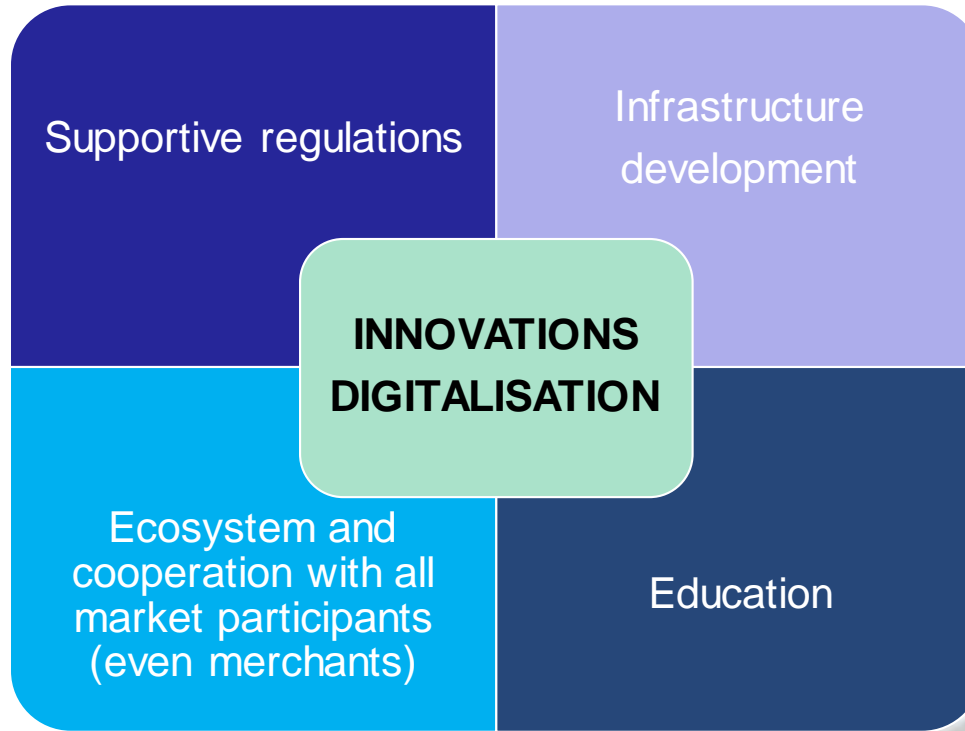National Bank of Serbia

Session 1: Retail cashless payment systems
- Case: The Republic of Serbia -

Ms Dragana Stanić, Vice-Governor

November 2022

Innovations and digitalisation – key success factors

Supportive regulations

Infrastructure development

INNOVATIONS DIGITALISATION

Ecosystem and cooperation with all market participants (even merchants)

Education

- **LPS**: Implementing several EU directives – PSD1, EMD2 and SFD.
- Technology-neutral provisions of the Law.
- **Introduction of e-money** and non-bank payment service providers.
- Increased competition in the market

(14 payment institutions, 3 e-money institutions,

wide network of agents)

- **IFR**:Interchange fee cap for card-based payment transactions:
  – 0.2% for debit card transactions,
  – 0.3% for credit card transactions.
- Important for **further widening of acceptance network**.
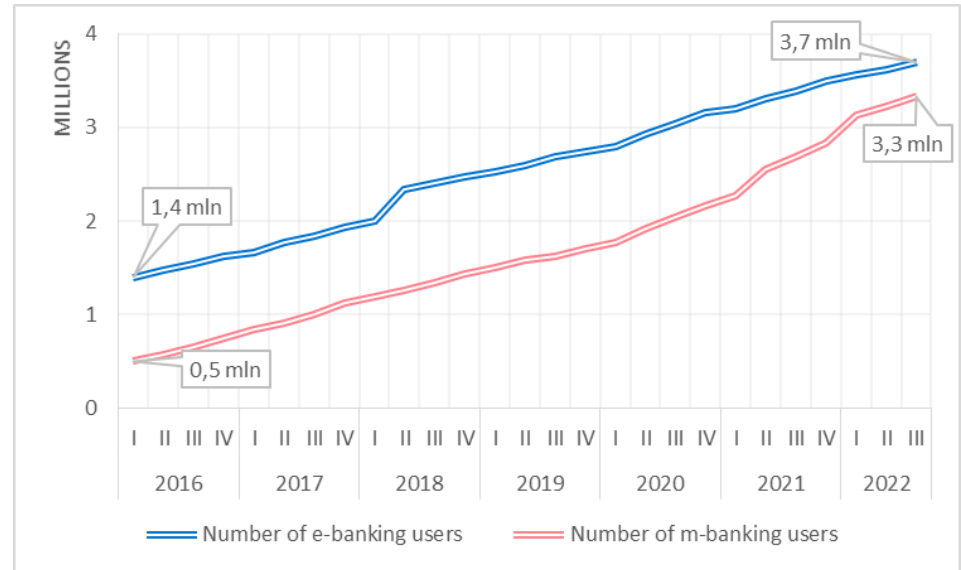-

Fees (interchange/merchant fees)

Merchant fees

- As a result of the Law on Multilateral Interchange Fees and Special Operating Rules for Card-based Payment Transactions enforcement and NBS activities in this field, merchant fees have been drastically reduced (see below).


e-comm

POS
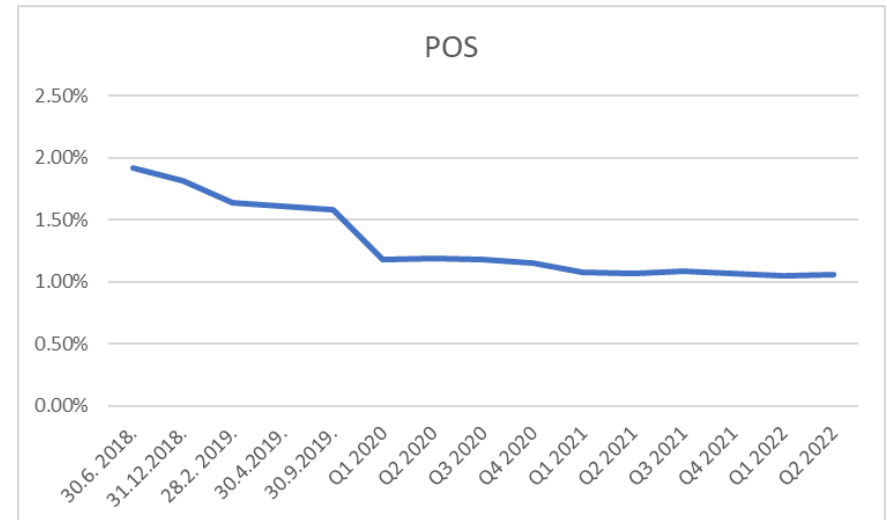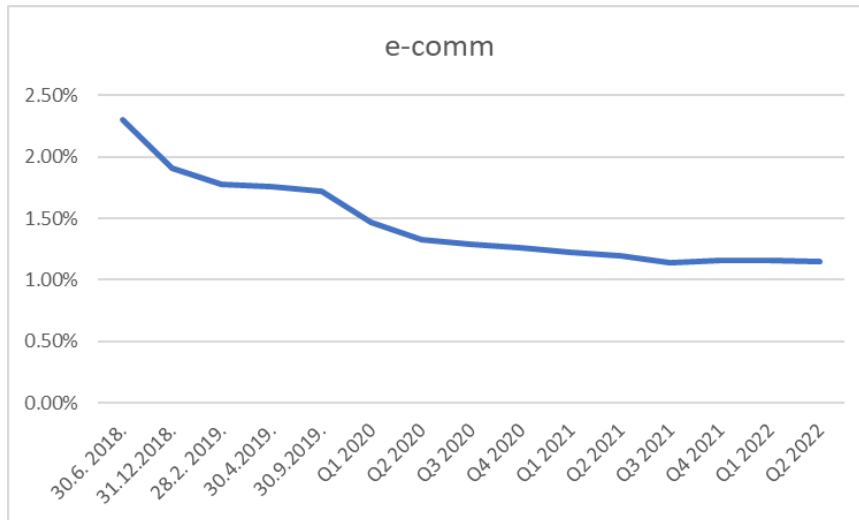
Digital channels expansion

- At the end of Q3 2022 there were 3,705,972 e-banking users in the RS, which makes 9.12% YOY increase;

- At the end of Q3 2022 there were 3,332,306 m-banking users – 23.76% YOY increase;

- The number of transactions through mobile banking has increased 100 times in the last 10 years.

- In 2019 the National Bank of Serbia adopted the Decision on Conditions and Manner of Establishing and Verifying Identity of a Natural Person through Means of Electronic Communication.

Serbian Digital Payments Index

Serbian Digital Payments Index

Year	Index
2016	100
2017	107
2018	122
2019	138
2020	152
2021	180

Serbian Digital Payments Index
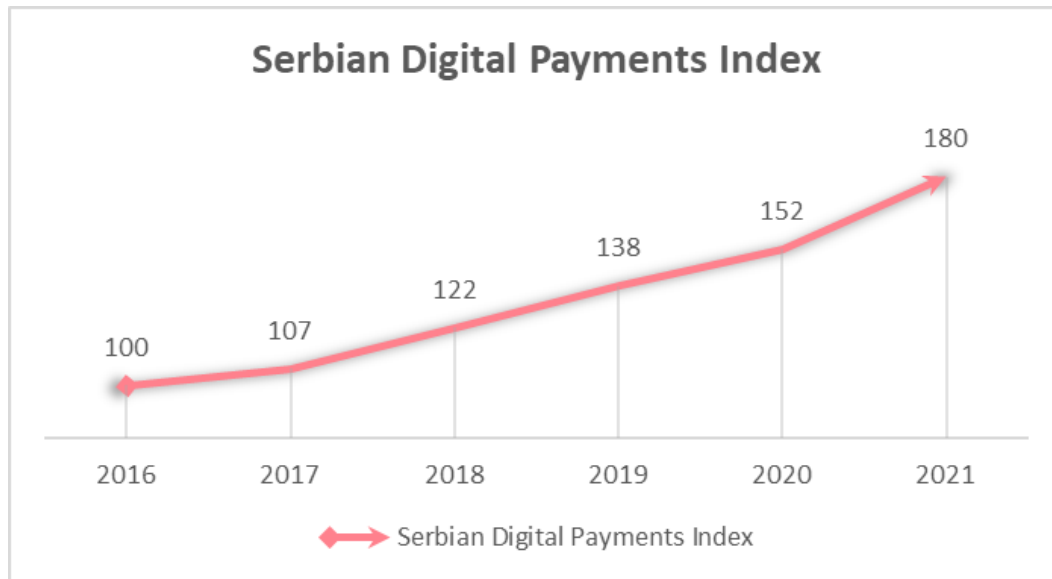
DPI is a unit of measurement showing the evolution of digital payments use in Serbia over time, calculated for the one-year period.

The index captures:

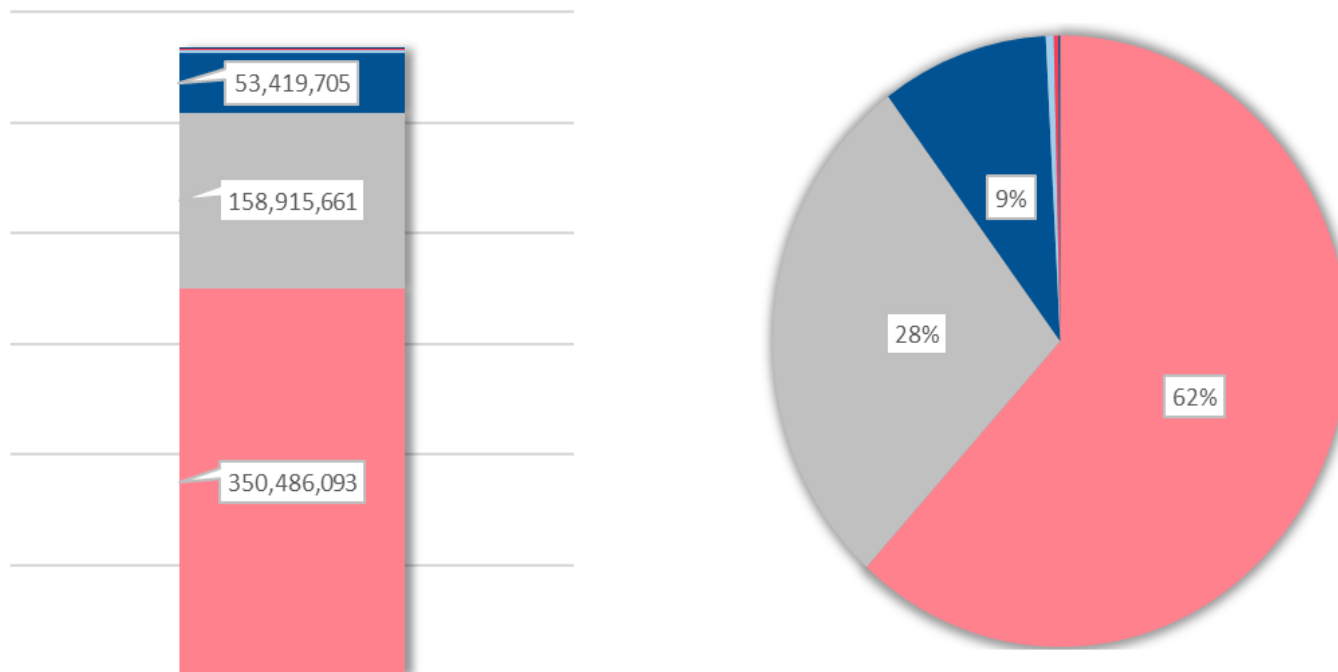1. Infrastructure of payment services

2. Degree of technological development

3. Payment performances

4. Consumer experience in payments (descriptive measurement)

Share of digital transactions in 2021

53,419,705

158,915,661

350,486,093

9%

28%

62%

- Card-based payments
- via e-banking
- via m-banking
- via direct debit
- via standing order
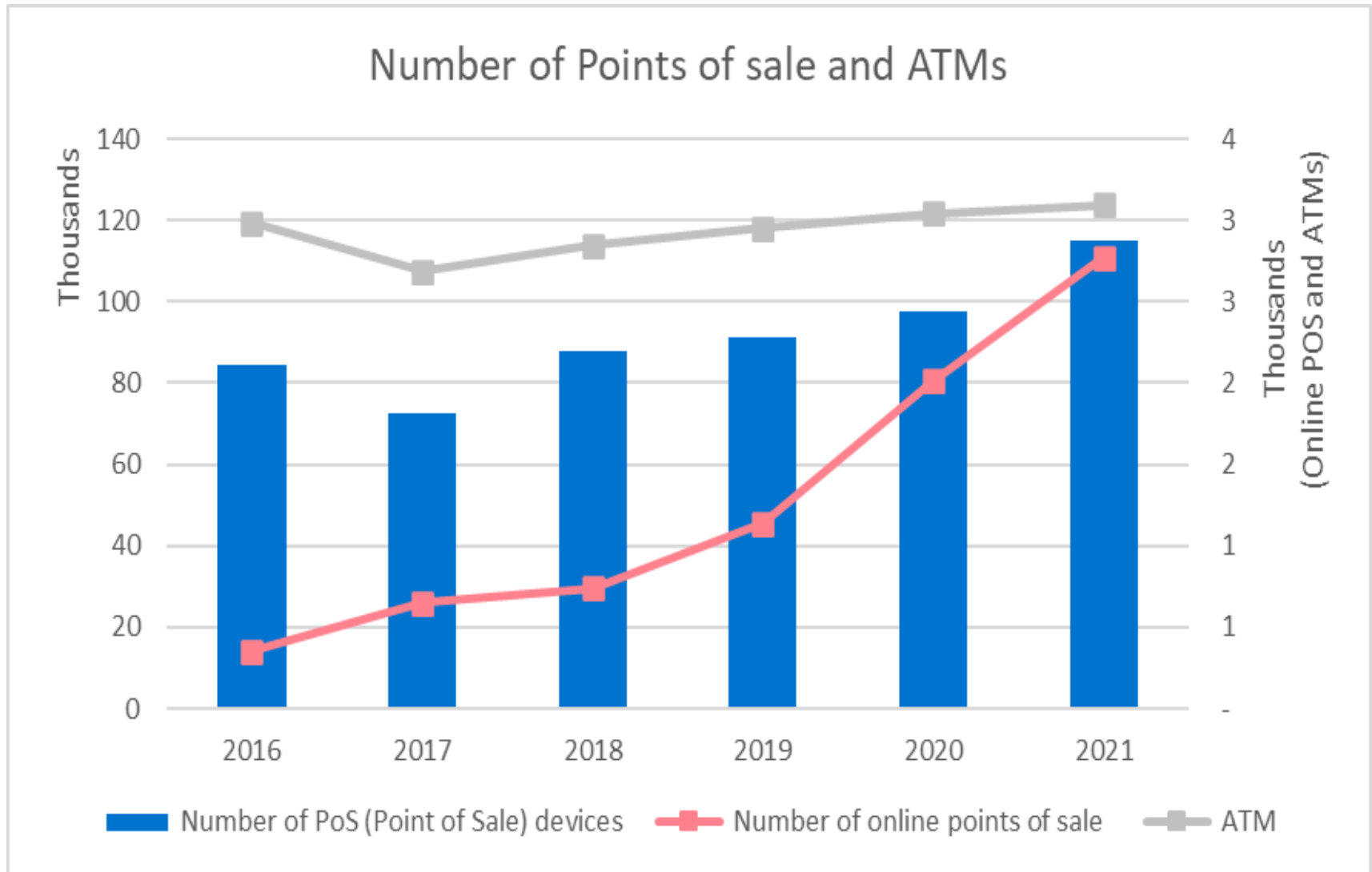- e-money payments
- telephone payments

Statistical data on digital payment services usage

- Continuous growth - the number of transactions with cards and electronic money for the purpose of online purchase of goods and services increased 37.07% in just one year (comparing data for the first three quarters of 2022 and the first three quarters of 2021).
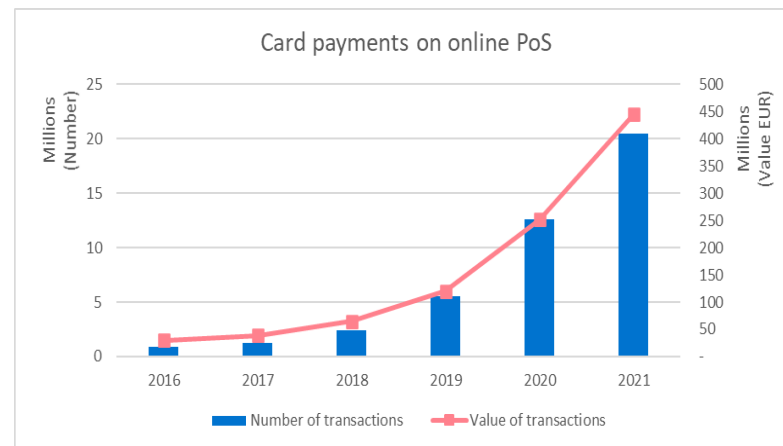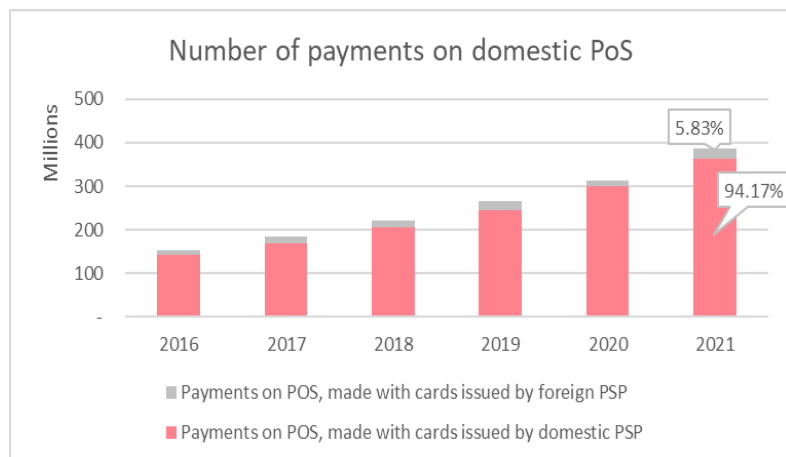
- The card infrastructure continued its successful development in the previous year as well. The growth of the acceptance network for cashless payments is evidenced by the fact that comparing data for 2021 and 2020 there was a 17.63% YOY increase in the number of POS terminals on the market. Comparing data about online points of sale for 2021 and 2020 there was a YOY increase of 37.80%.

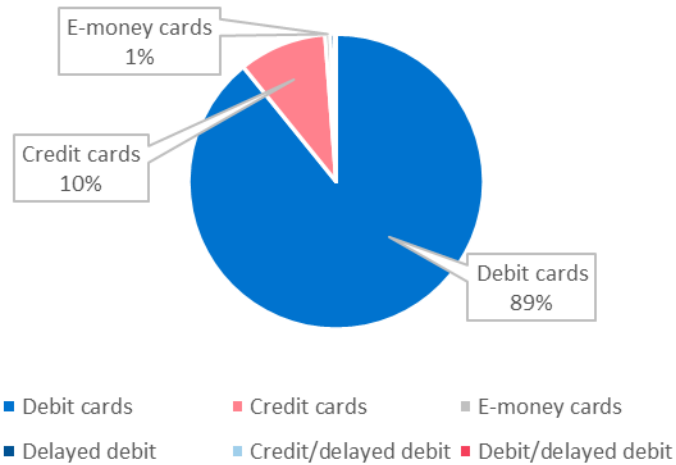# Number of Points of Sale and ATMs

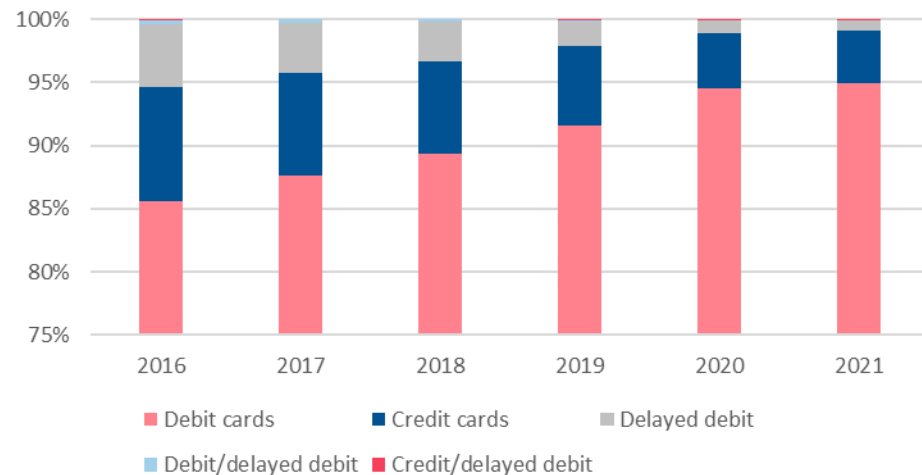Number of Points of sale and ATMs

Legend: Number of PoS (Point of Sale) devices — Number of online points of sale — ATM

Card Payments

Number of payments on domestic PoS

- Payments on POS, made with cards issued by foreign PSP
- Payments on POS, made with cards issued by domestic PSP

5.83%

94.17%

Card payments on online PoS

- Number of transactions
- Value of transactions

Share of issued cards at the end of 2021 and share of payments by card type

Share of issued cards at the end of 2021

- E-money cards 1%
- Credit cards 10%
- Debit cards 89%

Legend: Debit cards, Credit cards, E-money cards, Delayed debit, Credit/delayed debit, Debit/delayed debit

Share of payments by card type

Legend: Debit cards, Credit cards, Delayed debit, Debit/delayed debit, Credit/delayed debit

Overview of the payment system infrastructure at the NBS before 2018

- Before 2018 the NBS had been operator of five payment systems:
    - ➤ RTGS payment system;
    - ➤ Clearing payment system;
    - ➤ Interbank FX clearing system;
    - ➤ International FX clearing system;
    - ➤ DinaCard clearing system;
    - ➤ NBS IPS System was **introduced on October 22, 2018**.

    Beside the NBS, the Association of Serbian Banks (ASB) is also the operator of the two payment systems in the country:

    - ➤ ASB Cheque Clearing Payment System;
    - ➤ ASB Direct Debit Clearing Payment System.

Concept of instant payment system

- **Basic principles for establishing the system**:
  - Instant payments settlement in **Central Bank Money**
  - **24/7/365** operating hours of the NBS IPS
  - Participation in the NBS IPS mandatory for all participants in the NBS RTGS system
  - Besides banks, other payment service providers are also allowed to participate in the instant payment system
  - **ISO 20022** message format

NN	Type	Mode	Accounts
1	Commercial Bank	Online/Offline Connected to IPS	RTGS + IPS accounts
2	NBS and Republic of Serbia Ministry of Finance - Treasury Administration	Online/Offline Connected to IPS	RTGS + IPS
3	PSP	Indirect Connected to IPS	IPS account
4	PSP	Sub-Participant Not connected to IPS	No IPS account

NBS IPS System in Numbers

Total number of payments (data until end-October):**118,465,916**

Total value of payment (data until end-October):
RSD1,104,018,863,538.87 approx. **EUR 9,411,676,788.92**

Daily record in number of transactions:
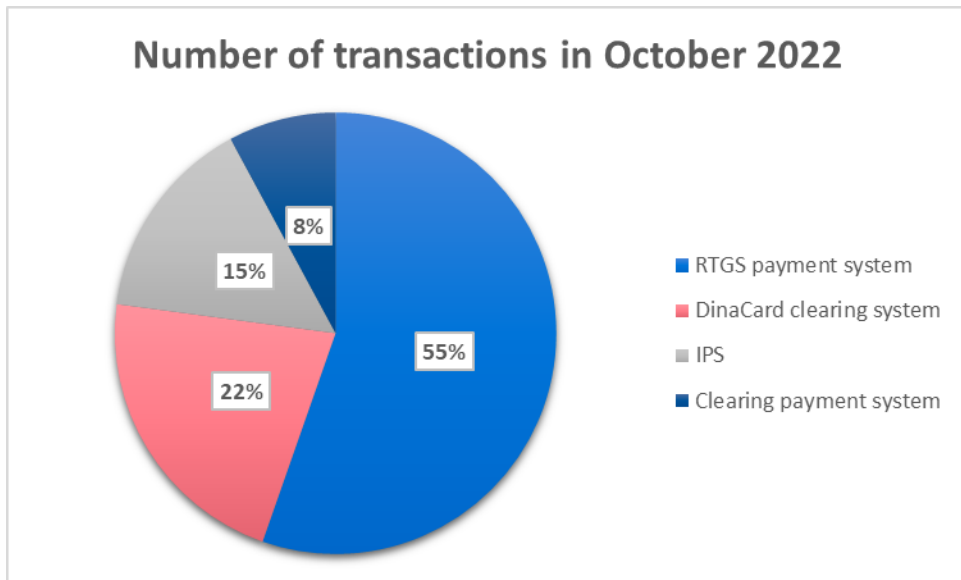February 21, 2022 with 265,458 transactions processed

Average processing time in the system: 1.1 s

Monthly number of transactions executed in IPS NBS system
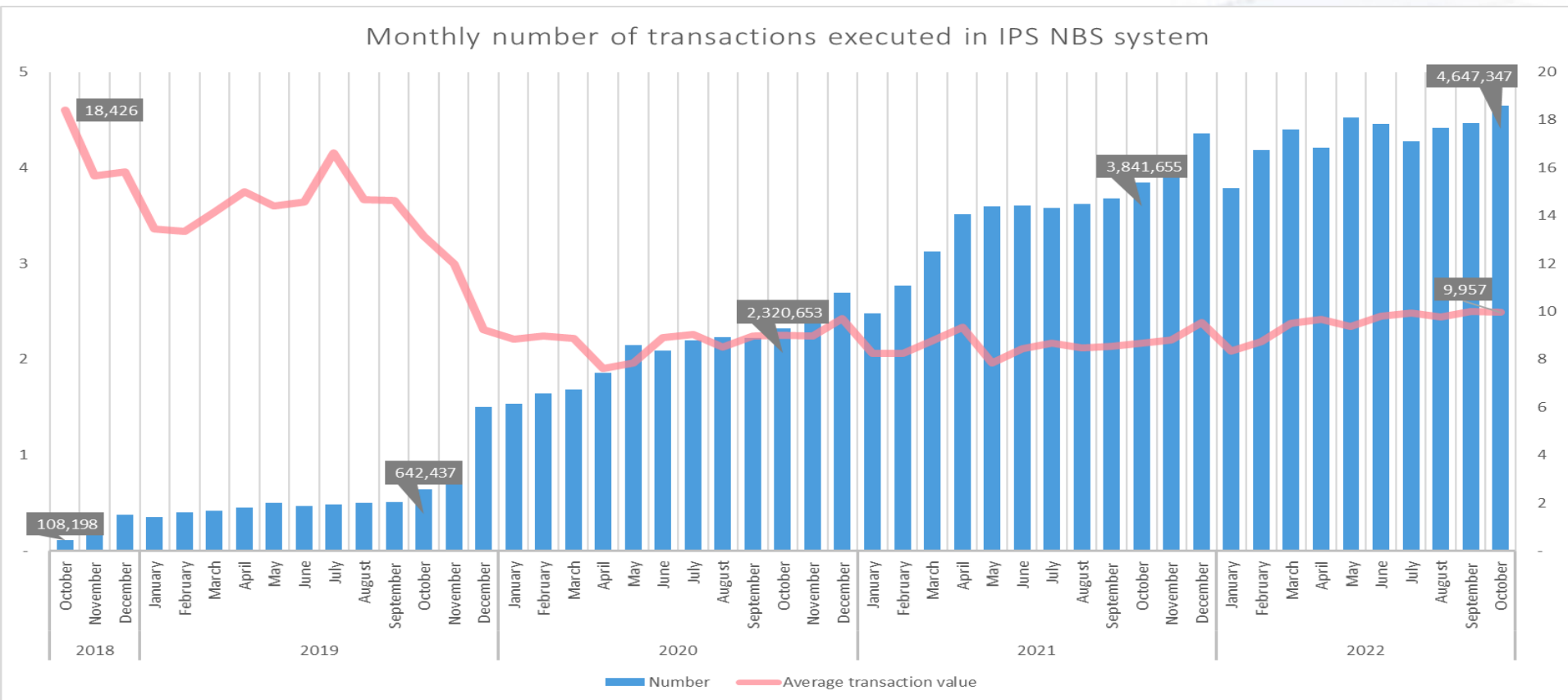
NBS IPS percentage share in the total number of transactions executed through 4 main NBS systems

- RTGS still has the biggest share in the total number of transactions executed through NBS systems. The reason for this lies mainly in the fact that it must be used to execute orders for credit transfers and direct debits in the individual amount of RSD 300,000 (around EUR 2550) and above. Also, bulk payments are enabled through RTGS.

- Credit transfers up to RSD 300,000 executed in real time using MT-102 messages with priority through NBS RTGS system are charged at the same rate as orders in the NBS clearing system and NBS IPS.

Number of transactions in October 2022

- 8%
- 15%
- 55%
- 22%

- RTGS payment system
- DinaCard clearing system
- IPS
- Clearing payment system

- As of October 22, 2018 instant credit transfers were enabled through standard payment channels:

➢ **bank tellers**

➢ **mobile banking applications**

➢ **electronic banking applications**

- The NBS had the idea not only to enable the basic infrastructure but also to develop other functionalities and take other activities, such as:

➢ **standardization of the NBS IPS QR code**

➢ **instant payments at the point of sale (both physical and internet)**

➢ **Central Addressing Scheme - Prenesi, Deep link, Bill Presentment and Payment**

- **NBS IPS Test Lab**
- **NBS IPS QR Code Generator and Validator**

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Example of an NBS IPS QR code printed on a bill

e.g. Serbian electricity company (PC EPS)

e.g. smallest municipality in Serbia

e.g. of the PUC Infostan Tehnologije

e.g. Kindergarten from Požega

Instant payments from a customer perspective (point of sale)

- Customer has an m-banking application (not a new banking app, but updated with new functionalities) that provides him/her with the opportunity to present his/her IPS QR code, or to scan the merchant's IPS QR code – both methods;

- Banks must provide prescribed information to the customer immediately after transaction;

- Customer has the right to dispute transaction for one of the reasons that are also prescribed;

- Regardless of the method, this is instant credit transfer where in preparing customer payment order both the issuer and acquirer are involved (it is important for dispute resolution regarding correct execution).

# Mobile banking application for a customer

- **IPS Scan** – example
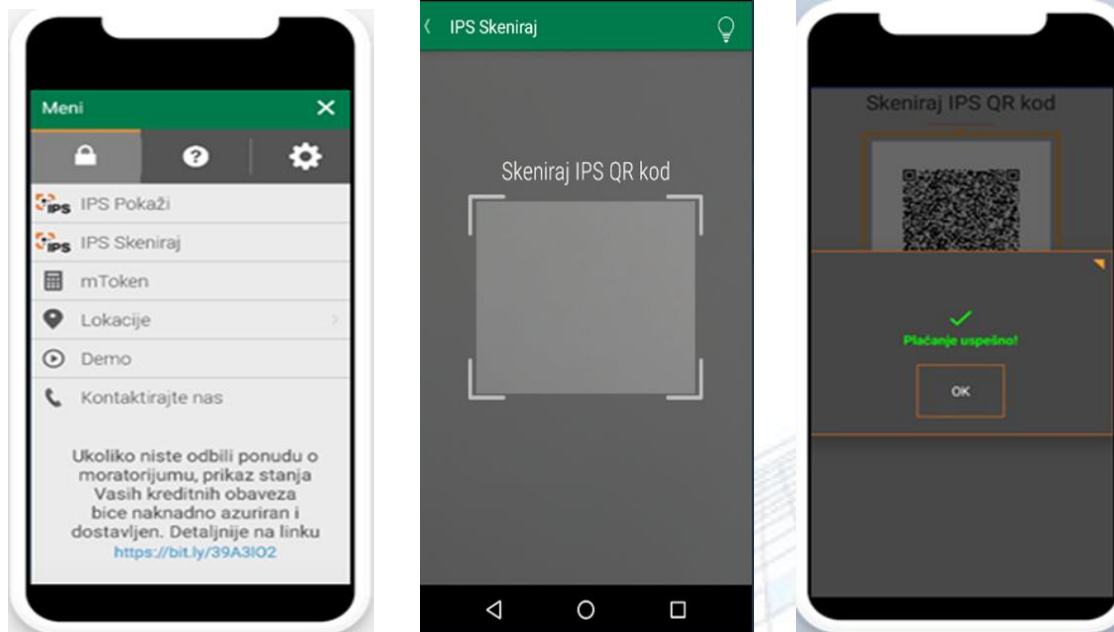
- Authentication process is very important. It depends from bank to bank and it may include PIN or biometric authentication for example. Payers can use the IPS scan method at online points of sale, at any physical point of sale marked with the IPS scan logo, as well as when a merchant who has a mobile application for this method and delivers the product to the payer says that the payment can be done via the IPS scan. The same function payers can use also to pay bills with the NBS IPS QR code for which specification is different from IPS QR dedicated for point of sale instant payment. Mobile applications simply recognize that it is not payment at point of sale, so payer will have a different screen.

# Mobile banking application for a customer

- **IPS Show** – example
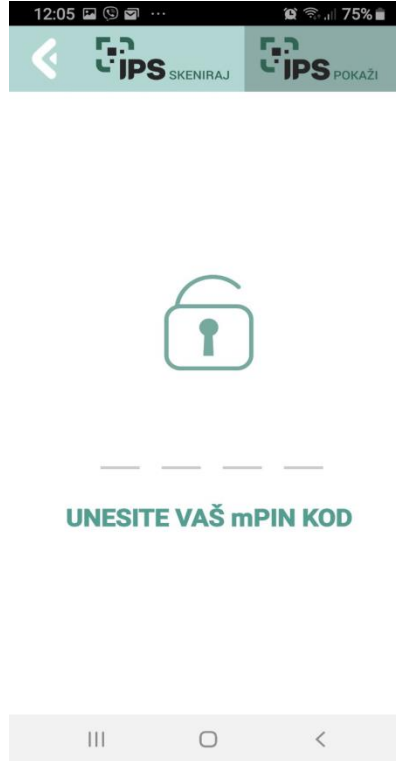
IPS show method is used by payers at any physical point of sale marked with the IPS show logo, as well as when a merchant who has a mobile application for this method and delivers the product to the payer says that the payment can be done via the IPS show.

Instant payments from a merchant perspective

- It is prescribed that acquirers of payment cards have to offer acquiring of instant payment instrument too, but they are not obliged to offer both methods, merchants may decide which method they want to use;

- Instant payment is possible on an infrastructure that is completely independent from the infrastructure used for card payments (mobile phone, tablet..), but it is also possible on the existing card infrastructure (POS terminals);

- The NBS recommends independent infrastructure for the purpose of mitigating risks due to the use of the same infrastructure for two completely different payment instruments - in case any problem occurs, none of them may be used;

- Merchants who have a card payment infrastructure (POS terminals) and instant payments enabled through independent infrastructure secure more stability for cashless payments;

- Beside options to use POS terminals or cash register with IPS QR code reader, it is possible for merchants to use mobile application for accepting instant payments;

- This option is especially interesting for delivery companies or, for example, usage in taxi vehicles.

Instant payments at the point of sale were introduced in February 2020 in a large retail chain Mercator S.

Mobile application for merchants – IPS scan
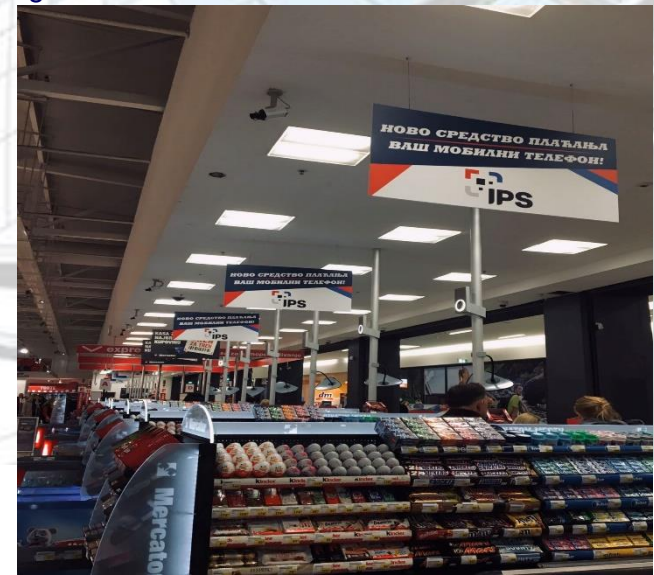
Target merchants:

- Small merchants who were not accepting cashless payments before because POS terminals and acceptance of payment cards are expensive (craft shops, restaurants, cafes etc.);

- Courier services that deliver products, food, taxi drivers, merchants, but also large retailers who have their own product delivery etc.;

- It is welcomed for merchants and different technical service providers to prepare mobile app for merchants that will be integrated with the selected acquirer – acquirers are obliged to provide merchants and technical service providers with all technical documentation and specifications and also testing in the NBS IPS TestLab (open space on the acquiring side with the purpose of implementing different solutions);

- It is prescribed for all banks that are payment card acquirers to offer acquiring of instant payments.

22

Mobile application for merchants – IPS show
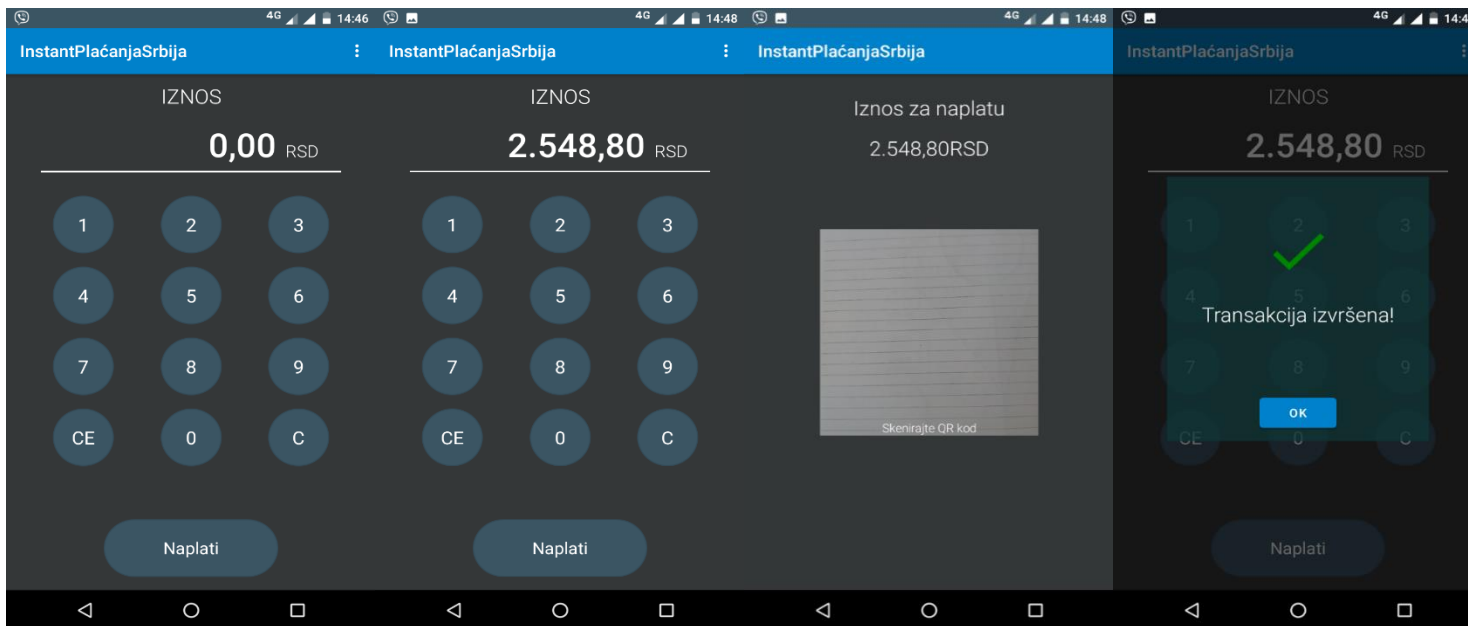
- Target merchants for IPS show by mobile app are the same as for IPS scan:

  - Small merchants, courier services that deliver products, food, taxi drivers, but also large retailers who have their own product delivery etc. Merchant experience for IPS show is almost the same as for IPS scan method;

  - For this method (IPS show) it is also welcomed that merchants prepare their own mobile app or different technical service providers to prepare mobile app for merchants with the same obligation for acquirers as for IPS scan method (providing documentation, testing in the NBS IPS TestLab);

  - Plans are to intensify the use of the mobile app by merchants because it is independent from the infrastructure used for card payments (previously mentioned advantages).

- Presented in June 2020;

- Alternative to card payments at a web shop;

- No need for customer to enter any data about payment instrument, all he/she needs to do is to scan the IPS QR code presented in the web shop through his/her mobile banking app;

- Already enabled in: NBS | Online points of sale – status as at

- Current solution - **usage of two electronic devices** and since February 2022 **DeepLink option (just one device needed – no need to scan IPS QR code).**

IPS Skeniraj
Svoju online porudžbinu možete platiti instant plaćanjem, metodom IPS skeniraj.

Kada izaberete IPS skeniraj bićete preusmereni na stranicu na kojoj će Vam biti prikazan jednokratan IPS QR kod koji je obezbedila Raiffeisen banka.

Aplikacijom mobilnog bankarstva (Mbanking aplikacijom) koju imate instaliranu na svom mobilnom uređaju skeniraćete/preuzećete podatke iz generisanog IPS QR koda i plaćanje obavljate jednostavno, u sigurnom okruženju Vaše banke.

Informacija o ishodu plaćanja biće Vam prikazana odmah po završetku obrade ali će Vam biti dostavljena i putem imejla.

| 01 | 47 |
| MINUT | SEKUNDI |

Vaša korpa

Proizvod		Cena	Popust	Cena sa popustom	Količina	Ukupno
	DOMAĆI KLASICI NA DRINI ĆUPRIJA ćirilično izdanje 349213	1.099,00 RSD	15,00%	934,15 RSD	1.00	934,15 RSD

24
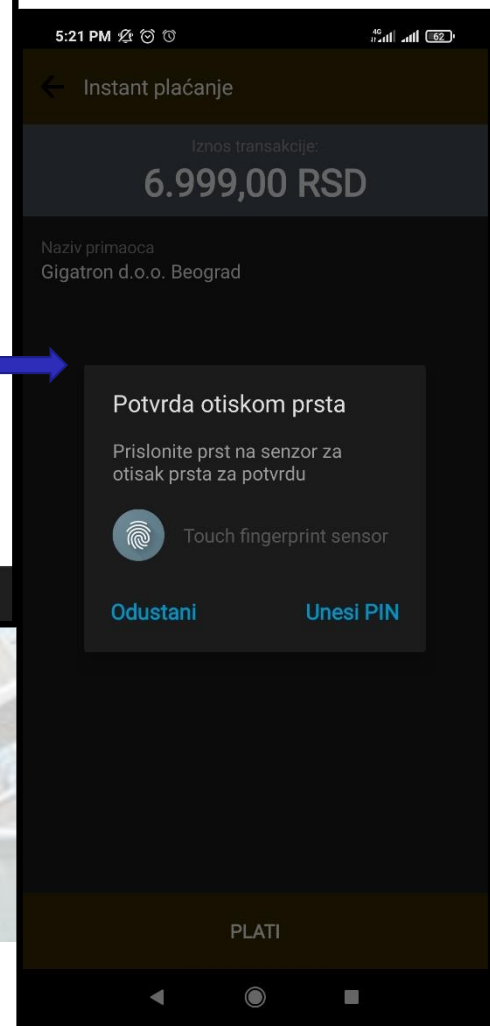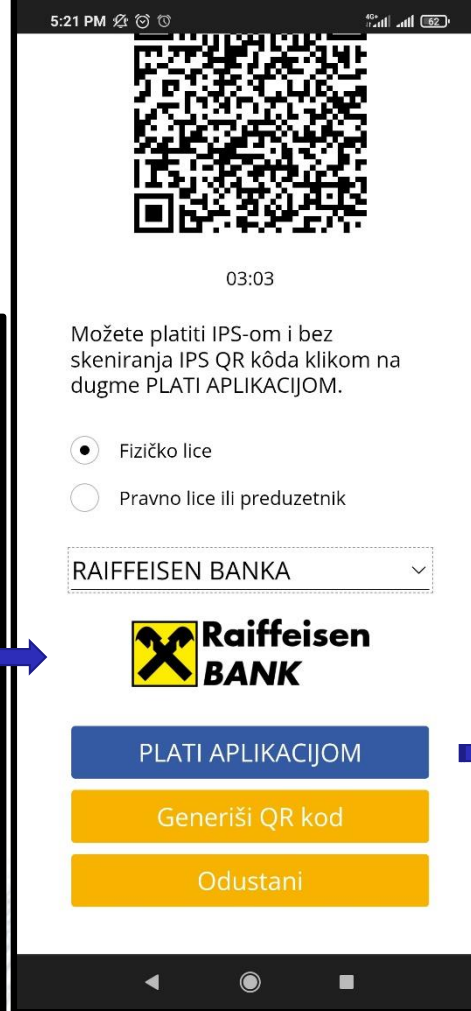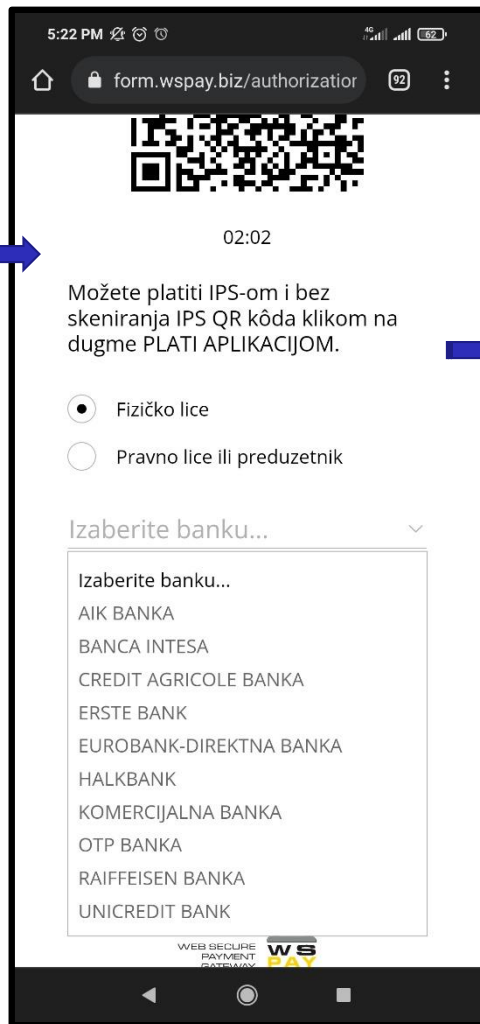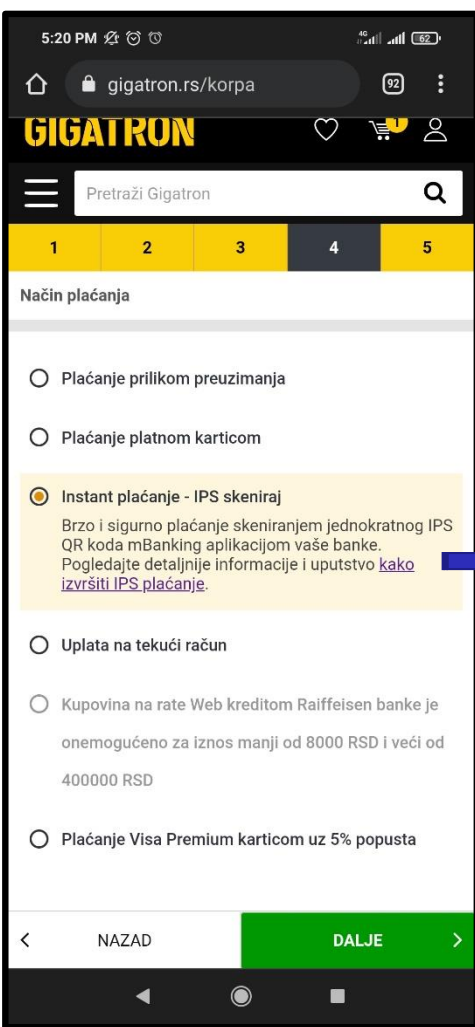
Deep Link

NBS IPS TestLab, Generator and Validator

- All banking apps and solutions for instant payments (e.g. issuers and acquirers) are tested in the **NBS IPS TestLab** before we allow banks to enable them to clients. For issuers we check determined requirements regarding simple user experience, correct execution of transactions and message correctness, information requirements after execution for payers, safety etc. For acquireres we check determined requirements regarding message correctness, especially control mechanisms of acquirers regarding fake IPS QR codes, information requirements after execution for merchants etc.

- In order to further support public utility companies, we prepared application – **NBS IPS QR code generator and validator** that is in production on the website https://nbs.rs/QRcode/index_lat.html. Users can freely generate this code using filling elements, or using string. The generated NBS IPS QR code is in line with the prescribed specification and can be used for initiating payments.

Additional functionalities – Prenesi (*Transfer*)

- Prenesi is a service that enables users to transfer money quickly and easily by knowing the mobile phone number of the user registered for the service.

- With her/his payment service provider, the user registers a mobile phone number that represents her/his alias which another user can use to initiate instant credit transfer.

- Entering, or choosing a mobile phone number from the contact list, and entering the amount to be transferred are sufficient information to form a payment order.

- The service was introduced in the second half of 2021.

Example
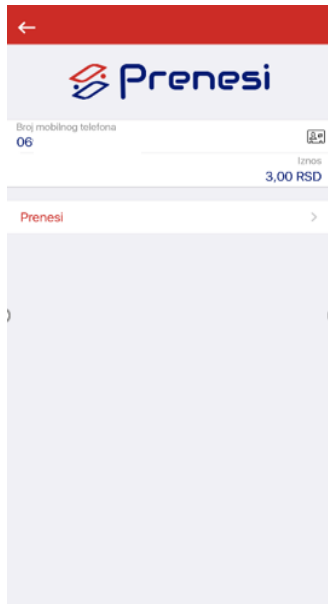
National Payment Card
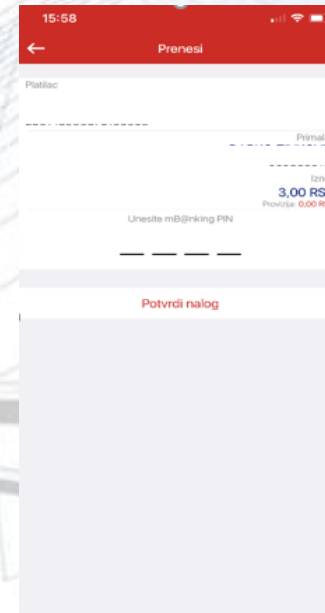
- DinaCard is a national payment card of the Republic of Serbia used for payment of goods and services, cash withdrawals and payment in instalments. Additional services offered to consumers are: internet payments and payments directly at the Treasury Administration counters.

- Even though the DinaCard payment card is a national card of the Republic of Serbia intended dominantly for use in the country, by establishing cooperation with two large international card systems, the NBS enabled the issuance of the international DinaCard payment card which can also be used abroad.

DinaCard-DFS card

DISCOVER

DinaCard-UPI card

UnionPay

- Why is it important to have a national payment card
- lower fees
- independence from foreign card schemes

ABOUT DINACARD SYSTEM

- National payment card scheme operated by the National Bank of Serbia
- There are approximately 5.5 million DinaCard cards issued
- DinaCard is accepted at all ATMs, POS locations and at most internet merchant locations (web-shops) in Serbia.
- Members of the DinaCard system are:

  ➡ 19 banks (out of 22 banks present on the market) and

  ➡ 11 processing companies (some of them international processors, e.g. Nets, SIA, Euronet)
- Switching and clearing are performed by the National Bank of Serbia.

Cooperation with banks and merchants

- In the Serbian market, DinaCard system has strong competition from international card systems;

- All currently issued DinaCard cards are **chip cards and cards with a magnetic stripe**. About 80% of all issued cards are chip cards, and the number (share) of those cards is growing rapidly;

- **Contactless cards;**

- The "**Get dinars**" service enables DinaCard users to withdraw cash in the amount of up to RSD 5,000 when making a purchase in some retail stores, irrespective of the amount of the purchase.

- On the left side you can see a photo from the day when the first *Get dinars* transaction in a large retail store – Mercator S was made. On the photo are Madam Governor and representatives of Mercator S and Unicredit Bank Srbija ad Beograd.

INTERNATIONAL PROJECTS

DinaCard-DFS картица

DISCOVER

- Cooperation with **Discover Financial Services**

- Until 2010 DinaCard payment cards were used exclusively in Serbia. In order to enable global acceptance of DinaCard cards as well, in 2010, the DinaCard system established cooperation with companies **Discover Financial Services** and **Diners Club International**.

- The formal start of the cooperation and the project was in 2007, and in 2010 a new product was introduced in the system – internationally accepted DinaCard - which functions as DinaCard in the country, while abroad it is accepted on the Discover and Diners acquiring networks.

- In 2017 DinaCard system established cooperation with **UnionPay International** system and in 2018 formally started a project. The aim of the project was acceptance of Union Pay cards in DinaCard network and issuing of co-badge card DinaCard-UnionPay which could be accepted internationally in UnionPay acceptance network;
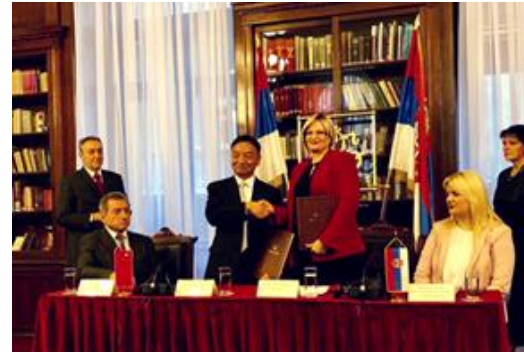
- First ATM acceptance of UnionPay cards in DinaCard network was enabled in 2021;

- Currently, acceptance of UnionPay cards is enabled at more than 85% of ATMs and at more than 50% of POS terminals in Serbia. Most frequent locations are covered, but acquiring banks are enabling acceptance of UnionPay cards on remaining POS terminals, regardless of the location atractivness.

CURRENT PROJECTS AND PLANS

National Bank of Serbia

DinaCard

- In addition, the DinaCard system is in the process of various complex projects:

➢ implementation of contactless technology

➢ implementation of 3DSecure 2.0

➢ issuance of co-badge card DinaCard-UnionPay

➢ acceptance of UnionPay cards in the rest of DinaCard network and e-commerce

➢ acceptance of DFS cards in DinaCard network

Other

➢ Crowdfunding regulation – the National Bank of Serbia is finishing the drafting process, by the end of the year it will be on a public discussion.

➢ Further development of the NBS IPS System - further growth in the number of cashless payments.

➢ Research on digital dinar – currently conducting research on the potential to issue CBDC.

Thank you for your attention!
☺