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THE POTENTIAL AND STATE OF DEVELOPMENT OF DIGITAL BANKING IN SERBIA

Potencijal i stanje razvoja digitalnog bankarstva u Srbiji

Abstract

Digitization of processes and services is one of the biggest challenges of modern banking. Driven by the principles of profitability and maximizing user experience, banks conduct the implementation of digital products and services, which affects reorganization of resources and all activities of the banks. Rapid changes in clients' behavior and new technological possibilities are directing banks to the goal of ensuring prompt availability of resources, through real time transactions and loan approval. This paper presents a comparative analysis of the digital banking development in the banking sector in Serbia, focusing on availability of products and services that are current on the market, with follow-up on the same type of trends in the region and the European Union. It also discusses the potential and limitations in the application of a digital concept in banking, such as application of digital signature, demographic characteristics, regulation, technological capabilities and general features of the domicile economy.

Keywords: *digital banking, comparative analysis, digital transformation, digitization, Serbia.*

Sažetak

Digitalizacija procesa i usluga predstavlja jedan od najaktuelnijih izazova u savremenom bankarstvu. Uvažavajući principe profitabilnosti i maksimizacije korisničkog iskustva, implementacija digitalnih usluga i proizvoda u bankarstvu sprovodi se sa ciljem razvoja preorijentisanog pristupa koji pretpostavlja reorganizaciju resursa i aktivnosti na nivou banaka. Izuzetne promene u navikama klijenata i nove tehnološke mogućnosti usmeravaju banke ka cilju obezbeđivanja promptne dostupnosti resursa, kroz trenutnu realizaciju transakcija i odobrenje kredita. U radu je predstavljena komparativna analiza razvoja digitalnog bankarstva na nivou bankarskog sektora Srbije, sa fokusom na zastupljenost proizvoda i usluga koji su aktuelni na tržištu i osvrtom na istovrsne trendove u zemljama regiona i Evropskoj uniji. Takođe, razmatraju se potencijali i ograničenja u primeni digitalnog koncepta u poslovanju banaka, poput primene digitalnog potpisa, demografskih karakteristika, regulacije, tehnoloških mogućnosti i opštih karakteristika domicilne privrede.

Cljučne reči: *digitalno bankarstvo, komparativna analiza, digitalna transformacija, digitalizacija, Srbija.*

Introduction

The strategic determination of banks towards digital transformation is a necessity for many reasons. Intense competition, increasingly demanding needs of clients and new technology platforms create an environment in which the survival of banks' operations is questionable, unless all dimensions of the market approach are adapted to the new digital concept. The majority of foreign-owned banks in the banking market of Serbia (76.1% according to the balance sheet assets criteria) contributed to the boom of application of new technologies and the introduction of the most up-to-date services that provide clients with speed, simplicity and significantly lower fees. On the global and domestic market, mobile banking has become a priority in further development of digital banking channels.

Comparative analysis of digital banking market in Serbia

The expansion of digital products and services is more pronounced in retail banking - 29 out of 31 banks offer Internet banking service, 24 banks mobile banking service and 30 banks SMS service (Table 1). In order to improve clients' satisfaction, special functionalities of mobile banking applications have been developed and presented to the market. Telenor banka introduced itself in 2013 as the first mobile bank in Serbia and induced a more intense approach of competitors when it comes to addressing clients' needs on digital platforms. The possibility of paying checks by photographing them (Erste Bank and Addiko Bank), withdrawing cash from ATMs using a mobile application (Telenor banka and Komercijalna banka), mobile contactless payments at POS terminals (Banca Intesa and Komercijalna banka) are just some of the most current innovations in the area of mobile banking in Serbia. Physical presence of clients in banks' premises while making payments is not a necessity, but in the case of signing a loan contract or opening an account there is no an end-to-end online process. According to Article 13 of the Law on the Prevention of Money Laundering and Terrorist Financing, for the identification of a client by the bank, its physical presence is required. The obligation

to physically identify clients is imposed in the case of concluding a current account contract and a loan agreement, and regulatory restrictions of this kind prevent banks from fully developing digital lending services.

Online account opening is offered by 9 out of a total of 31 banks, with the process reflected in filling out the form with data necessary for preparation of contract documents and physical identification of the client in the banks' premises. By introducing the courier service, Telenor banka adapted online current account process by avoiding regulatory restrictions, and enabled conclusion of current account and loan agreements without the necessary presence of a client in the business units of the bank.

Online loan application has been developed by 17 banks on the market, out of which 10 banks offer a process which consists of filling out the form on a public website (Table 1), a call from an advisor and at least two visits to the branch for the purpose of submitting a loan application and necessary documentation, and signing of the loan agreement. Filling out the form on the website is available to both clients and non-clients, which makes this type of digital service also a significant acquisition channel.

Banca Intesa, Direktna banka, Société Générale banka Srbija and Telenor banka have developed an online loan application submission exclusively for bank clients on the Internet banking (web-based) application. Société Générale banka Srbija is also the only bank on the market that has introduced the use of a qualified electronic signature for signing contractual documents, which allows clients to access their loan funds instantly from the moment of placement. Sending documentation by uploading it via website or by e-mail is a part of online loan application process in Erste Bank, Raiffeisen banka and VTB banka, which encourages clients to use reliably Internet and mobile devices in interaction with the bank. The most common forms of preferential pricing for online loan application are lower interest rates and/or processing fees.

In corporate banking, all banks on the market offer Internet banking services, except for Telenor banka and Bank of China Srbija. Mobile banking application for entrepreneurs and legal entities is offered by Eurobank, ProCredit Bank, Raiffeisen banka and Sberbank Srbija. Given that the primary focus in digital banking market

is oriented to further development of mobile banking, an even greater presence of mobile banking services for legal entities in the Serbian market can be expected. The availability of banking services provided by the development of digital services and products also presupposes the use of multifunctional ATMs (terminals). In addition to classical functions, such as cash withdrawal and insight into account balance, cash payment and payment of invoices are becoming more and more pronounced services at ATMs in Serbia. Multifunctional ATMs take up a significant amount of work that traditionally took

place in branches and sub-branches, with the aim of reorienting the role of the branch from the service and administration to the advisory role.

In 2015, ProCredit Bank opened the first self-service zones in Serbia. In 34 business units, the use of currency exchange ATMs, transaction terminals (which include services such as payment of bills and currency conversions), account terminals and deposit boxes [28] are available to retail and corporate clients. The self-service zone is a separate part of the branch, which clients can access at any time. Eurobank, Raiffeisen banka, Telenor banka,

Table 1: Comparative analysis of the digital banking market in Serbia

Bank	Retail banking					Corporate banking	
	Internet banking	Mobile banking	SMS banking	Online loan application*	Online current account opening	Internet banking	Mobile banking
Addiko Bank							
AIK banka							
Alpha Bank Srbija				Form			
Banca Intesa				Clients only			
Banka Poštanska štedionica							
Bank of China Srbija							
Crédit Agricole banka Srbija				Form			
Direktna banka				Clients only			
Erste Bank							
Eurobank				Form			
Findomestic banka							
Halkbank							
JUBMES banka							
Jugobanka Jugbanka							
Komercijalna banka							
Marfin banka							
MIRABANK							
MTS banka							
NLB banka				Form			
Opportunity banka							
OTP banka Srbija				Form			
Piraeus Bank				Form			
ProCredit Bank				Form			
Raiffeisen banka							
Sberbank Srbija				Form			
Société Générale banka Srbija				Clients only			
Srpska banka							
Telenor banka				Clients only			
Unicredit Bank Srbija				Form			
Vojvodanska banka				Form			
VTB banka							
Total number of digital products/services	29	24	30	17	9	29	4

*Form - End-to-end application process is not present, but the user completes a short form and the process continues in the branch office;

Clients only - The application is only available to the bank's clients and does not represent an acquisition channel;

Blank - Full online application process.

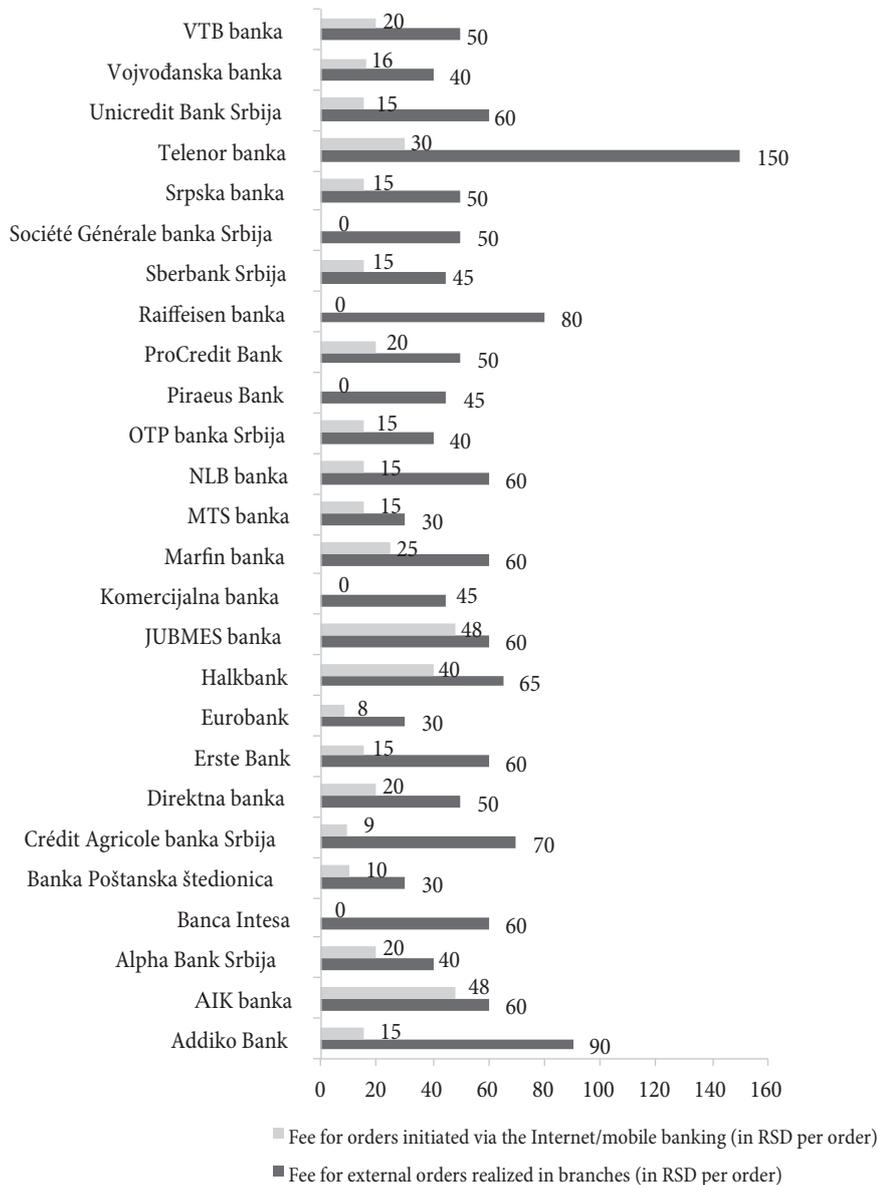
Source: Authors' own illustration based on [1] and [2], [3], [5], [6], [7], [9], [10], [12], [13], [14], [15], [16], [17], [18], [19], [20], [21], [24], [25], [26], [27], [28], [29], [32], [38], [39], [40], [41].

Unicredit Bank Srbija and Vojvođanska banka also have a network of multifunctional ATMs.

One of the advantages of using digital products and services are significantly lower fees for payment orders in relation to the ones realized in the branch. Observed individually at the level of each bank on the Serbian market (Figure 1), the difference in the minimum fee charged for external non-cash orders and the minimum fee for orders executed via the Internet/mobile application ranges from 12 dinars (AIK banka and JUBMES banka) up to 120 dinars per payment order (Telenor banka).

Fees for external non-cash orders realized in the branch are higher by 1.3 to 7.8 times compared to orders initiated via the Internet/mobile application. Analysis of income statements of the 10 biggest banks on the market indicates that the share of fee and commission income in total revenues is at the level of 80.4% (Figure 2). High contribution of fee and commission income to profitability and their expressed variability indicates that a massive use of digital channels for payments and other services represents a potential risk to the profitability of banks. Maintaining the principle of economies of scale and

Figure 1: Comparison of fees for external orders realized in branches and fees for orders initiated via the Internet/mobile banking (in RSD per order)



Source: Authors' calculation and illustration based on [1] and [2], [3], [5], [6], [7], [9], [10], [12], [13], [14], [15], [16], [17], [18], [19], [20], [21], [24], [25], [26], [27], [28], [29], [32], [38], [39], [40], [41].

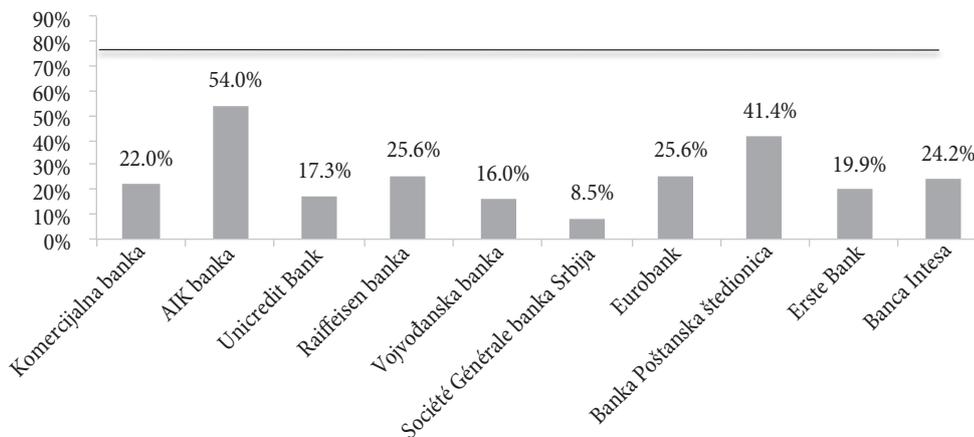
reduction of administrative costs at the level of business units (branches and back office units), increase in volume and number of transactions with a decrease in the number of employees, are certain consequences of digitization in the long run.

In spite of the pronounced variability of the share of fee and commission income in the total net operating income, considering banks separately - from 8.5% in Société Générale banka Srbija to 54% in AIK banka (Figure 2), the value of Herfindahl - Hirschman's fee concentration index (877) on a level of the top 10 banks in Serbia indicates a non-concentration of fee income. Income variability is complementary to the significant differences in fees at the level of individual external payment order (Figure 1), taking into account the different pricing policies of banks in the process of implementing an individual digital transformation strategy.

Relevant indicators for further development of digital products and services and the strategic determination of banks in the process of internal and external digitization are also the relationships between the number of employees, the number of business units and the ATM network (Table 2). Traditional banking is characterized by a diversified network of business units, which is complementary to a larger number of employees in the banking sector. The presence of ATMs and related services that supersede the need for a physical presence of banks in the form of branches points to the development of a digital approach in management of Serbian banks.

The ratio of the number of ATMs to the number of business units ranges from 1.09 in the case of Société Générale banka Srbija to 2.46 in the case of AIK banka. The ratio of the number of employees in relation to the number of business units ranges from 10.61 in the case

Figure 2: Concentration of fee and commission income



Source: Authors' calculation and illustration.

Table 2: Comparative analysis of the indicators of the digital banking market in Serbia

Bank	Number of business units	Number of ATMs	Number of employees	Rank according to the criteria of balance sheet assets	Number of ATMs/ Number of business units	Number of employees/ Number of business units
Banca Intesa	187	270	3,025	1	1.44	16.18
Komercijalna banka	228	269	2,852	2	1.18	12.51
Unicredit Bank Srbija	71	99	1,204	3	1.39	16.96
Raiffeisen banka	86	125	1,566	4	1.45	18.21
Société Générale banka Srbija	97	106	1,336	5	1.09	13.77
AIK banka	57	140	605	6	2.46	10.61
Eurobank	72	126	1,447	7	1.75	20.1
Banka Poštanska štedionica	149	261	1,885	8	1.75	12.65
Erste Bank	76	157	1,027	9	2.07	13.51
Vojvodanska banka	105	137	1,468	10	1.3	13.98
Total	1,128	1,690	16,415	-	-	-

Source: Authors' calculation and illustration based on [1] and [2], [3], [5], [6], [7], [9], [10], [12], [13], [14], [15], [16], [17], [18], [19], [20], [21], [22], [24], [25], [26], [27], [28], [29], [32], [38], [39], [40], [41].

of AIK banka to 20.10 in the case of the Banka Poštanska štedionica (Postal Savings Bank). The mentioned banks belong to the second half of the ranking according to the size of the balance sheet assets. On the other hand, the largest banks are characterized by lower values of the number of ATMs per business unit and higher values of the number of employees to the number of business units ratio, indicating a significant physical presence of banks on the market and potential further consolidation of the banking sector in the process of digital transformation of the traditional banking.

Potentials and restrictions in further development of digital banking in Serbia

Digital transformation assumes the implementation of a long-term strategy at the level of individual banks, which is manifested in the form of certain tendencies at the level of the banking sector. Structural capital, as a component of overall intellectual capital, is under the greatest influence of the digital transformation of banks. Structural capital plays an important role in value creation that results in higher values of total assets and ROE of Serbian banks [8, p. 297]. Taking into account the movement of certain indicators, it can be concluded that the potential for further development of digital banking in Serbia is reflected in:

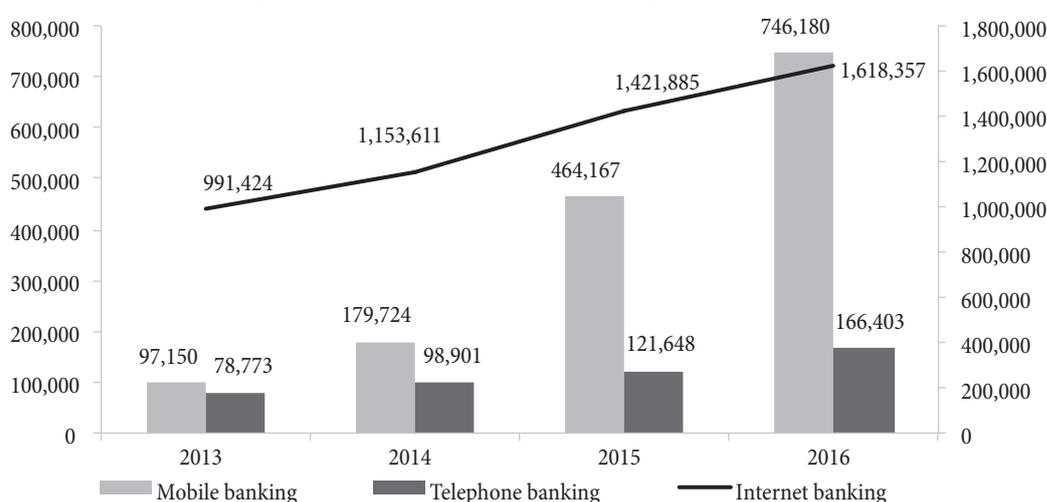
- Increase in the number of users of mobile and Internet banking services,

- Increase in the number and volume of payments initiated using digital channels (Internet, mobile banking and ATMs)
- Increase in the number of Internet users, computers and the use of mobile phones.

Acceptance of digital banking services by clients has a growing tendency, especially in the area of mobile banking (Figure 3). In the period from 2013 to 2016, the number of mobile banking users in Serbia has increased by 649,030, and Internet banking users by 626,933. A positive trend confirms that mobile banking will represent the dominant digital channel in the future and that a justified focus of development is the one oriented on the functionalities and possibilities of using a mobile phone in banking. Phone banking also recorded growth in the observed period (from 2013 to 2016), but significantly lower - by 87,630 users.

The trend of the reduced number and volume of cash payments followed by increase in the number and volume of transactions initiated using digital channels also pose positive trends in Serbia's digital banking market (Figure 4). In the period from 2013 to 2016, the number of cash payments decreased by 6.7 million transactions, while mobile banking transactions increased from 188,518 in 2013 to 2,085,549 in 2016. Also, transactions through Internet banking increased by 20%, and ATM payments grew by 2000% (from 5,658 in 2013 to 117,540 in 2016). Cash transfers initiated by clients in a branch are reduced

Figure 3: Number of users by type of payment service



Source: Authors' illustration based on [23].

by 15%, indicating that clients have potentially migrated to digital channels. Greater availability of computers, the Internet and the use of mobile phones are a precondition for the development of digital banking (Table 3). The potential is manifested in the increase of household computers by almost 40% over a period of 10 years, the increasing access to the Internet by 46% and the increasing use of the mobile phone by 22%. Also, Internet usage for Internet banking has increased from 12.9% in 2015 to 19.2% in 2016. The Internet is mostly accessed from the smartphones (76.5%) and computers (72%), which makes the expansion of mobile phones in digital banking services once again confirmed by the presented tendencies in the banking market of Serbia. Benefits for banks in the massive use of mobile banking are reflected in [35, p. 98]:

- Increasing market share,
- Reduction in operating costs,
- Acquisition of new clients and deposits,
- Personalized contact with the client,
- Better positioning on the market.

Factors that may have a limiting impact on the digital transformation of banks in Serbia are:

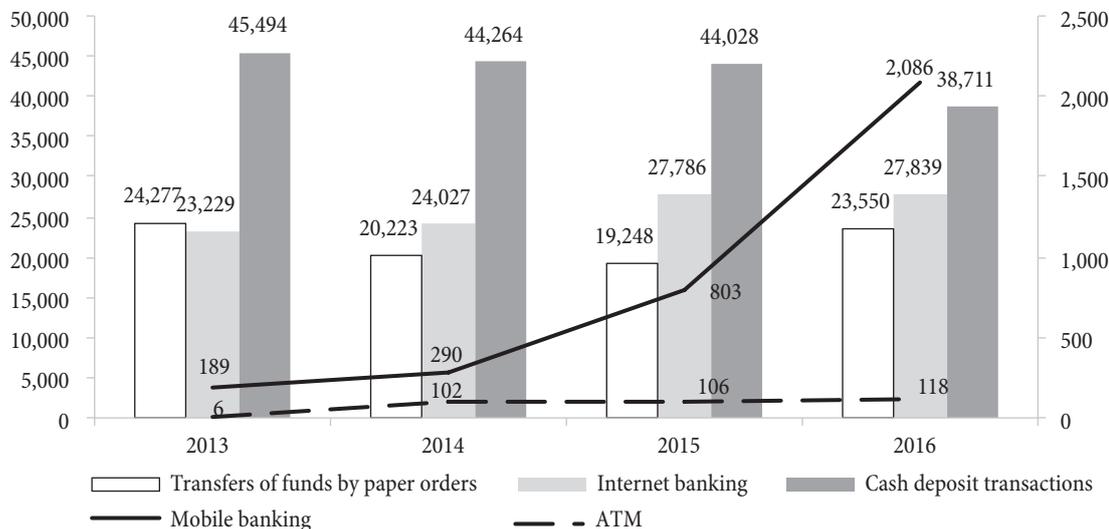
- Technical and technological,
- Regulatory,
- Education of users,
- Gray economy and living standard.

The dominant limiting factor is technical and technological aspect for further development of digital

banking. The development of digital products and services presupposes long-term investments that require the investment of significant assets. Banks that do not invest in the development and implementation of the digital concept are at risk of significant loss of clients, and accordingly, the risk of decrease of business volume and profitability. New technology enables strategic planning by superior data mining through collection, analysis, and sharing of huge amounts of longitudinal data generated inside and outside the company, which has never been available before [11, p. 244]. In this context, the application of new technologies to the process of digital transformation of the bank implies education, pre-qualification and investment in human capital. Successful digital transformation means that banks will need to continue with existing services, while developing strategies to manage the shift in the service mix (e.g. support more self-directed clients) [36, p. 37].

Regulatory constraints also primarily affect banks as providers of digital services - the inability of laws and regulations to be modified at the speed of rapid changes on the market are most pronounced in the domain of digital signature application and clients' identification based on their physical presence. User education is also a significant factor that affects the acceptance of digital products and services. Digital literacy is also reflected in the use of Internet and, according to the Statistical Office of the Republic of Serbia, 29.2% of citizens in Serbia never used the Internet [34, p. 37]. Individuals who do not use

Figure 4: Number of transactions by type of payment service (in 000)



Source: Authors' illustration based on [23].

the Internet are predominantly older than 55 years of age and have a lower level of education.

Investing in digital literacy and education represents the potential of banks to acquire new clients through the channels of digital banking products and services. The prerequisite for expansion of digital banking is also the reduction of the gray economy and the increase in the purchasing power of clients. Estimation of the share of gray economy in gross domestic product in 2010 was 30.1%. The gray economy directly affects the illegal cash flows, which indicates that a certain part of the earnings are received in cash, which in turn implies a lack of need for opening a current account and making payments through digital channels. The higher costs of personal consumption in relation to the average income of population in Serbia - 56,624 to 60,720 RSD [33] indicates a big challenge for banks in enrollment of new and existing customers in digital banking and in increasing profitability.

Enterprises that excel in digital transformation process are distinguished by: strong overarching digital

Table 3: Indicators of the use of information and communication technologies in Serbia

Year	Desktop computers in households	Internet access	Mobile phone use
2006	26.5%	18.5%	70.0%
2010	50.4%	39.0%	82.7%
2016	65.8%	64.7%	91.8%

Source: [34].

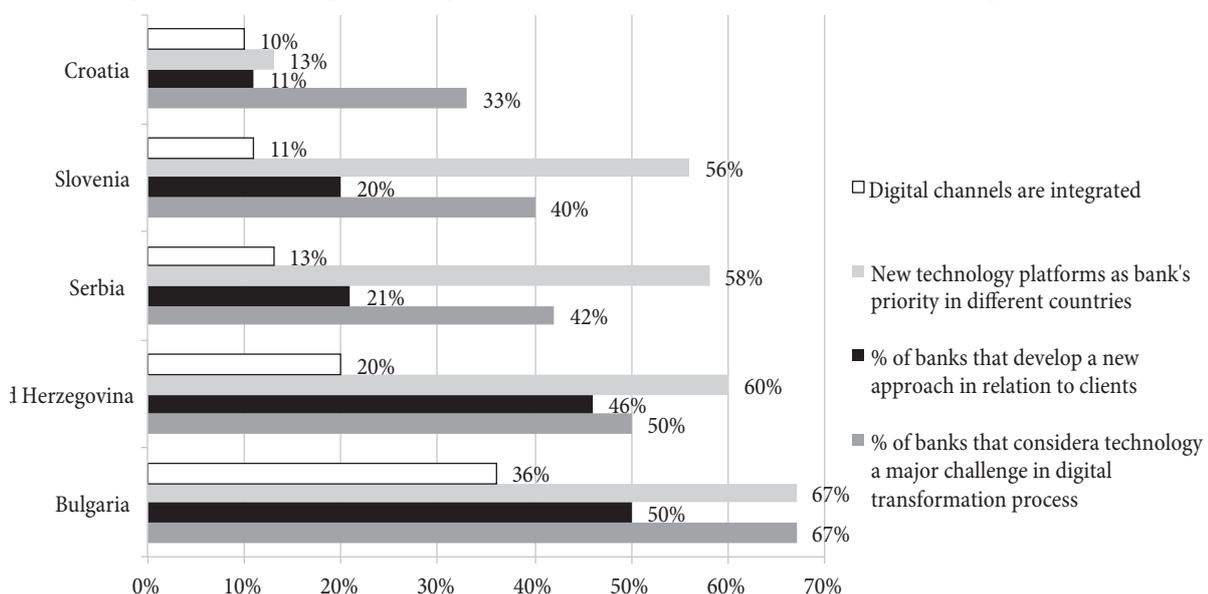
vision, excellent governance across silos, many digital initiatives generating business value in measurable ways, strong digital culture [37, p. 25]. The challenges of banks in Serbia on the path to digital transformation are identical when it comes to the banking systems of the countries in the region, including the ones in the European Union. Employees in banks in Croatia, Slovenia, Serbia, Bosnia and Herzegovina and Bulgaria have similar attitudes to some aspects of digital transformation (Figure 5).

The biggest identified challenges of the digital transformation process are the development of technology and implementation of a new technology platform that integrates digital channels into a unique multifunctional ecosystem. Bankers in Bosnia and Herzegovina (88%) and Croatia (55%) consider the implementation of a general business strategy that incorporates digital strategy as the main challenge of the banks in digitization. In Bulgaria, management (78%) and security (78%) are aspects that require special approach and engagement, while the budget is cited as the biggest challenge in digital transformation for bankers in Serbia (63%) and Slovenia (80%) [4, p. 11].

Conclusion

The speed of changes in digital banking indicates the necessity of banks to adapt their strategic orientation to emerging clients' needs, new technological solutions and

Figure 5: Certain aspects of digital transformation of banks in the surrounding countries



Source: [4, p. 10].

the emergence of new forms of competition. The high rate of acceptance of new technologies (smartphones), social networks and other digital trends have caused massive changes in consumer behavior in all industries. These trends also correlate with the requirements for greater quality, speed and simplicity in the use of banking products and services. The banking market of Serbia is under the dominant influence of foreign capital, and such an environment is favorable for significant investments that require digitization.

Regulatory environment is a major challenge and uncertainty in the banking business, since it is not worthwhile to develop and invest in products and services whose complete digital application is conditioned by rudimentary identification and security regulations. Regulatory barriers restrict the acquisition function of digital products and services. A positive trend is the growing migration of cash into non-cash transactions and the massive use of mobile banking and mobile phones, bringing the market of bank clients in Serbia to the most developed markets in terms of habits and behavior. The surrounding countries, including EU member states, face the same challenges of digital transformation as banks in Serbia - with particular emphasis on the problem of incorporating the digital strategy into a general business strategy. In the process of digital transformation of banks in Serbia, the priority strategic activities are client education, increase of client satisfaction, adjustment of price policy to new market trends and competition and implementation of new business processes complementary to the concept of digital banking.

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