

VII. UNIFIED PAYMENT INTERFACE: AN INDIAN SUCCESS STORY OF REVOLUTIONIZING THE PAYMENT INDUSTRY

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ABSTRACT

Governments across the globe are gearing towards real-time technology to boost economic growth and prosperity by providing consumers and businesses with cheaper and more effective payment options. The development of financial technology, the blistering rate of internet data penetration and cell phones have directly impacted the revolutionary shifts in international payments and transactions. Under the aegis of the National Payment Corporation of India, the Unified Payment Interface was launched as one of the most successful models of real-time payment systems globally. While attributing its success to the collaborative efforts of the Government, central, public-sector banks, private institutions and consumers, India is the undisputed leader in real-time payments. With its latest entry into cross-border remittances, India has progressed from domestic success to a global sensation. This paper intends to comprehensively analyze the progressive acceptance and proliferation of UPI, a form of real-time payment across India against their global counterparts. It shall also discuss the viability of a fee-per-transaction clause on UPI transactions to revitalize the assets of stressed banks and financial institutions, in light of the latest NPCI press release and the future of this ubiquitous model in India.

I. Introduction	136	B. Consumer Adoption of RTP Across the Globe	148
II. Part A... ..	138	IV. Part C... ..	150
A. Evolution and Scope of Development of UPI in India.....	138	A. Viability of fee-per transaction in India: An analysis of the recent NPCI notification	150
B. How UPI Works	140	V. Part D.....	154
C. The Regulatory Framework Governing UPI Transactions.....	143	A. Conclusions and Suggestions	154
III. Part B... ..	146		
A. UPI as a Successful RTP Model vis-à-vis Global Competitors	146		

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I. INTRODUCTION

Unified Payment Interface (hereinafter referred to as "**UPI**") is a mobile-centric, real-time interbank payment system¹ which permits peer-to-peer ("**P2P**") and peer-to-merchant ("**P2M**") transactions.² Launched in 2016, UPI is a banking technology infrastructure in which all banks, financial institutions and users transact money using phone numbers, QR codes, account numbers, IFSC codes, Aadhar numbers, unique Virtual Payment Addresses ("**VPA**"), or UPI IDs.³

The Remitter Bank, Remitter PSP, Beneficiary Bank, and Beneficiary PSP are the four participants in the UPI system. While the remitter and beneficiary PSP are the front end (which, in this instance, is a mobile application)⁴ used by the remitter or beneficiary to send or receive the funds, the remitter and beneficiary banks are the accounts where the actual movement of funds occurs. Although money transfers only occur between banks in the UPI ecosystem, a bank or a non-bank can provide the front end or platform.

¹ Rahul Gochhwal, 'Unified Payment Interface—An Advancement in Payment Systems' [2017] American Journal of Industrial and Business Management, 7, 1174-1191 < https://www.scirp.org/pdf/AJIBM_2017102515484308.pdf > accessed 19 March 2023.

² 'UPI payments now available in UAE as NPCI's global arm partners Mashreq Bank' (Livemint , 20 August 2021) < <https://www.livemint.com/news/india/upi-payments-now-available-in-uae-as-npci-s-global-arm-partners-mashreq-bank-11629455637164.html> > accessed 25 March 2023.

³ 'The Phenomenal Success of India's Mobile Payments System' Penser (UK), < <https://www.penser.co.uk/article/the-phenomenal-success-of-indias-mobile-payments-system/#:~:text=within%20a%20single%20interface%2C%20to,success%20in%20India%20was%20interoperability.> > accessed 27 March 2023.

⁴ Johannes Ehrentraud, Jermy Prenio, Codruta Boar, et al, 'Fintech and payments: regulating digital payment services and e-money' (BIS FSI Insights on policy implementation No 33, 2021) < <https://www.bis.org/fsi/publ/insights33.pdf> > accessed 23 March 2023.

The other stakeholders of this model of immediate credit with real-time confirmation are the NPCI, merchants and consumers.⁵

Recently, UPI was in the spotlight when it made a grand entry into alternative payment methods ("APM") with cross-border remittance with the linkage of Singapore's PayNow and UPI.⁶ This is Singapore's second and India's first cross-border real-time system linkage. This first-of-its-kind arrangement uses cloud technology and has seen the participation of non-banking financial institutions⁷ for enabling cost-efficient cross-border transactions.⁸

Part A of the paper shall discuss the evolution and scope of development, modus operandi and the regulatory framework governing UPI transactions in India. Following this, Part B will focus on the reasons for the progressive acceptance and proliferation of UPI, a form of real-time payment ("RTP") against their global counterparts and the global consumer adoption of RTPs. Part C shall analyse the viability of fee-per-transaction in India in light of the recent NPCI notification and its impact on UPI's ubiquitous model on the Indian turf. The last limb of this paper will deal with a summary,

⁵ 'How UPI is Driving India's Shift from Cash to Digital Payments', *ACI Blog* < <https://www.aciworldwide.com/blog/how-upi-is-driving-india-shift-from-cash-to-digital-payments> > accessed 31 March 2023.

⁶ 'India's UPI goes global, links with Singapore's PayNow for seamless cross-border transactions' (*Business Insider*, 21 February 2023) < <https://www.businessinsider.in/india/news/indias-upi-goes-global-links-with-singapores-paynow-for-seamless-cross-border-transactions/articleshow/98114766.cms> > accessed 31 March 2023.

⁷ Mayank Goyal, 'Linkage of UPI with overseas countries and its impact on cross border neo banks' (*BFSI*, 31 March 2023) < <https://bfsi.economictimes.indiatimes.com/blog/linkage-of-upi-with-overseas-countries-and-its-impact-on-cross-border-neo-banks/93212117> > accessed 31 March 2023.

⁸ 'SBI Joins India's First Cross-Border Real-Time UPI-PayNow Payments System With Singapore' (*Outlook India*, 22 February 2023) < <https://www.outlookindia.com/business/sbi-joins-india-s-first-cross-border-real-time-upi-paynow-payments-system-with-singapore--news-264243> > accessed 21 March 2023.

conclusions and suggestions for improving fintech and consumer acceptance of RTPs.

II. PART A

A. Evolution and Scope of Development of UPI in India

The Indian banking industry has experienced tremendous growth and has been experimenting with and attempting to adapt and integrate electronic payments to improve the banking system. It has experienced development unlike anything else since the introduction of e-payments. One of the most successful models of e-payment in India is UPI, a brainchild of the National Payments Corporation of India ("NPCI"), which was formed in 2009 as an initiative of the Reserve Bank of India ("RBI") and the Indian Banks Association ("IBA"). The NPCI pioneered UPI as a public-private partnership ("PPP") with an interoperable platform. With little to no transaction fees, the platform has been used by the fintech industry, banks, and telecoms, which have used it to deploy QR codes at point-of-sale merchant locations (POS).⁹

The RBI, in its report, recognized that non-cash transactions in India were critically low, although retailer merchants accepted card-based payments. In light of this, it published its vision statement in 2012 to uphold its renewed commitment to provide "safe, efficient, accessible, inclusive, interoperable and authorised payment and settlement systems for the country."¹⁰ This regulatory policy aimed at greening financial institutions by fostering a cashless and paperless society. It also emphasised the usage of

⁹ Ministry of Information & Broadcasting, 'From Local to Global: How India's Digital Payment Revolution is Inspiring the World' (Press Information Bureau, 19 March 2023) < <https://pib.gov.in/FeaturesDeatils.aspx?NoteId=151350&ModuleId%20=%202> > accessed 29 March 2023

¹⁰ Reserve Bank of India (2012) Payment Systems In India Vision 2012-15. Department of Payment and Settlement Systems, Reserve Bank of India.

electronic payment products and services accessible anywhere and anytime by anyone at affordable prices.¹¹

The structure of the Indian economy is changing, and the use of real-time payment technologies has reduced the amount of cash in circulation ("**CIC**"). For the first time in 20 years, the State Bank of India (SBI) noted that the CIC declined by ₹7,600 crores during Diwali week,¹² from 88% in FY16 to 20% in FY22, and is further expected to reduce to just 11.15% in FY27!¹³ The report also stated that a lower level of currency in circulation is comparable to a reduction in the cash reserve ratio ("**CRR**") for the banking system because it causes less deposit leakage and benefits monetary transmission.¹⁴ A high CIC increases risks, including its storage and lack of trial transactions leading to tax evasion.¹⁵ By gaining quick access to tax records or transaction data on e-commerce marketplaces, digital infrastructure enables individuals and small enterprises to access and use their data.

¹¹ Ibid

¹² Livemint, 'A 20-year first: Why currency circulation in India dipped in Diwali week' (India, 03 November 2022) < <https://www.livemint.com/economy/a-20-year-first-why-currency-circulation-in-india-dipped-in-diwali-week-11667479479273.html> > accessed 19 March 2023.

¹³ Smriti Jain, 'Power of digital transactions! Currency in circulation declines in Diwali week for 1st time in 20 years' (*Times of India* 3 November 2022) < <https://timesofindia.indiatimes.com/business/india-business/power-of-digital-transactions-currency-in-circulation-declines-in-diwali-week-for-1st-time-in-20-years/articleshow/95276968.cms> > accessed 19 March 2023.

¹⁴ SBI, 'THE POWER OF DIGITAL TRANSACTIONS: CURRENCY IN CIRCULATION DECLINES IN A BUSY DIWALI WEEK FOR THE FIRST TIME IN 20 YEARS (IN 2009, A MARGINAL DECLINE OF RS 9.5 BN BUT REFLECTING THE CRISIS!)' (India, 03 November 2022) < https://sbi.co.in/documents/13958/25272736/031122-Ecowrap_20221103.pdf/cd4b1203-b560-54b5-0b24-600015b2a81c?t=1667455438553 > accessed 19 March 2023.

¹⁵ Rahul Gochhwal, (n 1).

B. How UPI Works

A UPI transaction involves a two to four-party model consisting of two PSPs.¹⁶ For UPI to function, a VPA connected to the customer's bank account is created. Following that, customers can utilize this VPA to send and receive money from other users.¹⁷ The inter-bank transfer occurs over mobile devices: smartphones and otherwise, registered with the bank to transfer money between bank accounts instantly. Upon successful registration with UPI, an identity is generated, and this is used to transfer money. The RBI regulates UPI, which runs as an open-source application programming interface ("**API**") on top of the Immediate Payment Service ("**IMPS**") and Aadhar Enabled Payment System ("**AEPS**").¹⁸ The UPI then integrates various bank accounts, smooth fund routing and merchant payments into a single mobile application.

The API on which UPI works is simple and requires a one-click two-factor authentication to ensure safe and secure payments using mobile phone devices.¹⁹ According to the "India Digital Payments Report", the fintech firm Worldline India noted that UPI transactions accounted for over Rs. 32.5 trillion

¹⁶ Shehnaz Ahmed and Aryan Babele, 'Modernising the Law for Payment Services in India | Preparing for the Future of Retail Payments' (Vidhi Centre for Legal Policy Blog, 4 Oct 2021) < <https://vidhilegalpolicy.in/research/modernising-the-law-for-payment-services-in-india-preparing-for-the-future-of-retail-payments/> > accessed 01 April 2023.

¹⁷ Dr.A, Shaji George et.al., 'Payments Interface (UPI): Benefits, Challenges, and Opportunities' (2023) 2(1) PUIRJ < <https://zenodo.org/record/7723154#.ZB7rmnZBzEY> > accessed 25 March 2023

¹⁸ S. Varahasimhan, 'UPI: the dawn of digital fintech nirvana' (The Hindu, 04 July 2022) < <https://www.thehindu.com/business/upi-the-dawn-of-digital-fintech-nirvana/article65599052.ece> > accessed 25 March 2023

¹⁹ Neelanjit Das, 'UPI Provides A Seamless And Convenient Payment Option; But How Secure Is It?' (Outlook India, 23 April 2022) < <https://www.outlookindia.com/business/upi-google-pay-phonepe-bhim-mobikwik-hdfc-provides-a-seamless-and-convenient-payment-option-but-how-secure-is-it--news-192752> > accessed 31 March 2023

out of the total volume of Rs. 38.32 trillion transaction digital payment transactions in the third quarter of 2022.²⁰

Digital payments in India are facilitated by the India Stack, a storehouse of software and tools like API connecting databases and software.²¹ These stacks integrate Aadhaar's identity and authentication capabilities with NPCI's projects for digital payments via APIs.

India Stack is the first national digital infrastructure in the world. It is a unified platform and a technical foundation comprising a collection of APIs, serving as a technological bridge between two software applications. Financial services are at the vanguard of this innovation and transformation, which has seen an exponential rise in India's embrace of digital services. Governments, corporations, start-ups, and developers can use this unique digital infrastructure to catalyze the development of the digital ecosystem.²²

While Real Time Gross Settlement ("**RTGS**") and National Electronic Funds Transfer ("**NEFT**") also facilitate merchants' payments, including P2M transactions and Fund Transfer Payment Systems, they are not as popular as UPI. This is because RTGS is predominantly used for Business-to-business payments ("**B2B Payments**") for large value transactions, and NEFT does not facilitate immediate credit with real-time confirmation.²³ While RTGS and

²⁰ Press Trust of India, 'Digital Payments Worth Rs 38.32 Trillion Carried Out In Jul-Sep 2022 Period: Worldline' (*Outlook India*, 06 December 2022) < <https://www.outlookindia.com/business/digital-payments-worth-rs-38-32-trillion-carried-out-in-jul-sep-2022-period-worldline-news-242687> > accessed 25 March 2023.

²¹ 'What is the India Stack? Nandan Nilekani explains' (*DigFin*, 28 July 2023) < <https://www.digfingroup.com/what-is-india-stack/> > accessed 19 March 2023.

²² Neelanjit Ghosh (n 20).

²³ Discussion Paper on Charges in Payment Systems, RBI (3 October 2022) < <https://rbidocs.rbi.org.in/rdocs/Publications/PDFs/DPSSDISCUSSIONPAPER5E016622B2D3444A9F294D07234059AA.PDF> > accessed 30 March 2023.

NEFT are owned and operated by RBI, UPI is owned and operated by NPCI, a non-profit entity.

The UPI platform stands out in real-time payments due to its interoperability and simple design. The consumer's bank account is portable due to UPI, and they can connect them all to a single app if they have multiple bank accounts.²⁴ To empower every Indian with access to a variety of safe and secure economic e-payment choices, the NPCI and RBI played a role in the establishment of a regulatory sandbox, the opening of Centralized Payment Systems ("**CPS**") to non-bank PSOs, authorising 'on tap' payment system and empowering feature phone-based payment service system.

Contrary to popular opinion, owning a smartphone or having internet access is not the *sine qua non* for carrying out UPI transactions in India.²⁵ The NPCI integrated the National Unified Unstructured Supplementary Service Data Program ("**NUUP**") to enable persons with feature phones to make digital payments with a relatively simple enrolment procedure. This initiative called the UPI123Pay, has an app-based functionality with an Interactive Voice Response ("**IVR**") to activate this facility on feature phones.²⁶ The UPI123Pay feature facilitates customer onboarding and retention, thus making

²⁴ 'How UPI is Driving India's Shift from Cash to Digital Payments', *ACI Blog* < <https://www.aciworldwide.com/blog/how-upi-is-driving-india-shift-from-cash-to-digital-payments> > accessed 31 March 2023.

²⁵ 'UPI money transfer without Internet or smartphone; know how to do it' (*Business Today*, 06 January 2022) < <https://www.businesstoday.in/industry/banks/story/upi-money-transfer-without-internet-or-smartphone-know-how-to-do-it-318068-2022-01-06?onetap=true> > accessed 20 March 2023.

²⁶ Reserve Bank of India launches (a) UPI for Feature Phones (UPI123pay) and (b) 24x7 Helpline for Digital Payments (DigiSaathi), Press Release: 2021-2022/1830 (India, 08 March 2022) < https://www.rbi.org.in/Scripts/BS_PressReleaseDisplay.aspx?prid=53385 > accessed 20 March 2023.

UPI a customer-centric model. This model is all the more beneficial in the Indian context, where over 95 million feature phones are still in use.²⁷

C. The Regulatory Framework Governing UPI Transactions

Payment and Settlement systems are a group of financial institutions that serve as an institutional backbone and facilitate the transfer of money and other assets between central banks, financial intermediaries, firms and consumers.²⁸ It includes the process, procedures and interbank funds transfer system which operates the payment service operator (“PSO”). Payment methods are typically categorized as retail or wholesale. UPI is a type of retail payment system that deals with a lot of low-value transactions for consumers' and businesses' purchases of products and services.²⁹

The establishment of national payment systems is often spearheaded by the central bank of each nation. The Payment and Settlement Systems Act, 2007 (“PSS Act”) and the Payment and Settlement Systems Regulations, 2008 (“PSS Regulations”), which came into effect on August 12, 2008, govern the payment and settlement systems in India. § 4 of the PSS Act states that a payment system cannot be started or run in India without RBI authorization.

The PSS Act gives the RBI the essential authority to regulate payment systems without considering policy objectives. It does so largely from a systemic perspective. The RBI offers guidelines, instructions, and notices to

²⁷ Shanglio Sun, ‘Share of mobile operating systems in India 2012-2022’ (Statista, 08 Mar 2023) < <https://www.statista.com/statistics/262157/market-share-held-by-mobile-operating-systems-in-india/> > accessed 17 April 2023.

²⁸ John Armour and others, ‘Payment and Settlement Systems’ *Principles of Financial Regulation* (Oxford, 2016; online edn, Oxford Academic, 20 Oct. 2016) < <https://doi.org/10.1093/acprof:oso/9780198786474.003.0018> > accessed 15 April 2023.

²⁹ BIS, ‘Central banks and payments in the digital era’, (BIS Annual Economic Report, 2020) < <https://www.bis.org/publ/arpdf/ar2020e3.pdf> > accessed 12 April 2023

regulate fintech under the PSS Act.³⁰ In 2022, RBI made a separate fintech department handling fintech regulations, Central Bank Digital Currency (“CBDC”), internal and international co-ordinations, among others.

The RBI released guidelines on digital banking units (“**DBU Guidelines**”)³¹ and digital lending (“**Digital Lending Guidelines**”) to banks and Non-Banking Financial Institutions (“**NBFCs**”) as a result of the increasing adoption of digital payments in recent years, as reflected by the Digital Payments Index.³² The DBU guidelines do not redefine banking, instead, they concentrate on how banking services are delivered using electronic devices and include online banking, mobile banking, or any other digital channels that the bank deems appropriate, provided they offer a high degree of process automation, cross-institutional service capabilities, and a differentiated business model or strategy.³³

NPCI International Payments Limited (“**NIPL**”), a wholly owned subsidiary of NPCI works on transcending domestic waters and establishing a successful cross-border APM. It has already entered into bilateral cooperation with other countries like the UK, USA, France, UAE and Singapore and recently entered into a cross-border remittances linkage with Singapore.³⁴ It is

³⁰ Shehnaz Ahmed and Aryan Babele, ‘*Modernising the Law for Payment Services in India | Preparing for the Future of Retail Payments*’ (Vidhi Centre for Legal Policy Blog, 4 Oct 2021) < <https://vidhilegalpolicy.in/research/modernising-the-law-for-payment-services-in-india-preparing-for-the-future-of-retail-payments/> > accessed 01 April 2023.

³¹ Vaibhav Kakkar and others, ‘*Fintech Laws and Regulations 2022*’ (Global Legal Insights, 2022) < <https://www.globallegalinsights.com/practice-areas/fintech-laws-and-regulations/india> > accessed 17 April 2023.

³² Neelanjit Das, ‘*Why Did RBI’s Digital Payments Index Jump To An All-Time High In March?*’ (Outlook India, 29 July 2022) < <https://www.outlookindia.com/business/why-did-rbi-s-digital-payments-index-jump-to-an-all-time-high-in-march--news-212811> > accessed 01 April 2023.

³³ RBI, ‘Guidelines for Establishment of Digital Banking Units’, [3.1.] < <https://www.rbi.org.in/Scripts/NotificationUser.aspx?Id=12285&Mode=0> > accessed 16 April 2023.

³⁴ Mayank Goyal (n 8).

guided by the RBI cross-border sales of goods and services (“**OPGSP Guidelines**”) and Online Export-Import Facilitators Guidelines (“**OIEF Guidelines**”).³⁵

There are several regulatory loopholes when it comes to UPI transactions. For instance, a third party application provider (“**TPAP**”) participates in the UPI ecosystem as a service provider of PSPs. When a client registers, PSP is responsible for authenticating the user through either its app or TPAP's app. It is expected to adhere to all PSP and NPCI regulations.³⁶ The PSS Act excludes TPAPs from authorization requirements because they just offer a technological interface and do not handle customer cash or offer payment, clearing, or settlement services. The role of TPAPs has changed significantly as a result of the payments sector's transformation and the advent of bank-fintech partnerships, particularly when they are interacting with customers directly.³⁷ Countries like Indonesia and Canada have given legal recognition to TPAPs and have assessed them with risk assessment framework.³⁸

Secondly, although NBFCs can participate in both front-end and back-end services, they can operate in the UPI ecosystem only if they partner with banks.³⁹ When these banks collapse, TPAPs providing UPI services are directly affected. For instance, when RBI placed YesBank under moratorium, consumers of TPAPs like PhonePe witnessed transaction disruptions until it

³⁵ Vaibhav Kakkar (n 32).

³⁶ ‘Roles and Responsibilities of NPCI/PSP and TPAPs in Unified Payments Interface (UPI)’, *Indusland Bank* < <https://www.indusind.com/content/dam/indusind-corporate/Other/UPI-R&R-of-NPCI-PSP-TPAPs.pdf> > accessed 31 March 2023.

³⁷ Shehnaz Ahmed, (n 31), 52.

³⁸ Canada RPA Act, s 29; Indonesia BI Regulations, art. 61.

³⁹“RBI, ‘Master Directions on Prepaid Payment Instruments (PPIs)’ (August 2021) para 2.8 < https://www.rbi.org.in/Scripts/BS_ViewMasDirections.aspx?id=12156 > accessed 17 April 2023.

partnered with ICICI.⁴⁰ Although NPCI has released notifications urging TPAPs to adopt multi-bank models⁴¹, the lack of regulatory framework makes financial technology fragile and prone to non-compliance by TPAPs, thereby affecting consumer confidence in digital payment systems.

III. PART B

A. UPI as a Successful RTP Model vis-à-vis Global Competitors

To understand the seismic adoption rate of digital payments in India, it is essential to understand the socio-political context in which UPI was launched in 2016. UPI was not the talk of the town when it was first launched. The growth and proliferation of UPI came with the advent of demonetisation and achieved its zenith with the global pandemic and the lockdown that ensued in 2020.

India removed the Rs. 500 and Rs. 1,000 notes from circulation on November 8, 2016, to stop the circulation of black money into the economy. These were the days of extended lines at ATMs, cash-strapped machines, and several fatalities due to the abrupt shock to the cash economy.⁴² The situation

⁴⁰ Shehnaz Ahmed, 'Yes Bank Collapse Exposes the Fault-Lines in India's Fintech Industry' (Vidhi Centre for Legal Policy, 23 March 2020) < <https://vidhilegalpolicy.in/blog/yes-bank-collapse-exposes-the-fault-lines-in-indias-fintech-industry/> > accessed 16 April 2023.

⁴¹ 'NPCI advised UPI payment apps to have multi-bank approach in 2017' (Business Insider, 9 March 2020) < <https://www.businessinsider.in/business/news/npci-advised-upi-payment-apps-to-have-multi-bank-approach-in-2017/articleshow/74556160.cms> > accessed 16 April 2023.

⁴² Kamalika Ghosh, 'Demonetisation Catalysed Digital Payments, But Nobody Knows Its Impact On Black Money' (Outlook India, 08 November 2021) < <https://www.outlookindia.com/website/story/business-news-demonetisation-led-to-increased-digital-adoption-that-helped-in-dealing-with-covid-19-but-still-no-data-on-black-mon/400179> > accessed 27 March 2023.

was further exacerbated when the pandemic struck the Indian markets, first in 2020 and then in 2021.⁴³

Digital payments began to gain popularity, and the UPI was a blessing in disguise during these times. Paytm was the sole significant digital wallet provider in 2016. Since then, many UPI-enabled businesses have become household brands, including PhonePe, Google Pay, Amazon Pay, and others. From hawkers to vendors, almost the entirety of the retail chain accepts payment via UPI.

The foundation of the digital payment environment in India is government regulation and policy. Together, the Indian Government and RBI have formulated schemes like the Pradhan Mantri Jan Dhan Yojana, a financial inclusion initiative introduced in 2014 and the Digital India program, a digital empowerment initiative launched in 2015 to empower digital payment initiatives. Through several initiatives, including tax exemptions, price caps on digital payments, and incentives for retail transactions, the Government has aggressively promoted digital payments over the years.⁴⁴ Currently, transactions via UPI have exceeded Rs. 800 crores in volume, with a daily transaction rate of Rs. 36 crores in January 2023 alone!⁴⁵

⁴³ Pragma Agarwala et.al., ‘Epidemiological Characteristics of the COVID-19 Pandemic During the First and Second Waves in Chhattisgarh, Central India: A Comparative Analysis’ [2022] 14(4) PubMed Central <<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9106595/#:~:text=The%20month%20of%20February%202021,%2C%202021%2C%20lasting%2099%20days.> > accessed 27 March 2023.

⁴⁴ Simmi Chaudhary, ‘Digitalising payments for an Inclusive Digital India’ MyGov blog <<https://blog.mygov.in/editorial/digitalising-payments-for-an-inclusive-digital-india/> > accessed 31 March 2023.

⁴⁵ News Service, ‘Daily UPI transactions cross 36 crores: RBI Governor’ (The New Indian Express, 07 March 2023) <<https://www.newindianexpress.com/business/2023/mar/07/daily-upi-transactions-cross-36-crores-rbi-governor-2553915.html> > accessed 31 March 2023.

One of the major catalysts for greater acceptance of UPI among the Indian populace and the retail markets is its utility in making transactions of smaller denominations without any charges. The charges, even if applicable, are *de minimis*. Tax benefits and seamless experience have paved the way for UPI acceptance in the upstream market. When NPCI upgraded UPI to version 2.0, it was aimed to be more merchant-centric, with features like buy-now-pay-later and a more robust verification procedure to reduce the possibility of fraud.

UPI transactions are secured with multi-factor authentication, and users can set their own UPI PIN, adding layer of security. These transactions are settled in real time, meaning the money is transferred from one bank account to another almost instantaneously. A primary advantage of UPI is its interoperability, which enables customers to transfer money between banks using a single mobile application. This functionality has drastically streamlined the payment procedure for clients and has made UPI more accessible and user-friendly compared to other payment systems. Further, the availability of round-the-clock service, secure and reliable conditions, and an explosion of crucial consumer services that require digital transactions, such as e-commerce and taxi-hailing via apps, as well as the scaling up of these services to its widespread adoption.

B. Consumer Adoption of RTP Across the Globe

While China makes up the majority of Asia Pacific's 34.6% share, 45% of those 118 billion transactions occurred in India, the Middle East, Africa, and South Asia. With a predicted CAGR of more than 50% from 2021 to 2026, South and Central America will experience the highest growth. These regions are only beginning the transition to electronic payments. While cards have been widely used for years and are now the foundation for contactless or

mobile wallet transactions in developed markets, growth there is predicted to be slower.⁴⁶

Noting the tremendous success of UPI, Google urged that the Federal Reserve Board, the central bank of the United States, use UPI as an example while creating FedNow, which is the real-time payment system for the United States.⁴⁷ Initially, there weren't many incentives to use alternatives to paper checks and cash as of 2020. The need for new contactless payment systems has grown as a result of the pandemic. Further, businesses can integrate payments directly into their systems, but they must do so for each bank separately. RTP integration for small to medium-sized banks is practically difficult because of more than 4,000 banks in the US. Further, a nominal fee of \$0.045 is charged for every real-time transaction.⁴⁸ There must be a more straightforward and cohesive solution if RTP is to become the industry standard.⁴⁹

India continues to dominate RTP and accounts for 46% of all global sales, followed by Brazil, China, Thailand, and South Korea. By 2027, Bahrain, which has a population of only 1.5 million, is anticipated to have the most significant rate of RTP consumer adoption, with an estimated 83.3 RTP transactions per head per month. By 2027, only four European nations—

⁴⁶ Sam Murrant, 'Developing Nations Continue To Drive Global Real-Time Payment Volumes — and There's More To Come' (ACI Worldwid, April 2022) < <https://www.aciworldwide.com/wp-content/uploads/2022/04/Prime-Time-for-Real-Time-Report-2022.pdf> > last accessed 22 March 2023.

⁴⁷ 'Google wants US Federal Reserve to follow India's UPI example and build 'FedNow' (Livemint, 14 December 2019) < <https://www.livemint.com/news/india/google-wants-us-federal-reserve-to-follow-india-s-upi-example-and-build-fednow-11576335813947.html> > accessed 25 March 2023.

⁴⁸ Admin, 'Is Real-Time Payment the future of payments?' (Diro.io 25 October 2021) < <https://diro.io/real-time-payment/#:~:text=The%20fee%20for%20RTP%20is,the%20cost%20for%20financial%20institutions.> > accessed 30 March 2023.

⁴⁹ Ibid

Netherlands, Sweden, Denmark, and Finland—are anticipated to rank among the top 10 consumers of RTP.⁵⁰

A global lesson from India is the deeper penetration of mobile phones over banking facilities for ensuring the success of RTPs. Unlike its US and European counterparts, India's real-time payment system is not intricately linked with traditional and inflexible electronic payment structures. It is a government-backed system with financial institutions' agreement and commitment, standardizing and centralizing every component of the system. By combining consumer demand (pull factor) and governmental regulation (push factor), financial institutions across the globe shall witness a new era of digital evolution.

IV. PART C

A. Viability of fee-per transaction in India: An analysis of the recent NPCI notification

In a two-sided retail market consisting of merchants and consumers such as UPI, the PSPs take credit risk and incur costs to facilitate instantaneous payments. The costs associated with a digital payment transaction are not universally uniform and could differ based on the commercial agreement between the parties. These fees generally comprise interchange fees, other service charges, and convenience fees and are known as Merchant discount rates ("MDR").⁵¹ It is shared with the issuer of the payment instrument,

⁵⁰ ACI Worldwide, 'World's Major Economies Playing Catch-Up as Widespread Adoption Drives Global Real-Time Payments Growth – ACI Worldwide Report' (*Business Wire*, 20 March 2023) <https://www.businesswire.com/news/home/20230328005314/en/World%E2%80%99s-Major-Economies-Playing-Catch-Up-as-Widespread-Adoption-Drives-Global-Real-Time-Payments-Growth-%E2%80%93-ACI-Worldwide-Report> < accessed 01 April 2023.

⁵¹ Shehnaz Ahmed (n 31), 18.

which is determined by the PSO. The MDR for UPI is zero, according to the amendment made by the Government to the PSS Act, effective January 1, 2020.⁵²

Additionally, notifications for MDR cost reimbursement for particular payments were released by the RBI and the Ministry of Electronics and Information Technology. The following amendments to the Income Tax Act of 1961 and the PSS Act were made by the government in 2019 through the Finance (No. 2) Act of 2019⁵³:

- §269SU Income Tax Act, 1961 (“**IT Act**”) required companies to offer their customers payment options for (i) debit cards enabled by RuPay, (ii) UPI (BHIM-UPI), and (iii) UPI Quick Response Code (BHIM-UP QR Code) if their total sales, turnover, or gross revenues exceeded INR 500 million in the last fiscal year.⁵⁴
- §10A was inserted into the PSS Act which prohibited banks and system providers from charging a payer or a beneficiary to receive money via the electronic payment methods allowed by § 269SU of the IT Act.

UPI transactions can occur either as bank account-to-account transactions or with Prepaid Payment Instruments (PPI Wallets). The NPCI, in its latest press release, announced the application of a fee that the PSP charges to the merchant, called an interchange fee of 1.1% on UPI Payments via prepaid payment instrument (“**PPI**”) of online merchants, large merchants

⁵² Press Trust of India, ‘MDR waiver: RBI may pay Rs 1,800 cr to banks to fund free transactions’ (*Business Standard*, 07 January 2023) < https://www.business-standard.com/article/economy-policy/mdr-waiver-rbi-may-pay-rs-1-800-cr-to-banks-to-fund-free-transactions-120010701314_1.html > accessed 30 March 2023.

⁵³ The Finance (No. 2) Act, 2019 < <https://egazette.nic.in/WriteReadData/2019/209695.pdf> > accessed 25 March 2023.

⁵⁴ The Income Tax Act, 1961, ss. 269SU and 271DB.

and small offline merchants carrying out transactions greater than Rs. 2000.⁵⁵ PPIs include wallets like Paytm Wallet, Amazon Pay among others and preloaded gift cards like HDFC and ICICI Gift Cards. Interchange fee is the fee charged by PSPs to the merchant to cover the cost of accepting, processing and authorising transactions.⁵⁶ On a variety of services, the interchange charge will also be payable in the range of 0.5% to 1.1%. There will be an interchange fee of 0.5% for fuel, 0.7% for telecom, utilities/post office, education, and agriculture, 0.9% for supermarkets, and 1% for mutual funds, the Government, insurance, and railroads.⁵⁷

This fee does not apply to P2P and P2M transactions, thereby implying bringing private money transfers outside the scope of UPI.⁵⁸ This notification is set to come into force from April 1, 2023, and will be reviewed on or before September 30, 2023.⁵⁹ The implication of this circular is restricted to digital transactions over Rs. 2000 made via merchant QR codes, which are likely to be paid merchant acquirer to the wallet issuer.⁶⁰ Since the interchange fee

⁵⁵ Amol Detha, 'Merchant transactions using PPI on UPI over Rs 2,000 will be charged at 1.1% from April 1' (*Economic Times*, 28 March 2023) < https://bfsi.economicstimes.indiatimes.com/news/fintech/merchant-transactions-on-upi-over-rs-2000-will-be-charged-at-1-1-from-april-1/99065673?action=profile_completion&utm_source=Mailer&utm_medium=newsletter&utm_campaign=etbfsi_news_2023-03-29&dt=2023-03-29&em=YW5hbmlhYmhhhdDE2MTRAbnVhbHMuYWMuaW4= > accessed 29 March 2023.

⁵⁶ Basudha Das, 'UPI payments: Which transactions will attract NPCI's 1.1% interchange fee? Check details here' (*Business Today*, 30 March 2023) < <https://www.businesstoday.in/industry/banks/story/upi-payments-which-transactions-will-attract-npcis-1-1-interchange-fee-check-details-here-375271-2023-03-29> > accessed 30 March 2023.

⁵⁷ Ibid

⁵⁸ Payment instrument issuers include banking/non-banking entities that issue cards and wallets. Payment acquirers are banking/non-banking entities which facilitate the acceptance of payment instruments. PSOs are deployed to facilitate P2P and P2M transactions.

⁵⁹ Koustav Das, '1.1% fee on UPI transactions above Rs. 2,000, but who pays that?' (*India Today*, March 29, 2023) accessed < <https://www.indiatoday.in/business/story/upi-transaction-interchange-fee-rs-2000-merchants-prepaid-payment-instruments-interoperability-2352883-2023-03-29> > accessed 29 March 2023.

⁶⁰ Ibid

applies only to transactions made through PPIs, the principal target seems to be the digital wallets which store money without paying interest to the user.

With this move, the revenue for banks and PSPs, who provide the infrastructure for UPI, is said to be benefitted.⁶¹ Since the fee is charged on the merchant side, the final brunt of paying such charges may or may not pass onto the consumers. For instance, if a PPI Payment is made using the QR Code of Google Pay, then according to the recent NPCI Notification, Google pay will receive an appropriate interchange charge from the retailer.⁶² The wallet loading charges to the account holder's bank (remitter bank) is 15 basis points if more than Rs. 2000 is stored in it.⁶³

The circular, which is yet to be notified, clarifies that individual transactions shall not be charged any extra fee on personal transactions. This aligns with the Government of India's policy of digitising India and recovering costs incurred by service providers through other means.⁶⁴

The notification adheres to the guidelines issued by RBI in 2019 on the pricing of UPI Guidelines. According to these guidelines, banks and PSPs can charge a fee for UPI transactions, subject to certain conditions. The RBI, the custodian of Indian banks, stated that PSOs incur vast expenditures to ensure safe and secure payment systems which are user-friendly, safe and secure,

⁶¹ Ankita Chakravarti, 'Wallet payments may have a transaction fee, UPI to remain free' (*India Today*, 29 March 2023) accessed 30 March 2023.

⁶² Ronak Jain, 'Will UPI Payments now attract charges? Decoding NPCI's interchange fee on UPI transactions via prepaid payment instruments' (*Business Insider*, 30 March 2023) < <https://www.businessinsider.in/finance/news/npci-introduces-interchange-fees-on-upi-transactions-done-via-prepaid-payment-instruments/articleshow/99080455.cms> > accessed 30 March 2023.

⁶³ Basudha Das (n 57).

⁶⁴ 'Charges on UPI transactions? What govt said explained in 10 points' (*Livemint*, 22 August 2022) < <https://www.livemint.com/money/personal-finance/charges-on-upi-transactions-what-govt-said-explained-in-10-points-11661138297587.html> > accessed 30 March 2023.

interoperable and receive no profits in return. Its consultation paper recommends the imposition of charges on PSOs recovered from the beneficiary.⁶⁵

One of the essential considerations is the pricing strategy followed by banks and PSPs. If the fees charged for UPI transactions are too high, it may discourage users from using the service and result in declining transaction volume. On the other side, if the fees are too low, banks and PSPs may be unable to recover their expenses and earn a profit. Fee ceilings are crucial to restrict the financial success of banks and PSPs and ensure that users will not be charged excessive fees for UPI transactions.

V. PART D

A. Conclusions and Suggestions

Fintech is developing at a rate that was unimaginable a decade ago. In markets like India, the Government's push, an almost obstinate determination to make digital transactions the standard rather than dealing in cash, is matched by the considerable pull factor of consumer demand and adoption. The ease and dependability of commerce are now more critical than perks like monetary rewards and tax breaks.

UPI payments are instantaneous since they are started, cleared, and paid in seconds. The combination of rapid availability and finality of capital transactions, instant confirmation, and integrated information flows guarantee that payments are made within seconds. It is a system for both merchant payments and transfers of funds. The enlarged outreach of UPI is facilitated

⁶⁵ Discussion Paper on Charges in Payment Systems, RBI (3 October 2022) < <https://rbidocs.rbi.org.in/rdocs/Publications/PDFs/DPSSDISCUSSIONPAPER5E016622B2D3444A9F294D07234059AA.PDF> > accessed 30 March 2023.

by its customer-centric model. Payer PSP, Payee PSP, Remitter Bank, Beneficiary Bank, NPCI, Bank Account Holders (Payer and Payee/Merchants), and Third-Party Application Providers (TPAPs) are among the different participants in UPI.⁶⁶ It uses a combination of these participants to enable the settlement of payment transactions.

While UPI transactions are effortless, efficient and secure for small-amount transactions, the same is not the case for large-scale transfers. For instance, most banks associated with UPI have an upper limit on the amount and frequency of weekly transactions.⁶⁷ Some banks have a single transaction limit but no limit on the number of transactions.⁶⁸

Most APMs typically see success only in the native market because of low standardisation and the resulting need for a country-by-country strategy. The global aspirations of UPI stem from its advanced domestic success. This instant gratification model has displayed a 10% month-on-month growth over the past five years, and its experts in the field believe that one of the ways of its international expansion can be with remittances.⁶⁹ The linkage of Singapore's PayNow with UPI is a magnificent success for enabling cost-efficient cross-border transactions using cloud technology.

The debate on the indispensability of a fee-per-transaction via UPI and whether the end customers, the primary beneficiaries of this system, are to bear the brunt of paying interchange fees is open-ended. This question is

⁶⁶ Ibid

⁶⁷ UPI Transaction Limit 2023: SBI, HDFC & 105 Banks (Updated List) (*Cashfree*, January 2023) < <https://www.cashfree.com/blog/upi-transaction-limit/> > accessed 27 March 2023.

⁶⁸ For instance, the SBI UPI Limit on single and multiple transactions upto 10 transfers is a maximum of Rs. 100,000. However, there is no limit on per week or per month transaction. See also, *ibid*.

⁶⁹ Mayank Goyal (n 8).

intricately linked to the sustainable revenue model of banks, non-banking PSPs and financial startups. The RBI has always advocated that PSPs in any payment system should generate revenue to support ongoing system operations and enable investments in new technologies, systems and procedures. Additionally, since UPI is similar to IMPS regarding funds transmission systems, a tiered fee may be assessed based on the various amount bands. The ubiquitous model of UPI could be overshadowed by the application of fee-per-transaction.

Ultimately, it is for the Government to set out policies by balancing the requirements of stressed financial institutions, consumers, merchants and its Digital India initiative. India has shown the world that a single cell phone has the power to revolutionise the payment system. From cash is king to digital payments for the win, she has come a long way in fintech innovation.