC on the financial performance of these companies. Arifa and Ahmar (2016) examined on a sample of 10 insurance companies, the effects of VAIC and its components on ROA and ROE in Indonesia for the period 2010-2013. years. The results of their research show that HCE and CEE have a positive effect on ROA and ROE, while SCE has no significant impact. Nourani et al. (2017) examined the impact of IC on the performance of insurance companies in Malaysia and concluded that IC does not have a significant impact on the financial performance of these companies.

What these studies have in common is that there is no agreement on which component of IC has the greatest impact on banks' financial performance. The question is which is the key component of IC, which has the greatest impact on the financial performance of financial institutions operating in the Republic of Serbia.

Methodology Research and the Empirical Results

As mentioned in previous sections, the main objective is to examine the impact of VAIC and its components, HCE, SCE and CEE, on the financial performance of institutions operating in emerging markets. HCE is a human capital coefficient that can be defined as a combination of human capabilities to solve business problems. It consists of four components: 1) elements that each employee brings to the work process (intelligence, energy, enthusiasm, experience, skills, emotional intelligence, etc.), 2) learning abilities (improvement, intelligence, and creativity), 3) ability to act (conversion of data and information for action) and 4) motivation (sharing of information and knowledge and development of team spirit and goal orientation). SCE is a structural capital ratio that can be defined as a set of intangible assets and knowledge arising from organizational processes owned and owned by an enterprise even though employees leave the enterprise. CEE is the coefficient of efficiency of the use of engaged capital, which can be defined as invested capital. Mathematically, these coefficients can be expressed as follows:

$$VAIC = HCE + SCE + CEE \quad (1)$$

$$HCE = \frac{VA}{HC} \quad (2)$$

$$SCE = \frac{VA - HC}{VA} \quad (3)$$

$$CEE = \frac{VA}{CE} \quad (4)$$

Where:

VA = Value added - sum of operating profit, labor costs, written off value and depreciation

HC = Plate and other personal income

CE = Physical and financial capital

HEC = Human capital efficiency

SCE = Efficiency of structural capital

CEE = Efficiency of employed capital

The research was conducted on the example of the financial sector of the Republic of Serbia. The key components of VAIC are HCE, SCE and CEE. Their impact on one of key indicator of financial performances of financial institutions, ROE, have been studies, which mathematically may be expressed by following the linear model for panel data:

$$ROE_{i,t} = \alpha_i + \beta X_{i,t} + \varepsilon_{i,t} \quad (5)$$

Where $_{ROE-}(i,t)$ is the observation on the dependent variable for cross-sectional unit i in period t , X_{it} is a $1 \times k$ vector of independent variables (HCE, SCE, CEE) observed for unit i in period t , β is a $k \times 1$ vector of parameters. The α_i is a unit-specific and time-invariant component and ϵ_{it} an observation specific error to unit i in period t . The α_i are then treated as fixed parameters (in effect, unit-specific y-intercepts). For this reason, the model is estimated by static panel data estimator. Precisely, the Fixed effects estimator was used. In addition to these major variables, three control variables are included in our model, which is in line with the prevailing literature. Control variables are: the size of financial institution (VEL), which represents logarithm of amount of total assets, the age of financial institution (AGE), which represents the natural logarithm of the number of years since the company was founded and Leverage ratio (LEV).

Using panel data techniques enables the control of the bias generated by potential heterogeneity (Radivojevic, Jovovic, 2017). In the paper authors used balanced panel data consists of 22 banks, 10 insurance companies, 2 investment funds, 6 leasing companies and 7 brokerage companies. The data was collected from HR department of these companies, for period from 2011 to 2018 years.

A summary of the descriptive statistics of collected data given in Table 1

Table 1. *Descriptive Statistics of Collected Data*

Variable	Observ.	Mean	St. Dev.	Min	Max
HCE	368	1.540	2.390	-11.30	18.80
SCE	368	0.614	2.421	-9.610	38.90
CEE	368	0.100	0.513	-3.510	3.400
ROE	368	-0.025	0.411	-2.480	0.325
VEL	368	13.40	2.990	18.20	22.11
AGE	368	2.910	0.448	0.410	3.960
LEV	368	0.544	0.313	0.004	2.981

Source: (Authors)

As can be seen from Table 1, the average HCE value in the observed period is 1.540, with a pronounced imbalance between the company in terms of height HCE, in the range from -11.30 to 18.80. The obtained value of HCE is significantly lower in comparison with the values of this component reached by Mahesh et al. (2013), Al-Musalli & Ismail (2014), Ozkan et al. (2017), Javed & Jahan, (2017), Alipour, (2012), Arifa & Ahmar (2016) and similar to Meles et al. (2016), Lu et al. (2014), and higher than the value of HCE in Tran & Vo (2018). In the case of SCE, an even higher disparity is present, ranging from -9.61 to 38.90, while the average value is 0.614, which is similar to the results of the research carried out by Mahesh et al. (2013); Al-Musalli & Ku Ismail (2014), Ozkan et al. (2017), Javed & Jahan (2017), and greater than the recorded values in Meles et al. (2016), Lu et al. (2014). In contrast, value of SCE is lower than values reported by Tran & Vo (2018), Alipour (2012), Arifa & Ahmar (2016). The average value of the CEE was 0.100, and the value of this coefficient ranged from -3.510 to 3.400. CEE of the Serbian financial sector is lagging behind the value achieved by financial sector in Australia (Mahesh et al., 2013); Pakistan (Javed & Jahan, 2017), China (Lu et al. (2014), Indonesia (Arifa & Ahmar, 2016), but it is significantly higher than the value achieved by the financial sectors in Turkey, Turkey (Ozkan et al., 2017) or Thailand (Tran & Vo, 2018).

The value of standard deviations for HCE and SCE is 2.390, or 2.421, respectively, which implies relatively high variability in the amount of these components over the observed eight-year period. On the other hand, the value of standard deviation for CEE of 0.513 indicates relatively low variability in terms of the value of this coefficient by years.

The average value of the ROE is -0.025 approximately, which means that these companies gather recorded negative financial results in the observed period. However, the ROE illustrates a relatively high disparity between financial institutions, taking value ranging from -2.480 to 0.325. High standard deviation of dependent variable can be interpreted as consequence of great oscillations in financial performances of the selected companies. The average value of the LEV is 0.554 approximately, which means that companies mainly finance their operations from debt. However, the high value of standard deviation of the LEV, also points to large differences between companies. The value of this indicator ranges from 0.04 to 2.981. This points to the inequity in the financial power of companies, which was expected, because the panel consists as well as large banks, but small brokerage houses. The value of the VEL variable is large because the panel contains the largest banks and investment funds which operating in Serbia. A high value of standard deviation indicates the existence of large differences in the financial strength between selected companies. It is similar to the variable AGE. The panel includes banks with a long tradition, but financial institutions that are relatively recently founded.

First step in deals with time series is check the panel stationary by using a unit root test for stationary. For that purpose, in the paper, were used the Choi meta-tests. The results of the test shown in table 2.

Table 2. Panel Unit Root Test

Variable	Choi meta-tests		
	Test	Score	p-value
HCE	Inverse $\chi^2(94)$	171.315	0.000
	Inverse normal test	-3.152	0.001
	Logit test: t(239)	-2.624	0.005
SCE	Inverse $\chi^2(94)$	495.655	0.000
	Inverse normal test	-7.833	0.000
	Logit test: t(239)	-17.072	0.000
CEE	Inverse $\chi^2(94)$	271.896	0.000
	Inverse normal test	-5.749	0.000
	Logit test: t(239)	-7.690	0.000
ROE	Inverse $\chi^2(94)$	374.578	0.000
	Inverse normal test	-5.555	0.000
	Logit test: t(239)	-11.729	0.000
VEL	Inverse $\chi^2(94)$	461.783	0.000
	Inverse normal test	-5.085	0.000
	Logit test: t(239)	-14.359	0.000
AGE	Inverse $\chi^2(94)$	631.784	0.000
	Inverse normal test	-7.688	0.000
	Logit test: t(239)	-22.030	0.000
LEV	Inverse $\chi^2(94)$	626.648	0.000
	Inverse normal test	-10.116	0.000
	Logit test: t(239)	-23.207	0.000

Source: (Authors)

As it can be seen from table 2, None of the series has a problem with non-stationarity. The next step in dealing with panel data is analysing the correlation matrix, which is given in table 3.

Table 3. *The Correlation Matrix and VIF Coefficients*

HCE	SCE	CEE	ROE	VEL	AGE	LEV		VIF
1.000	-0.140	0.381	0.461	0.193	0.161	-0.109	HCE	1.701
	1.000	-0.084	-0.202	0.024	0.098	0.162	SCE	1.011
		1.000	0.755	-0.311	-0.225	-0.214	CEE	1.323
			1.000	-0.111	0.172	0.313	ROE	-
				1.000	0.320	0.711	VEL	1.137
					1.000	0.091	AGE	2.211
						1.000	LEV	1.553

*Note: VIF coefficient calculated based on estimation of equation (1) using by OLS method.
Source: (Authors)*

The results are shown in Table 3 point out that there is no strong correlation between any two pairs of variables. For this reason, no variable is excluded from further research. The analysis was further carried out by examining the presence of multicollinearity. Although there is no strong correlation between variables, not more than 0.8, a multicollinearity test was performed in the paper. For this purpose, the Variance Inflation Factors test was used. The results of this test are shown in the second part of Table 3. As could be expected, there is no multicollinearity between the variables.

The results of the Fixed effects estimator are presented in Table 4.

Table 4. *The Estimates of model (5) parameters*

	Coefficient	Std. Error	t-ratio	p-value
const	-1.383	0.243	-5.686	0.0001***
HCE	0.050	0.007	6.930	0.0001***
SCE	-0.004	0.004	-1.028	0.305
CEE	0.659	0.041	16.170	0.0001***
VEL	0.045	0.011	3.935	0.000***
AGE	0.083	0.037	2.265	0.024**
LEV	0.111	0.057	-1.956	0.051*
LSDV R-squared: 0.752			Within R-squared: 0.709	
Log-likelihood: 127.986			Akaike criterion: -149.972	
Joint test on named regressors: F(6, 323) = 131.021 (1.98e-083)				
Test for differing group intercepts: F(46, 323) = 3.043 (4.50e-009)				
Hausman test statistic: H = 27.4548 (0.0001)				

*Note: *, **, *** indicate significance on 1%, 5% and 10% respectively. Dummies for unite effects are omitted.*

Source: (Authors)

Since no dummy variable for unit is included in the model, Within R-squared is a real R-squared measure. Value of the Within R-squared is 71% approximately. It means that about 71% the variation of dependent variable may explain using by independent variables in the regression model. The p-value of Joint test on named regressors is less than 5%, which means that the beta coefficients are not equal to zero, but they have an impact on the dependent variable. In other words, this means that the right variables are selected in the model. Test for differing group intercepts reveals that financial companies have their own specificities that affect to financial performances, such as organizational climate and culture, management still, risk aversion, way of HR management etc. All these features affect the results. This justifies the application of the FE model. Also, the Hausman test justifies the application of this estimator. The results of the FE estimator point out that HCE and CEE are significant variables, but we did not find a statistically significant relationship between SCE and ROE. Other words, the results show to exist a positive and significant correlation between HCE and CEE and ROE. Actually, results imply that for every 1% increase of HCE, the ROE rate will rise approximately by 0.05%, while any increase in the CEE of 1% will lead to increase of the financial performance of the selected companies by about 0.66%. These findings are in line with research were conducted by Arifa & Ahmar (2016), Jafarnezhad & Yadollahzade (2016), Meles et al. (2016), Ozkan et al. (2017), Tran & Vo (2018); Poh et al. (2018).

The size of the company has a significant and positive impact on ROA, which means that financial performance is enhanced by increasing the size of a firm, measured through total assets. This is understandable when we take into account the relationship between profitability and the size of the assets of financial institutions operating in Serbia. Age of companies have significant effects on financial performance. The results indicate a negative impact of leverage on the financial performance of these institutions. However, this finding contradicts the theoretical postulates of financial leverage, according to which any increase in debt will lead to an increase in the rate of return on equity. Therefore, when interpreting this finding should be careful and take into account the structure of the panel data.

Bearing in mind that the age of the company is a significant component, the question arises as to whether the company's specificities vary over time. The FE estimator is useful when each company has unique characteristics that are both unmeasurable and constant over time (also known by the sounding phrase, 'unobserved time-invariant heterogeneity'). However, in order to examine whether the unique characteristics of the units vary over time, equation (5) is included in the time dummy variables. The model becomes:

$$ROE_{i,t} = \alpha_{i,t} + \beta X_{i,t} + \varepsilon_{i,t} \quad (6)$$

The model (6), also, was estimated by the FE estimator. The results are given in Table 5.

Table 5. *Estimates of Model (6) Parameters*

	Coefficient	Std. Error	t-ratio	p-value
const	-1.449	0.244	-5.931	0.0001***
HCE	0.048	0.007	6.648	0.0001***
SCE	-0.004	0.004	-0.977	0.329
CEE	0.661	0.041	16.300	0.0001***
VEL	0.045	0.011	3.985	0.000***
AGE	0.088	0.037	2.411	0.016**
LEV	0.126	0.057	-2.219	0.027**
dt2	0.037	0.038	0.959	0.338
dt3	0.093	0.038	2.446	0.015**
dt4	0.075	0.038	1.958	0.051*
dt5	0.105	0.038	2.759	0.006***
dt6	0.042	0.038	1.093	0.275
dt7	0.033	0.038	0.854	0.394
dt8	0.037	0.035	0.979	0.328
LSDV R-squared: 0.760			Within R-squared: 0.72	
Log-likelihood: 134.940			Akaike criterion: -149.828	
Joint test on named regressors: F(6, 316) = 128.802 (8.3e-083)				
Test for differing group intercepts: F(46, 316) = 3.37 (5.27e-009)				
Wald joint test on time dummies: χ^2 (7) = 11.862 (0.105)				

Source: (Authors)

The results confirm the above findings and indicate that there is no time effect. This indicates the severity of the selected assessor and confirms the initial assumption of time-invariant effects. In order to obtain robust estimates and confirm the findings, the model (5) was estimated by the Least Squares Dummy Variables method. The results of this appraisers were given appendix. The results confirm the above findings.

Conclusion

In this paper, we examined the impact of IC, i.e., its key components, (in accordance with the VAIC model) on the performance of financial institutions operating in Serbia in order to answer whether the IC and its key components have the same influence and importance on the performance of these institutions, as financial institutions operating in developed markets that have a high degree of innovation, creativity and the application of modern IT.

The analysis of the panel data was used in the paper, while the FE method was used to evaluate the model. In order to obtain robust estimates, we used the LSDV estimator. The results point out that HCE and CEE are significant variables, but we did not find a statistically significant relationship between SCE and ROE. Other words, the results show to exist a positive and significant correlation between HCE and CEE and ROE. Actually, results imply that for every 1% increase of HCE, the ROE rate will rise approximately by 0.05%, while any increase in the CEE of 1% will lead to increase of the financial performance of the selected companies by about 0.66%. These findings are in line with research conducted by Arifa & Ahmar (2016), Jafarnezhad & Yadollahzade (2016), Meles et al. (2016), Ozkan et al. (2017), Tran & Vo (2018) i Poh et al. (2018).

The size of the company has a significant and positive impact on ROA, which means that financial performance is enhanced by increasing the size of a firm, measured through total assets. This is understandable when we take into account the relationship between profitability and the size of the assets of financial institutions operating in Serbia. Age of companies have significantly affected financial performance. Given the structure of panel data, the finding related to the impact of leverage on financial performance requires deeper analysis.

References

1. Agostini L., Nosella, A., Filippini, R. (2017). Does intellectual capital allow improving innovation performance? A quantitative analysis in the SME context. *Journal of Intellectual Capital* 18(2), 400-418.
2. Alipour, M. (2012). The effect of intellectual capital on firm performance: an investigation of Iran insurance companies. *Measuring Business Excellence* 16(1), 53-66.
3. Al-Musalli M.A., Ku Ismail N.I. (2014). Intellectual capital and its effect on financial performance of banks: evidence from Saudi Arabia. *Procedia e Social and Behavioral Sciences* 164, 201-207.
4. Arifa P.A., Ahmar N. (2016). The effect of intellectual capital on the financial performance of insurance companies listed on the Indonesia Stock Exchange (ISE). *The Indonesian Accounting Review* 6(1), 45-54.
5. Chan K.H. (2009). Impact of intellectual capital on organisational performance: An empirical study of companies in the Hang Seng Index (Part 1 & 2). *The Learning Organization* 16(1), 4-21.
6. Choong K.K. (2008). Intellectual capital: definitions, categorization and reporting models", *Journal of Intellectual Capital* (9)4, 609-638.
7. Cardoza K., Basara, J. Cooper, L., Conroy R. (2006). The power of intangible assets: an analysis of the S&P 500. *Les Nouvelles*.
8. Chu K.W.S., Chan H.K., Wu, W.W.Y. (2011). Charting intellectual capital performance of the gateway to China", *Journal of Intellectual Capital* 12(2), 249-276.
9. Goh P.C. (2005). Intellectual capital performance of commercial banks in Malaysia. *Journal of Intellectual Capital* 6(3), 385-396.
10. Hidayat C., Putong I., Puspokusumo, R. (2016). The Interrelationship between Intellectual Capital and Financial Performance: A Case Study of Indonesian Insurance Companies. *Pertanika Journal of Social Sciences & Humanities* 24, 83-97.

11. Ivanovic T., Maksimovic G., Mandaric, M., Radivojevic, N., Jovic, M. (2021). The impact of intellectual capital on the financial performance of agricultural enterprises: evidence from the West Balkans Counties. *Custos e @gronegócio on line* 17(2), 350-376.
12. Javed, I., Jahan, Z. (2017). Corporate Governance, Intellectual Capital and Financial Performance of Banks listed in Pakistan Stock Exchange. *Pakistan Administrative Review* 1(3), 175-196.
13. Jafarnezhad M., Tabari Y. (2016). The Effect of Intellectual Capital on Financial Performance: Evidence from Iranian Banks Listed in Tehran's Stock Exchange. *International Journal of Management, Accounting and Economics* 3(1), 1-14.
14. Kaupelytė, D. and Kairytė, K. (2016). Intellectual capital efficiency impact on european small and large listed banks financial performance. *International Journal of Management, Accounting and Economics* 3(6), 367-377.
15. Khalique M., Bontis N., Abdul, J., Abu, S., Isa, H. (2015). Intellectual capital in small and medium enterprises in Pakistan. *Journal of Intellectual Capital* 16(1) 224-238.
16. Lu W.M., Wang W.K, Kweh, Q. L. (2014). Intellectual capital and performance in the Chinese life insurance industry. *Omega* 42(1), 65-74.
17. Mahesh J., Daryll C., Jasvinder, S., Monika, K. (2013). Intellectual capital and financial performance: an evaluation of the Australian financial sector. *Journal of Intellectual Capital* 14(13), 266-285.
18. Meles A., Porzio C., Sampagnaro, G., Verdoliva, V. (2016). The impact of the Intellectual Capital Efficiency on Commercial Banks Performance: Evidence from the US. *Journal of Multinational Financial Management* 36, 64-74.
19. Mohamed, I.A.H. (2017). Methods of measuring intellectual capital ant the efficiency of investment it: advantages and disadvantages. *Analytical comparative study. Imperial journal of Interdisciplinary research* 3(2), 1083-1092.
20. Nourani M., Chandran V., Kweh, Q. L., Lu, W.M. (2017). Measuring Human, Physical and Structural Capital Efficiency Performance of Insurance Companies. *Social Indicators Research* 137(1), 281-315.
21. Ozkan N., Cakan, S., Kayacan M. (2017). Intellectual capital and financial performance: A study of the Turkish Banking Sector. *Borsa Istanbul Review* 17(3), 190-198.
22. Osinski M., Selig M.P., Matos, F., Roman D.J. (2017). Methods of evaluation of intangible assets and intellectual capital. *Journal of Intellectual Capital* 18(3), 470-485.
23. Pasher, E., Ronen T. (2011). *The Complete Guide to Knowledge Management-A Strategic Plan to Leverage Your Company's Intellectual Capital*. John Wiley & Sons, Inc., Hoboken, New Jersey.
24. Pulic A. (1998). Measuring the performance of intellectual potential in knowledge economy". In 2nd McMaster Word Congress on Measuring and Managing Intellectual Capital by the Austrian Team for Intellectual Potential.
25. Radivojevic N., Jovovic, J. (2017). Examining of determinants of non-performing loans. *Prague Economic Paper* 26(3). 300-316.
26. Sidharta I., Affandi, A. (2016). The Empirical Study on Intellectual Capital Approach toward Financial Performance on Rural Banking Sectors in Indonesia. *International Journal of Economics and Financial Issues* 6(3), 1247-1253.
27. Sullivan P.H. (2000). *Value-Driven Intellectual Capital: How to Convert Intangible Corporate Assets into Market Value*, Wiley, New York.

28. Poh T.L., Adem K., Siti Nur Iqmal, I. (2018). On intellectual capital and financial performances of banks in Malaysia. *Cogent Economics & Finance* 6(1), 1-15.
29. Teo S., Reed, K.K., Ly, K. (2014). Human resource involvement in developing intellectual capital", *The Service Industries Journal* 34(15), 1219-1233.
30. Tran D.B. Vo, D.H. (2018). Should bankers be concerned with Intellectual capital? A study of the Thai banking sector. *Journal of Intellectual Capital* 19(5), 897-914.
31. Yanga J., Brashear, T., Asare, A. (2015). The value relevance of brand equity, intellectual capital and intellectual capital management capability. *Journal of Strategic Marketing* 23(6), 543-559.

Appendix

Table 1A. *The Estimates of model (5) parameters using LSDV*

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
const	-1.604	0.285	-5.633	<0.0001	***
HCE	0.050	0.007	6.930	<0.0001	***
SCE	-0.004	0.004	-1.028	0.305	
CEE	0.659	0.041	16.170	<0.0001	***
VEL	0.045	0.011	3.935	0.000	***
AGE	0.083	0.037	2.265	0.024	**
LEV	0.111	0.057	-1.956	0.051	*
du_1	0.134	0.135	0.990	0.323	
du_2	0.481	0.124	3.865	0.000	***
du_3	0.471	0.126	3.746	0.000	***
du_4	0.404	0.126	3.209	0.002	***
du_5	0.530	0.127	4.156	<0.0001	***
du_6	0.359	0.109	3.294	0.001	***
du_7	0.467	0.121	3.868	0.000	***
du_8	0.172	0.122	1.409	0.160	
du_9	0.133	0.106	1.256	0.210	
du_10	0.081	0.103	0.790	0.430	
du_11	0.279	0.107	2.615	0.009	***
du_12	0.307	0.107	2.877	0.004	***
du_13	0.221	0.106	2.090	0.037	**
du_14	0.303	0.109	2.793	0.006	***

du_15	0.353	0.107	3.300	0.001	***
du_16	0.497	0.131	3.784	0.000	***
du_17	0.299	0.130	2.303	0.022	**
du_18	0.451	0.128	3.524	0.001	***
du_19	0.291	0.110	2.657	0.008	***
du_20	0.203	0.104	1.955	0.052	*
du_21	0.194	0.108	1.798	0.073	*
du_22	-0.225	0.098	-2.301	0.022	**
du_23	-0.041	0.102	-0.4000	0.689	
du_24	0.121	0.099	1.220	0.223	
du_25	0.349	0.112	3.125	0.002	***
du_26	-0.005	0.104	-0.050	0.960	
du_27	0.227	0.103	2.218	0.027	**
du_28	0.371	0.108	3.431	0.001	***
du_29	0.154	0.097	1.579	0.115	
du_30	0.032	0.096	0.336	0.737	
du_31	0.062	0.098	0.629	0.530	
du_32	0.148	0.096	1.544	0.124	
du_33	0.135	0.096	1.414	0.158	
du_34	0.175	0.098	1.791	0.074	*
du_35	0.171	0.099	1.719	0.087	*
du_36	0.232	0.102	2.264	0.024	**
du_37	0.220	0.102	2.159	0.032	**
du_38	0.238	0.100	2.375	0.018	**
du_39	0.282	0.100	2.827	0.005	***
du_40	0.222	0.099	2.236	0.026	**
du_41	0.165	0.096	1.717	0.087	*
du_42	0.133	0.102	1.301	0.194	
du_43	0.179	0.101	1.773	0.077	*
du_44	0.169	0.099	1.695	0.091	*
du_45	0.166	0.100	1.670	0.096	*
du_46	0.081	0.096	0.840	0.401	
R-squared		0.752	Adjusted R-squared		0.712

Source: (Autors)

Primljeno: 10.02.2022.
Odobreno: 23.02.2022.

DOI: 10.5937/bankarstvo2201126K

PRIMENA SISTEMA BALANCED SCORECARD (BSC) U POSLOVNOJ BANCII

Dr Ljiljana Kontić, Vanredni profesor, Univerzitet MB, Poslovni i
Pravni fakultet
email: ljiljana.kontic@yahoo.com,
Jovan Kontić, magistar ekonomskih nauka
email: jokon@Eunet.rs

Rezime:

U radu se razmatra model BSC koncept domaćoj poslovnoj banci. Kako bi se stekla kompletna slika o dugoročnoj efikasnosti banke neophodno je uključiti nefinansijske indikatore kao što su perspektiva klijenata, interni poslovni procesi, kao i učenje i razvoj. Rezultati su pokazali da se predloženi model može koristiti u banci iz tranzicionog okruženja. Izbalansirana karta rezultata omogućava menadžerima banke da procene sve faktore u cilju implementacije strateških ciljeva.

Ključne reči: BSC koncept; poslovna banka; strategija; Srbija

JEL klasifikacija: G21, M21

Uvod

Od kada je početkom XXI veka zaključeno da intelektualni kapital utiče na proces stvaranja vrednosti, neophodno je pronaći način merenja intelektualne imovine. Najpodesniji model, nastao krajem XX veka je Izbalansirana karta rezultata (u daljem tekstu IKR). Uspeh i dostizanje izvanrednih performansi bilo koje organizacije dostiže se ne samo finansijskim performansama, već merenjem i upravljanjem neopipljivim resursima. U ovom radu se razmatra holistički model IKR u jednoj banci koja posluje na srpskom tržištu. Cilj primene IKR koncepta je pružanje menadžerima kompletnog uvida u poslovanje, kao i fokusiranje na potencijalno kritične oblasti (Kontić i Čabrilo, 2009).

Primećeno je da rigidna kontrola i nadzor banaka omogućava ranu detekciju opadanja performansi u cilju sprečavanja bankrotstva pojedinačnih banaka i tako preliivanja negativnog uticaja na realni sektor ekonomije. Supervizori u bankarskom sektoru imaju posebne tehnike za otkrivanje potencijalnih problema u bankama. Sve banke koje posluju na jednom tržištu moraju da primenjuju regulativu propisanu od strane Centralne banke, odnosno Narodne banke Srbije. Pored periodične revizije, kontrola se sprovodi i fizičkim dolaskom u prostorije banke, najmanje jednom godišnje. Osnovni cilj kontrole je blagovremeno identifikovanje ozbiljnih problema čijim se rešavanjem sprečava likvidacija banke. Sve mere Narodne banke Srbije kojima se sprečava bankrotstvo povećavaju poverenje u ukupni bankarski sistem.

Prema sopstvenom saznanju, u Srbiji su sprovedena različita i kvantitativna i kvalitativna istraživanja merenja performansi banaka od strane brojnih autora (Vuksanović i Todorović, 2011; Domanović, 2013a; Domanović, 2013b; Lukić, 2021), ali malo njih je koristilo model IKR (Todorović i saradnici, 2012; Radić, 2016).

Postoje dva osnovna pristupa merenja performansi putem stejkholdera i akcionara (Domanović, 2010). Bez obzira koji se pristup izabere, neophodno je da se strategija dekomponuje na specifične strategijske ciljeve. Prema pristupu stejkholdera - svih grupa zainteresovanih za poslovanje organizacije, finansijski i nefinansijski faktori obuhvaćeni modelom izbalansirane karte rezultata determinisace izbor strategije.

Cilj ovog rada je da istraži da li izbalansirana karta rezultata, kao usklađeni sistem merenja, predstavlja adekvatan model za procenu performansi u jednoj banci na srpskom tržištu. Iz toga razloga, prvi deo je posvećen metodologiji IKR, sa pregledom prethodnih studija. Drugi deo je posvećen kontekstu istraživanja, srpskom bankarskom sektoru. Zatim je prikazana metodologija istraživanja i rezultati istraživanja. Poslednji deo sumira glavne ideje, istovremeno ukazujući na ograničenja studije i daje predlog za naredno istraživanje.

Koncept izbalansirane karte rezultata

Početkom 1990-ih godina Kaplan i Norton (1992) su formulisali model IKR sa osnovnom idejom da pomogne menadžerima u procesu implementacije strategije. Od tada su autori razvili konceptualne i praktične karakteristike modela publikujući knjige (1996a, 2000) i radove u časopisima (1993, 1996b, 2001, 2004). Koncept IKR obuhvata finansijske i nefinansijske indikatore izabrane u cilju implementacije ključnih faktora uspeha uključenih u viziju banke. Pored finansijske perspektive, Kaplan i Norton (1992) uvode tri perspektive: potrošače, interne poslovne procese, kao i učenje i razvoj. Ovi faktori predstavljaju buduće performanse banke, za razliku od finansijskih indikatora koji predstavljaju prošle indikatore.

Analiza relevantne literature pokazala je različita istraživanja implementacije IKR u različitim organizacijama. Potrebno je istaći da se primena IKR u uslužnom sektoru razlikuje od primene u proizvodnom sektoru. Autori, takođe zaključuju da je IKR holistički pristup merenju performansi u bankarskom sektoru (Ozturk i Coskun, 2014). Tabela 1 ilustruje pregled prethodnih istraživanja čiji je predmet bio implementacija IKR u bankarskom sektoru različitih država sveta.

Tabela 1. Pregled prethodnih istraživanja

	Država	Metodologija	Glavni rezultati
Wu (2012)	Kina	Strukturalna procena, analiza studije slučaja	Strategijske mape pomažu menadžmentu da odredi prioritete i da se fokusira na ključne indikatore.
Tuan (2020)	Vijetnam	SPSS 22 je korišćen za prikupljanje i analizu podataka iz 109 upitnika koje su popunili menadžeri u 4 komercijalne banke.	Primena IKR je pomogla poboljšanju poslovnih performansi u analiziranim bankama.
Al-Najjar i Kalaf (2012)	Irak	Uzročno-posledične veze između finansijskih i nefinansijskih perspektiva IKR.	Primena IKR u iranskim bankama na način kako da strategijsku viziju pretvore u performanse.
Balkovskaya i Filneva (2016)	Rusija	DEMATEL metod	Strategijske mape pomažu menadžerima da odrede prioritete u kontekstu ograničenih resursa.
Rostami i sar. (2015)	Iran	Fuzzy Analytical Hierarchy Process (FAHP)	Rang 1 su imali klijenti, rang 2 finansijski aspekti, rang 3 interni procesi i na kraju učenje i razvoj.
Dincer i sar. (2020)	Turska	Analytic Network Process Approach	Finansijske performanse rang 1, klijenti 2, učenje i razvoj rang 3 i rang 4 interni procesi.
Panicker i Seshadri (2013)	Standard Chartered Bank (SCB), strana banka u Indiji	Uzročno-posledične veze između finansijskih i nefinansijskih perspektiva IKR.	Banke treba da analiziraju i shvate značaj IKR kao tehnike za postizanje dugoročnih ciljeva.

Izvor: Izbor autora relevantnih studija

Iz perspektive IKR, finansijski indikatori su važni, ali se mogu kompenzovati sa ostala tri indikatora intelektualnog kapitala ili neopipljivih resursa koji su neophodni za budući razvoj, kao i za ostvarivanje i zadržavanje konkurentne prednosti. Sve četiri perspektive su povezane sa strategijom i stvaraju holistički model koji omogućava svim zaposlenima da doprinesu uspehu banke. Implementacija IKR u određenoj privrednoj grani treba da uvaži specifičnosti privredne grane (Kaplan i Norton, 1996a, 34). Međutim, model ima i određena ograničenja na koja su ukazali različiti autori (Nørreklit, 2000; Heinz, 2001; Kennerly i Neely, 2002; Olson i Slater, 2002).

Bankarski sektor u Srbiji

Na osnovu uvida u finansijske izveštaje koje su sve banke dužne da dostave Narodnoj banci Srbije, na dan 6.10.2021. god., 24 banaka je poslovalo u Srbiji (Narodna banka Srbije, 2021). U tabeli 2 su prikazani izabrani indikatori bankarskog sektora u Srbiji.

Tabela 2. Pregled izabranih indikatora u bankarskom sektoru u Srbiji (u %)

Banke	Broj banaka	Imovina	Kapital	Filijale	Zaposleni
Domaće banke	7	24,3	25,6	34,9	28,9
Državne	4	16,8	15,4	27,8	22,6
Privatne	3	7,5	10,2	7,1	6,3
Strane banke	19	75,7	74,4	65,1	71,1
Italija	2	26,8	26,3	14,7	19,0
Austrija	2	13,5	12,7	11,6	11,9
Francuska	1	2,9	1,8	5,1	4,0
Mađarska	2	13,5	11,6	15,0	14,2
Ostale	12	19,1	22,0	18,6	22,0
Ukupno	26	100	100	100	100

Izvor: Narodna banka Srbije (2020)

Istraživanje je sprovedeno u domaćoj poslovnoj banci. Bankarski sektor je izabran iz sledećih razloga: zato što je bankarstvo jedna od vitalnih privrednih grana u svakoj ekonomiji i kada je konkurentna i efikasna ima pozivno dejstvo na ostale privredne grane u nacionalnoj ekonomiji. Tokom poslednje tri decenije dešavale su se značajne promene u bankarskom sektoru u Srbiji (Kontić i Kontić, 2009; 2012). Rezultati su smanjenje broja banaka, likvidacija malih banaka i preuzimanja od strane inostranih banaka. Posledica je inteziviranje konkurencije u bankarskom sektoru.

U cilju sticanja i zadržavanja konkurentne pozicije neophodno je da banke mere i opipljive i neopipljive resurse.

Finansijska perspektiva je prva i osnovna dimenzija modela IKR, jer se sve ostale dimenzije mere kako bi se poboljšalo finansijsko zdravlje. Model se koristio i u ostalim državama za merenje efikasnosti banaka. Početna hipoteza istraživanja je:

H0: Ako banka koristi model IKR za merenje ukupnih performansi, onda se dobija kompletna slika dugoročne efikasnosti banke.

Podaci su prikupljeni iz sekundarnih izvora (npr. kvartalni i godišnji izveštaji Narodne banke Srbije i godišnji izveštaji Banke). Skorovi su kvalitativno analizirani sa ciljem da se odredi da li je model podesan za merenje efikasnosti u bankarskom sektoru u Srbiji.

Metodologija

Svrha svaka banke je obezbeđivanje dugoročnog rasta i razvoja. Banke iz toga razloga mere neopipljive resurse koji su ključni za savremeno poslovno okruženje. Njihovo merenje zahteva uvođenje nefinansijske dimenzije u sistem merenja i upravljanja bankom. Jedan takav model je IKR na šta ukazuju istraživanja drugih autora. Autori će prikazati komplementarnu upotrebu modela IKR. Analiziraće se efikasnost putem sledećih perspektiva: finansijske, klijenata, internih procesa, kao i učenja i razvoja.

Iz finansijske perspektive, ciljevi su: opstanak, razvoj, satisfakcija stejkholdera i prihod. Predložena merila mogu biti: likvidnost, ROI, ROE, margina profita i leveridž ratio (Abdurizzag, 2017, s.10). Ciljevi banke iz perspektive internih poslovnih procesa su: povećanje inovacija, poboljšanje operativnih kapaciteta i efikasnost poslovnih aktivnosti. Merila mogu biti: rast produktivnosti, rast bančnih usluga, rast kreditnih plasmana, veći broj softverskih aplikacija i povećanje osoblja koje direktno radi sa klijentima. Što se tiče klijenata, ciljevi su njihovo zadržavanje, privlačenje novih i povećanje tržišnog učešća. Važno je meriti satisfakciju klijenata, rast tekućih i štednih računa, kao i rast depozita. Ciljevi, iz perspektive učenja i rasta su poboljšanje sposobnosti zaposlenih, njihovo zadovoljstvo i povećanje upotrebe informacionih tehnologija (IT). Merila mogu biti: produktivnost zaposlenih, koeficijent obrta, rast broja filijala, učešće zaposlenih u razvojnim programima, povećanje broja zaposlenih i korišćenje IT u svakodnevnom radu (Abdurizzag, 2017, s. 10). Osnovni istraživački cilj je implementacija IKR modela u domaćoj poslovnoj banci.

Rezultati istraživanja

Primena modela IKR analizirana je kroz sve četiri perspektive, finansijsku, internih poslovnih procesa, klijenata, kao i učenja i razvoja.

Finansijska perspektiva - Korišćeni su sledeći finansijski indikatori: likvidnost, ROE, ROA i ratio leveridža (videti Tabelu 3). Autori ukazuju na važnost pravovremenog izveštavanja o novčanim tokovima (Knežević&Mitrović, 2018).ž

Tabela 3. *Finansijski indikatori u Banci*

Indikator	31.12.2019.	31.12.2020.	30.9.2021.
Likvidnost ¹	0,2195	0,1775	0,1291
ROE ²	34,63	13,4736	0,0081
ROA ³	4,39	0,0037	0,0024
Ratio leveridža ⁴	7,89	3,642	3,375

Izvor: Kalkulacije autora

- 1 Likvidna sredstva/obaveze
- 2 Profit pre oporezivanja/Ukupan kapital
- 3 Profit pre oporezivanja/Ukupna sredstva
- 4 ROE/ROA

Narodna banka Srbije reguliše standarde za likvidnost banaka na sledeći način: treba da bude najmanje 1 u svim radnim danima u tekućem mesecu; ne sme da bude niža od 0,9 više od tri uzastopna dana u mesecu, kao i da na kraju svakog radnog dana treba da bude najmanje 0,8.

Iz ove perspektive internih poslovnih procesa, tri su osnovna cilja: povećati inovacije, povećati kapacitete i povećati operativnu efikasnost (Abdurizzag, 2017, s. 10). Merila mogu biti: rast produktivnosti, rast bančnih usluga, rast kredita, povećanje broja softverskih aplikacija, kao i povećanje broja zaposlenih koji su u direktnom kontaktu sa klijentima.

U martu 2020. godine realizovani s sledeći projekti (Izveštaj Banke, 2020, s. 67):

- Potpuna automatizacija međunarodnih plaćanja sa izveštavanjem na 10 dana,
- Usvajanje "cloud-based collaboration" alata,
- Protokol za realizaciju sastanaka,
- Potpuno usvajanje elektronskog sistema internih mejlova i potpisivanja dokumenata.

Pandemija Covid-19 pokrenula je promene bančinog budućeg modela razvoja. Iz toga razloga pokrenuti su i sledeći projekti: Smart Working (dizajn kancelarija, organizacija i digitalna komunikacija) i projekti sa stanovništvom (povećanje efikasnosti poslovne mreže, samouslužno bankarstvo, smanjenje troškova).

U pogledu upravljanja rizičnim plasmanima, u periodu od 2015. do 2020. godine, u posmatranoj Banci došlo je do značajnog smanjenja učešća loših plasmana (engl. non-performing loans NPL) sa 32,3% u 2015. god. na 6,2% u 2020. god.

Zadovoljstvo klijenata je značajno merilo performansi u bankarskom sektoru, jer direktno utiče na povećanje prihoda i profit. Praktično, lojalnost klijenata je iznad kategorije zadovoljnog klijenta i predstavlja faktor postizanja dugoročne profitabilnosti Banke. Banka treba da obezbedi visok nivo poverenja koji će u njeno poslovanje imati njeni klijenti. Kako meriti zadovoljstvo i lojalnost klijenata, obzirom na činjenicu da su u pitanju meki faktori uspeha?

Iz perspektive klijenata, tri su osnovna cilja: zadržavanje klijenata, privlačenje novih i povećanje tržišnog udela Banke. Stoga je važno meriti povećanje broja klijenata, njihovo zadovoljstvo, povećanje broja tekućih računa, povećanje broja štednih računa i rast depozita.

U posmatranoj Banci klijenti su kategorisani na sektor stanovništva i korporativni sektor. Rezultati analize su pokazali da je zajmovni portfolio klijenata bio sledeći (u milionima evra) u periodu 2015. god. do 2020. god. 175, 208, 274, 327, 368 i 387,6 (Bank Report, 2020, p. 55).

Prema definisanim kriterijumima Narodne banke Srbije, kvalitet kreditnog portfolija u posmatranoj Banci se može proceniti kao veoma dobar, sa 89,66% kredita kategorija A, B i V, kao i 10,34% visoko rizičnih kredita - kategorija G i D.

Tri su osnovna cilja iz perspektive učenja i rasta, a to su: povećati sposobnosti zaposlenih, povećati zadovoljstvo zaposlenih i povećati upotrebu IT. Merila mogu biti sledeća: produktivnost zaposlenih, koeficijent obrta zaposlenih, povećanje broja filijala, učešće zaposlenih u razvojnim programima Banke, povećanje broja zaposlenih, kao i upotreba IT u svakodnevnom radu (Abdurizzag, 2017).

Na osnovu podataka iz Izveštaja Banke (2020), analiza je obuhvatila podatke o broju novozaposlenih, koeficijentu obrta, ukupnim časovima treninga, kao i prosečnim časovima treninga po menadžeru i po zaposlenom (videti Tabelu 4).

Tabela 4. *Treninzi i zaposlenost u periodu 2015-2019. god.*

Godina	Ukupan broj časova treninga	Prosečan br. časova treninga po menadžeru	Prosečan br. časova treninga po zaposlenom	Broj novozaposlenih	Koeficijent obrta (u %)
2015.	15,216	10,10	10,55	76	5,32
2016.	21,325	10,45	11,35	105	7,60
2017.	21,325	10,55	11,25	97	5,84
2018.	21,400	10,15	11,55	104	6,34
2019.	21,920	10,50	11,50	139	9,50

Izvor: Adaptirano prema podacima iz Izveštaja Banke (2020): 122, 124.

U martu 2020. godine IT odeljenje se suočilo sa dva velika izazova. Bilo je potrebno izmestiti svu opremu i instalacije Banke iz prostorija ka domovima zaposlenih. Istovremeno, Narodna banka Srbije je uvodila nove regulatorne projekte.

Zaključak i preporuke za menadžere banke

Izbalansirana karta rezultata ima značajnu ulogu u procesu merenja efikasnosti bankarskog sektora. Model IKR ukazuje na četiri perspektive: finansijsku, interne poslovne procese, klijente, kao i učenje i razvoj. Omogućava prevodenje vizije i strategije, definišući strategijske veze i povezujući performanse u posmatranoj Banci, komunicirajući ciljeve i indikatore u filijalama, kao i isticanje strategijskih inicijativa. Kada se potpuno primeni, zaposleni u Banci razumeju šta i kako treba da rade da bi doprineli realizaciji strategije. Takođe, model IKR se može koristiti kao osnova za sistem nagrađivanja i daje povratne informacije menadžerima o implementaciji strategija.

Na osnovu prethodnih istraživanja i rezultata ove studije, glavne smernice za menadžere su sledeće:

- Pre nego što se pristupi operacionalizaciji indikatora, neophodno je detaljno analizirati model IKR.
- Prilagoditi IKR konkretnoj kulturi poslovne banke, uključiti zaposlene u sve faze - od formulizacije do implementacije modela.
- Pažljivo upravljati procesom, sa posebnom pažnjom na otpore promenama.

Sledeće pitanje koje se postavlja je: Kako da većina banaka u Srbiji primeni model IKR? U većini slučajeva, banke koriste kvantitativne indikatore kao što su profitabilnost, tržišni udeo i neke kvalitativne indikatore npr. novi koncept, novi dizajn, novi proizvodi, veštine prodaje, zadovoljstvo klijenata. Do kojeg nivoa se indikatori prate i mere zavisice i njihova povezanost sa strategijom i ciljevima Banke. Koliko su indikatori u skladu sa alokacijom nagrada i mnoge druge dileme prilikom primene IKR u Srbiji, biće predmet narednih istraživanja.

Literatura

1. Andrić, M., Krsmanović, B. i Jakšić, D.: Revizija, teorija i praksa, peto izmenjeno i dopunjeno izdanje, Subotica, 2009.god.
2. Sretenović R., Janković Andrejević Lj., Značaj revizije javnog sektora za efikasno upravljanje javnim finansijama, Međunarodna naučna konferencija Univerziteta Singidunum – Upravljanje finansija u savremenim uslovima poslovanja, Beograd, 2015.god.
3. Pekovic J., Značaj državne revizorske institucije, Univerzitet odbrane, Vojna Akademija, Beograd, 2016.god.
4. http://www.dri.rs/upload/documents/Opsti_dokumenti/zakon_dri.pdf
5. Ustav Republike Srbije, 2006.godina;
6. Zakon o Državnoj revizorskoj instituciji ("Sl. glasnik RS", br. 101/2005, 54/2007 i 36/2010 i 44/2018- dr.zakon)
7. Zakon o budžetskom sistemu Republike Srbije (Službeni glasnik RS", br. 54/ 09, 73/ 2010, 101/ 2010, 101/2011, 93/2012, 62/2013, 63/ 2013 - ispravka, 108/ 2013, 142 /2014, 68/ 2015 - dr. zakon, 103/2015, 99/ 2016, 113/ 2017, 95/ 2018, 31/ 2019, 72 / 2019, 149 /2020.
8. Zakon o finansiranju političkih aktivnosti ("Sl. glasnik Republike Srbije", br. 43/11 i 123/14 i 88/2019);
9. Poslovnik Državne revizorske institucije ("Sl. glasnik RS", br. 9/2009);
10. Pravilnik o unutrašnjoj organizaciji i sistematizaciji radnih mesta u Državnoj revizorskoj instituciji;
11. Pravilnik o obrascu službene legitimacije lica ovlašćenih za vršenje revizije poslovanja korisnika javnih sredstava ;
12. Međunarodne standarde vrhovnih revizorskih institucija („Službeni glasnik RS“, br. 77/2015).
13. Informator o radu Državne revizorske institucije, 2020. god.
14. INTOSAI. (1977). The Lima Declaration of Guidelines on Auditing – Approved at IXth Congress of INTOSAI, Lima/Peru 1977. Preuzeto sa <http://www.intosai.org/issai-executivesummaries/view/article/issai-1-the-lima-declaration.html>

Received: 10.02.2022
Approved: 23.02.2022

DOI: 10.5937/bankarstvo2201126K

IMPLEMENTATION OF BALANCED SCORECARD IN DOMESTIC COMMERCIAL BANK

Ljiljana Kontić, PhD, associate professor, University MB, Faculties of Business and Law
email: ljiljana.kontic@yahoo.com,
Jovan Kontić, Master of Economics
email: jokon@Eunet.rs

Summary:

The paper discusses the Balanced Scorecard model in one bank that operates on Serbian market. To obtain a more complete image of the bank efficiency in the long term, it is necessary to include non-financial indicators, such as clients' perspective, internal business processes, as well as learning and growth. The results showed that proposed model can be used in banking sector in one transition economy. Balanced Scorecard has been allowed bank's managers to assess all factors in order to implement strategic goals.

Keywords: Balanced Scorecard; commercial bank; strategy; Serbia

JEL classification: G21, M21

Introduction

Since that intellectual capital affects value creation processes in the XXI century, it is necessary to find out the way to measure the intellectual assets. The most prominent model in the last decade of XX century is a Balanced Scorecard (BSC) model. The success and the excellence of an organization is the result not only from the financial performance but from measuring and managing the intangible assets. The paper discusses the holistic model i.e., BSC in one bank that operates in Serbian market. The aim of the Balanced Scorecard (BSC) is to give managers a comprehensive view of the business and allow them to focus on critical areas (Kontić&Čabrilo, 2009).

It is noticed that rigid control and supervision of banks consists of an early insight of performance deterioration position of individual banks in order to prevent the bankruptcy of individual banks that may affected on the real sector of economy. Banking supervisors have available range of techniques to detect problem in the banks. In other words, all banks that operated in one market, have been obtained prescribed regulations defined by Central Bank i.e. National Bank of Serbia. Apart from the periodic supervision, using computerized monitoring system (based on quarterly banking data), the regulators also perform field-testing of commercial banks, at least once a year. Bank control is conducting with an aim of timely correction of identified serious issues that may cause liquidation of one bank. Of course, any bankruptcy prevented by the National Bank of Serbia increases the trust in the overall banking system.

In the case of Serbian banking sector, there are various studies, both quantitative and qualitative, in domain of measurement banks' performances (Vuksanović & Todorović, 2011; Domanović, 2013a; Domanović, 2013b; Lukić, 2021), but only few have been used BSC model (Todorović et al., 2012; Radic, 2016).

Table 1. *Review of the past studies*

Authors	Country	Methodology	Main results
Wu (2012)	China	Structural evaluation methodology, case study	Strategic map to assist management in prioritizing the performance indicators and in focusing attention on the strategy-related activities of the crucial indicators.
Tuan (2020)	4 Vietnamese commercial banks	SPSS 22 was used to collect and analysis data, basing on the results of 109 questionnaires of managers and head of department from Vietnamese commercial banks.	The application of balanced scorecard helped to improve the business performance in observed banks.
Al-Najjar & Kalaf (2012)	Iraq	The cause-effect relationships between the non-financial, and the financial dimensions of the BSC.	How banks in Iraq may apply the BSC to evaluate their performance, and how they might turn strategic vision into potential performance.
Balkovskaya & Filneva (2016)	Rusia	DEMATEL method	Strategic map that helps managers to prioritize their strategic steps in the limited resources context.
Rostami et al. (2015)	Iran	Fuzzy Analytical Hierarchy Process (FAHP)	The rang 1 had customer aspect, the rang 2 had financial aspect, rang 3 had an internal processes, and at the end, learning and growth perspective.
Dincer et al. (2020)	Turkish banking sector	Analytic Network Process Approach	Financial factor had the first rank; Customer perceptive was in the second rank; Learning and growth stayed in the third rank, and Internal factor has the weakest importance.
Panicker & Seshadri (2013)	Standard Chartered Bank (SCB), a foreign bank in India	The cause-effect relationships between the non-financial, and the financial dimensions of the BSC.	Banks can consider and realize the importance of this tool as a strategic and valuable performance management system.

Source: Authors` selection of relevant studies

There are two main approaches to performance measurement stakeholder and shareholder approach (Domanović, 2010). Whatever approach managers were chosen, it is necessary to transmit the strategy into the set of specific goals and objectives. According to the stakeholder approach, the financial and non-financial factors incorporated in Balanced Scorecard model would determine the strategic choice.

The aim of this paper is to examine whether the Balanced Scorecard, as a contemporary performance measurement system, is an appropriate model for evaluating the performances in one bank at Serbian market. In that sense, the first section is devoted to the Balanced Scorecard methodology, with review of past studies. The second section of the paper is devoted to research context i.e., Serbian banking sector, followed by Research Methodology and Research Findings. Final section summarized main ideas with study limitations and future research agenda.

Theoretical Background

In the early 1990s, the Balanced Scorecard (BSC) has been developed by Kaplan and Norton (1992). The main purpose of BSC is to help managers in the process of strategy implementation. Since then,

these authors were continually developing its conceptual and practical characteristics through books (1996a, 2000), and articles (1993, 1996b, 2001, 2004). The concept of BSC includes financial and non-financial indicators selected in order to implement key success factors embodied in vision of the bank. Aside from the financial perspective, Kaplan and Norton (1992) introduced three perspectives i.e., Customer, Internal business process, and Learning and Growth. These categories represent indicators of future bank performance, contrary to financial perspective which represents former bank performance.

The results of relevant literature analysis have been revealed various studies about BSC implementation in different organizations. It is worth to notice that development and implementation of BSC in service sector are different from manufacturing sector. In their literature review about implementation of BSC in banking sector, Ozturk & Coskun (2014) concluded that BSC is a holistic approach for measuring bank's performances. Table 1 illustrates review of past research about implementation of BSC in banking sector worldwide.

From the BSC perspective, financial measures are important, but it can be supplemented with other three indicators of the "intellectual capital" or "invisible assets", which is necessary for future growth and to obtain and sustain competitive position. These four perspectives are linked to the strategy and create a holistic model of strategy that allows all employees to see how they can contribute to the success of company. To implement BSC in specific sector, it is necessary to include further perspectives (Kaplan and Norton, 1996a, 34).

However, the Balanced Scorecard model has some limitations suggested by different authors (Nørreklit, 2000; Heinz, 2001; Kennerly and Neely, 2002; Olson and Slater, 2002).

Research Context

Based on the financial statements that the banks are obliged to submit to the NBS, on August 4th, 2021, 25 banks were operating in Serbia (National Bank of Serbia, 2021). Concluded with October 6th, 2021, the total number of banks which take business in Serbia was twenty-four. Table 2. shows the review of the selected indicators of banking sector in Serbia.

Table 2. Review of the Selected Indicators of the Banking Sector in Serbia (in %)

	Number of banks	Assets	Capital	Branches	Employees
Domestic banks	7	24.3	25.6	34.9	28.9
Stateowned	4	16.8	15.4	27.8	22.6
Private	3	7.5	10.2	7.1	6.3
Foreign banks	19	75.7	74.4	65.1	71.1
Italy	2	26.8	26.3	14.7	19.0
Austria	2	13.5	12.7	11.6	11.9
France	1	2.9	1.8	5.1	4.0
Hungary	2	13.5	11.6	15.0	14.2
Others	12	19.1	22.0	18.6	22.0
Total	26	100	100	100	100

Source: National Bank of Serbia (2020)

The research was conducted in one bank in Serbia. Banking sector has been chosen as the research context for the following key reasons: Banking sector is a vital service industry in any economy, and when it is competitive and efficient, it is able to spur positive impact on other industries. Over the past three decades, the banking sector in Serbia has witnessed substantial changes (Kontic & Kontic, 2009; 2012). There is evidence of a decrease in the number of banks, a dissolution of small, non-viable banks, and a take-over of the market by foreign banks. As a consequence of this process, competition in the banking sector is highly intensified.

To gain and sustain competitive position, it is necessary for the banks to measure all assets i.e., tangible as well as intangible.

The financial perspective is the first and primary dimension of the BSC model. The financial one is the primary dimension because all other non-financial dimensions are measured in order to improve the performance of the financial perspective. BSC model is a comprehensive model for measuring and managing the efficiency of banks. Hence, it is possible to define initial hypothesis, which will be tested analyzing data from the four perspectives of BSC model:

H0: If a bank applies BSC model in measuring total performance, then there is more complete image about bank efficiency in the long term.

Data received from the secondary sources (i.e., quarterly and annual reports of National Bank of Serbia and annual bank reports) was used for the case study. The scores are analysed in a qualitative manner. Specifically, the intention is to determine if the BSC model is suitable for use in measuring efficiency of the banking sector in Serbia.

Research Methodology

The purpose of any bank as well is to maintain, grow and develop in the long term. Bearing this in mind, the banks are forced to measure and manage intangible assets, which is the most important value driver in the contemporary business environment. Measuring intangible assets inevitably implies introducing non-financial dimensions into the bank performance measurement and management model. Such a model is the BSC model. Thus, the other research finding is that most appropriate model of banks performance measurement in the long term is the BSC model. The text below is going to show in detail the concrete implementation of the BSC model in the process of the banks' efficiency evaluation in Serbia. The authors are going to present the complementary use of the BSC model. Thus, the authors are going to analyze an efficiency of the banking sector through performance measures from different perspectives: finance, client, internal processes, innovation, and learning and growth.

From financial perspective, the objectives are: survival, growth, stakeholder satisfaction, and revenue. The proposed measures may be: liquidity, ROI, ROE, profit margin, and leverage ratio (Abdurizzag, 2017, p.10). The objectives from internal business processes are: increase innovation, improve operational capabilities as well as improve operational efficiency. These objectives can be measured through productivity growth, growth of banking services, credit growth, growth of software application, and increase of front office employees. Regarding clients, objectives are client retention, attraction of new clients, and increase of market share. It is important to measure clients' satisfaction, growth of current and saving accounts as well as growth of safety deposits. The objectives of Learning and Growth perspective are to improve employees' capabilities and satisfaction as well as to improve information

technologies (IT). Aforementioned can be measured by employees productivity, employees' turnover, growth of banks branches, employees participation in development programs, number of employees, and using IT in their work (Abdurizzag, 2017). The main purpose of this study is to implement BSC method in one domestic commercial bank.

Research Findings

Implementation of BSC model has been analyzed through all four perspectives i.e., Financial, Internal business process, Client, as well as Learning and Growth.

Financial perspective can be used the measures such as: liquidity, ROE, ROA, profit margin and leverage ratio (see Table 3). The authors have emphasized that it is important to provide timely information on cash flows (Knezevic & Mitrovic, 2018).

Table 3. *Measures of Financial Perspective in the Bank*

<i>Indicator</i>	<i>31.12.2019.</i>	<i>31.12.2020.</i>	<i>30.9.2021.</i>
Liquidity ¹	0.2195	0.1775	0.1291
ROE ²	34.63	13.4736	0.0081
ROA ³	4.39	0.0037	0.0024
Leverage Ration ⁴	7.89	3.642	3.375

Source: Authors` calculation

1 Liquid assets/liabilities

2 Profit before tax/Average total capital

3 Profit before tax/Average total assets

4 ROE/ROA

The National Bank of Serbia regulates standards for bank liquidity in a following manner: It has to be at least 1 for all working days in the month; It has not been less than 0.9 for more than 3 consecutive working days, and at the end of each working day has to be at least 0.8.

From the perspective of Internal Business Processes, there are three main goals: to increase innovation, to improve operational capabilities, and to improve operational efficiency (Abdurizzag, 2017, p. 10). The proposed measures may be: productivity growth, growth of banking services, credit growth, growth in software application, as well as front office employees.

In March 2020, the following organizational and operational projects have been realized (Bank Report, 2020, p. 67):

- Full automation of international payments and ten days reporting,
- Adoption of cloud-based collaboration tool,
- Policy for the conduction of meetings, committees,
- Full adoption of electronic workflow system for the internal circulation and signing of documents.

The Covid - 19 pandemic introduced initiative for change of the Bank model in the future. Therefore, the following projects have been initiated: Smart Working (i.e., teleworking technology, design of office space, organization redesign, digital communication), Retail Projects (i.e., network efficiency, self-service banking, predictive analytics, and cost efficiency).

Regarding troubled assets management, in period 2015 to 2020, non-performed loan (NPL) ratio significantly decreased over the years (from 32.3% in 2015 to 6.2% in 2020).

Client`s satisfaction presents a significant performance measure of the banking sector, because it also directly affects the services turnover and income levels, and ultimately the profit. Practically, the principle of loyalty is above the category of satisfied client and shows the factor of achieving a long-term profitability of the banks. This means that banks need to provide a higher level of trust in their own business. An interesting question is how to measure the clients` satisfaction and loyalty, considering that it is about a soft factor, i.e., which are the most important criteria in clients` satisfaction.

From the Client perspective, there are three main objectives: client retention, attracting new clients, and to increase market share of the Bank (see Table 3). Therefore, it is important to measure clients` satisfaction, clients` growth, growth of current accounts, growth of saving accounts, and growth of safety deposits.

In the observed Bank, clients are divided into retail sector and corporate sector. The study analyzed the client loan portfolio (in million Euro) in the period 2015 to 2020, as followed: 175, 208, 274, 327, 368, and 387.6 in 2020 (Bank Report, 2020, p. 55).

According to criteria defined by National Bank of Serbia, the quality of credit portfolio in the observed Bank is very good with 89.66% of credits category A, B, and V, as well as 10.34% of high-risk credits - categories G and D.

They may be three main goals, from Learning and Growth perspective, such as to improve employees` capabilities, to improve employees` satisfaction, and to improve computerized system application (see Table 2). Some measures can be as followed: employees` productivity, employees` turnover, growth of the bank`s branches, employees` participation in development programs, number of employees, as well as using IT in their work (Abdurizzag, 2017).

Based on the Banks Report (2020), the analysis in this study has been included data about new employee hires, turnover rate, total hours of training, as well as average hours of training per manager and employee (See Table 4).

Table 4. *Training and Employment in the Period 2015-2019*

Year	Total hours of training	Average hours of training per manager	Average hours of training per employee	New employee hires	Turnover rate (in %)
2015	15.216	10.10	10.55	76	5.32
2016	21.325	10.45	11.35	105	7.60
2017	21.325	10.55	11.25	97	5.84
2018	21.400	10.15	11.55	104	6.34
2019	21.920	10.50	11.50	139	9.50

Source: Adapted from Bank Report (2020): 122, 124.

In March 2020, IT department had faced two major challenges. It was necessary to move all equipment and installation from Bank's facilities to employees' homes. At the same time, the regulatory project has been introduced by National Bank of Serbia.

Conclusion and Managerial Recommendation

The Balanced Scorecard model has a significant role in the process of measuring the efficiency of the banking sector. The BSC implies that performances could be viewed from four main perspectives: financial, customer, internal business process, and learning and growth. It translates vision and strategy, defines the strategic linkages to integrating performance across an observed bank, communicates objectives and measures to the branches, and aligns strategic initiatives. When fully implemented, it aligns employees in the bank that they understand how and what they can do to support the strategy. In addition, the BSC could be used as a basis for compensation and provides feedback to management about the strategy implementation.

Based on past research and this study, **the main recommendation for banks' managers** can be summarized as followed:

- Before operationalization of the measures, the BSC model should be analyzed in detail,
- Customized the BSC to bank's culture, incorporate employees in all phasis (from formulation to implementation the model),
- Carefully manage the process, with attention on resistance to change.

However, the question is how many banks in Serbia will implement the BSC model? Generally, banks in Serbia apply quantitative indicators i.e., segment profitability, product profitability, the branch profitability; profitability per employee, market share, and some qualitative indicators i.e., new concept, new design, new products, sales skills, customer satisfaction). Whether and to what extent the bank monitors and measures the impact of qualitative to quantitative indicators, how much these indicators are in line with the defined strategy and objectives of the banks, how much these indicators are in accordance with the allocation of rewards and incentives of employees, and many other similar questions that are actually related to the issue of whether the banking sector in Serbia implement the BSC model, will be subject to special consideration by the forthcoming research efforts.

Literature

1. Abdurizzag, A. (2017). Evaluation of Bank's Performance by using Balanced Score card: practical study in Libyan Environment. *International Journal of Business and Management*, V(1), 1-14., 10.20472/BM.2017.5.1.001
2. Al-Najjar, S. M., & Kalaf, K. H. (2012). Designing a balanced scorecard to measure a bank's performance: A case study. *International journal of business administration*, 3(4), 44.
3. Balkovskaya, D., & Filneva, L. (2016). The use of the balanced scorecard in bank strategic management. *International Journal of Business Excellence*, 9(1), 48-67.
4. Bank Report (2020). Annual Report & Corporate Responsibility Report 2020. Belgrade.
5. Dincer, H., Hacıoğlu, Ü., & Yüksel, S. (2020). Balanced scorecard-based performance assessment of Turkish banking sector with the Analytic Network Process (ANP). *International Journal of Decision Sciences & Applications*.
6. Domanović, V. (2013a). Efektivnost sistema merenja performansi u uslovima savremenog poslovnog okruženja, *Ekonomski horizonti*, 15(1): 31-44. COBISS.SR-ID 198002956
7. Domanović, V. (2013b). Efekti primene savremenih sistema merenja performansi, u Babić V. and M. Đorđević (redaktori) *Karakteristike, koncepti i izazovi menadžmenta u savremenim uslovima poslovanja*, Kragujevac: Ekonomski fakultet, ISBN 978-86-6091-041-9. str. 183-209. UDK 005.21:005.336.1, 005.52, COBISS.SR-ID 513194588.
8. Domanović, V. (2010). BSC – mogućnosti i efekti primene. Kragujevac: Ekonomski fakultet Univerziteta u Kragujevcu.
9. Heinz, A. (2001) Applying the balanced scorecard concept: An experience report, *Long Range Planning*, 34 (4): 441-461.
10. Kaplan, R. S. and D. P. Norton (1992). The Balanced Scorecard - Measures that Drive Performance, *Harvard Business Review*, (January-February): 71-79.
11. Kaplan, R. S. and D. P. Norton (1993). Putting the balanced scorecard to work, *Harvard Business Review*, 71(5): 134-142.
12. Kaplan, R. S. and D. P. Norton (1996a) The balanced scorecard: Translating strategy into action. Boston: Harvard Business School Press.
13. Kaplan, R. S. and D. P. Norton (1996b). Using the balanced scorecard as a strategic management system, *Harvard Business Review*, (January-February): 75-85.
14. Kaplan, R.S. and D. P. Norton (2000) The strategy focused organization: How balanced scorecard companies thrive in the new business environment, Boston: Harvard Business School Press.
15. Kaplan, R. S. and D. P. Norton (2001). Transforming the balanced scorecard from performance measurement to strategic management, *Accounting Horizons*, 15: 87-104.
16. Kaplan, R. S. and D. P. Norton (2004). How strategy maps frame an organisation's objectives, *Financial Executive*, 20 (2): 40-45.
17. Kennerly, M. and A. Neely (2002). Performance measurement frameworks: A review, In Neely A. (ed.), *Business performance measurement: Theory and practice*, Cambridge: Cambridge University Press, pp. 145-155.
18. Knežević, S., & Mitrović, A. (2018). Cash flow statement and financial decision-making in insurance companies. *Bankarstvo*, 47(4), 108-123. <https://doi.org/10.5937/bankarstvo1804108K>

19. Kontić, J., & Kontić, Lj. (2009). Mergers and acquisitions in banking sector. *Bankarstvo*, 38(5-6), 90-105.
20. Kontić, Lj., & Čabrilo, S. (2009). A strategic model for measuring intellectual capital in Serbian industrial enterprises. *Economic Annals*, 54(183), 89-117.
21. Kontić, Lj., & Kontić, J. (2012). Sustainability and readiness for change: Insights from a banking case study in Serbia. *Amfiteatru Economic*, 14(32), 537.
22. Lukić, R. (2021). Application of the EDAS method in the evaluation of bank efficiency in Serbia. *Bankarstvo*, 50(2), 64-75.
23. National Bank of Serbia (2020). Banking Sector in Serbia – IV Quarter 2019. Belgrade. https://nbs.rs/export/sites/NBS_site/documents-eng/kontrola-banaka/quater_report_IV_19.pdf (access on October 6th, 2021).
24. National Bank of Serbia (2021). Financial statements of banks. <https://nbs.rs/en/finansijske-institucije/banke/bilans-stanja/index.html> (access on October 6th, 2021).
25. Nørreklit, H. (2000). The balance on the balanced scorecard – a critical analysis of some of its assumptions, *Management Accounting Research*, 11 (1): 65-88.
26. Olson, E. M. and S. F. Slater (2002). The balanced scorecard, competitive strategy and performance, *Business Horizons*, 45 (3): 11-16.
27. Ozturk, E., & Coskun, A. (2014). A strategic approach to performance management in banks: The balanced scorecard. *Accounting and Finance Research*, 3(3), 151-158.
28. Panicker, S., & Seshadri, V. (2013). Devising a balanced scorecard to determine Standard Chartered Bank's Performance: A case Study. *International Journal of Business Research and Development*, 2(2).
29. Radić, S. (2016). Vrednovanje intelektualnog kapitala primenom metode obračunate nematerijalne vrednosti. *Ekonomске ideje i praksa*, 22, 71-88.
30. Ritter, M. (2003). The use of balanced scorecards in the strategic management of corporate communication, *Corporate Communications: an International Journal*, 8 (1): 44-59.
31. Rostami, M., Goudarzi, A., & Zaj, M. (2015). Defining balanced scorecard aspects in banking industry using FAHP approach. *International Journal of Economics and Business Administration*, 1(1), 25-38.
32. Todorović, V., Domanović, V., & Jaksić, M. (2012). Performance analysis of the banking sector of Serbia in terms of crisis. *Actual Problems of Economics*.
33. Tuan, T. T. (2020). The impact of balanced scorecard on performance: The case of Vietnamese commercial banks. *The Journal of Asian Finance, Economics and Business*, 7(1), 71-79.
34. Vuksanović, E. and V. Todorović (2011). The global financial crisis and the banking sector in Serbia In Prachalias C. (ed.), *International Conference on Applied Financial Economics, Conference Proceedings, Volume A*, ISBN: 978-960-466-085-8, ISBN SET, ISBN: 1790-3912, Greece: National and Kapodistrian University of Athens, pp. 173-181.
35. Wu, H. Y. (2012). Constructing a strategy map for banking institutions with key performance indicators of the balanced scorecard. *Evaluation and program planning*, 35(3), 303-320.

BAROMETAR/BAROMETER

JUN 2021 – MAJ 2022. / JUNE 2021 – MAY 2022

1. PROMET / TURNOVER

Mesec/Month	Listing	Open Market	Regulisano tržište/Regulated market	MTP/MTF	Ukupno/Total	Broj transakcija/Number of transactions
Maj 2022	9.919.443.195	304.783.345,00	10.224.226.540	41.664.773,00	10.265.891.313	2.788,00
April 2022	2.174.994.092	157.561.026,00	2.332.555.118	251.428.547,00	2.583.983.665	2.071,00
Mart 2022	3.151.301.502	22.364.765,00	3.173.666.267	120.761.401,00	3.294.427.668	2.119,00
Februar 2022	1.959.662.678	11.539.264,00	1.971.201.942	48.167.269,00	2.019.369.211	1.137,00
Januar 2022	2.749.265.371	30.937.162,00	2.780.202.533	18.277.405,00	2.798.479.938	808,00
Decembar 2021	4.001.970.725	79.976.538,00	4.081.947.263	232.917.610,00	4.314.864.873	1.429,00
Novembar 2021	2.972.330.624	37.088.592,00	3.009.419.216	60.560.485,00	3.069.979.701	1.669,00
Oktobar 2021	5.741.634.936	42.180.961,00	5.783.815.897	1.806.541.872,00	7.590.357.769	1.455,00
Septembar 2021	4.317.271.039	61.870.838,00	4.379.141.877	20.831.970,00	4.399.973.847	1.375,00
Avgust 2021	1.170.804.576	38.939.053,00	1.209.743.629	477.848.321,00	1.687.591.950	1.484,00
Jul 2021	1.613.119.599	41.696.072,00	1.654.815.671	46.265.397,00	1.701.081.068	1.148,00
Jun 2021	3.621.882.419	565.050.460,00	4.186.932.879	105.562.078,00	4.292.494.957	1.770,00
	43.393.680.756	1.393.988.076,00	44.787.668.832	3.230.827.128,00	48.018.495.960	19.253,00

*RSD

2. INDEKSI / INDICES

Decembar 2021/December 2021 Maj/May 2022		BELEX15	BELEXline
	Poslednja vrednost / Last value	830,92	1.669,36
	Promena (abs) / Change (abs)	20,8	-11,35
	Promena (%) / Change (%)	2,57%	-0,68%
	Najviša vrednost / Maximum value	865,33	1.789,15
	Najniža vrednost / Minimum value	800,22	1.647,62
	Istorijski max / History maximum value	3.335,2	5.007,34
	Istorijski min / History minimum value	347,46	841,99
	Vrednost prometa / Value of turnover	810.788.890	1.401.247.645

*u hiljadama RSD / in RSD thousands

3. TRŽIŠNA KAPITALIZACIJA / MARKET CAPITALISATION

2022	FEBRUAR	MART	APRIL	MAJ
Ukupna tržišna kapitalizacija/ Total market capitalisation	540.400.346	529.327.676	511.488.140	517.140.732
Regulisano tržište/Regulated Market	329.079.333	332.870.317	315.369.576	322.472.214
Listing	246.094.758	239.591.947	245.006.922	254.567.663
Prime Listing – akcije/ Prime Listing – shares	157.118.306	157.143.434	165.590.754	167.895.447
Standard Listing – akcije/ Standard Listing – shares	88.976.452	82.448.513	79.416.168	86.672.216
Open Market	82.984.575	93.278.370	70.362.654	67.904.551
MTP/MTF	211.321.013	196.457.359	196.118.564	194.668.519
BELEX15	299.281.084	296.493.634	286.909.779	288.605.626
BELEXline	311.457.991	308.911.645	302.106.814	303.924.265

4. UČEŠĆE STRANIH INVESTITORA / FOREIGN INVESTORS PARTICIPATION

Decembar/December 2021. Maj/May 2022	Učešće stranih investitora / Foreign Investors Participation		
	FIS	total	81,27%
		b-FIS	80,01%
		s-FIS	82,53%
	FIB		4,03%
	FIT		31,77%

Indeks_Belex15	Indeks_BELEXLine	Datum	BELEX15	BELEXLine
BELEX15	BELEXLine	6/1/2021	781.64	1,654.03
BELEX15	BELEXLine	6/2/2021	779.23	1,652.76
BELEX15	BELEXLine	6/3/2021	779.94	1,652.78
BELEX15	BELEXLine	6/4/2021	781.97	1,659.45
BELEX15	BELEXLine	6/7/2021	781.86	1,662.48
BELEX15	BELEXLine	6/8/2021	780.08	1,657.85
BELEX15	BELEXLine	6/9/2021	781.06	1,658.75
BELEX15	BELEXLine	6/10/2021	781.87	1,660.29
BELEX15	BELEXLine	6/11/2021	782.16	1,660.05
BELEX15	BELEXLine	6/14/2021	781.71	1,658.79
BELEX15	BELEXLine	6/15/2021	782.32	1,661.81
BELEX15	BELEXLine	6/16/2021	782.32	1,661.82
BELEX15	BELEXLine	6/17/2021	778.79	1,652.40
BELEX15	BELEXLine	6/18/2021	777.37	1,647.60
BELEX15	BELEXLine	6/21/2021	775.57	1,644.98
BELEX15	BELEXLine	6/22/2021	776.74	1,653.44
BELEX15	BELEXLine	6/23/2021	774.21	1,648.43
BELEX15	BELEXLine	6/24/2021	772.63	1,646.46
BELEX15	BELEXLine	6/25/2021	775.37	1,647.57
BELEX15	BELEXLine	6/28/2021	776.94	1,649.62
BELEX15	BELEXLine	6/29/2021	771.77	1,645.31
BELEX15	BELEXLine	6/30/2021	779.45	1,653.08
BELEX15	BELEXLine	7/1/2021	771.88	1,645.15
BELEX15	BELEXLine	7/2/2021	772.39	1,646.63
BELEX15	BELEXLine	7/5/2021	771.62	1,645.07
BELEX15	BELEXLine	7/6/2021	775.28	1,653.51
BELEX15	BELEXLine	7/7/2021	774.44	1,650.20
BELEX15	BELEXLine	7/8/2021	773.97	1,648.72
BELEX15	BELEXLine	7/9/2021	773.58	1,649.31
BELEX15	BELEXLine	7/12/2021	773.56	1,649.00
BELEX15	BELEXLine	7/13/2021	771.41	1,643.49
BELEX15	BELEXLine	7/14/2021	772.92	1,643.36
BELEX15	BELEXLine	7/15/2021	769.02	1,636.81
BELEX15	BELEXLine	7/16/2021	768.43	1,635.76
BELEX15	BELEXLine	7/19/2021	769.94	1,636.40
BELEX15	BELEXLine	7/20/2021	771.64	1,643.24
BELEX15	BELEXLine	7/21/2021	770.59	1,642.06
BELEX15	BELEXLine	7/22/2021	771.16	1,643.67

BELEX15	BELEXLine	7/23/2021	772.93	1,644.54
BELEX15	BELEXLine	7/26/2021	775.00	1,646.81
BELEX15	BELEXLine	7/27/2021	776.52	1,648.42
BELEX15	BELEXLine	7/28/2021	775.7	1,650.38
BELEX15	BELEXLine	7/29/2021	775.7	1,650.38
BELEX15	BELEXLine	7/30/2021	775.7	1,650.42
BELEX15	BELEXLine	8/2/2021	777.6	1,654.40
BELEX15	BELEXLine	8/3/2021	777	1,652.90
BELEX15	BELEXLine	8/4/2021	776.1	1,651.97
BELEX15	BELEXLine	8/5/2021	776.6	1,653.14
BELEX15	BELEXLine	8/6/2021	781.2	1,667.35
BELEX15	BELEXLine	8/9/2021	785.1	1,675.86
BELEX15	BELEXLine	8/10/2021	785.1	1,673.34
BELEX15	BELEXLine	8/11/2021	789.7	1,686.70
BELEX15	BELEXLine	8/12/2021	792.1	1,689.47
BELEX15	BELEXLine	8/13/2021	796.3	1,690.87
BELEX15	BELEXLine	8/16/2021	807.8	1,711.91
BELEX15	BELEXLine	8/17/2021	810.3	1,720.31
BELEX15	BELEXLine	8/18/2021	810.9	1,721.16
BELEX15	BELEXLine	8/19/2021	806.7	1,716.80
BELEX15	BELEXLine	8/20/2021	802.3	1,712.22
BELEX15	BELEXLine	8/23/2021	800.1	1,704.68
BELEX15	BELEXLine	8/24/2021	796.5	1,695.89
BELEX15	BELEXLine	8/25/2021	800.95	1,700.66
BELEX15	BELEXLine	8/26/2021	799.91	1,698.29
BELEX15	BELEXLine	8/27/2021	796.15	1,692.88
BELEX15	BELEXLine	8/30/2021	799.73	1,702.43
BELEX15	BELEXLine	8/31/2021	805.01	1,712.12
BELEX15	BELEXLine	9/1/2021	804.83	1,708.51
BELEX15	BELEXLine	9/2/2021	803.24	1,705.98
BELEX15	BELEXLine	9/3/2021	808.73	1,708.92
BELEX15	BELEXLine	9/6/2021	805.19	1,707.14
BELEX15	BELEXLine	9/7/2021	802.38	1,704.15
BELEX15	BELEXLine	9/8/2021	802.38	1,703.47
BELEX15	BELEXLine	9/9/2021	803.25	1,704.39
BELEX15	BELEXLine	9/10/2021	809.63	1,713.92
BELEX15	BELEXLine	9/13/2021	808.25	1,717.48
BELEX15	BELEXLine	9/14/2021	802.60	1,712.44
BELEX15	BELEXLine	9/15/2021	802.75	1,711.87

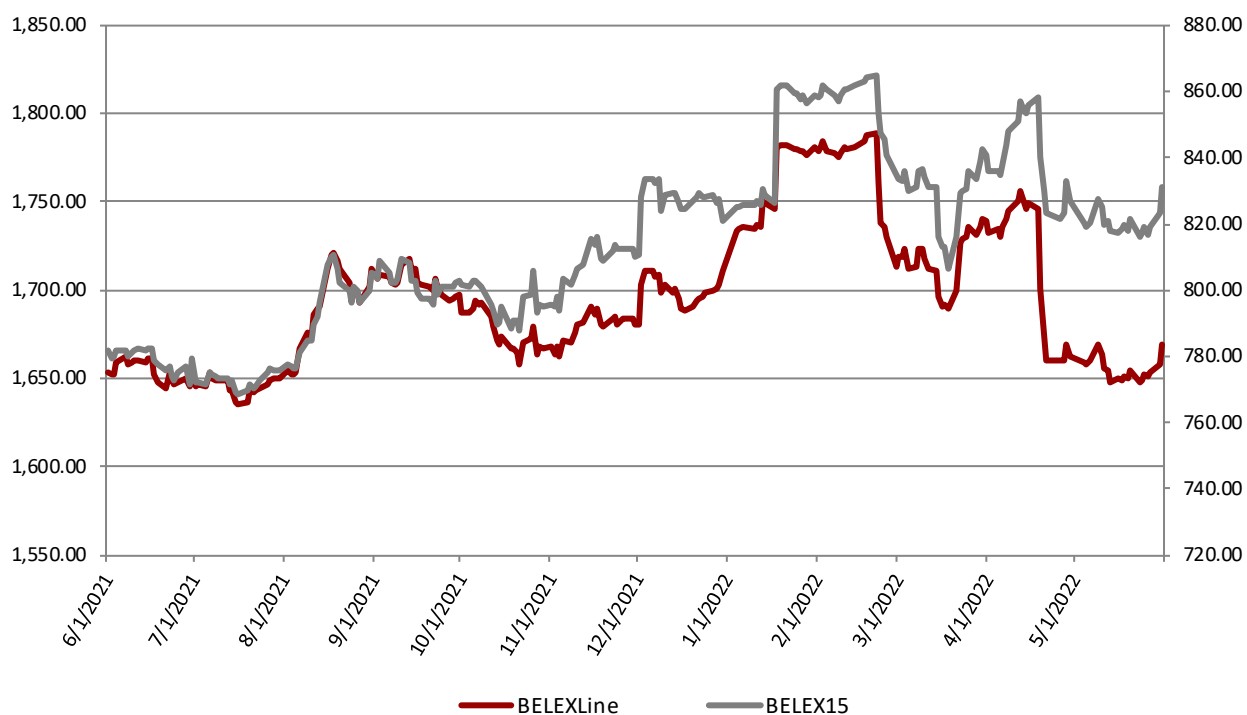
BELEX15	BELEXLine	9/16/2021	799.44	1,704.59
BELEX15	BELEXLine	9/17/2021	797.61	1,702.65
BELEX15	BELEXLine	9/20/2021	797.46	1,702.56
BELEX15	BELEXLine	9/21/2021	795.74	1,700.32
BELEX15	BELEXLine	9/22/2021	802.61	1,706.25
BELEX15	BELEXLine	9/23/2021	798.71	1,701.83
BELEX15	BELEXLine	9/24/2021	801.20	1,697.10
BELEX15	BELEXLine	9/27/2021	800.86	1,694.08
BELEX15	BELEXLine	9/28/2021	801.35	1,694.97
BELEX15	BELEXLine	9/29/2021	802.37	1,696.06
BELEX15	BELEXLine	9/30/2021	802.81	1,697.72
BELEX15	BELEXLine	10/1/2021	801.40	1,687.79
BELEX15	BELEXLine	10/4/2021	800.88	1,687.24
BELEX15	BELEXLine	10/5/2021	802.65	1,690.11
BELEX15	BELEXLine	10/6/2021	802.70	1,694.06
BELEX15	BELEXLine	10/7/2021	801.42	1,692.01
BELEX15	BELEXLine	10/8/2021	800.82	1,692.73
BELEX15	BELEXLine	10/11/2021	795.94	1,684.98
BELEX15	BELEXLine	10/12/2021	794.09	1,679.35
BELEX15	BELEXLine	10/13/2021	789.67	1,671.68
BELEX15	BELEXLine	10/14/2021	790.20	1,669.79
BELEX15	BELEXLine	10/15/2021	794.88	1,673.96
BELEX15	BELEXLine	10/18/2021	788.52	1,667.32
BELEX15	BELEXLine	10/19/2021	791.08	1,667.06
BELEX15	BELEXLine	10/20/2021	791.01	1,664.31
BELEX15	BELEXLine	10/21/2021	788.13	1,657.84
BELEX15	BELEXLine	10/22/2021	798.08	1,670.12
BELEX15	BELEXLine	10/25/2021	798.56	1,672.86
BELEX15	BELEXLine	10/26/2021	805.85	1,678.99
BELEX15	BELEXLine	10/27/2021	793.49	1,663.94
BELEX15	BELEXLine	10/28/2021	795.41	1,667.59
BELEX15	BELEXLine	10/29/2021	795.15	1,667.11
BELEX15	BELEXLine	11/1/2021	795.91	1,668.63
BELEX15	BELEXLine	11/2/2021	794.82	1,663.83
BELEX15	BELEXLine	11/3/2021	798.25	1,668.24
BELEX15	BELEXLine	11/4/2021	793.73	1,662.03
BELEX15	BELEXLine	11/5/2021	803.42	1,671.66
BELEX15	BELEXLine	11/8/2021	801.84	1,670.80
BELEX15	BELEXLine	11/9/2021	804.82	1,676.56

BELEX15	BELEXLine	11/10/2021	806.30	1,680.14
BELEX15	BELEXLine	11/12/2021	807.68	1,681.60
BELEX15	BELEXLine	11/15/2021	815.81	1,690.98
BELEX15	BELEXLine	11/16/2021	813.65	1,686.61
BELEX15	BELEXLine	11/17/2021	816.03	1,689.29
BELEX15	BELEXLine	11/18/2021	809.26	1,680.90
BELEX15	BELEXLine	11/19/2021	808.70	1,679.36
BELEX15	BELEXLine	11/22/2021	812.07	1,683.59
BELEX15	BELEXLine	11/23/2021	813.83	1,685.11
BELEX15	BELEXLine	11/24/2021	812.47	1,680.54
BELEX15	BELEXLine	11/25/2021	812.33	1,682.48
BELEX15	BELEXLine	11/26/2021	812.38	1,683.70
BELEX15	BELEXLine	11/29/2021	812.37	1,683.48
BELEX15	BELEXLine	11/30/2021	810.12	1,680.71
BELEX15	BELEXLine	12/1/2021	810.76	1,680.95
BELEX15	BELEXLine	12/2/2021	828.46	1,702.79
BELEX15	BELEXLine	12/3/2021	833.64	1,711.37
BELEX15	BELEXLine	12/6/2021	833.81	1,711.16
BELEX15	BELEXLine	12/7/2021	832.66	1,707.24
BELEX15	BELEXLine	12/8/2021	833.75	1,708.89
BELEX15	BELEXLine	12/9/2021	823.95	1,698.90
BELEX15	BELEXLine	12/10/2021	828.99	1,703.41
BELEX15	BELEXLine	12/13/2021	829.18	1,698.49
BELEX15	BELEXLine	12/14/2021	829.55	1,700.83
BELEX15	BELEXLine	12/15/2021	826.36	1,695.17
BELEX15	BELEXLine	12/16/2021	824.70	1,690.07
BELEX15	BELEXLine	12/17/2021	824.85	1,688.75
BELEX15	BELEXLine	12/20/2021	827.02	1,690.51
BELEX15	BELEXLine	12/21/2021	828.43	1,694.29
BELEX15	BELEXLine	12/22/2021	829.54	1,695.56
BELEX15	BELEXLine	12/23/2021	828.00	1,696.22
BELEX15	BELEXLine	12/24/2021	828.20	1,698.76
BELEX15	BELEXLine	12/27/2021	828.99	1,699.60
BELEX15	BELEXLine	12/28/2021	826.21	1,700.41
BELEX15	BELEXLine	12/29/2021	827.63	1,703.03
BELEX15	BELEXLine	12/30/2021	820.78	1,711.57
BELEX15	BELEXLine	1/4/2022	825.04	1,734.07
BELEX15	BELEXLine	1/5/2022	825.18	1,734.22
BELEX15	BELEXLine	1/6/2022	826.04	1,735.57

BELEX15	BELEXLine	1/10/2022	825.64	1,735.14
BELEX15	BELEXLine	1/11/2022	827.10	1,737.55
BELEX15	BELEXLine	1/12/2022	826.04	1,736.15
BELEX15	BELEXLine	1/13/2022	830.41	1,750.73
BELEX15	BELEXLine	1/14/2022	828.50	1,749.83
BELEX15	BELEXLine	1/17/2022	826.20	1,745.55
BELEX15	BELEXLine	1/18/2022	860.67	1,781.50
BELEX15	BELEXLine	1/19/2022	861.71	1,782.63
BELEX15	BELEXLine	1/20/2022	861.71	1,782.63
BELEX15	BELEXLine	1/21/2022	861.69	1,782.60
BELEX15	BELEXLine	1/24/2022	859.71	1,780.38
BELEX15	BELEXLine	1/25/2022	859.33	1,779.98
BELEX15	BELEXLine	1/26/2022	857.95	1,778.55
BELEX15	BELEXLine	1/27/2022	858.83	1,779.20
BELEX15	BELEXLine	1/28/2022	856.22	1,776.47
BELEX15	BELEXLine	1/31/2022	858.86	1,781.04
BELEX15	BELEXLine	2/1/2022	858.06	1,778.40
BELEX15	BELEXLine	2/2/2022	859.09	1,781.18
BELEX15	BELEXLine	2/3/2022	861.91	1,784.82
BELEX15	BELEXLine	2/4/2022	860.80	1,779.19
BELEX15	BELEXLine	2/7/2022	858.96	1,777.27
BELEX15	BELEXLine	2/8/2022	857.19	1,775.42
BELEX15	BELEXLine	2/9/2022	858.82	1,777.45
BELEX15	BELEXLine	2/10/2022	860.95	1,781.25
BELEX15	BELEXLine	2/11/2022	860.91	1,780.28
BELEX15	BELEXLine	2/14/2022	862.05	1,781.47
BELEX15	BELEXLine	2/17/2022	863.00	1,784.23
BELEX15	BELEXLine	2/18/2022	864.27	1,787.79
BELEX15	BELEXLine	2/21/2022	865.06	1,789.15
BELEX15	BELEXLine	2/22/2022	853.69	1,760.44
BELEX15	BELEXLine	2/23/2022	847.49	1,738.10
BELEX15	BELEXLine	2/24/2022	845.56	1,736.03
BELEX15	BELEXLine	2/25/2022	841.05	1,729.92
BELEX15	BELEXLine	2/28/2022	834.64	1,713.41
BELEX15	BELEXLine	3/1/2022	833.42	1,718.42
BELEX15	BELEXLine	3/2/2022	833.03	1,719.40
BELEX15	BELEXLine	3/3/2022	835.97	1,723.71
BELEX15	BELEXLine	3/4/2022	829.71	1,712.25
BELEX15	BELEXLine	3/7/2022	831.13	1,713.02

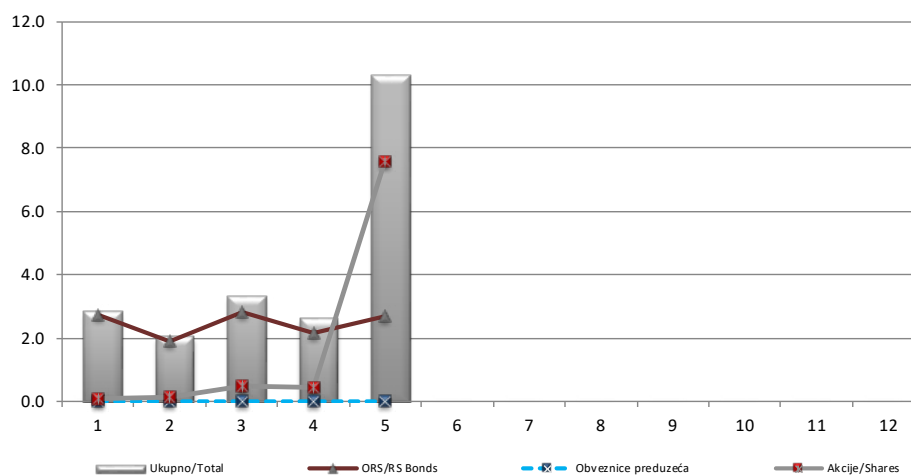
BELEX15	BELEXLine	3/8/2022	835.76	1,723.06
BELEX15	BELEXLine	3/9/2022	836.56	1,722.99
BELEX15	BELEXLine	3/10/2022	833.93	1,717.94
BELEX15	BELEXLine	3/11/2022	831.32	1,712.27
BELEX15	BELEXLine	3/14/2022	830.93	1,711.52
BELEX15	BELEXLine	3/15/2022	815.89	1,695.89
BELEX15	BELEXLine	3/16/2022	812.97	1,691.24
BELEX15	BELEXLine	3/17/2022	813.09	1,691.31
BELEX15	BELEXLine	3/18/2022	806.50	1,689.28
BELEX15	BELEXLine	3/21/2022	816.03	1,699.27
BELEX15	BELEXLine	3/22/2022	829.67	1,726.53
BELEX15	BELEXLine	3/23/2022	830.09	1,729.12
BELEX15	BELEXLine	3/24/2022	830.78	1,729.84
BELEX15	BELEXLine	3/25/2022	835.86	1,736.32
BELEX15	BELEXLine	3/28/2022	833.39	1,731.07
BELEX15	BELEXLine	3/29/2022	839.01	1,736.14
BELEX15	BELEXLine	3/30/2022	842.84	1,740.13
BELEX15	BELEXLine	3/31/2022	840.53	1,739.08
BELEX15	BELEXLine	4/1/2022	836.00	1,732.07
BELEX15	BELEXLine	4/4/2022	835.78	1,734.43
BELEX15	BELEXLine	4/5/2022	834.80	1,730.73
BELEX15	BELEXLine	4/6/2022	837.87	1,735.43
BELEX15	BELEXLine	4/7/2022	843.55	1,740.18
BELEX15	BELEXLine	4/8/2022	847.95	1,745.12
BELEX15	BELEXLine	4/11/2022	851.15	1,750.03
BELEX15	BELEXLine	4/12/2022	857.23	1,756.38
BELEX15	BELEXLine	4/13/2022	854.22	1,749.34
BELEX15	BELEXLine	4/14/2022	853.27	1,746.44
BELEX15	BELEXLine	4/15/2022	855.73	1,748.98
BELEX15	BELEXLine	4/18/2022	858.42	1,746.34
BELEX15	BELEXLine	4/19/2022	839.94	1,700.62
BELEX15	BELEXLine	4/20/2022	829.85	1,673.62
BELEX15	BELEXLine	4/21/2022	823.12	1,659.76
BELEX15	BELEXLine	4/26/2022	821.37	1,659.72
BELEX15	BELEXLine	4/27/2022	823.43	1,660.07
BELEX15	BELEXLine	4/28/2022	832.79	1,669.12
BELEX15	BELEXLine	4/29/2022	827.16	1,662.63
BELEX15	BELEXLine	5/4/2022	820.36	1,659.22
BELEX15	BELEXLine	5/5/2022	819.36	1,658.21

BELEX15	BELEXLine	5/6/2022	820.11	1,660.18
BELEX15	BELEXLine	5/9/2022	827.42	1,669.56
BELEX15	BELEXLine	5/10/2022	825.02	1,664.14
BELEX15	BELEXLine	5/11/2022	819.91	1,655.95
BELEX15	BELEXLine	5/12/2022	821.23	1,655.02
BELEX15	BELEXLine	5/13/2022	818.16	1,647.98
BELEX15	BELEXLine	5/16/2022	817.26	1,649.90
BELEX15	BELEXLine	5/17/2022	818.28	1,648.40
BELEX15	BELEXLine	5/18/2022	820.02	1,651.65
BELEX15	BELEXLine	5/19/2022	818.11	1,650.37
BELEX15	BELEXLine	5/20/2022	821.79	1,654.29
BELEX15	BELEXLine	5/23/2022	815.90	1,647.62
BELEX15	BELEXLine	5/24/2022	817.12	1,649.39
BELEX15	BELEXLine	5/25/2022	819.40	1,652.64
BELEX15	BELEXLine	5/26/2022	816.56	1,651.50
BELEX15	BELEXLine	5/27/2022	819.05	1,653.79
BELEX15	BELEXLine	5/30/2022	823.34	1,658.11
BELEX15	BELEXLine	5/31/2022	830.92	1,669.36



U mlrd dinarima / RSD

2022.



2022	Ukupno/Total	ORS/RS Bonds	Obveznice preduzeća	Akcije/Shares
1	2,798,479,938	2,736,693,452	0	61,786,486
2	2,019,369,211	1,894,745,001	0	124,624,210
3	3,294,427,668	2,805,469,107	0	488,958,561
4	2,583,983,665	2,135,040,364	0	448,943,301
5	10,265,891,313	2,701,476,264	0	7,564,415,049
6				
7				
8				
9				
10				
11				
12				

Hrvatska /Croatia

Data	quarter	GDP	ROA	ROE
2008	1	2.7	1.7	13.0
	2	0.4	2.0	14.5
	3	-1.6	1.9	14.1
	4	-2.4	1.8	12.8
2009	1	-4.9	1.6	11.5
	2	0.5	1.6	11.3
	3	-1.1	1.4	10.1
	4	0.8	1.2	8.8
2010	1	-1.1	1.3	8.9
	2	-1.0	1.2	8.2
	3	1.6	1.2	8.7
	4	-1.3	1.2	8.3
2011	1	-0.4	1.3	9.1
	2	1.5	1.3	9.2
	3	-0.4	1.3	9.1
	4	-0.7	1.2	8.8
2012	1	-1.2	1.3	9.2
	2	-0.9	1.1	7.8
	3	0.3	1.0	7.4
	4	-0.8	0.9	6.2
2013	1	0.6	0.9	6.6
	2	0.1	0.6	4.4
	3	-0.5	0.6	4.4
	4	-0.3	0.3	1.8

2014	1	-0.2	0.8	5.6
	2	0.6	0.8	5.7
	3	-0.4	0.7	4.8
	4	0.5	0.6	4.6
2015	1	0.6	0.6	4.3
	2	1.3	0.7	5.1
	3	1.8	-1.5	-10.9
	4	-1.4	-1.2	-8.7
2016	1	2.5	1.5	11.9
	2	0.4	1.8	13.8
	3	0.4	1.7	12.7
	4	1.3	1.6	11.8
2017	1	1.2	0.5	3.4
	2	0.3	0.7	4.6
	3	1.2	0.9	6.3
	4	0.3	1.1	7.4
2018	1	0.0	1.7	11.4
	2	2.5	1.7	11.8
	3	0.0	1.7	11.9
	4	0.4	1.4	9.6
2019	1	1.8	1.6	11.2
	2	1.1	1.8	13.2
	3	-0.5	1.7	12.2
	4	0.5	1.6	11.3
2020	1	-0.1	1.2	8.5
	2	-14.2	0.9	6.6
	3	3.9	0.9	6.5
	4	4.0	0.7	7.2

Srbija /Serbia

Data	quarter	GDP	ROA	ROE
2008	1	8.8	2.77	12.72
	2	6.3	2.60	11.51
	3	4.6	2.74	12.03
	4	2.9	2.08	9.28
2009	1	-4.1	1.50	6.40
	2	-4.2	0.96	4.10
	3	2.3	1.10	4.80
	4	-1.6	1.00	4.60
2010	1	-0.2	1.30	6.10
	2	0.6	1.40	6.60
	3	1.7	1.20	5.90
	4	1.8	1.10	5.40
2011	1	3.0	1.50	7.60
	2	2.5	1.40	7.00
	3	0.7	1.30	6.50
	4	0.4	1.20	6.00
2012	1	-0.9	1.40	7.00
	2	0.3	1.30	6.20
	3	-0.7	1.20	5.90
	4	-2.7	1.0	4.7
2013	1	2.4	1.51	7.25
	2	1.1	1.11	5.34
	3	3.4	0.79	3.81
	4	3.3	-0.07	-0.36

2014	1	-0.2	1.15	5.42
	2	-1.2	1.06	5.00
	3	-3.8	0.97	4.63
	4	-1.8	0.12	0.58
2015	1	-1.7	0.98	4.69
	2	1.2	1.13	5.40
	3	2.3	1.19	5.64
	4	1.1	0.32	1.58
2016	1	3.9	1.88	9.18
	2	2.0	1.32	6.49
	3	2.8	1.41	6.89
	4	2.5	0.68	3.40
2017	1	1.6	2.25	11.41
	2	1.8	2.11	10.60
	3	2.2	2.18	11.01
	4	2.5	2.08	10.57
2018	1	4.9	2.08	10.50
	2	4.9	2.06	10.61
	3	4.1	2.07	10.66
	4	3.4	2.12	11.27
2019	1	2.6	1.75	9.72
	2	2.9	1.76	9.90
	3	4.8	1.86	10.51
	4	6.2	1.72	9.79
2020	1			
	2			
	3			
	4		1.1	6.5

Bosna /Bosnia

Data	quarter	GDP	ROA	ROE
2008	1	3.4	0.1	0.7
	2	2.9	0.2	2.5
	3	1.3	0.4	4.5
	4	0.6	0.4	4.3
2009	1	-8.6	0.1	1.3
	2	-8.2	0.1	1.3
	3	-7.7	0.2	2.0
	4	-4.9	0.1	0.8
2010	1	-2.9	0.0	-0.2
	2	-2.6	-0.3	-2.9
	3	1.0	-0.4	-3.5
	4	-1.4	-0.6	-5.5
2011	1	-2.4	0.2	1.4
	2	0.9	0.4	3.5
	3	0.0	0.4	3.4
	4	0.0	0.7	5.8
2012	1	-1.2	0.9	6.7
	2	-2.9	1.1	7.7
	3	-1.9	1.1	7.5
	4	-2.9	0.7	5.1
2013	1	-1.8	1.1	7.4
	2	-0.4	1.1	7.8
	3	-0.4	0.7	4.8
	4	-0.1	-0.1	-0.5

2014	1	-1.2	1.2	8.2
	2	-0.4	0.9	6.4
	3	0.3	0.9	6.4
	4	2.4	0.8	5.4
2015	1	2.1	1.5	10.3
	2	4.4	1.5	10.2
	3	3.1	1.3	9.0
	4	2.1	0.3	2.0
2016	1	2.1	1.6	11.1
	2	1.4	1.5	10.1
	3	2.4	1.2	8.4
	4	2.0	1.1	7.3
2017	1	2.6	2.0	13.6
	2	1.7	1.7	12.1
	3	2.9	1.7	11.7
	4	3.0	1.5	10.2
2018	1	2.0	1.7	12.2
	2	3.4	1.7	12.1
	3	3	1.5	11.1
	4	3.0	1.3	9.6
2019	1	2.2	1.6	12.0
	2	2.7	1.6	11.9
	3	2.7	1.5	11.1
	4	1.6	1.4	10.4
2020	1	2.0	0.3	2.4
	2	-9.3	0.5	3.6
	3	-6.3	0.7	5.3
	4	-3.8	0.8	6.0

Zbirni podaci /Collective results

Data	quarter	GDP	ROA	ROE
2008	1	8.8	2.77	12.72
	2	6.3	2.60	11.51
	3	4.6	2.74	12.03
	4	2.9	2.08	9.28
	1	3.4	0.1	0.7
	2	2.9	0.2	2.5
	3	1.3	0.4	4.5
	4	0.6	0.4	4.3
	1	2.7	1.7	13.0
	2	0.4	2.0	14.5
	3	-1.6	1.9	14.1
	4	-2.4	1.8	12.8
2009	1	-4.1	1.50	6.40
	2	-4.2	0.96	4.10
	3	2.3	1.10	4.80
	4	-1.6	1.00	4.60
	1	-8.6	0.1	1.3
	2	-8.2	0.1	1.3
	3	-7.7	0.2	2.0
	4	-4.9	0.1	0.8
	1	-4.9	1.6	11.5
	2	0.5	1.6	11.3
	3	-1.1	1.4	10.1
	4	0.8	1.2	8.8
2010	1	-0.2	1.30	6.10
	2	0.6	1.40	6.60
	3	1.7	1.20	5.90
	4	1.8	1.10	5.40
	1	-2.9	0.0	-0.2
	2	-2.6	-0.3	-2.9
	3	1.0	-0.4	-3.5
	4	-1.4	-0.6	-5.5
	1	-1.1	1.3	8.9
	2	-1.0	1.2	8.2
	3	1.6	1.2	8.7
	4	-1.3	1.2	8.3

2011	1	3.0	1.50	7.60
	2	2.5	1.40	7.00
	3	0.7	1.30	6.50
	4	0.4	1.20	6.00
	1	-2.4	0.2	1.4
	2	0.9	0.4	3.5
	3	0.0	0.4	3.4
	4	0.0	0.7	5.8
	1	-0.4	1.3	9.1
	2	1.5	1.3	9.2
	3	-0.4	1.3	9.1
	4	-0.7	1.2	8.8
2012	1	-0.9	1.40	7.00
	2	0.3	1.30	6.20
	3	-0.7	1.20	5.90
	4	-2.7	1.0	4.7
	1	-1.2	0.9	6.7
	2	-2.9	1.1	7.7
	3	-1.9	1.1	7.5
	4	-2.9	0.7	5.1
	1	-1.2	1.3	9.2
	2	-0.9	1.1	7.8
	3	0.3	1.0	7.4
	4	-0.8	0.9	6.2
2013	1	2.4	1.51	7.25
	2	1.1	1.11	5.34
	3	3.4	0.79	3.81
	4	3.3	-0.07	-0.36
	1	-1.8	1.1	7.4
	2	-0.4	1.1	7.8
	3	-0.4	0.7	4.8
	4	-0.1	-0.1	-0.5
	1	0.6	0.9	6.6
	2	0.1	0.6	4.4
	3	-0.5	0.6	4.4
	4	-0.3	0.3	1.8

2014	1	-0.2	1.15	5.42
	2	-1.2	1.06	5.00
	3	-3.8	0.97	4.63
	4	-1.8	0.12	0.58
	1	-1.2	1.2	8.2
	2	-0.4	0.9	6.4
	3	0.3	0.9	6.4
	4	2.4	0.8	5.4
	1	-0.2	0.8	5.6
	2	0.6	0.8	5.7
	3	-0.4	0.7	4.8
	4	0.5	0.6	4.6
2015	1	-1.7	0.98	4.69
	2	1.2	1.13	5.40
	3	2.3	1.19	5.64
	4	1.1	0.32	1.58
	1	2.1	1.5	10.3
	2	4.4	1.5	10.2
	3	3.1	1.3	9.0
	4	2.1	0.3	2.0
	1	0.6	0.6	4.3
	2	1.3	0.7	5.1
	3	1.8	-1.5	-10.9
	4	-1.4	-1.2	-8.7
2016	1	3.9	1.88	9.18
	2	2.0	1.32	6.49
	3	2.8	1.41	6.89
	4	2.5	0.68	3.40
	1	2.1	1.6	11.1
	2	1.4	1.5	10.1
	3	2.4	1.2	8.4
	4	2.0	1.1	7.3
	1	2.5	1.5	11.9
	2	0.4	1.8	13.8
	3	0.4	1.7	12.7
	4	1.3	1.6	11.8

2017	1	1.6	2.25	11.41
	2	1.8	2.11	10.60
	3	2.2	2.18	11.01
	4	2.5	2.08	10.57
	1	2.6	2.0	13.6
	2	1.7	1.7	12.1
	3	2.9	1.7	11.7
	4	3.0	1.5	10.2
	1	1.2	0.5	3.4
	2	0.3	0.7	4.6
	3	1.2	0.9	6.3
	4	0.3	1.1	7.4
2018	1	4.9	2.08	10.50
	2	4.9	2.06	10.61
	3	4.1	2.07	10.66
	4	3.4	2.12	11.27
	1	2.0	1.7	12.2
	2	3.4	1.7	12.1
	3	3	1.5	11.1
	4	3.0	1.3	9.6
	1	0.0	1.7	11.4
	2	2.5	1.7	11.8
	3	0.0	1.7	11.9
	4	0.4	1.4	9.6
2019	1	2.6	1.75	9.72
	2	2.9	1.76	9.90
	3	4.8	1.86	10.51
	4	6.2	1.72	9.79
	1	2.2	1.6	12.0
	2	2.7	1.6	11.9
	3	2.7	1.5	11.1
	4	1.6	1.4	10.4
	1	1.8	1.6	11.2
	2	1.1	1.8	13.2
	3	-0.5	1.7	12.2
	4	0.5	1.6	11.3



UPUTSTVO ZA AUTORE

Radovi za časopis *Bankarstvo* moraju biti originalni i prethodno neobjavljivani. Autor odgovara za podatke objavljene u tekstu.

Radovi se klasifikuju kao: originalni naučni, pregledni i stručni. Uredništvo zadržava pravo da tekst koji ne odgovara datim kriterijumima vrati autoru kao neodgovarajući ili radi izmena i dopuna. Drugim rečima, nijedan rad neće biti poslat na recenziju ukoliko nisu ispoštovana sva pravila data u Uputstvu.

Radovi domaćih autora, što se odnosi i na autore iz Bosne i Hercegovine, Crne Gore i Hrvatske, primaju se na srpskom i engleskom jeziku. Ukoliko nedostaje jedan od navedenih jezika, rad će biti vraćen autoru. Strani autori radove predaju na engleskom jeziku.

Uz rad **obavezno** dostaviti popunjen formular „Podaci o autoru”, koji se nalazi na našem sajtu: www.casopisbankarstvo.rs/uputstvo-za-autore-i-recenzente.

U tekstu ne navoditi nikakve lične podatke pošto se rad šalje na anonimnu recenziju.

Prva stranica rada treba da sadrži: naslov rada, rezime i ključne reči.

JEL klasifikaciju određuje redakcija u skladu sa klasifikacijom *Journal of Economic Literature*.

Postupak testiranja na plagijat obaviće se nakon pozitivnih recenzija rada. Radovi će biti odbijeni ukoliko se utvrdi plagijat, autoplagijat ili lažno autorstvo.

Radove dostavljati **isključivo** u elektronskom obliku na mejl adresu:
bankarstvo@ubs-asb.com

Uputstvo

Molimo da rad pripremite pridržavajući se **obavezno** sledećih uputstava koja se **podjednako** odnose na tekst i na srpskom i na engleskom jeziku:

- Rad treba da bude u A4 formatu, sve margine 20 mm.
- Dužina rada najviše 10 strana uključujući grafikone, tabele, literaturu i ostale priloge. Ukoliko rad po obimu prevazilazi date propozicije, na uredništvu je odluka da li će ga objaviti ili ne.
- Font i veličina fonta za ceo rad: isključivo Times New Roman, latinica, 10pt, razmak između redova single.
- Naslov rada mora da bude kratak i jasan.
- Posle naslova rada napisati rezime dužine do 150 reči.
- Posle rezimea dati do 10 ključnih reči, pogodnih za indeksiranje i pretraživanje.
- Osim glavnog naslova (naslova rada) koristiti u tekstu do dva nivoa naslova, bez numeracije.
- Početak pasusa kucati od početka kolone (bez tabulatora).
- Ukoliko uz tekst idu šeme ili grafikoni, označiti u radu gde treba da budu i **napraviti ih isključivo** u programu Word, Excel ili PowerPoint.
- Ukoliko rad sadrži fotografije, označiti u radu gde one treba da stoje i priložiti svaku kao poseban fajl u formatu .eps ili .tiff, rezolucija 300 dpi.
- Tabela po širini ne sme da prelazi margine, a po dužini ne sme biti duža od jedne stranice i mora imati naslov i izvor.
- U tekstu i tabelama ne koristiti tekst boksove.
- Web adrese kucati kao tekst, a ne kao hiperlink.
- Ispraviti sve gramatičke i greške u kucanju.
- Nazivi institucija se, prilikom prvog pominjanja, navode u prevodu a u zagradi originalni naziv i skraćenica.
- Fusnote nisu predviđene (reference navesti u tekstu i obavezno u literaturi).
- Reference se u tekstu navode tako što se u zagradi navedu prezime autora i godina izdanja. Citirani delovi teksta navode se u radu tako što se u zagradu stave prezime autora, godina izdanja i broj strane sa koje je citat. Ukoliko se radi o dva autora, imenuju se oba uz godinu izdanja, a ako ima tri i više autora, navodi se samo prvi (prezime prvog autora + i saradnici sa godinom izdanja). Svaka referenca se mora navesti i u popisu literature.
- Literaturu grupisati na kraju rada po sledećem principu: - Knjige: Klasens R. (2006). *Sprečavanje pranja novca*. Beograd: Udruženje banaka Srbije
- Časopisi: Pantelić S. (2013). Flavije Valerije Konstantin (306-337). *Bankarstvo* 42 (4), 136-145. (prilikom citiranja iz elektronskih verzija časopisa na kraju dodati: doi broj citiranog članka, ako ga ima, odgovarajući internet link i datum pristupa)
- Ostali izvori - vebajtovi (internet adresa i datum pristupa), disertacije (prezime, ime, naslov, institucija gde je doktorska disertacija odbranjena, godina), službene publikacije (naziv publikacije/organizacije/ustanove, naslov, mesto izdavanja, izdavač, broj, godina).

Postupak recenzije

Radove recenziraju dva stručna, nezavisna recenzenta.

Recenzenti dobijaju radove bez ličnih podataka autora. Posle recenzije popunjavaju formular o kvalitetu rada za časopis *Bankarstvo* (koji se nalazi na našem sajtu: www.casopisbankarstvo.rs/uputstvo-za-autore-i-recenzente) i dostavljaju ga Redakciji u roku od 30 dana.

U delu koji se odnosi na napomene i preporuke obaveza je recenzenata da objasne date ocene i preporuče da li je rad za objavljivanje, ispravku ili odbijanje. Radovi će biti prihvaćeni za objavljivanje ili poslati na ispravku isključivo ako su obe recenzije pozitivne.

Konačnu odluku o tome da li će rad biti publikovan ili ne donosi glavni i odgovorni urednik.



INSTRUCTIONS FOR THE AUTHORS

Papers sent to *Bankarstvo* Journal must be original and previously unpublished. The author is liable for the data published in the text.

The papers are classified as: original scientific papers, scientific review articles and expert articles.

The Editorial Office retains the right to return to the author the text which does not meet the set criteria, as inappropriate or requiring additional changes and amendments. In other words, no paper will undergo review unless it fulfils all the rules defined in the Instructions.

Papers by domestic authors, including the authors from Bosnia and Herzegovina, Montenegro and Croatia, are to be submitted in Serbian and in English. If the paper in either of these languages is missing, the paper will be returned to the author altogether. Foreign authors submit their papers in English.

Along with the paper, it is **obligatory** to submit the completed Author's Personal Data form, to be found on our website: www.casopisbankarstvo.rs/en/instructions-for-authors-and-reviewers. The text itself should not contain any personal data since it is to be sent for anonymous review.

The first page must contain: the title, abstract, and keywords.

JEL classification is determined by the Editorial Office pursuant to the classification of the *Journal of Economic Literature*.

Plagiarism testing is performed after the paper gets positive reviews. The paper will be rejected if there is a detected case of plagiarism, auto-plagiarism or false authorship.

Papers are to be submitted
exclusively in electronic form to:
bankarstvo@ubs-asb.com

Instructions

We kindly ask you to prepare your papers **strictly** in accordance with the following instructions, which **equally** refer to the texts in Serbian and in English:

- The paper should be in A4 format, all margins 20mm.
- The paper should be maximum 10 pages long, including charts, tables, bibliography and other appendices. If the paper exceeds the given proportions in volume, the Editorial Office decides whether to publish it or not.
- Font and font size for the entire paper: exclusively Times New Roman, 10pt, with single spacing.
- The title of the paper should be short and concise.
- Below the title the author is to write an abstract of up to 150 words.
- The abstract is to be followed by up to 10 keywords, suitable for indexing and search purposes.
- In addition to the main title (title of the paper), use up to two levels of titles in the text, without numeration.
- Each paragraph is to be typed from the beginning of the column (without tabulator).
- If the text is accompanied with graphs or charts, please designate where in the paper they should be placed, and enclose each of them **exclusively** in Word, Excel or PowerPoint.
- The author should also designate where in the paper photographs should be placed, submitting each of them as a separate file in the .eps or .tiff format, resolution 300 dpi.
- A table must not exceed the margins in width, must not be longer than one page and must have the title and the source.
- Text boxes are not to be used either in the text or in the tables.
- Websites are to be typed as a text, not as a hyperlink.
- Please, correct all grammatical or typing errors.
- When mentioned for the first time, the names of institutions are translated and the original name and abbreviation are given in brackets.
- Footnotes are not to be used (please, state all references directly in the text and in the bibliography at the end of the paper).
- References in the text are given by putting the last name of the author and the year of publishing in brackets. The quoted parts of the text are marked by putting the last name of the author, year of publishing and number of the page from which the text is quoted in brackets. If there are two authors, they are both mentioned along with the year of publishing, and if there are three or more authors, only the first one is mentioned (last name of the first author + et al, along with the year of publishing). Each reference has to be cited in the bibliography, too.
- Bibliography is to be listed at the end of the paper, according to the following citation style:
 - Books: Claessens R. (2006). *Prevention of Money Laundering*. Belgrade: Association of Serbian Banks
 - Journals: Pantelić S. (2013). Flavije Valerije Konstantin (306-337). *Bankarstvo* 42, (4), 136-145. (when citing from electronic journals, the authors must add: the doi number of the cited article, if available, the appropriate web link and date of access)
 - Other sources: web pages (web link and date of access), dissertations (last name, first name, title, institution in which the PhD dissertation was presented, year), official publications (name of publication/organization/institution, title, place of publishing, publisher, issue, year).

Reviewing Procedure

The papers are reviewed by two peer, independent reviewers.

The reviewers receive the papers without any personal data on the authors. Upon reviewing, they fill in the form on paper quality for *Bankarstvo* Journal (to be found on our website: www.casopisbankarstvo.rs/en/instructions-forauthors-and-reviewers) and submit it to the Editorial Office within 30 days.

In the section intended for reviewers' comments and recommendations, the reviewers are obliged to elaborate on the given grades and recommend whether the paper is to be: published, amended or rejected. The papers will be accepted for publication or sent to be amended only if both reviews are positive.

The final decision about whether the paper will be published or not is made by the Editor-In-Chief.

