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# Uticaj digitalizacije bankarskih usluga na performanse komercijalnih banaka

## The impact of digitalisation of banking services on the performance of commercial banks

### Rezime

Svako tržište, pa tako i finansijsko, danas karakteriše borba učesnika za opstanak u dinamičnom poslovnom okruženju u kojem su institucionalne, organizacione i funkcionalne promjene neizbježne. Te promjene uslovljene su razvojem i primjenom informacionih tehnologija i sistema, koje su uticale na privredne subjekte da mijenjaju i prilagođavaju svoje poslovne strategije novoformiranim uslovima. Digitalizacija kao oblik inovativne strategije sve više predstavlja predmet interesovanja banaka i jedan od načina na koji se banke bore sa konkurencijom i tržišnim promjenama. Postavljanjem digitalizacije u fokus svojih poslovnih strategija, programa i mjera, banke teže da doprinesu unapređenju poslovanja i jačanju konkurentnosti. Inovativnost se nameće kao nužnost, a digitalizacija je ta koja doprinosi stvaranju razlika između tržišnih učesnika. U ovom radu traži se odgovor na istraživačko pitanje u kojoj mjeri banke u Bosni i Hercegovini (BiH) koriste digitalizaciju bankarskih usluga i da li primjena digitalizacije usluga kao inovativna strategija utiče na performanse banke i na jačanje tržišne pozicije banke. Odgovore na ova pitanja ćemo pokušati dobiti desk analizom dostupnih javno objavljenih podataka na veb-stranicama svih banaka u BiH. Kvalitativno istraživanje metodom studije slučaja na primjeru dvije banke, pri čemu je jedna od banaka u većinskom vlasništvu stranog kapitala, dok je druga u većinskom vlasništvu domaćeg kapitala, provedeno je na osnovu podataka prikupljenih iz izvještaja Agencije za bankarstvo Republike Srpske i Centralne banke BiH, te zvaničnih finansijskih izvještaja banaka. Cilj istraživanja je da utvrdimo da li digitalizacija utiče na poslovanje komercijalnih banaka u BiH i Republici Srpskoj. U širem smislu, analizom prikupljenih podataka i njihovim deskriptivnim prikazom, rezultati istraživanja ukazuju na pozitivnu vezu između primjene digitalizacije i savremenih informacionih tehnologija u razvoju proizvoda i usluga banaka, ali i u povećanom korištenju informacione tehnologije, pogotovo u segmentu plaćanja, te pojavu novih oblika banaka. Rezultati mogu biti korišteni u smislu unapređenja bankarskog poslovanja i potpuni primjene strategije digitalizacije.

**Ključne riječi:** inovativne strategije, digitalizacija, inovacije, komercijalna banka, bankarsko poslovanje.

### Abstract

Every market, and so the financial one, is nowadays characterized by stakeholders' struggle to survive in dynamic business environment where the institutional, organisational and functional changes have become inevitable. The necessity of those changes is a result of the development and application of information technologies and systems, which have made economic subjects change and adjust their business strategies to newly created conditions. As a form of innovative strategy, digitalisation has become an all-the-more frequent subject of research carried out by banks, as well as one of the methods used by the banks in combatting competition and market changes. By putting digitalisation in the focus of their business strategies, programmes and measures, banks tend to contribute to an improvement in business and strengthening of competitiveness. Innovation imposes itself as a necessity, and digitalisation is what contributes to making differences between market participants. This paper tends to look for an answer to the research question of how much the banks in Bosnia and Herzegovina (BiH) use the digitalisation of banking services and whether the application of the digitalisation of services as an innovative strategy influences the performance of the bank and the strengthening of the bank's position on the market. We will try to find answers to these questions through desk analysis of the available data publicly announced on the websites of all the banks in BiH. Qualitative research based on the method of case study of two banks, one with the majority ownership of foreign capital and the other with the majority ownership of domestic capital, has been conducted based on the information collected from the reports from the Banking Agency of the Republic of Srpska and the Central bank of BiH, as well as from the official financial reports of the banks. The aim of the research is to determine whether the digitalisation affects the business operations of commercial banks in BiH and the Republic of Srpska. In a broad sense, through the analysis of the collected data and their descriptive interpretation, the results of the research indicate a positive correlation between the application of digitalisation and modern information technologies in the development of the banks' products and services, as well as in an increased use of information technology, especially in the payment segment and the emergence of the new forms of banks. The results can be used for the purpose of advancement of banking business and more complete application of the digitalisation strategy.

**Key words:** innovative strategies, digitalisation, innovations, commercial bank, banking business

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## UVOD

Velike i brze transformacije, uslovljene razvojem tehnologije, te njenom selidbom u druge oblasti ekonomije i društva, pa time i u oblasti bankarskog poslovanja, karakterišu današnje poslovanje (Kandžija i Pucar, 2017). U cilju održavanja konkurentske pozicije i opstanka u tržišnoj borbi, inovativnost poslovnih subjekata se nameće kao nužnost, a inovacije su te koje će, uz preduzetničko rukovođenje i precizno definisane preduzetničke strategije, zasnovane na inovativnosti, stvoriti razliku između poslovnih subjekata i njihovog poslovnog uspjeha. Definisanjem strategija, svaki poslovni subjekat, pa tako i banka, usmjerava svoje kapacitete u pravcu unapređenja poslovanja, pronalaženja ideja i pretvaranja rezultata istraživanja u znanje, a potom i u tehnološki inovativne proizvode i usluge. Upravo iz tog razloga, problem istraživanja ovog rada bi se mogao definisati kroz pitanje: U kojoj mjeri banke u Bosni i Hercegovini (BiH) koriste digitalizaciju bankarskih usluga i da li primjena digitalizacije usluga kao inovativna strategija utiče na performanse banke i na jačanje tržišne pozicije banke? Vodeće banke u svijetu i kod nas postaju svjesne da je digitalna tehnologija, primijenjena kroz elektronsko i mobilno poslovanje, elektronske baze podataka, interakciju sa klijentima putem društvenih mreža, postala ključni faktor u borbi za očuvanje profitabilnosti i jačanje tržišne pozicije (Levar i Nikolić, 2012). Predmet istraživanja ovoga rada jeste uticaj informacionih tehnologija i digitalizacije na bankarsko poslovanje, kako kroz razvoj novih proizvoda i usluga, tako i kroz pojavu novih oblika savremenih banaka i jačanje konkurentske pozicije banke. Inovativnost se u bankama najviše ogleda kroz primjenu digitalizacije, koja je usmjerena ne samo ka stvaranju ponude savremenih i funkcionalnih proizvoda, obezbjeđenju visokog kvaliteta usluga, već i ka boljoj organizaciji poslovanja u smislu prikupljanja, obrade i analize podataka, boljoj povezanosti zaposlenih, usavršavanju znanja zaposlenih i pružanju većeg broja usluga na jednom mjestu. Istraživanja su ukazala na značaj koji digitalizacija može imati u procesu rangiranja digitalnih banaka u svijetu (Financial IT, 2017), kao i na podjelu kompanija na osnovu primijenjenih inovativnih preduzetničkih strategija (Ramadani i Gerguri, 2010). Neki od zaključaka istraživanja ukazuju na to da, pored poteškoća u razumijevanju i verifikaciji tehnoloških rješenja, te rizika koji nosi, razvoj bankarskog poslovanja, potpomognut digitalitacijom, doprinosi povećanju sigurnosti novčanih tokova, lakšem praćenju potreba i zahtjeva korisnika, što podstiče ulaganja u istraživanja i razvoj i inovacije putem kanala finansiranja (Lin, Liu i Wei, 2018).

Promjene u potrebama i navikama potrošača zahtijevaju ponudu bankarsko-finansijskog sektora koja će biti drugačija od univerzalnih bankarskih proizvoda koji su ograničeni na distribuciju kroz fizičko prisustvo, uglavnom putem filijala (Tešić i Krstić, 2016). Da bi banke bile u stanju da odgovore i isprate promjene u svom okruženju, one teže primjeni preduzetničkih strategija koje su usmjerene ka izmjeni organizacije poslovanja, povećanju efikasnosti i produktivnosti poslovanja. U uslovima rastuće konkurencije, banke sve više teže ka automatizaciji procesa i upotrebi savremenih elektronskih sistema (Lukić i Nikolić, 2015). Ovakvo poslovanje zahtijeva preduzetničko rukovođenje, svjesno dinamike i intenziteta promjena u okruženju, na koje će biti sposobno da odgovori stvaranjem organizacije koja će biti sposobna za inovacije usluga i bankarskih procesa uopšte. Preduzetnički orijentisano upravljanje organizacijom za cilj ima primjenu strategija koje će omogućiti pravo usmjeravanje bankarskih proizvoda, održavanje interakcije sa potrošačima i kreiranje rješenja koja će zadovoljiti njihove potrebe (Lukić i Nikolić, 2015).

Osnovna hipoteza istraživanja, definisana na osnovu prikupljene i analizirane literature, mogla bi se formulisati na sljedeći način: Primjena inovativnih strategija kroz proces digitalizacije pozitivno

utiče na razvoj bankarskog poslovanja. Pomoćne hipoteze ukazuju na to da primjena savremene informacione tehnologije i proces digitalizacije utiču na povećanje efikasnosti poslovanja banke, razvoju novih oblika proizvoda i usluga, te tako doprinose jačanju konkurentske pozicije banke. U prvom dijelu rada, u pregledu literature, objasnili smo pojam inovacija i inovativnih strategija. U drugom dijelu je posebna pažnja posvećena razumijevanju digitalizacije kao oblika inovativne strategije, ukazuje se na međusobni uticaj koji inovacije i digitalizacija mogu imati na bankarsko poslovanje i bankarski sektor, sa jedne strane, a sa druge uticaj koji bankarski sektor ima na primjenu strategije digitalizacije. U trećem dijelu rada prikazani su rezultati istraživanja na osnovu prikupljene literature i analiza prikupljenih podataka, uz ocjenu postavljenih hipoteza. Na kraju, u diskusiji i zaključku izvedenom na osnovu analizirane literature i rezultata istraživanja, ukazali smo na koristi koje proces digitalizacije može imati za unapređenje postojećih i razvoj novih oblika digitalnih proizvoda i usluga, te za razvoj mjera za unapređenje bankarskog poslovanja uopšte.

## 1. PREGLED LITERATURE

Današnje poslovanje karakterišu velike i brze transformacije uslovljene razvojem tehnologije i znanja o upotrebi tehnologije, te njenom selidbom u druge oblasti ekonomije i društva, pa time i u oblasti bankarskog poslovanja (Kandžija i Pucar, 2017). Rastući uticaj koji tehnologija ima na razvoj bankarskog poslovanja u posljednjih nekoliko godina čini inovacije i digitalizaciju ključnim faktorom rasta konkurentske prednosti. Inovacija predstavlja specifično oruđe preduzetnika, sredstvo pomoću kojeg oni koriste promjenu kao mogućnost za izvršavanje različitih proizvodnih ili uslužnih djelatnosti (Drucker, 1991). Osnov savremenog shvatanja inovacije bi se mogao predstaviti kroz model inovacije koje su podstaknute tehnologijom, ali koje predstavljaju atipične primjere interakcije između tehnoloških mogućnosti i potreba tržišta (Deakins i Freel, 2012). Inovacije zasnovane na novim naučnim otkrićima koriste preduzetnici koji su spremni da preuzmu rizik i da brzo reaguju, te radikalno razvijaju nove proizvode. Uzevši u obzir navedeno, preduzetništvo se u uslovima inovativnosti odnosi na stvaranje novog proizvoda ili usluge, ili na stvaranje takvog proizvoda i usluge koji će se znatno razlikovati od ostalih koji se nude na tržištu (Deakins i Freel, 2012). Inovacije u oblasti bankarstva obuhvataju razvoj i primjenu novih informacionih tehnologija koje doprinose ne samo razvoju novih proizvoda i usluga, već i višem kvalitetu bankarskih usluga, promjeni u strukturi i veličini tražnje na tržištu bankarskih proizvoda, što je uticalo na banke da teže povećanju efikasnosti radi povećanja pofitabilnosti i stvaranju konkurentske prednosti (Pjanić i Marjanović, 2010). Inovacije su tretirane kao pojave koje utiču na ekonomiju, dovode do uspostavljanja nove proizvodne funkcije. Privredni razvoj podrazumijeva realizaciju novih načina proizvodnje, a preduzetnik, zajedno sa preduzetničkim inovacijama, narušava tržišnu ravnotežu i tako dovodi do promjena u privredi (Stojanović, 2009).

Vodeće banke u svijetu i kod nas postaju svjesne da su digitalna tehnologija, elektronsko i mobilno poslovanje, elektronske baze podataka, interakcija sa klijentima putem društvenih mreža, postali ključni faktori u borbi za očuvanje profitabilnosti i jačanju tržišne pozicije. Savremena tehnologija omogućuje bankama da lakše identifikuju klijente na koje će usmjeravati svoje napore (Levar i Nikolić, 2012), dok uz digitalizaciju eliminišu problem geografske udaljenosti klijenta i banke i omogućuju lakšu komunikaciju, povezivanje klijenata i protok informacija (Obradović, Dragosavac i Arsić, 2015).

## INTRODUCTION

Great and fast transformations which resulted from the development of technology, as well as from its transition into other fields of economy and society, and thus in the field of banking business too, characterize today's business (Kandžija and Pucar, 2017). With the aim of maintaining competitive position and surviving in the market race, innovativeness of business subjects imposes itself as a necessity, and innovations are those which, combined with entrepreneurial management and precise definition of entrepreneurial strategy based on innovativeness, will create a difference between business subjects and their business success. By defining strategies, every business subject, and thus the bank, directs its capacities towards business advancement, generating ideas and transforming research results into knowledge and then into technologically innovative products and services. For that very reason, the matter of research in this paper could be defined in terms of the following question: To what extent do the banks in Bosnia and Herzegovina (BiH) use the digitalisation of banking services and does the application of digital services as an innovative strategy have an influence on the bank's performance and on strengthening the bank's market position? The leading banks in the world and in our country are becoming aware of the fact that digital technology, applied through electronic and mobile business, electronic databases, interaction with clients through social networks, has become the key factor in an effort to keep profitability and strengthen the market position (Levar and Nikolić, 2012). The subject of research in this paper is the influence that information technologies and digitalisation have on the banking business, both through the development of new products and services and through the emergence of new forms of modern banks and strengthening the competitive position of the bank. Innovativeness in the banks is mostly reflected in the application of digitalisation, which is directed not only towards creating the offer of cutting-edge and functional products, ensuring high-quality services, but also towards better organisation of business in terms of collecting, processing and analysing data, better networking of the staff, professional development of the staff and providing a greater number of services in one place. Research has indicated the importance that digitalisation can have in the process of ranking digital banks in the world (Financial IT 2017), as well as the categorisation of companies based on the applied innovative entrepreneurial strategies (Ramadani and Gerguri, 2010). Some conclusions of the research indicate that besides the difficulties in understanding and verification of technological solutions, along with the risks they carry, the level of banking business, assisted by digitalisation, contributes to the increase in the safety of cash flow, easier monitoring of the users' needs and demands, which stimulates the investments in research and development and the innovations through funding channels (Lin, Liu and Wei, 2018).

The changes in needs and habits of consumers demand the offer from the banking-financial sector which will be different from the universal banking products which are limited to the distribution through physical presence, mainly via branch offices (Tešić and Krstić, 2016). In order to be capable of responding to and monitoring the changes in their environment, banks tend to apply the entrepreneurial strategies directed towards the change in the organisation of business, the increase of efficiency and productivity of business. In the conditions of growing competition, banks are increasingly in demand for the automation of processes and the use of modern electronic systems (Lukić and Nikolić, 2015). Such business demands entrepreneurial management, aware of the dynamics and the intensity of the changes in the environment, to which it will be capable of responding by creating an organisation which will be capable of innovating the services and banking processes in general. Entrepreneurially oriented management of an organisation has the aim to apply strategies which will enable appropriate direction of banking products, maintaining interaction with the users and creating solutions which will meet their needs (Lukić and Nikolić, 2015).

The major hypothesis of the research, defined on the basis of the collected and analysed literature could be formulated as follows: The application of innovative strategies through the process of digitalisation

on positively influences the development of the banking business. The sub-hypotheses indicate that the application of cutting-edge information technology and the process of digitalisation influence the increase in the efficiency of the business activities of the bank, the development of the new forms of products and services, and thus contribute to strengthening of the competitive position of the bank. In the first part of the paper, in the literature overview, we explained the concept of innovations and innovative strategies. In the second part, special attention is paid to understanding digitalisation as a form of innovative strategy; the mutual influence which innovations and digitalisation might have on banking business and banking sector, on the one hand, and on the other the influence which the banking sector has on the application of the strategy of digitalisation is indicated. The third part of the paper presents the results of the research based on the collected literature and analyses of the collected data, along with the assessment of the set hypotheses. In the end, in the discussion and conclusion drawn on the basis of analysed literature and the results of the research, we indicated the benefits which the process of digitalisation might have for the advancement of the present and the development of the new forms of digital products and services, as well as for the development of the measures for the advancement of the banking business in general.

## 1. LITERATURE OVERVIEW

Today's business is characterised by great and fast transformations which resulted from the development of technology and knowledge of the use of technology, as well as its transition into other fields of economy and society, and thus in the field of banking business too (Kandžija and Pucar, 2017). The growing influence the technology has had on the development of banking business in the last few years makes innovations and digitalisation the key factor in the growth of competitive advantage. Innovation represents a specific tool of an entrepreneur, a way of using change as an opportunity to conduct different production or services activities (Drucker, 1991). The basis of contemporary understanding of innovation could be represented through the model of innovations which were stimulated by technology, but which represent atypical examples of interaction between technological possibilities and demands of the market (Deakins and Freel, 2012). Innovations based on new scientific discoveries are used by entrepreneurs who are ready to take the risk and act swiftly, as well as radically develop new products. Taking into account the abovementioned, the entrepreneurship within the conditions of innovativeness refers to the creation of the new product or service, or to the creation of such product and service which will be significantly different from the others offered on the market (Deakins and Freel, 2012). Innovations in the field of banking include the development and application of new information technologies which contribute not only to the development of new products and services, but also to higher quality of banking services, to the change in structure and size of the demand on the market of banking products, which influenced the banks to strive to increase efficiency for the purpose of increasing profitability and creating competitive advantage (Pjanić and Marjanović, 2010). Innovations are treated as phenomena which influence economy and lead to the establishment of new production functions. Economic growth implies the realisation of new modes of production, and the entrepreneur, along with entrepreneurial innovations disrupts the market balance and thus brings about changes in the economy (Stojanović, 2009).

The leading banks in the world and in our country are becoming aware of the fact that digital technology, electronic and mobile business, electronic databases, as well as interaction with clients through social networks, have become the key factors in an effort to keep profitability and strengthen the market position. Cutting-edge technology enables banks to identify clients towards whom they will direct their efforts more easily (Levar and Nikolić, 2012), while along with digitalisation they eli-



Razvojem savremenih tehnoloških rješenja omogućeno je smanjenje kompleksnosti u obavljanju transakcija u realnom vremenu, te integracija komponenti ekonomske aktivnosti koje značajno smanjuju troškove poslovanja (Zamfir, 2014). Sa promjenom tehnologije dolazi i do tržišnih promjena jer novi proizvodi mogu da se plasiraju na nova tržišta, da supstituišu postojeća ili da čak doprinose ulasku na nova regionalna tržišta (Sagić, 2016). I dok jedni digitalizaciju vide kao vid transformacije putem interneta, koja treba da kroz standardizaciju doprinese poboljšanju i automatizaciji procesa, drugi je vide kao način obnove poslovnih modela koji prate potrebe kupaca pomoću novih tehnologija (Mergel, Elelmann i Haug, 2019).

### 1.1. Digitalizacija kao korporativna preduzetnička strategija

Strategija se često definiše kao vještina upravljanja, vođenja poslova, dok nam ekonomska literatura strategiju definiše kao način ostvarivanja ciljeva. Svaka inovacija „donosi promjenu tržištu ili društvu, kao i plodove svom korisniku, veće kapacitete društvu za proizvodnju bogatstva, veću vrijednost ili veće zadovoljenje neke potrebe. Najbolji test svake inovacije je ono što donosi korisniku. Otuda preduzetništvo uvijek ima potrebu da bude vođeno na tržišni način“, (Drucker, 1991, str. 320). Ramadani i Gerguri (2010) ukazali su na izveštaj Buza Alena Hamiltona (Booz Allen Hamilton) iz 2007, u kojem je statističkom analizom uzorka od 1000 kompanija, na osnovu primijenjenih strategija, izvršio podjelu u tri različite kategorije: kompanije koje se fokusiraju na traganje za novim vidovima potreba, kompanije usmjerene na istraživanje tržišta i kompanije koje su vođene tehnologijama (Need Seekers, Market Readers and Technology Drivers). Kompanije koje tragaju za potrebama fokusiraju se prvo na predstavljanje novih proizvoda na tržištima i svoje istraživačko-razvojne napore temelje na dobijanju informacija od kupaca. Oni aktivno angažuju trenutne i potencijalne kupce za oblikovanje novih proizvoda, usluga i procesa. Kompanije koje se usmjeravaju ka istraživanju i razumijevanju promjena na tržištu jesu kompanije koje su se istakle po pažljivom posmatranju inkrementalnih promjena i stvaranju vrijednosti na tržištu i kao brzi sljedbenici na tržištima. Tehnološki orijentisane kompanije fokusiraju se na pristup zasnovan na tehnološkim inovacijama, dok manje obraćaju pažnju na učešće klijenta i njihov doprinos procesu. Proces usmjeravaju prema svojim tehnološkim mogućnostima, uz dodatna ulaganja u istraživanje i razvoj (Ramadani i Gerguri, 2010). Inovativnost predstavlja jednu od važnijih odlika preduzetnički orijentisanih preduzeća, koja preuzimaju rizik prihvatajući nove tehnologije, nove razvojne mogućnosti koje možda prevazilaze trenutno stanje u datoj oblasti, ali koje vode ka razvoju novih procesa, proizvoda, usluga ili razvoju novih tržišta (Kyn, 2005).

Banke i drugi privredni subjekti, u nastojanju da obezbijede adekvatnu tržišnu poziciju, a zavisno od definisanog cilja i vizije, definišu strategiju kojom sagledavaju svoju poziciju na konkurentskom tržištu i primjenjuju različite metode za jačanje te pozicije, uz pravilno usmjeravanje svojih materijalnih, ljudskih i informacionih resursa. Definisanje strategije polazi od analize ukupne ponude i tražnje, uzimajući u obzir komparativne prednosti konkurenata. Uopšteno, banke imaju na raspolaganju izbor između strategije poslovanja zasnovanog na primjeni savremene tehnologije i digitalizaciji, strategije tradicionalnog bankarstva, ili kombinacije ovih strategija. Strategija tradicionalnog bankarskog poslovanja uglavnom se zasniva na širenju broja filijala i poslovnica kako bi se klijentu olakšao pristup bankarskim proizvodima i uslugama. Ovakve banke fokusiraju se na obavljanje kreditno-depozitnih poslova, ne obraćaju dovoljnu pažnju na konkurenciju, imaju dosta homogenu ponudu proizvoda i usluga, nisu usmjerene ka zadovoljavanju potreba i zahtjeva klijenata (Gregović i Crnogorac, 2016). Izborom strategije digitalizacije, banka se usmjerava na bolje zadovoljenje potreba korisnika finansijskih usluga, pokazuje spremnost ka većoj inova-

ktivnosti i bržim promjenama, posebno kada je riječ o bankarskim proizvodima, tehnologiji, organizaciji poslovanja, postojanju boljeg preduzetničkog duha, posebno kod top menadžera. Svoje poslovanje usmjeravaju ka primjeni savremene tehnologije, koja omogućuje ekonomiju obima, jačanje konkurencije, niže troškove poslovanja i širok asortiman novih proizvoda i usluga.

### 1.2. Mogućnosti primjene strategije digitalizacije u bankarskom sektoru

Inovacije su preduzećima omogućile razvoj poslovanja i unapređenje položaja na tržištu. Posebnu ulogu u tome imala je tehnologija. Međutim, inovacije nisu samo rezultat razvojno-istraživačkog procesa već predstavljaju sposobnost preduzeća da kroz pravilno definisane strategije doprinesu prihvatanju i primjeni novih tehnologija. Tehnološke inovacije, osim što utiču na produktivnost i profitabilnost, predstavljaju glavni generator revolucionarnih promjena u bankarskom sektoru (Gregović i Crnogorac, 2016). Inovativnost preduzeća ogleda se i kroz njegovu sposobnost definisanja i primjene strateškog pristupa.

Firme mogu koristiti različite strategije kako bi razvile svoje inovacije. One mogu koristiti „strategiju saradnje“ i razvijati inovacije zajedno sa spoljnim partnerima, preduzećima ili institucijama i tako interno znanje dopuniti eksternim znanjem i ekspertizom. Firme mogu saradivati formalno ili neformalno sa drugim preduzećima ili institucijama, poput dobavljača, kupaca, konkurenata, konsultantskih firmi i univerziteta. Menadžment se takođe može odlučiti za „internu strategiju“, odnosno za proces razvijanja inovacija uglavnom unutar preduzeća u situaciji kada procijeni da je spoljno znanje nevažno jer je interno znanje već uspostavljeno, a na taj način preduzeće može izolovati inovacijske aktivnosti od spoljne firme ili institucije i tako spriječiti „curenje“ znanja (Bonte i Dienes, 2012). Primjenom inovativnih strategija doprinosi se unapređenju produktivnosti, smanjenju troškova proizvodnje kroz razvoj novih metoda i tehnika, jačanju konkurentnosti, povećanju efikasnosti kroz poboljšanje internih procesa i kroz povezivanje sa eksternim učesnicima (Ravić i Gavrić, 2015).

Digitalizacija, uz to što doprinosi razvoju odnosa i jačanju saradnje banaka sa kompanijama iz drugih oblasti, postala je i kriterijum prema kojem su se banke rangirale. Tako su prema istraživanju koje je sproveo Financial IT (2017) pod naslovom Financial IT's digital bank ranking, kao osnovni kriterijumi za rangiranje digitalnih banaka u svijetu korišteni: medijska pokrivenost digitalnih kanala, broj zaposlenih i procjena uticaja digitalne banke na bankarski sektor uopšte.

Vodeća banka, prema ovim kriterijumima, jeste WeBank iz Kine, osnovana 2015. godine. WeBank je komercijalna banka sa internetskim fokusom koja koristi facijalne softverske proizvode za prepoznavanje. Nudi male iznose zajmova i investicione proizvode putem svojih platformi na mreži. Ova banka svoje proizvode razvija u saradnji sa kompanijom Tencent, vodećom kineskom internet kompanijom. Druga po veličini i značaju je MYbank, banka iz Kine, osnovana u saradnji sa kompanijom Alibaba, zatim dolazi Digibank by DBS, banka iz Indonezije koja je priznata kao „najsigurnija banka u Aziji“. Pored navedene top tri, u vodeće digitalne banke se ubrajaju i BankMobile iz SAD, EQ Bank iz Kanade, Atom Bank iz Velike Britanije, Hello Bank! iz Belgije i K Bank iz Koreje (Financial IT, 2017, str. 46).

Ono što je zajedničko većini poslovnih strategija, pa tako i strategiji digitalizacije, jeste uspostavljanje saradnje sa telekomunikacionim kompanijama, kompanijama specijalizovanim za pružanje usluga procesinga i ostalim kompanijama netipičnim za bankarski sektor. Takođe, banke utiču na razvoj inovativnosti svojih komitenata. U

minate the problem of geographical distance between the client and the bank and enable easier communication, connection of clients and flow of information (Obradović, Dragosavac and Arsić, 2015). The development of modern technological solutions has decreased the complexity of performing transactions in real time, as well as the integration of the components of economic activity which significantly decrease the cost of business (Zamfir, 2014). Along with the change of technology come the market changes because new products can be placed on new markets, to substitute the existing ones or even contribute to breaking into new regional markets (Sagić, 2016). And while some see digitalisation as a means of transformation via the Internet which needs to contribute to the advancement and automation of the process through standardisation, the others see it as a way of renewal of business models which follow the needs of buyers aided by new technologies (Mergel, Elelmann and Haug, 2019).

### 1.1. Digitalisation as corporate entrepreneurial strategy

The very concept of strategy is often defined as the skill of management, running businesses, while the economic literature defines strategy as a way of realizing goals. Every innovation “brings change to market or society, as well as fruits of labour to its user, greater capacities to the society for the production of wealth, higher value or greater satisfaction of a certain need. The best test of every innovation is that which it brings to the user. Therefore, entrepreneurship always needs to be led marketwise” (Drucker, 1991, p. 320). Ramadani and Gerguri (2010) indicated the report from Booz Allen Hamilton from 2007 in which, by the statistical analysis on the sample of 1000 companies, based on applied strategies, he distinguished 3 different categories: companies which focus on searching for new aspects of needs, companies directed towards market research and companies led by technologies (Ned Seekers, Market Readers and Technology Drivers). Companies which search for the needs focus firstly on presenting new products on markets and base their research-development efforts on getting information from customers. They actively involve the existing and prospective buyers to shape new products, services and processes. The companies which are directed towards research and comprehension of market changes are the companies which have distinguished themselves by careful monitoring of incremental changes in value creation on the market as well as by being fast followers on the market. The technology-oriented companies focus on the approach based on technological innovations while paying less attention to clients’ involvement and their contribution to the process. They direct the process according to their technological capabilities, along with extra investments in research and development (Ramadani and Gerguri, 2010). Innovativeness represents one of the main features of entrepreneurially-oriented companies, which take risks by accepting new technologies, new development possibilities which might be exceeding the current state in a given field, but which lead towards the development of new processes, products, services or the development of new markets (Kyn, 2005).

Banks and other business entities, in an effort to secure an adequate market position, and depending on the defined aim and vision, define the strategy with which they perceive their position in the competitive market and apply different methods to strengthen that position, along with proper direction of their material, human and information resources. Defining strategy starts with the analysis of the total supply and demand, taking into account the comparative advantages of the competitors. Generally, banks have at their disposal the choice between the business strategy based on the application of modern technology and digitalisation, the strategy of traditional banking, or the combination of these strategies. The strategy of traditional banking business is mainly based on broadening the number of branch offices and divisions in order to facilitate the client’s access to bank’s products and services. Such banks focus on administering credit-deposit issues, not paying enough attention to competition, they have a rather homogenous offer of products and services, they are not directed towards meeting the needs and requests from the clients (Gregović and Crnogorac, 2016).

By choosing the strategy of digitalisation, bank directs itself towards better satisfaction of the needs of users of financial services, it shows enthusiasm for greater innovativeness and faster changes, especially when it comes to banking products, technology, business organisation, presence of better entrepreneurial spirit especially with top managers. They direct their business towards the application of modern technology, which enables the economy of scale and a wide range of new products and services.

### 1.2. Possibilities of applying the digitalization strategy in the banking sector

Innovations have enabled companies to develop their business and advance their position in the market. Technology has a special role in it. However, innovations are not only the result of development-research process, but they also represent the capability of a company to use accurately defined strategies to contribute to the acceptance and application of new technologies. Technological innovations, apart from the influence they have on the productivity and profitability, represent the main generator of revolutionary changes in the banking sector (Gregović and Crnogorac, 2016). Innovativeness of a company is also reflected in its capability to define and apply the strategic approach.

Firms can use different strategies in order to develop their innovations. They can use “the strategy of cooperation” and develop innovations along with external partners, companies or institutions and in that way complement internal knowledge with external knowledge and expertise. Firms can cooperate formally or informally with other companies or institutions, such as suppliers, buyers, competitors, consulting firms and universities. Management can also decide to use “the internal strategy”, i.e. the process of developing innovations mainly inside the company in the situation when it estimates that the external knowledge is unimportant because the internal knowledge has already been established, and in that way the company can isolate the innovation activities from the external firm or institution and thus prevent the “leakage” of knowledge (Bonte and Dienes, 2012). Application of innovative strategies contributes to the advancement of productivity, reduction of production costs through the development of new methods and techniques, strengthening competitiveness, increase of efficiency through the improvement of internal processes and through connecting with external participants (Ravić and Gavrić, 2015).

Digitalisation, apart from contributing to the development of relationships and strengthening the cooperation between banks and companies from other fields, has become a criterion against which the banks have been ranked. Consequently, according to the research conducted by Financial IT (2017) under the title Financial IT’s digital bank ranking, the following were used as the main criteria in ranking digital banks in the world: media coverage of digital channels, the number of employees and the evaluation of the influence of the digital bank on the banking sector in general.

The leading bank under these criteria is WeBank from China, founded in 2015. WeBank is a commercial bank with internet focus which uses facial software programmes for recognition. It offers small loan amounts and investment products via its platforms on the net. This bank develops its products in cooperation with Tencent, the leading Chinese Internet company. The second in size and significance is MYbank, a bank from China, founded in cooperation with Alibaba company, then follows Digibank by DBS, a bank from Indonesia which is recognised as “the safest bank in Asia”. Along with the top three, in the leading digital banks there are also BankMobile from the USA, EQ Bank from Canada, Atom Bank from Great Britain, Hello Bank! from Belgium and K Bank from Korea. (Financial IT, 2017, p. 46.)

What is common for the majority of business strategies, and the strategy of digitalisation alike, is the establishment of cooperation with telecommunication companies, companies specialised in providing servi-



istraživanju Instituta Azijske razvojne banke (Asian Development Bank Institute, 2018) navedeno je da najveći problem u uspostavljanju i održavanju međusobnih odnosa u finansiranju novih tehnologija između banaka i tehnoloških firmi nastaje zbog poteškoća u razumjevanju i verifikaciji tih tehnologija, kao i u količini rizika koju tehnologije nose (Lin, Liu i Wei, 2018). U istraživanju Instituta Azijske razvojne banke koje je obuhvatilo kompanije iz SAD, Azije i Evrope (Italija), fokus je stavljen na uticaj razvoja lokalnog bankarstva kroz inovativne aktivnosti firme. Zaključak istraživanja ukazuje na to da razvoj lokalnog bankarstva pozitivno utiče na inovativne aktivnosti firme, pri čemu je najveći efekat zabilježen za visokotehnološke kompanije. Konkretno, pristup bankarskim kreditima igra značajnu ulogu u finansiranju različitih inovativnih aktivnosti, uključujući uvođenje novih proizvoda i tehnologija i usvajanje novih proizvodnih procesa. Iako ne sugerišu uzročno-posljedičnu vezu, nalazi ukazuju na povoljan uticaj razvoja bankarstva na inovacije putem kanala finansiranja (Lin et al., 2018).

### 1.3. Uticaj strategije digitalizacije na razvoj bankarskog sektora

Tehnološke inovacije u bankarstvu najveći uticaj su imale na platni promet i transfer novčanih sredstava, jačanje trenda prelaska sa gotovinskog oblika plaćanja na različite oblike elektronskog, mobilnog plaćanja, razvoj kartičnog oblika plaćanja (paypass, Gcas, mpos tehnologija...), primjenu ATM i POS uređaja, kontakt centre, SMS usluge. Digitalizacija bankarskog poslovanja započela je sa prvim elektronskim prenosom novca u bankarstvu 1860. godine od strane Western Uniona putem telegrafa koji je u tom periodu predstavljao jednu od najvećih tehnoloških inovacija (Zelenović, 2012). Telegrafski transfer novca omogućio je razvoj Fedvajera (Fedwire), kao jednog od najvećih platnih sistema pri sistemu federalnih rezervi SAD (Zelenović, 2012.). Barclays Bank je 1967. godine uvela prvi ATM, koji je izumio Džon Šepard Baron (John Shepherd Barron), koji je omogućavao samo isplatu gotovine (Zelenović, 2012). Frenk Meknamara (Frank Meknamara) 1950. godine je slučajno pronašao platnu karticu kao jednu od najvećih inovacija u bankarstvu. Iste godine osniva Diners Club, prvu kompaniju za kreditne kartice na svijetu, a krajem pedesetih godina počinje sa radom American express, a potom sa radom počinje i BankAmericard, kasnije poznata kao Visa card (Vunjak i Kovačević, 2011).

Digitalni oblici plaćanja klijentu omogućuju brže obavljanje transakcija bez čekanja u redovima ispred šaltera banke, niže cijene usluga, lakši pristup informacijama, direktan uvid u stanje i promet po računu, realizaciju transakcija 24/7/365. „Istraživanja pokazuju da plaćanje računa gotovinom traje minimum 33 sekunde, a platnom karticom 23 sekunde, dok je posljednja generacija kartica sa NFC (Near Field Communication) beskontaktnom tehnologijom skratila vrijeme transakcije na 12 sekundi, zahvaljujući opciji autorizovanja transakcije bez PIN koda.“ (Gregović i Crnogorac, 2016) Mobilno bankarstvo predstavlja jednu od najbrže prihvaćenih bankarskih inovacija, a integracija mobilnih telefona sa NFC beskontaktnom tehnologijom predstavlja posljednju inovaciju u okviru bezgotovinskog načina plaćanja. Primjena ove inovacije je dodatno digitalizovala bankarsko poslovanje, jer tehnologija nije skupa, veliki broj stanovnika posjeduje mobilne telefone, pogodna je za mlađu, informatički pismenu generaciju. Elektronske baze podataka i trenutni pristup ovakvim informacijama su uveliko olakšali zaposlenima pristup podacima i internu komunikaciju.

U procesu transformacije bankarstva usljed digitalizacije, banke su različito reagovala na promjene. „Tako su istraživanja iz 2014. godine pokazala da četvrtina vodećih svjetskih banaka transformaciju posmatra samo na projektnoj osnovi za budući period, 42% banaka digitalizaciju posmatra kao sastavni dio poslovanja, dok je 32% banaka osnovalo posebnu poslovnu jedinicu unutar organizacije.“ (Krstić i Tešić, 2016) Digitalizacija bankarskog poslovanja sa sobom nosi pojavu novih tržišnih igrača i novih konkurenata koji imaju značajan uticaj na tradicionalni način bankarskog poslovanja i uslovljavaju

promjene u ovoj oblasti. Ovo se posebno odnosi na kompanije koje se bave uslugama platnog prometa, kartičarstva, mikrofinansiranja.

Jedan od primjera novih igrača je kompanija PayPal, jedan od pionira u elektronskoj oblasti platnog prometa, koji broji preko 180 miliona aktivnih računa širom svijeta. Tu su i Google Wallet, Square kao rješenje za procesiranje kreditnih kartica, Fundbox za mikroreditiranja, Applpay za beskontaktno plaćanje za korisnike Apple telefona i niz drugih vrsta fin-teh kompanija (Krstić i Tošić, 2016).

Istraživanje koje je sproveda Unikredit banka u maju 2018. godine (preuzeto sa zvanične internet stranice Zagrebačke banke) pokazuje da je digitalna infrastruktura korisnika interneta i mobilnih telefona u zemljama Srednje i Istočne Evrope na istom nivou kao i u naprednim zemljama, te da je penetracija korisnika mobilnih telefona veća od 100 (jedna mobilna pretplata po osobi), dok je penetracija interneta veća od 60% (Unikredit banka, 2018). Demografski trendovi, takođe, idu u korist ubrzanog digitalizaciji, budući da je gotovo 50% stanovništva mlađe od 35 godina, za razliku od Zapadne Evrope, gdje je taj podatak oko 40%. Upotreba internet bankarstva u zemljama kao što su Češka, Turska i Srbija udvostručila se od 2010. godine. U Srednjoj i Istočnoj Evropi posluje više od 600 fin-teh kompanija, od čega se više od 50% kompanija bavi poslovima iz oblasti finansija, transakcija i plaćanja, a više od trećine ovih kompanija je osnovano u periodu između 2012. i 2016. godine (Unikredit banka, 2018). Na osnovu podataka Centralne banke BiH za 2018. godinu, 22 banke nude usluge internet i mobilnog bankarstva, koje koristi ukupno 667.551 klijent (Godišnji izvještaj CBBiH za 2018. godinu).

Prema istraživanju koje je sproveo Dilajt (Deloitte, 2016), koje je obuhvatilo najveće kompanije Centralne Evrope, uključujući i banke, više od 79% ispitanika smatra da će digitalna revolucija imati uticaj na njihovo poslovanje. Čak 90% ispitanih banaka vjeruje da digitalna transformacija ima veliki uticaj na bankarski sektor i na ostvarene rezultate, pri čemu čak 95% banaka ima jasnu viziju za primjenu strategije digitalne transformacije. Suština strategije digitalizacije svodi se na kontinuirano unapređenje i transformaciju pozadinskih procesa sa ciljem postizanja veće učinkovitosti i kvaliteta usluga, povećanja performansi bankarskog poslovanja uz potpuno novi koncept, koji od klijenata zahtijeva da prihvate nove servise, ali i promjene u načinu razmišljanja, koje donose novi trendovi u bankarstvu. Dodatni aspekt digitalizacije ogleda se u automatizaciji manuelnih zadataka, elektronskog potpisivanja, te većoj kontroli pristupa i upravljanja dokumentacijom, što snižava operativne troškove.

## 2. EMPIRIJSKO ISTRAŽIVANJE, METOD I ISTRAŽIVAČKI UZORAK

Bankarski sistem BiH uključuje 23 banke sa većinskim privatnim kapitalom, uz dominaciju stranog privatnog kapitala, dok su dvije banke u većinskom vlasništvu domaćih akcionara. Metodom studije slučaja analiziran je uticaj digitalizacije na bankarsko poslovanje u BiH, uz primjer dvije banke koje su odabrane na osnovu pokazatelja o nivou razvijenosti digitalnih usluga, pri čemu je jedna od banaka u većinskom vlasništvu stranog kapitala (u nastavku teksta Banka 1), dok je druga u većinskom vlasništvu domaćeg kapitala (u nastavku teksta Banka 2).

Istraživanje za potrebe ovog rada obuhvatilo je period od četiri poslovne godine, tačnije 2015, 2016, 2017. i 2018. godinu, a podaci su prikupljeni na osnovu zvanično publikovanih izvještaja Centralne banke Bosne i Hercegovine, Agencije za bankarstvo Republike Srbije, te dvije banke koje su odabrane na osnovu pokazatelja o nivou razvijenosti digitalnih usluga. Za potrebe istraživanja sprovedena je kvalitativna analiza podataka objavljenih u sljedećim publikacijama:

ces in processing and other companies atypical of the banking sector. Moreover, the banks influence the development of innovativeness of their clients. In the research conducted by Asian Development Bank Institute (2018) it is stated that the biggest problem in establishing and maintaining correlations in financing new technologies between banks and technological firms arises from the difficulties in understanding and verification of those technologies, as well as in the amount of risk the technologies carry (Lin, Liu, and Wei, 2018). In the research by Asian Development Bank Institute which included companies from the USA, Asia, Europe (Italy), the focus was put on the influence of local banking development through innovative activities of the firm. The conclusion of the research indicates that the development of local banking positively affects innovative activities of firms, whereby the largest effect was registered with high-tech companies. Specifically, the access to the bank loans plays a significant role in financing different innovative activities, including the introduction of new products and technologies and acquiring new production processes. Although they do not suggest cause and effect relationship, the findings indicate a favourable influence of the development of banking on the innovations through funding channels (Lin et al., 2018).

### 1.3. The influence of the strategy of digitalisation on the development of the banking sector

Technological innovations in banking have had the biggest influence on payment systems and money transfer, reassuring the trend of switching from the cash form of payment to various ways of electronic, mobile payment, development of card form of payment (paypass, Gcas, mpos technology...), use of ATM and POS devices, contact centres, SMS services. Digitalisation of banking business started with the first electronic money transfer in banking in 1860 by the Western Union via telegraph which in that period represented one of the greatest technological innovations (Zelenović, 2012). Telegraphic money transfer enabled the development of Fedwire as one of the greatest payment systems within the system of federal reserves of the USA (Zelenović, 2012). In 1967, Barclays Bank introduced the first ATM, invented by John Shepherd-Barron, which allowed only cash withdrawals (Zelenović, 2012). In 1950, Frank Meknamara by chance invented the payment card as one of the greatest innovations in banking. The same year, he establishes the Diners Club, the first credit card company in the world, and in the late fifties the American express starts up, followed by the Bank Americard, later known as Visa card (Vunjak and Kovačević, 2011).

Digital forms of paying enable the client to do the transactions faster without queuing in front of the bank counter, lower prices of services, easier access to information, direct insight into the account balance and turnover, realization of transactions 24/7/365. "Research shows that paying bills in cash takes minimally 33 seconds and by payment card 23 seconds, while the last generation of the cards with NFC (Near Field Communication) aided by non-contact technology, has shortened the transaction time to 12 seconds and by virtue of the option of authorizing the transaction without the PIN code" (Gregović and Crnogorac, 2016). Mobile banking represents one of the most rapidly accepted banking innovations and the integration of mobile phones with NFC non-contact technology represents the last innovation in the scope of non-cash way of payment. The application of this innovation has additionally digitalised the banking business, as the technology is not expensive, great number of citizens own mobile phones, it is convenient for younger, computer-literate generation. Electronic databases and current access to such information have significantly facilitated data access and internal communication for the employees.

In the process of transformation of banking caused by digitalisation, banks have reacted differently to the changes. "Thus the research from 2014 indicated that a quarter of the leading world banks consider transformation only on the basis of projection for the future period, 42% of the banks considers digitalisation as a component of business, while 32% of the banks established a special business unit within the organisation". (Krstić and Tešić, 2016). Digitalisation of banking business

brings along the emergence of the new market players and new competitors who have a significant influence on the traditional way of banking business and condition the changes in this field. This especially refers to the companies which deal with the payment system services, cards, microfinance.

One of the examples of the new players is PayPal company, one of the pioneers in the electronic field of payment system, which numbers over 180 million of active accounts around the world. Then there are Google Wallet, Square, as a solution for credit card processing, Fundbox for microcredits, Applpay for non-contact payment for the users of Apple phones and a number of other kinds of fin-tech companies (Krstić and Tošić, 2016).

The research conducted by Unicredit Bank in May 2018 (taken from the official Internet page of Zagrebačka banka) indicates that the digital infrastructure of Internet and mobile phone users in the countries of middle and eastern Europe is on the same level as in the developed countries, and also that the penetration of the mobile phone users is bigger than 100 (one mobile subscription per user), while the penetration of the Internet is bigger than 60% (Unicredit bank, 2018). Demographic trends benefit faster digitalisation as well, since almost 50% of the citizens are younger than 35 years of age, as opposed to the Western Europe where that data is around 40%. The use of internet banking in countries such as the Czech Republic, Turkey and Serbia has doubled since 2010. In Middle and Eastern Europe, more than 600 fin-tech companies do business, out of which more than 50% of companies deal with business in the field of finance, transaction and payment and more than a third of these companies were founded in the period from 2012 to 2016 (Unicredit bank, 2018). Based on the data from the Central bank of BiH for 2018, 22 banks provide services of Internet and mobile banking, which is used by 667.551 clients (Annual report of the Central bank of BiH for 2018).

According to the research conducted by Deloitte (2016), which included the largest companies of Central Europe, including the banks, more than 79% of respondents think that digital revolution will have an impact on their business. As much as 90% of the interviewed banks believe that digital transformation has a great influence on the banking sector and realised results, where as much as 95% of the banks have a clear vision of the application of the strategy of digital transformation. The essence of digitalisation strategy comes down to continual advancement and transformation of background processes with the aim to achieve higher efficiency and quality of services, increase the performances of banking business with a brand new concept, which demands from clients to accept new services but also the changes in the way of thinking, which are brought by the new trends in banking. An additional aspect of digitalisation is reflected in the automation of manual tasks, electronic signature, and greater access control and documentation management, which lowers operative costs.

## 2. EMPIRICAL RESEARCH, METHOD AND THE RESEARCH SAMPLE

The BiH banking sector includes 23 banks with majority private equity; foreign private equity is dominant, whereas two banks are in the majority ownership of local shareholders. In this paper, the case study method was used to analyse the impact of digitalisation on the banking business in BiH, with the example of two banks that were chosen on the basis of indicators of digital services development state, whereby one of the banks is in the majority ownership of foreign equity (hereinafter: Bank 1), while the other one is in the majority ownership of domestic equity (hereinafter: Bank 2).

The research carried out for the purpose of writing this paper included a period of four business years, namely 2015, 2016, 2017 and 2018,

- Izvještaj o stanju u bankarskom sistemu Republike Srpske na 31. 12. 2015, 31. 12. 2016, 31. 12. 2017. i 31. 12. 2018;
- Centralna banka BiH – Godišnji izvještaji za 2015, 2016, 2017. i 2018. godinu;
- Godišnji izvještaji preuzeti sa zvaničnih veb-stranica dviju posmatranih banaka za 2015, 2016, 2017. i 2018. godinu.

Prikaz uticaja digitalizacije na poslovanje banaka predmet je analize ovog rada. Osnovna svrha ovog istraživanja je da se ukaže na sve veću primjenu inovativnih digitalnih rješenja u bankarskom poslovanju, a u vidu bankomata, POS terminala, platnih kartica, digitalnih šaltera, mobilnog i elektronskog bankarstva, te sve veću međuzavisnost razvoja bankarskog poslovanja i primjene savremene tehnologije, kroz proces digitalizacije. Istraživanje je bazirano na analizi podataka poslovanja iz navedenih izvještaja, u kojima su pojedini podaci dati okvirno. Plan istraživanja odnosi se na istraživanje prikupljene literature i ostalih relevantnih izvora, sa ciljem dolaska do potrebnih podataka, njihove kvalitativne i kvantitativne obrade, te tabelarnog i grafičkog prikaza. U analizi rezultata istraživanja, korišćena je deskriptivna statistika.

### 2.1. Ograničenja u istraživanju

U procesu istraživanja postojala su određena ograničenja koja su se posebno odnosila na mogućnost prikupljanja podataka za veći broj banaka. Razlog tome je činjenica da mnoge banke ne daju saglasnost za objavljivanje detaljnih podataka, a podaci koji su javno dostupni u publikacijama, kao što su godišnji finansijski izvještaji, dosta banaka predstavlja procentualno, kao rast/pad u

**Tabela 1.** Podaci za Bosnu i Hercegovinu

Godina	Broj kartica	Promjene u odnosu na prethodnu godinu	Broj bankomata	Promjene u odnosu na prethodnu godinu	Broj POS terminala	Promjene u odnosu na prethodnu godinu	Broj korisnika mobilnog i elektronskog bankarstva	Promjene u odnosu na prethodnu godinu
2015.	2.013.219	4,18%	1.509	5,82%	25.579	14,17%	314.777	47,39%
2016.	2.042.280	1,44%	1.512	0,20%	27.353	6,94%	383.761	21,92%
2017.	2.005.213	-1,81%	1.539	1,79%	27.458	0,38%	490.859	27,91%
2018.	2.153.346	7,39%	1.582	2,79%	28.239	2,84%	667.551	36,00%

Izvor: autorova obrada podataka

Na osnovu prethodne tabele može se vidjeti da je u 2018. došlo do vraćanja višegodišnjeg pozitivnog trenda povećanja broja aktivnih kartica na godišnjem nivou koji je prekinut prošle godine kada je zabilježen negativan trend i pad za 1,81%. Broj bankomata i POS

odnosu na prethodno posmatrani period, bez brojčanih podataka. Agencija za bankarstvo Republike Srpske u svojim izvještajima nema podatak o broju izdatih platnih kartica, kao ni podatak o broju korisnika elektronskog i mobilnog bankarstva, što predstavlja dodatno ograničenje u dijelu istraživanja.

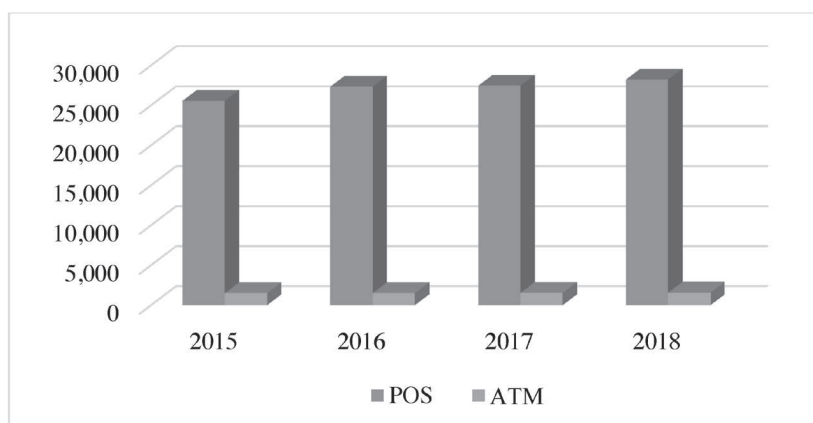
Dodatna ograničenja u istraživanju predstavlja i činjenica da banke, a ni CBBiH ili ABRS, ne objavljuju podatke o drugim dostupnim digitalnim rješenjima, kao što su broj i-komerc (engl. e-commerce) trgovaca, broj korisnika mvalet rješenja, broj uplata na račun putem uplatnih bankomata i digitalnih šaltera, broj korisnika elektronskog pečata za predavanje platnih naloga i pologa pazara, kao ni promet ostvaren na ovakav način.

### 2.2. Rezultati istraživanja

Istraživanje je sprovedeno sa ciljem dolaska do podataka koji pokazuju uticaj koji primjena savremenih tehnoloških dostignuća ima na bankarsko poslovanje. Plan istraživanja se odnosio na istraživanje prikupljene literature i kvalitativnu obradu primjenom metode komparacije, te njihovu deskriptivnu, grafičku i tabelarnu obradu i prikaz. U prvom dijelu istraživanja bazirali smo se na podatke prikupljene iz publikovanih izvještaja Centralne banke BiH i izvještaje Agencije za bankarstvo Republike Srpske, a koji se odnose na podatke o kartičnom poslovanju, broju instaliranih bankomata i POS terminala, te prometu ostvarenom na ATM i POS uređajima u BiH i RS. U ovom dijelu istraživanja nastojali smo da prikazemo udio posmatranih banaka (Banke 1 i 2) u broju instaliranih bankomata i POS terminala na tržištu.

terminala je u konstantnom porastu. Ono što se posebno ističe je rast broja korisnika elektronskog i mobilnog bankarstva, koji se na kraju posmatranog perioda udvostručio u odnosu na prvu godinu posmatranja.

**Grafički prikaz 1.** ATM i POS uređaji u BiH po godinama



Izvor: autorova obrada podataka

Kada je riječ o podacima o broju instaliranih bankomata i POS terminala za Republiku Srpsku, Agencija za bankarstvo RS u svojim izvještajima prikazuje podatke za banke iz Republike Srpske, ali

i podatke za banake iz Federacije BiH koje imaju organizacione dijelove koji posluju na teritoriji Republike Srpske.



while the data was collected from the officially published reports by the Central Bank of Bosnia and Herzegovina, the Republic of Srpska Banking Agency, and two banks that were chosen on the basis of indicators of digital services development state. A qualitative analysis of the data published in the below listed publications was done for the needs of the research:

1. Report on the state in the Republic of Srpska banking system on 31.12.2015, 31.12.2016, 31.12.2017. and 31.12.2018,
2. Central Bank of BiH – Annual reports for 2015, 2016, 2017 and 2018,
3. Annual reports taken over from the official websites of the two observed banks for 2015, 2016, 2017. and 2018.

The subject of analysis in this paper is to review the impact of digitalisation on the business operation of banks. The main purpose of this research is to indicate an all-the-greater application of innovative digital solutions in the banking business, in terms of automated teller machines, POS terminals, payment cards, digital teller windows, mobile and electronic banking, as well as an all-the-larger interdependence of the development of banking business and the application of modern technology, through the process of digitalisation. The research is based on an analysis of the business data from the stated reports, in which certain data is given generally. The research plan pertains to the investigation of the collected literature and other relevant sources, with the aim of obtaining the necessary data, their qualitative and quantitative processing, as well as tabular and graphic presentation of the same. Descriptive statistics was used in the analysis of the research results.

**2.1. Research limitations**

In the research process there were certain limitations that were particularly related to the possibility of gathering data for a larger number

of banks. The reason for this is the fact that many banks do not give agreement to the publication of detailed data, and present the data that is publicly available, such as the annual financial reports, in percentage, as growth/fall in relation to the previous observed period, without any numerical data. The Banking Agency of the Republic of Srpska does not have the data on the number of issued payment cards in their reports, nor the data on the number of users of electronic and mobile banking, which represents additional limitation in one part of the research.

The fact that the banks, including the CBBiH and BARS, do not publish data on other available digital solutions such as the number of e-commerce traders, mWallet users, the number of payments to the account through payment automated teller machines and digital teller windows, the number of users of electronic seal for submitting payment orders and collections of takings, or the turnover realised in this manner, represents an additional limitation in this research.

**2.2. Research results**

The research was carried out with the aim of obtaining data that shows the impact of the application of modern technological achievements on the banking business. The research plan pertained to the investigation of the gathered literature and qualitative processing using the method of comparison, as well as its descriptive, graphic and tabular processing and presentation. The first part of the research is based on the data collected from the published reports by the Central Bank of Bosnia and Herzegovina and the ones by the Banking Agency of the Republic of Srpska, which pertain to the data on card transactions, the number of installed automated teller machines and POS terminals, as well as turnover realised on ATMs and POS devices in BiH and RS. In this part of the research we endeavoured to present the share of the observed banks (Banks 1 and 2) in the number of installed automated teller machines and POS terminals on the market.

**Table number 1.** Data for Bosnia and Herzegovina

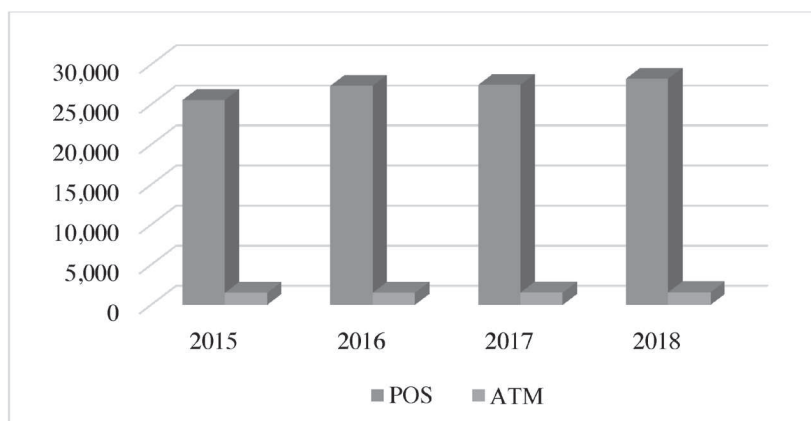
Year	Number of cards	Changes in relation to previous year	Number of ATMs	Changes in relation to previous year	Number of POS terminals	Changes in relation to previous year	Number of users of mobile and electronic banking	Changes in relation to previous year
2015	2,013,219	4.18%	1.509	5.82%	25.579	14.17%	314.777	47.39%
2016	2,042,280	1.44%	1.512	0.20%	27.353	6.94%	383.761	21.92%
2017	2,005,213	-1.81%	1.539	1.79%	27.458	0.38%	490.859	27.91%
2018	2,153,346	7.39%	1.582	2.79%	28.239	2.84%	667.551	36.00%

Source: Data processed by the author

The previous table shows that 2018 saw the return of years-long positive upward trend in the number of active cards annually, which had been interrupted the year before, when a negative trend i.e. fall by 1,81% had been recorded. The number of automated teller machines and POS terminals is constantly on the rise.

What stands out in particular is the growth in the number of electronic and mobile banking users, which doubled relative to the first year of observation, at the end of the period under observation.

**Graphic presentation number 1.** ATM and POS devices in BiH by years.



Source: Data processed by the author

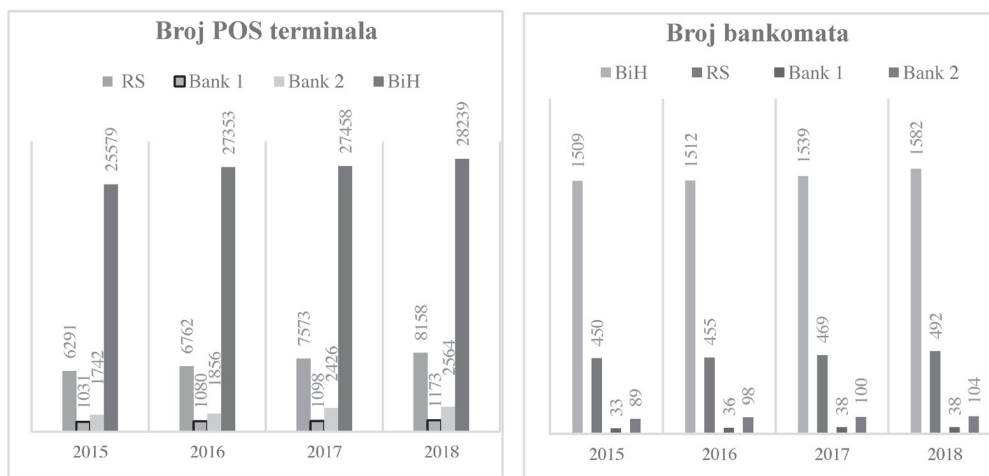
**Tabela 2.** Broj bankomata i POS terminala na teritoriji Republike Srpske i Bosne i Hercegovine

Uređaj	ATM				POS terminali			
	2015.	2016.	2017.	2018.	2015.	2016.	2017.	2018.
Banke u RS	365	362	365	383	4.512	4.674	5.324	5.473
Org. dijelovi banaka iz FBiH u RS	85	93	104	109	1.779	2.088	2.249	2.685
Ukupno RS	450	455	469	492	6.291	6.762	7.573	8.158
Ukupno BiH	1.509	1.512	1.539	1.582	25.579	27.353	27.458	28.239

Izvor: autorova obrada podataka

Na osnovu podataka koje su posmatrane banke objavile u svojim godišnjim izvještajima, a primjenom metoda komparacije, možemo vidjeti da Banka 1 učestvuje sa 4,15% u ukupnom broju instaliranih POS terminala u BiH i sa 14,38% u broju instaliranih POS terminala u RS. Kada je riječ o Banci 2, ona u ukupnom broju instaliranih POS terminala na području BiH učestvuje sa 9,08%, a na području RS sa 31,43%.

U ukupnom broju instaliranih bankomata u BiH, Banka 1 učestvuje sa 2,4% i sa 7,2% u RS, dok Banka 2 u ukupnom broju bankomata u BiH učestvuje sa 6,57%, a u RS sa 21,14%. Veći rast u broju instaliranih POS terminala ukazuje na to da klijenti (trgovci, ali i korisnici kartica) sve više koriste platne kartice kao instrument plaćanja, a ne samo kao instrument podizanja gotovine na bankomatima.

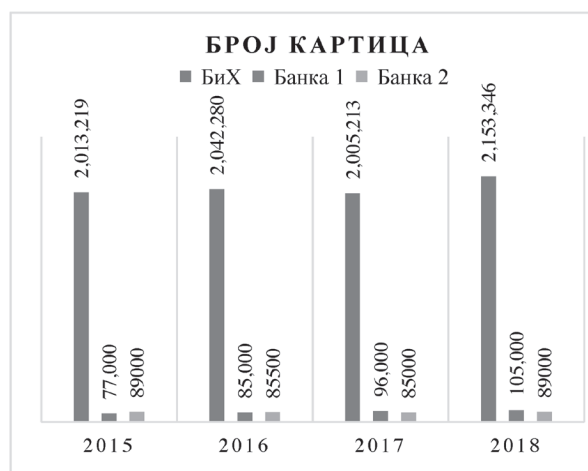
**Grafički prikaz 2. i 3.** Prikaz broja instaliranih POS terminala i bankomata

Izvor: autorova obrada podataka

Na tržištu BiH najzastupljenije su debitne kartice, sa preko 80% učešća u ukupnom broju izdatih kartica, zatim dolaze kreditne kartice (revolving, charge, installment) i poklon kartice. Najzastupljeniji kartični brend na tržištu BiH od 2018. godine je MasterCard, dok je godinama unazad taj primat imala Visa. Na tržištu su još zastupljeni American Express, Diners i domaća kartica BamCard. Grafički prikaz broja izdatih platnih kartica ukazuje na pozitivnu korelaciju povećanja ukupno izdatih kartica u BiH i povećanja broja izdatih kartica kod dvije posmatrane banke. Banka 1 ostvaruje

4,88% učešća u ukupnom broju izdatih kartica u BiH, dok Banka 2 ostvaruje 4,13% učešća.

Većoj popularnosti kartica doprinosi mogućnost upotrebe kartica na internetu, e-commerce platforma za plaćanje, koju banke postepeno uvode, uz mogućnost odgođenog plaćanja i plaćanja na rate. Povećanju broja transakcija na internetu doprinosi i uvođenje dodatnih sigurnosnih mjera na strani izdavaoca i na strani prihvatioca, a kroz uvođenje 3D Secura i Verified by Visa.

**Grafički prikaz 4.** Broj platnih kartica izdatih u BiH

Izvor: autorova obrada podataka

When it comes to data on the number of installed automated teller machines and POS terminals for the Republic of Srpska, the Republic of Srpska Banking Agency shows in its reports the data for the

banks in the Republic of Srpska, but also those from the Federation of Bosnia and Herzegovina with organisational units operating on the territory of the Republic of Srpska.

**Table number 2.** The number of automated teller machines and POS terminals on the territory of the Republic of Srpska and Bosnia and Herzegovina

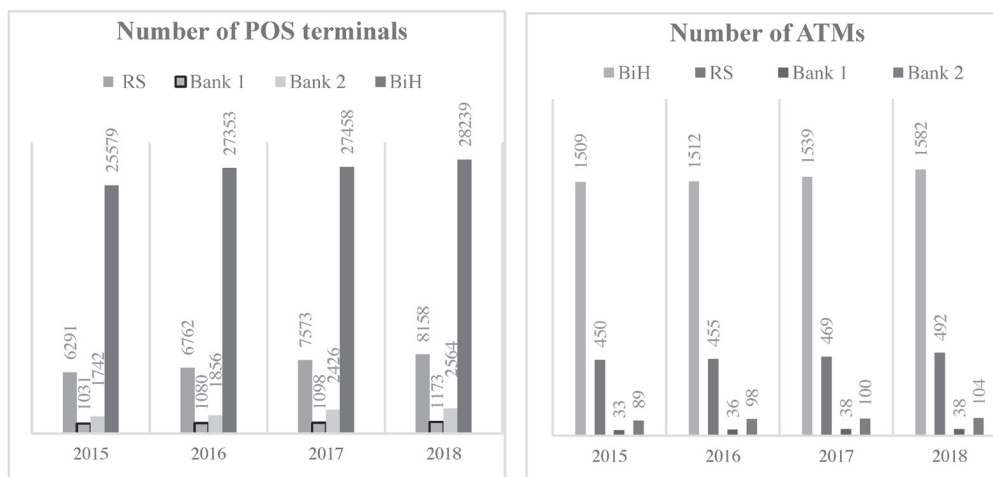
Device	ATM				POS terminals			
	2015	2016	2017	2018	2015	2016	2017	2018
Banks in the RS	365	362	365	383	4.512	4.674	5.324	5.473
Org. units of FBiH banks in the RS	85	93	104	109	1.779	2.088	2.249	2.685
RS total	450	455	469	492	6.291	6.762	7.573	8.158
BiH total	1.509	1.512	1.539	1.582	25.579	27.353	27.458	28.239

Source: Data processed by the author

On the basis of the data published by the observed banks in their annual reports and applying the comparison method we can see that the number of POS terminals installed by Bank 1 amounts to 4,15% of the total number in BiH, that is, 14,38% in the RS. When it comes to Bank 2, the number of installed POS terminals on the territory of BiH amounts to 9,08%, that is, 31,43% in the RS.

Bank 1 has installed 2,4% of the total number of installed automated teller machines in BiH, that is, 7,72% in the RS, while the figures for Bank 2 are 6,57% for BiH and 21,14% for the RS. The greater growth in the number of installed POS terminals indicates that clients (traders and card users alike) use payment cards as the means of payment, not only as the instrument of withdrawing cash from automated teller machines.

**Graphic presentation number 2 and 3.** Presentation of the number of installed POS terminals and automated teller machines.



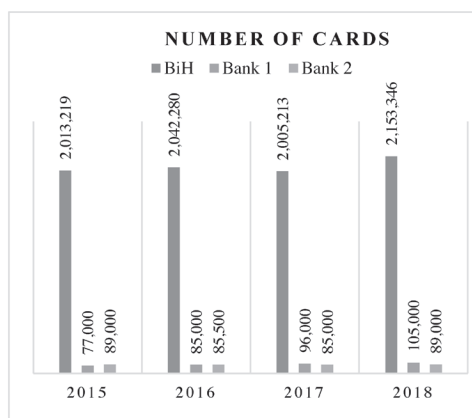
Source: Data processed by the author.

On the BiH market debit cards have the greatest presence with over 80% of the total number of issued cards; then come credit cards (revolving, charge, and instalment) and gift cards. The card brand used on the BiH market the most since 2018 has been MasterCard, whereas years before this primacy had been held by Visa. Other card brands that are present on the market are American Express, Diners and the domestic BamCard. The graphic display of the number of issued payment cards indicates positive correlation between the increase in the total number of issued cards in BiH and the rise in the number of issued cards with

the two observed banks. Bank 1 makes up 4,88% of the total number of issued cards in BiH, whereas Bank 2 constitutes 4,13% of the same.

The possibility of using cards on the Internet, e-commerce payment platform which is gradually being introduced, as well as the possibility of delayed payment and payment through instalments, contribute to the greater popularity of cards. On the other hand, the introduction of additional safety measures on the part of the issuer and the receiver, via 3D Secure and Verified by Visa, also contribute to the increase in the number of Internet transactions.

**Graphic presentation number 4.** The number of payment cards issued in BiH.



Source: Data processed by the author.



Da se korisnici bankarskih usluga sve više okreću ka alternativnim načinima plaćanja, pokazuju i podaci da je karticama izdatim od strane banaka iz BiH u 2018. godini ostvaren promet u vrijednosti od 10,29 milijardi KM, što je rast za 8,2% u odnosu na prethodnu godinu. Promet je realizovan kroz transakcije podizanja gotovine na bankomatima (7,16 milijardi KM) i kroz transakcije plaćanja na

POS terminalima (3,12 milijardi KM). Kartični promet u periodu od 2015. do 2018. godine, bilježi konstantan rast, kako u broju, tako i u volumenu ostvarenih transakcija. Podaci o prometu za period od 2015. do 2018. godine ukazuju na rast prometa realizovanog karticama izdatim u BiH koji je u prosjeku rastao za 8,6% u posmatranom periodu.

**Tabela 3.** Pregled prometa karticama izdatim u BiH (u milijardama KM)

	2015.	2016.	2017.	2018.
POS	1,96	2,55	2,76	3,12
Promjene u odnosu na prethodnu godinu	7,0%	30,2%	8,2%	13,2%
ATM	5,71	6,24	6,75	7,16
Promjene u odnosu na prethodnu godinu	6,7%	4,9%	8,2%	6,1%
Ukupno	7,66	8,79	9,51	10,29
Promjene u odnosu na prethodnu godinu	6,8%	11,3%	8,2%	8,2%

Izvor: CBBiH – Godišnji izvještaj 2018.

Kartice su se pokazale kao veoma pogodan instrument plaćanja u inostranstvu, pogotovo kada se uzme u obzir da korisnici ne moraju razmišljati o konverziji valuta. Na povećano korištenje kartica izdatih u BiH u inostranstvu ukazuje podatak da u prosjeku promet po

osnovu ove vrste transakcija rastao 13,59% godišnje, dok je promet ostvaren upotrebom kartica izdatih u inostranstvu na uređajima u BiH u prosjeku rastao za 15,57%.

**Tabela 4.** Promet u inostranstvu ostvaren radom kartica izdatih u BiH i promet ostvaren radom inostranih kartica u BiH

Rad kartica izdatih u BiH na uređajima u inostranstvu (u milionima KM)	2015.	2016.	2017.	2018.
POS	153,36	157,43	149,12	148,72
ATM	277,47	336,23	380,34	474,03
Ukupno	430,83	493,66	529,46	622,75
Rad kartica izdatih u inostranstvu na uređajima u BiH (u milionima KM)	2015.	2016.	2017.	2018.
POS	973,12	1075,01	1212,93	1390,4
ATM	327,82	394,69	527,3	650,25
Ukupno	1300,94	1469,7	1740,23	2040,65

Izvor: autorova obrada podataka

Na osnovu podataka iz prethodne tabele, može se vidjeti zanimljiv podatak, a to je da se kartice izdate u BiH u inostranstvu u većoj mjeri koriste za podizanje gotovine, dok se kartice izdate u inostranstvu uglavnom u BiH koriste za plaćanje.

Drugi dio istraživanja odnosi se na prikaz podataka o digitalnim kanalima plaćanja, kao što su elektronsko i mobilno bankarstvo za fizička i pravna lica.

**Tabela 5.** Broj korisnika mobilnog i elektronskog bankarstva u Bosni i Hercegovini

Korisnici mobilnog i elektronskog bankarstva u BiH	2015	2016	2017	2018
Pravna lica	44.802	48.053	64.961	58.670
Fizička lica	269.975	335.708	425.898	608.881
UKUPNO	314.777	383.761	490.859	667.551

Izvor: autorova obrada podataka

Podaci o korisnicima usluga mobilnog i elektronskog bankarstva pokazuju da banke konstantno bilježe rast broja korisnika, pogotovo kada je riječ o fizičkim korisnicima i usluzi mobilnog bankarstva. Tako je samo u 2018. godini zabilježen rast broja korisnika od 36% u odnosu na 2017. godinu, pri čemu je 91% korisnika fizičko lice, dok je samo 9% korisnika registrovano kao pravno lice koje koristi uslugu elektronskog bankarstva. Uslugu elektronskog bankarstva na tržištu BiH nude 22 od ukupno 23 banke.

Na osnovu objavljenih podataka o korisnicima elektronskog i mobilnog bankarstva za posmatrane dvije banke, vidimo da Banka 1 ima značajno veći broj korisnika, što se može pripisati i podatku da Banka 2 u posmatranom periodu nije imala u ponudi uslugu mobilnog bankarstva. Ovo je posebno zabrinjavajuće ako se uzme u obzir podatak da je broj korisnika mobilnog bankarstva prvi put u 2018. godini prestigao broj korisnika internet bankarstva.

That users of banking services are more and more frequently turning to alternative payment methods is also shown by the data that a turnover in the amount of 10,29 billion BAM was realised by means of cards issued by the banks in BiH in 2018, which represents growth by 8,2% relative to the year before. This turnover was realised through cash withdrawal transactions at automated teller machines (7,16 billion

BAM) and via payment transaction on POS terminals (3,12 billion BAM). The card turnover in the period from 2015 to 2018 records a constant growth both in the number and volume of realised transactions. The data on the turnover for this period of time indicate growth in the turnover realised by means of cards issued in BiH, which on average grew by 8,6% in the time period under observation.

**Table number 3.** Overview of turnover by cards issued in BiH (billion BAM)

	2015	2016	2017	2018
POS	1.96	2.55	2.76	3.12
Changes in relation to the year before	7.0%	30.2%	8.2%	13.2%
ATM	5.71	6.24	6.75	7.16
Changes in relation to the year before	6.7%	4.9%	8.2%	6.1%
Total	7.66	8.79	9.51	10.29
Changes in relation to the year before	6.8%	11.3%	8.2%	8.2%

Source: CBBiH – Annual report 2018.

Cards have proven to be a very convenient payment instrument abroad, especially in light of the fact that users need not think about currency conversion. The increased use of cards issued in BiH abroad is further testified by the data that the turnover based

on this kind of transaction on average grew by 13,59% annually, while the turnover realised by means of cards issued abroad, on the devices in BiH, on average grew by 15.57%.

**Table number 4.** Turnover realised abroad on the basis of transactions using cards issued in BiH and the turnover realised on the basis of cards issued abroad and used in BiH

Transactions using cards issued in BiH on devices abroad (billion BAM)	2015	2016	2017	2018
POS	153.36	157.43	149.12	148.72
ATM	277.47	336.23	380.34	474.03
Total	430.83	493.66	529.46	622.75
Transactions using cards issued abroad on devices in BiH (billion BAM)	2015	2016	2017	2018
POS	973.12	1075.01	1212.93	1390.4
ATM	327.82	394.69	527.3	650.25
Total	1300.94	1469.7	1740.23	2040.65

Source: Data processed by the author

The previous table shows interesting data, namely that cards issued in BiH are more frequently used to withdraw cash abroad, whereas cards issued abroad are in BiH mainly used for payment.

The second part of the research pertains to the presentation of data on digital payment channels, such as electronic and mobile banking for private individuals and legal entities.

**Table number 5.** The number of users of mobile and electronic banking in Bosnia and Herzegovina

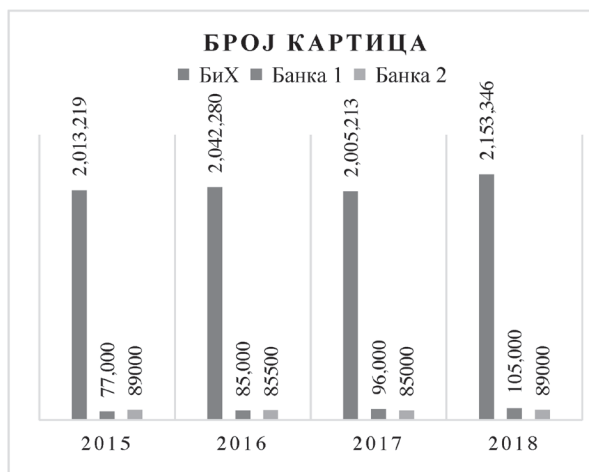
Users of mobile and electronic banking in BiH	2015	2016	2017	2018
Legal entities	44,802	48,053	64,961	58,670
Private individuals	269,975	335,708	425,898	608,881
TOTAL	314,777	383,761	490,859	667,551

Source: Data processed by the author

Data on the users of mobile and electronic banking services shows that banks constantly increase the number of users, especially when it comes to private individuals and mobile banking service. Thus, only in 2018 there was a growth in the number of users by 36% in relation to 2017, whereby 91% of the users are private individuals, and only 9% are registered as legal entities using electronic banking services. This service is offered by 22 out of the total 23 banks on the Bosnia and Herzegovina market.

On the basis of published data on the users of electronic and mobile banking for the two observed banks, we can see that Bank 1 has a significantly larger number of users, which can be attributed to the fact that Bank 2 did not have mobile banking service on offer in the observed period. This is particularly worrying in light of the data that the number of mobile banking users surpassed that of Internet banking users for the first time in 2018.

Grafički prikaz 5. Broj korisnika elektronskog i mobilnog bankarstva u BiH



Izvor: autorova obrada podataka

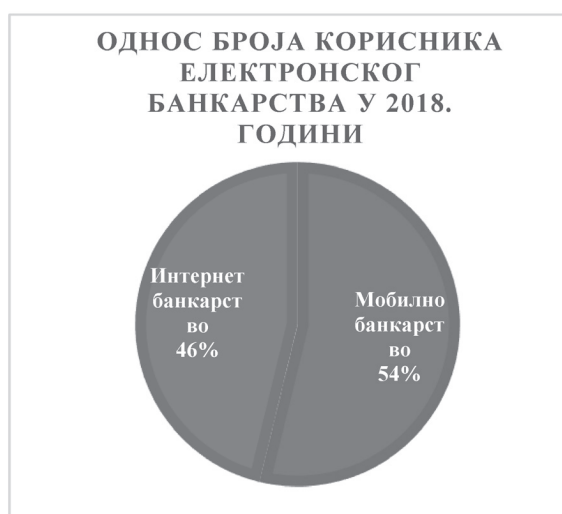
Табела 6. Корисници мобилног и интернет банкарства у БиХ у 2018. години

Мобилно банкарство – правна лица	Мобилно банкарство – физичка лица	Мобилно банкарство – укупно	Интернет банкарство – правна лица	Интернет банкарство – физичка лица	Интернет банкарство – укупно	Мобилно и интернет банкарство - УКУПНО
1.783	357.265	359.048	56.887	251.616	308.503	667.551

Izvor: Godišnji izvještaj CBBiH, kartičarstvo u BiH 2018.

Број корисника електронског и мобилног банкарства се у последње четири године удвоstrучио, а о повећаном коришћењу услуга електронског банкарства говори и податак да је у 2018. години Банка 1 повећала волумен платних трансакција за 18% у односу на претходну годину, и то када је ријеч само о трансакцијима унутрашњег платног промета. Посматрана банка је овај дигитални канал почела да користи и у сврху промоције и продаје осталих производа и услуга банке, па је тако у 2018. години пласирала више од 400 кредита за које су клијенти захтев подnijели путем електронског банкарства.

Граfiчки приказ 6. Однос броја корисника електронског банкарства у 2018. години



Izvor: autorova obrada podataka

### 3.3. Provjera hipoteza

У раду је постављена једна главна и двије помоћне хипотезе. Главна хипотеза гласи: Примјена иновативних стратегија кроз процес дигитализације позитивно утиче на развој банкарског пословања које се манифестује jaчањем конкурентске позиције банке, повећањем

броја клијената, повећањем броја трансакција и волумена плаћања, те побољшањем осталих перформанси банке. Тестирање главне хипотезе обављено је прегледом прикупљене литературе и анализом прикупљених података у истраживачком дијелу.

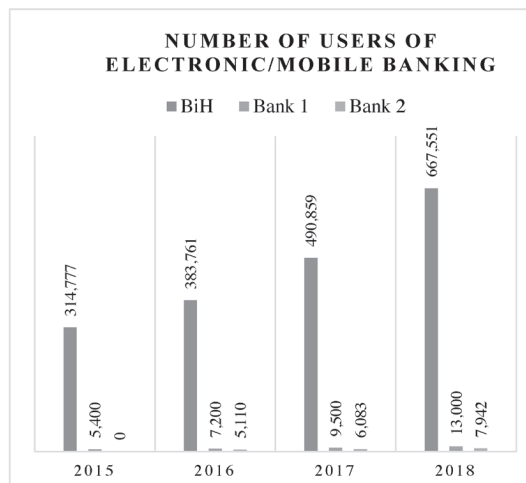
Прва помоћна хипотеза (H1) гласи: Примјеном савремене информационе технологије у банкарству доприноси се стварању дигиталних производа и услуга који утичу на повећање перформанси банкарског пословања, те jaчање конкурентске позиције банке на тржишту. Анализом прикупљене литературе, те на основу података објављених у истраживањима која су спровели Уникредит банка (2018), Дилоит (Deloitte, 2016) и Фajнешенел АјТи (Financial IT, 2017), можемо закључити да се иде у правцу дигитализације банкарских производа и услуга, те да дигитална трансформација има велики утицај на банкарски сектор и на остварене резултате пословања, доприноси повећању пословних перформанси банкарског пословања, поготово када се узме у обзир све више растућа конкуренција у области пружалца финансијских услуга. У складу са показатељима наведених истраживања, можемо рећи да је прва помоћна хипотеза потврђена, односно да дигитализација доприноси jaчању перформанси банке и njене тржишне позиције.

Друга помоћна хипотеза (H2) гласи: Дигитализацијом банкарских производа и услуга, банка осваја нове клијенте, проналази нове начине промоције и продаје банкарских производа, те долази до раста броја и волумена трансакција. Другу помоћну хипотезу доказујемо на основу студије случаја и резултата истраживања. На основу прикупљених података можемо видјети да се из године у годину повећава број корисника дигиталних производа и услуга, те да расте промет по основу примјене дигиталних иновација у банкарству. Према приказаним резултатима истраживања, потврђена је и друга помоћна хипотеза.

Након провјере помоћних хипотеза, и главна хипотеза (H0) потврђена је као истинита. Стратегија дигитализације доприноси побољшању перформанси банке кроз развој и примјену нових производа и услуга, кроз повећање броја клијената, раст промета по основу употребе дигиталних рјешења, те у коначници кроз jaчање тржишне позиције банке. Главна истраживачка хипотеза је потврђена прегледом литературе, као и на основу прикупљених података приказаних у истраживачком дијелу



**Graphic presentation number 5.** The number of users of electronic and mobile banking in Bosnia and Herzegovina.



Source: Data processed by the author

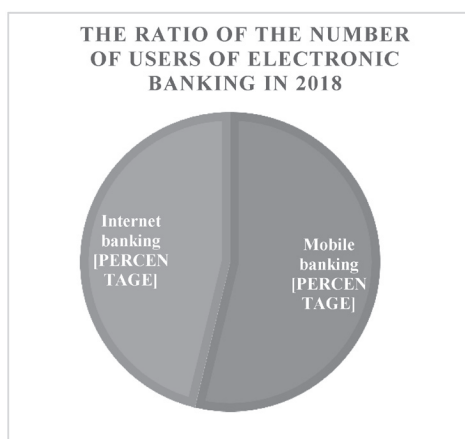
**Table number 6.** Users of mobile and Internet banking in BiH

Mobile banking – legal entities	Mobile banking – private individuals	Mobile banking – total	Internet banking – legal entities	Internet banking – private individuals	Internet banking – total	Mobile and Internet banking - TOTAL
1.783	357.265	359.048	56.887	251.616	308.503	667.551

Source: Annual report by CBBiH, Card transactions in BiH 2018.

The number of users of electronic and mobile banking has doubled in the last 4 years, and proof of the upward trend in the use of electronic banking services is the fact that in 2018 Bank 1 increased the volume of payment transactions by 18% in relation to the year before, with the internal payment transactions only. This bank started to use this digital channel for the purposes of promotion and sale of other products and services too; thus in 2018 it placed more than 400 loans the applications for which had been submitted via electronic banking.

**Graphic presentation number 6.** The relation between the number of users of electronic banking in 2018.



Source: Data processed by the author.

### 3.3. Hypothesis testing

One major and two sub-hypotheses were set in this paper. The major hypothesis runs as follows: Application of innovative strategies through the process of digitalisation positively impacts on the development of banking business which is reflected in strengthening the bank's competitive position, increase in the number of its clients, increase in the number of transactions and volume payments, as well as in an improvement of the bank's other performances.

Major hypothesis testing was done by reviewing the collected literature and analysing the collected data in the research part.

The first sub-hypothesis (H1) runs as follows: Application of modern information technology in banking contributes to the creation of digital products and services that have an impact on better banking business performances, as well as strengthening of the bank's competitive position on the market. On the basis of analysis of the collected literature and data published in the research carried out by Unicredit Bank (2018), Deloitte (2016) and Financial IT (2017), we can conclude that there is a tendency towards the digitalisation of banking products and services, as well as that the digital transformation has a huge impact on the banking sector and achieved business results, that it contributes to an improvement of the business performances of banking operation, especially when bearing in mind the fact that the competition in the area of financial service providers has mushroomed. In accordance with the indicators of the stated researches, we can say that the first sub-hypothesis has been confirmed, that is, that digitalisation contributes to the strengthening of the bank's performances and its market position.

The second sub-hypothesis (H2) goes as follows: By digitalising banking products and services banks win new clients, find new ways of promotion and sale of their products, and achieve growth in the number and volume of transactions. We prove the second sub-hypothesis on the basis of case study and research results. We can see on the basis of the collected data that the number of users of digital products and services increases year by year, as well as that turnover based on the application of digital innovations in banking is growing too. According to the research results presented, the second sub-hypothesis has been proven too.

After the sub-hypotheses were tested, the major hypothesis (H0) was confirmed to be true. Digitalisation strategy contributes to an improvement of bank performances via the development and application of new products and services, via increased number of clients, increase in the turnover based on the use of digital solutions, and finally through strengthening the bank's position on the

rada. Rezultati istraživanja koji su nas usmjerili u pravcu prihvatanja glavne hipoteze jesu:

- prosječno godišnje povećanje broja izdatih kartica na teritoriji BiH za 2,8%;
- konstantan rast broja izdatih kartica kod posmatranih banaka;
- prosječan godišnji rast prometa ostvarenog karticama izdatim u BiH za 8,6%;
- prosječan godišnji rast broja korisnika internet bankarstva za 33%;
- rast broja korisnika elektronskog i mobilnog bankarstva kod posmatranih banaka;
- konstantan rad na razvoju i primjeni novih digitalnih rješenja (paypass, Gcas, mpos tehnologija, e-commerce, mvalet...);
- razvoj novih oblika kompanija specijalizovanih za obavljanje određenih oblika bankarskih poslova.

## DISKUSIJA I ZAKLJUČAK

Preduzeća i preduzetnici učestvuju u oblikovanju promjena, kroz definisanje strategija i organizacione strukture, pri čemu treba imati u vidu da ne postoji jedna strategija koja je jednako dobra za sva preduzeća, jer upravo uspjeh strategije zavisi od razlika koja preduzeća ispoljavaju, te od uslova koje nameće okruženje. Definisanjem strategije digitalizacije bankama je omogućeno da razviju proizvode i usluge koji će privući nove kategorije klijenata, uz istovremeno zadržavanje postojećih, jer digitalizacija doprinosi povećanju efikasnosti poslovanja postojećih banaka, uz mogućnost stvaranja novih (virtuelnih) oblika banaka, širenju saradnje sa kompanijama iz drugih oblasti, kao što su telekomunikacione kompanije, što je dodatno bankama omogućilo i kreiranje nove baze klijenata. U procesu transformacije bankarstva usljed digitalizacije, banke su različito reagovala na promjene. Istraživanja iz 2014. godine su pokazala da četvrtina vodećih svjetskih banaka transformaciju posmatra samo na projektnoj osnovi za budući period, 42% banaka digitalizaciju posmatra kao sastavni dio poslovanja, dok je 32% banaka osnovalo posebnu poslovnu jedinicu unutar organizacije (Krstić i Tešić, 2016). Dilojt (Deloitte, 2016) je u svojim istraživanjima došao do zaključka da 90% banaka vjeruje da digitalna transformacija ima veliki uticaj na bankarski sektor i na ostvarene rezultate, pri čemu čak 95% banaka ima jasnu viziju za primjenu strategije digitalne transformacije. Istraživanja Unikredit banke (2018) ukazuju na to da demografski trendovi idu u korist digitalizacije poslovanja, posebno ukazujući na to da se upotreba internet bankarstva u nekim zemljama udvostručila. Istraživanja posebno ukazuju na povećanje broja fin-teh kompanija, pri čemu se više od 50% kompanija bavi poslovima iz oblasti finansija, transakcija i plaćanja.

Banke danas teže digitalnoj organizaciji procesa, posebno u oblasti kreditiranja, platnog prometa, kartičarstva. Uticaj interneta, mobilnih uređaja, razvoj mogućnosti prikupljanja i obrade velike količine podataka jesu faktori koje su banke morale uzeti u obzir u definisanju strategije poslovanja. Analizirajući prikupljene podatke došli smo do saznanja koja ukazuju na sve veću primjenu strategije digitalizacije u poslovanju banaka na teritoriji BiH. Od uvođenja prvih bankomata i POS terminala, do razvoja kartičnog poslovanja, digitalizacija proširuje svoj uticaj na bankarsko poslovanje kroz uvođenje elektronskog i mobilnog bankarstva, i-komerc (e-commerce) platformi, mvalita (mvalet) i ostalih digitalnih rješenja. Banke bilježe rast u broju instaliranih uređaja (prosječan rast od 6,08% POS i 2,65% ATM

godišnje), broju korisnika kartica (prosječan rast od 2,8% godišnje), ali poseban rast je zabilježen kod broja korisnika digitalnih kanala plaćanja (prosječan rast od 33,3% godišnje). Odnos ove dvije digitalizovane usluge govori da je od ukupnog broja registrovanih digitalnih korisnika u 2018. godini 54% korisnika mobilnog bankarstva, dok je 46% korisnika elektronskog bankarstva. Prema podacima CBBiH za 2018. godinu, u BiH je registrovano ukupno 359.048 korisnika mobilnog bankarstva, od čega je 357.265 korisnika fizičkih lica, dok su 1.783 korisnika pravno lice. Sa druge strane, kada je riječ o internet, odnosno elektronskom bankarstvu, podatak za 2018. govori da je registrovano 251.616 korisnika elektronskog bankarstva, fizičkih lica i 56.887 pravnih lica kao korisnika elektronskog bankarstva.

Digitalizovane banke će se u budućnosti sve više okretati ka potrošačima, uz diferenciranje svojih proizvoda i usluga, većim ulaganjem u tehnologiju prikupljanja i obrade podataka. Banke treba da rade na izradi strategije koja će doprinosti povećanju korištenja digitalnih proizvoda i usluga banke, pogotovo ako se uzmu u obzir podaci koji govore da digitalne usluge u većem obimu koriste privredni subjekti, dok se stanovništvo i dalje uglavnom opredjeljuje za šalter. Potrebno je raditi na jačanju interakcije u radu sa karticama, podnošenje zahtjeva za ostale usluge putem interneta, te povećati obim plaćanja putem elektronskog i mobilnog bankarstva. Da bankarsko poslovanje ide u pravcu sve veće primjene nekog od oblika digitalnog načina plaćanja pokazuju i rezultati istraživanja u dijelu koji se odnosi na promet karticama, a koji pokazuje prosječno povećanje prometa od 8,6%.

Provedeno istraživanje nameće potrebu za dodatnim istraživanjima, koja bi trebalo da pruže uvid i u:

- strukturu transakcija, kako bi se vidjelo za koja plaćanja se najčešće koriste digitalni kanali;
- volumen transakcija, kako bi se vidjelo koliko od ukupnog prometa banke se obavlja preko digitalnih kanala;
- strukturu klijenata koji su korisnici digitalnih proizvoda i usluga, kako bi banke mogle usmjeriti svoje akcije na privlačenje različitih kategorija klijenata.

Nakon analize dobijenih rezultata istraživanja, kao i pregleda prikupljene literature, smatramo da su postavljene hipoteze dokazane, te zaključujemo da inovativna strategija digitalizacije doprinosi poboljšanju i razvoju poslovanja banke, kroz uvođenje novih oblika proizvoda i usluga, povećanje broja klijenata, povećanje broja i volumena transakcija.

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market. The main research hypothesis was confirmed following a review of literature and on the basis of the collected data presented in the research part of the work. The research results that have directed us toward accepting the major hypothesis are the following:

- Average annual increase in the number of issued cards on the territory of BiH by 2,8%,
- Constant growth in the number of issued cards at the observed banks,
- Average annual growth in turnover realised by means of cards issued in BiH by 8,6%,
- Average annual growth in the number of users of Internet banking by 33%,
- Growth in the number of users of electronic and mobile banking at the observed banks,
- Constant work on the development and application of new digital solutions (paypass, Gcas, mpos technology, e-commerce, mWallet...)
- Development of new forms of companies specialised in performing certain forms of banking business.

## DISCUSSION AND CONCLUSION

Enterprises and entrepreneurs participate in shaping changes, through the definition of strategies and organisational structure, whereby one should bear in mind that there is no single strategy which is equally good for all enterprises, because the success of a strategy depends precisely on the differences manifested by the enterprises, and on conditions imposed by the environment. Defining the digitalisation strategy has allowed banks to develop products and services that will attract new categories of clients, and at the same time keep the existing ones, because the digitalisation contributes to increased efficiency of the existing banks, with the possibility of creating new (virtual) bank forms, expanding cooperation with companies operating in other areas, such as telecommunication companies, which has additionally allowed banks to create new client base. In the process of banking transformation due to digitalisation, banks have reacted to changes differently. Researches from 2014 proved that one quarter of the leading world banks see transformation only at the future project level, 42% of the banks see digitalisation as an integral part of the business operation, while 32% have formed special business unit within their organisation (Krstić and Tešić, 2016). Deloitte (2016) came to the conclusion that 90% of the banks believe that digital transformation has a huge impact on the banking sector and realised results, whereby even 95% of the banks have a clear vision for the application of digital transformation strategy. Researches carried out by Unicredit Bank (2018) indicate that demographic trends are beneficial for business digitalisation, and in particular, that the use of Internet banking in certain countries has doubled. Researches especially indicate an increase in the number of fintech companies, whereby more than 50% of the companies deal with activities in the areas of finance, transactions and payment.

Nowadays banks tend to organise their processes digitally, especially in the area of loans, payments, and card transactions. The impact of Internet, mobile devices, the development of possibility of collecting and processing huge amounts of data are factors that banks have to take into consideration when defining business strategy. Analysing the collected data we have come to know that the digitalisation strategy is being applied in the business operation of the banks on the territory of BiH all the more. From the introduction of the first automated teller machines and POS terminals to the development of card business, digitalisation expands its impact on the banking business through the introduction of electronic and mobile banking, e-commerce platforms,

m-Wallets and other digital solutions. Banks record growth in the number of installed devices (with an average POS growth by 6.08% and ATM growth by 2.65% annually), growth in the number of card users (an average growth by 2.8% annually), especially in the number of users of digital payment channels (an average growth by 33.3% annually). The relation between these two digitalised services implies that out of the total number of registered digital users in 2018, 54% are users of mobile banking, and 46% are electronic banking users. According to the data of CBBiH for 2018, there are 359.048 registered users of mobile banking in BiH, 357.265 users being private clients and 1.783 being legal entities. On the other hand, when it comes to the Internet, that is electronic banking, the data for 2018 imply that there are 251.616 registered users of electronic banking, including private clients and 56.887 legal entities as users of electronic banking.

In the future, digitalised banks will more and more frequently turn to consumers, by differentiating their products and services and investing into the technology of data collection and processing. Banks should work on developing a strategy that will contribute to an increased use of digital products and services of the bank, especially if we take into account data that says that digital services are to a greater extent used by economic subjects than the population that still prefers teller windows. Work needs to be done on strengthening the interaction in working with cards, submission of applications for other services via the Internet, as well as increasing the scope of payments made via electronic and mobile banking. That the banking business is heading in the direction of an all-the-greater application of one of the forms of digital payment methods is also shown by the results of the research in the part that pertains to the card turnover and which demonstrates an average increase in the turnover by 8,6%.

The conducted research imposes the need for additional investigations that should provide insight into the following:

- Structure of transactions, in order to see which payments use digital channels the most often,
- Volume of transactions, in order to see how much of the total bank turnover is done via digital channels,
- Structure of clients who are users of digital products and services, in order for the banks to be able to direct their actions towards attracting different categories of clients.

On the basis of the analysis of the obtained results of research, as well as on the basis of the review of the collected literature, we believe that the set hypotheses have been proven, and conclude that the innovative digitalisation strategy contributes to the improvement and development of the bank's business operation through the introduction of new forms of products and services, increase in the number of clients and the number and volume of transactions.

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