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

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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 merenja 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 merenja 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 merenja 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-Mayer Olkin - KMO). Očekuje se viši nivo koeficijentata korelacije među varijablama (većina varijabli u korelaciji sa $r > 0,40$), kao i koeficijent pouzdanosti uzorka $KMO < > 0,50$, 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
	P28: E-Banka ima dobru poslovnu reputaciju
P29: E-Banka učestvuje u humanitarnim akcijama	
Sigurnost D6 (5)	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
	P33: Sve onlajn transakcije su transparentne klijentu
	P34: Klijenti E-Banke se osećaju sigurno prilikom korišćenja platnih kartica za plaćanje
Personalizacija D7 (5)	P35: E-Banka zahteva logovanje prilikom pristupa sistemima onlajn plaćanja
	P36: E-Banka prilagodava 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
		PERFORMANSA (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 attribute 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
DIP3	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
DIP6	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

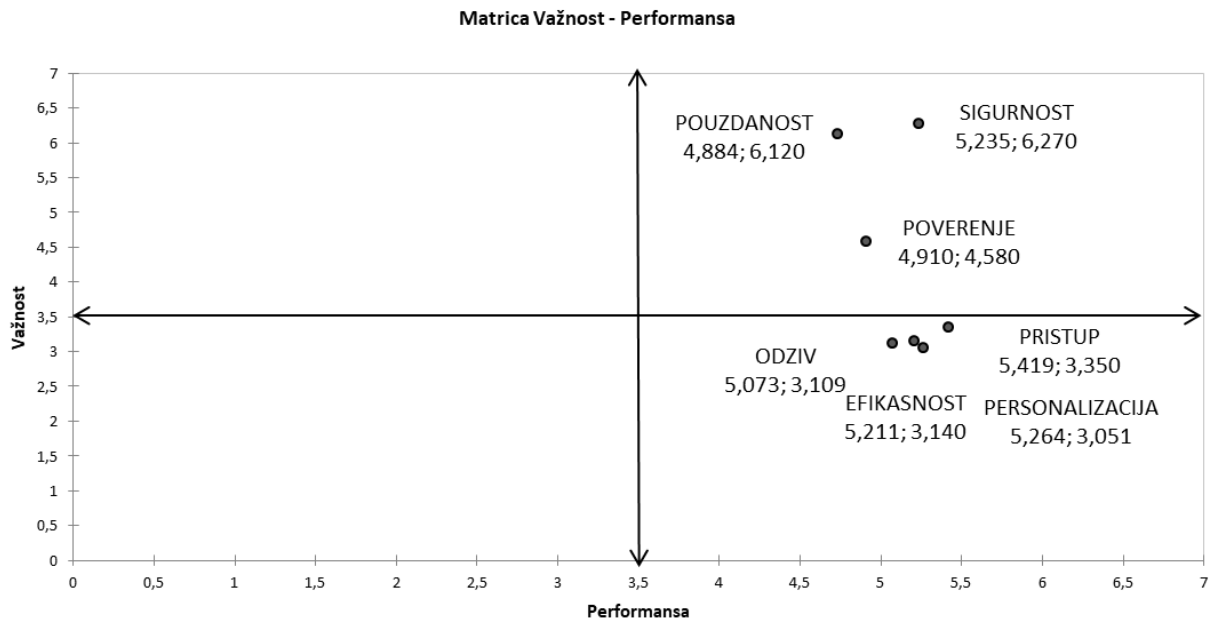
Tabela 9. Srednje vrednosti ocena važnosti dimenzija i percepcije (performansa)

	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 redukovan 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.

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

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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
	P11: E-Bank gives information on what to do in the case of a failed transaction
Accessibility D3 (7)	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
	P30: Information in commercials about E-Bank is always true
Safety D6 (5)	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
	P35: E-Bank requires login when assessing the online paying system
Personalization D7 (5)	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
<i>Cronbach's alpha:</i>	<i>0.801</i>	<i>0.883</i>	<i>0.832</i>	<i>0.738</i>	<i>0.828</i>	<i>0.885</i>	<i>0.797</i>

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

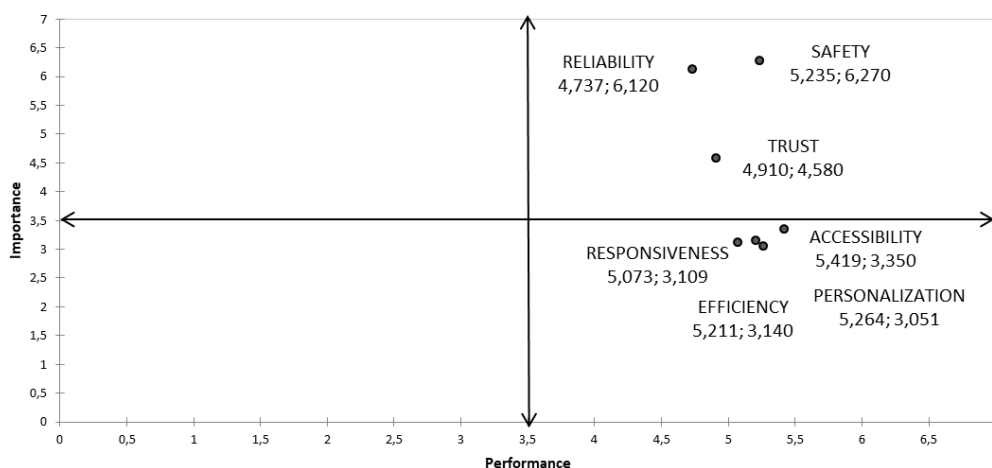
Source: The author

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.

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