

Pan-India new umbrella entity

Another milestone in India's
payments infrastructure
resilience roadmap

October 2021

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Overview

Over the past few years, the Government of India has been making strides towards creating a 'cashless India', under the larger campaign of building a 'digital India'. With the support of this push, by FY21, the total volume of digital transactions in India stood at more than 43.7 billion, an average of 119.8 million daily transactions.¹ This number is expected to increase 15 times to an average volume of 1.5 billion daily transactions by FY25.²

A key stakeholder in this digital payment journey, the National Payments Corporation of India (NPCI, an umbrella organisation for operating retail payments and settlement systems), has been at the helm of supporting digital transactions. Its offerings include Unified Payments Interface (UPI), RuPay, Bharat Bill Pay (BBPS), Immediate Payment System (IMPS), and National Automated Clearing House (NACH).

Table 1: NPCI transactions breakdown by product/platform³

Product/platform	Overview	FY21 transaction volumes (in m)	Year-on-year growth (FY20 vs. FY21)
Aadhaar Enabled Payment System (AePS)	Allows basic inter-operable banking transactions at Point of Sale (PoS) using Aadhaar authentication	963	120%
Bharat Bill Payment System (BBPS)	Integrated bill payment system offering inter-operable and accessible bill payment services	276	89%

¹ RBI annual reports for FY20 (<https://www.rbi.org.in/scripts/AnnualReportPublications.aspx?id=1293>) and FY21 (<https://www.rbi.org.in/Scripts/AnnualReportPublications.aspx?id=1322>).

² Anup Roy, "Digital transactions could reach Rs 15 trillion a day by 2025: RBI".

³ NPCI retail payments statistics (<https://www.npci.org.in/statistics>).

Product/platform	Overview	FY21 transaction volumes (in m)	Year-on-year growth (FY20 vs. FY21)
Cheque Truncation System (CTS)	Online, image-based cheque clearing system (for faster clearing of cheques)	668	- 35%
Immediate Payment Service (IMPS)	Instant payment, inter-bank electronic funds transfer system	3,278	27%
National Automated Clearing House (NACH)	Facilitates inter-bank, high-volume electronic transfers that are repetitive and periodic	3,626	7%
National Electronic Toll Collection (NETC)	Inter-operable nationwide toll payment system	1,327	128%
National Financial Switch (NFS)	Network of shared Automated Teller Machines (ATMs)	3,661	-15%
RuPay	Global card payment network	1,382	-7%
Unified Payments Interface (UPI)	Instant real-time payment system facilitating inter-bank transactions	22,331	78%

Amongst these, UPI alone has been a major disruptor in the digital payments sector. In FY21, UPI transactions, within five years of its launch, was already more than three times the amount of total credit and debit card transactions in India both by volume and value.⁴ Through NPCI International (a wholly owned subsidiary of NPCI), India has carved a place for itself in digital payments on the global stage. At present, foreign countries, such as Singapore and Bhutan, accept UPI at merchant locations (the latter has even deployed UPI for its QR-based payments). Plans are being made to take UPI and RuPay global to places such as Africa, the Americas, and Europe.

NPCI can keep up with the demands of a flourishing digital payments sector, managing about 68 percent of the digital transactions in India.⁵ However, having just a single umbrella entity runs the risk of system failures. It was witnessed when a leading fintech faced a service outage in March 2020 after the

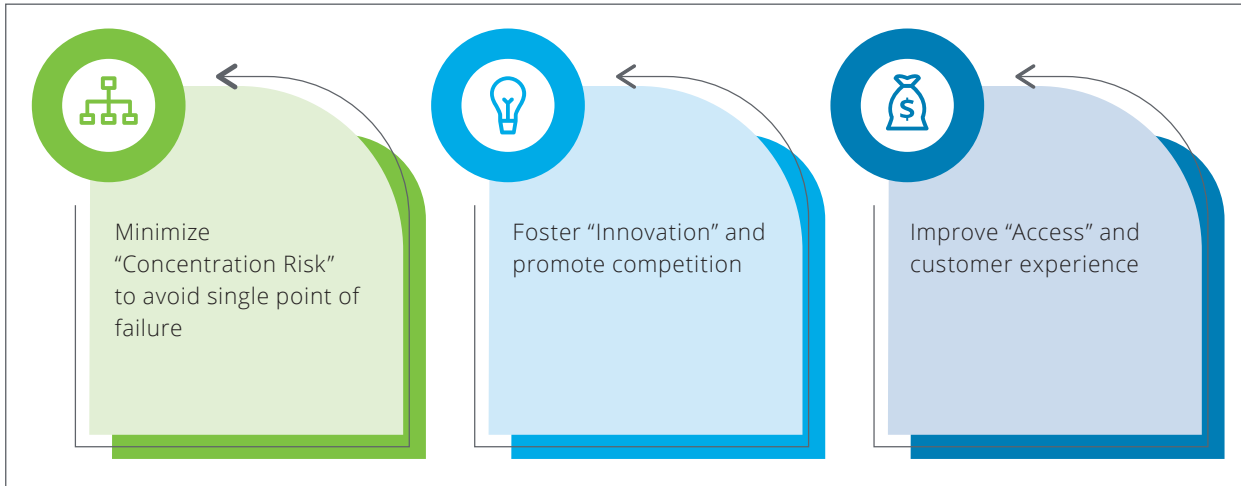
Reserve Bank of India (RBI) put its banking partner under moratorium, affecting millions of customers. With exceptional growth on the horizon, the overall payments landscape needs to be made more resilient and avoid any points of failure.

The RBI has issued a framework for the authorisation of pan-India New Umbrella Entity/Entities (NUE) and is currently evaluating the entities. These entities will set up, manage, and operate new payment systems, including (but not limited to) ATMs, white label PoS machines, UID-based payments, and remittance services. Unlike NPCI, which has been incorporated as a not-for-profit organisation, NUEs can be 'for-profit'. Establishing such entities can complement the NPCI and strengthen the payments landscape by mitigating the 'concentration risk'. It can also foster innovation, improve accessibility, and enhance customer experience through market competition.

⁴. RBI annual report for FY21 (<https://www.rbi.org.in/Scripts/AnnualReportPublications.aspx?Id=1322>).

⁵. Deloitte analysis based on data from RBI annual report for FY21 (<https://www.rbi.org.in/Scripts/AnnualReportPublications.aspx?Id=1322>) and NPCI retail payments statistics (<https://www.npci.org.in/statistics>).

Figure 1: NUE key objectives



What makes NUEs particularly attractive is the diversity of the players involved; the consortia that have bid for NUE licences include banks, fintechs, big tech, and large corporates. These establishments can use their heterogeneity and expertise in particular domains to create multi-dimensional, innovative, and resilient entities.

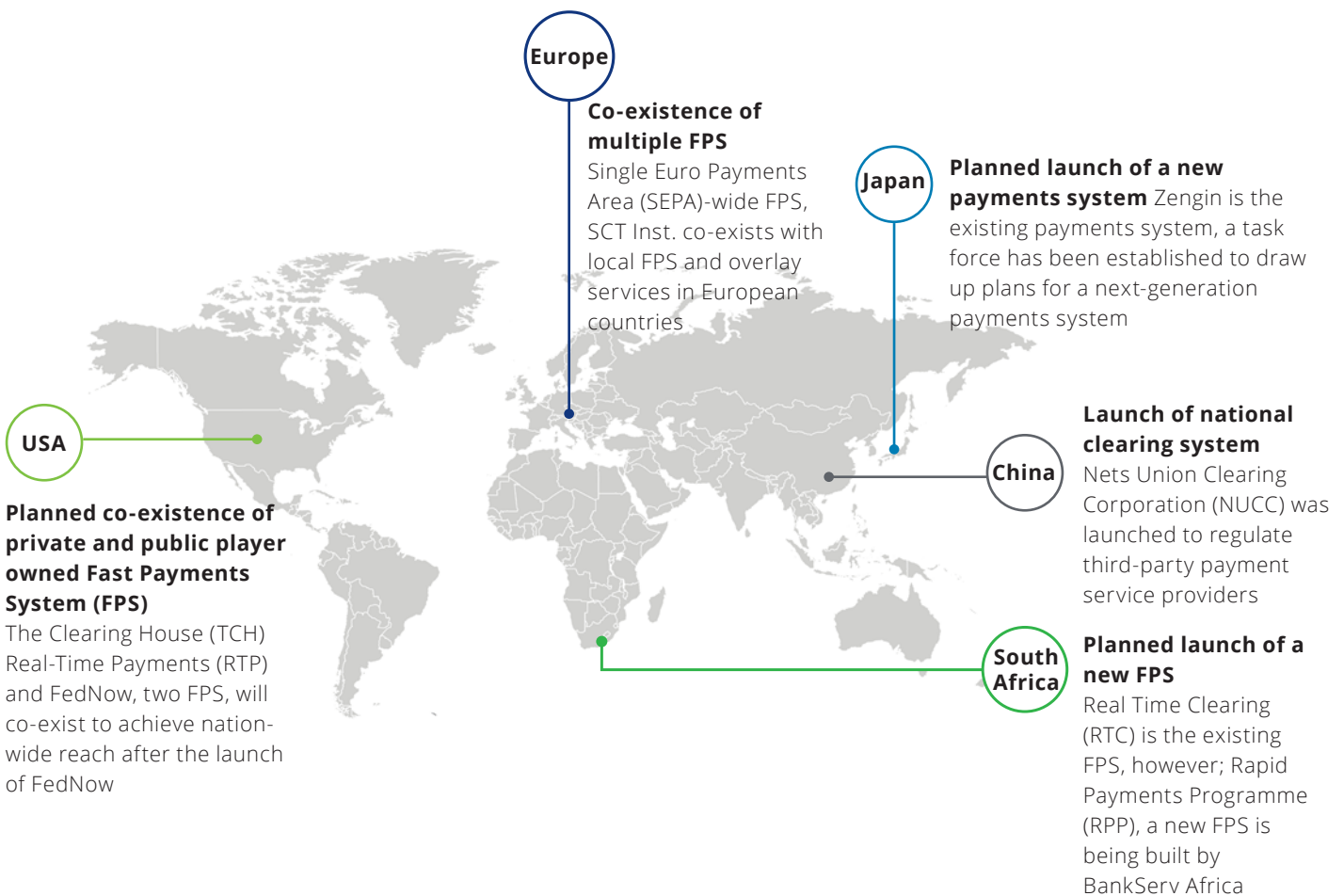


Global initiatives in payments infrastructure⁶

Globally, central banks have played a key role in developing a payments infrastructure for participants. However, we are seeing the creation

of new payments entities/systems and/or transformation of existing payments infrastructure, as outlined in Figure 2.

Figure 2: View of select unique global examples of multiple entities/payment systems



The drivers and motivation for setting up separate entities/payment systems include providing better coverage and inclusion and enhanced innovation; offering a broader set of use cases; avoiding monopoly; and fulfilling the need for more advanced systems. For instance:

1. **The USA** has always had two payment systems—one by the Federal Reserve (Fedwire, FedACH) and the other by The Clearing House (TCH), which is a private-sector organisation (CHIPS and EPN). In 2017, TCH launched its Real-Time Payments (RTP) network, which was the first new core payments infrastructure in the country in 40 years. In August 2019, the Fed announced that it will also build and operate an RTP system called FedNow. The system will focus on providing accessibility, safety, and efficiency. While there were no RTP-specific gaps that prompted the development of FedNow, the Federal Reserve Board determined that a single Fast Payment System (FPS)⁷ in the US could face challenges, especially in achieving nation-wide coverage.
2. Japanese banks' Payment Clearing Network (Zengin-Net), which serves as an administrator of the Zengin Data Telecommunication System (Zengin System), has started working on initiatives in pursuit of an ideal infrastructure for **Japan's** payment system, given the changing environment surrounding payments and settlement in Japan. This included establishing a task force for next-generation payment systems in FY 2020 and discussing the future model for this payment system (for example, participation of funds transfer service providers in the Zengin System, and development of frequent, small-amount payment services).
3. In **Europe**, some countries, such as Poland, had launched national fast payment solutions (while others planned to build their own) that were not interoperable with one another. This arrangement ran the risk of fragmentation of European payments. To avoid this, the Euro Retail Payments Board invited European Payments Council (EPC) to create a pan-European instant

payment scheme. The move led to the launch of the Single Euro Payments Area (SEPA) Instant Credit Transfer (SCT Inst) scheme in November 2017. At present, SCT Inst continues to co-exist with some local FPS, such as Express Elixir (Poland). Other overlay services (for example, in Italy and France) also use SCT Inst as the underlying rail to carry our real-time payments.

4. In **South Africa**, although Real Time Clearing (RTC), an FPS, is present in the market, BankServ Africa plans to launch a new mobile friendly FPS, Rapid Payments Programme (RPP) by Q2 2022. The programme aims to increase financial inclusion, create an integrated platform for payments, and enable the use of aliases (such as mobile numbers) and the ISO 20022 messaging standard.
5. The People's Bank of China (PBOC) launched Nets Union Clearing Corporation (NUCC) in 2018, to regulate the third-party payment service providers, including Alipay and Tencent, in **China**. NUCC acts as a clearing body between third-party PSPs and banks. Earlier, online payment via third-party PSPs were done directly between banks and these PSPs, bypassing the central bank's clearing system.

This phenomenon is largely propelled by the increasing popularity of digital payments across the world, as millions of formerly excluded and underserved customers move from cash-based instruments to transacting on their mobile phones and computers. For example, in Thailand, a co-ordinated push from both the government and the central bank have played an instrumental role in driving transaction volumes via PromptPay, Thailand's FPS; government departments process social welfare transfers and tax refunds through PromptPay. Since its inception in December 2016 until 2019, PromptPay transaction volumes have seen a CAGR of 440 percent, while transaction values grew at a CAGR of 535 percent. Similar growth has been witnessed with Australia's FPS, New Payments Platform (NPP), amongst other systems.

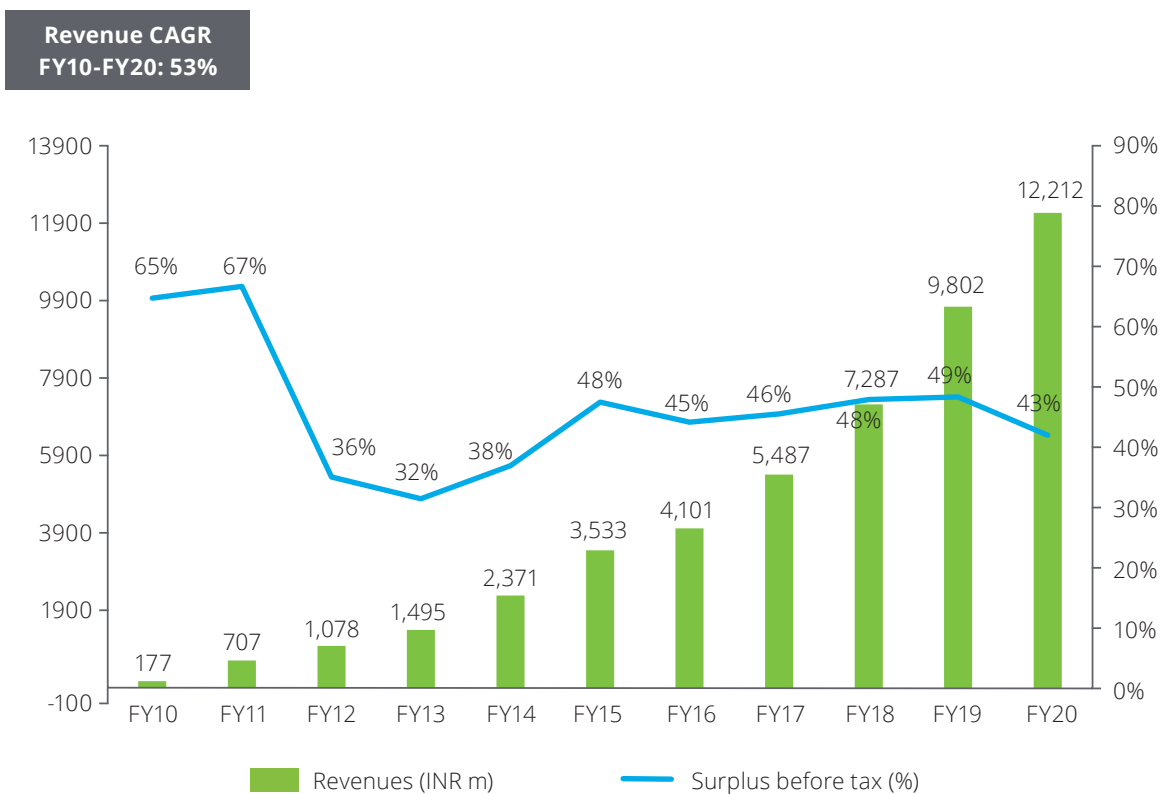
⁷ According to Committee on Payments and Market Infrastructures, Fast payments (also referred to as instant and real-time payments) are payments where the transmission of the payment message and the availability of final funds to the payee occur in real time or near-real time, and on as near to a 24-hour and 7-day (24/7) basis as possible.

Payments clearing and settlement is a 'profitable business'

In the past decade, NPCI has witnessed significant growth and profitability. The Compound Annual Growth Rate (CAGR) for its revenue from FY10 to FY20

stands at 53 percent.⁸ In the same period, the surplus (profit) before tax has been an average of 40- 50 percent of its total revenue (visualised in Figure 3):

Figure 3: NPCI revenue and surplus before tax (as a percentage of revenue)⁹



⁸ Calculated based on NPCI annual reports from FY10 to FY20 (<https://www.npci.org.in/who-we-are/corporate-governance/financials>).

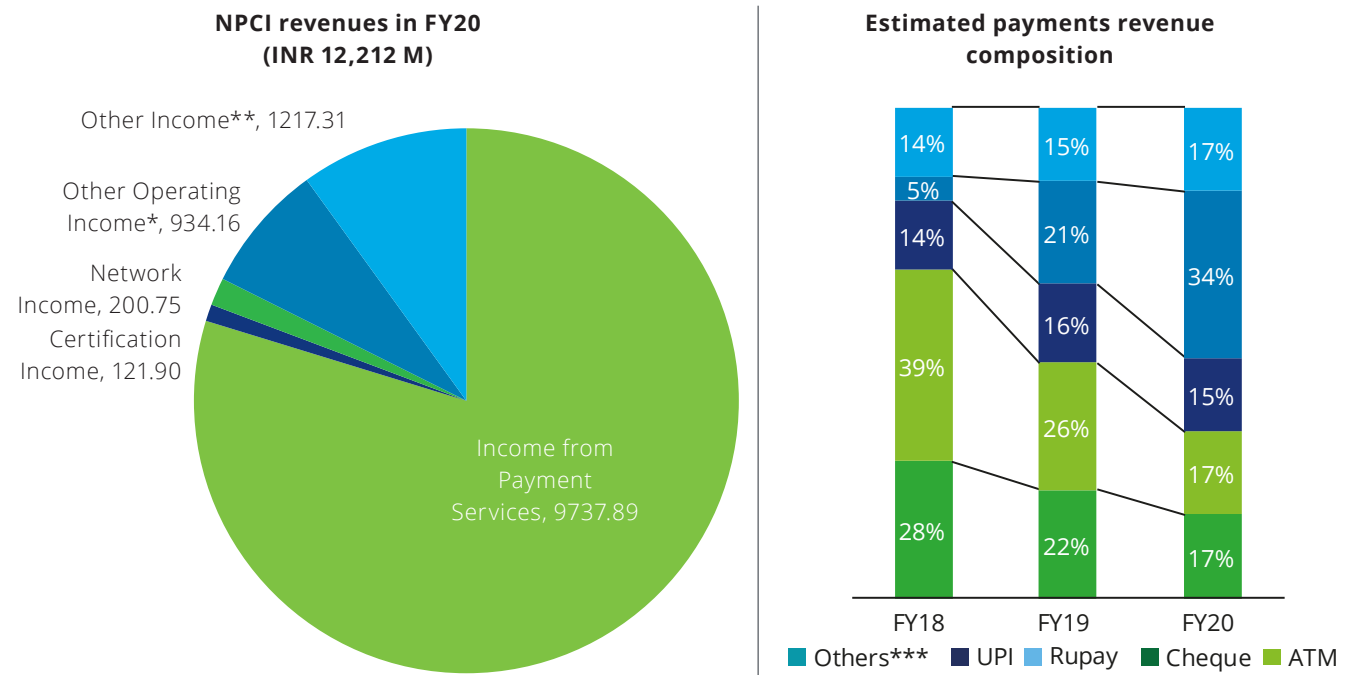
⁹ Based on NPCI annual reports from FY10 to FY20 (<https://www.npci.org.in/who-we-are/corporate-governance/financials>).

Though the NPCI has multiple revenue streams, ~80 percent of its income is generated from payment services (see Figure 4).¹⁰ According to a Deloitte analysis, of the payment services on offer, UPI has seen significant growth, making up to 34 percent of NPCI's revenue from payment services in FY20 (versus 5 percent in FY18). RuPay's contribution to the revenue from payment services has been stable at ~15 percent, while income generated from cheques and ATMs has fallen in the same assessment period. Share of income from other sources, such as NACH, IMPS, BBPS, AePS, and

NETC, has grown steadily by 100 to 200 basis points year-on-year (see Figure 5).¹¹

NPCI's performance shows that the payments clearance and settlements business is rife with opportunity for new entrants. The breakdown of its revenue from payments solutions serves as evidence that newer offerings, such as UPI, are driving growth. Time-honoured sources of revenue, such as cheques and ATMs, are increasingly making up a smaller share of income generated. Hence, in the long-term, NUEs will have to innovate and introduce new products to the market to drive revenue growth.

Figures 4 and 5: NPCI revenue in FY20¹² and composition of NPCI'S revenue from payments¹³



*Comprises compliance fees, membership fees, hologram charges, etc.

** Primarily comprises interest income

*** Others include NACH, IMPS, AEPS, and BBPS

Note: NPCI does not give a break down of income from payment services. This has been estimated based on standard switching rates and reported transaction volumes.

¹⁰ NPCI annual reports from FY18 to FY20 (<https://www.npci.org.in/who-we-are/corporate-governance/financials>).

¹¹ NPCI annual reports from FY18 to FY20 (<https://www.npci.org.in/who-we-are/corporate-governance/financials>), retail payments stats on NPCI platforms (<https://www.npci.org.in/statistics>), and Deloitte Analysis based on transaction volumes for each product and relevant switching fees.

¹² NPCI annual report for FY20.

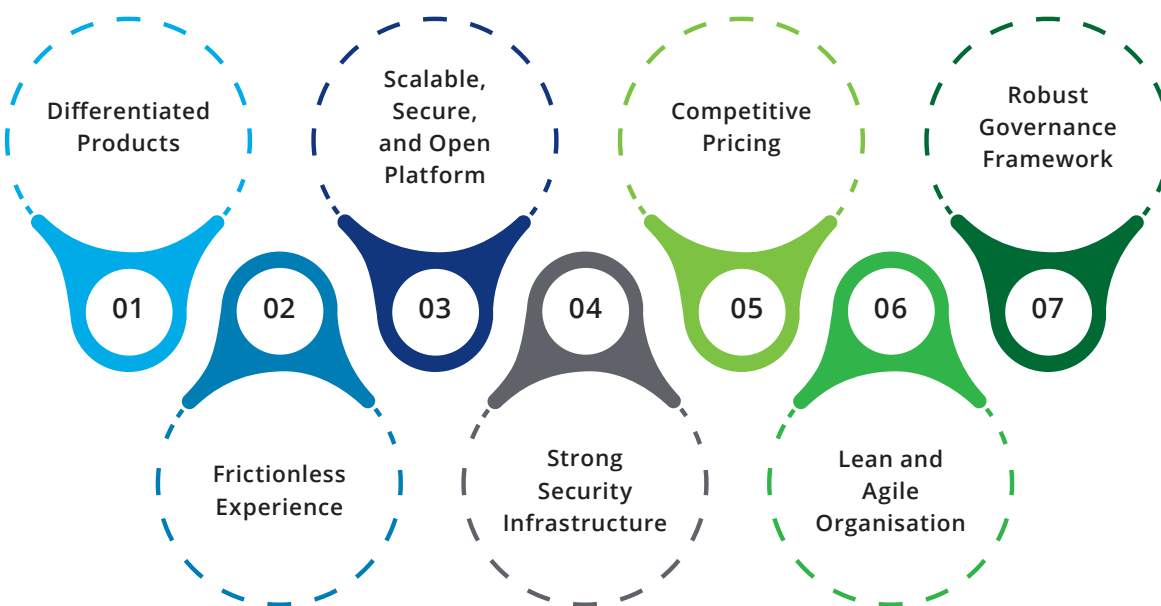
¹³ NPCI annual reports from FY18 to FY20 (<https://www.npci.org.in/who-we-are/corporate-governance/financials>), retail payments stats on NPCI platforms (<https://www.npci.org.in/statistics>), and Deloitte Analysis based on transaction volumes for each product and relevant switching fees.

Critical success factors for NUEs

While competition will be high, the payments landscape in India is brimming with opportunity. Only one-third (~33 percent) of the Indian households opt for digital payments despite 68 percent of them owning smartphones.¹⁴ To appeal to the section of the population that has yet to adopt digital means of payment, NUEs should ensure that their products and services will be widely accessible, with easy on-boarding and a

simple user experience. Payment platforms require heavy investments in technology to build robust and scalable systems. NUEs should be prepared for large-scale expenditure in this regard. Other elements to keep in mind are setting competitive prices for products and services, maintaining a lean and agile organisation, and developing a strong governance framework. Overall, NUEs should consider seven key success factors:

Figure 6: 7 critical success factors for NUEs



1. Differentiated products

To persuade more Indians to opt for cashless payments, as mentioned earlier, NUEs should focus on expanding the digital payment pie by offering new and differentiated products, and building on existing products in terms of features, accessibility, and customer experience. Exploring white spaces in areas such as cross-border, micro, and auto/recurring payments, presents ample possibilities. In the Indian payments landscape, some opportunities for NUEs, both from domestic

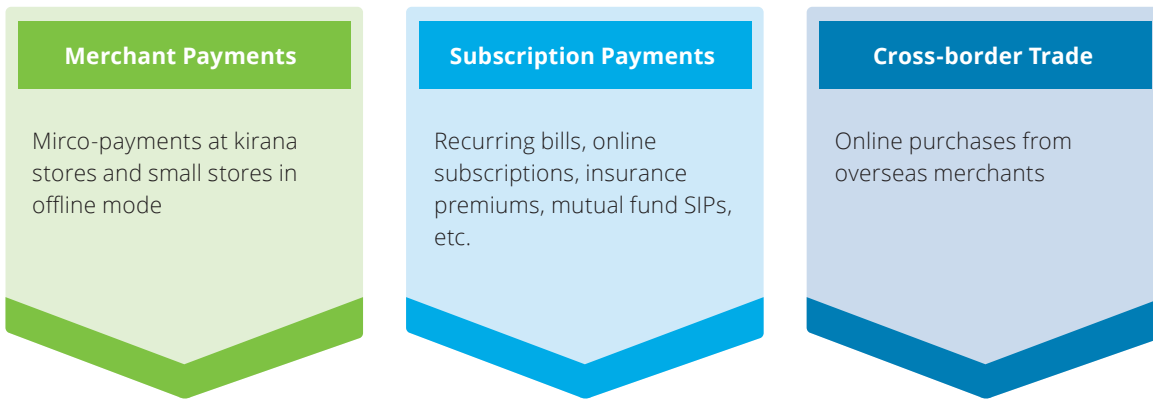
and cross-border perspectives, include a multitude of use cases:

- **Consumer-to-Business (C2B)**

The Indian retail landscape, which is expected to grow from US\$ 700 billion in 2019 to US\$ 1.1-1.3 trillion by 2025, remains largely unorganised. The landscape comprises a network of ~13 million neighbourhood *kirana* stores. At ~63.1 million, micro enterprises across rural and urban areas account for nearly 99 percent of

¹⁴ <https://www.npci.org.in/PDF/npci/press-releases/2021/NPCI-Press-Release-Digital-Payments-well-entrenched-in-Indian-household.pdf>

Figure 7: Use cases in C2B payments



Micro, Small, and Medium Enterprises (MSMEs) in India. About 69 percent of these MSMEs are engaged in trade and other services.¹⁵ Though COVID-19 has impelled a significant proportion of small retailers and MSMEs to adopt digital payment methods, most still rely on cash to conduct day-to-day business. While UPI and other QR code-based payment solutions have made strides towards digitising payments in these segments, a lot of ground needs to be covered. Current digital solutions in the C2B segment rely on smartphone usage and network connectivity, both of which cannot be presupposed in rural areas. Hence, NUEs can innovate by bringing digital micro-payment solutions that can work 'offline', i.e., without smartphones and internet connection.

The current process to initiate auto-payments requires customers to set-up 'bill pay' or e-mandates in their bank accounts and/or UPI application. This process can be cumbersome and complex. Further, the confirmation from the biller is not always instant. If a consumer wants to enable auto-payments through a digital wallet, the payment must be linked to a

debit/credit card, leaving 190 million unbanked Indians out of the ecosystem for recurring payments.¹⁶ All these limitations in existing products present opportunities for NUEs to build on.

In today's increasingly global world, opportunities in cross-border trade are increasing, and newer, more efficient products and services for cross-border payments have become the need of the hour. When shopping from overseas sellers, customers are often subject to high foreign transaction fees on debit/credit cards and bank transfers. Introducing products that can eliminate or reduce such arbitrary fees can become a major revenue driver for NUEs.

- **Peer-to-Peer (P2P)**

Cross-border P2P payments offer ample opportunities. Existing services, such as wire transfers, take a minimum of 1-2 days to process and often have high fees. NUEs can build products and services that can reduce the processing time, making near-instant cross-border P2P transfers a reality. They can also

¹⁵. Ministry of MSMEs Annual Report for FY21: <https://msme.gov.in/sites/default/files/MSME-ANNUAL-REPORT-ENGLISH%202020-21.pdf>

¹⁶. https://globalindex.worldbank.org/sites/globalindex/files/chapters/2017%20Index%20full%20report_chapter2.pdf

lower the fees associated with these types of transactions. This can be an especially lucrative segment for NUEs as India is the top receiver of remittances globally, with an inflow of US\$ 83 billion in 2020.¹⁷

- **Business-to-Consumer (B2C)**

As the freelance services industry continues to grow in India, compensation pay-outs to service providers, such as gig economy workers, present some possibilities. NUEs can innovate to bring-in products that can make instant and automated compensation payments (based on daily/weekly/monthly performance metrics) and manage micro-payments.

Marketplace disbursements have white spaces. These include the disbursement of micro-payments and refunds/claims money that can be instantaneously credited back to customers (at the moment, merchants rely on in-house vouchers for instant credits; refunds to cards/banks accounts can take as long as a week to reflect).

In August 2021, NPCI launched e-Rupi, a QR-code or SMS string-based e-Voucher delivered to beneficiaries' mobile phones as a one-time payment. The payment is redeemable without a

card, digital payments app, or internet banking access, at a specified service provider(s). Though the main motive to launch this new service is to ensure leak-proof delivery of government welfare schemes and benefits, the private sector can avail this facility for employee welfare and corporate social responsibility programmes. This product is revolutionary; it enables people to partake in contactless mobile payments without needing access to the internet. NUEs can look to launch similar products and services that can function 'offline'. They can enhance their offerings by giving consumers more power by allowing for partial redemptions. They can also work towards increasing use cases for this type of product.

- **Business-to-Business (B2B)**

Though Small and Medium-size Enterprises (SMEs) had been gaining technological sophistication for a few years, COVID-19 has accelerated their adoption of technology, specifically their use of digital payment methods. Traditionally, SMEs preferred to pay their vendors, employees, etc., with cash. However, in the new normal with lockdowns and social-distancing rules, making cash payments on time is becoming difficult. NUEs stand to benefit from this paradigm shift in how SMEs

Figure 8: Use cases in B2C payments



¹⁷ <https://data.worldbank.org/indicator/BX.TRF.PWKR.CD.DT?locations=IN>

will manage B2B payments in the future. Many of them recognise the ease of transacting digitally and are unlikely to go back to cash as their preferred mode of settlements.

Some new payment use cases may require time for adoption. Hence, supporting products and services that are already in the market can help NUEs gain some ground in the initial period, supported by regulatory intervention. For example, RBI may potentially consider handing over the operations and management of the National Electronics Fund Transfer (NEFT) system to NUEs, in line with how NPCI was entrusted with NFS (ATM switch). This could help bring early business volumes and revenues. In addition, the RBI could issue a regulatory mandate to financial institutions to connect with NUEs, helping drive participation and adoption rates for the new system.

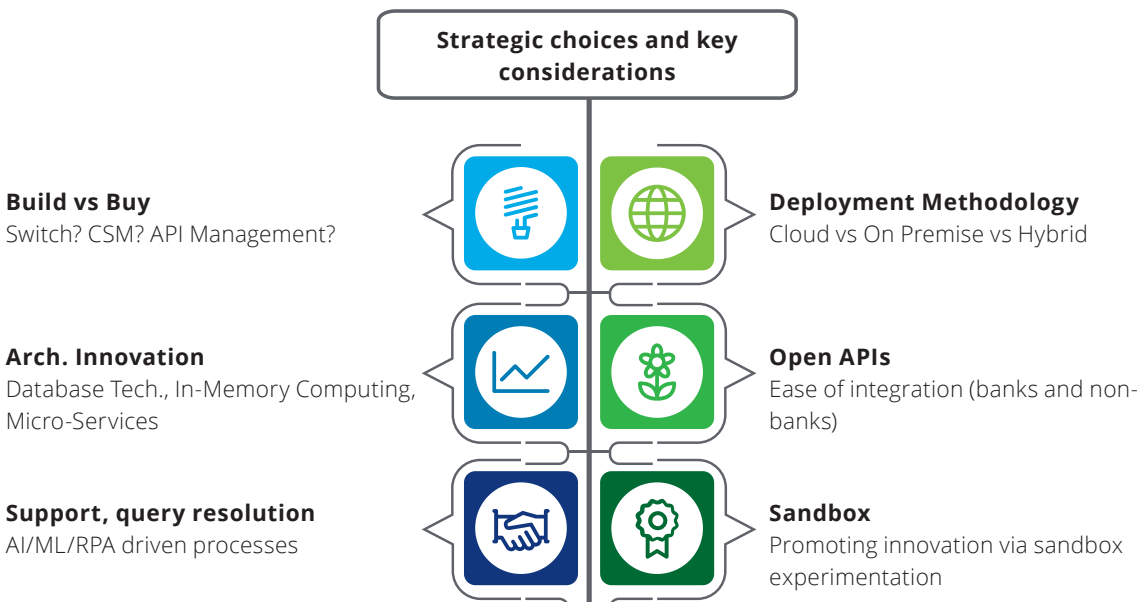
2. Frictionless experience

NUEs should lay emphasis on building platforms that are easy to operate, giving customers and participants a frictionless user experience. This will help NUEs distinguish themselves from other products and services in the market and make a good first impression. The move is vital to shaping brand loyalty amongst patrons. Ensuring ease of operation will make NUEs reach a wider audience as the easier a platform is to use, more customers it will reach. It can also drive positive feedback, which can aid in gaining more users.

3. Scalable, secure, and open platform

NUEs can be a systemically important financial market infrastructure, and require a robust and resilient technical architecture to manage large transaction volumes. Therefore, determining a strong deployment methodology (cloud versus on-premise versus hybrid) is important. Additionally, a number of critical decisions would need to be taken to define the technology architecture for NUEs, with an optimum balance amongst using new technologies (such as application programming interfaces, robotic process automation/artificial intelligence, and machine learning) to ensure competitiveness and capital expenditure requirements. Being 'open' from a technology standpoint would mean having a technology stack that can seamlessly integrate with other financial market infrastructure and partners, such as banks and non-banks (permissible entities). NUEs can also deploy the latest advanced tools and database technologies, such as AI and ML for fraud monitoring and prevention of Anti-Money Laundering/Combating the Financing of Terrorism (AML/CFT) violations. Use of such advanced technologies might lead to better fraud detection and a decline in the false positive rate of alerts. These technologies also have the ability to detect incidents previously missed by legacy rules-based systems.

Figure 9: Strategic choices for building a scalable, secure, and open platform



4. Strong security infrastructure

To protect from the ever-increasing risks of data theft and sabotage, NUEs must ensure that strong cyber security measures are in place for a robust IT infrastructure. They should adopt certain best practices for data management, including encrypting data and data back ups, to ensure the safety of sensitive information. They should build a system to delete redundant data to prevent any inadvertent data leaks and minimise the risk of data theft. NUEs should conduct periodic IT 'security audits' that include measures such as system checks through ethical hacking challenges, etc. They must also update and monitor their systems regularly and on time, and strive to foster a company-wide security mindset.

5. Competitive pricing

NUEs are expected to depend on revenues from existing products, such as UID-based payments and ATMs, in the initial period. Hence, they should price their products and services competitively to gain customers. They will have to balance this with a large capital expenditure required to enter this space. NUEs can look at offering a lower interchange fee and considering implementing a tiered switching fee, which is based on the number of non-straight-through processing transactions processed.

6. Lean and agile organisation

For any system to be resilient, it must be organised around lean and agile principles. NUEs

should use automation and intelligence operation wherever possible, especially for routine tasks, such as day-to-day clearance, settlement, and reconciliation. They can implement agile processes from the outset with a simple and quick roll-out that offers self on-boarding for participants, automated customer support, and faster certifications.

7. Robust governance framework

NUEs will have to balance both partner and participant interests while also managing their relationship with NPCI and RBI. As previously noted, the bidding consortia for NUE licences are quite diverse in their make-up and include partners from different business backgrounds. While diversity is conducive to innovation and growth, it can lead to disagreements amongst partners; they might have differing goals. NUEs need to be adept at managing such conflicts of interest. They will also have to establish a comprehensive framework for ownership of Intellectual Property (IP) and assets, especially those that are created and adopted after the NUE is set up. NUEs must uphold the spirit of fair competition — no partner-participant in an NUE should be given any preferential treatment over other, non-partner members. They must also ensure inter-operability with NPCI and other NUEs.



Conclusion

This RBI-led initiative, which is currently under evaluation, if implemented, can catalyse a wave of disruption by possibly sharing in NPCI's existing pie to start with. However, in the long term, the disruption brings more Indians into the digital realm through innovative products. Given the large technological and financial investments that may be involved in setting up NUEs, these products must target some existing white spaces in the Indian

payments ecosystem. These spaces include bill and cross-border payments. Early support from the regulator and intervention measures to bring initial business revenue and transactions can also act as drivers for NUEs' success in its nascent stages. Overall, NUEs have the potential to serve as the harbinger of further innovation to India's already advanced payments ecosystem, easing the existing burden on the NPCI as the sole innovator.



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