

strategy&

Payments Study Tour Report 2019

Lessons from Asia to inform South Africa's
payments modernisation journey

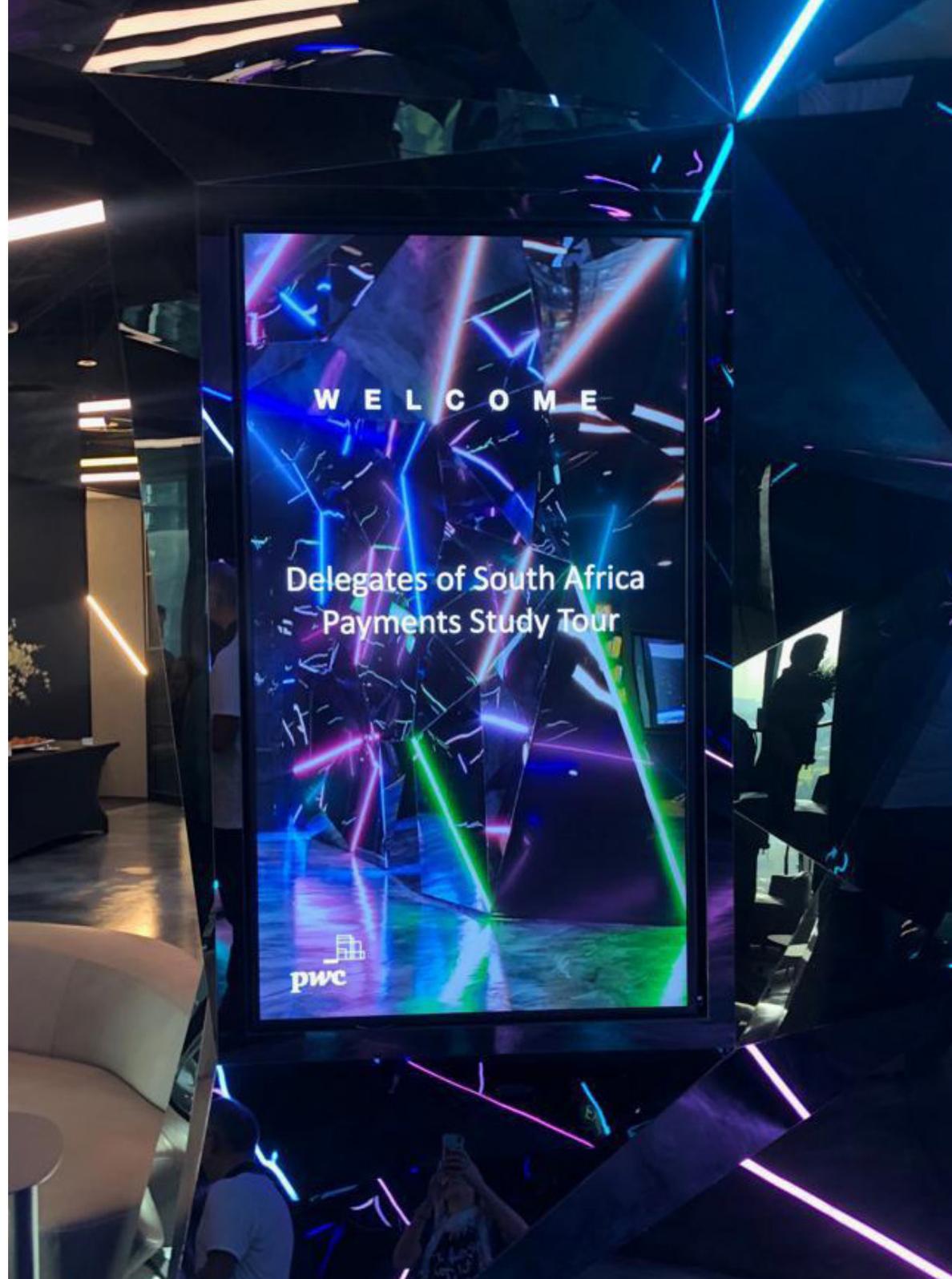
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BANKSERVAFRICA

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Foreword

Nelson Mandela said that to be truly free we must live in a way that respects and enhances the freedom of others. For the payments industry in South Africa, this has never been more pertinent than it is now as we move towards a payments future that aims to realise financial inclusion, reduce costs and help stimulate the economy. Building a payments system that can achieve this is what keeps us up at night, and what gets us up every morning.

Broadening financial inclusion has been a social, economic and political priority in South Africa since 1994, but meaningful inclusion goes beyond ensuring someone simply has a bank account. The promise of digital channels and digital transactions is that they will truly democratise the financial system for the benefit of all. The potential impact of this kind of technologically enabled transformation has been noticed at a presidential level.

South Africa has a proud history of payments innovation. Our RTGS system has been the envy of numerous countries for many years and been copied around the world. As an early adopter of EMV card chip enhancements, contactless card and related card security measures like 3D Secure, as well as being one of the first countries to offer a true real-time payments capability, and nowadays, also an authenticated mandate management and early debit collection capability, consumers and corporate users are assured of a safe and feature-rich payments capability.

South Africa can therefore rightly pride itself on its National Payments System (NPS). Yet, despite these innovations, South Africa's economy is still challenged by the stark differences between its sophisticated, first-world marketplace and large informal sector. Our per-capita electronic payments usage is below average, even in comparison to economies with similar GDP and demographic and socio-economic challenges.

South African consumers rely heavily on cash, which is fraught with hidden costs and security risks. At the same time, our NPS is facing increased pressures as the world is swiftly moving into the broad utilisation of digital business platforms. These developments challenge traditional platforms and payments systems, especially the use of cash.

In some other economies facing similar challenges to our own, we are seeing the emergence of real-time electronic payments systems, overlaid with mobile payment services. These not only facilitate the ease of real-time payments, but also stimulate economies by replacing bank notes, reducing fraud and crime, enabling businesses, and providing a service to consumers that is in many respects 'better and more convenient than cash'.

To truly democratise the financial system it has therefore never been more pertinent for South Africa to move towards a similar payments future that will help us to realise true financial inclusion, and at the same time reduce the social cost of cash and help stimulate the economy. This step now seems critical for South Africa and it is quite certain that an investment of this nature will truly democratise the financial system to the benefit of all.

In the study tour reported on here, which a number of South African participants conducted to understand more about these transformations, it became clear that the impact of technologically enabled payments transformations has been recognised at the highest level of state and they are therefore broadly supported to the benefit of the economies and citizens of these jurisdictions.

The study tour, hosted by PwC, the Payments Association of South Africa (PASA) and BankservAfrica was conducted by a broad array of stakeholders in the payments industry and was carried out in service of South Africa. The delegates wanted to learn from countries that would be of relevance and interest for South Africa. India, Thailand, Singapore and China were specifically chosen for this reason. These countries had similar payments modernisation goals and challenges to South Africa and had already achieved remarkable economic and consumer benefits from their transformations.

This report represents the collective voice of these delegates, and the intention of this report is to inform South Africa's own payments systems stakeholders and leadership of the potential gains that can be achieved. We hope that, like us, you will find this report insightful and valuable and we are looking forward to your presence and leadership in taking South Africa on a similar journey of transformation.



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Executive summary

A national payment system (NPS) is a set of arrangements and infrastructure that enables consumers, businesses and other entities to effect financial transactions, including making payments to one another and using the accounts and payment instruments offered by financial institutions. The South African Reserve Bank (SARB) has outlined nine goals within its Vision 2025, which aims to guide the development of the national payment system and support the aims of the National Development Plan 2030. The SARB states that 'Creating payment systems that are fit for purpose requires a holistic approach that is guided by an overarching vision and key goals. Industry stakeholders have to collaborate on implementing set strategies to meet these goals'.

“

Unless we adapt, unless we understand the nature of the profound change that is reshaping our world and unless we readily embrace the opportunities it presents, the promise of our nation's birth will forever remain unfulfilled¹

– President Cyril Ramaphosa (February 2019)



Broadening financial inclusion has been a social, economic and political priority in South Africa since 1994, but we now recognise that meaningful inclusion goes way beyond ensuring someone simply has a bank account. The promise of digital channels and digital transactions is that they will truly democratise the financial system for the benefit of all. The potential impact of this kind of technologically enabled transformation has been noticed at the highest level, with President Cyril Ramaphosa's announcement of the establishment of the Presidential Commission on the Fourth Industrial Revolution (4IR).

As part of the South African modernisation journey, an industry study tour was conducted to countries that would be of interest and relevance to South Africa. BankservAfrica and the Payments Association of South Africa (PASA) requested PwC to host the industry study tour to pursue learning from countries that have made significant strides in payment modernisation and to understand how the markets respond to and interact with these new capabilities and products.

Countries were selected that had similar payments modernisation goals and had achieved industry transformation. Other criteria considered included markets with similar demographics and the desired benefits (financial inclusion, low-cost services, speed of execution of transformation, efficiencies gained, challenges overcome, benefits attained, lessons learnt and what the future can look like).

PwC hosted the tour delegation on behalf of BankservAfrica and PASA, facilitated client meetings and co-created this report with the study tour delegation. Twenty-three delegates from across the industry took part in the tour to India, Thailand, China and Singapore from 31 March – 13 April 2019. Numerous meetings were conducted over the two-week period with regulators, banks, fintechs and industry bodies in each country, to understand the journey they are on and how they have achieved positive results in their journey.

The payments industry in each country is driven by a variety of factors such as policies and regulations, new technologies, competition and consumer behaviour. In the last few years there have been rapid advancements in payments in countries such as India, Singapore, Thailand and China. These countries have each embarked on a transformative payments journey to address their unique needs and challenges. Each country had a unique case for change, but all of them demonstrated an industry collaboration driven by a national imperative that was bigger than the interests of any individual stakeholder. The payments modernisation execution approach has differed between countries and is driven by market space, sophistication, skills and time available. In India the decision was to build a home-grown platform, as no commercial offerings existed. However, Thailand decided to go for a full commercial stack, China is dominated by social media payment platforms, while Singapore chose a hybrid approach.

Interestingly, each country visited has a unique payments journey with great successes being attained by overcoming the challenges that were encountered. A common

lesson learnt is that the sooner you start this journey, the sooner you learn, grow and understand the challenges presented. Another key element identified in all countries visited is that payments transformation can be a critical lever to catalyse growth. Due to the rate of change in the digital world, a payments journey will continue evolving and assisting with digital financial inclusion. Therefore it is critical to note that as soon as you start this journey you realise there is so much more to do and to learn.

South Africa has been on a journey to modernise its payment system for a number of years. The Modernisation of Payments (MoP) project was initiated in August 2014 by the banking industry with the strategic objective being to 'modernise all electronic funds payment systems by establishing a common standards platform based on the ISO 20022 methodology and standards.'² The payments modernisation project has achieved significant milestones since 2014, including consultation with the industry on what payments modernisation should look like in the South African context.

During 2017, a research initiative was launched to understand international modernisation programmes, the drivers of these programmes and how each jurisdiction aimed to achieve each of its goals by prioritising certain initiatives. In parallel, research was conducted into the South African economy, its unique challenges as well as recommendations for an approach towards modernisation in South Africa. A critical output of this was that the research also investigated and defined the target state architecture for payments modernisation. Efforts to establish the target state architecture commenced in January 2018 under the name 'Project Future' and through a strategy deduction and business architecture process, a concept for the future payments system has been developed and is under review. The concept aims to achieve the goals set out by the South African Reserve Bank's (SARB) Vision 2025 policy document as well as key industry goals.³ This research was conducted in a collaborative manner within the financial services industry, and was a critical step in the modernisation journey. It demonstrated the power of collaboration and formed the basis of collaborating as an industry towards a consolidated approach for national benefit to act as South Africa Payments Incorporated (SAPayInc).

In 2018 BankservAfrica embarked on the Rapid Payments Programme (RPP) that aims to define a possible mobile-friendly instant payment platform for the industry. This programme would address key needs identified both in the vision 2025 and Project Future recommendations, namely increasing financial inclusion and creating an integrated platform for payments. The programme is currently in the collaborative development stage in which a quantified commercial case, business and technical proposition are being defined.

¹ "President Cyril Ramaphosa," 2019 State of the Nation Address, <https://www.gov.za/speeches/president-cyril-ramaphosa-2019-state-nation-address-7-feb-2019-0000> (accessed Jul. 17, 2019).

² BankservAfrica and PASA, "South Africa Future state, demands and pressures", [http://www.pasa.org.za/docs/default-source/default-document-library/modernisation/pasa-bsva-sa-future-state-demands-and-pressures-online-final-\(c\)pdf.pdf?sfvrsn=2](http://www.pasa.org.za/docs/default-source/default-document-library/modernisation/pasa-bsva-sa-future-state-demands-and-pressures-online-final-(c)pdf.pdf?sfvrsn=2), (accessed Jul. 17, 2019).

³ Payments Association of South Africa, Project Future, <http://www.pasa.org.za/resources/project-future> (accessed Jul. 17, 2019).

Key findings of the tour

1

A large-scale rapid payments journey needs an immensely **strong national imperative** driven by government, in collaboration with banks, associations and fintechs. The national imperative needs to be supported by a regulatory framework that promotes and does not stifle innovation.

2

While clear sponsorship and funding is a primary enabler, the collaboration of participants is the fundamental cornerstone of success. Large-scale collateral benefits can only be achieved if all **parties involved work collaboratively** with defined roles and responsibilities.

3

Success is an **ecosystem value play**, and players need to focus and understand how their value proposition integrates into the ecosystem. They need to collaborate and be socially responsible and commercially viable, or risk being left behind.

4

Fintechs and non-banks can be leveraged to drive consumer adoption and have become larger than traditional banks. This is an ecosystem play with all role players not just banks.

5

There are numerous aspects relating to **customer, it is about the experience and the trust relationship**. For ease of use and customer experience, the fintechs have performed the best, whereas traditional banks still own customers' trust relationship.

6

In order to successfully implement digital payments, an **enabling infrastructure** (mobile network access, fibre etc.) needs to be in place at a national level and be deemed affordable to the market.

7

Standardised QR codes, both dynamic and static, seem to be key to the merchant acquiring capability for digital person-to-merchant (P2M) payment success.

8

Interoperability between banks is achieved by the use of **open platforms** that are secure, efficient, and have the ability to respond rapidly to the ever-changing business environment.

9

There needs to be a **clear business case and unique case for change for the country**. The solution developed was often not just to address a payments problem, but rather an economic one. This is embedded in the strategic plan of the country supported by incentives, deadlines and guidelines.

10

Rapid consumer adoption was driven by **ease and timely incentivisation** for adoption of proxy payments through leveraging proxy/alias databases.

11

Massive attention has been paid to ensuring the establishment of an appropriate **fraud, cyber risk and security framework** was in place prior to driving real-time transaction processing. Some elements were effected through legislation.

12

The role of **government is critical**. For example, in Thailand, the government incentivised customer adoption by making it easier to receive tax refunds through digital channels, along with price and convenience benefits.

13

Payments transformation is a journey, and the lesson from other countries is that you need to be **adaptable**, as there are elements on the journey that will **change**, and **challenges** will have to be addressed along the way. It is about navigating and adopting.

14

It is better to start the journey **sooner rather than later**. Payments transformation has no end, but much can be achieved very quickly if all stakeholders are committed.

15

Person-to-person (P2P) **low-cost real-time payments** were the critical catalysts for change in each of the countries visited, which all sought a payment method more efficient, more convenient and superior to cash.

16

The desire to accelerate development has encouraged many governments to open their markets to non-bank players. Although full service banking is the dominant and preferred banking model across the globe, **regulators in these emerging markets have introduced a differentiated banking licence for both bank and non-bank players aimed at furthering financial inclusion.**

The South African ambition

National Development plan 2030

National Government has clearly articulated their intent to drive growth, eliminate poverty and reduce inequality in South Africa within the National Development Plan. The NDP is a plan for the whole country, Government plans to engage with all sectors to understand how they are contributing to implementation, and particularly to identify any obstacles to them fulfilling their role effectively. The use of digital communications has changed society in ways that are not yet fully understood. It is clear, however, that young people have embraced the new media, and this represents a potentially powerful means of fostering social inclusion. South Africa needs to sharpen its innovative edge and continue contributing to global scientific and technological advancement. This requires greater investment in research and development, better use of existing resources, and more nimble institutions that facilitate innovation and enhanced cooperation between public science and technology institutions and the private sector. To further support this drive the President has appointed members of the Presidential Commission on the Fourth Industrial Revolution (4IR) which will assist government in taking advantage of the opportunities presented by the digital industrial revolution.

NPS Vision 2025

Financial inclusion remains one of the South African Reserve Bank's (SARB) priorities and they recognise the vital role they play in eliminating poverty and reducing inequality and thus have taken a clear stance to serve the economy and the people of South Africa.* Within the National Payment System Framework and Strategy Vision 2025, the National Payment System Department has articulated the goals and strategies intended to guide the national payments industry, aimed at building a world-class national payment system (NPS).

The opportunity

In recent months economists and political analysts have deliberated on the state of the South African economy.** Such deliberations come against the backdrop of dwindling state revenue, the collapse of state-owned enterprises, weak investor confidence in the South African economy, a weakening rand, rising food prices and unprecedented unemployment. As outlined within this report and learning from other economies, payments could be a critical catalyst for positive growth for South Africa.

Vision 2025

Industry goals



Promoting competition and innovation



Financial inclusion



Regional integration



Transparency and public accountability



Cost-effectiveness



Interoperability



A clear and transparent regulatory and governance framework



Financial stability and security



Flexibility and adaptability

Industry strategies and tactics

* South African Reserve Bank, *The National Payment System Framework and Strategy Vision 2025*, [https://www.resbank.co.za/RegulationAndSupervision/NationalPaymentSystem\(NPS\)/Documents/Overview/Vision%202025.pdf](https://www.resbank.co.za/RegulationAndSupervision/NationalPaymentSystem(NPS)/Documents/Overview/Vision%202025.pdf) (accessed Jul. 17, 2019)

**Ayabulela Dlakavu, "OPINION: Why an IMF intervention might not be a bad thing for South Africa", *news24*, Aug. 23, 2019

South Africa can benefit from learnings in each country visited



India

India leads the Asian market when it comes to the introduction of digital identity (Aadhaar identity), integration for all social security payments, pioneering customer experiences from banks and non-banks. These changes have catalysed a shift to a less cash-reliant economy. The regulator was the driver of change, using demonetisation as the lever, but this did create its own challenges. The regulator also provided building blocks in the form of incentives for banks to cooperate and collaborate. The execution approach for India was to build a home-grown platform, as no other commercially viable option existed.

Stakeholders engaged with

- Citibank
- FlexiLoans
- ICICI Bank
- Indian Banks' Association
- FSS
- NPCI
- Reserve Bank of India
- State Bank of India



China

China was selected owing to the evolution of social media payment platforms in the Chinese market. The regulatory authorities have had to adjust their thinking in order to accommodate this evolution into their payments landscape. Of interest is the NUCC Online Payments Platform, which addresses issues arising from mobile payment such as 'unknown transactions, money laundering, and cybercrimes', and creates 'a clear boundary between online payment and clearing services of TPP'. Allied to this, the Chinese Internet Banking Payments Platform provides multi-account real-time credit and debit services, both of which are ISO 20022 compliant.

Stakeholders engaged with

- Ant Financial
- Tencent
- Swiftpass



Thailand

Thailand has had one of the most rapid transformations and adoption of real-time proxy payments. PromptPay, the domestic scheme which was launched in 2017 quickly achieved critical mass in less than eight months. It now processes over 1,000 low-value real-time payments per second (average), presenting an interesting case study in quick ramp-up and adoption of a new system. Thailand's transformation clearly illustrates how branding and consistent customer experience is critical to the success of instant payments.

Stakeholders engaged with

- Central JD Fintech
- Kasikorn Bank
- The Thai Bankers' Association



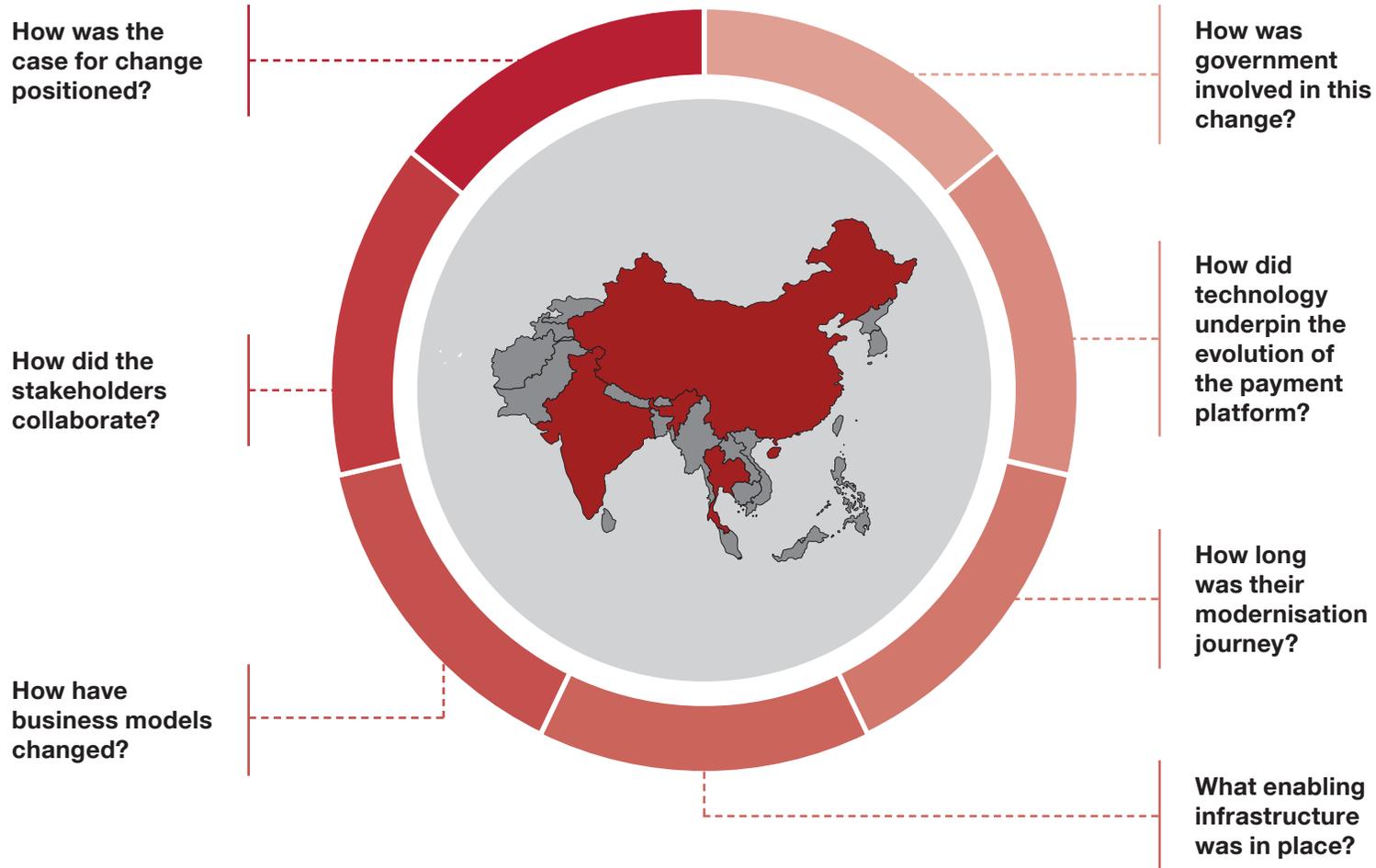
Singapore

Singapore is seen as the powerhouse of the region and is a great case study on institutional response to be a smart economy. Singapore was one of the first countries in the region with proxy payments and provides an invaluable case study on the institutional response required to become a cashless 'smart payments nation'. Singapore has a hybrid model and has faced its own challenges on its journey, illustrating the need for proxy standardisation. Singapore and Thailand are working together to create a real-time cross-border proxy payments system by linking their domestic proxy schemes. This is a world first and a useful example for possible SADC expansion.

Stakeholders engaged with

- Monetary Authority of Singapore
- NETS
- Vocalink

Assessment dimensions used across countries visited



“

It is amazing what can be achieved when you are in mission mode



Payments study tour, April 2019

Desktop research and analysis has been an important source of insight for the South African modernisation journey. To enhance this understanding, PwC, PASA and BankservAfrica embarked on a payments study tour to Asia in April 2019 with participants from across the financial services industry to collaboratively learn and inform the payments strategy for South Africa. No two countries' payments journeys have been the same, but there are important commonalities in the journeys and challenges faced in the Asian markets that we could practically benefit from by understanding through experience.



Cutting-edge technology will reshape the next-generation payment system, with both Financial Technology (FinTech) and established players driving innovation.



Payment platforms will evolve from being commoditised propositions to strategic solutions that complement and add value to people's lifestyles.



With a lack of conventional payments infrastructure, and in the absence of a legacy technology, emerging markets are leapfrogging developed economies and coming up with cutting-edge customer experience solutions.



Customers are at the core of the transformations; it is about enabling the customer experience more than just the actual payment or technologies.

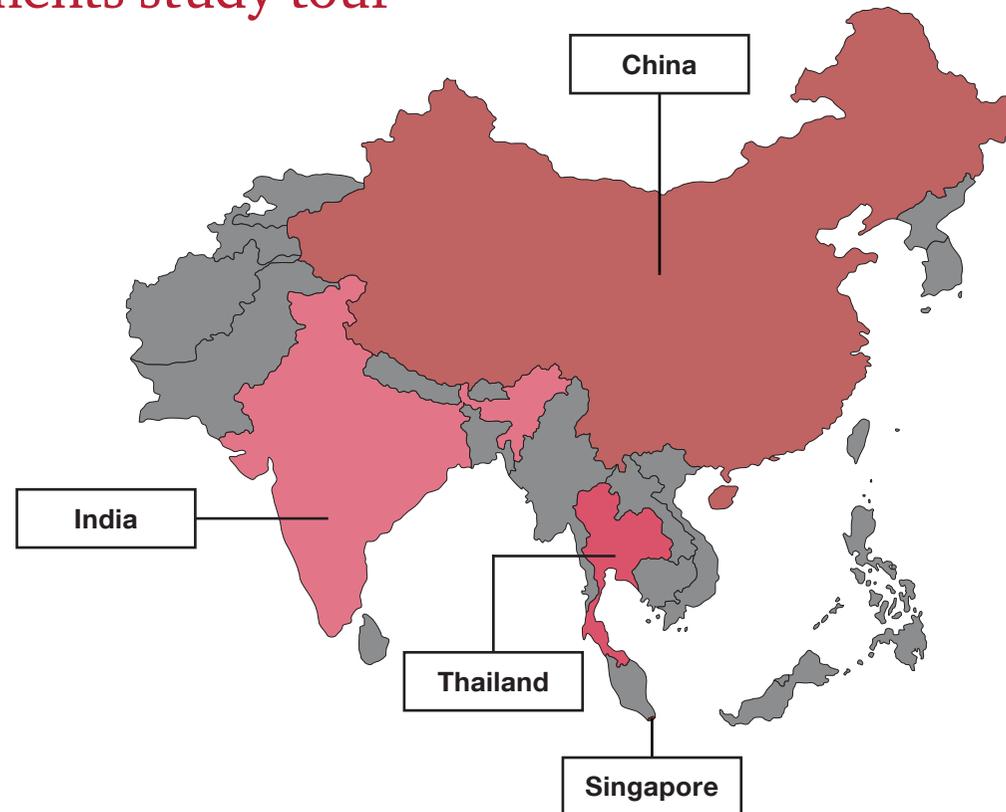


Payments are critical levers for economic growth, digital and financial inclusion, and when this is championed at a governmental and regulatory level, phenomenal results can be attained.



There are fundamental building blocks that need to be in place to catalyse this change across infrastructure, financial services and the industry as a whole, which requires collaboration.

Payments study tour



Twenty-three delegates representing banks, non-banks, system operators, regulators and industry associations were represented in the group that embarked on the study tour to learn from other countries that have or are implementing advanced real-time payments ecosystems. The countries selected for this tour were India, Thailand, China and Singapore.

The objective of the tour was to learn from these markets about how they overcame their challenges, embraced technology and benefited their respective countries and markets. Within each country, the delegation wanted to gain an understanding of the full payment ecosystem from customers and banks, to fintechs, payment system operators, technology providers and regulators. The Industry delegation wanted to gain an understanding of how each participant – whether bank, regulator, system operator or fintech – participated in the payments ecosystem, how they were regulated and what positive or negative elements should be harnessed or avoided to benefit the ecosystem as a whole, and ultimately benefit the people of the country.

The delegation set out to gain a practical understanding of the learnings and to develop a shared understanding of the economic and commercial benefits for the South Africa market as well as the transition paths, design choices and approaches pursued in each of the selected countries.

Tour objectives

To **develop an enhanced understanding** of the **key drivers, products** and **approaches** used by India, Thailand, China and Singapore to modernise and transform their payment systems.

To understand the critical design choices faced and the **key criteria**, and **decision-making process**, behind each of the choices made.

To **create a collective desire and case for change** as opposed to a fragmented self-interested approach.

To obtain a clearer picture of the **societal and economic benefits** that have been realised through the enablement of each of the use cases.

To understand the **operational elements**, the challenges faced and the problems that have been solved.

To gain insight into customer behaviour, the **customer journey** and relationships with banks and traditional financial services sector versus that of the new digital ecosystem, and to understand where the customer relationship is held and maintained.



To achieve a better understanding of the approaches to **modernisation** and the reasons for these **approaches** being followed by the various countries.

To obtain a **clearer view** of the **benefits to the stakeholders** (central banks, operators, banks, retailers, fintechs and citizens).

To create a better understanding of possible use cases that could be applied to South Africa and the **impact on each of the stakeholders** in the ecosystem.

To understand the **execution approach**, the **lessons learnt** and successes to be attained.

To understand the role of other **participants** in the **payments ecosystem**, particularly technology service providers and fintechs, and the subsequent regulation and collaboration.

Each country visited has similar socio-economic challenges, as well as similar payments modernisation goals to South Africa. Each has achieved great things in various aspects of its payments transformation process and has managed to leapfrog many more advanced economies in its implementations in a very short time. This report outlines the learnings and proposed focus areas for consideration for modernisation of the South African payments eco-system.



India

India is the world's largest democracy, with more than 1.3 billion people, and is projected to become the fifth-largest economy in the world by 2020. India has a stable growth trajectory enabled by rapid reform in the macroeconomic, monetary policy, tax and business environments.

Mobile and internet penetration has been on the rise, with the internet user base in India exceeding the 500 million mark, and is likely to reach 627 million by the end of 2019. The digital gap between urban and rural areas is being bridged through increased awareness driven by government, increased availability of bandwidth and cheaper data plans, thus leading to an increase in rural penetration from 9% to 25% between 2015 and 2018. India also has one of the largest youth populations in the world⁹, driving the change towards a digital world, with 75% of India's Millennials having used a mobile wallet at the point of sale.

“

My citizens, my country, my economy, my boundaries, we don't like our money flowing out of India.



⁹ Nandita Mathur, "India's internet base crosses 500 million mark, driven by Rural India," Live Mint, Mar. 11, 2019.

Payments overview

India is known as the most exciting digital payments laboratory in the world, despite cash still acting as the primary payment method. In 2010, the government introduced Aadhaar identity, a biometric identity for all citizens, as a tool to improve the public distribution system and make services such as access banking available to citizens.

Since 2011, more than one billion adults have gained access to basic transaction accounts. India's rapid adoption of digital payments has been significantly accelerated by demonetisation – the sudden removal of high-denomination banknotes from circulation. The aim of these initiatives was the reduction of leakages in government social grants distribution and minimising tax evasion. The demonetisation exercise impacted the man on the street and thus whether it was successful or not is debatable. However, it was a critical catalyst that created the platform for change. The demonetisation exercise impacted the man in the street and thus whether the initiative was successful is debatable. However, it was a critical catalyst for change and adoption of electronic instant payments.

The regulator has played a leading role in the payment system's modernisation journey and aided the country through incentives and supporting the rollout of telecommunication infrastructure to remote areas. India has also licensed 11 payments banks, whose objective is to promote financial inclusion by providing basic banking and remittance services to migrant workers, low-income households, small businesses, and other underserved sectors.⁹

The journey has further been enabled by fintechs collaborating with banks and investment into the backbone of connectivity and data in the country. The banks in India still have a vital role to play in the modernisation process – this is an opportunity for the entire ecosystem, not just the up and coming fintechs. While the fintechs may own much of the customer experience, consumer trust still lies with the banks.

With high mobile and internet penetration rates, India is set to see dramatic shifts in its payments landscape. Previously, customers saw e-commerce as an inconvenience. However, this is slowly starting to change thanks to readily available and simpler payment methods such as the popular Paytm, PhonePe and MobiKwik e-wallets. There is projected growth of approximately 21% CAGR in e-commerce over the next five years¹⁰, implying that e-commerce spend could increase from US \$36.5 billion in 2017 to US \$95 billion in 2022.

Although cash is still a widely accepted payment method, instant payments have filled the market need and stifled the growth of cash usage.

The government of India has embarked on numerous activities to promote digital payments and a less cash-based economy. In July 2019, the government abolished bank fees on digital payments for businesses using local schemes. This could possibly increase merchant acceptance, facilitate more electronic payments and discourage the use of cash.

⁹ Nandita Mathur, "India's internet base crosses 500 million mark, driven by Rural India," Live Mint, Mar. 11, 2019.

¹⁰ Worldpay "Global Payments Report," Nov.2018, https://www.paymentscardsandmobile.com/wp-content/uploads/2018/11/Global-Payments-Report_Digital-2018.pdf (accessed Jul. 17,2019).

Sources: BMI Fitch; Worldpay Global Payments Report 2018; World Economic Forum: Global Competitiveness Report 2018; World Bank: Global Findex Database; World Bank: World Development Indicators; Transparency International (CPI) <https://www.transparency.org/research/cpi2018>; IMF Working Paper WP/18/17 Shadow economies around the world.; Cable: <https://www.cable.co.uk/mobiles/worldwide-data-pricing>. All values are estimated values for 2018 unless stated otherwise



Informal economy (2015)

- 18%

Corruption perception Index:

- 41/100



Account ownership at financial institution (2017)

- 80%



Population: 1.353 billion

Growth rate: 1.0 % p.a.

Density: 454.9 /sq km

Urban pop: 34%



Spend using mobile wallet (2017)

- eCom: 26%

- POS: 6%



Global Competitiveness Report:

- ICT adoption: 28/100

- Innovation capability: 54/100



Mobile phone subscriptions

- 4% p.a. decline

- 87 per 100 people



Spend per capita (2017)

- e-com: US \$27

- POS: US \$659



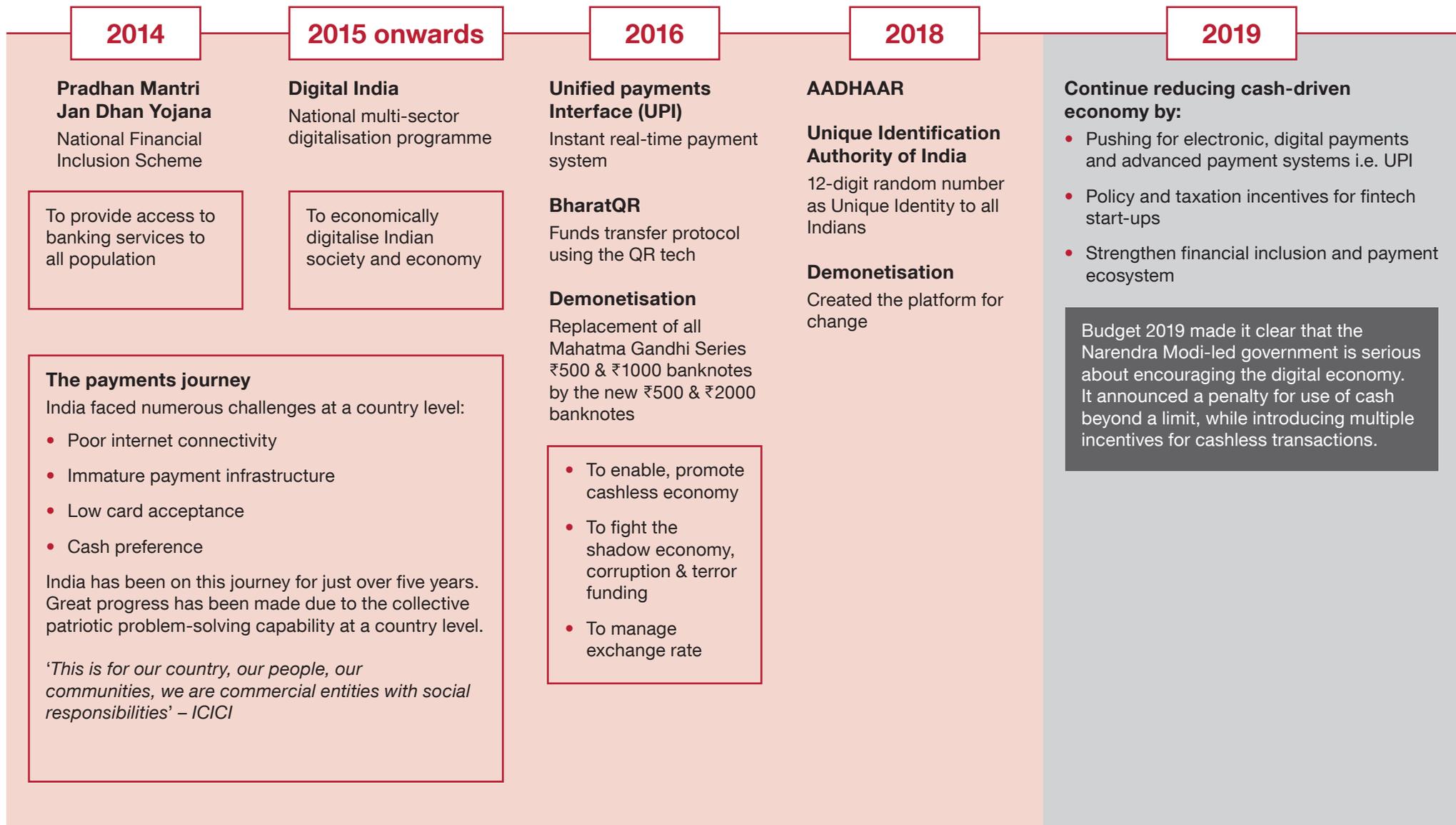
Internet penetration

- 45%

Cost of 1GB data

- US \$0.26

India: Payments macro landscape evolution



Source: Euromonitor, PwC's Strategy& analysis



“

With proxy payments, we saw a 50% increase in overall transactions, largely new to the system

Potential benefits of a focused implementation in India



Meet **Mrs Patel**. She works in Andheri in Mumbai selling fresh produce from her husband's farm. Mrs Patel does not have a bank account and prefers to keep all her cash on hand, even though it is not safe. She does not trust the use of electronic payments and stands in long queues to make her utility payments with cash. She has to travel to the city centre to make these payments and is then unable to man her fresh produce stall.

Before:

She receives paper utility bills which she needs to pay one by one.

She has to leave her produce stall, travel to the city centre and stand in long queues to pay each bill individually.

She has to carry large amounts of cash, which is unsafe.

It takes a whole day standing in queues to pay her bills.

After:

As part of her enrolment with an Aadhaar identity, she has been offered a bank account. The process is seamless and she can bank at her bank of choice.

Mrs Patel logs into her banking application via her mobile phone. She is able to make and receive payments to beneficiaries.

By using Bharat BillPay, she is able to pay all her bills without leaving her market stall.

Mrs Patel can now carry less cash and can use electronic and mobile channels to make payments.



Actions implemented to drive change

01

Implemented Aadhaar biometric identity system with an identity-linked number acting as a financial address for the unbanked.

02

Zero-rated bank accounts. Banks offered fee-free accounts for all citizens to promote financial inclusion.

03

Unified Payments Interface (UPI) introduced a real-time payment system that allows consumers and users to make, receive and request payments using the identifiers they know, which could be a handle or a mobile number.

04

Bharat Bill Pay offers an integrated bill payment system where 'Anytime Anywhere' bill payments can be made digitally by consumers.

05

RuPay: this domestic card scheme was introduced to lower fees, bring more control and minimise the financial burden of foreign card schemes like Visa and Mastercard.

Benefits to Government:

- Reduction in leakage of the social welfare distribution
- Increased prevention in fraud, tax evasion and money hoarding
- A broader tax base, generating higher revenue for the tax authorities
- Promotion of financial inclusion

Benefits to Business:

- Payments services for businesses ensure a seamless omnichannel experience
- Enhanced customer experience and ease of transacting
- Entrants of new players to increase competition and increase market size
- The creation of hybrid business models and partnership that allows business to provide better value offerings to customers
- Enhanced data collection on customer behaviour
- Banks have a **passive inflow of accounts** due to the requirement that stores of value need to sit within banks
- **Cost displacement** due to smaller dependency on cash-related infrastructure

Benefits to Citizens:

- Access to basic and affordable financial services
- Easily identifiable handle (Aadhaar ID)
- More trust in the financial system
- Alternative to cash that is widely accepted



Benefits of payments modernisation



Assessment and observations for India

What was the country problem that was being solved?

India did not aim to enable a cashless society. **India aimed to reduce leakage in social security distribution and minimise tax evasion.** The interventions included demonetisation, increasing mobile penetration and making electronic payment effortless.

How did the stakeholders collaborate?

Industry collaboration was largely **driven by the Indian Government and influential senior industry members with a unified vision.** As a result, there was a sense of urgency for compliance while still remaining competitive and innovative. There is **plenty of room for each participant to grow**, thus there is no fear of cannibalising the businesses of others; the growth of markets resulted instead.

How have business models changed?

Due to the emergence and success of non-bank payment players both in technology and telecoms, the banks have had to adapt their business models. Banks realised that they need to optimise their business model to meet customer needs and collaborate with fintechs who own the customer experience. PayTM has acquired a large customer base and is leading the way in peer-to-peer (P2P) payments. **Banks have collaborated with non-banks to expand their customer bases**, such as ICICI partnering with GooglePay. Banks are also forming partnerships with fintechs to shorten the payments innovation life cycle to minimise time to market. The government and the regulator created a new class of banking licence called payment banks to allow for a “mid point” between non-banks and full service banks and determined that stores of value can only lie with banks.



How was government involved in this change?

The government was the driving force behind the rapid modernisation journey, with payments being a single aspect of a larger digitisation plan. These initiatives included a financial inclusion scheme, demonetisation, rationalisation of service charges and mandatory routing of payments over a certain value. Government is continuing its drive towards a cashless society through policy and taxation incentives for fintech start-ups. The Reserve Bank of India (RBI) provided clear directives and deadlines to all parties and held financial institutions accountable for non-compliance. **To keep the cost of payments free RBI sponsored the interchange fees.**

How did technology underpin the evolution of the payment platform?

A number of technological interventions have been made, including Immediate Payment Services (IMPS), the National Payments Switch, Aadhaar identity system and Bharat QR code. All these **innovations supported the overall goal of building national infrastructure.** India has continuously leveraged existing infrastructure and built it up, culminating in the Unified Payment Interface (UPI), which provides an **open-access platform to all payments players in India.**

What enabling infrastructure was in place?

India has a growing mobile and internet penetration rate, enabled by **some of the lowest mobile data costs in the world**, with one gigabyte (1GB) of data costing an average of R4. India is **on a drive to provide internet connectivity in its villages** and commissioned the BharatNet project to execute this.

How long was the modernisation journey?

India's payments modernisation journey was initiated by the launch of the government's financial inclusion scheme in 2014. However, the adoption of a digital ecosystem was accelerated by demonetisation and the implementation of the Aadhaar identity system in 2016. Since then, **more than one billion adults have gained access to basic transactional accounts.** There were 65 million UPI transactions in February 2019 alone, with an average annual growth of 9% in person-to-merchant (P2M) payments. Due to an abundance of skills and resources, India is able to move from prototype to full implemented solutions in 60 days.

Key insights

1

Demonetisation was an accelerator of India's payment modernisation and adoption of electronic transactions. It created a platform for change that was a shock to the system as it forced citizens to make use of other payment streams outside of cash, like card and EFTs. This created additional challenges that impacted the man on the street and the banking system. There are varying views on the success of this initiative; however, the key factor to note is that it created a **catalyst for change** and was a critical element to the transformation journey in India. In South Africa, our market has undergone numerous shocks already and no additional shock is needed. Instead, consideration should be given to policy interventions that could promote and accelerate modernisation initiatives to achieve national benefits.

2

The adoption of IMPS in India was slow, similar to RTC, until UPI was introduced. UPI was not rolled out as a big-bang event, but rather leveraged the IMPS infrastructure, and the solution evolved. UPI was **successful due to the ease of use** with the implementation of the Aadhaar ID as a proxy. The success of South Africa's modernisation initiative could depend on our ability to **leverage existing systems** while building compatible new ones and also on ease of use and a consistent customer experience.

3

The **common intent, objective and cultural symmetry** of how stakeholders approached solving numerous problems have been key factors underpinning success in India. In the case of South Africa, we need to define these at the outset.

4

Fintech's are opening new markets for banks. They are **funneling new customers and associated data to banks**. These new flows into the banking sector positively contribute to the growth and economics of the country.

5

Government interventions ensured that the cost of low-value payments would not inhibit adoption. Government drove an integrated approach on a clear strategy.

6

Banks report that they are **able to displace the cost associated with cash** (bricks and mortar and extensive ATM fleets) because they **collaboratively address this issue**.

7

Together with RuPay, India's own **domestic payment rail**, and the establishment of a **digital proxy database** (Aadhaar identity), UPI was an important building block as an enabler of accelerated change. It has made payments **safer and easier for the people of India**. As a **proxy-based**, immediate notification and settlement solution for low-value payments, it created a **cheaper, safer, more efficient alternative to cash** and this was a critical catalyst to the payments transformation journey.

8

Strong vision, direction and leadership was provided by government, policymakers, regulators, interbank entities, banks, fintechs, consumer groups and other entities that needed to be involved in addressing challenges that came up. For example, the government is collaborating with the national **payments infrastructure to roll out the BharatNet project**, which aims to provide **internet connectivity across more than 500 000 villages**.

9

The **mandates and roles and responsibilities of each** of the participating entities was respected and known, thus none went beyond the bounds of their remits during the process. This clarity of purpose was reinforced by the National Payments Corporation of India (NPCI), which published a set of **standards and protocols** before the payment modernisation process began.

10

The modernisation topic in South Africa, as in India, needs to span the breadth and depth of all payment capabilities from cash, cheque, card, electronic as well as the **entire ecosystem** (access to cheap data, mobile network infrastructure, standardised form factors, access to digital infrastructure etc.) required to solve a particular problem.

11

India's vast population forced system designers and builders to adopt the design principle of being able to **scale for a billion people**. There is a need for design principles that are specific to South African conditions. For example, **payment solutions should be low cost and able to operate on both smartphones and feature phones**.

12

There is an **overwhelming sense of national pride and social responsibility evident in India**. All participants engaged believe it was their responsibility to their country to make a difference.

Thailand

Thailand is Southeast Asia's second largest-economy after Indonesia. The country has a population of over 69 million, with a large number living in the capital city of Bangkok. Over the last four decades, Thailand has made remarkable progress in social and economic development, moving from a low-income country to an upper-income country in less than a generation.¹¹ Thailand has been ranked top for mobile banking users, with a reported 71% mobile penetration.¹²

“

Electronic payments are displacing cash, in our market we foresee 75% of cash will be displaced in 5 years

Payments overview

Thailand's payments landscape is dominated by cash. Despite the increase in electronic payments, Thailand is still a very cash-dependent economy.¹³ The costs of manual transactions (cash, over the counter) were not sustainable and the banking industry acted to shift to a cashless economy. Thailand did not set out to reduce the amount of cash in the system, but rather drive up electronic payments and the move to a digital economy.

In December 2015, the government, in collaboration with the Bank of Thailand (BOT), launched the National e-Payment Master Plan with five core projects and the overall aim of creating an integrated e-payment infrastructure for funds transfer and payment for consumers, business and government, with an integration of the tax and social welfare disbursement systems.

Government has been the main driver of the major change projects. Government incentivised customer adoption by making it easier to receive tax refunds through digital channels, along with price and convenience benefits. There is a massive retail base in Thailand. Companies such as Central JD Fintech are creating an ecosystem of different services to facilitate digital transactions for the consumer. A single platform is used to access the fulfilment mechanism. In order to remain relevant, traditional banks face the choice of fitting in with the large retail players or risk being left out.

Thailand had one of the most rapid digital payment transformations through the adoption of PromptPay, a real-time proxy payments system. Within eight months of its launch, PromptPay was processing over 1000 low-value real-time payments per second. The payments infrastructure is run by ITMX.

National ITMX (Interbank Transaction Management and Exchange), established by the Thai Bankers' Association under direction of Payment System Committee (PSC) governed by Bank of Thailand (BOT), is a developer and service provider of the electronic payment infrastructure in Thailand. The ITMX system is an open platform that is secure and efficient with the ability to respond to rapid change of business demands. ITMX supports all kinds of electronic payments and fund transfers from various channels including ATM, EDC, OTC, Internet and mobile. Services also include PromptPay, a key service to support the National E-payment masterplan, which is part of government's Thailand 4.0 initiative.¹⁴

Interoperability between banks is achieved by the use of open platforms that are secure, efficient, and have the ability to respond rapidly to the ever-changing business environment. The infrastructure will also be able to support cross-border services once they are established.

Between 2016 and 2018 Thailand was able to reinforce the development of the digital economy, improve social welfare management, reduce cash handling and transaction costs and enhance efficiency and transparency.

¹¹ World Bank, Thailand overview, <https://www.worldbank.org/en/country/thailand/overview> (accessed Jul.17 2019).

¹² Worldpay "Global Payments Report," Nov.2018, https://www.paymentscardsandmobile.com/wp-content/uploads/2018/11/Global-Payments-Report_Digital-2018.pdf (accessed Jul. 17,2019).

¹³ Atchana Lamsam, Jaree Pinthong, Chonnakarn Rittinon, Aniya Shimnoi and Phuriwat Trakiatikul, "The Journey to Less-Cash Society: Thailand's Payments System at a Crossroads," Puey Ungphakorn Institute for Economic Research, https://www.pier.or.th/wp-content/uploads/2018/12/pier_dp_101.pdf (accessed Jul.;17, 2019).

¹⁴ Mastercard Press Releases: Mastercard and National ITMX Widen E-Commerce Acceptance of Thai Debit Cards, Feb. 25, 2019,

Sources: BMI Fitch; Worldpay Global Payments Report 2018; World Economic Forum: Global Competitiveness Report 2018; World Bank: Global Findex Database; World Bank: World Development Indicators; Transparency International (CPI) <https://www.transparency.org/research/cpi2018>; IMF Working Paper WP/18/17 Shadow economies around the world.; Cable: <https://www.cable.co.uk/mobiles/worldwide-data-pricing>. All values are estimated values for 2018 unless stated otherwise



Informal economy (2015)

- 43%

Corruption perception Index:

- 41/100



Account ownership at financial institution (2017)

- 82%



Population: 69 million

Growth rate: 3% p.a.

Density: 136 /sq km

Urban pop: 50%



Spend using mobile wallet (2017)

- eCom: 20%

- POS: 2%



Global Competitiveness Report:

- ICT adoption: 57/100

- Innovation capability: 42/100



Mobile phone subscriptions

- 1% p.a. decline

- 132 per 100 people



Spend per capita (2017)

- eCom: US \$358

- POS: US \$2 602



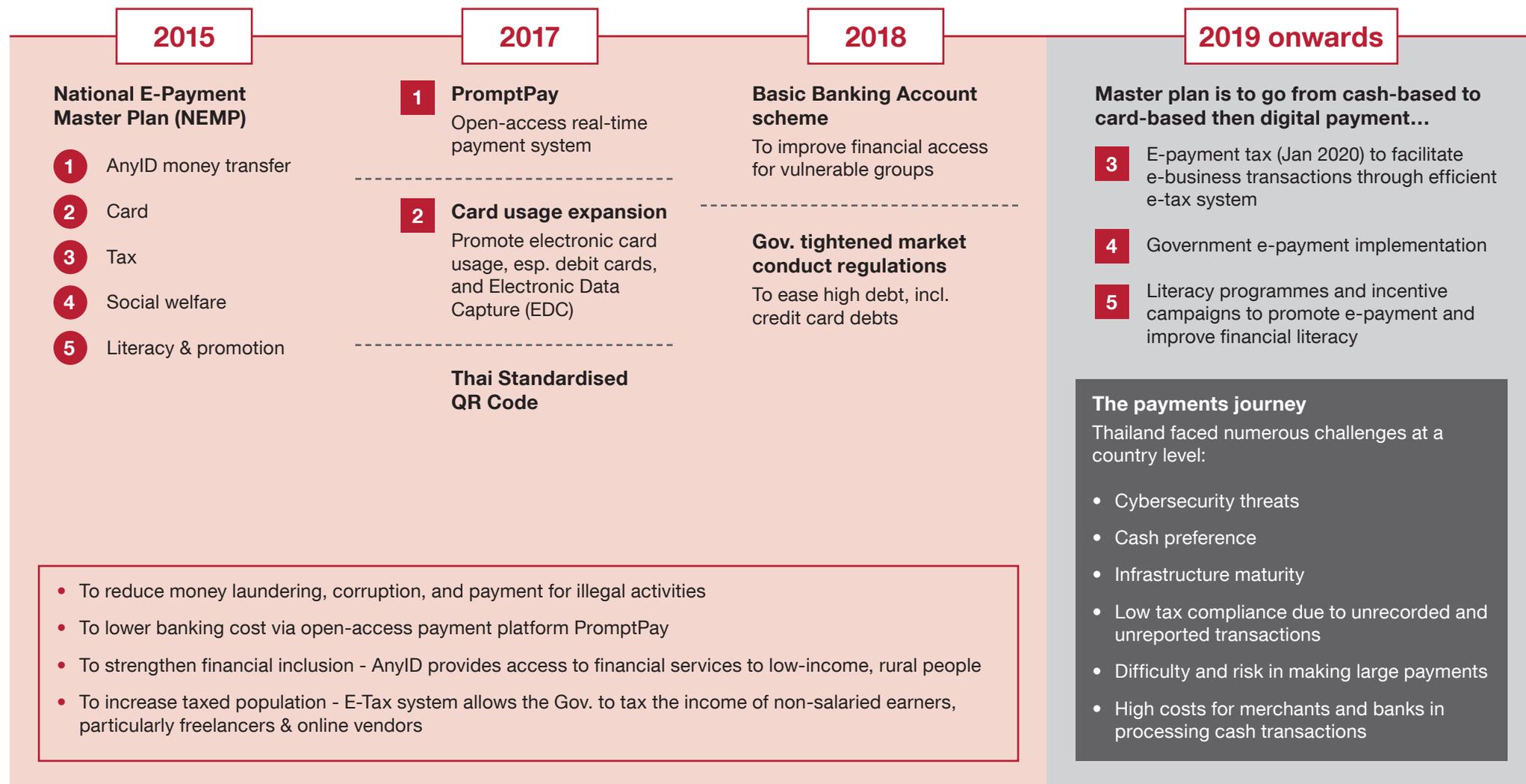
Internet penetration

- 63%

Cost of 1GB data

- US \$2.78

Thailand: Payment macro landscape evolution



Source: Bangkok Post, Bank of Thailand, PwC's Strategy& analysis



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Right, simple and convenient
has unleashed demand in P2P
in Thailand

Potential benefits of a focused implementation in Thailand



Meet **Mr Somchair**. He works in Bangkok as a tuk-tuk driver. His family lives in a village two hours away from the city. He sends money home every week using one of the 70 000 ATMs in Bangkok. However, it is an inconvenience to get to one and the transaction is expensive. At times, the social welfare payment sent to his family does not arrive as the government does not know their details.

Before:

Mr Somchair receives payments in the form of cash from his clients for his transport services, and can be carrying a lot at any time, which is a security risk.

He receives social welfare payments every month in cash.

He uses the cash he's received to buy groceries.

He deposits the remaining money weekly at an ATM, which is inconvenient and costly.

Once the money is in his account, he sends the money to his family.

The money clears after a few days and his family receives the money.



After:

Mr Somchair has a QR code on his tuk-tuk which customers scan to pay him.

He is able to pay for his groceries by scanning a QR code with his phone.

He receives his social welfare payments through the national e-payment system.

Once the money is in his account, he can use PromptPay to send the money to his family immediately.

Actions implemented to drive change

01

National e-payment system introduced, enabling the integration of tax and social security disbursement systems to allow for faster and accurate distribution to low-income population.

02

PromptPay launched to enable fund transfer using proxy IDs, such as the National Citizen ID or a mobile number.

03

Debit card usage expansion scheme gives shops and vendors tax privileges to incentivise them to install EDC machines.

04

Standardised Thailand QR code institutes a single country-specific QR code to make payments through local bank networks and support interoperability in the ecosystem.

Benefits to Government:

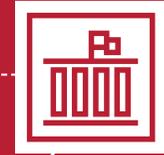
- More accurate identification of low-income population, hence greater reach to support the target group in need
- More transparency of social welfare distribution, lowering corruption
- More efficient tax system and tax coverage expansion for the revenue department
- Strengthened financial inclusion, as AnyID provides access to financial services to low-income/ rural communities

Benefits to Business:

- Merchants receive rebates from government for achieving a certain volume of e-payments
- More efficient to accept non-cash payment at reasonably lower costs, enhancing customer service
- Reduction of time, administrative labour and paper usage costs for businesses
- Shortened execution time frame of invoicing and payment settlement reconciliations

Benefits to Citizens:

- Correct allocation of social welfare, as citizens are easily identifiable
- Lower banking cost via open-access payment platform PromptPay
- Consumers receive VAT rebates for e-payments
- Reduction in the need to carry cash
- Consumers have more choices of simpler, cheaper and user-friendly payment services



Benefits of payments modernisation

Assessment and observations for Thailand

What was the country problem that was being solved?

Recognising the need to transform into a digital economy, the Thai Government developed the **National e-Payment Master Plan**, consisting of five core projects aimed at reducing money laundering, corruption, payment for illegal activities and the size of informal economy as well as lowering banking costs, strengthening financial inclusion and broadening the tax base.

How did the stakeholders collaborate?

The development of a national system and infrastructure requires collaboration from all parties, including the government, the Bank of Thailand, financial institutions and non-banks. Banks have identified collaboration opportunities with large retailers and fintechs and as a result opened up a larger customer base. **A compelling national case for change** was developed by the Thai Banking Association and was used to obtain commitment and buy-in. Fourteen banks in Thailand formed the Blockchain Community and banks have worked with the Bank of Thailand to create the country-specific QR code.

How was government involved in this change?

The Thai Government, with strong support from the regulator, is the **primary driver of financial inclusion and the creation of a digital economy**. The National e-Payment Master Plan created an integrated e-payment infrastructure for funds transfer and payment for consumers, business and government with the integration of the tax and social welfare disbursement system. Government incentivised customer adoption by making it easier to receive tax refunds through digital channels, along with price and convenience benefits.



How have business models changed?

Previously, Thai banks were seen as lagging, but they have been quick to adopt new ways of working, invest in start-ups and fintechs, and partner with non-banks and retailers. A great focus has been placed on the **analytics of customer data** – enhancing customer personalisation and reducing fraud. Retailers like JD.com use transaction data, which can be used to decipher behavioural insights of consumers and help banks cross-sell a variety of products, reduce churn and easily detect fraud. **Monetisation of customer data has become a core focus across industries.**

How did technology underpin the evolution of the payment platform?

The **National e-Payments Master Plan** includes a series of developments, including **establishing PromptPay and the adoption of a standardised QR code for Thailand**. PromptPay offers an interbank, real-time, proxy payment platform to banked and unbanked individuals and entities, without the need for an actual bank in transaction processing. The introduction of a **standardised QR code** has enabled consumers to use a single code to make payments through local bank networks, thus increasing interoperability.

How long was their modernisation journey?

Thailand has shown rapid progress to a digital economy with a strong government-backed and industry-adopted initiative. **Within three years** Thailand has completed its implementation of PromptPay, which has had 46 million registrations with an expected annual growth of 21% year on year.

What enabling infrastructure was in place?

A core element to the National e-payment Master Plan is the National Infrastructure Initiative, which aims to roll out 3G/4G across the country and **bring internet access to 70 000 villages by 2020**.

Key insights

- 1 There are many similarities between Thailand and South Africa, including population size, a **reliance on cash** and the need for infrastructure to be rolled-out to **rural areas**.
- 2 Thailand's **Government** was on a drive to build a digital economy, and thus the **regulatory drive** was the foundation upon which the National e-Payment Plan was defined and implemented. The drive was to create an efficient and integrated digital payment infrastructure that can support financial transactions made by all sectors. Thailand focused on the **reduction of costs** to create a **cashless economy** and **enable social welfare distribution**.
- 3 Time spent defining **what problem was being solved** ensured that there was **alignment** between the problem statement definition and the national country agenda, which was defined by the National Agenda Plan 2016-2020, National Infrastructure Plan, National e-Payment Plan, National Digital Identity Plan, National Cyber Security Plan and the National Data Bureau Plan.
- 4 The government and regulators drove the digitalisation of the economy as a **national imperative**. To support this a **strong case for change** was proposed by the Thai banking association that created the imperative for banks to participate and constantly acts as a North Star for their collective efforts.
- 5 The players in the Thai market recognise the value and place for **Fintechs** as their agility and efficiency provides customer with more options and also introduces operational **cost reduction** into the system. The Bank of Thailand recognises the opportunity and risk and therefore aims to foster ecosystem collaboration through their regulatory sandbox environment.
- 6 Through this digital payment transformation **greater financial inclusion** has been attained in Thailand and thus it has not only improved the welfare of the people but also unleashed economic potential of the previously excluded resulting in economic growth for the country.
- 7 The domestic real time proxy payment platform, PromptPay, changed the way Thai pay **creating a strong ecosystem**. The instant payment solution PromptPay has incrementally grown and additional services have been added since inception.

- 8 There was **collaboration across the financial services industry** to reduce the amount of cash in circulation and acceptance of electronic payments through initiatives such as implementing PromptPay, standardising QR codes and white labelling ATMs.
- 9 Due to the **rapid uptake** of PromptPay, ITMX faced a challenge processing high volumes of transactions. PromptPay's success was due to them understanding the problem to be **solved across lower transaction fees, a centralised system that is able support payments made by all channels** and ease of use for the consumer **due to the standardised proxy**. As of June 2018, one and a half years after the service launch, over 44 million IDs have been registered for the service and around 2.7 million transactions are made every day.*
- 10 Massive attention has been paid to ensuring the establishment of an **appropriate fraud, cyber risk and security framework** prior to driving real-time transaction processing. Some elements were effected through **legislation**.
- 11 There was **strong vision, direction and leadership** provided by government, policymakers, regulators, interbank entities, banks, fintechs, consumer groups and other entities that needed to be involved in developing and implementing the change programme and dealing with the challenges that emerged.
- 12 The **central bank** has played a **critical role** in the transformation of Thailand. The Bank of Thailand has master plans it is executing, as it believes efficient and inclusive financial and payment systems can help empower the growth engine of the country.
- 13 The Bank of Thailand believes that the very foundation for **improved financial services efficiency** is through the adoption of digital technology and shared infrastructure. Moving from cash-based transactions to more electronic-based transactions can potentially reduce incidences of corruption and improve governance through greater transparency.
- 14 PromptPay's success is attributable to an **affordable fee scheme** (free for <5k Baht, up to 10 Baht fee) and consistent branding (named PromptPay irrespective of adoption payment system players).

* Atchana Lamsam, Jaree Pinthong, Chonnakarn Rittinon, Aniya Shimnoi and Phuriwat Trakiatikul, "The Journey to Less-Cash Society: Thailand's Payments Sytem at a Crossroads," Puey Ungphakorn Institute for Economic Research

China

China is the world's second-largest economy and has a population of over 1.4 billion. China has experienced rapid economic and social development since implementing market reforms in 1978 to shift from a centrally planned economy to a market-based economy. China has since sustained the fastest expansion by a major economy in history, with annual GDP growth averaging 10%, and more than 850 million people having been lifted out of poverty. China's economic growth in mobile and internet has led to high inequality rates between the urban and rural populations, which China's 13th Five-Year Plan aims to address. China has the world's largest online population, with between 800 and 900 million mobile internet subscribers and 97.5% of consumers accessing the internet via their mobile devices.¹⁵ The large millennial population has contributed to the rapid adoption of mobile e-wallets and mobile payments, with 74% of Chinese millennials having used a mobile wallet at the point of sale.

“

The customer relationship has changed, a customer can choose their own product from various banks



Payments overview

China has had a rapid revolution in e-commerce and mobile payments through third-party platforms WeChat and Alipay, resulting in a 30% decline in cash usage between 2011 and 2016. It is one of the world's leading countries in alternative payments, and mobile-based transactions have become the default method of payment for Chinese citizens.

China is the largest e-commerce market in the world due to the widespread adoption of e-wallets, with Chinese consumers adopting cashless and e-commerce methods at a faster rate than the rest of the world. The combination of e-wallets and the QR codes allows Chinese consumers to go straight from cash to smartphones, skipping the use of credit and debit cards. e-Wallets have become ubiquitous in China and it has been found that 61% of WeChat users in China opened the app more than 10 times per day.¹⁶ These e-wallet and social media app have integrated lifestyle with payments: people use them to pay for clothes, groceries, taxi fares and utility bills.

As China's internet finance revolution has predominantly been commercially driven, government is only now tightening its regulation to counter fraud risks introduced by QR code payments. Tencent evolved without regulation and regulators have had to adapt quickly. The mobile payments landscape was not regulated by the Chinese government initially, but the boom in mobile payments due to Tencent and Alipay has led the central bank, the People's Bank of China (PBOC), to implement mobile payment regulation. Now all mobile payments have to be cleared through the PBOC.

China's e-commerce market is growing steadily and is forecast to reach \$1.8 trillion in 2022.¹⁷ In Quarter 1 of 2019, the PBOC announced that in the near future it will regulate fintechs in the country. It aims to use technology to enhance the flow of credit, reduce financing costs for business and avoid the introduction of risk to the market.

Government is tightening its regulation to counter fraud risks introduced by QR code payments.

The growth of mobile penetration has had a massive impact on financial inclusion, with people moving from no previous banking history to being able to make payments via a mobile phone.

86% of China's population will make use of mobile payments in 2019, for the highest mobile payments penetration rate of any country in the world.

The Chinese environment is unique, and there are key lessons to be learnt, particularly with respect to financial inclusion. The fundamental successes achieved in this environment were enabled by firstly reaching a new market, the under or unbanked customers in remote areas in a cost-efficient manner through agent-based models, providing the regulatory space for fintechs to innovate and the role that government can play to drive the objective.

¹⁵ Niall McCarthy, "China Now Boasts More Than 800 Million Internet Users And 98% Of Them Are Mobile," *Forbes*, Aug. 23, 2018.

¹⁶ Niall McCarthy, "China Now Boasts More Than 800 Million Internet Users And 98% Of Them Are Mobile," *Forbes*, Aug. 23, 2018.

¹⁷ Danielle Long, "China e-commerce market forecast to reach \$1.8tn in 2022," *Drum*, Aug.20, 2018.

Sources: BMI Fitch; Worldpay Global Payments Report 2018; World Economic Forum: Global Competitiveness Report 2018; World Bank: Global Findex Database; World Bank: World Development Indicators; Transparency International (CPI) <https://www.transparency.org/research/cpi2018>; IMF Working Paper WP/18/17 Shadow economies around the world.; Cable: <https://www.cable.co.uk/mobiles/worldwide-data-pricing>. All values are estimated values for 2018 unless stated otherwise



Informal economy (2015)

- 12%

Corruption perception Index:

- 39/100



Account ownership at financial institution (2017)

- 80%



Population: 1.415 billion

Growth rate: 0.5% p.a.

Density: 152.1 /sq km

Urban pop: 59%



Spend using mobile wallet (2017)

- eCom: 65%

- POS: 36%



Global Competitiveness Report:

- ICT adoption: 71/100

- Innovation capability: 64/100



Mobile phone subscriptions

- 4% p.a. decline

- 110 per 100 people



Spend per capita (2017)

- eCom: US \$787

- POS: US \$10 911



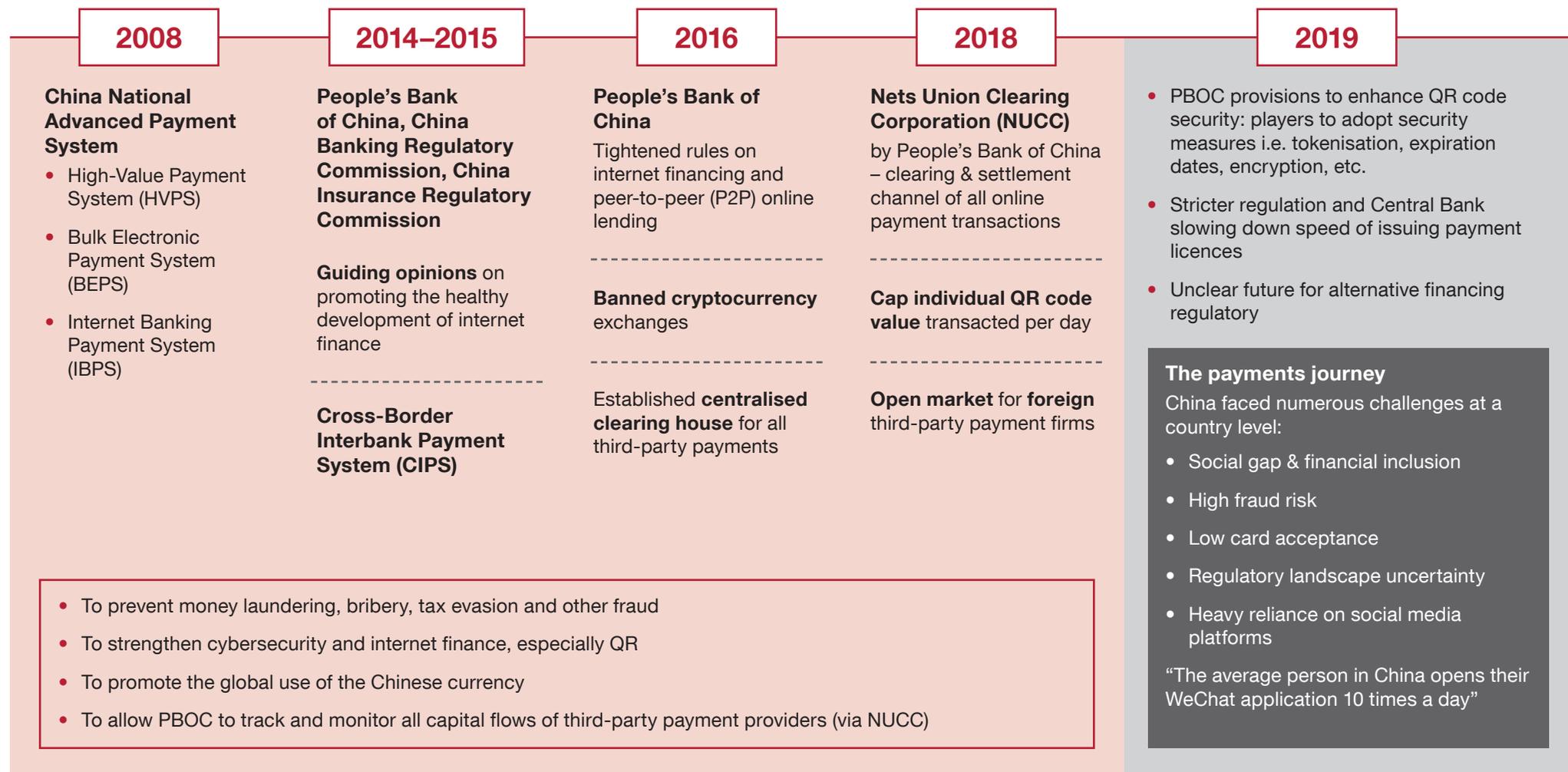
Internet penetration

- 61%

Cost of 1GB data

- US \$9.89

China: Payment macro landscape evolution



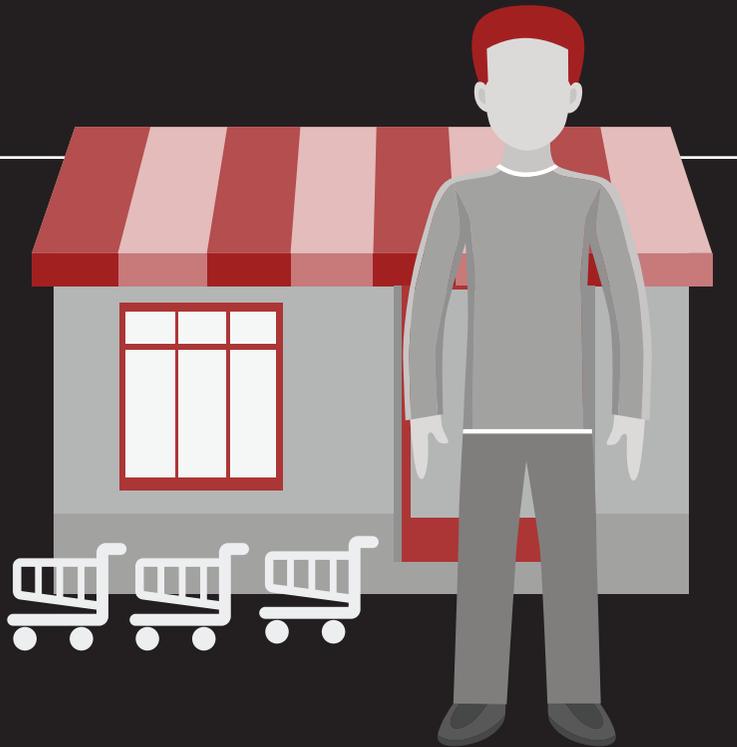
Source: PBOC, Public press, Euromonitor, PwC Strategy& analysis

A woman with short dark hair, wearing a dark blazer over a light-colored striped shirt, is sitting in the driver's seat of a car at night. She is looking out the window with a slight smile. The window is covered in raindrops, and the background outside is a blurred city street with warm lights.

“

**Monthly Active Users
of Weixin and WeChat
1,098,000,000**

Potential benefits of a focused implementation in China



Meet **Mr Li**, a convenience store owner in Tianjin. He has a wide variety of customers that walk into the store every day. Traditionally he has only transacted using cash but he has recently started allowing cashless payments. Customers can see various QR codes, including AliPay and WeChat, displayed at the counter of the store.

Before:

A customer sees a promotional poster in Mr Li's convenience store window.

His customers pay for items in cash.

At the end of the week, Mr Li goes to the bank to deposit the money. It is inconvenient as there are always queues.

While at the bank, he sends his mother in another province money via EFT which takes a few days to clear.

After:

A customer is near Mr Li's store and receives a notification on WeChat about a promotion at the store.

Mr Li has various QR codes that customers can scan to pay for items electronically using the app of their choice. He no longer collects large amounts of cash.

Payments are instantly transferred to his wallet. He can now send the money to his mother's WeChat wallet.

Using the same app, he pays for his transport home and responds to all his messages while he travels.



Actions implemented to drive change

01 | Alibaba (a Chinese e-commerce company) and Tencent (a Chinese technology company) implemented QR codes that enabled customers to make instant payments through their mobile phones either by scanning a merchant's QR code (C scan B) or via the merchant requesting payment by scanning the customer's personal account code (B scan C). These companies wanted to make payments easier and simpler for consumers.

02 | Alibaba and Tencent created a single lifestyle platform for banking, transport, messaging, shopping and social media.

03 | Consumer adoption of digital payment platforms was encouraged by merchants incentivising consumers through promotional campaigns and giving merchants an opportunity to market to a larger audience.

Benefits to Government:

- Reduced money laundering, tax evasion and bribery within the current system.
- Secure ways of identifying customers, reducing fraud.
- Strengthened cybersecurity and internet finance through the adoption of QR codes.
- Improved job creation due to expanded services offered by WeChat and Alipay.

Benefits to Business:

- Merchants no longer need to buy expensive equipment, but rather sign with a QR code.
- Increased marketing opportunities by opening up new markets and economic opportunities for small businesses and individuals.
- Access to credit is improved to low-income individuals and small businesses.

Benefits to Citizens:

- Secure and transparent payments for consumers.
- Provides convenience and ease of use for customers through use of a single platform.
- Citizens no longer need to carry cash.



Benefits of payments modernisation

Assessment and observations for China

What was the country problem that was being solved?

People viewed traditional banking as an inconvenience. **Carrying large amounts of cash is bothersome and poses a safety risk.** Banks are not accessible in rural areas and going to the bank is generally a time-consuming experience. With the rise of smartphone adoption, the tech giants offered simple and affordable payments, **integrated into a customer's daily life**, all on a single application.

How did the stakeholders collaborate?

Non-bank payment providers have been critical to the **widespread adoption of digital payments**, while traditional banks are struggling. Social media, e-commerce, third-party service providers and payment functions have all come together to provide a single platform, allowing users to **manage various aspects of their lives.**

How was government involved in this change?

In the case of China, **the lack of government regulation enabled the rapid evolution of payments technologies** by tech giants such as Tencent and Alibaba. In response, regulators have had to adapt regulation after the adoption of the technology. **Since July 2018 all mobile payments have been regulated** and all banks and payment service providers have had to connect to the local national payment gateway, which gives oversight of mobile payments to the central bank.



How have business models changed?

Non-bank platforms such as Tencent and Alipay provide diversified services, supporting both individuals and service providers, all driven by customer centricity. **An initiative is underway to integrate WeChat with China's electronic National ID system.**

How did technology underpin the evolution of the payment platform?

The **widespread adoption of QR codes saw mobile payments in China skyrocket**, with 95% of retail transactions now being made with mobile phones. WeChat and Alipay's platforms are rapidly transforming to offer more value-added services (VAS) to their customers. The National Payment Gateway (NPG) was established to implement interbank transaction and settlement through usage of standardised QR codes.

How long was their modernisation journey?

China has had a rapid revolution in social media payment platforms since WeChat was founded in 2011. In 2019 this has grown to 902 million daily users, with approximately 38 billion messages sent on the platform every day. There has been a **94% increase in total transaction value via third-party online payments between 2012 and 2018.**

What enabling infrastructure was in place?

China is ahead in its digital journey due to existing platforms and infrastructure, including internet and mobile telecoms. Tencent and Alipay leveraged the high penetration rate of smartphones to move away from cash. **Digital payment through mobile phones is becoming the payment method of choice in China.**

Key insights

1

Fintechs and non-banks can be leveraged to drive consumer adoption, and have become larger than traditional banks. This is an **ecosystem** play with all role players not just banks.

2

The **low cost** of person-to-person payments has been an important enabler for large-scale adoption.

3

Due to the lack of consumer banking options and facilities, as well as lack of stringent regulation and intervention from the Chinese Government on non-traditional banking service providers, there was **rapid transformation in financial technologies**.

4

Fintechs captured the cash market that functioned outside of the traditional banking system; they rapidly become **solution providers** to consumers and thus **did not compete** with traditional banks, as they did not operate in this market.

5

Mobile devices and smartphones are a critical enabler of payment modernisation, with 95% of retail transactions in China being done through mobile phones, as these devices can perform NFC payment, scanning of QR codes and the quick use of applications to make payments on the go.

6

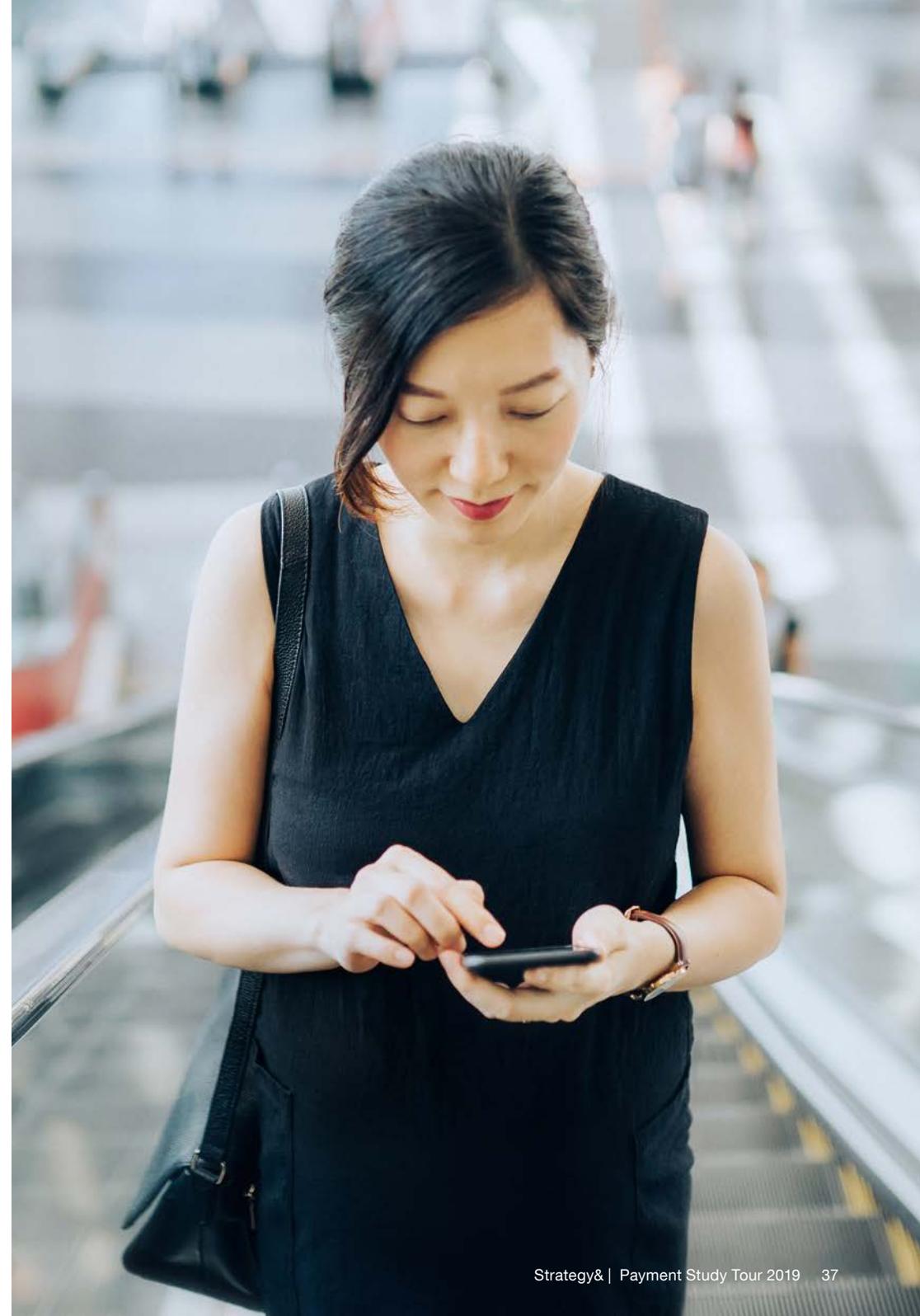
Payments are not seen as an end in themselves, but rather a means to **enhancing customer experience**. The two large payment players in China are a technology company and an e-commerce platform – by making payments convenient for their customers they have focused on customer experience rather than the mechanism of making a payment.

7

QR codes have fast become a key part of the payments landscape.

8

Consumers have a **range of innovative, accessible, low-cost digital financial products**, as the regulator allowed innovation. There is a fine balance that needs to be attained with innovation and customer experience vs the risk it introduces into the system.



Singapore

The small island city-state of Singapore has a population of 5.8 million people and is a leading global financial centre and major trading hub. The World Economic Forum has recognised Singapore as the world's most 'technology-ready' nation. In the decades since its independence Singapore has rapidly developed from a low-income country with high unemployment rates, poor infrastructure, and a housing shortage, to become a high-income, competitive economy.

Singapore places immense value on education, and has built a highly skilled, digitally enabled workforce. In 2018, 76% of the population used a smartphone, and the internet penetration rate reached 89%. These numbers are on a steady increase thanks to government's Smart Nation programme, which aims to foster innovation across all sectors and improve standards of living in Singapore.

“

Always wear your national hat to move the country forward, there is enough opportunity for all

Payments overview

Singapore is at the forefront of digital payments and was one of the first countries in the region to introduce proxy payments. Singapore and Thailand are currently working together to link their domestic proxy schemes to develop the world's first real-time cross-border proxy payment system.

Singapore has consistently and incrementally been building its digital payment infrastructure. In 1984 it implemented the General Interbank Recurring Order (GIRO). In 2002, the first contactless payment system for public transport and other utilities (EZ-link) was launched.

Cash is still the most popular payment method in Singapore and despite Singapore's high smartphone and internet adoption rates e-wallets have not yet been widely adopted. In alignment to moving towards a digital future and reducing the amount of cash used in the economy there has been the Smart Nation drive.

Smart Nation was launched in 2014 to transform Singapore through technology. In line with this, the Association of Banks in Singapore introduced Fast and Secure Transfers (FAST) in 2014, a real-time payment system across different banks, which was supported by the Monetary Authority of Singapore's (MAS) encouragement of real-time payments. This was a significant move towards a digital future and reducing the amount of cash in the economy. MAS's role in Singapore is to provide oversight of the payment and settlement system. It is at the forefront of stimulating innovation and collaboration among Singapore's role players.

PayNow was launched in 2017 and enables instant person-to-person (P2P) funds transfer to be made to a mobile number. It has also been adopted by multiple government agencies. The service is free and facilitates instant payments via QR codes. In 2018, NETS was appointed to develop a united digital payment platform, and the implementation of the Singapore Quick Response Code (SGQR) became effective as multiple payment QR codes were combined into one.

The Monetary Authority of Singapore is seen as a leader in rethinking and reimagining the regulatory landscape. The MAS is forward thinking and has clear plans for promotion of innovation and betterment of the financial services and country landscape. In their process they collaborate with banking participants and have created an environment where other participants can partake in the eco-system and contribute to its success. The MAS also collaborates beyond their borders with other regulators, banks, fintechs and eco-systems to continuously innovate and stay ahead of the pack. There have been challenges faced in the market and the decisive approach of the MAS has contributed to prompt turnaround, adoption and action.

Singapore has been moving away from cash payments and further to card-less, which is an arena of its Smart Nation realisation.

Sources: BMI Fitch; Worldpay Global Payments Report 2018; World Economic Forum: Global Competitiveness Report 2018; World Bank: Global Findex Database; World Bank: World Development Indicators; Transparency International (CPI) <https://www.transparency.org/research/cpi2018>; IMF Working Paper WP/18/17 Shadow economies around the world.; Cable: <https://www.cable.co.uk/mobiles/worldwide-data-pricing>. All values are estimated values for 2018 unless stated otherwise



Informal economy (2015)

- 9%

Corruption perception Index:

- 85/100



Account ownership at financial institution (2017)

- 98%



Population: 5.79 million

Growth rate: 1.6% p.a.

Density: 8225 /sq km

Urban pop: 100%



Spend using mobile wallet (2017)

- eCom: 10%

- POS: 4%



Global Competitiveness Report:

- ICT adoption: 85/100

- Innovation capability: 75/100



Mobile phone subscriptions

- 1% p.a. decline

- 145 per 100 people



Spend per capita (2017)

- eCom: US \$889

- POS: US \$21 481



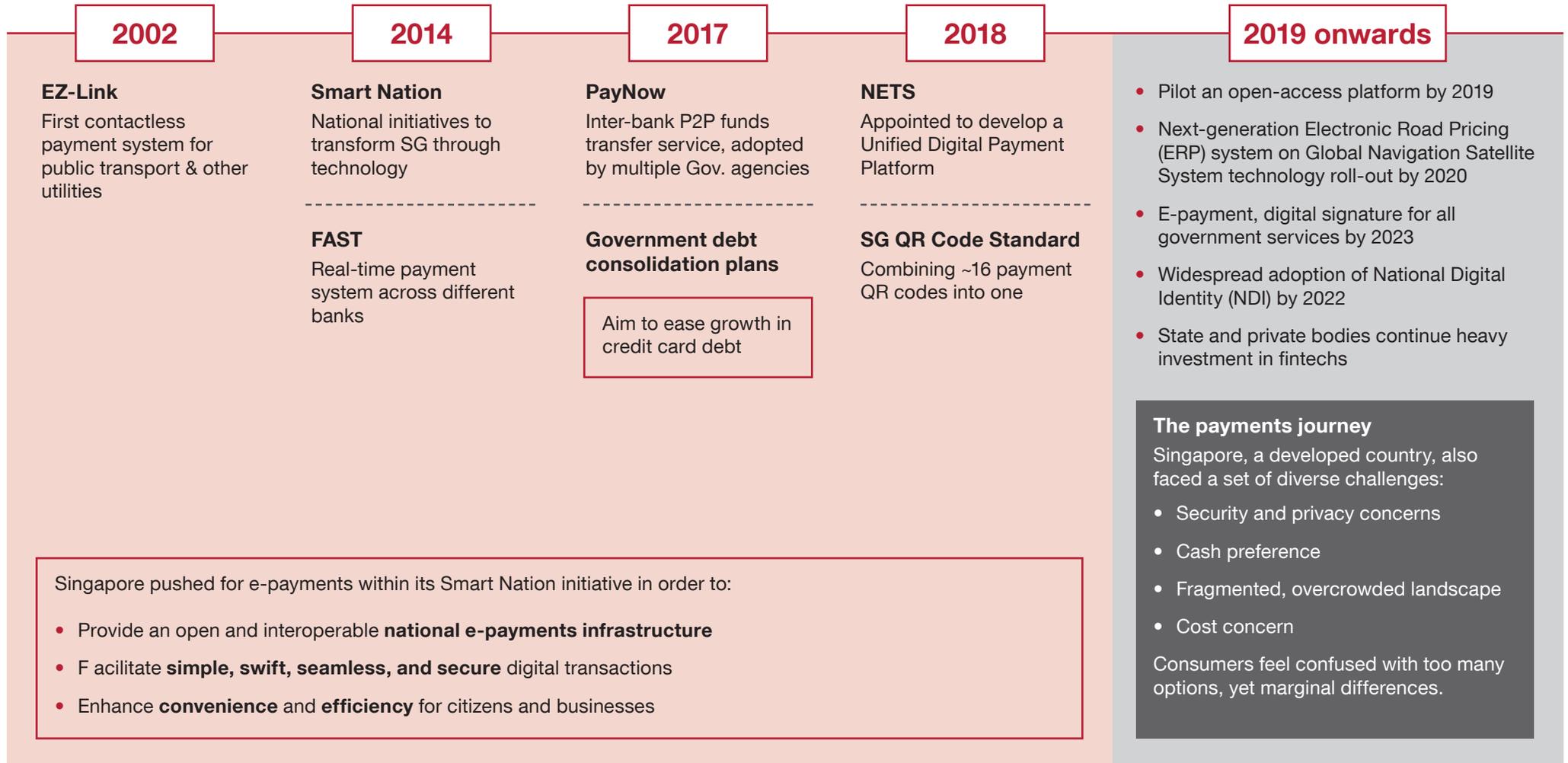
Internet penetration

- 85%

Cost of 1GB data

- US \$3.67

Singapore: Payment macro landscape evolution



Source: Smart Nation Singapore, Euromonitor, Public Press, PwC's Strategy& analysis

“

Fraud, yes it's always there, but has remained within tolerance and manageable



Potential benefits of a focused implementation in Singapore



Mr Chong owns a 7-Eleven in the busy Orchard Road. Mr Chong takes pride in his customer service and tries his best to ensure that his store is fully stocked and there are convenient payment mechanisms in place for his customers. He is very hardworking and will often work 18-hour days, leaving him limited time to go to the bank.

Before:

Mr Chong does not like cashless payments as he is charged high fees by credit card companies.

Customers are bombarded with the many QR codes at the counter and it takes a long time to find the right code compatible with his smartphone app.

Mr Chong has limited time to do his funds transfers and bill payments during banking hours due to his long working hours.

After:

The payments council has addressed the issues of high fees through a number of initiatives and now Mr Chong is more willing to accept cashless payments.

Customers can use the standard Singapore QR code to make payments irrespective of the mobile application they're using.

The new payment infrastructure caters for Singaporeans so that they can make payments for bills, transfers, transportation from any location at any time.



Actions implemented to drive change

01

Fast and Secure Transfers (FAST) is at the heart of the Smart Nation vision. Singapore's Smart Nation payments strategy is part of a wider government initiative to foster innovation across all sectors and improve standards of living in Singapore.

02

The Singapore Quick Response Code (SGQR) combines multiple e-payment solutions into one and was established by the Payments Council and co-led by the Monetary Association of Singapore (MAS). All QR payment options accepted by the merchant are shown to the customer for ease of payment.

03

PayNow enables instant person-to-person(P2P) funds transfer to be made by simply entering a mobile number or personal identification number.

Benefits to Government:

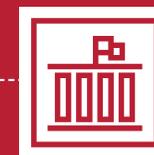
- Increased interoperability in the payments ecosystem.
- Unifying and streamlining what was a fragmented payments ecosystem.
- Citizens can now log onto government services using biometric authentication, and the Government can verify proof of life and payment to the correct recipient. The national registration identity card is linked to PayNow to receive their payment.

Benefits to Business:

- Increase in digital payments allows businesses to analyse their sales data more easily, as sales get captured automatically with electronic payment.
- More than 800 000 businesses have registered for payment, and this has lessened their administrative processes and enabled business owners to focus on growing their businesses.
- Government agencies such as the National Servicemen (NSMen), Sport Singapore (SportSG) that use PayNow are able to disburse funds immediately. This reduces the volume of cheques being issued and bank crediting.

Benefits to Citizens:

- A single SGQR code which is accepted at merchants and can be used with any payment application the customer has. Payment for customer is expedited.
- Citizens can interact seamlessly and conveniently with the government through the use of technology.
- Faster payments and reduced dependency on cash results in shorter queues at retail stores. The customer experience is enhanced.
- Convenience and efficiency is improved for citizens and businesses.
- 50 000 point-of-sale devices have been rolled out across the country, which offers greater convenience for consumers and reduces the use of cash.



Benefits of payments modernisation

Assessment and observations for Singapore

What was the country problem that was being solved?

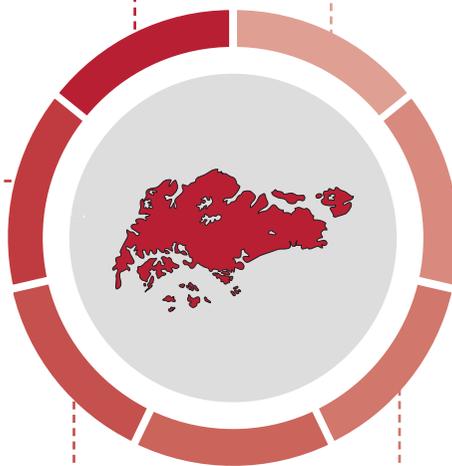
Singapore's Smart Nation initiative aims to provide an **open and interoperable national e-payments infrastructure**, as the current payment ecosystem is crowded and fast-moving, yet highly fragmented.

How did the stakeholders collaborate?

MAS spearheads payment modernisation initiatives by facilitating cooperation and comprehensive consultation and with the public, government, banks, Network for Electronic Transfers (NETS), and payment specialists. MAS has also established a Payments Council to streamline payment services. MAS in collaboration with the Association of Banks in Singapore published 'Finance-as-a-Service: Application Programming Interface (API) Playbook', a guide for financial institutions and fintechs that could deepen collaboration through open APIs.

How was government involved in this change?

The Singaporean Government developed Singapore's **Smart Nation payments strategy as part of a wider government initiative, with digital payments as a component**, to foster innovation across all sectors and improve standards of living in Singapore. MAS released the Payment Services Bill to create a regulatory framework for innovation in payment services. The framework provides for consumer safeguards and at the same time encourages innovation of payment services in Singapore.



How have business models changed?

The Singaporean government announced it will open the interbank payment gates to non-bank firms, bringing their e-wallets into the national e-payment loop. **This encourages competition and interoperability between e-wallets and bank accounts.** Singapore-based DBS Bank launched the world's largest API developer platform in November 2017 and retailers have utilised this to enhance their customer experience. For example, McDonald's is using DBS's payment API to enable cashless and faster payment processing for its consumers.

How did technology underpin the evolution of the payment platform?

Singapore's payment technology has been constantly evolving since the launch of Giro bill payment services in 1984. To enhance operability, Singapore's banking industry have launched Fast and Secure Transfer (FAST), Unified point of sale (UPOS), PayNow and most recently, the SGQR.

How long was their modernisation journey?

Singapore has been a leader in payments modernisation for more than 30 years. It was the first country in the world to introduce digital card and electronic payments. Its journey has been built around customer experience and is customer-focus led. Singapore's FAST and PayNow implementations were completed in two years.

What enabling infrastructure was in place?

Singapore already had advanced payment infrastructure and promoted further innovation for digital payments such as the PayNow platform for peer-to-peer transfers; NETS developed an interoperable and open-access e-payment solution at convenient spots for citizens such as coffee shops, hawkers centres and canteens.

Key insights

1

Singapore leveraged **national pride** as a driver for adoption (Smart Nation initiative). Singapore drove e-payments across the ecosystem with national pride in order to achieve its Smart Nation objectives. Singapore wanted to provide an **open and interoperable national e-payments infrastructure**, to facilitate simple, swift, seamless, and secure digital transactions and to enhance convenience and efficiency for citizens and businesses.

2

Singapore is opting for advanced innovations in e-payment methods across contactless and cardless. **Offering new generation of financial cards that offer high card rewards with integration into Public Services. Interoperable e-wallet solutions** as well as mobile and wearable payments. The data collected by the wearable devices are particularly insightful for tracking safety of children and dietary spending habits, as well as for monitoring the health of the elderly.

3

The **Singapore payment ecosystem is crowded, fast-moving yet highly fragmented with numerous QR codes**. Consumers feel confused with too many options yet marginal differences. The branding inconsistency of the digital payment (different names of PayNow offers across different banks, e.g. DSB Paylah!) causes confusion to consumers and impacts the experience.

4

Customer experience is a central focus of all payments services and initiatives. The lack of a unified open-access system that sets the playground for all types of players produces inconsistent user experience and hinders the digital payment take-up rate.

5

It is still costly to operate and process QR codes and NFC (near field communication) payments due to terminal installation investment, maintenance costs and transaction fees.

6

Singapore is **constantly evolving** its payment offerings and including all players in the ecosystem – consumers, government, businesses and non-banks.

7

A critical milestone in the Singapore payments transformation journey was the **development and rollout of the standardised QR code in 2018; this simplified the payments process and promoted interoperability**. The Singapore Quick Response Code (SGQR) was adopted by 27 payment schemes, including PayNow, Nets, GrabPay, Liquid Pay and Singtel Dash. More than 19,000 QR codes were replaced with SGQR codes.

8

The **Monetary Authority of Singapore** was recognised as the **Central Bank of the year in February 2019**, and it has proven to be a well-structured and agile institution capable of introducing joined-up rule-making while embracing technological change. In support of the Smart Nation, MAS seeks to create a Smart Financial Centre, where innovation is pervasive, and FinTech is used widely.

9

E-payments are a key component of a Smart Financial Centre agenda for MAS and their **journey** over the years has **encompassed enabling interbank merchant payments, bringing e-payments to public transport, creating greater convenience for consumers and businesses**, and improving interoperability. The core focus of 2019 is modern open access.

10

Singapore is a **leading market for alternative finance and digital lending**, with the creation of a regional hub of digital lending platforms that enables banks to digitise to reduce processing times. Alternative finance is expecting y-o-y growth rate of ~35%, reaching ~USD 10Mn value (equivalent to 0.01% GDP) by 2020.

11

Non-payment players are able to operate within the digital payment arena, as this encourages competition and interoperability.

12

The **regulatory framework in Singapore is not a one-size-fits-all approach**; rather, the regulations address the risk posed by specific payment activities, while promoting innovation.

South Africa

South Africa is the second-largest economy in Africa. It is home to more than 57 million people and is the 24th most populous country. South Africa is a predominately cash-based economy and the cash usage continues to grow. The majority of South Africans have a debit card in their possession and are banked, but most prefer to transact with cash.¹⁸ This could be due to a lack of trust in the banking system, convenience and the perceived lack of fees, which makes transacting in cash very attractive.

The payments industry in South Africa has embarked on a few initiatives to look at the changing payments landscape in South Africa. One of the modernisation initiatives, Project Future, has been running since early 2018 and has defined a target-state architecture payments landscape. The proposed architecture was informed by research on India's UPI and Australia's NPP implementations. India's UPI is of particular interest given the similar socio-economic challenges faced in that country and South Africa.



Payments overview

More than 17 million social welfare payments are made into SASSA debit cards every month.¹⁹ Some grant receivers withdraw their money in cash as soon as it has been transferred to them. This could be motivated by a belief that the money will be taken by the government if they leave it in the account. Financial literacy is required to ensure that South Africans are aware of the various payment options they have and the safety and trust features associated with them.

Many South Africans are subject to 'poverty tax' and have to pay higher prices for goods and services in their communities, such as paying R80 for a R40 ticket to a soccer match. The challenge that presents itself in these communities is the lack of options to the citizens, lack of alternatives to the goods or services they require, cost of transport to obtain alternatives, lack of credit facilities or access to electronic payment methods to mention a few, and these factors result in them being subjected to the higher fees for the payments of these goods and services they require.

For the past 30 years a healthy NPS has served the country effectively. The regulator is currently carrying out a review of the NPS Act, which will address issues such as interoperability and inclusion of non-bank players within the payments ecosystem. Most of the payment advances made in South Africa have not radically affected the broad user base such as reaching lower income users, or people without bank accounts, as it has done in other countries. This could be done by targeting

social grant recipients who have SASSA debit cards. They make up 77% of the banked population.²⁰

Payment industry players in South Africa have seen the need to modernise and have prioritised the following key functionalities as part of their end-state target architecture:

- Low-cost instant payments;
- Proxy/addressing services; and
- Requests to pay.

These functionalities will be based on the standards of interoperability in local, regional and international markets alike.

The adoption of smartphones in South Africa has been high, with contactless payments and e-wallets increasingly being used by to effect payment. The challenge with mobile wallets is that they are currently not interoperable in the South African market. They are also easier to use for foreigners working in South Africa, as many do not have bank accounts. While mobile penetration in South Africa is high, so too is the cost of data with 1GB costing US \$7.19. This prevents low-income users from using internet-based payments to transact. The high unemployment rate in South Africa (more than 29%) also results in many households not being able to afford high data costs. With the internet penetration at only 65%, some rural areas do not have access to fast and reliable internet connections.

¹⁸ *BankservAfrica, Business Report 2018*, https://gmfdev.co.za/bankserv/pdf/BankservAfrica_IR_12081_20190204_AR.pdf, (accessed Jul. 17, 2019).

¹⁹ 'Statistical Summary of Social Grants In South Africa. Fact Sheet :Issue No.21 December 2018', SASSA, <http://www.sassa.gov.za/index.php/statistical-reports> (accessed Jul. 17, 2019)

²⁰ *The World Bank, Global Index Database*, <https://globalexplorer.worldbank.org/> (accessed Jul.17, 2019).

Sources: BMI Fitch; Worldpay Global Payments Report 2018; World Economic Forum: Global Competitiveness Report 2018; World Bank: Global Index Database; World Bank: World Development Indicators; Transparency International (CPI) <https://www.transparency.org/research/cpi2018>; IMF Working Paper WP/18/17 Shadow economies around the world.; Cable: <https://www.cable.co.uk/mobiles/worldwide-data-pricing>. All values are estimated values for 2018 unless stated otherwise



Informal economy (2015)

- 22%

Corruption perception Index:

- 43/100



Account ownership at financial institution (2017)

- 69%



Population: 57 million

Growth rate: 1.3% p.a.

Density: 47.6 /sq km

Urban pop: 66.3%



Spend using mobile wallet (2017)

- eCom: 17%

- POS: 5%



Global Competitiveness Report:

- ICT adoption: 46/100

- Innovation capability: 44/100



Mobile phone subscriptions

- 4% p.a. decline

- 165 per 100 people



Spend per capita (2017)

- eCom: US \$38

- POS: US \$3 698



Internet penetration

- 65%

Cost of 1GB data

- US \$7.19



The South African Payments Landscape



The world is changing at a breathtaking pace. Market dominance can be lost to completely new entrants; leaders who do not understand and listen to their stakeholders and who lack the willingness and ability to change will be passed by, as their markets and customers move without them.

The South African financial services sector is increasingly moving towards a 'marketplace without boundaries', shaped by the entry of new digital players challenging the status quo and driving unprecedented levels of innovation. Financial inclusion and the digitisation of banking are pressing issues on the minds of executives. The NPS of South Africa has steadily evolved over the last few decades. South Africa was once recognised as a leader and has served the country well for over 30 years, but requires change in order to keep up with new technologies and consumer needs.

In response, South Africa has embarked on a journey to modernise its payments landscape to become more efficient, inclusive and flexible. The topic of payments modernisation is not new for the South African payments industry. At every inflection point the drive for modernisation has been linked to a national imperative. A holistic review of the entire system is therefore required to 'future proof' the electronic payment system and to ensure that it is able to serve and support the rapidly emerging digital economy.

The payment system is something almost every South African utilises on a daily basis, even if they're not aware of it. It enables consumers and business to seamlessly transact in the various mediums and channels offered today. South Africans primarily use four payment streams for low-value payments currently: cash, electronic funds transfer (EFT), card and cheques. Vision 2025 aims to develop a world-class payment system that meets both domestic and international requirements, through the adoption of electronic payments.

The industry has recognised the need to change to meet new user demands, adapt to new technology, enhance competition, and regulate effectively. The South African payment industry's objective is to drive the use of electronic payments and enable economy to become less cash reliant.

South African payments snapshot

Cash

Cash currently dominates the payments culture in South Africa.

More than **50%** of the value of consumer transactions are completed with notes and coins*

RTC

RTC allows for inter-bank clearing in real time but only captures 2% share of all transactions.

RTC volumes has increased by more than **61%** in 2018 and the values of the transactions have increased by more than **32%** in 2018*

EFT

EFT remains a popular payment method.

The number of EFTs processed (debit and credit) has **increased** from under 500 million transactions in 2002 to over **1 billion** transactions in 2018*

Card

Card payments are primarily used for frequent, small-value purchases.

Card usage increased from 45% of retail volumes in 2010 to **56%** in 2016, but this accounts for only **7%** of the value of retail payments*

Cheque

Cheques are the least popular payment method in South Africa.

The number of cheques processed annually has **decreased** from over 187 million in 2002 to less than **4 million** during 2018*

Debit Orders

Debit orders are one of the fastest-growing payment methods in South Africa.

Debit orders **increased** from 33 million in 2007 to **212 million** in 2018. This include both NAEDOs and AEDOs*

* All values are estimated values for 2018 unless stated otherwise

Source: BankservAfrica, Business Report 2018, https://gmfddev.co.za/bankserv/pdf/BankservAfrica_IR_12081_20190204_AR.pdf, (accessed Jul. 17, 2019).

South Africa's modernisation journey



1972

Establishment of the Automated Clearing Bureau (**ACB**)

1983

Saswitch service launched

1999

PASA recognised as a payment system management body (PSMB) by the SARB under the provisions of the NPS Act

1998

SAMOS implemented
NPS Act promulgated

2006

Early Debit Order (EDO) and Real Time Clearing (RTC) launched in South Africa

2009

ISO 20022 project initiated with a focus on mapping existing message structure to ISO 20022

2012

Europay, Mastercard, Visa (EMV) gain significant momentum after being initially rolled out in 2007

2011

Consumer Protection Act comes into effect

2013

Authenticated Collections project initiated through a regulatory mandate and based on ISO 20022

2014

Modernisation of Payments Programme (MoPP) initiated to modernise low-value credits, debits and high-value credits to ISO 20022

2016

A strong focus on card security and risks with the Payment Card Industry (PCI) DSS and 3D secure. Data security becomes a central focus

2017

Authenticated collections platform implemented

Research initiative launched to develop a more comprehensive understanding of payments system modernisation

Research identifies that Low Value Payment Infrastructure needs to be flexible, inclusive, low-cost and scalable.

2018

SARB releases 'Vision 2025'

Project Khokha- tests interbank wholesale settlement using distributed ledger technology (DLT)

Project Future – Developing the target state architecture of the NPS

2025

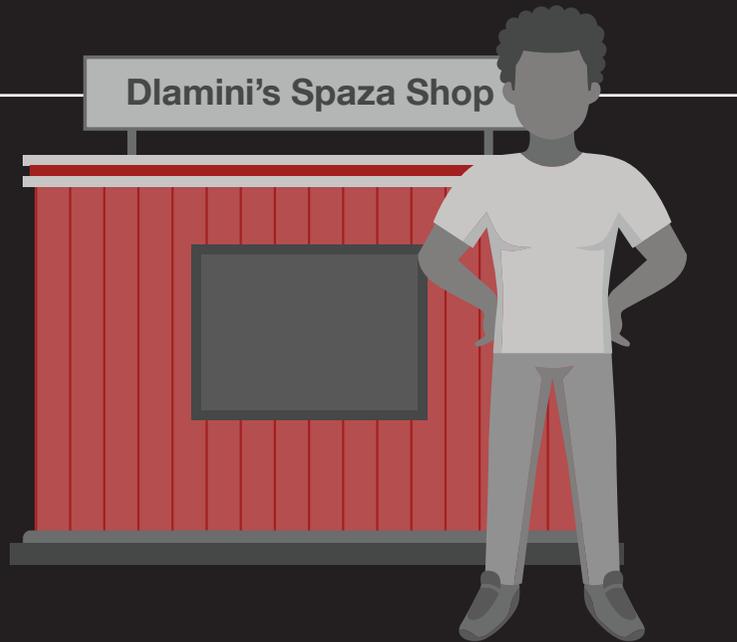
2019

Industry-wide study tour to Asia

4th Industrial Revolution Commission established



Potential benefits of a focused implementation in South Africa



Mr Dlamini owns a spaza shop in the Alexandra township. Mr Dlamini has been unsuccessful in opening a bank account and is also unable to obtain a point of sale device. He therefore only deals in cash as his payment acceptance method for his customers and he pays his suppliers with the cash he has on hand, as he does not have access to loan facilities. His wife is a pensioner and has a bank account into which she receives social grant payments. She does not trust financial institutions or the government and prefers to withdraw all her money when she receives funds. Mrs Dlamini also works as a domestic worker on a part-time basis.

Before:

Mr Dlamini only accepts cash and must keep large amounts of cash in his possession to pay his suppliers, as he needs to pay cash when collecting his supplies. He therefore travels with large sums of money on him. Mr Dlamini is permanently fearful of being robbed. Mr Dlamini owns a feature phone with a prepaid sim.

When Mrs Dlamini receives her monthly social welfare she immediately draws all the cash even though she has a fully interoperable debit card. She fears her spend and balance will be tracked or monitored and that she won't receive her following month's payment or her positive balance will be taken back by the government. She prefers to make all of her transactions using cash.

Mrs Dlamini's employer does not carry cash and prefers to make digital payments. Mrs Dlamini receives instant payment for her domestic work via a digital wallet and she has to travel to an applicable ATM to withdraw the entire amount in cash as she cannot use this digital wallet for any payments or transfers.

After:

Payment can be made via a QR code or USSD at the spaza shop. This allows customers to pay directly to Mr Dlamini's mobile number without the need for cash. Mr Dlamini no longer needs to travel with large amounts of cash. His suppliers can request for payments and Mr Dlamini is able to pay his suppliers electronically via his mobile device, regardless of where he is.

Having attended financial literacy classes, Mrs Dlamini is aware that she can keep her money in her SASSA social welfare account and then use her debit card to purchase goods and services and to make payments electronically. She no longer feels she's under surveillance or at risk of losing the money in her account.

Mrs Dlamini's employer is able to make an instant payment into Mrs Dlamini's bank account. Mrs Dlamini does not have to travel and queue at an ATM to withdraw cash as she is comfortable to use her bank account.





The Dlamini's home has a burst geyser and they call on the services of Mandla's Plumbing Services to repair it. Since the payment is a large sum and Mrs Dlamini does not have enough cash on her, she will have to make an EFT payment. Mandla is worried that Mrs Dlamini's EFT will take a long time to arrive in his account after he fixes the geyser. He therefore demands that Mrs Dlamini pays him with cash immediately.

Before:

Mandla cannot wait two days for EFT payments to clear. The lack of funds in his account causes a cash flow problem for Mandla when he needs to buy parts for repairs or fuel for transport.

Mrs Dlamini wants to ensure that Mandla is paid timeously and without having large amounts cash on hand or having to pay the extra fees for real-time payments.

After:

Mandla provides his cell number to Mrs Dlamini and receives immediate notification of funds being transferred into this bank account.

Mrs Dlamini can make immediate payments to Mandla with no extra fees.





Mrs Buthelezi runs a playschool for 100 children and many of the parents do not want to use debit orders. They prefer EFT payments to the school. However, many of the parents capture incorrect reference numbers and Mrs Buthelezi struggles with the reconciliation of payments every month. She has to spend time and money phoning parents to confirm if they have made their payments.

Before:

Parents make EFT payments to the school as they do not trust the debit order system. Incorrect reference numbers are used to make the payments and the reconciliation of the payments becomes tedious and expensive. Mrs Buthelezi has to call all of the parents to confirm that payment has been made.



After:

Mrs Buthelezi sends a Request to Pay (RTP), which includes the reconciliation information, to all of the parents. As soon as the parents accept the Request to Pay, the funds are immediately transferred to the school account and the reconciliation is automated.

Actions implemented to drive change

01	Low-cost digital payment acceptance methods such as a South African Standardised QR codes that allow for affordable payment at merchants or Requests to Pay.
02	Low-cost instant payment methods that are easy to use, including real-time account to account transfers and interoperable wallets.
03	Government incentives for the use of card payments specifically for SASSA cardholders.
04	Roll-out of financial literacy classes and awareness campaigns
05	Distribution points for payment with cards is a major challenge in the informal sector, but some fintechs have been quite successful in solving this by deploying low-cost card machines and focusing on cross-border remittances for the bulk of their revenue.
06	Many spaza shop owners are foreigners and are unable to get a bank account easily, due to the relevant documentation required to obtain a bank account. They also do not have the relevant volumes, infrastructure and investment required to be classified as a merchant for a point-of-sale device. This then means that there are very few options for their clients to pay other than using cash. If this is not solved then electronic payment methods will not scale.

Benefits to Government:

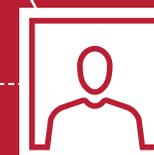
- Increased interoperability in the payments ecosystem.
- Increased financial inclusion for South Africans.
- Broadening of government services to citizens who were previously excluded.
- Citizens are financially educated and can make informed financial decisions.
- If the business taking place in the informal sector can be moved into the formal sector, this would stimulate growth and additional tax revenues.

Benefits to Business:

- Increases in digital payments lowers the amount of cash businesses have to deposit.
- The amount of cash being handled is lowered and the costs and risks associated with handling cash are reduced.
- Improved working capital/liquidity.
- Faster payments coupled with apps and QR codes will expand the points of payment.

Benefits to Citizens:

- Reduces the need to carry cash.
- Faster digital interoperable payments without the need to travel to withdraw money.
- Enhanced convenience, efficiency and safety.
- The Request To Pay feature can eliminate the fraudulent activities that take place with the misuse of debit orders.



Benefits of payments modernisation

Tour learnings for South Africa and the way forward



Country	Current state	Learnings from countries visited	Considerations for South Africa
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National government imperative

Vision 2025 sets out the key payment goals that need to be focused on. However, the payments modernisation journey is predominantly being driven by the banks in isolation of a discussion with government, telecommunication companies and fintechs relating to the digitisation of enabling or dependent technologies such as telecommunications networks and the cost of data, among other things.

Apart from China, the other countries visited had a government-driven digital agenda for the country as a national imperative. Government and key industry players drove and led overall vision, and through incentivisation enabled empowerment and alignment across players in the ecosystem and enforced compliance. This encouraged buy-in from banks, financial intermediaries and fintechs to spearhead the payments modernisation journey in each country.

There is a limit to how far we can get with just the banks being involved in the modernisation journey. They are needed from a commercial perspective, but the scale of the paradigm shift required to be successful can only be driven effectively if it is owned and led by government and regulators. Based on our observations, regulators with support from government can lead in the following activities:

- Setting the direction for payments modernisation for the country
- Driving and coordinating initiatives across the ecosystem
- Incentivising banks and industry players to collaborate or implement penalties to enforce compliance
- Updating the regulatory framework (NPS Act) to enable fintechs, third-party payment players (TPPPs) and retailers to participate equitably in the payment system both from a commercial and risk perspective.



Change in business models

The way the regulatory ecosystem is designed and structured leaves very little room for fintechs to offer payment products in South Africa within an enabling regulatory framework.

This creates a need for bank-fintech partnerships. As a result, fintechs resort to questionable practices (e.g. screen-scraping) to circumvent the current regulatory framework and enable their commercial intent, while simultaneously introducing additional risk that they don't underwrite.

We have seen collaboration between fintechs and telecommunication companies successfully disrupt the provision of services by being more customer centric than conventional financial services companies.

Instead of fighting them, successful banks have embraced the presence of fintechs and technology companies in the end-to-end value chain. This has enabled all participant banks and fintechs to leverage various parts of the ecosystem for commercial benefit.

Financial service providers have become more customer centric and have started to diversify their products and services within an enabling regulatory framework.

From an NPS perspective, we need to include fintechs, telecommunication and technology companies into our ecosystem so we can work together to develop a system that delivers financial inclusion and other development objectives. Customer protection and risk elements must be kept core to this, and thus a regulatory framework that enables innovation and still keeps customer protection at the core is critical.

To achieve this, the regulatory framework needs to evolve to give fintechs freedom to work and innovate in the payments area, while also effectively regulating their activities to mitigate against any risks introduced.

The payments industry should drive for the establishment of enablers that will open the way for innovators and fintechs to add value (such as standard APIs, standard QR codes, proxy databases, low-cost real-time payments, affordable data services).

As much as the fintechs require APIs to work better with financial institutions, the overall fraud model needs to be improved – with bank-fintech partnerships, fraud and risk models need to be agreed up front.

Country	Current state	Learnings from countries visited	Considerations for South Africa
 <p>Evolution of the payments platform</p>	<p>Instant Payments is integral to the evolution of payments in South Africa. Project Future was initiated to establish the target-state architecture for the electronic payments landscape, to identify key priorities and to establish an evolutionary transition path towards the end state.</p>	<p>Each country placed emphasis on a payments platform that was a collaboration between the banks, consumers and government. The platforms are evolving to ensure they provide the best customer experience and meet the convenience needs of their country's citizens. With India's UPI implementation they used an evolutionary approach and leveraged the current technologies they had in place i.e. IMPS.</p>	<p>South Africa can evolve its payments architecture to allow for a more affordable, open, safe, reliable and trusted ecosystem, and research has identified that Low Value Payment Infrastructure needs to be flexible, inclusive, low-cost and scalable.</p> <p>One way to achieve this would be to work more closely with fintechs or encouraging the industry to collaborate and innovate more.</p> <p>As a country we need to ensure that we make the most of existing technology while accommodating banks that are ready to use modern infrastructure.</p>
 <p>Enabling infrastructure</p>	<p>South Africa's infrastructure reach is far behind the countries visited, particularly in the telecommunications sector. In Africa, South Africa is on the higher-end of the scale in terms of data costs (US\$7.19 for 1GB of data), the highest being Zimbabwe (US\$75.20 for 1GB). This cost is relatively high considering the income inequality in South Africa, and high unemployment rates (29%). Internet penetration is only 65% and many rural communities do not have access to fast and reliable internet connections.</p>	<p>In each of the countries visited, there is a country-specific initiative to ensure that all citizens are connected to the internet. For example, Thailand has a programme to install 3G, 4G and fibre networks in rural villages. This will support their drive to bring digitalisation to all citizens. Once all citizens are connected to affordable internet services, it makes it possible to provide them with a host of digital services.</p>	<p>As a key enabler of an effective digital payments system, South Africa needs to find ways to give all South Africans affordable internet access in order to driver deeper digital financial inclusion. The government also needs to take action to stimulate the expansion of digital access in deep rural areas.</p>

Country	Current state	Learnings from countries visited	Considerations for South Africa
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Speed of modernisation journey

Through collaborative industry efforts such as Project Future and the Payment Study Tour, the South African payments industry has researched the theoretical and conceptual aspects of payment modernisation and needs to start with the practical application.

BankservAfrica has embarked on a rapid payments programme that looks at defining the viability of a mobile-friendly instant payments offering for South African banks in line with the concepts articulated through Project Future and Vision 2025.

Three of the countries visited enjoyed support from government and regulators from the outset and experienced rapid adoption of products and solutions.

For example:

- Since the implementation of Aadhaar identity in 2016, 95% of the Indian population is now banked.
- Thailand took three years to implement its National E-Payments plan and has experienced rapid adoption of PromptPay.
- Singapore has one of the most modern payment systems globally and continues to innovate and keep abreast of global developments.

South Africa needs a plan of action with high-level sponsors that can drive the plan in the shortest possible time frame.

There is an opportunity to regain our status as having a world-class payment system and for this we need to holistically consider the social, commercial and technical aspects that will serve the future economy. A digital identify can enable the realisation of this opportunity.

Recognising and implementing the building blocks to payments modernisation is critical if this is driven as a national imperative and brand around payments modernisation. This will help attaining the necessary support and momentum required.



South Africa has made steady progression in the payments landscape over the past 20 years. With the advancements in technology, the opportunities for innovation have accelerated greatly, enabling new channels to be developed as well as improving on the security and functionality of payments (speed and security).

This in turn has not only improved the customer experience by giving users options to use various methods, but also enabled many to access services they were not able to previously. The case for change has been accelerated by advancements in consumer advocacy, rights and protection, policy and regulation, rapid technology advances and the introduction of new payments players.

Catalyst for change



The South African economy has faced numerous challenges over recent years, which has resulted in sluggish economic growth. This has intensified the long-term structural challenges of high unemployment and social inequality. The opportunities to address inequality and lack of access that exist in South Africa are evident, which together with a changing financial services regulatory landscape, create opportunities for innovation and growth, in particular Low Value Payments.

Social cost of cash

The costs associated with cash are a major driver of overall banking costs and have a drag on the economy. Digitising payments, including for small transactions, can play a major role in the reduction of this cost. It is estimated that consumers pay approximately R23 billion (0.52% of GDP) per annum in cash management costs in 2015.⁵ The ripple effect of the social cost of cash, including theft, CIT heists, associated injuries and deaths as well as poverty tax should also be taken into consideration.

Visibility of financial flows

As the level of payments digitisation increases, the various regulatory and law enforcement agencies will have increased visibility of the flow of funds, enhancing investigative and prosecution capabilities.

Banking beyond the traditional bank account

To date, existing payment offerings have revolved around a traditional bank account, which is perceived to be expensive by lower-income segments of society. The availability of other interoperable stores of value beyond a bank account will present options to customers who find bank accounts unaffordable. It will also introduce competition to the market and align with the SARB Vision 2025 by enhancing financial inclusion and financial deepening.

Driving economic growth through enabling small and medium enterprises

Small and medium-sized enterprise (SMEs) are going to be major drivers of growth in the South African economy. Many SMEs operate in a cash market because of its value proposition of immediacy, certainty and perceived zero-cost of transacting. While many of the existing banking products address the needs of major corporates that have driven the economy up until now, major friction still exists for SMEs in the processing of payments. The technology investment required to plug into the existing payments ecosystem is also a deterrent, while the power of mobile devices to run their businesses and connect to the payments ecosystem has not been maximised.

A NPS is a crucial cog in a country's economy

In South Africa, the NPS is a vital enabler of commerce and trade for all South Africans and can be leveraged as a catalyst for growth and innovation. It is an essential component of the overall financial system that can either support or hinder economic growth and prosperity. The need for a payments system that is safe, efficient and accessible is best articulated in the SARB National Payment System Framework and Strategy - Vision 2025.

Digital payments

In researching similar, large-scale modernisation efforts across the globe, we found that the needs of the South African payments industry are more aligned to those in emerging economies, specifically those in Asia, where there has been a great need for digital financial inclusion and the promotion of inclusive growth. India, Thailand, China and Singapore are among the world's leading digital payment innovators. Their rapid adoption of digital transaction platforms means that they have leapfrogged many more-developed Western economies with regards to their national payment infrastructure and capabilities. In addition to providing cost efficiencies, digital financial inclusion, and transformation of the payment systems in all four of these countries had positive knock-on effects in terms of job creation and overall GDP growth.⁶



**We are commercially driven
but community grounded**

It's not clear whether the payments environment in these markets created this change or whether it was just one element in a broader transformation. Whatever the driver, the key factor is that transformation of the payments environment was a central catalyst to the process. These developments have sparked a national sense of pride in these respective countries as well as a drive for collaboration and cooperation between regulators and institutions. Furthermore, a reduction in the use of cash has delivered financial inclusion benefits as well as reducing revenue leakage in the tax system.

⁵ *BankservAfrica, Business Report 2018*, https://gmfdev.co.za/bankserv/pdf/BankservAfrica_IR_12081_20190204_AR.pdf, (accessed Jul. 17, 2019).

⁶ *Atchana Lamsam, Jaree Pinthong, Chonnakarn Rittinon, Aniya Shimnoi and Phuriwat Trakiatikul, "The Journey to Less-Cash Society: Thailand's Payments System at a Crossroads," Puey Ungphakorn Institute for Economic Research*, https://www.pier.or.th/wp-content/uploads/2018/12/pier_dp_101.pdf (accessed Jul. 17, 2019).

Key milestones

Key successes:

Real-time clearing

1

South Africa was an early adopter of fast payments or a Realtime-Retail Payment System (RT-RPS) with the RTC service that was launched in 2006. Development of South Africa's RTC system was driven primarily by banks responding to the need for immediate, once-off payments that were below R5 mil, so as to not overload the RTGS with low-value payments. The development of South Africa's RTC system was initiated by two banks and then later implemented by South Africa's large tier 1 banks with the RTC forum being established in 2002 and the RTC payments clearing house participant group (PCH PG) established in 2005.

2

In order to address debit order abuse, South Africa is soon to be the first country in which the banks will ask their customers to electronically confirm on a once-off basis that a debit order relating to a new contract is legitimate before it is processed.

3

The Reserve Bank built an internationally recognised proof-of-concept wholesale payment system for interbank settlement using a tokenised South African rand and distributed ledger technology. Project Khokha was given a fintech and regtech award for the best distributed ledger initiative by Central Banking Publications in 2018.

Project Khokha

What's next?

NPS Act Review

1

The NPS Act was reviewed with the main objectives of examining the robustness and resilience of the NPS legislative and regulatory framework; highlighting the shortcomings of the current regulatory and legislative frameworks; and to make policy proposals aimed at addressing the shortcomings and ensuring appropriate regulation of the NPS in line with best international standards and practices, and applicable domestic law.

2

A project to establish the target state architecture for the electronic payments landscape. The target architecture ensures that the future of electronic payments is more agile and flexible, streamlining the payments landscape in line with NPS Vision 2025. The Rapid Payments Programme is a critical building block on the payments modernisation journey.

3

Modernisation needs to serve goals beyond the payment system itself and industry collaboration is unlikely without empowered decision-makers. Therefore, a critical building block for the modernisation of payments in South Africa is the collaboration of stakeholders with a common understanding and case for change that clearly outlines the benefits of modernisation as well as unintended consequences if no action is taken.

Country Case for Change

Due to the rapid advancements in payments globally, South Africa has recognised the opportunity to leapfrog its payments modernisation programme in order to remain relevant and effectively serve the country. Countries in Asia have demonstrated the ability to leapfrog in a short time frame. Members of the payments industry in South Africa recognised the need for a study tour to a number of carefully selected countries to pursue learning from a regulatory level down to transition pathways, infrastructural and technological options selected and to understand how the market has responded to and interacts with these new capabilities and products.

Conclusion



What this means for South Africa

There are basic building blocks that have to be in place for South Africa to achieve the economic and utility benefits that can be unlocked by advancing the digitisation of payments. These include elements such as standardised APIs, affordable payment rails, access to real-time payments, a pervasive proxy database, and standardised QR codes.

'SA's telecommunications sector is regarded as one of the most advanced in Africa, with high mobile penetration, growing internet penetration and significant growth in connectivity infrastructure in the past decade.'²¹ However, there are challenges that are faced by the telecommunications sector, namely the high cost of data, evidenced by the #DataMustFall movement and data coverage.

There is significant demand for mobile services, and network operators are battling to deliver high-quality mobile services throughout South Africa. In comparative terms based on the hands-on experience of the delegation, the cost and quality of the mobile services were superior in the countries visited. These countries also practically illustrated how providing enabling services at an affordable price can be a key enabler to the adoption of digital payments. It is therefore necessary to ensure that digital financial inclusion is recognised as a national imperative and given the necessary support from government, the financial services sector, telecommunications sector, SMMEs, civil society and private citizens.

While fintechs played a role in the visited countries' modernisation journeys, they were not the big winners in opening up the players landscape. The fintechs enable the customer experience and enhance the digital eco-system, they did not replace traditional banks but rather collaborated to provide additional services to the customer and interestingly additional revenues and opportunities for growth for the financial services sector. This was achieved by the collaboration of large global organisations and banks, regulators, fintechs, retailers and banking, payments and eco-system players.

For the underdeveloped segments of South Africa's economy, where cash is the payment instrument of choice, it is evident that there are insufficient suitable payment products available to cater for the needs of individuals. This is further compounded by a lack of understanding and awareness necessary to influence the adoption of digital payments.

The heavy reliance on cash imposes a significant cost on society and the economy, and also increases the demand for more notes and coins to be circulated. This also increases costs for banks, which have to support and maintain the wholesale cash supply chain and its associated risks. This in turn creates an opportunity cost for banks, which must allocate resources away from higher-yielding business units and products to meet existing customer demands and needs. This increases the risk of potential disintermediation by unregulated entities that offer bespoke customer solutions. To mitigate this, there needs to be a focused collective effort to ensure that the costs of digital transactions are reduced.

The successful advancement of payments in South Africa requires that it be recognised as a national imperative and that all stakeholders work together for their common interest and benefit. The following insights are critical for consideration for South Africa.

²¹ Lynette Dicey, "SA's maturing telecommunications industry and its consumer interaction," *Financial Mail*, Jul.18, 2019



1. Cutting-edge technology will reshape the next-generation electronic low-value system, with both financial technology (fintech) and established bank players participating in product innovation and use-case fulfilment. Platform-based systems with next-generation core functionalities provides the basis for this.



4. True cost displacement of especially cash-related costs (including bricks and mortar and ATM fleets) can only be achieved if banks act as a collective. Digitisation, supported by modernised payments functionality, is core to a 'less-cash' society.



2. Payment systems and products will evolve from being commoditised propositions to become strategic ecosystems that complement macro socio-economic and government goals and at the same time, become more integrated with other digital propositions to add significant value to people's (increasingly digital) lifestyles.



5. Regulatory or government intervention and appropriate policy is necessary to catalyse change, support and incentivise adoption of new systems and support a process of reinvention of business models.



3. With a lack of conventional payments infrastructure, and in the absence of a legacy technology, Asian emerging markets are now leapfrogging developed economies and coming up with cutting-edge technical platforms that challenge conventional open banking thinking to level playing fields and provide broader access to payments service providers.



6. Low-value electronic payments system modernisation is less about technical enhancements to payments rails, and more about the implementation of modern payments ecosystems that contribute to bank profitability, support government socio-economic agendas, and at the same time add new levels of convenience and digital financial access to consumers.





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साँवरिया मेट्रोमार्ट

MISHRA JUICE
LAXMI AUTO GARAGE
लक्ष्मी ऑटो गैराज

“
Nobody wakes up wanting to make a payment, but we need to

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Glossary



Aadhaar identity	A 12-digit number that is used to identify the residents of India.
Anti money laundering (AML)	Rules, regulations and procedures that prevent criminals from using illegally obtained funds as legitimate income.
Application programming interface (API)	A set of commands that govern how one system or application interacts with another to ensure that the exchange of information is secure, fast and easy.
Association of Southeast Asian Nations (ASEAN)	An intergovernmental organisation consisting of 10 member states (Singapore, Thailand, Indonesia, Vietnam, Cambodia, Laos, Philippines, Malaysia, Brunei and Myanmar). The association's objective is to promote economic growth.
Business to consumer (B2C)	A traditional commerce model in which products/services are sold to consumers who are the end users.
Biometric identification	A form of identification that recognises and analyses individuals using physical and behavioural traits.
Bank of Thailand (BOT)	The central bank of Thailand, which is responsible for all central banking functions.
Consumer to business (C2B)	A recent e-commerce business model in which consumers (or individuals) offer to sell products or services to businesses.
Compound annual growth rate (CAGR)	A measure of growth over a time period.
Combating the financing of terrorism (CFT)	Involves investigating and preventing sources of funding for political, religious or ideological goals through violence against citizens.
Know Your Customer (KYC)	A process that financial institutions use to obtain and verify customer's information. It assesses customers' suitability and potential risk that the customers may carry.
Electronic data capture (EDC) machine	A machine that is used to facilitate payments.
Electronic fund transfer (EFT)	An electronic transfer of money between accounts.
Europa, Mastercard, Visa (EMV)	A payment method based on a technical standard to protect against fraud with point-of-sale transactions.
Fast and Secure Transfers (FAST)	An electronic funds transfer service. It enables customers of participating banks in Singapore to transfer funds between banks.
Financial institutions (FI)	Organisations that provide financial products and services, including deposits, lending and investments.
Fintech	Financial technology (fintech) is technology and innovation that aims to compete with traditional financial methods in the delivery of financial services. Fintechs are businesses that develop these services.

Gross domestic product (GDP)	A measure of economic activity within a country.
GIRO system	A low-cost option for collecting payments through an electronic direct debit mechanism in Singapore. It is a tripartite mechanism for billing customers, companies and banks. The bank acts as the intermediary in the tripartite mechanism by facilitating authorised GIRO payments.
Immediate Payment Services (IMPS)	India's instant payment interbank electronic funds transfer system.
Monetary Association of Singapore (MAS)	Singapore's central bank, which promotes economic growth through policy. It is responsible for managing Singapore's exchange rate, foreign reserves and liquidity in the banking sector.
Network for Electronic Transfers (NETS)	An electronic payment service provider established in Singapore to create a debit network to enable the adoption of electronic payments in the country.
National Payments Corporation of India (NPCI)	An organisation owned by a consortium of major banks that operates retail payments and settlement systems in India.
National Payment Gateway (NPG)	A Chinese system that enables a shared payment infrastructure and thus creates a national integrated electronic payment channel
National Payment system (NPS)	A set of systems that are open and interoperable. NPS enables consumers, banks and businesses to make financial transactions. This includes payments to one another and making use of the payment instruments offered by financial institutions.
Payments Association of South Africa (PASA)	A payment system management body recognised by the SARB, in terms of NPS Act 1998, to organise, manage and regulate on participation of its members in the payment system.
Payment Card Industry (PCI)	An industry organisation that sets standards for the payment cards industry and assists merchants and financial institutions in understanding and implementing the security standards.
Pradhan Mantri Jan Dhan Yojana (PMJDY)	India's financial inclusion programme, which was established to expand and give citizens access to financial services.
Point of sale (POS)	A device that is used to process card payments
Reserve Bank of India (RBI)	India's central bank, which formulates, regulates and implements India's monetary policies. It has the mandate to maintain India's price stability, while ensuring economic growth.
Real Time Clearing Payments (RTC)	A South African system for interbank transactions, issued by the payer to the payee bank. The payment is cleared within 60 seconds at a fee to the payer.

Real Time Gross Settlement (RTGS)	An electronic form of funds transfer where the transmission takes place on a real time basis.
South African Multiple Option Settlement (SAMOS)	An automated interbank settlement system that allows banks to reconcile any money transfers on a real-time basis or in a delayed settlement arrangement, thus providing a guaranteed settlement. The system is provided and operated by the South African Reserve Bank.
Southern African Development Community (SADC)	SADC is an inter-governmental organisation that aims to further socio-economic cooperation and integration as well as political and security cooperation among 16 southern African countries.
South African Reserve Bank (SARB)	The central bank of South Africa. It is responsible for achieving and maintaining price stability and also plays a pivotal role in ensuring financial stability.
Singapore Quick Response Code (SGQR)	A combination of various payments QR codes in Singapore into a single system.
System operator (SO)	A non-bank that is authorised to provide payment instruction services, including the delivery and/or receipt of payment instructions.
Third Party Payment Providers (TPPP)	TPPPs accept money or the proceeds of payment instructions from two or more payers for on-payment to third parties to whom the money is due.
Unified Payments Interface (UPI)	India's real-time payment system that was created by the National Payments Corporation of India.
Unified point of sale (UPOS)	A terminal that accepts a wide range of payment options.
Unstructured Supplementary Service Data (USSD)	USSD is a Global System for Mobile(GSM) communication technology that is used to send text between a mobile phone and an application program in the network.
Value-added services (VAS)	Services that are provided to customers above and beyond core offerings.

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