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# ANALYSIS OF SUPLLY AND DEMAND FOR ELECTRONIC BANKING SERVICES IN THE SOUTH BAČKA REGION

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UDC 336.71:004	<b>Abstract:</b> The subject of this paper is the research of the electronic banking services market in the South Bačka region. The aim of this paper is to systematise the supply of services by commercial banks. On the other hand, the aim of the paper is to evaluate the extent to which citizens use electronic banking services. The research methodology includes the application of the analytical method to the evaluation of the
Review paper	banking sector's supply of services, the survey method and the statistical processing of data in the empirical analysis of demand. The results of the research showed that there is a rich offer of electronic banking services in the Republic of Serbia and that it is widely accepted.
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## 1. Introduction

The subject of this paper is the analysis of the electronic banking services market in Novi Sad, as the regional center of the South Backa region. There are 26 commercial banks operating in the Serbian market. Most of them offer electronic

banking services. The aim of the research is to determine the size of demand for these services by individuals in the South Backa region. The results obtained will be generalized at the level of the more developed parts of the Republic of Serbia.

Electronic banking has a number of advantages over traditional banking. The benefits are reflected in space and time, transaction speed and low cost. Customers are given greater control over their own accounts, easier access to cash, while making it easier for banks to penetrate the market.

The paper uses data from the website of the National Bank of Serbia, as well as that from the websites of specific commercial banks. As for the empirical research into the demand for e-banking services, the survey method and the statistical method were used to process the data collected.

The paper consists of four parts in addition to the Introduction and the Conclusion. The first part interprets the research to date on the topic, from literature analyzing issues in high-developed countries to research in developing countries, including Serbia. The theoretical and methodological part forms the second part of the research. The third part of the paper presents the results of an analysis of the offer of electronic banking services in the Republic of Serbia on the basis of data available on the website of the National Bank of Serbia. The fourth part of the paper summarizes the results of a survey conducted to collect information on demand for electronic banking services.

## 2. Review of empirical literature

The development of information and communication technologies is affecting financial institutions worldwide. Their evolution has transformed the way banks provide their services, using technologies such as ATMs, telephones, the Internet, credit cards and electronic money. In this spirit, banking in Serbia is undergoing changes. Many banks invest in internet technology to maintain a competitive edge. There is ample empirical evidence of this.

Different aspects of information and communication technologies in the context of a developing country are presented in the author's section Dospinescu & Rus, 2006. There are two main points that explain the limited demand for e-banking services. First, because these services are expensive, that is, low-income individuals cannot pay financial transaction prices. An alternative view is that limited e-literacy serves as an important barrier to demand for e-banking services (Cole, Sampson & Zia, 2009). In their research, the authors Kongaut & Lis conclude that successful and widely accepted payment by mobile phone requires adequate technology and information infrastructure to accompany the growing demand for these services. The growing popularity of smartphones has spurred demand by making new payment technology available to large consumer groups. However, the use of mobile payment services could not have increased

significantly without the introduction of applications (regulators) in each country or region. These authors believe that a good combination of regulation and / or supply and demand policies is the way to win new consumers.

The authors Raičević & Matijašević in their work start from the hypothesis that electronic money and electronic banking, as a form of market communication, are necessary and conclude that it positively affects the speed and efficiency of business and that success depends on the effective protection of users' financial privacy. A number of indicators closely related to the satisfaction of users of ebanking services are indicated in his monograph Lacmanović, 2018, such as: customer support, application of new technologies, software tools and services, education strategy of the company in the field of electronic services and general computer literacy, importance security and data security in terms of users' trust in the electronic system of services. In the article, the authors Pavlović & Mutibarić, 2016, conclude that the implementation of banking in Serbia has not reached the European level, so banks seek to educate citizens and instruct them to use this type of banking. Authors Pavlovic & Savic, 2017, show in their empirical research that individuals' intentions to use mobile banking depend most on perceived financial cost and least on perceived utility.

The integrated research of supply and demand for e-banking services, which is the subject of this paper, fills the gap in the existing domestic literature as the findings confirm the initial hypotheses that become valid scientific knowledge and broaden the existing knowledge of consumer restrictions to use everything on supply.

### 3. Theoretical and methodological framework

The development of information and telecommunications technology has created the conditions for globalization of business. The main objective was to connect clients and information flows as quickly and efficiently as possible regardless of geographical distances (Živković, Stanković & Krstic, 2012, pp.451-452).

The primary goal of introducing electronic payment systems was to solve the problems of paper based payment systems, but practice later showed that these processes are of greater importance, that is, the efficient and economical use of this technology requires the reengineering of business processes and the interrelations of participants. The biggest technological achievement in banking is the emergence of electronic banking and electronic money. E-commerce refers to running a business on the Internet, buying, selling, organizing business, taking care of clients and business partners.

Electronic banking has a number of advantages over the so-called traditional (branch) business of banks. They are mainly reflected in time and space, the speed of transactions, low cost and a wide range of banking products and services. The

main advantage of electronic banking is that it is available 24 hours a day, 7 days a week. In a traditional banking business, a much larger number of people would need to be employed for such business hours, and thus the costs of doing business would be much higher. Spatial boundlessness is another of the benefits of e-banking. It can be done from anywhere in the world. All that is required is for the user to have an account with a bank providing electronic banking services and a computer with Internet access. In traditional business, the customer is tied to the country and branch of the bank where he has an account. Another advantage is the speed of transactions. While traditional banking takes time to go to the bank, wait at the counters, fill in forms or other documents, and take time to complete the transaction itself, electronic banking is the cheapest form of banking. The fees are the same or even lower than the fees in traditional banking.

In order to evaluate the state of electronic banking in Serbia, we must compare it with the situation in other more or less developed countries. For example, in France, the participation of electronic banking in the payment system is 70% or 80%, while in Serbia it is only 1/3, but it is relatively well developed in relation to some other segments and has a tendency for further development (Josanov & Peric, 2005; p.126). The development of electronic banking is reflected in the technological and organizational infrastructure of the PDO (Bureau of Accounts and Payments) and in the habits of using their services for banks and businesses.

Comprehensive reforms of the financial system in the Republic of Serbia began in 2001, within which the banking sector reform was initiated (Lacmanović, 2015, pp.81-82). Prior to 2001, the banking sector lost its primary function of mobilising free funds and placing them in profitable projects and the country's economy. In 2000, there were 84 commercial banks, of which 90% were socially owned. In December 2000, the National Bank of Serbia undertook measures to determine the true financial position of the banks, after which 23 operating licenses were withdrawn, the renowned European banks entered the market, and the total number of banks decreased to 53 banks. In 2019, the banking sector is comprised of 26 commercial banks. This is the result of the measures taken and the remediation under the reforms by the NBS.

Banks have successfully become involved in new interbank clearing systems according to world principles. The range of offerings has expanded. Through a computer or mobile phone, clients can check their account balance, view traffic and perform payments, and pay their dues. It offers the possibility of using ATMs, payment cards, POS terminals, call centers, all in order to provide clients with the provision of services throughout the day without going to the bank. In the area of payment card issuance and use, there is government support. Their interest is reflected in the fact that the use of cards implies a legal flow of money, since such payment requires the issuance of a fiscal invoice, which also involves the collection of taxes.

# 4. Results of analyse the supply for electronic bank services in Serbia

This part of the paper analyses the supply of electronic banking services in the Republic of Serbia. E-banking in our country is not yet sufficiently developed due to various factors, but banks are trying to educate citizens and make it easier for them to carry out their daily operations by using this form of banking. At first, the banks themselves were afraid of introducing electronic banking, but with increasing competition they were almost forced to start introducing it.

When assessing the state of electronic banking in Serbia, it is important to compare it with the situation in more developed countries. With us, the participation of electronic banking is much lower than in other developed countries, but each is well developed and, most importantly, shows a tendency for further development. In Serbia, paper money is still the most trusted, but nonetheless, data show that citizens, especially businesses, are increasingly turning to e-banking.

Of the 26 banks operating in Serbia, most offer e-banking services. In order to use e-banking, users must sign a contract with a bank that defines terms, rights and obligations. The use of e-banking services is free in most cases, which is one of the advantages of e-banking. Table 1 shows the electronic banking services offered by commercial banks in the Republic of Serbia.

Bank business name	Population	Economy, agriculture, legal entities
Addiko bank a.d. Beograd	Addiko e-bank	Personal e-bank (HALCOM)
	Addiko mobile	Office Banking (ASSECO)
	SMS servis	
Agroindustrijsko	eBanking	Electronic banking
komercijalna banka AIK	mBanking	Mobile banking
bankaa.d. Beograd		
API Bank a.d. Beograd	E-bankarstvo	E-banking
BancaIntesaa.a.d. Beograd	Wave2Pay	Electric banking
	IntesaMobi	e-comerce SMS i E-mail
	Intesa on-line	E-bankingterminals
	SMS notifications	
Banka Poštanska štedionica	Internet banking	
a.d. Beograd	Mobil banking	
	SMS info	
	SMS query to state	
	SMS recharge and	
	payment	
	Card alarm services	

Table 1. Electronic banking services offered by banks in the Republic of Serbia

	E-mail performs Self-service zone24/7	
Bank of China Srbijaa.d. Beograd		
Credit Agricole Banka Srbijaa.d. Novi Sad	ASSECO (Pexim) Halcom e-bank package Le bank mobile (m-bank)	ASSECO (Pexim) Halcom e-bank package m-bank
Direktna banka a.d.Kragujevac		
Expobanka.d. Beograd	e-banking personal (NETpersonal, NETmail, MOBILEsms)	e-banking business (NETbusiness,NETmail,MOBILEsms)
Erste Bank a.d. Novi Sad	netBanking mToken mBanking novoMob	NetBanking NovoKlik NovoMob Halcom Office banking
Eurobanka.d. Beograd	e-banking m-banking telephone banking	Mobile business banking Asseco (Pexim) Office banking Hal Ebank Personal
Halkbanka.d. Beograd	Electircal banking Mobile banking SMS information service payment by mobile phone	Electrical banking Halkbank online
Jubmes Banka a.d.	E- banking	E-banking
Beograd	Home banking mBanking	Home banking mBanking
Komercijalna Banka a.d. Beograd	Electrical banking SMS servis mBank Kombank trader	e-bank web e-bank SMS servis Kombank trader
Mirabanka.d. Beograd	Internet banking m-bankarstvo	Electrical banking
MTS Banka a.d. Beograd	Electrical banking	Electrical banking
NLB Banka a.d. Beograd	NLB eKlik NLB mKlik	NLB eKlik NLB mKlik NLB proKlik
Opportunity Banka a.d. Novi Sad		Electrical banking Office banking FX Client

Procredit Bank a.d.	Mobile banking	Mobile banking
Beograd	Internet banking	Internet banking
	Telephone banking	Telephone banking
Raiffeisen Banka a.d.	Internet banking	Reiffeisen online
Beograd	Mobile banking	Halcome-bankCMI@web
	Telephone banking	SWIFT MT101
	SMS	Mobile banking
Sberbanka.d. Beograd	e-bank	Business online
	m-bank	
SocieteGenerale Banka	e-banking	HAL E-BANK
Srbijaa.d. Beograd	m-banking	SOGE-BANKING
5 6	mobilia	Business card
	vocalia	Vocalia
	SMS instant	Mobilia
	recharge	
	standing order	
Srpska Banka a.d. Beograd	Electrical banking	Hal e-bank
-	Mobile banking	
	SMS service	
Telenor Banka a.d.	Internet banking	
Beograd	Mobile banking	
Unicredit Bank Srbijaa.d.	mBanking	Electrical banking
Beograd	mToken	Unicredit e-banking
_	Online bank	
	bank at the button	
	(internet banking,	
	mobile	
	banking,cash	
	machine)	
Vojvođanska Banka a.d.	iBank	VobEbank
Novi Sad	mBank	VobSMS

Source: Table created by the authors based on the offer the banks have on their site.

For both individuals and legal entities, it mainly covers mobile banking, internet banking, SMS, telephone banking. According to data from the banks' websites, we see that the richest offer is offered by Banca Intesa, Halkbank, Komercijalna Banka, Raiffeisen Bank, and Societe Generale Bank, which will be shown by an empirical study of demand for research.

Table 2 shows the amount of turnover made by non-cash transfer of funds in the Republic of Serbia in 2014 and 2015, given that the data on the website of the National Bank of Serbia as of 2015 end.

	20	14	2015		
	Number of transactions total	Total transaction value*	Number of transactions total	Total value of transactions	
Electronic Funds Transfer	87.880.894	12.684.589	100.148.513	14.778.297	
Internet banking	86.731.037	12.680.214	97.432.005	14.763.847	
Mobile banking	870.394	3.695	2.285.286	13.132	
ATM	279.463	680	440.222	11.320	

Table 2. Cashless transfer of funds in 2014 and 2015, in millions of dinars

Source: National Bank of Serbia

From this analysis, it can be concluded that in 2015 there was a slight increase in internet banking and a much higher use of ATM devices and mobile banking. This also means a much greater customer confidence in the e-commerce of banks. Electronic funds transfer increased by 13.96% in 2015, Internet banking recorded an increase of 12.34%, while mobile banking (162.56%) and use of ATM devices (57.52%) recorded the highest growth in the observed period. Table 3 shows the number of clients by types of individual payment services in the Republic of Serbia for 2014 and 2015.

	2014		2015	
Quarter	Ι	IV	Ι	IV
Total number of clients	8.517.231	8.811.973	8.774.395	9.032.298
Internet banking	1.019.637	1.153.611	1.209.521	1.421.885
Telephone banking	82.260	98.901	106.069	121.648
Mobile banking	103.212	179.724	218.456	464.167
Standing order	258.220	279.006	284.286	311.736
Internet banking – payment card	1.902.405	2.046.054	2.074.435	2.216.610
Internet banking – internet card	70.197	80.074	82.660	92.640

Table 3. Number of clients by types of individual payment services for 2014 and 2015.

Source: National Bank of Serbia

The total number of clients using one of the e-banking services in 2015 increased by 2.5% compared to 2014. That singing, though small, shows us that an increasing number of users are opting to use some of the e-banking services to do their jobs faster and easier.

Information on the number of cards issued in the Republic of Serbia was taken from the website of the National Bank of Serbia (https://www.nbs.rs/internet/latinica/35/statistika/index.html). Table 4 shows the number of payment cards issued and their activity in the Republic of Serbia for 2014 and 2015.

Table 4. Number and activity of payment cards issued in the Republic of Serbia for 2014 and 2015, in millions

	2014			4 2015		
The	Delivered	Active	Participation	Delivered	Active	Participation
quarter	in total	total	of active*	in total	total	of active
Ι	6.1	2.9	48%	6.3	3.1	49%
II	6.1	2.9	48%	6.4	3.2	49%
III	6.2	3.0	48%	6.3	3.2	50%
IV	6.3	3.1	49%	6.5	3.1	51%

Source: National Bank of Serbia

The total number of active payment cards issued in the Republic of Serbia increased by 6.13% in 2015 compared to 2014, but their participation recorded almost no growth. Banks need to focus on gaining customer confidence in order to achieve satisfactory growth in the participation of active payment cards.

The payment card market in Serbia includes Visa, MasterCard, Diners, American Express and the national payment card DinaCard (www.kombeg.org.rs). Most banks in our banking system issue Visa payment cards, debit and credit cards, and it is the first in the number of payment cards issued. MasterCard is the second most issued card. The presence of Diners cards is slightly lower here. They are generally not issued by banks but by Diners Club International, and can be found in 5 banks. American Express cards are very poorly represented here and can only be found on the Bank of Intesa offer. DinaCard is also issued as a national card by most banks in Serbia.

# 3. Results of the analysis of demand for electronic banking services in the South Backa region

In the period from 8 to 28 March 2017, 70 citizens were surveyed in Novi Sad, using a random sample method, in order to collect information on the implementation of electronic banking in the Republic of Serbia. The following tables present the processed data and analyze the obtained research results. The

questionnaire was taken from the author Pavlović & Mutibarić, 2016, with some modifications adapted to the subject of the research.



Figure 1. Relationship with banks - graphical representation of obtained results

Source: authors

Based on the data in Figure 1, we can conclude that the largest number of respondents have a current account and use one of the e-banking services (58.57%), which is a very good indicator, and banks should continue to work towards e-banking develops even more. Only 4.9% of respondents do not have a checking account and 37.14% do not use electronic banking.

	Number of respondents
To be tax exempt	24
To attract more customers / consumers	41
To contribute to the loyalty of their customers / consumers	14
Because they feel a moral obligation	6
They want to increase profits	45
They want to reduce the number of employees	45
They find that consumers / customers expect it from them	10
To attract new customers	41
Because so do their competitors	26
They want to be part of trends in the developed world	30

Table 5. What are the motives of the bank to offer electronic banking services

Source: authors

Most respondents believe that banks' motives for providing electronic banking services are their desire to increase profits and reduce the number of employees, as well as to attract as many clients as possible. The use of electronic banking increases the profit of banks because it reduces the cost of conducting banking transactions, but also because the number of employees in branches decreases

Figure 2 shows citizens' views on electronic banking. The majority of citizens who participated in this survey use e-banking to use e-banking. 37.14% of citizens still do not use these services, but most of them, 25.71% are interested and want to know more about these services of banks. Banks should work even harder to bring these services closer to citizens, to provide them with more information about them, to make them more interested and to become their customers.

Figure 2. Identification and attitude of citizens on electronic banking - graphical representation of the obtained results



Source: authors

Table 6 shows the number of respondents who opted for particular forms of electronic banking.

What kind of electronic banking do you use	Number of respondents
Electronic Funds Transfer	10
Internet banking	15
Mobile banking	26
None of the above	28

Table 6. Forms of electronic banking

Source: authors

Based on the data obtained, we can see that mobile banking is most prevalent among users, followed by internet banking. This is expected, since both mobile and internet banking make banking transactions easier as users save time, and fees for using these services are the same or even lower than bank fees.

Tables 7 and 8 give an overview of the number of respondents who opted for a particular type or a particular brand of payment card.

What type of payment card do you use	Number of respondents
Debitne	43
Kredit	38
Business	19
I have been using e-banking for some time	4
now	

 Table 7. Payment card types

Source: authors

Table 8. Payment card brands

What brand of payment card do you use	Number of respondents
Dina	8
Yuba	1
Visa	44
MasterCard/Maestro	38
American Express	0
Diners Club Card	0

#### Source: authors

The most common payment cards are Visa and MasterCard / Maestro, credit and debit cards. Visa and MasterCard are two of the world's leading brands in the payment card market so their representation is not surprising. Visa offers Visa electron, Visa classic, Visa gold and other types of cards. MasterCard offers Maestro debit card, MasterCard business, MasterCard standard and other card types.

The assessment of electronic banking security by the respondents is presented on Figure 3. From this picture we can see that electronic banking in Serbia has a future. Citizens remain unsure of this type of banking, but believe that their money is more secure than uncertain when using e-banking (62.86%).



Figure 3. Security of electronic banking - graphical representation of the obtained results

Source: authors

The following table shows the results of the respondents regarding their age.

Table 9. Respondents age data

	Age range			Ge	nder
<25	17	24,29	Male	34	48,57
25 - 45	29	41,43	Female	36	51,43
45 - 65	18	25,71			
>65	6	8,57			

*Source*: authors

Figures 4 and 5 summarize the data on the work status and income of the respondent.









Figure 5. Respondent status - a graphical representation of the results obtained

# We can see that the largest number of interviewed citizens is between 25 and 45 years old (41.43%), and that most of them are employed (65.71%). Therefore, it is not surprising that most of them have current accounts and use e-banking. It saves them time that they probably don't even have in terms of work. Using e-banking services in just a few clicks on your computer or phone, they do a job that might otherwise require much more time at the banks. It can also be seen that most of them receive between 25,000 and 50,000 dinars, which is some average salary in Novi Sad.

Figure 6. Degree of education of the respondents - graphical representation of the obtained results



Source: authors

It can be seen that the highest number of respondents have completed high school (42.86%), followed by college (31.43%) and high school (15.71%). In this way, the claim that highly educated people should have more knowledge and confidence in innovation is refuted. We live in a time when we are all aware of the fact that innovations that occur in all areas, including banking, actually make it easier for us to do our day-to-day business, which makes it less important what level of education someone has.

Sources of information	Number of respondents	%
I learn about electronic banking from commercials	29	41,43
I learn about electronic banking from the internet	38	54,29
I learn about electronic banking from bank brochures	41	58,57

Table 10. Sources of information on electronic banking services

Source: authors

Most citizens are informed about banking services from bank brochures, which can be found in the halls of banks. Banks may need to work to get their e-banking service advertisements and advertisements in various media to further raise awareness among citizens and make them aware of their services, and to encourage even fewer does not always use these services in a future period opting for this form of banking.

Bank business name	Number of respondents	%
Addiko bank a.d. Beograd	3	
Alpha Bank Srbija a.d. Beograd	3	
Banca Intesa a.d. Beograd	18	25,71
Banka Postanska štedionica a.d. Beograd	4	5,71
Credit Agricole Banka Srbija a.d. Novi Sad	4	5,71
Direktna banka a.d. Kragujevac	2	
Erste Bank a.d. Novi Sad	2	
Eurobank a.d. Beograd	1	
Halkbank a.d. Beograd	1	
Komercijalna Banka a.d. Beograd	12	17,14
NLB Banka a.d. Beograd	1	
Opportunity Banka a.d. Novi Sad	1	
OTP Banka Srbija a.d. Novi Sad	1	
Piraeus Bank a.d. Beograd	1	
Procredit Bank a.d. Beograd	1	
Raiffeisen Banka a.d. Beograd	1	
Sberbank a.d. Beograd	1	
Unicredit Bank Srbija a.d. Beograd	1	
Vojvođanska Banka a.d. Novi Sad	9	12,86

Table 11. Banks where respondents have a current account

Source: authors

The largest number of respondents has an open account at Banca Intesa (25.71%), Komercijalna Banka (17.14%) and Vojvodjanska Banka (12.86%), which indicates that citizens have the highest confidence in them. As mentioned earlier, Intesa Bank has the richest offer of electronic banking and payment cards (Intesa Bank is the only bank in our banking system that issues American Express payment cards), and on the basis of this research we conclude that it also has the highest citizen confidence.

## Conclusion

Electronic banking has evolved continuously since its inception. It has greatly improved the business. An increasing number of people want to manage their accounts electronically as they save time and are available 24 hours 7 days a week.

The advantage of e-commerce and e-banking is that it enables faster and easier international integrations for financial institutions as it significantly reduces the costs of transactions, administration and paperwork, and improves the archiving, retrieval and analysis of all transactions performed.

In Serbia, in the early stages of the development of electronic banking, outdated technology was a big problem, as was the population, which is very conservative when it comes to accepting any kind of newspaper. Today, we are witnessing an increasing use of e-banking services. In Serbia, the number of ATMs has increased significantly and their number is over 2800. Also, in our country there are over 8.2000 outlets with POS terminals, and their use is accepted by the population. More and more people are making payments with payment cards, not cash.

Survey results show that most respondents have current accounts and use some of the e-banking services, which indicates that it is already widely accepted. Banks should only continue to work in this direction to provide even more information to citizens about their services because even those who do not yet use these services want to know more about them, so that they themselves may become users of them because e-banking has many benefits for both customers and the bank. Banks should pay more attention to the development of mobile banking, as the number of mobile phone users is much higher than the number of computer users.

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# ANALIZA PONUDE I TRAŽNJE ZA USLUGAMA ELEKTRONSKOG BANKARSTVA U JUŽNOBAČKOM OKRUGU

**Rezime:** Predmet istraživanja rada je istraživanje tržišta usluga elektronskog bankarstva u južnobačkom regionu.. Rad ima za cilj da izvrši sistematizaciju ponude usluga od strane poslovnih banaka. S druge strane, cilj rada je da ocenii u kojoj meri građani koriste usluge elektronskog bankarstva. Metodologija istraživanja obuhvata primenu analitičke metode pri oceni ponude usluga bankarskog sektora, metod ankete i statističku obradu podataka pri empirijskoj analizi tražnje. Rezultati istraživanja su pokazali da je bogata ponuda usluga elektronskog bankarstva u Republici Srbiji i da je prihvaćena u velikoj meri.

**Ključne reči:** elektronsko bankarstvo, platne kartice, elektronski novac, ponuda, tražnja.

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