



WHITEPAPER

JUNE 2022

# Real-time payments: A perspective for payment system policy makers



# Benefits of real-time payments

**"Real-time payments can become both a catalyst for unlocking banking opportunities and a platform for financial services innovation."**

As the name suggests, real-time payment systems accelerate the speed at which funds are transferred between people, businesses, and governments creating efficiencies throughout the payments life cycle. This has benefits for all involved stakeholders, including end users such as consumers, merchants, corporates, governments, and financial institutions.

For end users, faster access to funds helps with managing overall movement of funds. For merchants and businesses, real-time payments can significantly reduce the working capital gap by decreasing batch and incomplete payments. Without the strain of securing funds to finance this gap, businesses can operate more efficiently, giving them the liberty to make more investments and create more employment opportunities. On the other hand, faster access to salaries and wages, government disbursements, tax refunds, insurance payouts, and refunds enables consumers to improve their personal finance management by paying off their bills and loans faster, receiving refunds and payouts quicker, and increasing their level of economic activity.

For governments, shifting to real-time payment systems adds benefit by boosting bank account usage rather than cash and cheque, thus boosting the overall efficiency of their economy. This includes a large number of tax disbursals at the end of each year, government disbursements during times of need, wages for employees, merchant payments, and many other such use cases. With the need for system participants to possess a bank account, these use cases in turn encourage financial and digital inclusion within financial services and retail banking. However, managing the balance of customer choice where cash and cheque may still be the preferred or required forms of payment is a key consideration even as countries shift towards a modernized payment system.

Along with cutting the costs incurred from producing, handling, storing, and losing cash and cheques, real-time payments can help to reduce the size of the shadow economy. Shifting to a more formalized economy helps to ensure the government is receiving the appropriate tax revenues, giving regulators more control over market competition, and strengthening the authority and legitimacy of social and economic institutions.

For financial institutions, ultimately, real-time payments can become both a catalyst for unlocking banking opportunities and a platform for financial services innovation. Enabling agile nonbank players such as fintechs, big tech, and retail companies to access the network results in the development of more tailored and innovative products and services and an improved unified user experience. Especially when implemented with the rich and transparent message standard, ISO 20022, real-time payments can lay the foundations for financial systems to be interoperable across global regions and flexible for future modifications and innovation.

# Comparing and contrasting the advantages and potential drawbacks of a regulatory approach to real-time payments

The implementation of real-time payment infrastructure typically arises from a combination of regulatory-based policy and market-based demand; however, the extent of the regulator's involvement varies widely. This section highlights the benefits of a regulatory approach to real-time payment implementation and examples of how countries have avoided common pitfalls.

## Advantages of a regulatory approach

**Interoperability & broad-based adoption:** In creating real-time payment regulation around a standardized framework, network participants will develop solutions and infrastructure that falls within the same regulatory and infrastructural sandbox, ultimately improving interoperability and efficiency between parties. The creation of national infrastructure encourages platform usage across all players in the market including smaller firms that might be concerned about value-added capabilities or the ROI of developing real-time payment products in-house.

50%

of the banked population registered for Thailand's PromptPay within 4 months as a regulatory approach led to rapid adoption.

**Rapid adoption & timeline transparency:** National real-time payment frameworks and mandates can encourage network adoption leading to rapid solution uptake. In early 2017, Thailand mandated their real time payment solution PromptPay to all banks and leveraged the platform to dispense both welfare and government rebates. This resulted in 50% of the banked population registering for PromptPay within 4 months of launch. Rolling out a detailed framework with well-defined timelines also brings clarity to financial institutions and allows them to effectively plan and adapt their offerings in line with solution rollout.

**Improved service quality:** Encouraging mass adoption can lead to broad service quality enhancements for real-time payment participants. High uptake and usage of real time payments achieved across a market can lead to cost efficiencies through economies of scale as well as other benefits. Other broad reaching, bank agnostic systems such as ISO 20022 reduce the complexity, cost and risk of data manipulation and conversion.

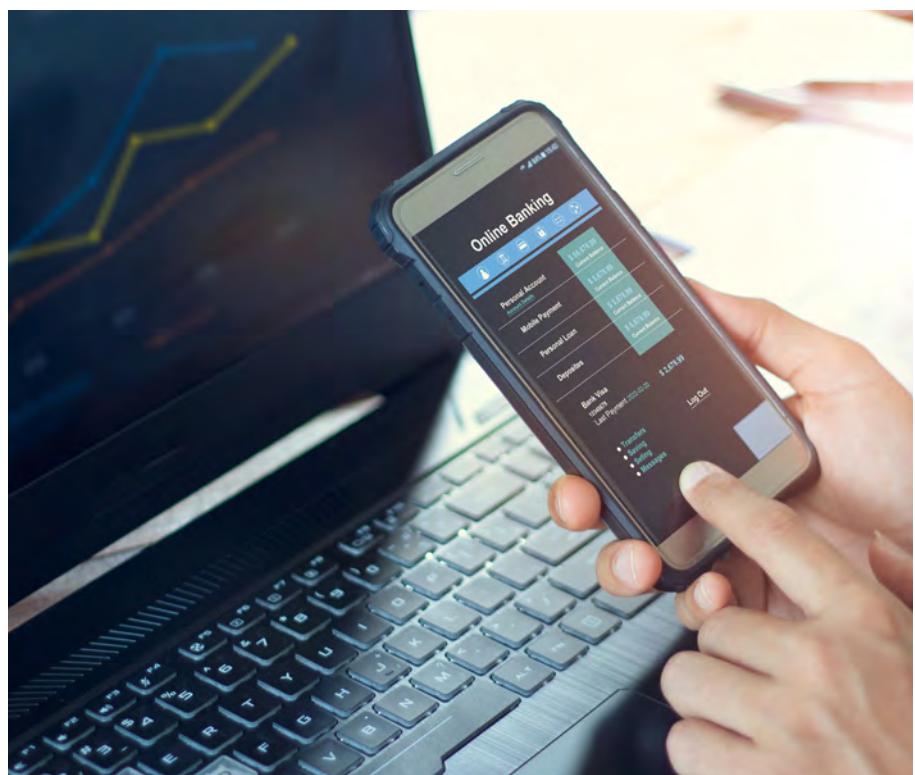
**"Upfront rollout planning coupled with adoption mandates results in strong payment scheme penetration."**

## Considerations of a regulatory approach and how to address them

**Drawn out timelines:** Passing regulations for systems as broad and far reaching as real-time payments can often be a lengthy process. However, upfront time spent planning system rollout coupled with strong adoption mandates has proven to result in strong penetration for countries like Malaysia, Thailand and India.

**Regulatory hurdles:** Because the implementation of real-time payment infrastructure often involves a variety of stakeholder groups, determining which jurisdiction real-time payment falls under, which body will oversee it and how collaboration and regulation will occur can be difficult. Countries like Canada have successfully addressed jurisdictional concerns by leveraging a separate entity, Payments Canada, to drive implementation forward under a single banner.

**High compliance costs:** A key consideration for payments policymakers is balancing network accessibility with compliance to regulatory, liquidity, and fraud-based real-time payments standards and requirements. In the US for example, fintechs may be regulated by a host of different bodies including the Federal Reserve Board, Securities Exchange Commission, and the Federal Deposit Insurance Corp. Policymakers have a key role to play in encouraging broad yet safe network participation. In the US for example, more equipped financial institutions like large US banks have connected directly to the real-time payment scheme bearing the regulatory costs. These financial institutions are then able to sell their services to smaller players and provide them with access to the payment scheme.



# Real-time payment implementation readiness framework

**"Differences in stakeholder readiness vary real-time payment implementation approach."**

Through evaluating the pre-to-post real-time payment implementation states of 13 countries, we created a real-time payment implementation readiness framework. This framework is intended to be a guide for policymakers in countries that have real-time payments in their payment modernization pipeline. By looking closely at the major players in a real-time payment ecosystem, policymakers will have a better view on overall market readiness. The major players are governments, financial institutions, and consumers and businesses.

- Governments must be capable of enacting and regulating payment rails, implementing relevant policies, and pushing the country towards certain policy objectives
- Existing financial institutions and their systems should be both malleable to allow for rapid RTP implementation and innovative, unlocking unique RTP use cases via open banking to boost RTP usage nationwide
- Consumers and businesses are more likely to follow governments and financial institutions but demographics, existing access to financial services and digital payments are all important factors that will drive speed of adoption

Based on different stakeholder readiness (governments, financial institutions, and consumers/businesses), policymakers should consider various factors and approaches to ensure a smooth implementation and maximize adoption.

## Real-time payment readiness framework





# 70%

of regulatory approach markets are rated high in government readiness.

**"A government that operates and regulates its existing payment rails will have more visibility into network access, mandates and policies."**

## Government readiness

The first pillar of the real-time payment implementation readiness framework evaluates a country based on the structure and objectives of its government. Ideally, a government should hold some level of control over the country's payment rails and network in the form of laws, frameworks, and distinct regulatory bodies to ensure compliance by all parties, mitigate risks, and protect data privacy. In countries where government stability is lower or are rated as being harder to conduct business, the degree of control required by the government may be higher than more developed countries where a more hands off approach may be more effective.

Ultimately, a government that operates and regulates a country's existing payment rails and networks will have more visibility into real-time payment network access, mandates, and policies to maximize real-time payment take-up. Of the markets researched by Mastercard Advisors, 70% of regulatory-first markets were rated high in government readiness, including markets with higher levels over other pillars such as Japan, Nigeria, and Rwanda. In both developing and developed countries, a government's objectives, and policies to promote financial inclusion, foster payments innovation, and move towards greater digital inclusion will have a direct correlation with the effectiveness of real-time payment implementation and ultimately, real-time payment adoption. Other important attributes include:

- A prior history of promoting financial inclusion. This determines the openness and accessibility of a real-time payment system and encourages broader adoption among the unbanked and underserved population
- Enacting policies that encourage financial innovation. This indicates the ability to grow real-time payment usage by adopting open banking and data sharing policies that build upon a real-time payment network
- A government's ability to leverage its disbursement use cases. This may drive penetration of digital payments which can further speed up adoption.



# 70%

of regulatory approach markets have high financial institutions readiness.

## Financial institutions' readiness

The second pillar of the real-time payment readiness framework concerns financial institutions and their ability to adapt to, integrate and leverage real-time payment technology. Financial institutions that place a strong emphasis on technological innovation in both their product offerings and data and analytics capabilities will be more ready to take advantage of the benefits of real-time payment. Closely related to this is the breadth and depth of adoption of existing financial institution payment systems. Interconnectivity and modularity of existing payment rails allows for greater innovation and faster speed to market, while legacy siloed systems require a more comprehensive overhaul to implement real-time payments. Depth of adoption will influence network effects – the greater the penetration of existing systems, the more likely that all players will move onto the new rails. In research conducted by Mastercard Advisors, 70% of regulatory approach markets demonstrated high financial institutions readiness in their pre-RTP implementation state including Japan, India, and South Africa.

In addition to technological innovation and interoperability of existing payment rails, other important attributes for financial institution readiness include:

- High financial institution asset concentration which indicates the ability to coordinate and regulate the widespread adoption of real-time payment networks more easily
- The ability of institutions to meet compliance and regulatory requirements to more easily adapt to the challenges of supporting an 'always on' real-time payment environment
- The degree of oversight applied to financial institutions plays a role in both the uptake of real-time payments and the environment for innovation within the ecosystem





# 46%

of regulatory approach markets have high consumer and business readiness.

**"Low readiness can be overcome with strong adoption to leapfrog existing payment methods."**

## Consumer and corporate readiness

The final pillar of this real-time payment readiness framework addresses individual consumers and businesses. A state of high readiness features high consumer and business willingness to adopt real-time payment, often demonstrated by the popularity of digital payment methods instead of traditional cash or cheque transactions. The ability to adopt such measures is also critical; many individuals currently lack access to the banking system, let alone interact with real-time payment while business' often need a strong financial incentive to change existing habits. Of the regulatory approach markets analyzed, only 46% had high levels of consumer and business readiness, indicating that compared to other pillars, readiness could be lower but can be overcome with strong consumer, merchant, and corporate adoption to leapfrog existing payment methods. None of the markets we analyzed featured only high levels of consumer and business readiness.

There are four primary drivers of consumer and business readiness: financial inclusion, payment norms, general adoption of technology, and demographic characteristics.

- A financially inclusive environment is one where individuals and businesses can readily access relevant financial services in a timely and affordable manner. Digital payments naturally require interaction with such services, making inclusion an integral driver of readiness.
- Existing payment norms can either help or hinder readiness, depending on how rigid and digitally friendly they are. A cultural distrust of non-cash payment methods, for example, can limit real-time payment readiness.
- A high general adoption of technology bodes well for real-time payment readiness, providing a direct outlet for consumers and merchants to engage with digital payments. For many economies this has been driven by COVID which has accelerated the demand for digital payment methods. Familiarity with technology can also assuage concerns regarding non-traditional payment methods.
- Countries with younger populations tend to be more open to digital payments, increasing willingness to adopt real-time payment technologies and practices. This driver closely relates to payment norms; cultures that emphasize the authority of older demographics may find it difficult to adopt digital-first payment norms.

In the following section, we selected four countries that span various levels of economic development, geographies, and performance in each of the three pillars of the readiness framework. Policymakers of countries with real-time payment implementation in the pipeline can learn from these countries' unique strategies and implementation challenges to ensure a smooth implementation and maximize adoption.

# Implementation use cases

## Singapore



### Pre-real-time payment implementation

With Singapore being recognized as not only a major financial capital in the Asia-Pacific region, but also globally, it ranked high in financial institution readiness. The country's stable economic and political environment, respected regulatory bodies, and strict payments policies also placed it high in government readiness. Singapore ranked high in consumer readiness, as the nation of digitally forward consumers has been historically quick to adopt modern payment solutions, such as credit cards and mobile wallets, and most consumers were already fully banked. However, its merchant readiness was lower due to the widespread cash acceptance and even preference among many small businesses.

### Real-time payment implementation

Despite Singapore's advanced economy, a pain point in its payments systems was the inability to process instant interbank transfers, with transfers taking up to three working days to complete. As a response to this pain point, Fast And Secure Transfers (FAST) was launched in March 2014 by two main companies: BCS (a clearing services company) and BCSIS (a payments application and software company) with the help of Vocalink, a Mastercard company. FAST now allows customers of the 24 participating banks and five non-banks to perform interbank transfers of up to S\$200,000 per transaction through personal computers, tablets, and mobile devices in under 15 seconds (up from 14 participating banks and a limit of S\$10,000 per transaction in 2014). Additionally, FAST allows payees to send debit requests to payers to support a predictable payment cycle.

In 2017, Singapore's overlay proxy scheme, PayNow was launched and built on the FAST infrastructure to support 24/7/365 instant P2P transfers by simply using a mobile phone number or a national registration identity card (NRIC) number. PayNow corporate was subsequently launched in 2018 to allow for instant B2B transfers between participating banks.

### Post-real-time payment implementation challenges and next steps

Initially, as a very early adopter of instant payments, Singapore experienced technological constraints with a limited number of vendor solutions in the market and thus, a slow real-time payment integration. This was especially true among fintechs and digital wallets that were excluded from the payment scheme until 2021. However, digital payments growth accelerated in 2021 after digital wallets were integrated into the scheme. This growth can be attributed to the increased use of proxies for P2P and P2B payments and a national QR code standard that made mobile payments seamless.

Given the connectivity of the Asia-pacific region, the next steps for Singapore involve leading the cross-border instant payments initiatives to help drive instant payment growth and adoption both locally and globally. Early strides towards this have already been made through their linkage with Thailand's PromptPay system in April of 2021.

## Nigeria



### **Pre-real-time payment implementation**

Despite a historically high unbanked population and heavy reliance on cash, Nigeria ranked high in government readiness. Over the past decade or so, the Nigerian government has taken leaps to modernize and simplify the country's payment systems. In 2007, the Central Bank of Nigeria (CBN) launched the payment systems vision 2020 initiative, which consisted of a series of workstreams targeting financial inclusion and electronic payments penetration. Financial institution, consumer, merchant and corporate readiness remain low due to outdated technological infrastructure, high corruption levels and a wealth gap that persists in the country.

### **Real-time payment implementation**

An outcome of this payments modernization initiative was the NIBSS instant payments (NIP), Nigeria's real-time payment scheme that launched in 2011. NIP is now the most developed real-time payment scheme in Africa and ranked sixth globally by number of real-time transactions in 2020. Starting with only two participating commercial banks, NIP is now the country's preferred funds transfer platform and is accessed by all commercial banks, micro-finance banks and mobile money operators. Along with strong adoption, NIP has become a platform for financial services and product innovation. NIP serves as a model system and catalyst for other developing African nations working to modernize their payment rails, with next steps including extending its services to neighboring countries.

### **Post-real-time payment implementation challenges and next steps**

Despite strong adoption and growth of real-time payments, penetration is still constrained by the large unbanked population (56% in 2020) and will be dependent on the success of the government's financial inclusion initiatives, such as launching payment services banks to offer basic banking services to the unbanked population and increasing agent networks across the country. Due to a maximum daily transaction limit of NGN 5m (\$13,810 USD) for individuals and NGN 10m (\$27,620 USD) for corporations, the small business segment is still underserved and presents opportunity for digital banks and fintechs to target.

## Mexico



### Pre-real-time payment implementation

Mexico's pre-real-time payment implementation readiness ranked low across the 3 pillars of government, financial institution, and consumer/merchant readiness. Despite this unfavorable situation, the country launched SPEI – a real time gross settlement system designed for large transaction volumes – in 2004.

Government readiness was deemed low, largely a result of both lackluster control over payment regulations and the presence of corruption. The relationship between the government and financial institutions has therefore been far from smooth. Ownership of banks was transferred to the Mexican government in the wake of the Latin American debt crisis in 1982, and there has been considerable back-and-forth since then. The Mexican peso crisis of 1994 shocked the system yet again, prompting further reforms and creating an unstable banking landscape leading up to real-time payment. Low readiness of Mexican consumers reflected this instability; the population was cash-reliant with a sub-par banking level compared to global averages.

### Real-time payment implementation

The implementation of real-time payment was largely driven by the central bank, empowered by the payment systems act of 2002. This granted the bank considerable power over clearing and settlement systems, permitting them to heavily influence the payments landscape of Mexico. Despite historical uncertainty, this sweeping authority catalyzed key developments like consolidating oversight of Account Holders Service System (SIAC), Extended-use Electronic Payments System (SPEUA), and Interactive System for Securities Deposit (SIDV), the existing payment systems of the day.

SPEI was launched in late 2004, offering real-time payments with a lower transaction fee of MXN\$1.00, compared to an average of MXN\$2.4 for the preceding SPEUA. The system was accessible by any regulated financial entity, theoretically extending coverage to any individual with a bank account.

### Post-real-time payment implementation challenges and next steps

After launch, cash usage was still high due to the significant unbanked population and low instant payment adoption among consumers saw low penetration. SPEI still primarily sees usage for high-value transfers involving large corporations, players like pension funds, brokerage firms, and insurance companies. Smaller transactions between consumers and merchants, such as daily purchases, have not typically occurred under SPEI. Miguel Diaz, a general director at the central bank, estimated earlier this year that cash could still account for up to 95% of transactions in daily commerce.

The payments and digital landscapes in Mexico have developed considerably since SPEI was implemented, in large part thanks to the system itself. Transaction volumes on the system have seen a compound annual growth rate of 11.8% for the past 5 years, and over 60% of Mexicans are estimated to use smartphones. There is still considerable runway for mobile banking adoption, however; only 37 million bank accounts exist for a population of around 130 million. SPEI continues to be updated by the central bank; its own operating hours extended to provide 24-hour coverage in late 2016, and there are plans for a more advanced network to be launched in the coming years.

## Japan



### Pre-real-time payment implementation

Given Japan launched their first real-time payment system in 1973, it is most helpful to understand the nations readiness to modernize their payment rails. However, prior to real-time payment, Japan's clearing and settlement functions were performed by the central calculation institute which streamlined clerical work for settling nationwide exchanges amongst banks. Zengin-net was launched to computerize this process.

### Real-time payment implementation

Japan has two intertwined real-time payment systems: Zengin-net, the world's oldest real-time payment system, was launched in 1973 by a large group of Japanese banks and is an interbank clearing system for managing domestic retail payments – typically smaller transactions. Zengin-net has gone through seven iterations and now handles P2P, B2B and EDI (electronic data interchange) transactions among other applications. Larger transactions like money market transfers and wholesale payments are handled by BOJ-net, which launched in 1988 by the central bank.

Japan's low consumer and merchant readiness stems from their heavy reliance on cash with ~80% of face-to-face transactions occurring through this medium. Historically low interest rates and a ubiquitous ATM network have further contributed to a cash is king mentality. Merchants weren't incentivized to move away from cash either, with merchant service fees on card payments historically ranging from 2- 5%. Moreover, Japan has the highest median population age in the world and adults spend 35% less time online than the global average making them less likely to adopt methods of digital payment. On the policy side, Japan has high government readiness, stemming from it being one of the first nations to support a real-time payment system in 1973. Since then, it has implemented several policies to both improve their real-time payment offering and enhance uptake such as extending system operating hours, adapting to ISO 20022 standards, and offering EDI transfer. Japan currently has a goal of becoming 40% cashless by 2025. These system and policy improvements have led to high financial institution readiness allowing both banks to roll out highly digitized solutions and Tokyo to become a hub for financial innovation.

### Post-real-time payment implementation

While cashless payments are growing in Japan, they still represent only 27% of transactions limiting real-time payment uptake. In addition, Japan's two system architecture also presents challenges to providing scalable innovation from legacy systems. To incentivize changes in payment habits, the government has implemented several initiatives such as offering up to a 5% rebate on all cashless transactions, capping merchant service fees and partnering with Visa to bring a unique and innovative payments experience to the 2021 Olympic games. In recent years, Japan has also implemented several initiatives to promote fintech innovation and inclusion such as open APIs, the offering of an EDI connection and a revised regulatory framework. These initiatives are translating into uptake with 60% of individuals indicating they plan to increase contactless payment usage in the future.

# Conclusion

Starting with the processing platform service provider and cascading down to participants and end users, implementing real-time payments is a multi-tiered process. Whether you're a policy maker, issuer, or financial institution, Mastercard brings more than a decade of operational experience to help answer your key questions regarding real time payments.

Alongside implementation, Mastercard's orchestration services team offers the guidance to manage a real-time payment system at scale to ensure proper scheme design, interoperability, consumer protection and ecosystem integrity by providing advice and principles related to:

- Governance and standards
- Customer management
- Dispute and issue management
- Ecosystem performance management

Reach out below to learn more about how Mastercard can assist policy makers in designing an optimal operating model and execution playbook, articulating the value of real-time payment to the market and its participants, while orchestrating real-time payment readiness driven by scheme to position their offering for rapid and successful uptake.

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## Please contact your representative.

Contact: **Patricia Reynolds,**  
Vice President, Payments Practice  
Email: [patricia.reynolds@mastercard.com](mailto:patricia.reynolds@mastercard.com)

**Andrew Thackray**  
Vice President, Government Practice  
Email: [andrew.thackray@mastercard.com](mailto:andrew.thackray@mastercard.com)

Contributors: Camille King  
Principal

Josh Cait  
Consultant

Ankita Wasan  
Managing Consultant



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