

CURRENT STATE AND PROSPECTIVE DEVELOPMENT OF ELECTRONIC BANKING IN SERBIA

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Predrag Radovanović, Andriana Milošević*

High Business School of Leskovac, Serbia

radovanovic.predrag@vpsle.edu.rs

*83.andriana@gmail.com

Abstract. *Payment operations system's reform in Serbia introduced a modern and effective payment infrastructure organized around electronic RTGS and clearing system. The reform was accompanied by changes of existing, as well as by passage of new laws and regulations; the new legal framework is formed that facilitate development of electronic banking and electronic business. At the same time, efforts were made for improvement of national telecommunication infrastructure. This paper summarizes current situation as well as the possibilities for future development of electronic banking in Serbia, and reviews available services in domain of internet and mobile banking. The paper also presents detailed statistical data on payment cards operations in Serbia, as well as data on transactions volume in RTGS and clearing systems.*

Key Words: *electronic banking, internet banking, mobile banking, RTGS, clearing system, payment cards.*

INTRODUCTION

Organization of the new national payment infrastructure has been one of the key reforms in Serbia following the restitution of its membership in the United Nations, the International Monetary Fund, the World Bank and other international organizations. Former payment operations system in Serbia had been built around the *Clearing and Payments Department*, state-owned institution that maintained the accounts of all economic operators in the country, and was in charge of all payment and clearing operations. By the end of 2001, a decision was made to transfer the responsibility for payment operations from the *Clearing and Payments Department* to commercial banks.

1. PAYMENT OPERATION SYSTEM'S REFORM IN SERBIA

One of the most important goals of the payment operations system's reform has been the implementation of a Real-Time Gross Settlement (RTGS) system. During 2002, technical, technological and organizational preparations took place for all entities covered by the reform (the National Bank of Serbia, banks and the Ministry of Finance). Parallel to the preparations, the legal framework — which the new payment operations system would be based on — was defined, while economic operators and individuals were familiarized with the upcoming changes. The *National Payment System Reform Council* was set up as the main executive body in charge of the reform implementation [see: 1, p. 1].

Through the implementation of the reform, the *National Bank of Serbia* has established modern and reliable payment operations system that laid a foundation for fast and efficient realization of payment transactions, and has served as a reliable channel for transmission of monetary policy measures. The first effective date of the new system was January 6th, 2003, when commercial banks successfully took over all payment operations, effectively terminating the long-standing monopoly position held by the *Clearing and Payments Department*.

In addition to the payment operations system's reform, the market and settlement infrastructure for government and corporate securities has also been improved. The *Central Securities Registry, Depository and Clearing House* has been separated from the *National Bank of Serbia* in 2003, to ensure infrastructure for development of securities market; the separation was made in accordance with the *Law on the Market of Securities and Other Financial Instruments*. The new law also introduced dematerialization of securities, enabling electronic registration of securities on the accounts of their respective holders [for more details see: 2, articles 5–6].

2. BUILDING THE NEW LEGAL FRAMEWORK

Appropriate legal framework, which would facilitate development of electronic business in general, represents one of basic prerequisites for development of electronic banking. The most important regulations in the legal framework for electronic business are, certainly, laws on electronic signatures and electronic commerce.

The Law on Electronic Signature has been enacted by Serbian Parliament on December 21st, 2004. The law regulates areas such as: electronic signatures and qualified electronic signatures, electronic certificates and Certificate Authorities, as well as the rights, duties and responsibilities of electronic signature users and Certificate Authorities. Essentially, the law defines a framework in which electronic signature is considered as a legal equivalent of personal signature, thus enabling legitimacy of electronic documents [see: 3].

The Law on Electronic Commerce is enacted on May 29th, 2009. The law enables citizens of Republic of Serbia to enjoy the benefits of shopping over the Internet. The law defines "information society services", responsibilities for fair informing and commercial message of information society services' provider. The law also defines electronic contracts (form of the contracts, mandatory elements, signing etc.), as well as the responsibilities of information society services' providers [for more details see: 4]. Passage of the *Law on Electronic Commerce* represents another big step towards development of information society in Serbia. The painstaking process still remains, however, of adjustment of

postal and customs systems and corresponding regulations with the *Law on Electronic Commerce*.

In addition to aforementioned laws, during and after the payment operations system's reform some laws were passed that are also of importance for development of electronic banking: *The Law on the National Bank of Serbia* [see: 5] and *The Law on Payment Transactions* [see: 6].

Based on authority granted by the *Law on Payment Transactions*, the *National Bank of Serbia* prepared a number of regulations (decisions, guidelines, instructions and operating rules) that regulate specific payment operations in more details. Some of these regulations are of particular importance for development of electronic banking: *Decision on Electronic Payment Transactions* [7], *Decision on the Settlement and Clearing and Functioning of Clearing Accounts of Banks with the National Bank of Serbia* [8], *The Operating Rules for Real-Time Gross Settlement* [9], *The Operating Rules for Clearing (Net Settlement) Services* [10], *The Decision on the Clearing and Settlement of Payment Card Transactions* [11], *Guidelines for the Format and Purpose of Data Exchange Messages in Payment Transactions* [12] etc.

3. MEASURES FOR IMPROVEMENT OF TELECOMMUNICATION INFRASTRUCTURE

Since development of information society and information services industry is inconceivable without a modern telecommunication infrastructure, certain measures have been undertaken in order to reach European standards in telecommunications. New legal framework was introduced with passage of the *Law on Telecommunications* [see: 13].

In accordance to the law, *Republic Telecommunications Agency* was formed in mid-2005, with the basic task of regulation of telecommunications according to best European practice. Moreover, in second half of 2006, *Government of Republic of Serbia* adopted the *Strategy for Development of Telecommunications in Republic of Serbia from 2006 to 2010*. The strategy was completely based on European experience in development of modern information society, as well as on European Union's guidelines in development of telecommunications. The *Republic Telecommunications Agency* considers faster development of optical backbone and broadband access networks in undeveloped areas as the matter of high priority.

4. THE NATIONAL BANK OF SERBIA'S RTGS AND CLEARING SYSTEM

Real-Time Gross Settlement (RTGS) and Clearing system are owned and operated by the *National Bank of Serbia*. Both systems are technically configured on a single platform, but there is the possibility for their separation onto two separate platforms, should the need arise. Operative tasks and management of RTGS and clearing system are performed by the *National Bank of Serbia's Payment System Department*.

RTGS and clearing system process and settle all interbank payment orders. Settlement of net positions from cheque clearing and payment card clearing is performed through RTGS system. Each participant in RTGS system has one main and one "virtual" clearing account (reserved funds based on approved limit) with the *National Bank of Serbia*. The "virtual" account is used for reconciliation of net clearing positions — its balance at the beginning and at the end of the day is always zero.

Data interchange in RTGS and clearing system is based on electronic messaging in SWIFT format, either via the National Bank of Serbia's private network or through the SWIFT network — the choice of network is individual and is based on business policy of each participant in the system. The National Bank of Serbia's private network covers the whole territory of Serbia, while transmission lines are owned by *Telecom Serbia*.

RTGS system is the only system for settlement of large-value payments. All payment orders exceeding RSD 250,000 must be processed through RTGS system. *Clearing system* of the National Bank of Serbia is used for clearing of small-value payment transactions. Cheque clearing system is operated by the *Association of Banks and Other Financial Organizations of Serbia*. Clearing of transactions with the domestic payment cards (*DinaCard*) is performed by the National Bank of Serbia's *National Payment Card Centre*, while the clearing of domestic (RSD) transactions with the international payment cards is performed by the respective international centers. Net positions are settled in the RTGS system [for more details see: 1, p. 20].

Figure 1 shows value of turnover, while *Figure 2* shows interbank payments in the National Bank of Serbia's RTGS and clearing system.

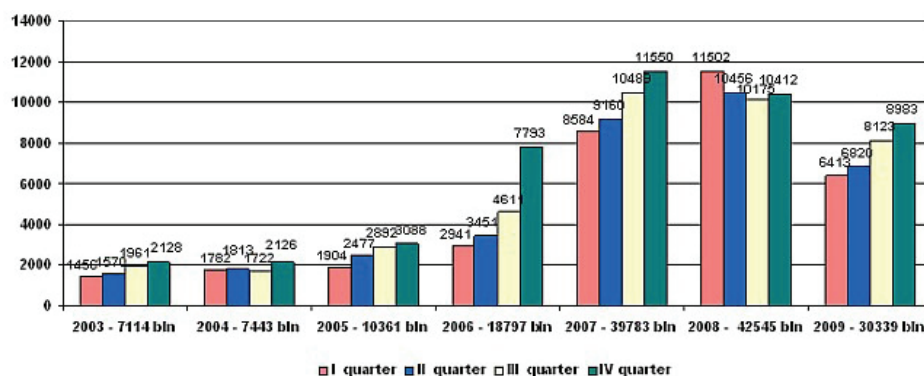


Fig. 1 Value of Turnover in the National Bank of Serbia's RTGS and clearing system by quarters from January 2003 to December 2009 (in RSD billion)
Source: The National Bank of Serbia [14].

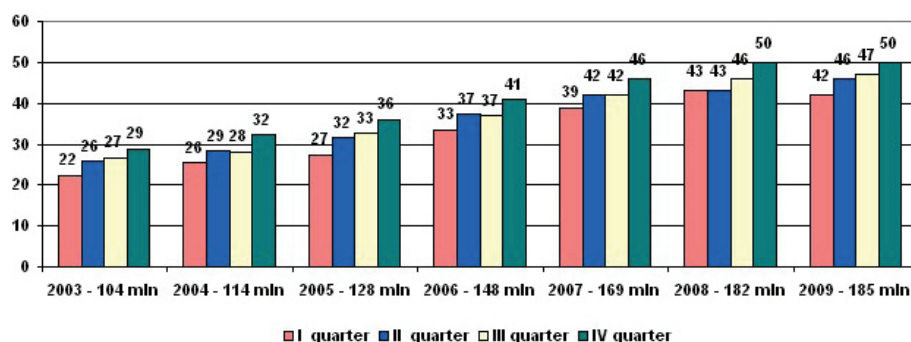


Fig. 2 Interbank Payments in the National Bank of Serbia's RTGS and clearing system by quarters from January 2003 to December 2009 (in millions of payments)
Source: The National Bank of Serbia [14].

In 2008, a total of 185.9 million interbank payments were processed in the RTGS and clearing system of the National Bank of Serbia. RTGS payments accounted for 56.8 per cent of the total number of payments processed in 2008, while clearing payments accounted for 43.2 per cent. The total value of the payments was RSD 44,464 billion, of which clearing accounted for RSD 700.4 billions, or 1.6 per cent [15, p. 111].

Record number of interbank payments (1,218,335 payments) was processed on November 30th, 2009. Record value of interbank turnover was RSD 385.4 billion, on December 30th, 2009. Record number of clearing payments was 414,798 payments, on July 1st, 2009, while record number of RTGS payments was 870,546 payments, on November 30th, 2009 [for up-to-date information see: 14].

5. PAYMENT CARD BUSINESS IN SERBIA

The most widely recognized payment card brand on Serbian market is *DinaCard*, national payment card, while the most successful international brands are *Visa*, *MasterCard*, *Diners* and *American Express*. *DinaCard* system has been founded on 2003 — through cooperation between the *National Bank of Serbia* and commercial banks — with the aim of stepping up development of non-cash payments, decreasing the amount of cash in the money supply and fighting gray economy. *DinaCard* system has enabled a number of domestic banks, who were not members of international payment systems, to offer to their clients a payment card which can be used in the largest acquiring network in Serbia. *The National Bank of Serbia* performs transmission, the clearing and settlement of *DinaCard* transactions, as well as settlement of domestic (RSD) transactions with *Visa* and *MasterCard* payment cards. *The National Bank of Serbia* regulates *DinaCard* business, according to the *Operative rules for DinaCard System*, while business with international payment cards (*Visa*, *MasterCard*, etc.) is regulated in accordance with operative rules of respective systems.

Requirements and conditions for issue and use of payment cards may differ significantly among different banks, even for the same brand of payment cards, while the differences among different payment card brands are even more significant [for analysis see: 16, pp. 383–387. For more details on the requirements see: 22].

Reliable statistical data on payment cards business in Serbia is available as of 2002. According to first available data, the total number of payment cards in Serbia at the end of 2002 was approximately 200,000. At the same time, there were only 65 ATMs and approximately 1,700 EFT/POS terminals. *Table 1* summarizes available statistical data on payment cards, ATMs and EFT/POS terminals from 2002 to 2009.

In March 2007, approximately 5.57 million of payment cards were in use in Serbia. Roughly a half out of this number were national payment cards (*DinaCard*). During the first quarter of 2007, a total of 8.5 million of transactions were affected via more than 50,000 EFT/POS terminals, totaling approximately RSD 18.7 billion in value. During the same period a total of 7.7 million of transactions were affected via more than 1,500 ATMs, totaling approximately RSD 33 billion in value. The majority of the issued cards were debit cards — approximately 4.6 million of them have been activated in the first quarter of 2007 [see: 1, pp. 11]. As *Table 1* show — starting from 2005 and throughout 2009 — the total value of cash withdrawals over ATMs was approximately twice the value of the retail payment transactions over EFT/POS terminals, which means that cash payments are still preferred in Serbia.

Credit cards use expanded during 2005, when many banks began issuing credit *DinaCard*. During 2002, for example, there were only 0.03 credit cards per inhabitant in Serbia, while during 2005 the number rose to 0.52. At the same time there were, on average, 3.32 payment cards per inhabitant in developed countries. There were only 9 ATMs per million inhabitants in Serbia during 2002, while the number rose to 113 in 2005. The number was, however, still minor compared to developed countries which had, on average, 1,063 ATMs per million inhabitants during 2005 [for more details see: 1, pp. 11; 78; 81].

Table 1 Payment Cards and Accessing Devices in Serbia (2002–2009)

	2002.	2003.	2004.	2005.	2006.	2007.	2008.	2009.
Number of Payment Cards Issued								
Debit Cards	195.652	623.206	2.129.728	3.443.015	4.327.537	4.613.448	4.548.241	4.884.814
Credit Cards*	4.186	10.896	28.224	382.158	857.608	1.039.042	1.082.771	1.022.544
Business Cards	N/A **	N/A **	N/A **	33.129	55.237	72.975	97.777	107.032
TOTAL	199.838	643.102	2.157.952	3.858.302	5.240.382	5.725.465	5.728.789	6.014.390
Value of Transactions with Payment Cards Issued in Serbia (RSD millions)								
Debit Cards	N/A **	N/A **	N/A **	58.746	118.070	186.220	255.497	300.854
Credit Cards*	N/A **	N/A **	N/A **	10.479	32.868	39.618	43.711	38.545
Business Cards	N/A **	N/A **	N/A **	2.824	6.288	9.629	14.070	15.739
TOTAL	N/A **	N/A **	N/A **	72.049	157.226	235.467	313.278	355.138
Number of ATMs and EFT/POS terminals								
ATMs	65	204	450	837	1.348	2.074	2.494	2.723
EFT/POS	1.709	6.779	16.266	31.816	48.194	55.340	57.919	59.058
Value of Transactions over ATMs and EFT/POS terminals (RSD millions)								
ATMs	N/A **	N/A **	N/A **	51.945	109.022	165.458	224.549	263.782
EFT/POS	N/A **	N/A **	N/A **	31.864	65.042	91.334	117.047	124.832

* Including *charge* cards.

** N/A — there is no reliable data available.

Source: Authors, based on: [1, p. 36], [17, p. 103], [18] and [19].

Total number of issued payment cards was 5.7 million by the end of 2008; however, only 48 per cent of the issued cards were active. In order to stimulate their clients to use cards for payment of goods and services, some banks offered special advantages for purchases in large retail chains (e.g. deferred payment). By the end of 2008 there were approximately 2,500 ATMs and 58,000 EFT/POS terminals. Total value of credit card transactions stood at RSD 43.7 billion (up by 10 per cent from 2007), while total value of debit card transactions rose to RSD 255.5 billion (up by 37 per cent from 2007); thus, relative share of turnover in credit-cards in total turnover continued to decline — from 17 per cent in 2007 to mere 14 per cent in 2008 (see *Figure 3*). At the end of 2008 there were approximately 2.4 million of *DinaCard* payment cards, which accounted for 43 per cent of total number of payment cards issued. During 2008, turnover in domestic cards in Serbia came to 33 per cent (see *Figure 4*), while domestic cards accounted for more than a half of retail POS transactions [15, pp. 115–118].

One of the most important additional services available to users of *DinaCard* is the payment of bills via mobile phones. Another service recently made available to users of domestic payment cards includes payments over the Internet. Technical and security systems necessary for Internet payments were defined in the *DinaCard* system during 2007, while the first merchant offering the service was the airline *Jat Airways* in 2008. During 2009, activities were continued on development of *DinaCard* smart card. Migration from magnetic stripe cards to chip-based smart-cards is expected to begin during 2010. A new service to be launched is card-to-card money transfer, i.e. transfer of funds between *DinaCard* cardholders' accounts. At

the beginning, this transfer will be performed via mobile phones, while other ways of using the service may be implemented in future. In order to follow the trends in the European and world payment cards markets, including regulations on card business in SEPA¹, the *National Payment Cards Centre* takes active part in the workings of the *Berlin Group*² and plans to continue cooperation with EAPS³ [see: 15, pp. 115–118 and 17, pp. 102–106].

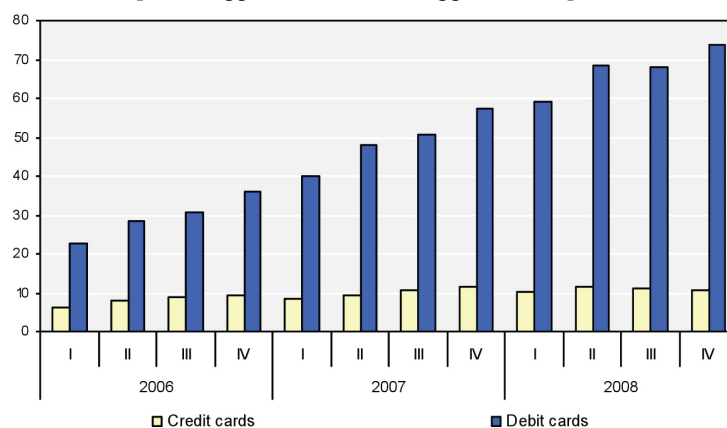


Fig. 3 Debit and credit card turnover by quarters from January 2006 to December 2008 (in RSD billion)
Source: [15, p. 115].

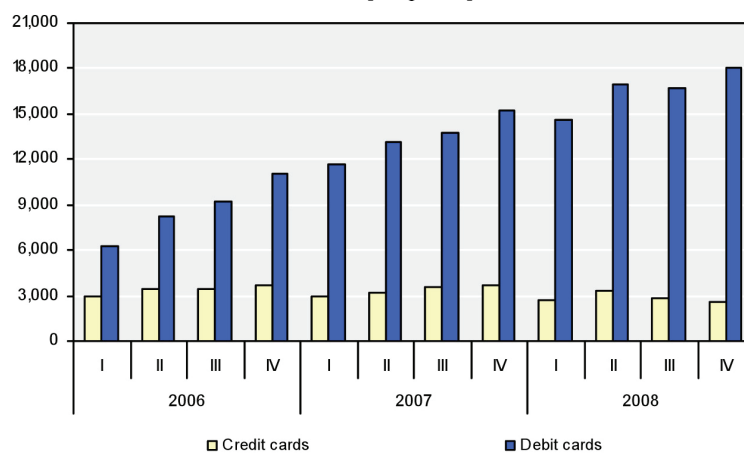


Fig 4 Dina Card debit and credit card turnover by quarters from January 2006 to December 2008 (in RSD million)
Source: [15, p. 117].

¹ Single European Payment Area (SEPA) initiative for the European financial infrastructure involves the creation of a zone for the euro in which all electronic payments are considered domestic, so the difference between national and intra-European cross border payments does not exist.

² The Berlin Group connects major national card systems across Europe in order to create a single payment cards market within the Single European Payment Area (SEPA).

³ Euro Alliance of Payment Schemes (EAPS) is European card solution for payment schemes and individual banks committed to improve card usage in SEPA.

6. ELECTRONIC (WEB) BANKING IN SERBIA

Electronic (web) banking services were offered in Serbia with certain time lag compared to developed countries. But the delay was not turned out to be so bad: in early stage of electronic banking development, numerous banks in developed countries experienced certain problems — ranging from modest to severe ones — concerning security and abuse of transactions. Foreign banks that had entered Serbian market set reliable and secure electronic banking systems, with domestic banks following. Therefore, security was not an issue during the early stage of electronic banking development in Serbia. The first web based e-banking system in Serbia was the *Internet Homebanking* system, offered by the *Postal Savings Bank* in October 1998. Available electronic banking services in Serbia are generally comparable to that offered in developed countries. Some banks are trying to persuade clients to use electronic banking by lowering electronic payment transactions' fees for more than 40 per cent.

Banks in Serbia usually offer to their clients an integrated set of electronic banking services. The most of the banks have a "basic package" of services, such as: account information inquiry, detailed report on current account transactions for chosen period of time, detailed payment-card reports etc. Some of the systems can also display details for a specific transaction, as well as details on each payment card transaction. More advanced services generally consist of: automated bill payments, funds transfer between different accounts, foreign-exchange transactions, etc. The most of the systems allow for printing of: an account turnover, payment orders, information on checking account and specific cheques, as well as information on payment cards reservations and unrealized transactions. Some of convenient services are: top-up of prepaid mobile phone accounts, telebanking/IVR⁴ banking, and information on loans or rented safe-deposit boxes (for clients using this service). Majority of banks also offer a number of useful applications on their e-banking websites: modules displaying list of exchange rates, loan calculators, currency conversion calculators, catalogue sales etc. [see: 16, pp. 390–392].

There are numerous services available for business clients, as well: effecting of all types of RSD and foreign-exchange payments, receiving a detailed report on an account turnover via e-mail, checking an account and individual transactions details over the Internet, SMS, automated call center etc. Some banks allow for tracking of a payment order realization (from initiation to realization of the payment). Banks in Serbia generally use reliable and secure applications for business clients, from renowned software providers in the field (e.g. Pexim, Halcom, Saga, Omicron etc.). Some applications allow for offline preparation of payment orders and online access through different software modules, while others allow access to accounts through a number of different channels: FX clients⁵, Internet, fax, e-mail, WAP⁶, SMS and the automated call-centre [see: 16, pp. 392–393]. One of more advanced services, International Cash Management, enables business clients with foreign branches to centralize cash management for all of their accounts. Certain banks also offer business intelligence systems to their business clients.

⁴ IVR — Interactive Voice Response. For more details on IVR banking see [16, pp. 223–225].

⁵ FX client is the application that needs to be installed on a personal computer in order to access an electronic banking system. FX client is generally used by business clients, while non-business individual clients can gain access to electronic banking through a web client.

⁶ Wireless Access Protocol is an open international standard for network communications in a wireless-communication environment. Most use of WAP involves accessing the mobile web from a mobile phone.

For basic set of services, clients' identification and authorization are generally based on user names and passwords. However, there is an increasing use of digital certificates recorded on mini-CDs, smart cards or USB flash memory cards for gaining access to more advanced services. Some banks use one-time passwords for each transaction, which are generated by convenient hardware password generators (tokens). In practice, this solution turned out to be the most reliable and flexible, since password generators can be used to access electronic banking services from any personal computer, as well as for gaining access to automated call centers, info-kiosks etc.

7. MOBILE BANKING

Mobile banking services are also available to banking clients in Serbia. The most popular mobile banking channel is the SMS channel. In the beginning, the channel is used for transmission of: account information, information on specific transactions, information on cheques, credit limit, and maturity of credit card installments, as well as for transmission of general information (list of foreign-exchange rates, information on new services, new loans conditions, change of interest rates etc.). As of 2006, SMS channel is used for payment orders.

During 2007, the most of the banks joined the mobile payments service introduced in 2006. Since large number of clients warmly welcomed service for prepaid mobile accounts top-up, the possibility for payment of post-paid bills is added, as well. There is also the possibility for payment of landline telephony and utilities bills. All mobile telephony operators active in Serbian market are expected to participate in the provision of the *m-payment* services [see: 17, p. 105].

Mobile phone users in Serbia can pay parking fees via mobile phones. There is also the possibility for payment of administrative fees and ordering of birth certificates, marriage certificates etc. via mobile phones. *Telecom Serbia* enabled users to order the certificates and other documents through its *Mondo WAP Portal*; the certificates are generally delivered in 48 hours. Mobile payment of administrative fees for birth certificates, marriage certificates and other documents will soon be available in majority of Serbian municipalities [see: 20]. Certain banks offered the OTAPOS⁷ payment service. The service allows for payment of any bill, from any personal computer. Each payment order has to be "signed" by six-digit code delivered via SMS. The OTAPOS system is fairly secure way for authorization of a payment since the code, received via SMS, is used only once. Thus the OTAPOS service, in essence, transforms mobile phone into password generator. Recently announced concept of a mobile payments service is based on implementation of a digital certificate on mobile phone's SIM card. The digital certificate will provide for enhanced security of transactions. When payment request is displayed on mobile phone screen, the user is expected to enter the *m-PIN*⁸ in order to authorize the payment. After the payment is effected, user will receive an SMS notification.

⁷ OTAPOS — One-Time PIN Over SMS.

⁸ m-PIN — Mobile Personal Identification Number.

CONCLUSION

Reform of payment operations system in Serbia terminated long-standing monopoly position held by the Clearing and Payments Department, while providing Serbia with modern and effective payment infrastructure, organized around electronic RTGS and clearing system. Through the passage of a number of key laws, the new legal framework was formed that facilitate development of electronic business and electronic banking in Serbia. Payment cards business steadily grows: number of issued payment cards reached 6 million, while during last five years (2005–2009) the value of payment card transactions, the value of ATM transactions and the value of EFT/POS transactions all increased almost fivefold, compared to corresponding values in 2005. However, inactive cards still account for more than a half of issued cards, so commercial banks should focus their activities on activation of the inactive cards, as well as on stimulation of active cardholders to use their cards more frequently. Electronic banking services offered to clients in Serbia are — with respect to quality, as well as to quantity — generally comparable to those offered to clients in developed countries. Electronic banking payment transactions accounted for, on average, 63 per cent of total value of interbank and internal payment transactions at the end of 2009 (in certain banks the percentage was as high as 80 per cent) [see: 21]. The mobile banking services spectrum is also broadening. Since there are more than 9 million registered mobile phones in Serbia — each of them representing potential transactional device — it is clear that mobile payments will have an increasingly important role in payment operations system in Serbia.

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TEKUĆE STANJE I PERSPEKTIVE RAZVOJA ELEKTRONSKOG BANKARSTVA U SRBIJI

Predrag Radovanović, Andriana Milošević

Reformom platnog sistema Srbija je dobila savremenu i efikasnu platnu infrastrukturu organizovanu oko elektronskog RTGS i kliring sistema. Reforma je bila praćena izmenom i dopunom postojećih i donošenjem novih zakonskih propisa, čime je formiran novi pravni okvir koji pospešuje razvoj elektronskog bankarstva i elektronskog poslovanja. U isto vreme, činjeni su naporu u cilju unapređenja nacionalne telekomunikacione infrastrukture. U ovom radu razmotrićemo tekuće stanje i perspektive razvoja elektronskog bankarstva u Srbiji, sa posebnim osvrtom na raspoložive usluge u sistemima internet i mobilnog bankarstva. U radu će biti prezentovani i detaljni statistički podaci o poslovanju platnim karticama u Srbiji, kao i podaci o obimu transakcija u RTGS i kliring sistemu.

Ključne reči: elektronsko bankarstvo, internet bankarstvo, mobilno bankarstvo, RTGS, kliring sistem, platne kartice.