DIGITAL PAYMENT TRENDS: GLOBAL AND KAZAKHSTAN VIEW

Dedicated to the 30th anniversary of the Tenge

NATIONAL PAYMENT CORPORATION OF KAZAKHSTAN

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FOREWORD

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«Cashless» does not only define a type of payments, but it also defines the future of technology and business. As consumers and businesses alike increasingly depend on cashless transactions for their purchases, the establishment of a state-of-the-art infrastructure for digital payments becomes crucial. Governments and central banks have been incentivizing non-cash payments at POS, building real-time payments systems, introducing new means of payments such as digital currencies, and altering their regulations to foster and accommodate cashless transactions. However, the establishment of the infrastructure entails more than the technological systems that enable payment. Electronic know-your-customer practices, identification procedures, data safety, and APIs constitute a large set of services that complement the transaction systems.

These developments do not happen everywhere at the same time and the same pace; they depend on the individual histories and issues of countries. Therefore, the proper design and implementation of market initiatives, policies, and regulations intended to modernize and digitize payments requires the proper examination of payments trends across the world. This paper intends to do exactly this: review recent developments in cashless payments, identify the key drivers behind these trends, and review main payment technology innovations. Furthermore, the paper synthesizes global trends with recent developments in the Kazakh economy, to identify key opportunities and challenges regarding the future of payments in Kazakhstan. Finally, the paper concludes with expectations for the future of payments, with possible implications for Kazakhstan.

Mastercard has been operating in Kazakhstan since the early 2000s and opened its first office in Almaty in 2012. Ever since, Mastercard has been working with Kazakh public bodies to understand, develop, and predict the payments sphere in Kazakhstan. This study in hand is the culmination of much effort, deliberation, and expectation both on the side of Mastercard and National Payments Corporation. Mastercard and National Payments Corporation hope to continue their joint effort to help Kazakh public policy makers and market participants, from payment players to banks and fintechs, to bring about a better payments system and economy.

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1 Executive Summary

The demand for cashless payments across markets has been increasing steadily, both on the side of merchants and consumers. Financial institutions and merchants alike are looking for new methods to serve their consumers as new payment technologies arise, while governments focus on one side, enabling and on the other, regulating these developments. This emerging need is felt strongly in Kazakhstan, where the digital payments market is changing rapidly, driven by fintech innovations and public investments in payment technologies.

This whitepaper surveys the recent developments in digital payments around the world, documents state-of-the-art technologies, and offers insights into the future of payments. Parallel to these aims, this whitepaper examines recent trends in digital payments in Kazakhstan, explores recent public policy steps towards payments digitization of payments, and discusses select issues in the Kazakh market.

Globally, cashless payments have been experiencing sustained growth, as consumers keep the habits they developed during the recent global pandemic, such as increasing use of e-commerce and contactless payment methods and decreasing use of cash. APAC countries, driven by China, have been leading the charge towards cashless payments, with 29.5% compound annual growth rate (CAGR) between 2018-2022, followed by the MEA region, with 13.3% CAGR in the same period. In contrast, North America and LATAM have experienced more modest growth in cashless payments, with 6.3% and 10.3% CAGR in between 2018-2022, respectively. Aside from card payments, which constitute the more conventional form of cashless payments, payments with digital wallets have been increasing their share as well, both in e-commerce and at point-of-sale (POS). According to Worldpay, digital wallets are globally the most common payment method for e-commerce, constituting 49% of payments, while credit and debit cards combined continue to be dominant at POS, making up 51% of transaction value. Having said that, other forms of digital payment methods such as A2A through RTP systems are also picking up fast in certain regions such as South America and APAC.

Five main trends define the current payments sphere: The emergence of digital wallets in the global economy, the increased interest in real-time payments, the drive towards open banking, the development of central bank digital currencies in parallel with the popularization of cryptocurrencies and the advent of artificial intelligence to transform the payments sphere end-to-end.

Parallel to the global trend towards cashless payments, non-cash payments in Kazakhstan have been growing rapidly, driven by a young population (with median age of 29.5 years), high internet and mobile phone penetration (91% for both), high banking penetration (81%), and high digital payment penetration (78%). Overall non-cash payments including payment orders grew by 19% CAGR between 2018-2022, whereas card payments grew with 58% CAGR in the same time period and amounted to 125 trillion KZT in 2022. This significant growth rate was achieved through yet another impressive growth rate of 100% per annum in transactions in terminals, reaching 104 trillion KZT in 2022. With these advances, Kazakhstan now leads her region in terms of non-cash payment penetration, as 78% of adults over 15 have reported to have sent or received digital payments in 2021.

Public bodies in Kazakhstan lead the charge towards a cashless economy. The establishment of the Astana International Finance Center and the National Payments Corporation aims to flourish investment in financial and payment innovations, in parallel with significant infrastructure projects undertaken by the National Bank of Kazakhstan. Three of these projects define the vision of the National Bank of Kazakhstan and National Payments Corporation for the future: Digital Tenge - the upcoming central bank digital currency of Kazakhstan; Real Time Payment system; Open Banking initiatives. Going forward, the prevalence of the shadow economy, the untapped e-commerce potential, limited interoperability for both domestic and cross-border payments, cyber-security, and financial literacy remain key issues in the digitization of payments in Kazakhstan.

The future of payments will see money reimagined and will build upon existing developments in national economies: Non-financial assets will make their way into the realm of payments through tokenization. Regular procedures such as tax payments on consumption will be automated further through programmable payments. Combined with the adoption of the Digital Tenge, programmable payments will accelerate cash flows significantly, and liquidity concerns will be mediated in Kazakhstan.

Globally, intelligent experiences will become more prevalent in digital payments, as new financial tools will allow the management of assets in different service providers. This will substantially increase the quality of financial services in Kazakhstan, especially as the National Bank's open banking practices alleviate data constraints on the side of financial service providers. Digital and physical borders will be eliminated through better cross-border payment solutions, and new acceptance methods will phase out any acceptance concerns. The adoption of the Digital Tenge and the Instant Payment System, two technologies that are aimed at alleviating geographical and digital barriers, will contribute to this push greatly.

Sustainable features of payments will gain significance in payments, as new credit solutions enhance the coverage of financial services, environmental, social, and governance considerations shape consumer preferences and spending, and enhanced trust processes allow safer payments services for consumers and businesses alike. Combined with national policies towards a more sustainable economic system and enhanced trust practices by the National Bank of Kazakhstan, the payments sphere will become responsible towards the environment and the society at large.

Increasing demand for cashless payments and innovations towards better cashless payment methods seem to create a positive feedback loop: Fueled by the surge in cashless payments, new payments solutions have been flourishing, bringing better and more responsible financial services. However, these developments are inseparable from the problems associated with them and existing issues in national economies. For the global case, innovations such as open banking and ubiquitous wallets also bring concerns about data privacy and security. For the case of Kazakhstan, the digitization of payments occurs in an economy with some form of informal activity, cash reliance on specific payments rails, and problems with interoperability. As public bodies build infrastructure such as real-time payments required for a digital economy, private agents should aspire to reap the benefits stemming from the digitization of payments and invest in such digital technologies to increase the quality of financial services in the Kazakh economy.

The paper hereinafter is organized as follows: The first section provides an overview of global trends in cashless payments, comparing regions in terms of adoption of different payments technologies, and reviews major innovations in digital payments. The second section reviews recent trends in payments in Kazakhstan: drivers behind these trends, payments ecosystem, policy advances towards the digitization of payments, and issues in the Kazakh payments ecosystem. The third section investigates what concepts or technologies are expected to have a significant impact on digital payments in the future, with implications for Kazakhstan. The final section concludes.

2 Global Payments Landscape

Globally, economies around the world have been going through an unprecedented transformation. As drastic changes in payment behavior such as increased use of e-commerce, contactless payments, and decreased cash use became more prevalent during the pandemic, we have seen how macroeconomic conditions such as high inflation and interest rates are further altering consumer and business behavior. Despite regional differences, one trend common across geographies is that payments are becoming increasingly cashless. New forms of digital technologies, from digital wallets to open banking to digital currencies and AI, have been and will continue digitizing payments. These shifts in user behavior, macroeconomic environment, and technology have been changing payments as we know it.

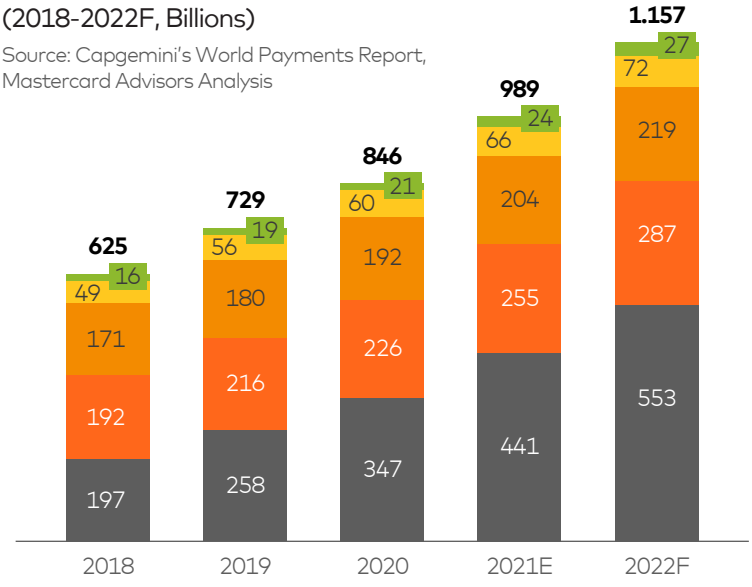
Globally, payments are becoming increasingly cashless

Amidst a rapidly evolving landscape, payments are becoming more and more cashless. According to Capgemini, total number of non-cash payments have increased from 625 billion to 1.157 billion between 2018 and 2022, corresponding to a 17% compound annual growth, at a global scale.

The acceptance of new payment methods such as instant payments, QR codes, e-money, mobile and digital wallets has also been contributing to the growth, which has been mostly driven by the increasing share of e-commerce in global trade. According to Statista, e-commerce's share in retail spend worldwide has increased from 12% by 2018 to 19% by 2022, undoubtedly as a lasting effect of changing consumer behavior during the pandemic.

Graph 1: Evolution of Total Non-Cash Transactions (2018-2022F, Billions)

Source: Capgemini's World Payments Report, Mastercard Advisors Analysis



	CAGR (18-22)	GROWTH (21-22)
Global	16.6%	17.0%
MEA	13.3%	12.6%
LATAM	10.3%	9.6%
North America	6.3%	7.0%
Europe	10.5%	12.5%
APAC	29.5%	25.5%

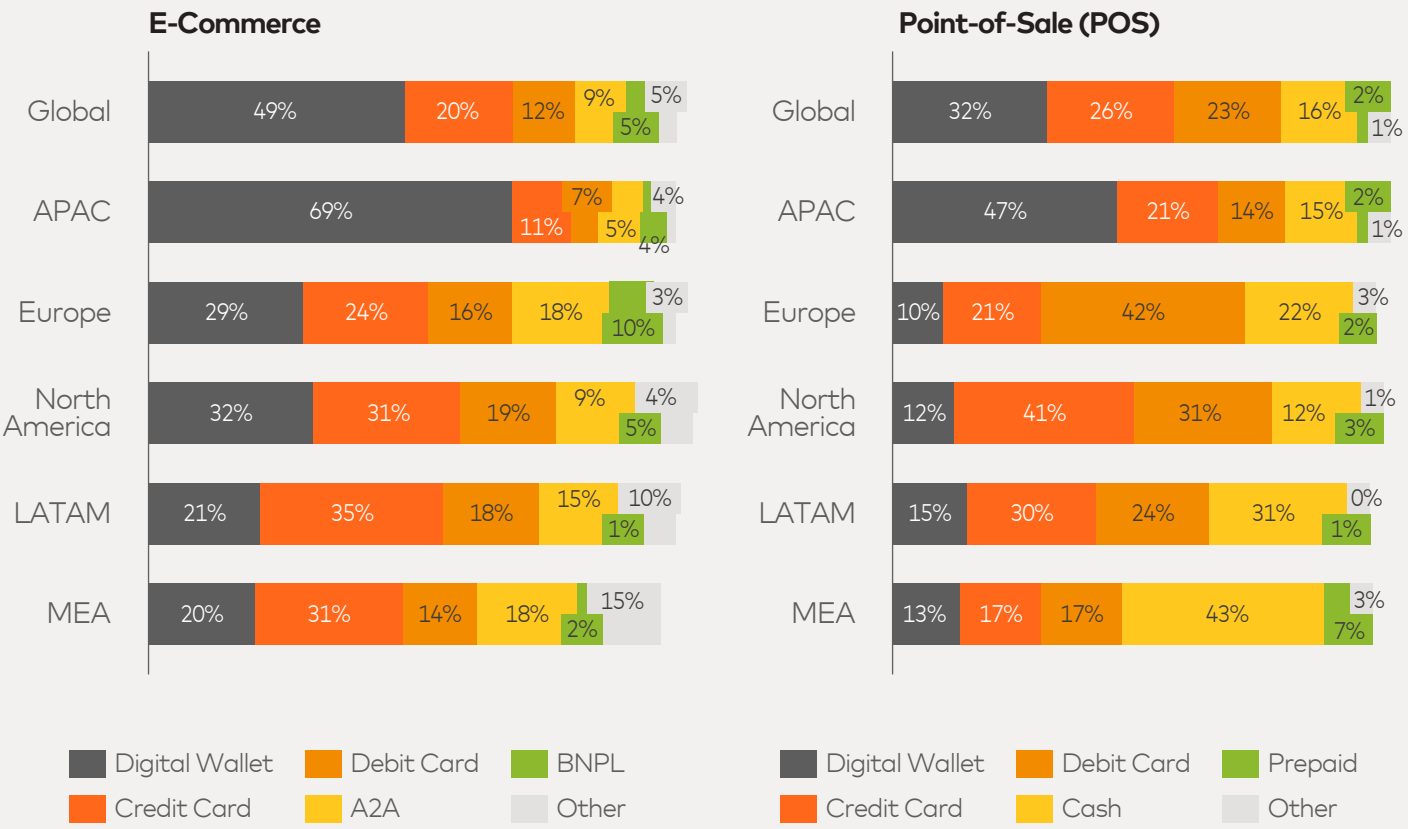
Parallel to global trends, non-cash payments have been growing across regions, although at different paces. APAC, the largest region in terms of the number of non-cash transactions, has also been the fastest growing. Playing into this is the popularity of mobile payments which has also been spreading in other countries in the region other than China.

In Europe, which in part has been a cash economy, non-cash payments have been growing at two digits, because of the increasing use of alternative payment methods such as account-to-account (A2A) and digital wallets especially for e-commerce payments. Other regions such as LATAM and MEA have also been growing at a relatively fast pace, as the population dynamics as well as the market initiatives such as introduction of Real-Time-Payment (RTP) systems have contributed to the growth of non-cash payments such as digital wallets and A2A, mostly stealing from cash.

Adoption of payment methods differ by region

Adoption of different payment methods has been changing rapidly and differs across geographies depending on the market characteristics. According to Worldpay, digital wallets are the most common payment method for e-commerce globally, constituting 49% of payments, while credit and debit cards combined continue to be predominant at point-of-sale (POS) making up 51% of transaction value. Having said that, digital wallets' share in POS payments have reached 32% and is expected to increase further. As changes in user behavior during the pandemic solidify, cash payments' share at POS has been and is expected to continue declining.

Graph 2: Share of Non-Cash Payments by Payment Method (2022, %)[1]



Note: Totals might exceed 100% due to rounding effects. "Other" includes cryptocurrencies, prepaid cards, PrePay and PostPay for e-commerce, as well as POS financing for Point-of-Sale. Source: Worldpay Global Payments Report – 2022; Mastercard Advisors Analysis

APAC is leading other regions in wallet adoption. Although China has been the driving force, other countries are picking up; share of digital wallets have more than doubled in e-commerce (up from 12% in 2018 to 28% in 2022) and grew sixfold in POS payments (up from 3% in 2018 to 17% in 2022) in the region excluding China. Next to digital wallets, cards are still widely used, credit and debit cards making up more than 35% of POS payments. Cash use has declined to 15% as mobile payments and the use of QR codes proliferate, despite differences between countries; cash use is as high as 56% in some countries such as Thailand and as low as 4% in others such as Australia.

In North America, the third largest payment market, digital wallets are the number one choice for e-commerce payments. This is because, most prominent digital wallets such as Apple Pay, Google Pay, and PayPal stem from and are widely accepted in the region. Despite the uptake of new payment methods, cards are still dominant, credit and debit cards combined making up more than 50% of e-commerce and more than 75% of POS payments as of 2022.

Latin American e-commerce and POS payments are dominated by cards. Here, cards make up 50% of both e-commerce and POS payments; yet A2A and digital wallets are picking up. Latin America is indeed growing fast in terms of A2A payments' share in e-commerce, driven by fast adoption in Brazil, Colombia, and Peru.

In Europe, digital wallets make up a lower share of e-commerce payments at 29%, although increasing, while cards and A2A constitute 40% and 18%, respectively. Cards, specifically debit cards, take the lion's share, 65% of transaction value, from POS payments. There are significant differences across countries when it comes to preferred payment method, though. In countries such as Germany and Spain, cash is still widely used for POS payments, at the levels of 41%, followed by debit cards. In the Nordic countries such as Denmark, Norway, Finland and the Netherlands, the share of cash in POS payments are 10% or lower, making these countries almost cashless. Newer forms of payments such as A2A and BNPL are also more common in these countries for e-commerce payments than in western Europe.

MEA is one region where cash has been rapidly replaced by newer and more convenient payment methods. Although cash constituted more than 70% of POS payments in 2018, this number is now down to 43%. During the same period, digital wallets have become more popular, standing at 20% and 13% of e-commerce and POS payments as of 2022, respectively. Cards are still widely used and are expected to keep their share over the next years.

New and innovative digital technologies are further digitizing payments

We have been witnessing the emergence of digital technologies with meaningful use cases in financial services in the last couple of decades, which will further digitize payments. Digital wallets, instant payments, open APIs/open banking, digital currencies, and artificial intelligence are a few to name. As consumer and business behavior has been changing, more users are adopting new payment methods although at different levels of maturity.

According to Mastercard's New Payments Index, Covid 19 pandemic has significantly altered user behavior across regions.

In APAC region,

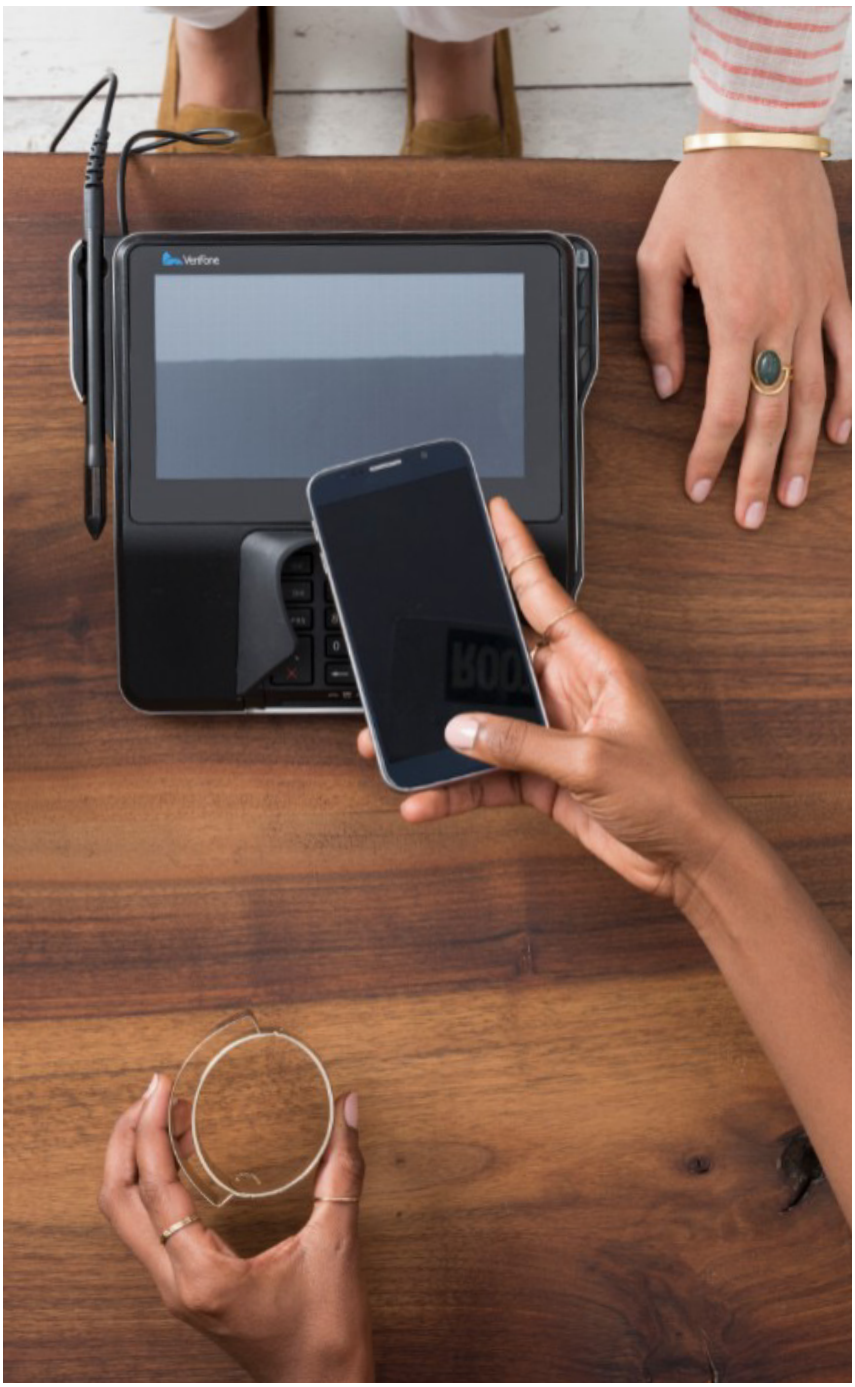
94%

of the users said they are open to using emerging payment methods such as QR code, biometrics, cryptocurrencies and contactless.[2]

Similarly, in Europe

93%

of consumers said they are likely to use a digital payment method in the next year.[3]



Digital Wallets

The use of digital wallets has skyrocketed in recent years as consumers look for alternatives to cash and embrace new ways to pay at a quicker pace. Digital wallets already account for 49% of the world's e-commerce sales and 32% of the POS sales in terms of transaction value as of 2022. These numbers are expected to reach 54% for e-commerce and 43% for POS payments by 2026.[4] Digital wallet transactions will increase from their current level of 7.5 trillion USD annually to more than 12 trillion USD by 2026.[5]

There are four major shifts happening in the industry that have played a significant role in the adoption of digital wallets, despite differences across regions. First, there is a fundamental change in consumer behavior and financial interaction, whereby consumers increasingly move towards e-commerce and more and more marketplaces, following on this trend, offer digital wallets to streamline the check-out process. As consumers' demand for contactless payments has accelerated in in-store payments -as a lasting impact of the pandemic-, digital wallet use is also picking up for physical retail purchases. Second, increased internet and smartphone penetration throughout the world and customers' expectations towards convenience feed into the digital wallet adoption.

On the supply side of the equation, there is fierce competition by players and disruption from different industries such as banks, telecom operators, fintechs and retailers, creating attractive propositions for merchants. Lastly, government initiatives to drive towards a cashless society along with smart city projects have been contributing to the adoption of digital wallets as a convenient way of paying.

Digital wallets around the world have different funding mechanisms from cash to accounts and cards; yet credit and debit cards combined are leading.

Globally,

34%

of consumers use bank accounts while

27%

use debit cards and

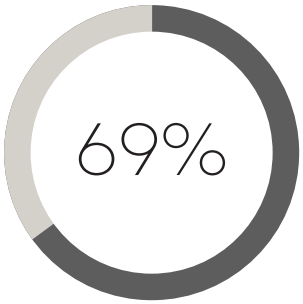
22%

use credit cards to fund their purchases through wallets.[6]

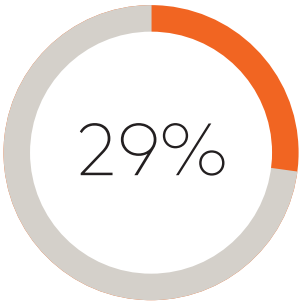
Graph 3: Penetration of Digital Wallets Across Regions (2022, % of Transaction Value)

Digital wallets have penetrated payments across markets

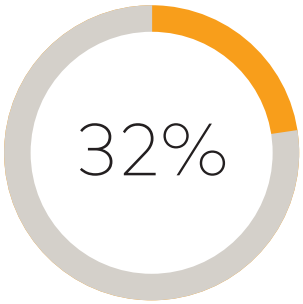
Digital wallet share in e-commerce:



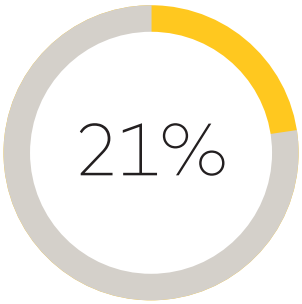
APAC
Wallets: AliPay, WeChat Pay, Union Pay, PayTM, GrabPay



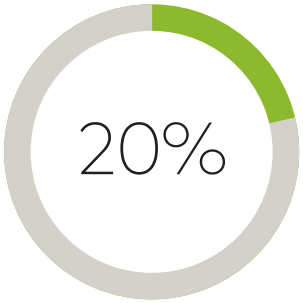
Europe
Wallets: Apple Pay, PayPal, Skrill, Google Pay, Wise, iDEAL



North America
Wallets: PayPal, Apple Pay, Venmo, Cash App, Google Pay



LATAM
Wallets: PicPay, PayPal, Mercado Pago, NuPay, PagSeguro



MEA
Wallets: M-Pesa, MTN Mobile Money, KongPay Orange Money, Payit

Source: Worldpay Global Payments Report 2022, Mastercard Market Trends, Mastercard Advisors Analysis

Digital wallets are instrumental in increasing financial inclusion

Digital wallets are seen by people as alternatives to banks; 77% of payment app users with low-to-medium incomes hold savings in their digital wallets/apps.[7] Moreover, digital wallets present opportunities to include the 1.4 billion unbanked, 25% of adult population, in the financial system.[8] Digital wallet trailblazers including PayPal, Venmo and Cash App started as P2P apps that enabled transfers amongst users without requiring banking information. Now, these offerings allow users to transact with companies, pay their bills, and even pay with governments, all of which are paving the way for the unbanked to transact digitally and securely.

Wallets are new marketing channel for consumer loyalty

Loyalty programs have significant sway on purchases; in a survey of over 32,000 consumers, more than 50% said loyalty programs influence their buying habits.[9] Hence, digital wallets serve as acquisition tools for marketers. 57% of survey respondents in the US said loyalty programs and points are digital wallets' top feature.[10]

As an alternative to sending offers to digital wallet consumers, businesses can embed a digital wallet into their consumer-facing loyalty apps. Although closed loop digital wallets allow companies to own their consumers' journeys within their loyalty apps, open loop systems provide consumers more flexibility around how and where they transact. It is important for merchants to factor their consumers' preferences before implementing such capabilities into their loyalty apps because this decision may significantly drive consumer spend and brand satisfaction.

Digital wallets will carry our identities

Access to legal personal identification is a real problem around the world; in 2019, nearly 1 billion individuals did not have an official form of personal identification such as a birth certificate.[11] Companies are creating digital wallet ecosystems to scan and store personal documents and IDs to streamline identification processes for finance, healthcare, travel, government, among other uses.

Moreover, organizations such as Trust over IP (ToIP), ID2020, and Decentralized Identity Foundation (DIF) are forming the requirements, specifications, and implementations of functional identity. Governments including Australia, EU, UK, and US are establishing mutual recognition of their own national digital IDs to allow for national and cross-border use. These will lay the groundwork for everyone to have access to government-approved digital identity wallets, which will validate their personal identity and empower users to share data with people, companies, and governments worldwide.

People are increasingly eager to test new Web3 innovations and Web3 wallets serve as keys to Web3 worlds

Web3 wallets are necessary to access and transact across blockchain networks and bridging between blockchains will scale Web3 wallets to the next level. Companies are creating digital wallets to buy, sell and hold currencies and tokens for each type of blockchain. A fundamental problem, though, is that they are blockchain specific. To address this, companies such as Portal are creating bridges allowing cryptocurrency conversion across different blockchains. Interoperability will pave the way for people to access relevant Web3 data in one place, like a Web3 super-app.

Digital wallets are here to stay and will become ubiquitous

Going forward, digital wallets are here to stay and will become ubiquitous as new uses gain traction, including the ability to unlock new forms of digital assets, store and access essential personal information, and easily traverse next-generation immersive iterations of the internet.

Real-Time Payments

A2A payments have long been in our lives in some form. In the past decade, though, we have witnessed rapid and widespread development of real-time payment (RTP) systems as a central component for digitalization of payments for many economies to achieve financial inclusion and formalization. Today, RTP is driving the rapidly evolving A2A payments ecosystem because of government intervention and a comprehensive set of use cases that sparks digital adoption. By the end of 2022, there were 72 markets globally with live access to real-time payments[12], accounting for around 94% of global GDP. According to Global Data, RTP payment transactions globally was as high as 195 billion in 2022 and is expected to reach 512 billion, or 27.8% of all electronic payments, by 2027.

Although P2P is still the primary one, new use cases in different payment flows emerge

RTP systems have started as a quicker and more secure option for P2P transfers and P2P has been the dominant use case especially in world's major economies. Yet, other use cases are also picking up as many countries including Brazil and India have introduced successful overlay or request-to-pay services. For example, Brazil's PIX supports all payments flows (P2P, P2B, B2P, P2G, G2P, B2G and G2P) and use cases including merchant payments, scheduled payments, request-to-pay, bill payments, and government payments. This has been instrumental in PIX's rapid adoption with 143 million users and annual transactions of 24 billion totaling Real 10.9 trillion USD (2.11 trillion USD) in 2022.*

There are indeed several use cases in different payment flows from B2B to B2C, C2B and G2C, where RTP systems can address the pain points inherent in these flows. For example, in B2B payments RTP systems can be used for supplier payments (e.g., an SME scanning invoice QR code and initiating payments via app) and help ensure full payment for suppliers and reduce theft risk. In B2C payments, salary payment is a use case where RTP systems can be used, providing employees more bank options and favorable terms. Lastly, RTP systems can be leveraged for social payments (e.g., disbursements to bank/wallet via mobile number) in G2P flow in a timely and cost-effective manner.

*Banco Central Do Brasil

RTP systems have their own challenges and risks

Despite their benefits, there are also certain inhibitors associated with RTP systems. An important aim of the RTP scheme is the ability to reach all bank accounts in the market, allowing everyone to connect easily and securely to the infrastructure from the outset. It's a foundation that's often the hardest to put in place. Banks, for various reasons, can be reluctant or slow to participate in the system. These delays can be detrimental to the development of real-time services and are why many regulators step in to mandate enrolment in these national infrastructures.

RTP systems can be challenging for banks if appropriate and effective pricing policies are not in place, given high investments associated with sophisticated infrastructure. The monetization of an RTP scheme comes not only from transaction fees, but also from indirect revenues such as cross-selling revenues and UX enhancements, as well as cost savings. Across markets, several ecosystems have implemented no-fee P2P to achieve wider adoption, while other more sophisticated use cases are monetized. The case of India's UPI shows the importance of having a balanced economic model. To increase the adoption, Central Bank during the launch of UPI 2.0 prohibited participants from charging for UPI-associated services, which created friction among players and hurt their financials. The participants have processed the formal request to the government to return the collection of MDR in UPI.

Lastly, there is an inherent fraud risk with RTP systems due to the nature of the transactions, which are immediate and irrevocable. Some RTP systems address this issue by setting limits per transaction to control the risk of fraud. For example, India's UPI has differentiated limits by flow type, ensuring a good balance between security and user experience. Moreover, the increase in transaction data with real time payments can be integrated into machine learning platforms to innovate financial institutions' fraud detection capacity.

Close examination of global experiences with different characteristic reveals lessons for successful implementation of RTP systems around five dimensions; 1: ecosystem development, 2: operating model design, 3: monetization, 4: user experience (UX), and 5: cross-border.[13]

Graph 4: Critical success factors for RTP systems
Source: Global Real-Time Payment Trends and Case Studies by Mastercard Market Trends

Global experiences reveals lessons for successful implementation of RTP systems

	LESSON	CASE STUDY	DETAILS OF THE CASE STUDY
Ecosystem Development	Align and involve the market participants from regulators to banks and other stakeholders, paying attention to needs and interests of the participants	PromptPay	• Regulator monitored the development and participated in tests • Thai Bankers Association provided the funds • Banks actively participated, helping PromptPay offer multiple use cases (e.g., e-comm, request-to-pay, tax refunds, etc.)
Operating Model	Design a balanced operating model between participants, UX, security, and operational efficiency	UPI UNIFIED PAYMENTS INTERFACE	• Having a centralized directory, operated by NPCI, allowed connection of all players ensuring interoperability • Unique virtual payment address that serves as an identity created a good user experience (UX) • Putting differentiated limits by flow type provided a good balance between UX and security
Monetization	Have appropriate and effective pricing policies that enable monetization and generate benefits for different players	pix	• No charge to individuals helped achieve high adoption rates, decreasing the use of cash in the economy • Giving participants flexibility w.r.t. pricing of P2M, B2B and B2C flows, coupled with very low usage charges from Central Bank, created higher yields for participants and a competitive environment
User Experience	Guarantee a standardized and frictionless UX across channels for the recognition, adoption, and growth of an RTP system	swish	• Superior UX focusing on keeping processes simple and highly intuitive (e.g., simple registration, minimalistic and intuitive interface with simple graphics, and easy-to-access options, etc.) ensured quick adoption • Having a single brand and application helped the high brand recognition in the market
Cross-Border	Think about cross-border interoperability as it is a growing global trend	P27 Nordic Payments	• Offering a fully standardized central clearing infrastructure with customizable modules is to help create services tailored to the local requirements, achieve economies of scale, and frictionless payments • Infrastructure enabling multi-currency transfers is to potentially help quick adoption

Going forward, widespread adoption of RTP systems will depend on their ability to overcome these challenges

In conclusion, RTP systems are becoming more widespread across geographies as more use cases pick up; they have achieved a certain scale in some markets such as APAC and South America. Leveling the playing field and ensuring that market participants have the economic incentives to participate and innovate will stay crucial for low level of cost and high level of adoption for both current and planned initiatives. The next major step for RTP systems will be cross-border interoperability; real-time cross-border payment ecosystems are still in development, but it is a global trend that is growing all the time and requires cooperation at a multi-market level. Despite some regional initiatives such as Nordic Payments Platform (P27), it is yet to be seen if cross-border interoperability can be achieved on a global scale.

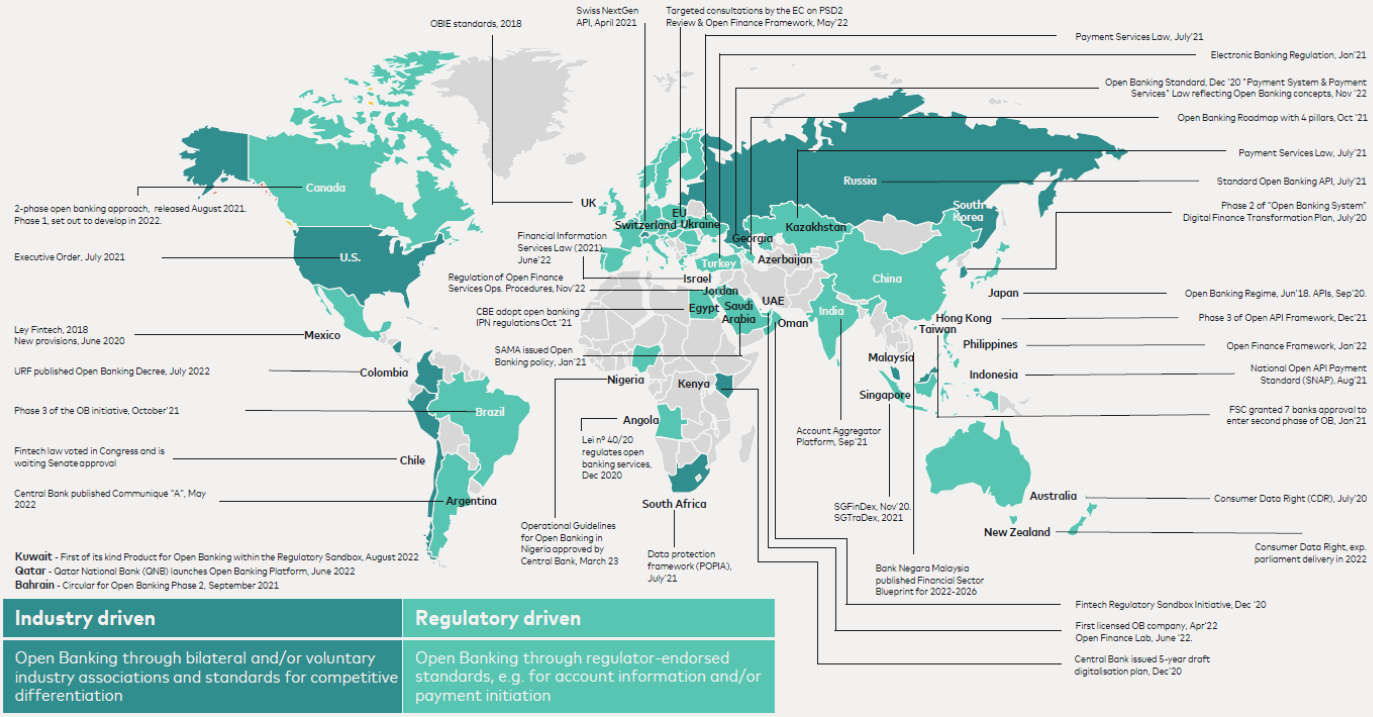
Open Banking

Open banking has gained global traction, boosted locally by either regulation or market initiatives, and is on the rise across geographies driven by efforts to stimulate innovation, foster competition, uphold data confidentiality, ensure cost efficiencies, and advance financial inclusion.

Open banking puts consumers and businesses at the center of where and how their financial data is utilized and furthers access to essential services tailored to their preferences and requirements. It is a new digital channel that seamlessly integrates banking platforms with 3rd party ones, culminating in the formation of a collaborative and synergistic ecosystem, where financial institutions securely share banking data through Application Programming Interfaces (APIs) to enable 3rd-party developers to build applications and services around that data.

Graph 5: Open Banking Initiatives
Source: Mastercard Advisors Analysis

Open banking is a global trend, driven in each country by either regulation or industry initiatives



To date, various Open Banking use cases and models have been adopted worldwide

United Kingdom - Account Information Services: The UK's implementation of open banking has led to the emergence of account information service providers (AISPs). These providers aggregate financial data from multiple banks to offer users a comprehensive view of their finances in one app. Companies like Yolt and Moneyhub allow users to monitor their account balances, transactions, and expenses from various banks in a single dashboard. As of 2023, over 7 million consumers and businesses (of which 750k are SMEs) are using innovative open banking enabled products and services to manage their money and to make payments.[14]

European Union - Payment Initiation Services: In the EU, open banking has facilitated the development of payment initiation service providers (PISPs). These providers enable users to initiate payments directly from their bank accounts when making online purchases. Trustly is an example of a PISP that allows users to pay for goods and services without the need for credit cards or third-party payment processors. Aiaa, a Mastercard company, connects third parties to over 3,000 banks, providing secure access to personal and corporate financial data and enabling seamless payment experiences. Additionally, Mastercard's European open banking connectivity allows businesses to achieve instant verification of bank account ownership.

India - Unified Payments Interface (UPI): Although not strictly open banking, India's UPI is a prime example of open-like principles applied to payments. UPI that enables users to link multiple bank accounts and perform real-time fund transfers through a single mobile app has been used to drive digitization of payments and movement of money with success. Apps like Google Pay and PhonePe leverage UPI to provide seamless P2P and P2M payment experiences. As of end 2020, UPI transaction volume had reached the 2 billion mark, representing 10% of India's GDP.[15]

One of the significant domains where open banking has made a notable impact is payments

Projected global value of Open Banking payments are estimated to reach 330 billion USD by the year 2027; up from 57 billion USD in 2023. Moreover, the trend is expected to continue to rise as forecasts show that by 2026, 75% of all payment transactions worldwide will be handled through Open Banking's direct payment mechanisms.[16]

Graph 6: Open Banking Use Cases

Source: Mastercard Advisors Analysis

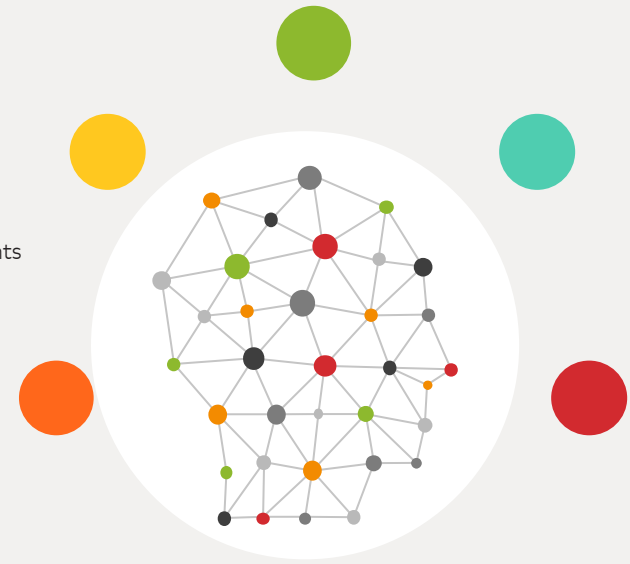
There are several open banking use cases in payments, demonstrating how open banking revolutionizing the way payments are initiated, processed, and managed

Direct Payments and Transfers :

- **Account-to-Account (A2A) Payments:** Direct fund transfers between bank accounts, usually in real-time, allowing seamless P2P and P2M transactions
- **P2P Payments:** Facilitating simple and fast money transfers between individuals across different banks and even different countries using open banking APIs without the need for intermediaries

Merchant Integration:

- **Merchant Payments:** Enables businesses to accept payments directly from customers' bank accounts, reducing transaction costs and simplifying the payment process
- **E-commerce and Online Shopping:** Allowing customers to make secure online purchases by initiating payments directly from their bank accounts



Enhanced Financial Management:

- **Personal Finance Apps:** Integrating open banking APIs with financial management apps to provide users with information about their spending habits and financial health
- **Budgeting and Expense Tracking:** Helps users track and categorize their transactions to better manage their finances

Automated and Recurring Payments:

- **Bill Splitting and Payments:** Allows users to split bills and make payments collaboratively, this is beneficial for shared expenses like utilities and dining
- **Recurring Payments and Subscriptions:** Authorizing automated payments for subscription services and regular bills, ensuring that payments are made on time

Innovative Payment Models:

- **Request-to-Pay (R2P):** Allows vendors to generate payment requests and send them to customers, simplifying invoicing and settling dues
- **Cross-Border Payments:** Facilitate international payments by providing real-time exchange rates and reducing intermediary involvement

Despite benefits, it also presents several challenges for successful implementation and widespread adoption

Security and Data Privacy - since open banking requires the sharing of sensitive financial data, it is extremely important to have robust security measures in place and to comply with strict data privacy regulations.

Standardization and Interoperability - different banks and financial institutions may have varying APIs and data formats, making it difficult for 3rd party developers to create consistent applications. Achieving standardized APIs and ensuring interoperability across the industry is a significant challenge.

Regulatory Landscape - Open banking initiatives must align with evolving regulatory frameworks, which can be complex and vary from one jurisdiction to another. For instance, compliance with regulations such as the General Data Protection Regulation (GDPR) in Europe adds layers of intricacy. Navigating these regulations while fostering innovation is a delicate balance.

Data Governance and Consent Management - Managing user consent to data sharing is not just a technical aspect, but also an ethical and trust issue. Establishing effective frameworks for consent management is vital to ensure data is used only for intended purposes.

Fraud Prevention - With increased data sharing, the potential for fraudulent activities also increases. Developing effective fraud prevention mechanisms that do not hinder the UX is a significant challenge.

Open Banking needs comprehensive collaboration across the board with internal and external stakeholders

In conclusion, while open banking brings forth numerous opportunities for innovation and enhanced financial services, addressing security, regulatory, and technical standards will be crucial for its successful implementation and long-term growth. Collaboration among stakeholders, including banks, fintech companies, regulators, and consumers, will be key to overcoming these challenges.

Digital Currencies

Digital currencies with significant advances in blockchain technologies, have started penetrating the payments sphere. Initially starting with cryptocurrencies such as Bitcoin, digital currencies have expanded to include central bank digital currencies (centralized digital currencies issued by the central bank) and stablecoins (digital currencies whose values are linked to external assets). Today, digital currencies impact the financial lives around the world, in areas from payments to transferring money, loyalty programs to loans, and others. Despite their consumer- and merchant-friendly features, digital currencies also carry significant risks, both for individuals alone and for the greater economy.

Graph 7: Digital Currencies and Real-Life Examples

Source: Mastercard Advisors Analysis

Consumers' interest in cryptocurrencies continue to rise

Consumers' interest in buying and spending cryptocurrency continues to rise, as they fear missing out on a potential investment opportunity and start to see cryptocurrencies as an alternative to their own fiat currencies to pay for retail purchases. According to the PYMNTS's Paying with Cryptocurrency report (August 2022), 48% of consumers say they want to invest in cryptocurrency in the next year to make money, and one-third say they plan to invest in digital currencies because they want to use the proceeds to make payments for expenses.

These developments are in part a response to a larger trend away from cash and other traditional means of payments. The affinity towards cryptocurrencies is also related with its inherent advantages. Businesses favor them due to the higher speed of payments, improved data transactions, and the possibility of currency conversion at the point of transfer/sale. Consumers favor cryptocurrencies due to their ease of use, their investment value, and diverse use cases.

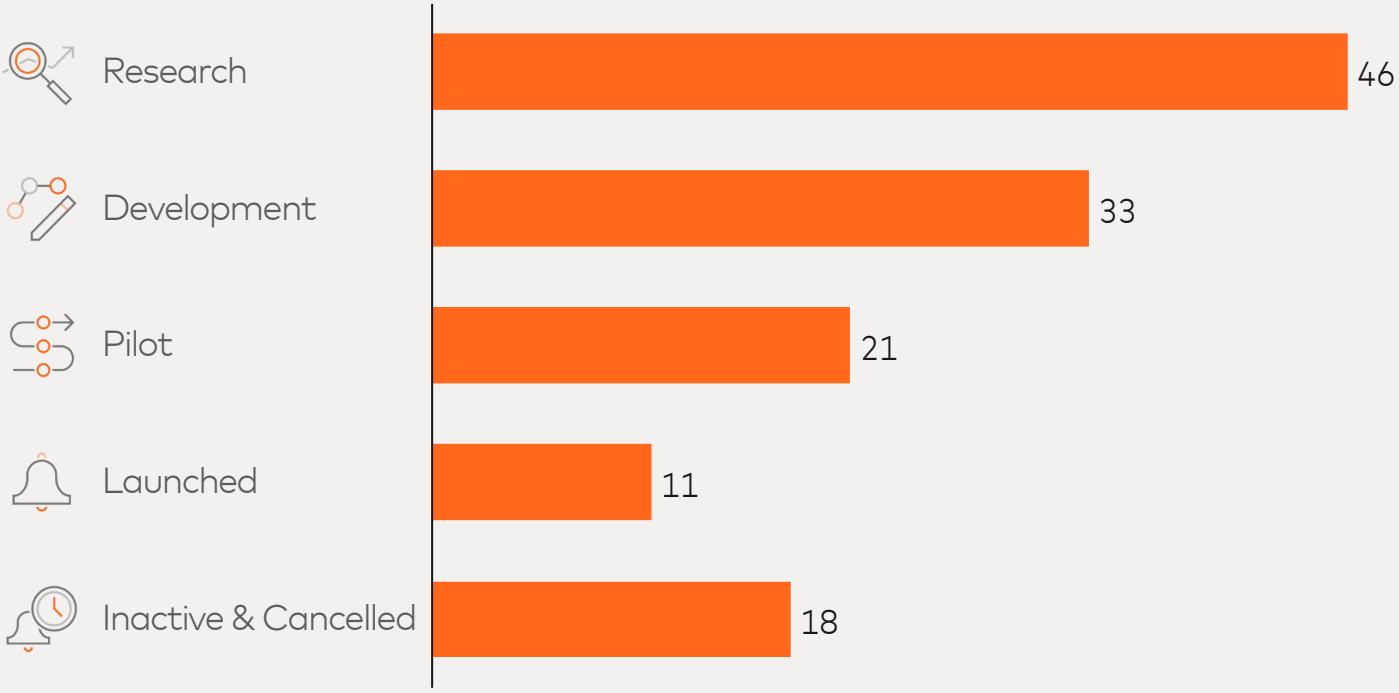
Heightened interest in digital currencies led governments across markets to respond with CBDCs

As cryptocurrencies and other kinds of payment methods gained prominence, policymakers were urged to consider reforming their payment systems. Governments that wanted to modernize their outdated payments infrastructure turned to their central banks to issue their own digital currencies, known as CBDCs. These are digital and equivalent representations of physical currency but easier to handle, less vulnerable to fraud and, as connectivity increases and mobile devices proliferate, a powerful way to include more people in the digital economy.

Graph 8: Number of CBDC Projects Around the World (2023) As of October 2023
Source: CBDCTracker by Atlantic Council, Mastercard Advisors Analysis

Globally 130 countries, representing 98 per cent of global GDP, have explored CBDC and are now at different stages

Number of CBDC initiatives by stage (2023)



From 35 countries considering a CBDC in May 2020, currently around 130 countries, representing 98% of global GDP, are exploring CBDCs (Atlantic Council, 2023). Of those, 11 have launched digital currencies, including China's pilot program that has reached 260 million users in total (Atlantic Council, 2023). These projects could transform the role of central banks while also changing the way we pay and get paid. For instance, they have the potential to lower the cost of cross-border payments, speed up money transfers and provide basic financial tools to more people.

Digital currencies have been penetrating the payments sphere

Digital currencies are currently used in different fields of the digital economy, including payments, acceptance, loyalty, investments, remittances, and loans. Digital currencies as a means of payments can be used in almost all traditional methods, such as debit, credit, and prepaid cards. They can also be used through digital wallets, which is the main method of doing crypto-denominated payments (41% of consumers prefer to access crypto assets through wallets)[17]. Examples of digital wallet products offered, in partnership with Mastercard, include the Wirex Travel Card, which allows consumers to use their cryptocurrencies at points of sale, the SoFi Crypto Investment card, which allows customers to earn cashbacks denominated in cryptocurrencies, and the Bit2Me Learning Platform, which allows payments in Euros and cryptocurrencies using the same debit card.

On the merchant side, digital currencies have penetrated the acceptance sphere, allowing merchants to reduce the risk of fraud and default, and better enable the receipt of payment. Loyalty programs, which provide a stronger connection between customers and merchants, have also been affected by digital currencies. Around the world, loyalty programs that allow cashbacks denominated by cryptocurrencies are in demand, with the rate being 44% for the US.

Source: Mastercard Crypto Concepts and Use Cases Report

Multiple investment mechanisms exist for cryptocurrencies, ranging from more conventional methods depending on the market, to more innovative solutions, such as rounding up the value of a purchase and using the extra fund to buy cryptocurrencies. Cross-border payments and remittances have also been affected by the crypto wave, with remittances reaching 600 billion USD globally in 2021.

Source: Mastercard Crypto Concepts and Use Cases Report

Yet, certain risks and issues still exist

Despite the vast benefits of digital currencies, significant issues still exist. Although there is consistent demand for domestic currency, due to tax payments, debt obligations, and so on, there is no guarantee that there will be a consistent demand for crypto assets over time. Those willing to pay for goods and services in crypto assets can find themselves unable to engage in such payments, due to a possible stop in the demand for crypto assets. Furthermore, due to the irreversible character of crypto assets, it is difficult to regulate payments and offer protection against fraud.

Besides, crypto assets, or their poor management, can threaten the macroeconomic stability of an economy. For example, a shift in domestic savings towards crypto assets could dampen the effectiveness of monetary policy, as fluctuations in the value of crypto assets could overpower the crypto asset/domestic currency exchange rate changes induced by monetary policy decisions. On the other hand, unlike domestic currencies, most crypto assets have no backing institutions. Therefore, significant fluctuations in the value of crypto assets could spread to the entire network of crypto asset holders and their connected non-asset holders, increasing the level of risk in an economy. Fiscal policy effectiveness, capital flow stability, and payment system efficiency are among other macro-level considerations that are threatened by poorly managed crypto assets (IMF, 2023).

The future holds the potential to witness a more widespread adoption of digital currencies

In conclusion, from the launch of the first cryptocurrency in 2009 until today, digital currencies have evolved significantly despite certain price speculations and volatility in the last decade. They increasingly show potential in becoming a part of everyday commerce, as consumers and business' interest in digital currencies as a means of payments increases, supported by introduction of more robust forms of digital currencies such as stablecoins and CBDCs. Today, market participants from payment schemes to digital wallets and Central Banks are innovating ways to include digital currencies in the payments ecosystem. Despite certain risks, the future holds the potential to witness a more widespread adoption of digital currencies in everyday lives.

Artificial Intelligence

In recent years, one of the most promising technological advancements is Artificial Intelligence (AI), which is transforming every major technological system in the world including financial markets, payments, healthcare, security, and compliance. The payment industry is also experiencing a significant transformation, driven by the rapid advancement of AI technology; 70% of all financial services firms are using machine learning to predict cash flow events, fine-tune credit scores and detect fraud[18]. As the payments industry continues to grow and evolve, businesses are seeking new ways to stay competitive and provide enhanced value to their customers by using AI.

AI is revolutionizing the way payments are made, processed, and secured

AI has the potential to significantly impact the payments industry by enhancing security, personalizing the customer experience, and streamlining processes in every aspect of payments, from mobile wallets to contactless payments, from real-time fraud detection to personalized customer interactions. In today's world, AI-powered payment systems are no longer optional, but crucial for businesses trying to stay competitive and deliver exceptional customer experiences since 92% of consumers expect a fast, frictionless experience that is also as trustworthy and secure as possible[19]. While AI is already being used in the payment industry, AI-powered payments are showcasing how technology is redefining financial transactions, driving innovation, and fundamentally changing the way we transact.

AI will streamline processes, improve accuracy, and automate reconciliation in payments

AI tools play a pivotal role in streamlining payment processing by automating repetitive tasks, reducing errors, and enabling industry players to focus on strategic activities. These tools use machine learning to analyze large volumes of transaction data and automatically match transactions to corresponding records in other financial systems. This automation includes tasks like data entry and reconciliation, enhancing efficiency for large merchants and acquirers. This in turn allows for better customer journey optimization, risk management, and the identification of new opportunities. Ultimately, AI in payment processing ensures a faster, more accurate payment experience for customers.

Furthermore, AI will significantly contribute to fraud detection in payments

Traditional methods of detecting fraud are no longer sufficient; this is where AI-powered fraud detection can make a significant impact. These tools can analyze massive amounts of data in real-time, detecting unusual patterns and identifying potentially fraudulent activities by leveraging advanced machine learning algorithms and data analysis from multiple sources. This not only helps in minimizing financial losses for merchants and payment providers, preserving customer trust, but also improves the customer experience by reducing the number of false declines. Brighterion, a Mastercard company, offers a portfolio of artificial intelligence and machine learning technologies for financial institutions, and processes more than 150 billion transactions annually.

Lastly, personalization in payments will see substantial improvement through AI

AI enables businesses to create personalized payment experiences based on customer preferences and behavior. This includes tailored product recommendations, loyalty programs, and customized payment options, ultimately boosting customer satisfaction. Furthermore, AI-driven analysis of customer data enables merchants to enhance offerings, leading to increased loyalty and more efficient transactions.

In conclusion, the integration of artificial intelligence (AI) into the payments industry offers significant opportunities for businesses. As the industry evolves, companies investing in artificial intelligence technology will remain competitive and meet changing customer needs. Its ongoing integration promises further innovation in financial transactions and enhanced customer experiences. Businesses that recognize the transformative potential of artificial intelligence in payments will contribute to the continued development and success of the industry.

3

Kazakhstan Payments Market Overview

Kazakhstan has come a long way in terms of digitalization of payments. A country of 20 million with high internet and mobile penetration, coupled with a sizable banked population, it is the leading economy in the CIS region with respect to non-cash payment penetration. In the last few decades, the introduction of fintech business models has significantly altered the competitive landscape, fostered innovation, and contributed to the digitalization of payments in the country. Supported by the Regulator's vision for the financial services industry, the country has taken significant steps towards the development of digital payment infrastructure with projects such as piloting Digital Tenge, introduction of RTP system and the push towards open banking in line with global trends.

Yet, there is room for growth for the non-cash payments in Kazakhstan, compared to more developed markets, creating opportunities for financial services players from banks to fintechs, and new players. Having said that, the realization of this potential and preparing Kazakhstan for the future of payments also require overcoming the challenges in the market, such as ensuring continuity of financial services, increasing level of competition, reducing total costs in the payments infrastructure, enabling interoperability between different payment methods and financial infrastructures -both cross-border and domestic-, improving the safety of payments, and so on. These will not only increase financial inclusion and efficiency in the market but also help foster further innovation, mitigate risks, and ensure a better user experience. Nevertheless, achieving this goal necessitates a joint effort from all market participants.

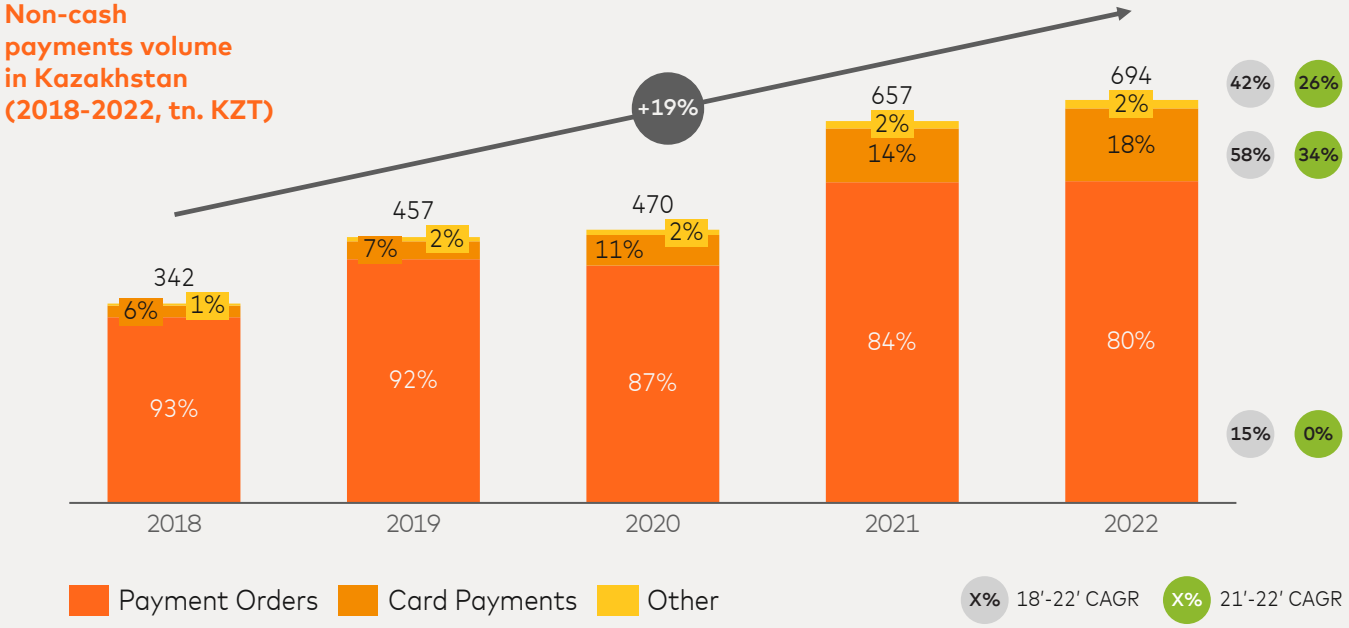
Kazakh non-cash payments have evolved significantly in the last decade, fueled by the favorable demographics and digital readiness

Kazakhstan, a Central Asian country with a rapidly growing economy, has achieved a significant evolution in its non-cash payment ecosystem in recent years especially since Covid 19 pandemic. In line with this evolution, total volume of non-cash payments in the market approached 700 trillion KZT in 2022, including money orders totaling 554 trillion KZT. Within this volume, transactions by payment cards have constituted 125 trillion KZT having grown at an annual rate of 58% between 2018 and 2022. In the last year alone, the growth was as high as 34%.

Graph 9: Non-Cash Payments Evolution in Kazakhstan (2018-2022, Tn KZT)

Source: National Bank of Kazakhstan, Mastercard Advisors Analysis

Payments in Kazakhstan have reached approximately 700 trillion KZT in 2022, including 554 trillion KZT money orders and 125 trillion KZT of card payments



Note: Card payments include payments with the use of payment cards of Kazakhstan issuers in the territory and outside of Kazakhstan

The main driver of this growth has been the transactions at terminals, i.e., purchasing transactions. During 2018-2022, the number of purchasing transactions grew by 102% per annum between 2018 and 2022 and reached 8.3 billion, while the volume of those transactions grew at over 100% per annum, amounting to 103.8 trillion KZT in 2022. This impressive growth was driven both by the increase in international payment schemes transactions and the transactions by the Interbank Card Payments System (JSC), especially since 2020.

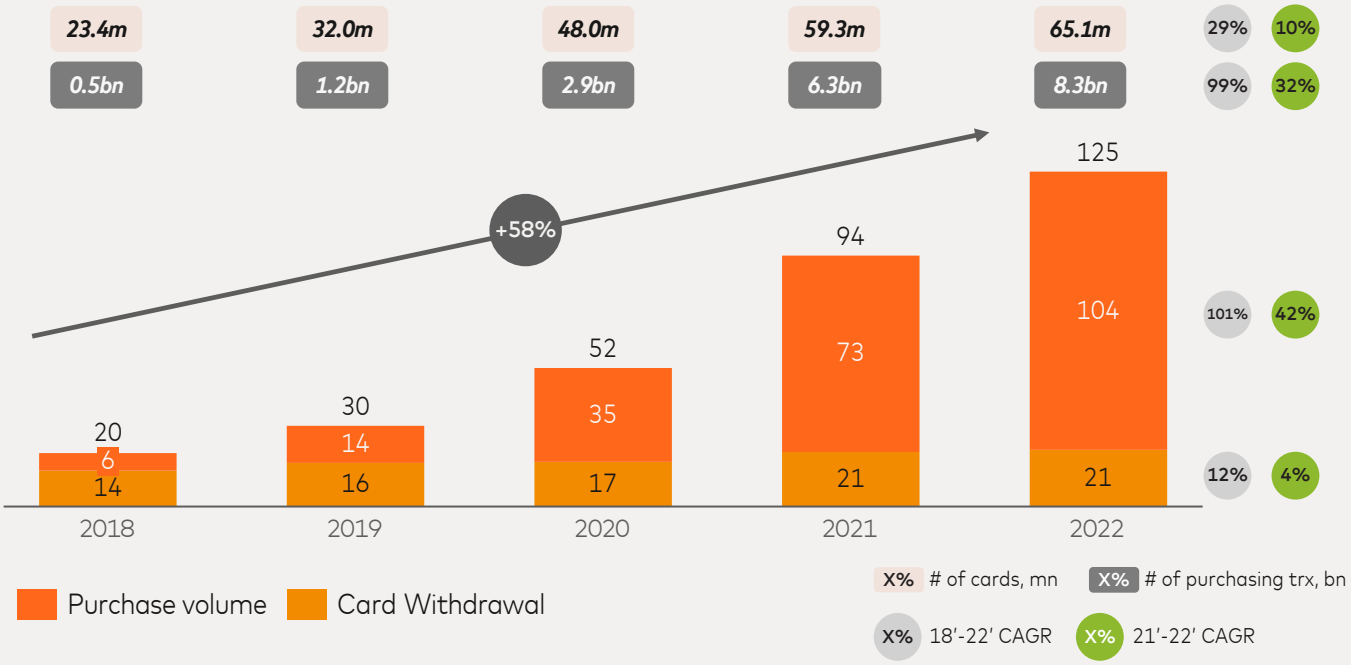
On the other hand, the growth of cash withdrawals has been significantly lower, both in terms of number of transactions and volume, at -3% and 12% per annum, between 2018 and 2022 respectively. It is plausible to say that the tendency towards using less cash during the Covid 19 pandemic has been solidifying also in Kazakhstan, as indicated by the decline in the number of cash withdrawal operations by 6%, and the increase in the volume of cash withdrawal operations by only 4%, between 2021 and 2022. In line with these trends, the distribution of the non-cash payments between cash withdrawal and purchasing transactions has changed dramatically. While payment transactions constituted only 32% of volume in 2018, this ratio has gone up to 83% by 2022.[20]

Graph 10: Cash and Purchase Volume on Payment Cards (2018-2022, Tn KZT)

Source: National Bank of Kazakhstan, Mastercard Advisors Analysis

Purchasing transactions witnessed an annual transaction volume increase of 58 percent between 2018 - 2022, whereas cash withdrawals experienced minimal growth

Cash and purchase volume on payment cards (2018-2022 tn. KZT)



Note: Payments with the use of payment cards of Kazakhstan issuers in the territory and outside of Kazakhstan

As a result, Kazakhstan today is the leading economy in the CIS region with respect to non-cash payment penetration. According to World Bank data, 78% of adults over the age of 15 in Kazakhstan have sent or received digital payments in 2021. To compare, this number stands at 42% in Uzbekistan, 39% in Krgyzstan, and 33% in Tajikistan. Moreover, share of non-cash transactions stands at 83% as of 2022 in Kazakhstan, while this number is 35% in Uzbekistan and 40% in Azerbaijan.

This transformation has been driven by several factors, including favorable demographics, growing digital readiness and e-commerce use, increased banking accessibility, infrastructural developments such as launch of local payment systems and QR codes by market players, launch of major digital wallets such as Apple Pay and Google Pay, as well as government initiatives.

Kazakhstan boasts a young population of around 20 million, with a median age of approximately 30 years; according to the World Bank, around 62% of its population is aged between 15 and 64. This demographic advantage has played a crucial role in the evolution of non-cash payments. Younger generations tend to be more tech-savvy and open to adopting digital payment methods, making it easier for digital payment providers to gain traction in the market.

Kazakhstan's internet penetration, which stood at 91% of the total population at the start of 2023, surpassing the CIS countries' average of around 85%, has been pivotal in shaping the non-cash payments landscape[21]. This increasing digital readiness is fueled by rising mobile penetration and smartphone usage (91% of aged 15+ have mobile phone with internet access as of 2021[22]), even in remote areas of the country, where more people are gaining access to smartphones and the internet, making the convenience of digital payments increasingly more appealing.

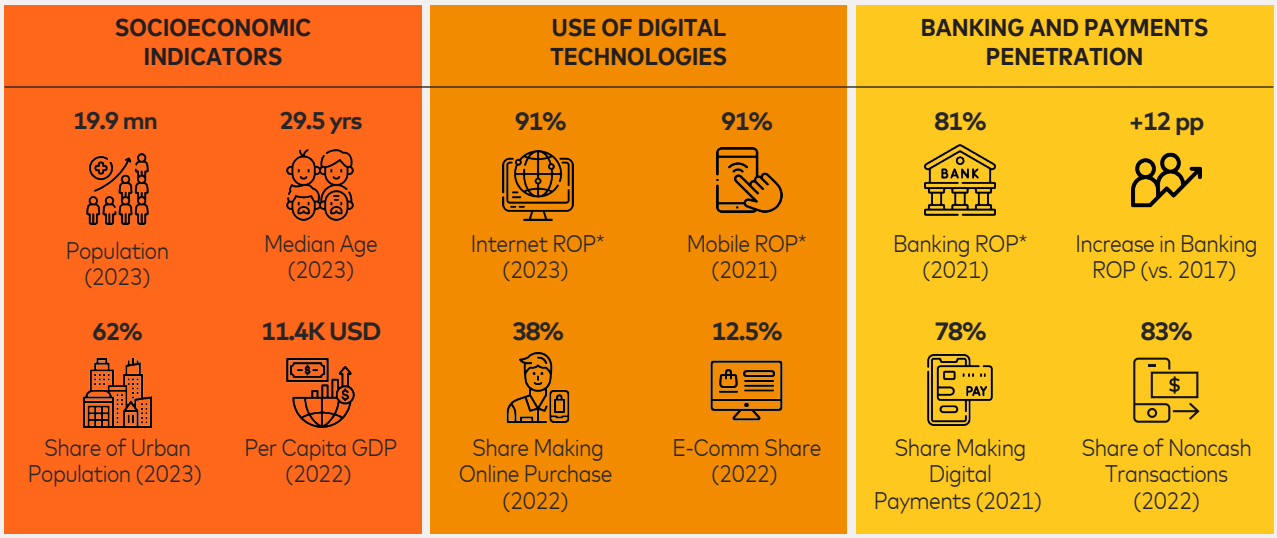
Another significant driver of the rise of non-cash payments has been the growth of e-commerce in Kazakhstan. As more people shop online, they are inclined to use digital payment methods to complete their transactions. This trend has further accelerated the adoption of non-cash payment options. According to the data released by the Bureau of National Statistics of Kazakhstan, the share of e-commerce in total retail trade within the country, including marketplaces, stood at 12.5% in 2022. This metric reflects the substantial growth and evolving landscape of digital commerce in Kazakhstan. Having said that, e-commerce share has not reached its full potential; going forward e-commerce growth is expected to further catalyze the digitalization of payments.

> *Kazakhstan has strategically been a very important country in Central Asia for Mastercard, since we started our operations in the country in the early 2000s. It has been very exciting for us to witness and contribute to the rapid evolution of digital payments and hence the overall economy in the country in the last decade. Today, Kazakhstan is the leading economy in digital payments in the region. Having said that, we strongly believe that further steps should be taken to bring Kazakhstan to next levels of development. As Mastercard, we are committed to continue our focus in the country and work in collaboration with all the stakeholders in the market to make this vision come true.*
>
> ***Yasemin Bedir, Division President, Eastern Europe, Mastercard***

Graph 11: Catalyzers for Non-Cash Payments Growth in Kazakhstan

Source: Bureau of National Statistics of Kazakhstan, World Bank, IMF, Statista, Mastercard Advisors Analysis

Non-cash payments growth in Kazakhstan has been catalyzed by various factors such as favorable demographics, digital readiness and banking penetration



*ROP stands for rate of penetration

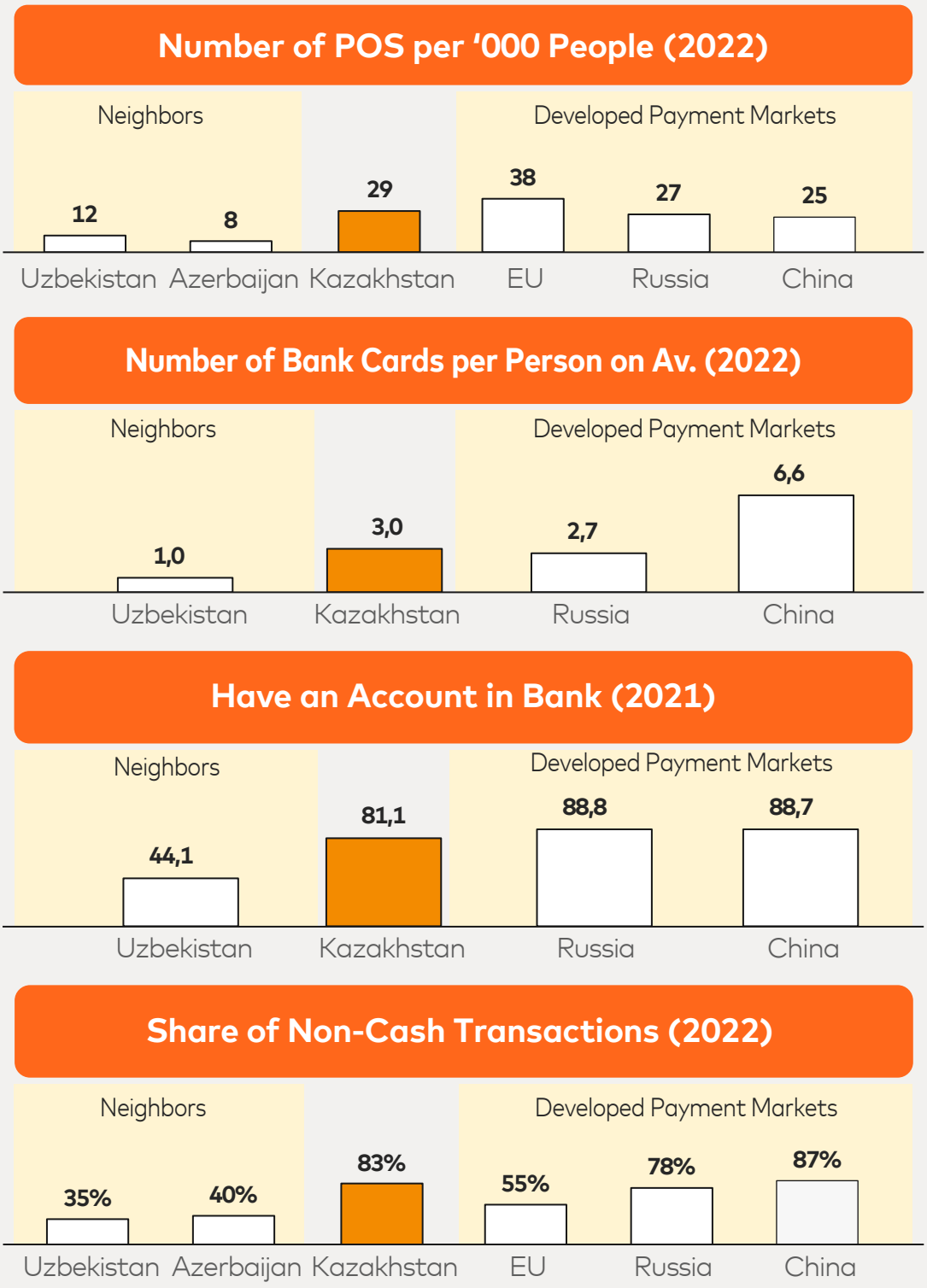
The expansion of banking services and the accessibility of financial accounts – share of banked population Kazakhstan's stood at around 81% in 2021 surpassing the world average of approximately 74% according to the World Bank - have made it easier for individuals and businesses to participate in non-cash transactions. These inclusive banking services have enabled a broader portion of the population to access digital payment methods. But the country still lags the European average of 89%, as parts of the rural population lack access to bank accounts.

Investment in digital infrastructure, including payment processing systems and secure online platforms, has been crucial in facilitating non-cash payments. Financial institutions and technology companies have worked to create a robust and reliable payment ecosystem, enabling users to transact digitally with confidence. The financial services ecosystem in Kazakhstan is comprised of four realms: the banking realm, the fintech realm, the microfinance realm, and the telecommunications realm. The banking realm, consisting of 20+ banks, plays a central role as the primary source of banking services and innovation in the country, having significantly altered the payments ecosystem. One example is the introduction of the local payment system (JSC) by Kaspi Bank, which uses QR mechanisms to make payments. QR payments have been one of the main drivers of the non-cash payments growth since 2020 in the country.

Graph 12: Level of Digitalization and Payments - Comparison with Other Economies

Sources:

1) Euromonitor, Mastercard Advisors Analysis
2) Central Bank Websites, Mastercard Advisors Analysis
3) World Bank, Mastercard Advisors Analysis
4) National Payments Corporation, Mastercard Advisors Analysis



The fintech realm, consisting of 150+ fintechs, is an indispensable source of innovation, operating in different domains such as financial literacy, investments, and mobile wallets. A gateway through an enhanced suite of services, superapps play a major role in the country - built around banking services, telecom, retail or others. They provide one-stop access to various services, from loans to payment solutions, issuing cards to hosting a marketplace, offering access to government services. The emergence of superapps has brought the Kazakh economy one step closer to being a mature digital economy. Yet, having independent ecosystems and infrastructures has also resulted in interoperability challenge that needs to be addressed so that Kazakhstan can take the next big leap in payments, as will be discussed in detail in the next sections.

Graph 13: Financial Services Ecosystem in Kazakhstan (2023)

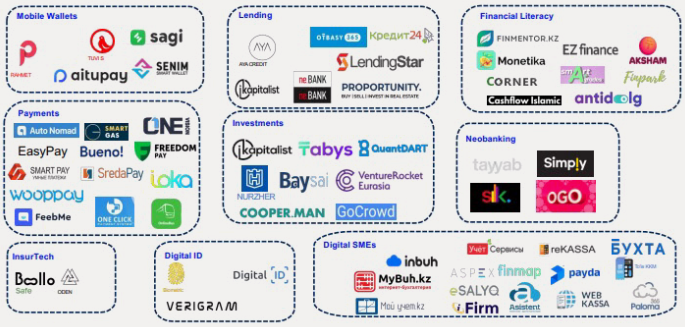
Source: Fintech in Kazakhstan Market Report by RISE Research, MOST, and Fintech Consult

21 BANKS

The financial services industry and innovations in the market are primarily **driven by traditional banks,** which have embraced digitalization and technology to maintain the lead in a highly competitive market.

Kaspi is a superapp. The largest Payments provider, Marketplace and Fintech Ecosystem with leading market share in each of its key products and services (75% of all non-cash transactions)

150+ FINTECHS



Source: Tech Hub AFC 2020 "The Fintech startups landscape in Kazakhstan"

236 MFOS

Microfinance sector has seen significant growth during the past 3 years. The number of microfinance organizations operating in the country has increased by 20%, and the average loan size has increased by 30%.

TELCO AND ESTABLISHED ENTERPRISES

Established enterprises in telco, payments, investing, etc. experimenting with product development, expanding and impacting the fintech domain.

Kazakhstan's integration into the global financial system has been another factor encouraging the use of non-cash payments, particularly for international transactions. Partnerships with international payment providers and the acceptance of major credit and debit cards by international card schemes (ICS) have made it easier for individuals and businesses to engage in cross-border commerce.

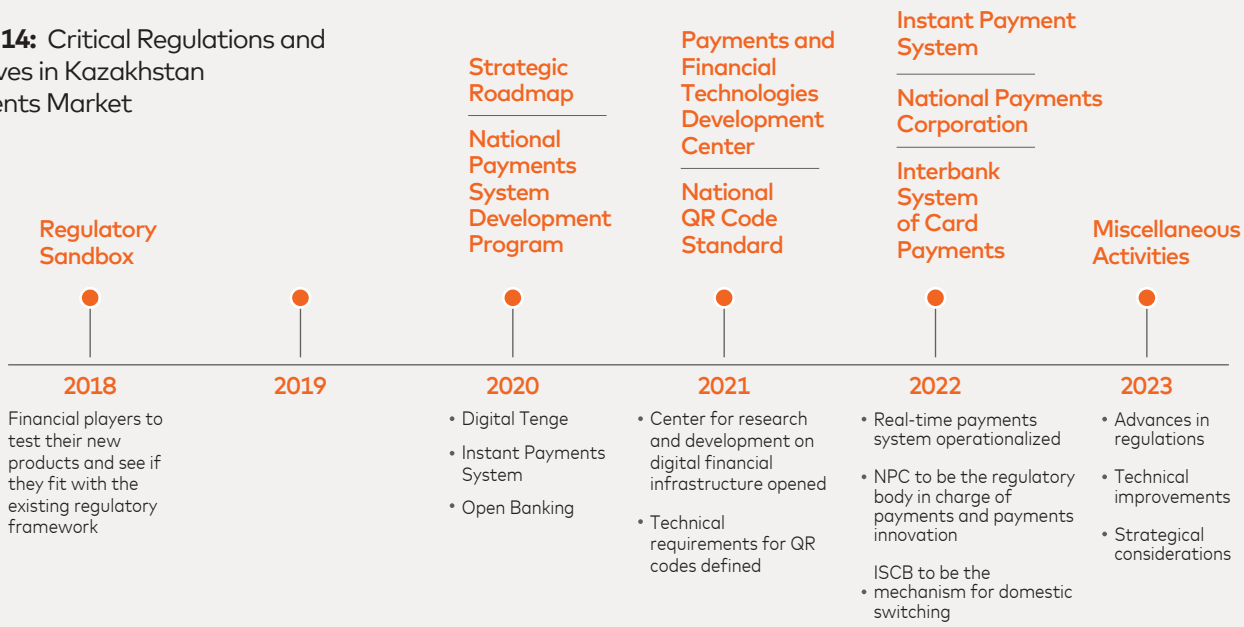
Lastly, The Kazakh government has been proactive in promoting the adoption of non-cash payments. Various initiatives, such as promoting cashless transactions for public services and incentivizing businesses to accept digital payments, have been implemented. GovTech development in Kazakhstan played a pivotal role in propelling the adoption of digital banking and cashless payments. Kazakhstan government data platforms collaborate with financial and non-financial institutions to create a seamless ecosystem for electronic transactions, user-friendly mobile apps, online platforms, secure digital identification systems, and the promotion of financial literacy. Additionally, GovTech is instrumental in modernizing public services, enabling citizens to make payments for various government-related transactions digitally. These efforts have created a supportive environment for digital payments.

Kazakhstan has been taking further steps towards development of digital payments, in line with the global trends

National Bank of Republic of Kazakhstan (NBRK), observing the recent trends that are evolving the payments landscape both globally and within Kazakhstan, has laid out a strategic vision "to develop a sustainable digital financial ecosystem" in the country, so that the Kazakh economy can overcome its current challenges and get ready for the future of financial services and payments. As part of this vision, several steps starting from setting the regulatory framework for the digitalization of payments to establishing critical institutions and introduction of new payment methods have been taken.

The NBRK has launched a regulatory sandbox in 2018, in which banks and other financial institutions can test out their new products under the supervision of the NBRK. Two strategy documents, Strategic Roadmap for Fintech and Innovation for 2020 – 2025 and the National Payment System Development Strategy until 2025, were published in 2020 to explain the big policy agendas of the NBRK. In 2021, the NBRK required all domestic transactions by international payment card schemes to be switched domestically. In the following year, it launched the Interbank System of Payment Cards, the infrastructure that provides the domestic switching service. In line with this development, National Payments Corporation has been established as the successor of the Kazakhstan Interbank Settlement Center (KISC) to manage and develop infrastructure of the national payment system, as the operational arm of NBRK. In the two years to come, the NBRK is also planning on developing the data factory that will be the foundation of the National Digital Payments Infrastructure. All these efforts are situated in a broader effort to modernize the payments infrastructure in the country and digitize the Kazakh economy.

Graph 14: Critical Regulations and Initiatives in Kazakhstan Payments Market



National Payments Corporation (NPC) works to modernize the Kazakh payments infrastructure to ensure safe, fast, convenient, and inexpensive movement of funds in the economy.

Mission Statement:

To provide business participants with safe, fast, convenient, and inexpensive movement of funds in the economy, regardless of the nature of the payment or transfer, 24/7/365, as well as access to advanced innovative financial and technological services by providing modern infrastructure for all financial institutions In Kazakhstan.

Vision Statement:

A single national provider of digital financial infrastructure and operator of the National Payment System in Kazakhstan, creating, developing, and maintaining modern infrastructure services in accordance with international quality standards, providing the best customer experience for all its consumers, as well as integration into the global digital financial ecosystem.

A crucial component of the payment infrastructure modernization has been the development of the "National Digital Financial Infrastructure"; a three-tier plan covering the entire payments system. At the bottom of the infrastructure are the establishment of mechanisms that ensure the reliability and the security of the entire system. Building on this system is the data factory, which consists of "mechanisms for collecting, storing, and processing of all operational data within the digital financial infrastructure". The ultimate tier consists of the national payments system along with identification and exchange infrastructures.

> *"Building an all access "foundation" for all market participants will ensure a "digital leap" and the development of competition through the creation of more technologically advanced, affordable, and low-cost financial services."*
>
> ***Binur Zhalenov, CEO and Board Member, National Payments Corporation***

Significant progress has been achieved in certain components of this plan. Most important being the introduction of Digital Tenge, launch of the national RTP system, and setting up of the open API agenda.

Digital Tenge

One of the innovations that have been adopted earlier is the Digital Tenge, a central bank digital currency that will be issued by the National Bank of Kazakhstan. There were a few broad goals with this project (i) increasing penetration of cashless payments, (ii) ensuring uninterrupted functioning of the National Payment System, (iii) increasing efficiency of payments by including the government, and (iv) making financial markets more competitive.

> *"The Digital Tenge project aims to develop and modernize Kazakhstan's national payment system to provide stable access to inexpensive, fast, convenient, and secure payments for every citizen. The introduction of the Digital Tenge is a requirement of the times: during the pandemic, the development of non-banking platforms accelerated and the potential risks of the impact of private projects on the country's monetary sovereignty increased"*
> ***Ainur Kenzhaveya, National Payments Corporation***

The Digital Tenge pilot project commenced in 2021, with the NBRK publishing an Advisory Report for public comment in May. After the discussion of the document with various stakeholders, 2022 saw the testing of the Digital Tenge with real customers and merchants. In 2023, after consultations with market participants, a wider set of use cases including wholesale applications and usage, securities settlement, stablecoin-related initiatives, and cross-border and social payments are currently under consideration as part of the Digital Tenge project.

The government of Kazakhstan has laid out a three-phased roll-out plan for the Digital Tenge. By the end of this year, the Digital Tenge will be launched in part, starting with public sector payments. The aim is to test integration with systems and market participants' services/platforms to verify the viability of innovative features and scenarios provided by the Digital Tenge platform. Digital Tenge is expected to demonstrate features such as advanced programmability in 2024, while smart contract features and the cross-border ecosystem are expected to be completed by the end of 2025.

The Digital Tenge can penetrate different payment rails with different use cases. In the B2B rail, the new CBDC can ease inventory purchase payments with its programmability feature and automize monthly utility payments. In the B2C rail, the Digital Tenge's smart contract feature will allow the validation of contractual terms and the programmability feature will allow tax collection at source, increasing the liquidity of the public sector. In the C2B rail, aside from enabling more frequent utility payments, the Digital Tenge has the potential to foster real-time settlement in daily purchases such as market shopping, eliminating the need for cash. In the C2G rail, the new CBDC might enhance income tax collection by collecting the tax at source, like the B2G case. Finally, in the G2C rail, the Digital Tenge might facilitate social welfare payments by allowing the better targeting of individuals in need.

Introduction of the National RTP System

Currently, ten banks are members of the Instant Payments System:
Eurasian Bank, First Heartland Jusan Bank, Kazpost, Bereke Bank, Bank Freedom Finance Kazakhstan, ForteBank, Altyn Bank, Bank CenterCredit, RBK Bank, Home Credit Bank.

Since the launch of the Instant Payments System in June 2022 the volume of transactions exceeded 112 billion KZT.

As part of the priority to ensure the continuity and reliability of payments in Kazakhstan, a nationwide real-time payments system, called the Instant Payments System, has been launched. The Instant Payments System is expected to bring benefits to different stakeholders in the Kazakh economy. The System is expected to create new business opportunities, expand online services, enhance competition in the payments market, and optimize costs for payment service providers. For consumers, the System will enable instantaneous payments that are simple to use and secured by the government infrastructure. For businesses and government agencies, the System will accelerate and optimize cashflows, also enabling the digitization of small cash payments.

The essential components of the National Payments System are set to be put into effect by the end of 2023. The system was planned to be operationalized in two stages, during the first of which individuals are now able to make money transfers between each other by phone number. During the second stage, QR code payments and other means of payments will be phased in. Currently, ten banks have agreed to participate in the project.

"We will observe a boost of the financial market from the moment as unified inclusive instant payment infrastructure will be launched, eventually we will see much more payment scenarios and cases" ***Assel Marchenko, Deputy CEO, National Payments Corporation***

Open API Platform

Fostering competition in the payments sector remains a priority for the country. Regarding safe access to reliable information as an important tool to this end, the NPC is currently developing an open banking infrastructure. In December 2022, the National Bank of Kazakhstan and the Agency for Regulation and Development of Financial Market, with the participation of the Agency for Protection and Development of Competition, developed and approved the Concept of Development of Open Banking and Open API in Kazakhstan for 2023-2025. Thus, since the beginning of 2023, work has begun on the preparation and implementation of the initiative to launch the concept of Open Banking and Open API. The infrastructure will provide financial institutions with anonymized customer data from other financial institutions, enabling more personalized financial services, better risk assessment procedures, and higher competition among banks.

> *The introduction of open banking can have a significant impact on the payments market of Kazakhstan. First of all, this will affect the diversity of the payments market due to the fact that new payment services will be available. Secondly, it can radically improve the user experience in payments and change user behavior, since the client can fundamentally refuse card funds. Such an innovation generally diversifies the payments market with more convenient, innovative products."*
>
> ***Zhanar Samayeva, Deputy CEO, National Payments Corporation***

The open API move by the NPC has the potential to align and unify the open API initiatives by private actors. Major financial institutions had already commenced with open API initiatives. Because it involves the sharing of sensitive personal information, it is crucial that the open banking practices in the Kazakh economy be regulated clearly. The efforts by NPC will provide all actors in the Kazakh economy with the proper framework. Furthermore, the banks are already coming up with simplification procedures that will aid the regulator finalize the open banking infrastructure.

In November 2023, Kazakhstan launched a pilot project to introduce the concept of Open Banking among a limited number of banks and a group of customers. This stage of the project is aimed at testing the exchange of information about current accounts of customers. The project participants underwent centralized accreditation, verification and testing of their APIs for compliance with the established unified Open API Standards.

NPC has identified two key tasks to unify the push towards open banking: Fostering competition and safety. The NPC's drive to foster competition includes reducing costs for financial institutions, ensuring an equal access mechanism, and ensuring a balanced digital development. To ensure the safety of all stakeholders, the NPC aims to develop a proper trust infrastructure, uniform standards in information security, and a platform to facilitate the exchange of digital consents (The NBRK, 2023).

> *"This isn't just any infrastructure; it is designed for a robust, secure, and seamless exchange of consumer data among market participants. At the heart of this lies our "DigitalConsent" feature, fortified with two-factor authentication and integrated biometrics for unparalleled security. We are gearing up to launch a pilot project in collaboration with leading market participants! This initiative will empower end-consumers with advanced account aggregation and PFM (Personal Financial Management) services."*
>
> ***Binur Zhalenov, CEO and Board Member, NPC***

Going forward there is still untapped potential for further growth of digital payments

Kazakhstan's progress in digital payments is noteworthy when compared to other countries in her region. It has managed to outpace many of its regional counterparts in the adoption of cashless transactions, reflecting a growing appetite for modern financial technologies and a shifting economic landscape. Nevertheless, when evaluated against more developed markets, Kazakhstan still has distance to cover.

Despite the significant growth in the size of non-cash payments, cash use is still widespread in certain payment flows in the country, particularly in Consumer-to-Business (C2B) payments. C2B payments are associated with in-store purchases and transactions within the informal or grey economy. To reduce cash usage in this context, it is crucial to increase acceptance coverage for card payments and encourage the growth of players in the market that provide acceptance solutions. By expanding the availability and accessibility of card payment options, Kazakhstan will be able to reduce cash reliance and promote a cashless economy.

There are significant gains for the overall economy for digitizing the cash dominant payment flows. Digital payments especially reduce informality in the commercial activities of micro, small, and medium-sized enterprises, contributing substantially to the state's tax revenues. This objective can be achieved through the enhancements of transparency in business turnovers. A 2019 study titled "An Empirical Analysis on the Relationship Between VAT Revenues and Card Usage in Turkey," reveals that a 1% increase in the credit card payments in household consumption increases VAT revenue by 1.64%, while a 1% increase in the debit card cash withdrawal amount reduces VAT revenue by 1.7%.

Establishing a well-defined and adaptable regulatory framework is necessary to effectively support the evolving digital payment landscape

The recent steps taken in Kazakhstan under the guidance of the NBRK and the NPC, as discussed in the previous sections, represent a pivotal vision for the country's financial landscape. These initiatives demonstrate a commitment to fostering a robust and innovative digital payment landscape, aligning with global trends and economic evolution. However, equally significant are the forthcoming steps that will shape the future of digital payments in Kazakhstan.

These steps should strike a balance between stimulating innovation and ensuring consumer protection. Furthermore, incentivizing small and medium-sized enterprises (SMEs) to adopt digital payment methods can lead to increased efficiency and competitiveness. Government support and incentives for SMEs in this regard can drive economic growth.

In this context, it is noteworthy that the Kazakh government has articulated a comprehensive plan designed to combat the shadow economy by 2025. The primary objective of this plan is to elevate the contribution of SMEs to the country's GDP, with a specific target of 37.5%. Overall, there is a set of systemic measures aimed at combating the shadow economy in the country and hence improving tax and customs administration, along with effective competition and budget allocation, as well as ensuring the population's protection from illegal business.

Another key pathway for the growth of digital payments, lies in the domain of e-commerce and cross-border transactions

As previously mentioned, the data from the Bureau of National Statistics of Kazakhstan reveals that e-commerce accounted for 12.5% of the total retail trade in the country in 2022, including marketplaces, a share surpassing the e-commerce shares of most countries in the region. However, it's important to note that the share of e-commerce in retail in Kazakhstan is still lower than the corresponding figure in the European Union, which stands at approximately 17.6%.

Next to e-commerce, it's essential to recognize that the potential of digital payments extends far beyond domestic borders. Facilitating cross-border transactions through digital channels can have a transformative effect on international trade and economic integration. To unlock the full potential of digital payments in cross-border transactions, it is important for Kazakhstan to address the challenges of high cost and time delays of cross-border transfers faced by consumers and the complex processes for corporations.

Yet another area where pain points with cross-border payments are apparent is remittance payments. Most of Kazakhstan's remittance activity is conducted with neighboring countries. This presents an exciting opportunity for Kazakhstan and its neighboring countries to enhance economic cooperation and global engagement. To tap into this potential, it is crucial for Kazakhstan to strengthen partnerships not only with neighboring countries but also with international financial institutions. Collaborative efforts in this regard can help create a seamless cross-border payment ecosystem that benefits businesses and consumers.

The next big leap for Kazakhstan's payments ecosystem necessitates collaborative steps by market participants

Embracing innovations and establishing a robust ecosystem that ensures interoperability among diverse payment systems will remain imperative for Kazakhstan. Notably, according to RBR, Kazakhstan has the highest share of credit transfers as a component of total payments, compared to Europe, owing to the rapid spread of transfer-based system of QR code payments by major banks. Also, credit transfers, witnessed triple-digit growth in Kazakhstan from 2019 to 2021. This significant growth played a substantial role in the overall expansion of cashless payments. Yet, as also mentioned in the previous sections, the fact that major players have built their own infrastructures has resulted in very big but closed ecosystems, hindering interoperability.

As the market continues to mature and consumers increasingly engage with multiple financial institutions, including both fintech companies and traditional banks, and adopt habits such as using multiple digital wallets, the importance of interoperability becomes even more critical from a customer experience perspective.

It will be only necessary for market players to ensure that customers can effortlessly access and manage their finances across multiple platforms and services. To this end, industry stakeholders, including financial institutions, payment service providers, and regulators must collaborate in establishing standardized protocols and infrastructures. These will not only facilitate seamless transactions across various payment systems, but also play a crucial role in delivering unified and customer centric payment experience within an increasingly interconnected financial environment.

Another area that necessitates close collaboration in the market is security and safety of payments. As digital payments continue to grow, cybersecurity measures become more critical. According to the Mastercard consumer payments insights report of 2022, 20% of Kazakh consumers expressed concerns about online fraud, signaling the need for data privacy and cybersecurity regulations. Building and maintaining trust in digital payment systems is a mandatory prerequisite, and to achieve this state it will be essential to promote financial literacy and educate both the businesses and the population on the benefits and responsible use of digital payments.

"With the development of digital/payment technologies, risks grow - fraud, cyber-attacks. The key tasks of each market participant, selling and providing services, are to provide protection and security for financial transactions made by consumers. International standards, national requirements, including those that are constantly modernized and updated, to minimize risks and financial threats, it is very important to pay special attention to cybersecurity, advanced training in this area, and exchange of experience."

Alexandra Yun, Managing Director for Payment Systems, National Payments Corporation

Given the substantial size of non-cash transactions, particularly through QR code payments, it is vital for stakeholders across the financial sector, including financial institutions, PSPs, and regulators, to collaborate on standardized cybersecurity protocols. These protocols should include encryption, multifactor authentication, and real-time monitoring. In this regard, NBRK set some initiatives such as biometric verification and a Centralized AML/FT data sharing platform in order to ensure effective identification and prevention of fraud as well as the safety of citizens' data.

Furthermore, the integration of cybersecurity into the innovation process is crucial. New payment methods and technologies must undergo rigorous security assessments to identify and address vulnerabilities before they can be exploited. Artificial Intelligence (AI) will be the one of the enablers in achieving this level of security. AI plays a crucial role in strengthening cybersecurity within the financial sector, especially when dealing with the rapid evolution of payment technologies.

In parallel with these measures, the promotion of financial literacy and education on the benefits and responsible use of digital payments can empower individuals to make informed decisions and mitigate the risk.

4

Future of Payments and Implications for Kazakhstan

By the end of the decade, we will witness significant innovations that will reshape commerce and usher in "the next economy." Mastercard sees nine emerging themes globally under three broad topics of reimagining money, intelligent experiences, and sustainable features. In our view, these themes, such as tokenization, programmable payments, ubiquitous wallets, borderless rails, "unleashing acceptance", and so on, are also relevant for Kazakhstan payments market in the short- to mid-term.

Graph 15: Emerging Themes in The Next Decade of Payments[23]
Source: Future of Payments, Mastercard Trends

REIMAGINING MONEY

1 A tokenized world
Money will include tokenized assets and other new forms of value.

2 Programmable payments
Complex, conditional commercial payments will be automated to speed commerce.

3 Ubiquitous wallets
Next-gen e-wallets will manage our identities assets, payments and more.

INTELLIGENT EXPERIENCES

4 Connected finance
Our assets will be accessible in any environment.

5 Borderless rails
Payments will break through today's geographic and digital boundaries.

6 Unleashing acceptance
Next-gen points of interaction will drive new ways for consumers to pay.

SUSTAINABLE FUTURES

7 Inclusive credit
New financing solutions willempower underbanked people and communities.

8 Conscious consumerism
Consumers will increasingly spend with companies that align with their values.

9 Embedded trust
Trust will become a critical point of differentiation for companies.

Reimagining Money

A tokenized world

In a tokenized world, almost anything can be represented as a discrete digital asset. As a result, we may see new assets serving as payment instruments, changing our conception of personal property and delivering greater financial flexibility. Tokens can alter the payments scene significantly with their ability to help exchange alternative currencies, physical assets, and personal data seamlessly and securely, even ownership rights and behavioral data. Through "fractionalization", the use of tokens can also lead to a future where expensive or physical items such as houses or even asset classes like art that previously couldn't be subdivided, can be owned partially.

Our perception of value and what we use for payments will be transformed as tokenization is extended to cover more real-world assets over the next five years. The result could be a broader set of payment options for consumers and opportunities to create business models to support new value exchanges for banks, digital players, and merchants.

Kazakh public policy bodies have taken several steps that will have **a positive influence on tokenization.**

Namely, the adoption of the **Law on Digital Assets in Kazakhstan in early 2023** defined the scope of digital assets, outlined the regulators, and designated the Astana International Financial Center as the licensing body for digital asset exchanges.

These developments will clear the playground for those interested in digital assets and will further contribute to a tokenized world in Kazakhstan.

Programmable Payments

Programmable payment solutions offer a compelling opportunity to boost operational efficiencies and elevate customer experience. These solutions can connect business events through APIs and leverage AI and smart contracts to facilitate complex payments involving multiple recipients. Moreover, they can be used to execute machine-to-machine interactions, automating exchange between connected devices.

Commercial use cases include supply chain transactions and royalty payments. In logistics, for instance, automated payments could be triggered for suppliers when on-site sensors confirm deliveries. In marketplaces, content creators could be paid in real-time with variable royalties based on the channel (mobile, app or in-person). Such capabilities empower entities to manage liquidity more efficiently while reducing the time and cost associated with back-end processing. Governments are also exploring the integration of programmability into currency itself through central bank digital currencies (CBDCs).

It's plausible that programmable payments will shift from niche use cases to becoming the standard in the industry by 2030. Embedding messaging and other value-added services such as cybersecurity and Know Your Customer verification will result in more intelligent and contextually relevant payment options. The ultimate outcome will be a substantial reduction in operational expenses related to preprocessing, reconciliation and exception handling and enhancements in speed and service to customers.

Programmable payments will slowly make their way to the Kazakh payments market with the adoption of the **Digital Tenge.**

NBRK regards programmable payments as a feature that can be incorporated into the Digital Tenge, **which will increase the speed and frequency** of regular payments, mitigating cash flow and liquidity concerns. Already in 2023, a pilot study with market participants will focus on implementing a smart contract for an **automatic tax deduction** on goods purchased at the point of sale from specific merchants.

Similar smart contracts implementation experiments will continue in the following stages of the development of the **Digital Tenge platform.**[24]

Ubiquitous wallets

While demand for simplified and seamless user experiences is evident, using wallets today is often a fragmented experience. Consumers frequently require multiple tools to conduct transactions or access services, including physical or digital wallets, identification documents, and bank applications. Adding further fragmentation is the onset of wallet-like capabilities built into internet browsers, IoT devices and crypto wallets, which can be challenging to navigate due to complex onboarding procedures.

As innovation targets these hurdles, digital wallets will transform into a unified control center for a broader range of services and activities. Advancements will include improved methods for authenticating any credentials, not limited to payments. This evolution suggests a future where wallets play an important role in our increasingly digital lives. The wallet of the future will enable users to verify their identities and manage their data, offer personalized financial insights, and serve as an "in-store remote" for personalized online and in-store experiences. This development, driven by the ongoing digitization of the economy, is leading us towards always-on, ever-present and ubiquitous wallets. Tomorrow's wallet will consolidate the way we handle cards, digital identity, house keys, office access cards, passwords, driver's licenses and more.

Given the competitive landscape and regulatory oversight, it is unlikely that a single wallet provider will dominate this space. Banks and digital players competing in this space will advance by delivering increased utility and seamless experiences, ultimately fulfilling the promise of a single wallet to manage all aspects of our lives.

As digital wallet adoption becomes more widespread and the means of payments diversify, a need for universal wallets may emerge in Kazakhstan.

The adoption of the Digital Tenge is yet another potential for an increase in the demand for ubiquitous wallets.

As Kazakh consumers obtain the Digital Tenge, their preferences will shift towards using digital wallets more, and the demand for ubiquitous wallets could subsequently increase.

Intelligent Experiences

Connected finance

Connected finance is an umbrella term used to describe the capacity in which we link our assets across various environments including digital, physical, or virtual spaces, providing universal access to payment services and other financial offerings. This capability is made possible through open banking and consumers' control over their data. By allowing non-financial companies to integrate financial products and services into their applications, open banking will play a pivotal role in delivering seamless financial experiences in any digital context.

The potential of connected finance is only beginning to unfold. With the ongoing expansion of digital commerce, the ability to provide immediate access to financial services on a large scale will empower consumers to conduct banking and make payments from anywhere through any available channel. This will also benefit banks by extending their reach through strategic partnerships, while merchants will have the opportunity to enhance their customer experience by providing a wider array of financial options.

The push towards connected finance in Kazakhstan is led by the NPC. The NPC's strategy to build the National Digital Payments Infrastructure includes the open API platform. Concerting the efforts of the private sector, the NPC will build the infrastructure and create the regulations for the proper functioning of open banking practices and connected finance. As these practices become more widespread, the quality of digital banking services will increase, increasing consumer welfare.

Borderless Rails

Globalization challenges persist and limitations on payment transactions are currently encountered in two distinct categories of borders: geographic and digital. Geographical borders are typically tied to specific jurisdictions, leading to obstacles when sending cross-border payments and challenges for banks and commercial entities in settlement speed, costs, and risks. On the other hand, digital borders, which encompass digital platforms and walled gardens (like the Apple App Store and Facebook that control user access to content and services), arise from the absence of payment interoperability among various digital ecosystems.

Geographic borders: Use cases for cross-border payments continue to grow. Today, funds must travel across multiple intermediaries and financial institutions leading to higher transaction fees and longer processing times than domestic payments. Liquidity provisioning, currency conversion and settlement of funds take time and are costly.

The G20 has set a roadmap for making cross-border payments faster, more transparent, and accessible at a lower cost. Implementation is underway, but the difficulty in obtaining consensus amongst many participants has slowed progress, with obstacles arising around messaging, data, and compliance. The near-term outcome may be pockets of interoperable geographies (as seen in ASEAN markets) rather than global connectivity.

Digital borders: Large digital platforms are arising with integrated payment systems (such as super apps) that are not interoperable from one walled garden to another. (e.g., Alipay users can't send money directly to Meta users) Even as consumers expect an enhanced payment experience, demand for data control is a significant constraint on interoperability.

Despite these headwinds, private and public sector participants continue seeking solutions to bring payment interoperability. Borderless rails — where the friction in sending payments is reduced or removed — will enable greater access to services across any border and vastly improve how we conduct commerce. This aspirational future will result in elevated economic prosperity for all participants.

Two forces could help shape a better borderless experience: consumer demand and regulatory action. Consumers and businesses expect frictionless payment experiences and money will flow to services that can cut across borders. Fintechs like Wise, Revolut and others have explicitly focused on these flows.

Consumers also want access across digital applications, which could lead to new data regulations that meet these demands and real-time payments that link across walled gardens. Regulators striving for fairness could pressure digital ecosystems to open their borders and enable a better flow of payments. In November 2022, the EU Digital Markets Act (DMA) was a step toward stopping unfair practices by companies that act as gatekeepers on online platforms.

Today, some governments are moving further from this future with data localization policies and mandates to use local rails. By the decade's end, however, we could see forces of consumers and businesses (demanding integrated multinational access) and regulators (pushing digital ecosystems) drive cross-border payment interoperability.

In the case of Kazakhstan, borderless rails are the most relevant theme with immediate implications both in terms of geographic and digital borders. As the current government initiatives such as the Digital Tenge and the National RTP system mature, the next step will be the cross-border interoperability of these systems especially within the region, considering Kazakhstan's close ties with the neighboring countries. Considering the dominance of superapps and digital wallets, which are currently closed ecosystems, in the market initiatives such as unified QRs by NPC and setting of the standards and rules for the industry will be instrumental in removing the digital borders.

Unleashing acceptance

Check-out processes have seen enhancements over the past two years, with merchants adopting practices such as QR codes and pay-by-phone, governments supporting via national schemes, and banks enabling pay-by-account and installment options at the POS. Despite these improvements reducing friction, certain challenges exist — merchants still need help with certification, often require physical devices and can struggle with integration. Meanwhile, consumers are increasingly expecting greater flexibility in what they pay with and how and where they do it.

To address these challenges, merchants, telecoms, and tech players are working at unleashing acceptance by leveraging new technologies that securely expand payment choices. Currently, advancements like 5G connectivity, cloud computing, and new devices and interaction points work towards eliminating the reliance on a fixed point of sale. This means that any mobile device can now serve as a commerce platform, offering the prospect of eliminating queues and facilitating payments through methods such as voice commands, biometrics, and mixed reality-enabled devices. Additionally, these solutions simplify merchant acceptance rollout by reducing the delay associated with device certification requirements and enabling the integration of wider array of services at the POS.

The next generation of solutions is expected to possess even more robust capabilities. In the near future, merchants and consumers will be able to engage in longer distance communication within physical stores. This enhanced connectivity will enable merchants to identify shoppers earlier in their purchasing journey allowing for hyper-personalized shopping experiences. Shoppers will have the option to enroll in rewards programs, make payments with various types of loyalty points, obtain a digitally issued card, or use a greater variety of assets and tokens for payment both in-store and through digital channels.

The acceptance landscape has been ameliorating in the Kazakh market, as digital wallets penetrate underbanked segments of the economy, and emerging technologies such as QR code payments offer alternatives for merchants.

The Kazakh government has been spearheading this acceptance charge, by modernizing the digital payments infrastructure altogether. One innovation by the Kazakh government is the development of a unified QR payment system, which will eliminate frictions in QR payments altogether.

Also new and lower cost solutions such as tap-on-phone will help smaller merchants to enable digital payments. Overall, the prospects for non-cash payments are increasingly positive.

Sustainable Features

Inclusive Credit

The prevalence of inclusive credit is set to rise with the assistance of new technology providers, who are dedicated to extending financial services to individuals with thin credit histories, those who are credit invisible and underbanked borrowers. While numerous initiatives have previously aimed at improving access to credit, the recent emergence of enablers such as tokenization, connected finance and acceptance will have a profound and transformative impact.

For consumers, enhancing inclusion and credit access requires payment products that effectively meet a broad range of transaction needs, widely available access points, as well as effective awareness and financial literacy efforts. Looking ahead, generative AI may offer innovative solutions in financial education such as virtual financial advisors seamlessly integrated into banking applications.

Financial institutions can enhance their inclusion efforts by considering alternative variables to establish risk profiles and diversifying their sources used for credit evaluation. Parallel to these diversification opportunities are emerging technologies that will play an important role in promoting more inclusive access to credit. Several AI-driven credit scoring models now consider alternative data points, such as total income, credit history, transaction analysis, work experience and even data platforms like Google Analytics. These new scoring models will drive a future where SMBs and individuals without traditional banking access enjoy increased access to credit.

The push towards inclusive credit in Kazakhstan does not focus on innovative credit scoring solutions, but on raising the level of financial literacy in the country. The NBRK led a three-year initiative titled **"National programme for improving the financial literacy of the population (2016 – 2018)"**, a program aimed at increasing financial literacy, improving consumer and investor protection, and financial stability (OECD, 2019).

Following this project, the NBRK partnered with the OECD to better measure the level of financial literacy in the country, developing a national strategy for financial education, initiating educational initiatives for the youth, and meeting the financial literacy needs of migrants (OECD, 2019). Today, although trailing behind OECD countries, **Kazakhstan has the third highest financial literacy score among CIS countries (OECD, 2021).**

As financial literacy spreads through the entire population, the immediate next step for Kazakhstan will be the adoption of new technologies to ensure better access to credit.

Conscious consumerism

As internet penetration increases and access to information becomes more widespread, a growing portion of consumers have moved away from traditional considerations such as price in their purchases. Younger generations are increasingly considering environmental, social and governance (ESG) issues in their purchases, such as fair-trade practices, or chemical-free produce. This drive towards more responsible consumer practices will benefit producers that work in line with these responsible practices or have a more local basis of operations.

Two technologies emerge as the drivers of conscious consumerism:
QR codes and RFID tags. These tools help consumers have instantaneous access to the genealogy of the products they are buying, whether they were produced locally, whether they have specific certifications, and so on. As these genealogical technologies and responsible consumer practices reinforce each other through a feedback loop, production will become more socially and environmentally conscious.

In Kazakhstan, conscious consumerism is led by the government, as the private sector lags. To transform the fossil fuel-dependence of the national economy, the **Kazakh government has pledged to be a carbon neutral economy by 2060.**

The long-term goal is put into practice through cooperations with international development organizations such as the **United Nations,** and regulatory changes that incentivize the private sector towards sustainable practices.

The effects of these initiatives on personal consumption in terms of **socially and environmentally sustainable** product use and businesses will be seen in the long run.

Embedded trust

With the wider adoption of cashless payments, digital wallets, and enhanced financial services driven by open banking and artificial intelligence, more and more areas of fraud and identity theft emerge. As more actors offer more diverse financial services, personal data is distributed to a higher number of parties. In parallel with the spread of personal data is the increase in the number of vulnerabilities in the financial services industry. This covariance creates an antagonism between safe payment processes and fast payment transactions. Furthermore, as data architectures become more secure, hackers and other malicious parties develop more sophisticated ways of obtaining personal data.

Therefore, technological developments also drive a need for proper identification and the development of new trust mechanisms. Embedded trust refers to a new procedure whereby companies combine their trust services with cutting edge technological innovations, such as utilizing data devaluation, encryption, and tokenization. These innovations intend to make consumer data unusable to irrelevant parties and enhance identification processes.

Trust constitutes an important component of the NPC's vision for the National Digital Financial Infrastructure.

The NPC lays out biometric identification, cloud-based e-signatures, approval management, and e-KYC as the four components of its Identification Infrastructure.

By incorporating these trust mechanisms into the national payments infrastructure, the NPC hopes to ameliorate trust practices without the need for groundbreaking innovations in the private sector, increasing avenues for innovation.

5 Conclusion

The payments sphere around the world has been evolving rapidly in the past few years. The global pandemic has shifted consumer preferences significantly, increasing e-commerce spending and the overall demand for cashless expenditures. The tendency towards cashless spending has not only increased the demand for card payments, but more innovative digital payment solutions such as digital wallets or cryptocurrencies. Collectively, the trend towards cashless payments resulted in the global number of non-cash transactions to almost double from 625 billion in 2018 to 1.157 billion in 2022.

Parallel to the increasing demand for cashless payments are advances in digital payment systems: mainly in digital wallets, real-time payments, open banking, digital currencies, and artificial intelligence. Digital wallet adoption has benefited from increasing demand for marketplaces and e-commerce, whereas real-time payments have increased the speed and safety of P2P, B2P, and P2G transactions. Moving away from commercial means of payments and savings, consumer interest in digital currencies as a decentralized alternative is increasing, and central banks have responded to this trend by engaging in CBDCs. Finally, all these developments have been happening over the backdrop of increased banking services, driven by advances in open banking and artificial intelligence.

These trends have also been observed to a great extent in Kazakhstan, the flag carrier of the region in terms of readiness for the digital payments. Rising digital readiness combined with relatively high banking penetration, has led Kazakhstan to be a leading economy in her region in terms of digital payments. Having said that, it still has an untapped potential to reach the maturity of developed economies. Achieving that stage will necessitate overcoming inefficiencies and challenges in the market such as limited diversification and competition, high cost of payments infrastructure, constraints with respect to interoperability, and so on.

Public policy institutions in Kazakhstan, the NBRK, and the NPC in particular, have been leading the march towards the solution of these inefficiencies and challenges. The long-term plan for the transformation of the national economy is the establishment of the National Digital Financial Infrastructure, a three-tier system of payments that will ensure the state-of-the-art methods in payments are adopted in Kazakhstan swiftly.

As policymakers tend to the needs of consumers, merchants, and other stakeholders, the needs themselves evolve over time. For example, as developing digital economies try to reduce their dependence on cash for payments, mature digital economies have been moving away from the concept of money towards more sophisticated means of payments, such as tokens. Similarly, mature digital economies have been moving towards programable payments where the need for human interactions is eliminated altogether. Finally, as wallet use picks up in developing digital economies, the future wallets are expected to be ubiquitous wallets.

All these innovations can be summarized as the move away from conventional digital experiences towards intelligent experiences. The future of payments is expected to bring about the merging of different asset classes to be managed together, the eradication of geographic and digital borders to ensure seamless payments, and acceptance ceasing to be a problem for merchants and consumers alike.

Observed with these innovations are perpendicular trends towards the social responsibility and sustainability of payments. For example, as means of payments diversify and more considerations come into play for credit payments, a new need emerges to come up with an alternative way of credit allocation. Similarly, as constraints in purchasing and payment options evaporate, consumers are beginning to put ethical, social, and sustainable considerations at the forefront of their consumption. Finally, all these rapid advances in the means of payments, the modality of service, and considerations of sustainability have brought about a renewed need for trust. The future of payments will unquestionably be built upon renewed and enhanced systems of trust.

Kazakhstan has demonstrated high flexibility in adapting to these themes and coming up with policy innovations to prepare for the future of payments. The three main pillars of the policy agenda, the Digital Tenge, real-time payments, and open banking constitute a major push towards the elimination of cash as the primary method of payment and any frictions that exist within the payments ecosystem. As Kazakhstan renovates its payments infrastructure, the next step will be to adapt to the cutting-edge technologies in payments, such as tokenization, programmable payments, and borderless rails.

What do these trends, innovations, and expectations mean for different stakeholders? Developments such as the gradual eradication of cash from payments reduce liquidity constraints and increase the welfare of all stakeholders through increased transparency and tax collection for the state. Furthermore, the widespread adoption of new digital payment methods such as digital wallets and digital currencies will diversify payment methods and increase the safety of payments. The quality of financial services is also expected to increase, as open banking practices and artificial intelligence offers new opportunities for more personalized experiences.

For Kazakhstan, these innovations and policies will primarily foster financial inclusion. The rural/urban divide in financial inclusion, currently mediated by the efforts of private actors, can completely disappear as technological adoption increases and consumers adapt to digital payment mechanisms. Furthermore, these innovations have the potential of boosting competition in the payments market, by decreasing operational costs, making available payments infrastructures for a broader base of financial institutions, and actively encouraging financial innovations through government incentives.

Payments innovations have also the potential of eliminating frictions in the Kazakh economy. Namely, the adoption of QR payments or mobile acceptance solutions such as tap-on-phone will reduce the need for POS devices, whose cost has been increasing. This, in turn, will lower the barrier for merchants to obtain a viable method of non-cash acceptance.

These improvements in consumer and merchant welfare are not deterministic. Indeed, they will actualize if governments and public policy bodies ensure the proper regulatory frameworks to foster competition, maximize adoption, and build a reliable financial infrastructure. Increasing access to financial services and more foundational assets will be overarching themes encompassing these policy actions.

The next big leap for Kazakhstan's payments ecosystem necessitates collaborative steps by market participants. As financial inclusion increases and individuals open accounts with multiple financial institutions, more sources of friction emerge in the financial process. A host of issues, ranging from interoperability to cybersecurity and standardization can only be tackled with the cooperation of all market participants. Financial institutions should aim at working with each other to develop better information sharing platforms and ensure security, in line with the vision of the regulator. The regulatory institutions in turn should ensure the protection of consumers and banks alike from financial, digital, or any other type of risk.

GLOSSARY

Acceptance: A term, used with a payment method, that describes the occurrance or frequency at which a payment method is usable in a setting. For example, if the majority of merchants in an economy accept payments through cards, then card acceptance is high in that economy.

Anti-money laundering (AML): Usually refers to a set of laws and regulations against money laundring and financial terrorism.

Application programming interface (API): A tool that enables a system to access the data or features of another system.

Artifical intelligence: Branch of computer science that develop systems to perform human tasks, such as recognizing speech or visuals, translation, and so on.

Asia-Pacific (APAC) Region: A region consisting of countries around the Pacific ocean, including countries from Asia and Oceania.

Association of Southeast Asian Nations (ASEAN): An intergovernmental institution of countries in Southeast Asia.

Buy now pay later (BNPL): A type of payment that allows consumers to purchase and use a product now and pay for it in the future.

Central bank digital currency (CBDC): A digital currency issused by a central bank.

Closed-loop: A term, used in conjunction with a system, that means the features of the system cannot be used outside that system. For example, if an app only allows payments to accounts within that app and not to accounts outside that app, then this system is a closed-loop system.

Commonwealth of Independent States (CIS): A group of countries consisting of countries that previously belonged to the Soviet Union.

Cumulative average growth rate (CAGR): For a variable tracked over time, the average rate at which the variable grew between two endpoints.

Digital currencies: Currencies that are intangible, unlike hard currencies that have physical form such as paper money or change.

Digital payment: Any payment that does not include physical payment instruments at the time of payment, such as paying with a payment card at a POS terminal.

Digital wallets: A tool that holds money or other payment instruments allowing payments using the stored payment instruments.

Government technology (GovTech): A term that describes the use of contemporary technologies (such as digitized payments) to facilitate public processes.

Gross domestic product (GDP): Total monetary value of all goods and services produced in a country in a given year.

Group of 20 (G20): An intergovernmental institution that aims at working on global issues.

Interoperability: A term that describes, in the context of payments, whether a payment method in one system can be used to make payments in another distinct system.

Joint stock company (JSC): A company owned by its investors, where the share of ownership is determined by the amount of shares the investor holds.

Kazakhstan Tenge (KZT): The national currency of Kazakhstan.

Know-your-customer (KYC): A set of procedures and regulations that help institutions obtain adequate information about their customers.

Latin American Countries (LATAM): Countries situated in the Latin American continent.

Merchant discount rate (MDR): In the context of a card payment, the fee that the merchant pays the bank that processes their transaction.

GLOSSARY

Middle East and Africa (MEA) Region: A region consisting of countries in the Middle East and Africa.

Office of Economic Cooperation and Development (OECD): An intergovernmental institution aiming at fostering economic development around the world.

Payment rails: A term that describes the initiator and the recipient of a payment. A list of payment rails are as follows:

C2C/A2A/P2P: Consumer-to-consumer (also called peer-to-peer or account-to-account) transactions include non-commercial (and also commercial, although not desirable due to tax evasion) payments between individuals.
C2B: Consumer-to-business transactions include payments for goods and services.
C2G: Consumer-to-government transactions include tax, fine, or other public payments.
B2C: Business-to-consumer transactions include salary payments, bonuses, and other related payments.
B2B: Business-to-business transactions include payments for goods or services traded between businesses, business loans, or other inter-business transactions.
B2G: Business-to-government transactions include tax payments, dues, or other public payments.
G2C: Government-to-consumer transactions include social security payments, salaries, tax refunds, and other types of payments.
G2B: Government-to-business transactions include tax rebaits, subsidies, procurement payments, and similar types of transactions.
G2G: Government-to-government transactions include any transfer of funds between public bodies.

Payment service provider (PSP): In the context of a payment, a party (that is not the payer or the recipient) that contributes to the execution of the payment.

Point-of-sale (POS) machine: A terminal by which card payments are accepted by merchants.

Processing: A verb that entails, in the context of payments, the fulfillment of payment orders from its initiation to the payment reaching its destination account.

Quick-response (QR) code: A two-dimensional matrix barcode that carries information.

Radio Frequency Identification (RFID): An identification technology using radio frequencies.

Real-time payments (RTP): A payment method with which payments are settled instantly.

Regulatory Sandbox: An instrument that allows the trialing of new products, services, or rules before their expansion to the entire markets.

Settlement: A term that entails, in the context of payments, the actual transfer of funds as a result of a payment order.

Small-to-medium enterprise (SME): Businesses that have fewer than a pre-determined number of personnel or revenue lower than a pre-determined threshold.

Superapp: A term that describes applications that offer an enhanced set of services, such as offering financial services, access to marketplaces, and so on.

Switching: A term that describes the process starting from the initiation of a payment order to the actual transfer of funds.

Tokenization: 1) The process of anonymizing sensitive data 2) The process of using an object that is not regularly a payment instrument as a method of payment.

United States Dollar (USD): National currency of the United States of America.

User experience (UX): The feelings and/or behavior of an individual during the use of a product or service.

Value-added tax (VAT): A tax on the amount of value added, i.e. increase in value, of a good or service.

REFERENCES

[1] The Global Payments Report 2022, Worldpay from FIS

[2] Global New Payments Index by Mastercard, 2021

[3] Global New Payments Index by Mastercard, Europe Report, May 2022

[4] The Global Payments Report 2022, Worldpay from FIS

[5] Digital Wallets - Accelerating to a Cashless Society, Juniper Research

[6] The Global Payments Report 2022, Worldpay from FIS

[7] Digital Payments and the New Opportunity to Increase Savings, Commonwealth

[8] The Global Findex Database 2021, The World Bank

[9] Mapping Loyalty in Uncertain Times, TruRating

[10] Why the Digital Wallet Wars Matter, Forrester

[11] Identification Development Global Dataset, The World Bank

[12] It's Prime Time for Real-Time 2023, ACI and Global Data

[13] Global Real-Time Payment Trends and Case Studies, Mastercard® Market Trends

[14] Open Banking Impact Report, 2023

[15] GPay Perspective: Open Banking System Design, 2021

[16] Open Banking Market Research Report, 2022 – Juniper Research

[17] Crypto Concepts and Use Cases, Mastercard® Market Trends

[18] Using AI Intelligently: Smart ways to use Artificial Intelligence in Payments, The Payments Association's Guide to AI

[19] Article by Beth Shulkin, Total Retail, Modern Consumers Demand Fast and Secure Digital Experiences

[20] Statistics of Payment Cards, National Bank of Kazakhstan

[21] Share of Population Using the Internet, Statista

[22] International Telecommunication Union (ITU)

[23] Future of Payments, Mastercard® Market Trends

[24] Status Report on the Implementation of The National Digital Currency in the Republic of Kazakhstan, NBRK

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