REPORT

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Implementing Real-Time Payment Systems in Budget Constrained Environments: Trends and Insights

Policy Center for the Digital Economy

Contributors

Heba Shams
Vice President, Global Public Policy
Inclusive Fintech and International Development
Mastercard

Ravi Aurora
Senior Vice President
Global Public Policy & Indo-Pacific Policy Operations
Mastercard

Rory MacFarquhar
Senior Vice President, Strategic Growth
International Institutions Engagement
Mastercard

Chris Harrall
Vice President
Mastercard Policy Center for the Digital Economy

**Views in this document are those of the authors and do not reflect the views of Mastercard.*

Introduction

Real-time payments represent a global trend in payment modernization. Countries with a demanding development agenda and limited public resources are seeking Real-Time-Payments (RTP) systems as a key enabler of economic digitalization and financial inclusion. Affordability is the main driver of infrastructure procurement in these contexts. The pursuit of affordability shapes countries' RTP deployment. Experience, however, shows us that there is a trade-off between opting for the lowest cost option and achieving ambitious policy outcomes. Experience also shows that phased implementation combined with regional and technology solutions that mitigate for scale can address the cost without compromising quality. Service agreements combined with an open and competitive ecosystem can expand countries choice regardless of budget. The procurement process itself can be the best educator.

Real-Time Payments insights

Also known as fast payments, immediate payments, or instant payments, RTPs are going mainstream all around the world. As the latest development in payments infrastructure modernization, these domestic, account-to-account payment systems deliver instant availability of funds to payees and operate 24 hours a day, 7 days a week. FIS' first *Flavors of Fast* report counted a total of 14 fast payment schemes that were live at the time of its publishing in 2014.[1] In 2020, the Report's 7th edition counted 56 countries with active real-time payments systems.[2] In 2022, Mastercard's Journey to Payments Modernization Insight Series set the number at 66 markets with live access to real-time payments.[3] This global trend is occurring in markets around the world, representing a wide spectrum of economic and technological development and varying levels of established digital infrastructure.

This report focuses on better understanding the challenges and opportunities of establishing real-time payments in budget-constrained environments. Our analysis is based on the most recent efforts to procure and deploy fast payments infrastructure by countries of relatively limited means. The report reflects key findings and lessons learned from market analysis of sampled countries, conversations with over 100 regulators, central bankers, government officials, and providers of payments modernization advisory services.

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[1] [1]FIS, *Flavors of Fast* (2020).

[2] Ibid.

[3] Mastercard, "Setting Out: Planning Your Route to Payment System Modernization," Mastercard *Insight Series: Journey to Payment Modernization,* Part I, January 2022.

Ambitious Policy Objectives and Limited Budgets

Countries approach instant payment implementation, not merely as an infrastructure for faster methods of payment, but as a necessary step in the modernization of the whole economy, achieving financial inclusion and formalization. In a blog published on January 15, 2021, World Bank's payments experts stated: "Systems that allow instant access to funds — known as Fast Payment Systems (FPS) — are an integral part of the strategy of countries across the world to advance the use of digital payments and enhance financial inclusion."[4]

Among the countries sampled, promoting digitalization, reducing the use of cash, and advancing financial inclusion were the key policy motives in countries' efforts to implement instant payment systems.

Reflecting these ambitious goals, the Requests for Proposals (RFPs) for RTP system deployment were very broad in scope. Nearly all RFPs reviewed called for solutions that covered all use cases: P2P, in-store, online, bill payments, P2G/G2P, B2G/G2B. Many also included value-added services (VAS) especially fraud prevention and alias directory.

Despite the ambition of the goals, the budget allocated for infrastructure procurement was very limited and typically equal to or less than US$500,000.

The pursuit of countries' ambitious policy objectives is contingent on enabling a variety of use cases. This requires the deployment of fast payments infrastructure with an advanced set of functionalities and capabilities. For example, the displacement of cash requires a system that allows the participation of bank and non-bank payment service providers and possesses the capability to interface with a range of devices. This requires RTP infrastructure with extended functionalities, the costs of which often exceed the low budgets allocated for RTP procurement. Disproportionately low budget allocations give central banks little choice but to compromise on the needed functionalities at the procurement stage.

Broad RFP specifications turned into highly selective implementations that prioritized specific use cases based on country context and strategy. Some countries focused on bill payments while others centered their deployment on P2P, salary disbursement or remittances. This may be a sound phased approach when it is well planned around infrastructure that possesses the necessary capability to enable future expansion.

[4] Harish Natarajan *et. al.*, "Fast Payment Systems: A Toolkit Helps Countries and Regions Navigate Implementation," *Private Sector Development Blog* (15 January 2021).

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markets globally with live access to real-time payments, accounting for more than 90 percent of global GDP (As of Q2 2021)

In some instances, low-cost solutions may not support upgrades or additional use cases. In one case in this sample, earlier deployment of a low cost RTP system built on the RTP capabilities of the incumbent provider of ACH and RTGS infrastructure led to a full revamp and launch of a new procurement process to obtain a new RTP system.

The Economics of Real-Time Payment Systems

With low budget allocation, system affordability appears as the key specification in RFPs for fast payment infrastructure in budget constrained countries. Countries perceive the affordability of the system as necessary to achieving the affordability of the services to the end user. Cost of integration also drives the decisions of banks and PSPs participate in the RTP system. Affordability is, therefore, the primary driver of the procurement process for the government and stakeholders in the payment value chain.

As a policy objective, three core assumptions drive governments' emphasis on affordability: (1) Digital payments are an entry point to formal financial services more broadly; (2) cost is the main obstacle to financial inclusion; and (3) free or cheap digital payment services are feasible and essential for financial inclusion. This list, however, ignores the many factors that impede inclusion.

The World Bank Findex data show that cost of service is only one barrier to access and use of financial services.[5] Other barriers, often more potent, relate to lack of funds, challenges of documentation and identification, inconvenience, and unsuitability of the services to the needs of different user segments. The World Economic Forum's *Shared Principles for an Inclusive Financial System* illustrate the interconnectedness between the different features of the financial system that enable financial inclusion and the trade-offs involved between cost, innovation, sustainability, and trust.[6]

For banks and other payment service providers lowering the cost of integration with the new system is key. This results in favoring solutions that leverage existing infrastructure such as RTGS and ACH systems at the expense sometimes of newer, more future-proof capabilities. Uncertainty about the profitability of the service and the risks associated with offering it drive cost concerns amongst banks and other PSPs.

Understanding the cost and return of providing payment services for banks can help explain their preferences in relation to RTP adoption. According to a 2020 McKinsey Global Payments Report, payments remain one of the best

[5] The World Bank, "The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution," 2018.

[6] The World Economic Forum, "Shared Principles for an Inclusive Financial System," August 2021.

Payments remain one of best performing services of **revenue,** yet payment services sometimes represent **30-40 percent** of **operating costs** due to high technology spend
McKinsey Report

performing financial services in terms of revenue for banks, yet payment services sometimes represent 30-40 percent of the banks' operating costs in part due to "high technology spend associated with providing payments." According to the same report, institutions that lead in payments committed 3-13 percent of their revenues to capital investment in 2019. This translates to US$250 million to $1 billion.[7]

Mitigating the Cost of Infrastructure

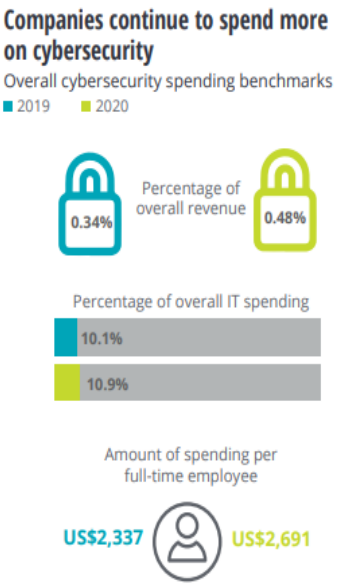
Countries mitigated the cost of infrastructure using one or a combination of the following approaches: (1) using public financing and government procurement to obtain the RTP infrastructure, (2) seeking donor and development financing from the Gates Foundation and multilateral development banks (MDBs); (3) relying on incumbent providers of payments infrastructure who run existing RTGS or ACH infrastructure; (4) using government in-house development capabilities, local banks or local FinTech; (6) in rarer cases, relying on donor-funded open source software; and (7) scaling back required capabilities and taking a phased approach.

Prioritization of cost considerations more generally exerts downward pressure on the investment in system capabilities. In addition, each of these cost mitigation mechanisms exert significant influence on the choice of infrastructure and shape the future path of RTP deployment.

There is a general expectation that a low-cost solution implemented through subsidy or grant and operated on a cost recovery basis without profit will lead to lowering the price for users and therefore advancing the policy objectives of financial inclusion and digitalization. Views amongst donors and development finance providers vary. Some believe in a philanthropic model that aims for zero cost payments, while others aim to reduce the cost of payment as much as possible while maintaining the economic sustainability of payment systems through cost recovery and providing economic incentives for participants.

Naturally, the cost of operating real time infrastructure is strongly influenced by economies of scale. Despite limited transparency on set-up and operations cost of RTP systems, our research shows that the context of very low volume of transactions, as in Moldova, Albania or Belize, the cost per transaction is relatively high. With higher volume of transactions, as in India and Mexico, the cost per transaction drops significantly. Volume determines cost to user much more than the cost of infrastructure. At the same time, quality of infrastructure and service are key to driving volume.

[7] McKinsey, "The 2020 McKinsey Global Payments Report," October 2020.



Sources: FS-ISAC/Deloitte Cyber & Strategic Risk Services CISO survey reports, 2019 and 2020; Deloitte Center for Financial Services analysis.

Securing Real Time Payments

The main appeal of RTP infrastructure as an instrument for digitalization and financial inclusion is the way it allows funds to be available immediately or almost immediately like cash as well as the finality of RTP transactions. These two positive features come with increased customers' exposure to the risks of fraud. Lower friction means detecting and preventing fraud must happen in real time and the finality of RTP makes reversing transactions more challenging, if not impossible.

This explains why in the cases examined, fraud prevention was one of the most frequently demanded functionalities in RTP systems. It is also one of the costs that banks take into consideration when they contemplate integration with RTP infrastructure.

According to FS-ISAC/Deloitte Cyber Risk Services CISO Survey 2019, respondents spent an average of 10% of their IT budget on cybersecurity. This amounted to an average of 0.33% of their revenues, and average US$2,300 per full-time or equivalent employees (FTE). The same survey in 2020 found that cybersecurity spending by financial institutions have increased since 2019 from an average of .33 percent of revenues to .48 percent. It also documents those providers of financial services infrastructures such as clearing houses, exchanges, and payment processes spent the highest on cybersecurity at 1 percent of IT budget and .75 percent of revenues. Financial infrastructure providers remained the highest spending segment in the industry with their spend per FTE rising from US$3,630 to $4,375 between 2019 and 2020.[8]

Implementation and Operational Challenges

Most of the RTP systems covered in this sample are at early stages of deployment. It is therefore too soon to assess their operational effectiveness and whether they delivered the desired modernization outcomes. In one country, a low-cost deployment operated for a while with some level functionality but required full replacement to accommodate future demand.

Most of the issues identified through the interviews related to the capacity and willingness of payment service providers to adopt the technology and deploy RTP services rather than to issues of functionality. In one example RTP infrastructure was sourced and installed with limited uptake from market participants and is currently in process of being replaced by a new infrastructure.

[8] Deloitte, "Reshaping the Cybersecurity Landscape," *Deloitte Insights*, 2020.

Another challenge that is often overlooked in planning RTP deployment is the availability of IT skills in the economy. Many countries look to India and Mexico as examples for successful low-cost RTP deployment, yet they overlook not only the scale available in these two markets but also the availability of local IT professionals.

Lessons Learned

Phased Deployment

RTP systems are complex. Their rollout throughout an economy is a multi-year project encompassing a variety of stakeholders. In the detailed analysis of 15 RTP projects, it was observed that comprehensive and ambitious vision was scaled down in implementation to a limited number of use cases and value-added services.

This often reflects a phased-deployment approach that, when planned well, is consistent with the stage-by-stage rollout that any new payment system requires. In doing so, it is important to procure systems that can withstand increased demand and diversity of demand in the future. This requires modularity and ability to integrate and easily overlay services that extend the RTP functionality.

For best results, phased deployment should be governed by a detailed framework and well-defined timeline that allows participants to plan and adapt.[9] Also, enabling third party applications and overlay services should be a core part of the RTP system design. RTP systems are foundational infrastructure whose success depends on the extent to which they enable service providers to offer solutions for a broad range of use cases in an easy and frictionless manner.

Use case prioritization is country-specific and must be identified with both capacity and scale in mind. Prioritization of safety and security features including fraud detection and prevention services and functionalities is necessary especially in view of its impact on trust and uptake.

Learn Through Procurement

Procurement processes especially in low- and low-middle-income countries with less mature public procurement systems are often governed by rules that restrict interaction between the public authorities and the bidders. These rules aim to ensure the integrity of procurement and prevent corruption. In procuring complex and innovative systems, such as RTP infrastructure, these processes may hinder the ability of government to identify the best solutions for the specific needs of the market.

[9] Mastercard, "Real-Time Payments: A Perspective for Payments Systems Regulators," April 2022.

Increasingly, countries are exploring "competitive dialogue"[10] procedures for the procurement of complex systems. This approach allows the authorities to launch the procurement with minimum specifications and invite qualified bidders to a process of dialogue and negotiations that aim to design the most suitable solution. This process poses both integrity and competition risks. But for RTP systems it represents major benefits especially as countries increasingly require more complex and future-proof solutions.

Solve for Scale

Scale is the main driver of cost. For smaller countries, low transaction volume limits the ability to reduce cost to end users. Low budget RTPs may exacerbate the low volume challenge if they fail to support relevant use cases that attract larger numbers of users. Lessons can be drawn from research on uptake of financial services targeting the base of the pyramid where evidence suggested that low uptake and lack of use of payment products offered to base of the pyramid users through government cash transfer programs was due to de-prioritization of customer-friendly features in favor of lower administrative cost and modest service fees.[11] These findings should inform RTP procurement as well. Prioritization of cost of infrastructure over capability may result in low uptake if it affects the relevance of use cases and convenience of services.

In terms of limitations deriving from pure population size, countries may consider:

1) Cloud-based solutions can provide the potential benefit of having larger scale of deployments given that the infrastructure is used to service multiple countries.
2) Regional consortia that allow shared infrastructure with neighboring countries to achieve larger volume of transaction and economies of scale, as well as pooling resources and increasing the budget available to invest in higher capability RTP solutions with better functionality.

Avoid Vendor Lock-in Through Competition

As the research showed, following low-cost requirements, incumbency is the next most important driver of vendor selection regardless of the procurement model. Country and donor concerns about vendor lock-in and its effect on competition is limiting countries access to innovative solutions that meet cost and scale requirements. It was observed that countries avoid managed services options in RTP deployment as well as cloud-based solutions for fear of limiting competition because of vendor lock-in. Yet, countries are repeatedly selecting incumbent adjacent service providers while restricting themselves to licensing and on-soil solutions to avoid vendor lock-in. Vendor lock-in, including for maintenance and upgrades, is driven by the cost of integration not by the

[10] "Competitive dialogue: an economic and legal assessment" *Journal of Public Procurement*, 2020.

[11] BIS, Payments Aspects of Financial Inclusion, April 2016.

business model or use arrangements. RTP system rollouts require a multi-year, large-scale investment by all market participants. It is this integration cost that drives incumbent selection.

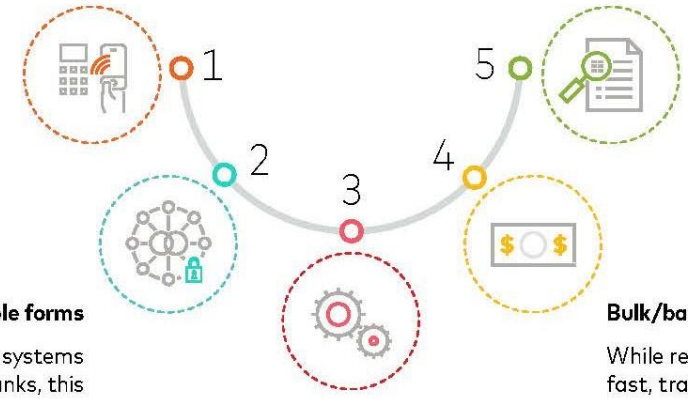
Armed by this realistic understanding, countries should consider all methods of driving scale and reducing cost including managed services, cloud solutions and regional arrangements. In parallel, countries can address vendor lock-in through access policies and technical specifications that enable different suppliers to provide different use cases and value-added services.

Levelling the playing field and ensuring that market participants have the economic incentives to participate and innovate is the only guarantee of low cost and high level of adoption.

Those who want to develop RTP systems should carefully consider these five points:

Ubiquity and reach are crucial

Everyone who can participate must be able to connect easily and securely to the infrastructure from the outset.



There's an opportunity for better business use cases

Banks can use modern services to improve offerings for business customers. The benefits go beyond speed, and include improved straight-through-processing (STP) and reconciliation.

Access takes multiple forms

While some payments systems provide access to non-banks, this will differ as a priority from market to market. Most see the benefit of opening up to enable more market players to participate, therefore facilitating more transactions.

Cross-border interoperability is important

It's a challenge that requires cooperation at a multi-market level, but should be a key consideration when looking at the standards, design and technology used in your system.

Bulk/batch still has a role

While real-time payments are growing fast, traditional bulk/batch payments are a cost-effective solution that will continue to play a significant complementary role.