CONNECTED COMMERCE

CREATING A ROADMAP FOR A DIGITALLY INCLUSIVE BHARAT

Mastercard & NITI Aayog Knowledge Series

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INSIDE THIS **REPORT**

MESSAGE FROM THE **VC's OFFICE**

The world is becoming increasingly interconnected, thanks to rapid technological advancements. A key aspect of the transformational role of technology has been the provision of greater and easier access to financial services to many. International Monetary Fund's Financial Access Survey, 2019, points out that the mode of banking across the world is increasingly shifting to mobile and internet banking. In 2018, the value of such banking transactions in low- and middle-income economies rose to more than 200% of GDP, while in high-income economies, digital transactions crossed 500% of GDP. Digital financial services are also crucial for achieving the targets of Sustainable Development Goals and improving the quality of life globally. But despite impressive gains in mobile and internet banking, there remain gaps in access to financial services for small businesses and others.

> In India too, there is an increasing digitization of financial services and consumers are shifting from cash to cards and UPI. UPI transactions reached Rs 3.3 trillion in September 2020, growing at nearly 100% y/y.

While digitization of financial services for those who already have access to it is increasing at a fast pace, the issue that we face today is how to increase overall access itself. Availability of credit to those with strong creditworthiness and past credit history remains healthy. However, for those with no history—especially micro, small and medium enterprises (MSMEs) that are less likely to be eligible for loans on conventional metrics—credit delivery remains a challenge. The government has been promoting access to credit to MSMEs through various initiatives, such as the MUDRA Scheme, the 59-minute-loan scheme, and the Credit Guarantee Scheme. But data shows that overall credit from scheduled commercial banks, especially that given to MSMEs, continues to grow slowly.

Digital financial services span a spectrum of sectors. Not just limited to credit, they offer many avenues for new kinds of business models. Recent models related to e-commerce, shared mobility, peer-to-peer payment,

delivery services, etc., have thrived on the back of consumers preferring digital transactions over cash, which have in turn given a massive boost to the digital trend. There is, however, an urban-rural divide here. The penetration of internet and mobile technology in rural areas is low relative to urban areas, and there is a need to focus on technologies that can leverage this huge opportunity. This knowledge series touches upon these issues and addresses opportunities and challenges related to sectors such as agriculture, commerce, trade, urban mobility and transport, and cyber security. These themes in totality cover the overall landscape of the economy, in terms of rural and urban, and the sectors that need digital disruptions to bring financial services to the last mile.

Mobility is an upcoming use-case for digital financial services. It can be instrumental in enabling connected transit through interoperable payment systems and improved solutions for faster and safer payments. However, as we are more digitally integrated, the safety and security of our networks and data are increasingly becoming key challenges. From this perspective, it is crucial for the government and the relevant stakeholders to deliberate on the strength and resilience of our digital systems not just to protect consumers from frauds, but to also maintain trust in financial services and the economy in general.

I hope this series will bring to the fore key issues in relevant sectors, how digitization can help bridge the looming gaps and the steps forward to ensure a sound digital foundation to our economy.

Dr. Rajiv Kumar
Vice Chairman, NITI Aayog

MESSAGE FROM THE **CEO's OFFICE**

The financial sector is undergoing a massive change. Banks have been conventionally understood to be synonymous with credit and have been instrumental in financing India's credit needs over the past decades. However, a dramatic shift was noted in the credit scenario in India in the last decade. Continued deceleration in credit growth in the banking sector created a gaping hole, which was filled by non-banking players that could provide credit to the unbanked. Over the years, India has seen tremendous growth in institutions such as micro-finance, NBFCs, and small banks to facilitate better access to credit for the Indian industry. These institutions have brought about an enormous change in how credit is disbursed, with instruments like micro-loans, flow-based lending and group-based lending that have been tried and tested successfully and are now increasingly matching credit demand and supply. This disruption is furthered by a flood of fintech players that are bringing about transformational change in the way financial services are provided. Making services like invoice discounting and KYC fully digital is game-changing in comparison to the traditional ways of banking.

> Digital technology will be the backbone of the economy, going forward. Both products and services - be it in retail, health, education, or financial services - will increasingly have a digital as well a physical aspect.

Already, customers are demanding digital solutions for even basic needs. It is only inevitable that credit too will soon become a part of this phenomena. Banks remain the major source of credit and will perhaps continue to be so. While banks are showing tremendous progress in breaking out of their old legacies by increasingly adopting digital solutions, fintechs too have a great growing opportunity. Digital financial inclusion will be a success only if we can provide seamless communication between innovative financial solutions and industry. Fintech players have a big role to play in the growth and development story of India, as credit demand will increase manifold as the economy expands.

India's private credit to GDP is the lowest among its peers. Countries like China and South Korea have had tremendous growth and achieved massive improvements in their living standards on the back of high

leverage. Even Vietnam's recent development has been partially a result of growth in its private debt. The credit scenario in recent years in India has been less accretive to growth, and for a greater part a drag on the economy. There is a growing need for our industry to be supplied with the necessary liquidity. While the government has been successful in enabling access to banking services and has given a massive boost in recent years through the Jan Dhan-Aadhaar-Mobile trinity, much needs to be done in making more financial services available to the newly connected consumers.

Financial inclusion as a process depends on the regulatory environment as much as it depends on the growth and structure of the financial services industry. As new business models emerge to fill the current gaps in achieving digital financial inclusion, the necessary regulations must also be changed as and when required. The entire process will require initiatives like this knowledge series to bring together all relevant stakeholders such as banking and industry professionals, technology solution providers, fintech players and regulators to bridge policy gaps in the credit and finance sector.

We are living in an ever-changing environment. In the post-Covid era, building resilient systems and encouraging business models that could be change-makers of the future is crucial. It will also be important to make sure that every individual is comfortable and confident about using digital financial solutions. India is emerging as the hub of digital financial services globally, with solutions like UPI growing tremendously and being hailed as instrumental in bringing affordable digital payment solutions to the last mile. Fintech players, alongside the conventional financial services providers, hold the key to transforming the way the economy functions and increasing access to credit for our industry. This will enable us to make the Indian digital financial landscape convenient, safe, and accessible to all.

Amitabh Kant
CEO, NITI Aayog

NOTE FROM
SESSION CHAIR

Financial inclusion has always been a critical goal of our government's economic policies. It has a crucial role to play in assimilating India's unbanked and underbanked population into the mainstream economic system. Equal and affordable access to financial services can help reduce poverty and income inequality. The convergence between banks, telecom players, and technology companies is also strengthening the drive for financial inclusion.

> The Jan Dhan Yojana has been a strategic policy initiative by the government to promote last mile financial access to the unbanked in India.

The usual 'banked' criterion for financial inclusion is now set to undergo a paradigm shift with a rise in connected commerce, online shopping, e-marketplaces, and an ubiquitous mobile network.

This stakeholder analysis was conducted to discuss the demand and supply side challenges and opportunities that have to be addressed to advance digital commerce and promote financial inclusion. This series encompassed discussions on diverse sectors such as MSMEs, agriculture, safety and security in digital commerce, transit systems, etc., which are at the forefront of digital transformation and can connect Indians in a way that can eventually contribute towards an equitable development.

Ajit Pai
Distinguished Expert and Head,
Economics and Finance Cell,
NITI Aayog

FORE**WORD** ■

With economic activity showing signs of recovery, governments across the world, particularly in emerging markets, are striving for economic growth and financial inclusion. There is hope for inclusive growth, an improved standard of living, lower unemployment, and a movement towards a more equal society. More than ever before, all of these now rely on digital infrastructure to thrive.

The COVID-19 pandemic alerted us all to the fragility of cash and the resilience of digital technologies, including digital payments. The past year saw low-value digital transactions surging across India as consumers switched from cash for everyday purchases—online and offline—amidst growing health and safety concerns. Smaller cities and towns contributed two-thirds of e-commerce demand.

Digital has shown us the way to redefine successful inclusive growth. By bringing millions of people into the digital and financial mainstream, we enable them to access financial services, including cheaper credit to help small businesses grow. Further, digital payments are the synovial tissue that connects rural and urban India.

> We must build digital systems for underserved communities so they can access services, and better control their future.

In an interconnected world, interoperability is key to financial inclusion, else we risk creating islands of success. Inclusion won't happen if we don't integrate everyone into existing systems and provide them new experiences and opportunities. Technology creates opportunities, but also risks widening the gap. If we simply digitize tools without extending them to those outside the system, we risk having an Internet of Everything without the Inclusion of Everyone. There are three things the world needs to do to bridge the divide: improve access and affordability; build infrastructure in rural areas; and educate people on how to use technology. This cannot be achieved by governments alone: it needs public-private partnership.

This report delves into how Connected Commerce can help balance the trinity of problems that we are all dealing with: inclusion, environmental sustainability and the trade-off between the short vs long-term goals we are striving towards. It aims to draw out key elements of a roadmap that India can take to its next level of digital transformation, driven by providing real value to the next half billion who go online in the next three years.

In a bold new world emerging from disruption by the pandemic, digital payments will be a key pillar on which a self-reliant India will stand.

Ari Sarker
Co-President, Asia Pacific
Mastercard

EXECUTIVE
SUMMARY

Between October and November 2020, Mastercard and NITI Aayog organized a series of five discussions that served as virtual sectoral interfaces for **"Connected Commerce: Creating a Roadmap for a Digitally Inclusive Bharat"**—aiming to promote digital financial inclusion, and confidence in electronic payments.

The roundtable participants included government leaders and experts from banks, the financial regulator, fintech enterprises and various ecosystem innovators. Conversations spanned areas around accelerating digital financial inclusion (DFI), enabling global opportunities for MSMEs, inspiring trust and security in digital commerce, preparing India's agri-enterprises for connected commerce, and building robust transit systems for smart cities.

The central questions discussed were:

1) How to accelerate digital financial inclusion of the underserved sections of the society?

2) Which confidence-building measures will enable MSMEs towards 'getting paid, getting capital and going digital'?

3) How to move the needle on cyber security concerns from being seen as a purely "awareness issue" to looking at policy and technological interventions that can foster trust and increase cyber resilience?

4) Which interventions can unlock the promise of digitization in India's agriculture sector?

5) Which are the essential elements of a digital roadmap towards accessible transit for all citizens, including the poor, underserved and travelers/workers from other cities?

1. Accelerating the Next Phase of Digital Financial Inclusion

We have seen a lot of effort and much success on the supply side of DFI: in e-governance, the JAM trinity, in GST (goods and services tax). Most bank or digital accounts can be credited through the government's Direct Benefit Transfer (DBT) schemes, or transfers from employers, or peer-to-peer transfers. However, the break in the digital financial flow comes at the last mile, where account holders mostly withdraw cash for their end-use. For market players, it is critical to address this gap on the demand side by creating user-friendly digital products and services that encourage the behavioral transition from cash to digital.

Key inferences from this session:

■ To strengthen acquisition infrastructure needed for double-sided growth of digital commerce (whether merchants or consumers):

  • Increase innovation and investment in the acquisition space, encouraging non-banks to build acceptance infrastructure

    - Allow for the adoption of more automated infrastructure developments, such as interoperable QR

    - Allow payment schemes to induct non-banks as associate members

■ NBFCs can be enabled to participate more freely in the payment ecosystem through specific measures, such as:

  • Issuance of credit cards

  • Allowing for OTP based mandates, e-KYC and other services to be provided similar to banks

■ Facilitating the adoption of aggregator-based models around challenges such as providing credit, lending, etc., in moving India to an open banking/finance ecosystem. For example:

  • Permitting a regulatory sandbox model on aggregator platforms in the credit and lending space tested in a pilot mode. For e.g., RBI's regulatory sandbox (whose third cohort, focuses on MSME lending, could allow for such models to be developed)

2. Enabling Global Opportunities for MSMEs

MSMEs have been a key growth driver for the Indian economy. A GAME Task Force report of June 2020 highlights that the category employed some 110 million people, or over 40% of India's non-farm workforce. The widespread inability to access formal finance is a common pain-point of India's heterogeneous MSME landscape. Increasing the credit flow to MSMEs is pivotal to GDP growth. The lack of proper documentation, bankable collateral, credit history and non-standard financials force them to access informal credit at interest rates that are double of those from formal lenders.

Key inferences from this MSME session were:

- Streamlining and digitizing registration and compliance processes, tax filings, software wizards, central inspection system and single window clearance would nudge this ecosystem toward more formalization

- For supply-chain financing to grow, more sources of credit need to be enabled for MSMEs. Suggested measures:

  - Equip better data-driven models around transaction tracking and supporting micro-merchants in credit access

  - Enabling conditions for fast-tracking a loan service provider's framework

  - Allow ease of adopting AI, data analytics and blockchain to provide quicker financing to suppliers

3. Inspiring Trust and Security in Digital Commerce

With the tremendous growth in digital payments in the past few years, companies are putting customer experience at the front and centre. However, security cannot be left behind, especially given the fact that 500 million users will have access to internet in the next few years. This surge in digital transactions has increased the risk for possible security breaches, both for consumers and businesses. We must ensure that India's inclusive digital financial system is protected against frauds and security breaches for both consumers and business.

Key inferences from the trust and security session were:

- A whitelisting approach can be developed on verified contact origins—phone numbers or top-level domains (TLDs) of banks—to avoid risks of phishing (where sensitive personal data is obtained via disguised means)

- The use of sophisticated automated models (AI, ML) to reduce friction should be encouraged in real-time models that track device signals and patterns. A harmonized set of industry standards that is interoperable must be in place, whether it is behavioral biometrics, locking device or SIM, etc.

# 4. Preparing India's Agri Enterprises for Connected Commerce

Agriculture, with its allied sectors, provides livelihood to a large section of the Indian population. Over the years, agriculture's contribution to national GDP has declined from 34% in 1983-84 to just 16% in 2018-19. Farmers face myriad challenges, such as access to markets, information, inputs, financial services, expert advice, etc. Most agri-techs have not succeeded in digitizing financial transactions for farmers or enabling formal credit at lower rates of interest by leveraging transaction data.

Key inferences from this session were:

- Digitization of land records in a timebound manner, aggressive efforts to improve institutional credit delivery through technology-driven solutions to reduce the extent of financial exclusion of agricultural households, enabling agricultural NBFCs to access low-cost capital to extend farm credit at competitive rates

- Digital infrastructure should be built to help commercial banks acquire new customers at reduced cost and provide solutions spanning all stages of the agri value chain

- Need for a hybrid 'phygital' model to achieve digitization outcomes in the long run. To decide which service to use and what is the right price to pay for that service cannot be left to the farmer alone. Along with digitization of the value chain, inclusion programmes must be undertaken to ensure that farmers are trained to use that technology
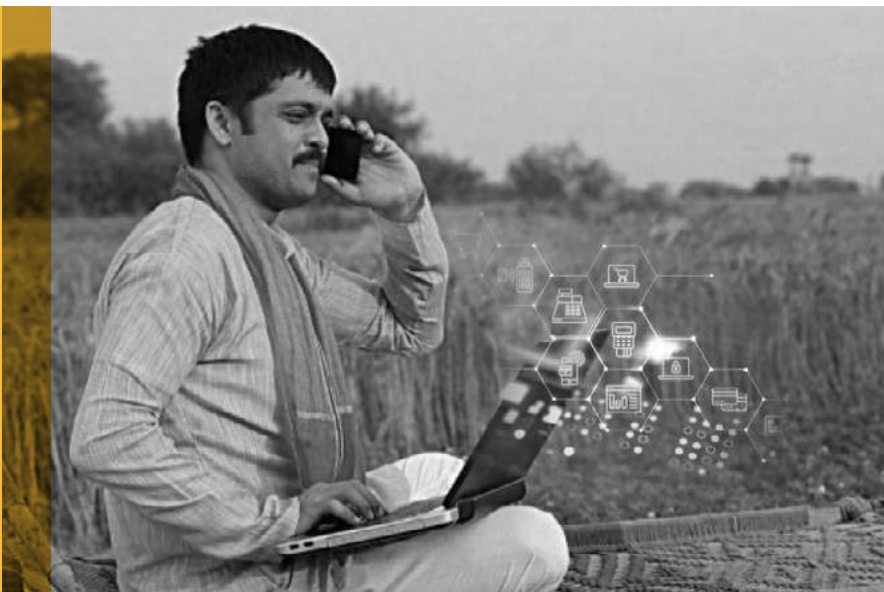
5. Robust Transit Systems for Smart Cities

Mass transit is the backbone of developed economies. India needs systems that allow citizens to access transit seamlessly. Today's proprietary cards give discounts and benefits to those who pay up front, while poor customers spend time in queues for more expensive single-ride tickets. Minimizing queues and crowds is important as the world recovers from the Covid-19 pandemic.

Can we support payment with popular platforms that build on what customers already use (bank accounts, payment apps, contactless cards)? With the transport sector expected to grow to 12% of GDP by 2026, there is a huge opportunity for the government and private sector to collaborate and provide top-quality systems for mass transit by improving the overall customer experience.

Key inferences from the transit session:

- Make city transit seamlessly accessible to all, including visitors, migrant workers from towns or villages, minimize crowding and queuing, post pandemic. Allow price benefits of digital payments to poor citizens

- Leverage existing smart phones, cards and non-transit payment modes as far as possible. Instead of (or in addition to) a new transit card, support payment apps using wallets and UPI via NFC and QR codes, and existing contactless debit and credit cards. Many transit commuters have smart phones. A smartphone-based app where a commuter can just enter the destination, generate a QR code and use that to enter the transit system could be another option. Ultimately, aim for an inclusive, fully open system like the London 'Tube'

- To onboard new customers digitally and expedite their transition from cash to digital, the government and industry should incentivize the customer

> A very successful example and use case is that of FASTag, now virtually a mandate on vehicles for highway tolls, via a mix of incentives and penalties. Another mega success story outside transit is UPI, and it is worth leveraging that for transit via phone apps.

Session 1

ACCELERATING THE FINTECH ECOSYSTEM FOR CONNECTED COMMERCE IN POST-COVID INDIA

The roundtable participants included representatives from the government, banks, financial regulator, fintech enterprises and various ecosystem players and innovators. The conversation spanned themes such as: last-mile infrastructure push for boosting digital commerce, fixes needed for an efficient supply-chain financing environment, pivoting towards aggregation models, and drawing up level-playing-field conditions between banks and NBFCs.

Context: Financial inclusion has always been a key pillar of the Indian government's economic policies. Initiatives such as the Jan Dhan-Aadhaar-Mobile (JAM) trinity are game-changers that have ensured equal and affordable access to financial services for India's unbanked and underbanked population, thereby reducing income inequality.

Financial inclusion, as a key policy imperative, entered the banking lexicon in 2008, courtesy the recommendations of the Rangarajan Committee. Faster implementation of financial inclusion plans (FIPs) was seen after 2010, as commercial banks opened new rural branches, and with increased coverage of villages with ATMs and digital kiosks, more banking correspondents, opening of no-frills accounts, and the provision of more credit through credit cards (Kisan and general). The progress was evident on the Global Findex (GFX) measure at World Bank, as India progressed from a score of 35 in 2011 to 80 in 2017. The JAM trinity has played a crucial role in helping India improve across major indicators with the percentage of account holders (over 15 years of age) rising to 80% in 2017 from 35% in 2011. However, formal savings at a financial institution increased by only 8% from 12% in 2011 to 20% in 2017. Many people continued to use informal channels for savings.

India has grown significantly across major G20 Financial Inclusion Indicators from 2011 to 2017
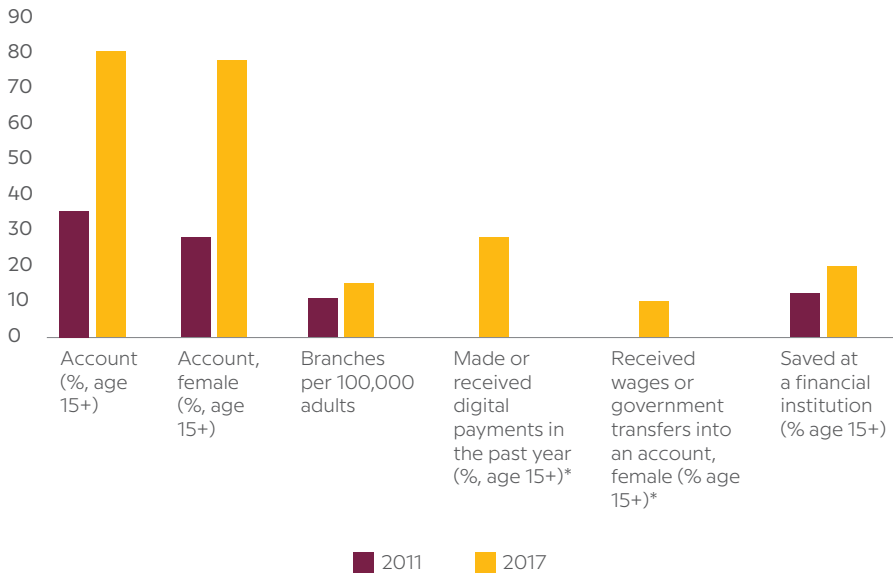
*Source: World Bank, https://datatopics.worldbank.org/g20fidata/country/india, *Data not available for 2011*

'Digital financial inclusion' (DFI) refers to the use of digital financial services to advance financial inclusion. These include payments, transfers, savings, credit, insurance, securities, financial planning and account statements. They are delivered via technology, such as e-money (initiated either online or on a mobile phone), payment cards and regular bank accounts.

In addition, the convergence between banks, telecom players and technology companies is paving the way for higher integration and innovation, important facets to streamline financial inclusion. The usual 'banked or unbanked?' criterion for financial inclusion is set to undergo a paradigm shift, with a rise in connected commerce, e.g. online shopping, e-marketplaces and mobile telephony.

Session Objectives:

Discuss ways to accelerate digital financial inclusion, especially of the underserved sections of society

Explore innovations in the ecosystem that are driving digital commerce in the Post-Covid climate

Share global best practices in financial inclusion that India could embrace

Discussion Point 1: Digitizing Last-Mile Service Delivery

So far, efforts on the supply side of DFI have seen manifestations either in e-governance, the JAM trinity or GST systems. In the current system, most bank or digital accounts can be credited through government's DBT schemes, or transfers from employers, or through peer-to-peer transfers. However, the break in the digital financial flow comes at the last mile where account holders have to withdraw cash or write physical checks for their end use. For market players, it is critical to address this gap on the demand side by creating user-friendly digital products and services that encourage behavioural transition from cash to digital. For the government, it is essential to incentivize small businesses, consumers, and merchants for the digitized last mile.

The 2018 Reserve Bank of India (RBI) High-Level Committee Report on Deepening Digital Payments underscored the importance of expanding acquisition infrastructure across the country. Growth of acceptance infrastructure can replace cash-out networks, help reduce cash holdings, and aid digital transition. Acceptance infrastructure includes last-mile points that accept and support customer payments made via mobile phones, cards, bank accounts, and comprise dedicated point of sale (PoS) devices, mobile PoS apps, and QR-code systems, inter al. A strong acceptance infrastructure is a critical parameter of DFI, as it ensures merchants have the capacity to accept digital payments and also supports the transition from cash to digital payments.

Current Scenario: Recent steps by the regulator RBI in operationalizing the Payment Infrastructure Development Fund (PIDF) support the recommendations of this report. It envisages the creation of 3 million new touch points every year (1 million physical PoS devices, and 2 million digital—QR code or soft PoS). The regulator has prescribed a subsidy of 30-50% of the cost of physical PoS and a 50-75% subsidy for digital or soft-PoS for the payment acceptance points deployed as part of this Fund.

Interoperable QRs: Bharat QR and BHIM UPI QR are examples of QR codes standardized to promote digital payments among merchant establishments, e-commerce and m-commerce entities. In 2020, Pine Labs, an Indian unicorn start-up and merchant platform launched its paper, POS. It is an all-in-one solution for merchants to accept multiple forms of UPI and Bharat QR payments through a single merged static QR code at the point of sale, providing an alternative to traditional, standalone PoS terminals for grocers, departmental stores, taxi services, unmanned kiosks, etc. Similarly, Paytm and others use UPI QR to accept payments from their own apps and other wallets' UPI-supporting apps.

Key Inferences: To strengthen the acquisition infrastructure required for double-sided growth of digital commerce (both merchants and consumers):

- Allow market-driven models to determine interchange fees

- Increase innovation and investment in the acquisition space, encouraging non-banks to build acceptance infrastructure

- Allow for the adoption of more automated infrastructure developments, such as interoperable QRs

- Encourage payment entities to develop solutions such as offline payments, near-field communication (NFC) and SoftPoS, card-on-file, cloud tokenization, etc

- Allow payment schemes to induct non-banks as associate members, and thereby become active members of the acceptance ecosystem

> To strengthen payment infrastructure, RBI's PIDF fund will help create 3 million new acceptance points every year in Tier-3 to Tier-6 locations, with PoS hardware, QR code and soft-PoS.

Discussion Point 2: Driving Supply-Chain Financing

Supply-chain financing (SCF) services could help fill the credit gap for MSMEs (micro, small and medium enterprises) in a cost-effective and efficient manner. SCF consists of several options that aim to finance suppliers by using invoices and receivables as interim collaterals. One reason SCF has not picked up in India is the largely 'dealer-based financing' mindset.

Two common SCF methods are factoring and reverse factoring. Factoring is a financial transaction where suppliers sell their accounts receivable to a third party (a bank or fintech) at a discount. Reverse factoring is also an accounts receivable financing mechanism, but in this case the transaction is initiated by the buyer.

One of the panelists highlighted two key reasons for the slow adoption of SCF in India: onboarding MSMEs digitally, and getting buyers to accept receipts on a digital portal for SCF.

Banks have traditionally preferred offering working capital loans over supply chain-based financing due to lack of borrower data and difficulty in assessing the collateral provided. However, the growth of SCF could ease access-to-credit challenges for India's MSME sector. This could bundle well with the MSME Champions initiative which aims to help MSMEs capture new opportunities in manufacturing and services sector.

The RBI has also approved of and backed TReDS (Trade Receivables Discounting System), a digital initiative for SCF, where MSMEs can get their invoices factored. Only banks and NBFC-Factors can be part of the TReDS platform today, and an amendment in Factoring Regulation Act is required to bring other NBFCs into the fold. The government has already taken the initiative to amend the Act, and this is likely to happen in 2021. Bringing NBFCs into the fold will boost SCF options for MSMEs registered on the TReDs platform.

> **Key Inference:** With these developments and with the MSME Ministry constituting five task forces around areas such as Industry 4.0, exports and integration of technology centres, a sixth task force in public private partnership (PPP) mode may be required to address SCF challenges and allied issues.

This SCF task force could look at providing a roadmap on the following aspects:

Innovative solutions for MSME financing and underwriting, which leverage non-traditional data to establish credit histories

Models for providing early-stage financing

Allowing a transition to rating-based models for data-driven credit risk assessments

Proposing support measures for SCF to flourish

A more detailed perspective on SCF has been laid out in the Session 2 overview below.

Discussion Point 3: Pivoting Toward Aggregator-Driven Models

Aggregator platforms can be a powerful mechanism for solving a variety of financial inclusion challenges. For example, the Indian start-up Urban Company aggregated 30,000 individual workers/service providers (plumbers, electricians, carpenters, beauticians, etc.) across 18 cities. It was able to seamlessly provide credit/interest free loans, etc., to professionals on the platform with no formal credit scores.

Similarly, Sahamati is an account aggregator ecosystem collective. It aims to create a new kind of digital data model wherein account aggregators (a type of NBFC regulated by the RBI) will act as data intermediaries between users and entities that are the primary owners of data, as well as banks, financial institutions, and NBFCs that maintain and manage it. The account aggregator architecture is built to help individuals and small businesses avail credit easily by allowing lenders to assess their credit risk based on their personal data with their consent.

Key Inferences: Pivots towards aggregator-based models can be increased further to solve for challenges such as providing credit and lending and moving India to an open banking/finance ecosystem. Some specific measures could be:

- Permitting a regulatory sandbox model on aggregator platforms in the credit and lending space, tested in pilot mode. The third cohort of RBI's regulatory sandbox, focused on MSME lending, could allow for such models to be developed.

- NITI Aayog's Data Empowerment and Protection Architecture (DEPA) could be a suitable template to allow fintech to co-create new account aggregator enterprises that address various segments—credit, lending, and other aspects.

Discussion Point 4: Creating a Wider Digital Financial Ecosystem

NBFCs currently account for 20-30% of the overall credit given in the system. For non-banking entities to play a stronger role in digital financial inclusion imperatives, they must be given equal footing in the system. NBFCs are practically constrained from the credit card market on account of high access barriers, especially regarding the issuance of general credit cards. They are barred from issuing variants of other cards, like charge cards, debit cards, and stored value cards.

Panelists recommended a level playing field with respect to issuance of credit cards, e-KYCs (online identification or 'know your customer' verification process) and OTP (one-time password) based mandates. This would help deepen financial inclusion via improved credit culture in India.

> A level playing field for NBFCs and banks with respect to issuance of credit cards and e-KYC will deepen credit culture and financial inclusion.

Non-banks have entered the market and expanded the range of payment services available to the Indian consumer, backed by their strength in technology and customer-centric innovation. Banks and non-banks are partnering to offer the combination of trust (banks) and innovation (non-banks) to the Indian consumer. This "best of both worlds" approach should be allowed to flourish. Credit cards are a key instrument for the growth of digital payments in India.

Current Scenario: A 2013 Master circular from RBI allowed the issue of co-branded cards by NBFCs under certain conditions. The Central KYC (know your customer) Registry Operating Guidelines, 2016, mandates that every reporting entity must capture an individual's data as per the common KYC template and upload it on the CKYC registry, along with a scanned copy of the supporting documents. Lending through OTP-based e-KYC authentication under RBI's KYC Master Direction is currently capped at Rs 60,000.

> **Key Inferences:** NBFCs should be enabled to participate more freely in the payment ecosystem through specific measures:
>
> - Issuance of credit cards
>
> - Allowing for OTP-based mandates, e-KYC and other services, similar to banks
>
> There should be an increase in the limits for loan accounts permitted under OTP-based e-KYC onboarding. The limits for credit cards issued under the same process should also be increased commensurate to the average loan ticket sizes via digital modes (Rs 3,00,000).
>
> - Smaller NBFCs should also be promoted at the regional level for better outreach

Discussion Point 5: Ensuring Safe, Secure and Reliable Digital Financial Environment

As we get more digitally integrated, we must evaluate the strength and resilience of digital payments to not just protect consumers from frauds, but to also maintain trust in financial services. Public–private collaborations are key to a post-Covid era for innovations in this ecosystem. For instance, all card networks are working together with regulator RBI on a 'Risk Forum' toward protecting consumers and merchants. Collaborative initiatives like these between private and public sector entities are essential to ensure a safe and reliable financial environment.

As new users join digital payment systems, they need a good experience, to continue using these avenues. Any failures will result in setbacks. When users lose confidence in digital payments, they build backups (cash in hand), or move back to cash.

Trust is a critical challenge as many citizens want to be assured that the money in their accounts is safe and that they are being offered an appropriate range of products. There is a FI Insights Wave IV survey that illustrates how women prefer banking with female business correspondents and bankers. For PMJDY account holders, a deal-breaker is the overall experience of banking—giving up on daily wages to go to a bank and subsequently wait in a queue for their turn—and not just safety. Financial inclusion products need to embed not just access and trust but efficiency as well.

Current Scenario: The Committee on Deepening Digital payments note that failure rates have not been published by the RBI. So far, we mostly have anecdotal evidences that demonstrate the need and possibilities of improvement to build trust in digital financial systems.

Key Inferences: Increasing customer confidence and trust while accessing financial services can be undertaken through a slew of measures:

- Making bank accounts coterminous with some form of insurance protection against frauds (up to certain amounts)

- Swifter grievance redressal mechanisms and quality of service (QoS) measures on payment failures:

  - Requiring payment operators to implement an online dispute resolution, with prescribed time limits (15–20 days)

  - Periodic user surveys by RBI or its associated bodies, on digital payments adoption and attitudes

Some insurance against frauds and thefts for the money in bank accounts would encourage consumers to transact more digitally.
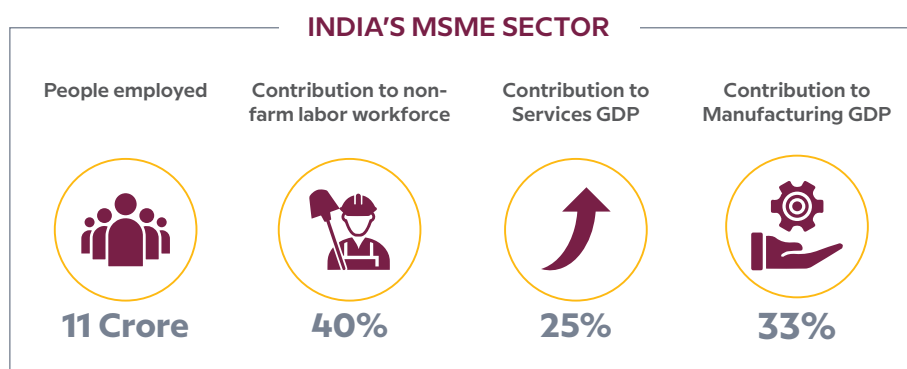
ENABLING GLOBAL OPPORTUNITIES

FOR MSMEs THROUGH CONNECTED COMMERCE

The round-table participants highlighted the lack of formalization and the need for data-driven approaches to innovative financing as key challenges in the MSME ecosystem. The conversation spanned themes such as reforming P2P lending and the need to grow supply-chain financing to enable more sources of credit for MSMEs.

Context: MSMEs have been a key growth driver for the Indian economy. As per a GAME Task Force report of June 2020, enterprises in this category employ approximately 11 crore people, which is more than 40% of India's non-farm workforce. Businesses in this sector have also been a critical enabler of distribution and supply chain for larger companies, contributing nearly 25% towards India's services' GDP and 33% towards manufacturing output.

INDIA'S MSME SECTOR

People employed	Contribution to non-farm labor workforce	Contribution to Services GDP	Contribution to Manufacturing GDP
11 Crore	**40%**	**25%**	**33%**

Source: GAME Task Force Report on "Improving Economic Dynamism and Accelerating MSME growth", June 2020.

The widespread inability to access formal finance is a common pain-point of India's heterogeneous MSME landscape. Increasing the credit flow to MSMEs is pivotal to GDP growth. The lack of proper documentation, bankable collateral, credit history and non-standard financials force them to access informal credit at interest rates that are double of those from formal lenders.

Banks remain the most important source of external finance to MSMEs. But banks limit their loan exposure to MSMEs, because they have a higher perceived risk of non-performance, limited available performance or credit data, and low ability to provide security collateral. Most Indian MSMEs do not have audited financial statements to present with their loan applications, or adequate, ready collaterals. Consequently, most MSMEs end up relying exclusively on expensive and uncertain informal funding sources.

The GST regime drove in a degree of MSME formalization. Applicable to enterprises with a turnover of Rs 20 lakh and above, GST catalyzed a formalization wave among the erstwhile micro and small enterprises by compelling them to file returns based on their sales and trade data. Over the last two years, GST registrations have generated a large pool of data that can be analysed to provide credit to these businesses.

Challenges and critical impediments to reviving MSME growth include access to credit, inventory management/logistics and economic and financial uncertainty in the current Covid-triggered crisis.

Access to credit has been a top challenge for SMEs

Why proposals were rejected	Outcome of efforts to seek alternative sources of trade financing by SMEs (% of responses)
Lacked additional collateral — 20	Unable to find appropriate alternative financing — 47
Completely unsuitable for support — 19	Used informal financing — 18
Serious KYC concerns — 18	Used formal alternative financing successfully — 16
Poorly presented and had insufficient information — 17	Found formal alternative financing but opted not to use it — 10
Not profitable enough to process — 15	Found informal financing but opted not to use it — 7
Not profitable to process due to regulatory capital constraints — 11	Found digital finance but opted not to use it — 1
	Used digital finance successfully — 1

Source: ADB 2019: Trade, Finance Gaps, Growth and Job Survey

Session Objectives:

Identify the pain-points for small and medium businesses towards better integration and formalization into the MSME ecosystem

Look at ways of increasing access to credit for such businesses

Build confidence to enable MSMEs to go digital

'**Get Paid, Get Capital, Get Digital'**: Charting a New Growth Path for MSMEs

The round-table participants included representatives from government, banks, payment enterprises, MSME councils and foundations. The conversation spanned themes such as MSME financing, P2P lending, efforts towards more formalization and evolution towards better data-driven approaches to spur credit access for small and medium businesses.

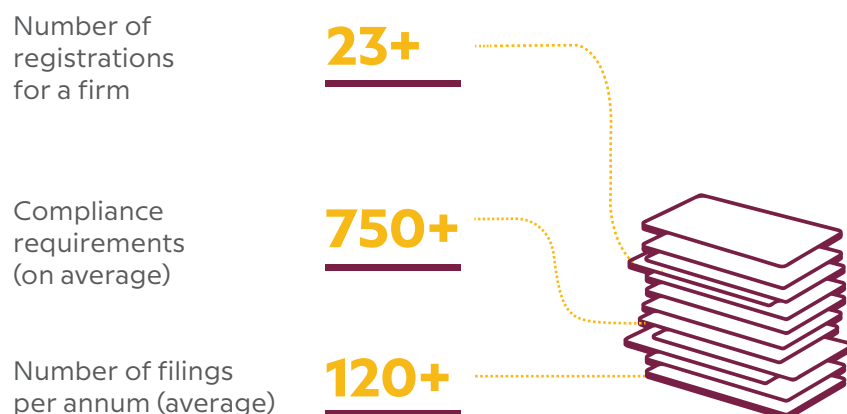## Discussion Point 1: Paving the Way for a Formalized Ecosystem

MSMEs come under a distinct legislative framework (Micro, Small and Medium Enterprise Development Act, 2006) vis-à-vis retailers and traders, who are governed under a separate regime by the Ministry of Commerce (Department for Promotion of Industry and Internal Trade). Therefore, policy ask and approaches must be framed accordingly, whether directed at MSMEs, retailers, traders or street vendors. The government has been open to suggestions and is cognizant of the present realities wherein disruptions brought about by the pandemic merit more collaborative approaches between different stakeholders.

Current Scenario: The MSME Ministry wants to locate 500 Champions as role models for India among various sectors. The Champions initiative aims to promote a unified, empowered, robust, bundled and technology-driven platform for helping and promoting MSMEs, whether in manufacturing or services.

Panelists highlighted the low extent of formalization as a key impediment. Few MSMEs are within the 'formal net', as seen in the number of firm-level GST filings. The Emergency Credit Line Guarantee Scheme (ECLGS) steered by SIDBI has been a key initiative during Covid-19. But it needs to be seen how this can be expanded further and how we can augment priority sector lending. For example, how can we look at expanding the GeM (Government e-Marketplace) platform?

Panelists from banks highlighted the need to identify impediments around the larger formalization of the MSME fold—issues such as collateral or credit history. Rural areas have growth potential on the micro and small segment side: however, more hand-holding is required on this front.

Excess paperwork and filings for compliance has been a major impediment to formalizing MSMEs

Number of registrations for a firm	**23+**
Compliance requirements (on average)	**750+**
Number of filings per annum (average)	**120+**

Source: GAME Task Force Report on "Improving Economic Dynamism and Accelerating MSME growth", June 2020.

Creating digital systems that simplify business registration is an imperative demand. The government's Business Reforms Action Plan (BRAP), a joint initiative of the commerce and finance ministries, also outlines the need for a single window flow on both registration and compliances.

Global Best Practice: Singapore's TradeNet is a platform where traders submit electronic data to a single-window to obtain all necessary import/export-related permit/certificate and customs declarations. It has been acknowledged as one of the primary reasons for Singapore's success on the Ease-of-Doing Business index. In Malaysia, the SME Plan allows for Integration of Business Registration and Licensing to create a single registration point.

Key Inference: Streamlining and digitizing registration and compliance processes like labor compliance, EHS (environment, health and safety) filings, tax filings, information wizards along with a central inspection system and a single window system could accelerate the formalization of this ecosystem. In this regard, we could look at:

- One online registration platform in line with BRAP

- A single place/window to apply for all compliances, submit all information and documents

Discussion Point 2: Shifting Toward Digital Lending

With the rise in internet usage and smartphone penetration, financial services firms are looking at more aggregated solutions around digital lending models driven by cutting-edge technologies such as AI, ML and rating-based models. Digital lending has some inherent advantages over traditional lending, such as faster approval of credit, use of alternative data to assess creditworthiness, and operating cost efficacy.

Current Scenario: The digital lending market is expected to grow to $100 billion by 2023. As digital lending matures with innovative models such as point-of-sale financing, invoice discounting exchanges, and buy-now-pay-later, we should look at how we can drive the next phase of digital consumer lending.

There have been recent concerns in India stemming from an increasing number of unauthorized digital lending platforms that provide a promise of quick loan disbursement. RBI did issue a clarification that such digital lending platforms, which are used on behalf of banks and NBFCs, must disclose the name of the bank or NBFC upfront to the customers.

Governments in countries like the UK have backed the peer-to-peer (P2P) lending model and have been active participants in platforms like Funding Circle and Zopa. Regulators in the US have staunchly supported P2P systems and have come up with measures to safeguard the industry.

A Medici report from 2020 says that India has over 19 P2P lenders which have facilitated over Rs 500 crore in loans. This space is highly regulated by the RBI, where all the platforms registered with it are categorized as NBFC-P2P entities.

Key Inference: P2P lending is a sunrise space in the Indian financial ecosystem. While regulator RBI has relaxed P2P lending norms over recent years, some measures to bolster this area could include the following:

Measures to encourage electronic contracting for P2P transactions. This would save the hassles of filing and record keeping and pave the way for borrowers to honor their loan commitments legally

Compliance requirements can be strengthened for mandatory reporting on payment defaults. This would provide a holistic picture of creditworthiness

Discussion Point 3: Need for Growing Supply Chain Financing

Several panelists highlighted the lack of data in understanding the segmentation of various MSME categories (very small vs large businesses), the incentives needed in the system to encourage retailers to go digital, and the issues around the lack of data, leading to only 10% of small businesses having access to formal credit.

Supply-Chain Financing (SCF) provides opportunities for lenders to extend microloans and creates new opportunities for businesses.

> Multiple forms of credit sources will go a long way in reducing the sector's over-reliance on informal credit.

The benefits to the ecosystem in diversifying credit sources are:

- Increased sale of additional stock purchased using credit

- Access to banking and financial services

- Room for incentives, such as subsidizing loan insurance for entities servicing MSMEs

- Reduction of risk and operational cost of handling cash

- Potential for cross-selling benefits for the bank, such as access to personal credit

While the government has taken some steps to reduce the sector's over-reliance on informal credit channels, it will see the light of the day if licensed access to Account Aggregators and GSTN (Goods and Service Tax Network) are made available to qualifying fintech entities for efficient and seamless loan disbursal to MSMEs and retail borrowers. This would help in formalizing platforms for MSME credit delivery.

In India, the Open Credit Enablement Network (OCEN), recently unveiled by iSPIRT Foundation, democratizes 'credit rails' on some of the aspects connecting lenders with marketplaces. In the United States, the Small Business Administration authority onboards non-banks as lenders under the federal paycheck protection program as part of COVID recovery efforts.

Data-driven models in the MSME ecosystem can help grow supply chain financing.

In Singapore, banks like DBS exemplify a new breed of SCF providers who are leveraging the newest technologies—APIs (application programming interfaces) and blockchain—to provide financing more quickly to suppliers. On the supply-chain financing side, the push has been mostly on the buyer side, with very little work on the dealer or sales side.

Key Inference: For supply-chain financing to grow, more sources of credit need to be enabled for MSMEs. Some measures in this regard could be:

Equipping better data-driven models around transaction tracking and supporting micro-merchants in credit access via all financial institutions, including banks.

Allow ease of adopting AI, data analytics and blockchain to provide quicker financing to suppliers.

Enabling conditions for fast-tracking a loan service provider's framework (such as LSP licences and seamless loan disbursal).

Session 3

INSPIRING TRUST AND SECURITY

IN DIGITAL COMMERCE

SECURITY BREACH

INTRUSION DETECTED

HACKING DETECTED

32%

23%

47%

74%

56%

18%

67%

The conversation spanned themes such as trust and security of digital payments, need for institutionalizing PPP mechanisms around threat monitoring/intelligence, and more design-based interventions of a secure customer onboarding process.

Context: In India, digital transactions have increased at a CAGR of 61% and 19%, in terms of volume and value, respectively, between fiscal 2014-15 and 2018-19. In fiscal 2014-15, digital transactions were valued at 660% of GDP. In 2018-19, this number increased to 862%. This growth in digital payments is great for the consumer as companies innovate on putting customer experience front and center. However, security cannot be left behind, especially for the next 500 million users who will go online in the next few years. This surge in digital transactions has increased the risk vectors on possible security breaches, both for consumers and businesses. We must ensure that India's inclusive digital financial system is protected from risk vectors like security breaches for both consumers and businesses.

A Medici report of June 2020 says 40,000 cyber-attacks targeted the IT infrastructure of the banking sector in India. In August 2018, Cosmos Bank faced a cyber-attack, resulting in nearly $14 million being siphoned off. In another incident, Canara Bank ATM servers were hacked and $27,000 siphoned off from over 50 victims.

Several measures by the RBI, especially around tokenization, consent-based function for Card Not Present (CNP) transactions, Turnaround Time (TAT) framework, creation of a Central Payments Fraud Registry, have been welcome steps in instilling consumer confidence and laying out the necessary security upgrades.

With digital transactions spiking, cyber frauds keep pace as first-time users come on board
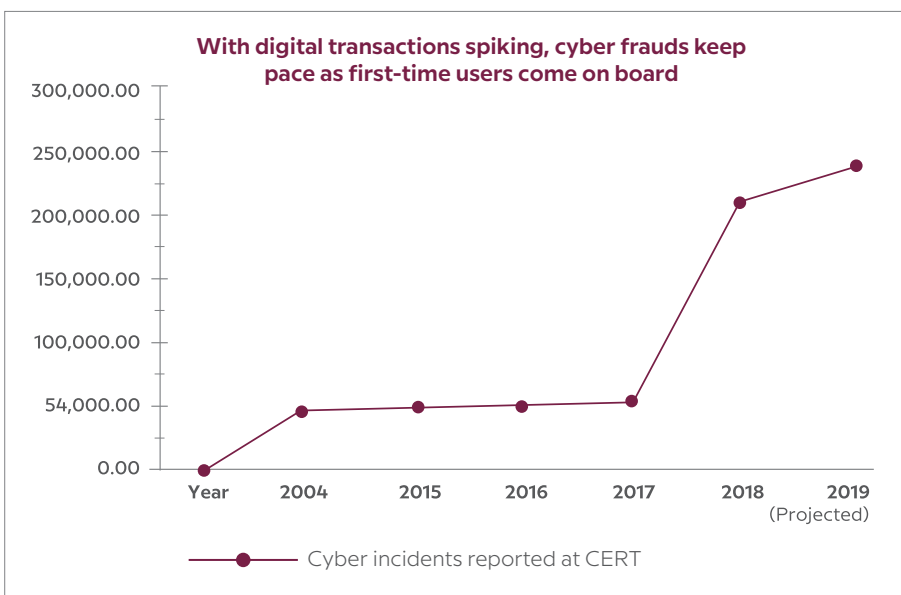
Source: AMCHAM and FTI Consulting White Paper on 'India's National Cybersecurity Strategy'

Session Objectives:

Discuss policy and technological interventions for cyber-security concerns to increase resilience

Build trust while ensuring seamless transaction experiences

Explore the role of emerging technologies (AI, ML) in countering frauds

From Caveat Emptor to Caveat Vendor?
"Security First" Design Approaches for Frictionless Commerce

Discussion Point 1: Securing User Trust on Digital Payments' Use and Experience

Covid-19 may have led to an increase in phishing and identity thefts, but that wasn't unique to the pandemic period. A panelist highlighted how large-scale financial frauds occur due to vishing (social engineering) attacks. Several panelists highlighted the need for stronger mechanisms to tackle such vishing attacks, whether by way of better fraud analytics or more robust information sharing.

In sessions 1 and 2, too, the issue of trust and security in digital payments was highlighted. Transaction failures and reliability concerns, whether with m-wallets (PPIs), UPI or its TPAPs (third-party application providers), or other instruments, have been a key challenge. The report by RBI's High-Level Committee on Deepening Digital Payments notes that transaction failures cause poor consumer experiences.

The critical challenge has been to develop enough friction for fraudsters when they try to run fraudulent campaigns or cyber-attacks. One way to do so is by signals or entire attribute history to create friction against fraudsters. Moreover, a centralized repository of fraudsters, where all companies and customers can flag suspicious details for everyone's benefit, was suggested as a possible approach on information exchange around threat intelligence. Another set of suggestions centered around payment platforms developing more visually explicit warnings or labels for users, such as creating multiple suspicion screens. The efficacy of developing scenario-based modeling exercises in the customer onboarding process was also highlighted.

Information sharing systems such as a fraud repository can be an effective threat intelligence mechanism to tackle cyber-attacks.

Online platforms can carry labels or warnings for alerting consumers to the risk of frauds.

Key Inferences:

- A whitelisting approach can be developed on verified contact origins, whether phone numbers or top-level domains (TLDs) of banks, in ensuring mitigation of phishing (a type of fraud where sensitive personal data is obtained via disguised means) risks. A repository of fraudsters should also be in place to ensure both payment enterprises and end customers can flag suspicious numbers and activities.

  Whitelisting is a fairly commonplace approach organizations follow as a cyber-security practice wherein administrator-level safeguards are put in place to allow only for an approved set of applications that can be organized within an internal network, whether from a computer or mobile device.

RBI maintains the Sachet portal (sachet.rbi.org.in) to facilitate information sharing on illegal or fraudulent deposit schemes. The website also provides an investor awareness section, along with a whitelist of registered entities such as licensed NBFCs.

- User experience (UX) interfaces for those transacting in digital platforms should carry actionable friction points or create a break for the user to reconsider the flow: e.g. an e-commerce checkout process that requires at least one explicit confirmation before placing an order. Such design interventions can also be incorporated around the digital onboarding process for internet/mobile banking as well.

- The use of sophisticated automated models (AI, ML) to reduce friction should be encouraged in real-time models that track device signals and patterns. A harmonized set of industry standards that are interoperable must be in place, whether it is around behavioral biometrics, locking device or SIM, etc.

RiskRecon, Inc, worked with a large US financial institution to develop a robust third-party risk assessment program to assess third-party cyber risks and manage critical vulnerabilities to keep the systems secure.

Discussion Point 2: Bridging Coordination Gaps in Cyber Security and Streamlined PPP Mechanisms

The upcoming National Cyber Security Strategy (NCSS) is expected to provide a holistic 360-degree view on cyber security. Coordination challenges in cyber security have existed on both fronts, government and industry. Proposed projects such as a National Threat Exchange and the National Malware Repository would require cooperation of both academia and industry.

Some panelists said successful government and private sector collaborations like the Aarogya Setu contact tracing app are often driven by necessity or public interest factor. But monitoring and threat intelligence sharing need to move in a synchronized fashion without the need to identify a larger public exigency ground.

It was also highlighted how organic collaboration amongst the CISO (Chief Information Security Officers) community has been missing, whether on knowledge sharing, capacity building or other related efforts. Covid-19 has provided a trigger for CISOs to come together and discuss WFH (work from home) implications around security. However, this must be broadened in scope and ambition, with more institutional and streamlined sector-wide collaborations, whether it's among government and industry cyber-security experts or initiatives with regulators, such as RBI and IDRBT (Institute for Development and Research in Banking Technology) looking at security issues in the BFSI (banking, financial services and insurance) ecosystem.

Current Scenario: The government is looking at a new National Cyber Security Strategy that proposes a legislative framework for cyber insurance, and governance mechanisms for decentralized cyber-security responsibilities. This strategy needs to include a clear directive for institutionalized coordination mechanisms on cyber threats.

There is a need for more informal yet structured ways of threat intelligence-sharing between CISOs from various sectors and agencies such as CERT-In on a regular basis and not just on an ad-hoc- or crisis-mode basis such as the Covid-19 pandemic.

> Better information sharing systems such as a fraud repository can be an effective threat intelligence mechanism to tackle cyber-attacks.

Key Inferences:

- A national intelligence platform should be established for using global signals emerging across networks, platforms, apps and use models to trigger defenses. Tracking signals from frauds emanating globally is critical.

- In 60-70% of cyber security fraud cases, the service provider is located outside India and authorities need to go through the MLAT (mutual legal assistance treaty) process, which takes months or years. There is a need for an e-MLAT process to make the system around information-sharing more effective and less time-consuming.

  Both of these would require cooperation mechanisms at the regional and global levels. While this may be difficult to implement, there are several such initiatives that have shaped cooperation successfully such as the Cybersecurity Tech Accord on online safety/threat mitigation and 3GPP as a multi-stakeholder consortium around telecommunications standards development.

- Bug Bounty programmes (a crowdsourced initiative to invite researchers and developer communities to test security effectiveness and system flaws) have been effective in promoting multi-stakeholder collaborations on security issues. More such "Good Samaritan" initiatives or approaches are needed.

Aarogya Setu's Bug Bounty program was prepared with the goal to partner with security researchers and the Indian developer community to enhance its security and build users' trust in the contact-tracing system.
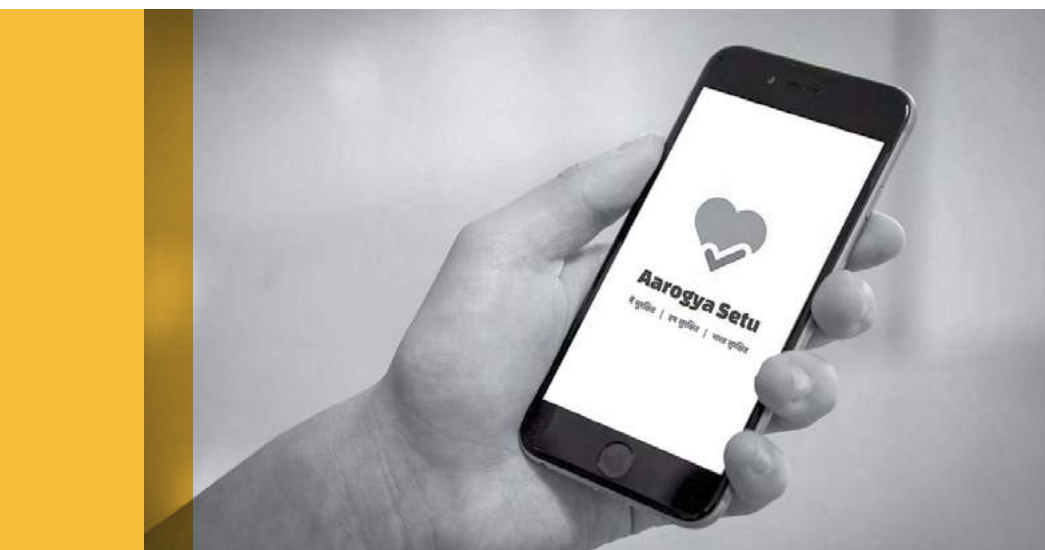
PREPARING INDIA'S AGRI ENTERPRISES

FOR CONNECTED COMMERCE

The round-table participants included representatives from the government, banks, agri enterprises, multilateral agencies, VC firms and foundations. The session focused on building a digital ecosystem that would enable the integration of various parts of the agri value chain and help farmers use technology to boost productivity and lower the cost of production, thereby leading to higher incomes.
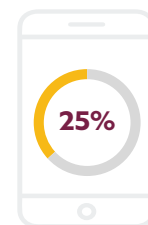
Context: Agriculture, with its allied sectors, provides livelihood to a large section of the Indian population. Small and marginal farmers (owning less than two hectares of land) account for 86% of all farmers in India, according to the 2015-16 agriculture census. These small farmers face several challenges through the agriculture life-cycle: challenges of access to markets, information, advice, inputs, mechanization, logistics, and financial services. Even before the pandemic, farmers and small agri-businesses struggled to obtain the necessary funds needed to run and maintain their businesses.

According to the World Bank, growth in the agriculture sector is up to four times more effective at raising incomes among the poorest populations, than other sectors. With the Government of India's push to doubling the income of farmers by 2022, India can play a significant role in showcasing the strength of digitization in building efficiencies in agriculture supply chains, thus increasing farmers' incomes.

The promise of digitization has not always translated into impact because digitization efforts often suffer from poor product design, inappropriate technology for a rural context and inadequate understanding of the needs of key agriculture stakeholders. Smartphone penetration is very low in rural India (25% in 2018) and internet access is limited—rural broadband penetration was a mere 29% in March 2020. Yet many agri-tech platforms rely on a high-tech, low-touch model, expecting farmers to download apps and videos on their phones and make online transactions themselves, which may not be possible without hand-holding.

25%

Rural Smartphone Penetration in **2018**

Source: India Cellular & Electronic Association, July 2020

29%
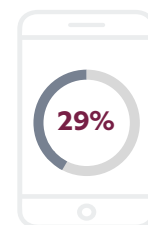
Rural Broadband Penetration in **March 2020**

Source: Broadband for inclusive development—social, economic, and business, November 2020

Digitization impact in agri sectors have been limited by product design, technology, understanding of user needs and smartphone and internet penetration.

There has also been a continued concern over the lack of formal channels to extend credit to farmers. A 2016-17 study by NABARD showed that 52.5% of agricultural households were in debt on the date of the survey. Banking rules do not allow farmers who have running loans to access more credit. Moreover, most agri-techs have not succeeded in digitizing financial transactions for the farmers or enabling formal agri-credit at lower interest rates, say by leveraging transaction data.

Session Objective: The objective of the session was to look at interventions that are necessary to unlock the promise of digitization in agriculture. These included the following aspects:

Enabling greater market access by digitizing the agri value chain

Building a commercially sustainable rural digital ecosystem at scale

Role of FPOs/agri credit societies in building and sustaining a digital ecosystem

Financial inclusion in the agri sector

Achieving agri-credit at scale

Transforming the Agri Value Chain
## Hybrid 'Phygital' Approaches

Discussion Point 1: Access to Formal Credit as a 'First Mile' Concern

There has been continued concern over lack of formal channels to extend credit to farmers. Agriculture is a major sector, employing nearly half of India's workforce. Over the years, agriculture's contribution to national GDP

has declined from 34% in 1983-84 to just 16% in 2018-19 (in terms of GVA at current prices). This is predominantly due to inherent inefficiencies in the agricultural ecosystem. Farmers are wary of approaching banks because the average loan processing duration is very high. Further, as most farmers do not have a recorded credit history, it is cumbersome for banks to extend formal credit. In the absence of formal credit, farmers use informal channels and end up paying 4 to 5 times higher interest on their loans, entering into a spiraling debt cycle that never ends. This implies that access to formal credit is a first-mile concern, and not a last-mile one.

> Farmers who can't access bank loans due to lack of credit history turn to informal lenders, ending up paying up to five times higher interest, and enter spiraling debt.

Distribution of agricultural households by source of loan

- Institutional
- Non Institutional
- Both
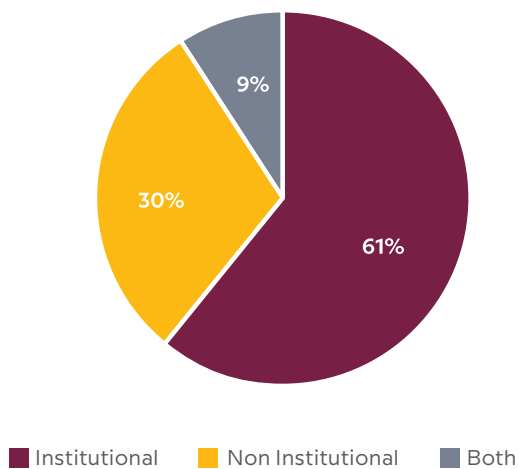
Source: NABARD All India Financial Inclusion Survey 2016-17

Current Scenario: As per NABARD's All India Financial Inclusion Survey (NAFIS) report from 2016-17, data on agricultural loans shows that 61% of the households borrowed only from institutions, while 30% of them borrowed from other sources. Further, due to the lack of records related to their agricultural activity, tenant farmers, sharecroppers, oral lessees and landless laborers faced a lot of difficulty in accessing institutional credit.

During the lockdown, the government announced additional emergency working capital funding of Rs 30,000 crore for farmers through NABARD to be targeted at rural cooperative banks and regional rural banks (RRBs). However, as per RBI's internal working group report to review agricultural

credit, commercial banks provided the majority share (up to 80%) in agricultural and allied credit, followed by the cooperative banks that provided around 15% of the credit while the RRBs provided only 5% of agriculture credit.

The RBI's report also suggested that in order to bring the excluded agricultural households into the fold of institutional credit, there is a need to build an enabling ecosystem that would include digitizing land records, reforming the land-leasing framework, creating a national-level agency to build consensus among states and the Center concerning agriculture-related policy reforms, and use innovative digital solutions to bridge the information gap between banks and farmers.

Key Inferences: To ensure small and marginal farmers' access to formal credit systems and move a step closer towards realizing the goal of doubling farmers' incomes by 2022:

- **Digitization of land records:** Due to the lack of maintenance of actual land records, there have been challenges, including litigation. The most important asset of a small farmer is land. Today, farmers spend precious time and resources over land disputes. Digitized land records would improve transparency by showing ownership status. This would not only empower farmers but also improve ease of doing business in the agri sector. For example, digitized land records in Uttar Pradesh, Andhra Pradesh, Telangana and Karnataka are some such successful digital transformation efforts.

> Digitization of land records will empower farmers by improving transparency and ease of doing business in the agri sector.

The Bhoomi database (digitized records of all land ownership in Karnataka), developed by the state government, captures details of about 40 lakh farmers and has helped check the eligibility of farmers for loan waivers. This database combined with the land survey, Aadhaar and ration-card databases, as well as bank data, has helped the Crop Loan Waiver Scheme save around Rs 4,000 crore since December 2018, when the waiver was rolled out. It has also helped eliminate as many as 8 lakh loans that were identified as non-farm.

In April 2020, the Prime Minister launched the **SVAMITVA Scheme** to provide an integrated property validation solution for rural India, which has been extended to all states and union territories in Union Budget 2021–22.

The Center also plans to issue a **14-digit Unique Land Parcel Identification Number** (ULPIN) to every plot of land in the country within a year's time. It will subsequently integrate its land records database with revenue court records and bank records, as well as Aadhaar numbers on a voluntary basis. The ULPIN scheme has been launched in ten states in 2021 and will be rolled out across the country by March 2022.

- **Agricultural NBFCs can play an important role in farm sector development.** As in the early days of FPO financing, credit support for small farmers and agri start-ups is more likely to come from NBFCs, which will then be followed by large commercial banks once the agri-credit lending sector picks up steam and becomes more lucrative. However, policy reforms are required to enable agricultural NBFCs to access low-cost capital to be able to extend farm credit at competitive rates. Just as with NABARD, cheaper credit could be made available to NBFCs.

- **Creation of an Aggregated Digital Ecosystem (a 360-degree Solution):** There is a need to develop digital infrastructure to help commercial banks to acquire new customers at reduced cost and provide solutions focusing on all stages of the agri value chain. For example, a common platform could support getting credit, selling

crops, receiving payment, etc. These should serve as a one-stop destinations for farmers to engage with customers, banks and third parties. To achieve this, more collaboration is required where fintechs can act as the interface between farmers and large banks, and provide banks with trusted information based on which credit can be extended to farmers. Building low-interest credit products enabled by leveraging transaction-level data can work well with predictive AI analytics.

SBI's YONO App: YONO SBI Krishi has four offerings or sections: Khata (caters to agriculture credit solutions like agri gold loans), Bachat (financial superstore for farmers' investment and insurance needs), Mitra (agriculture advisory services) and Mandi (an online marketplace for purchasing agricultural inputs and farm equipment).

Mastercard Farmer Network (MFN): MFN is a digital marketplace that enables buyers and aggregators to procure agricultural yields directly from farmers and FPOs in a more efficient and transparent way. MFN digitally links buyers, farmers and FPOs, facilitating the seamless posting of orders, its fulfillment and payments in a digital environment.

Discussion Point 2: Access to Information to Enable Informed Decision Making

Like any other business, boosting productivity and reducing the cost of production using technological interventions are effective ways to increase farmer income. However, from farm to fork, issues arise due to lack of informed choices. There is either a lack of information, or too much information that a farmer is not equipped to choose from. For example, a farmer in Uttar Pradesh today has access to several agriculture-related apps, providing a lot of overlapping information, which at times is contradictory, resulting in loss of trust of the farmer in the digitally available information. Challenges around managing excess or insufficient produce (gaps in understanding demand-supply situation) arise as information asymmetry exists at every stage of the agri ecosystem.

Current Scenario: The seed is a basic input for attaining high quality yield. Seed testing laboratories and certification standards promise better results, but farmers are unable to use them fully due to lack of information about modern seeds in the market. There is no proper medium or information service that explains the importance of quality and advantages of different varieties of seeds in the market, while some of the services come at a price that small and marginal farmers cannot afford. Similarly, lack of information and understanding about the use of fertilizers has led to skewed nitrogen-phosphorus-potassium (NPK) ratios in soil, resulting in decreased fertility. Agri financing is another area vulnerable to information gaps.

Developed by the Ministry of Electronics and Information Technology (MeitY) and National e-Governance Division (NeGD), UMANG (Unified Mobile Application for New-Age Governance) aims to drive mobile governance in India. The app provides a single platform to all Indian citizens to access pan India e-gov. Through the app, farmers can apply for financial support, 'soil health card' services, sell and purchase farm machinery, know about fertilizer stock position and prices, seeds related information and transportation services. As a one-stop shop, UMANG is a step in the right direction: whether the app is easily accessible to and usable by farmers is yet to be seen. The bigger challenge lies in popularizing the app as well as hand-holding farmers to be able to use the app effectively.

Key Inferences: To tackle existing gaps and enable information services that contribute to farmer development and help improve their financial situation:

- **Transparency and availability of data for research by any interested party:** Analyzing data leads to insights into cropping patterns, predicting shortage/surplus, mapping shortfall/abundance of artificial irrigation, weather changes, etc. All this will help predict future demand for multiple crops—on what to grow and how much to grow. A lot of such data is available with Central and state governments, but often not made available to researchers, start-ups, et al. Creating a system for open sourcing all such government data and creating APIs for researchers/private sector players to use, perhaps for a fee, can help initiate the building of an effective agri digital ecosystem.

> Making government agri data available to third parties, with or without a fee, can help build an agri digital ecosystem.

Fasal is an agri start-up that helps farmers through its AI-powered IoT-SaaS platform, which captures real-time data on growing conditions from on-farm sensors and delivers farm- and crop-specific actionable advisories to farmers via mobile phones in vernacular languages.

- **A 'phygital' (physical plus digital) model in the short- to mid-term is critical for good digitization outcomes in the long run.** To decide which service to use and what is the right price to pay for that service cannot be left to the farmer alone. Along with digitization of the value chain, there is a need to undertake inclusion programs to ensure that farmers are trained to use that technology. Both private and public services can co-exist, but the foundational element should come in the form of a public good investment. Further, large private sector technology firms can also act as a bridge between government programs and on-ground agri techs to drive scale.

> A 'phygital' model can help farmers decide which service to use and what price to pay, achieving better long-term digital outcomes.

- **Setting up of a specialized fund for the upliftment of the agri-tech sector:** The agriculture sector requires a combination of talent and technology to come up with solutions that can be scaled. There are many recent agri-tech related startups with new ideas and innovative approaches, but unable to scale up due to lack of availability of significant risk-taking capital. There is a Start-up India fund of Rs 10,000 crore; a Rs 10,000 crore MSME fund is also being set up. On similar lines, there is a need to create a specialized fund for the agri-tech sector, something that traditional venture and angel funds often ignore.

Discussion Point 3: Disaggregated Agri Value Chains and Gaps in Market Linkages

Among the larger financial inclusion initiatives that the Government has steered, from the Jan Dhan-Aadhaar-Mobile (JAM) trinity to the Account Aggregators platform, the focus has been on the ability to create aggregation models—stack-like ecosystems that can apply interoperable mechanisms for credit, lending and other challenges.

This could be adapted to the issues around the lack of market linkage faced by farmers, as highlighted by several panelists. There is a huge gap in what farmers get for their produce versus the price at which the produce is sold in the market. Most of the money is distributed among intermediaries along the value chain. Due to lack of consumer feedback, along with little information on 'true market demand', the farmer continues to grow the same crops, leading to a surplus at times. Establishing comprehensive market linkages is critical because production does not automatically translate into higher profitability. If done right, FPOs can become the center for farmers where they get to deal directly with large consumers and independent retailers, thereby creating an end-to-end value chain.

Key Inferences:

- **More collaboration is required between agri-related start-ups and FPOs** where the former can fill the information gap on both the upstream and downstream sides, with the advent of technology—smartphones, cloud-based internet services, remote sensing functionality—in remote rural areas. FPOs can connect farmers to start-ups and help them avail their services.

- **Improve operational efficiencies of FPOs by employing simple digital tools that would aid in digitally tracking all business transactions in a secure manner and provide them with marketing opportunities.** As of now, most FPOs face challenges in day-to-day operations and marketing. Further, manual record-keeping and multiple record books increase the chances of error and calls for reconciliation across business transactions.

Session 5

ROBUST TRANSIT SYSTEMS

FOR SMART CITIES

Panelists underscored the importance of moving to open systems, allowing not just one city-specific card or even one new national card usable across transit systems, but also payment via popular platforms: UPI, mobile wallets (PPIs), and contactless cards, including cards stored by smartphone apps in safe, tokenized forms. Key areas highlighted: Ease of use and low friction, so that customers could walk into any city transit system without queuing up for tickets, a special card, or recharging.

The poor often queue up for tickets, while richer travelers skip queues using prepaid cards for cheaper fares. Inclusive mass transit must bridge this gap.

> The pandemic drove home the need for minimizing ticket queues, preferably using what citizens already use—contactless cards and smartphones, with support for m-wallets, cards, and UPI.

Transit Payment Solutions

	Pros	Cons
RFID tokens (All metro systems in India)	Cheap for user, no money blocked upfront	Long queues, delays, manpower needed
Prepaid cards (All metro systems in India)	Easy to do; already in use for transit	Won't work across cities; blocks funds
Regional Combo cards (Some metro systems like Kochi)	A single card for retail purchases, and transit in a city	Won't work across cities for transit
Common Mobility Card (Planned across India)	Will work across cities	One more card to carry; need to reissue plastic
Contactless NFC (London Tube, Hong Kong MTR, others)	Can support NFC cards, and UPI, PPI apps; No new plastic	Robust design needed for reliable zero-delay system

Source: Based on internal analysis

Context: Transit systems are the backbone of any urban center. In India, with the transport sector expected to grow to 12% of GDP by 2026, new doors have opened for allied sectors, especially payment service providers and fintech firms to ease payments and improve user experience.

An example of world-class transit in India is the Delhi Metro, which carried 6 million passengers every day before the pandemic. With Covid-19 impacting mass-transit systems across the globe, both government and industry have been forced to think and innovate towards easing customer experience by introducing contactless payments and systems. Globally, these modes of payments have been in use for transit for some years now.

With the onset of the pandemic, there is an increasing need for transit systems to be further integrated with contactless payments in India. Globally, the trend is toward open-loop transit systems, with interoperable payment solutions allowing travelers to switch between different modes of transport with a connected payments network. This has been a growing point of discussion in India as well.

Beyond transit, interoperable mobile-based payment systems on innovative platforms, such as UPI, have paved the way for new business models. Technological changes have disrupted the conventional way in which payments were conducted. FASTag for tolls is another example of a system being rapidly implemented across India, driven through with a carrot-and-stick approach backed by government mandate. There is some way to go before India can embrace transit systems that are fully and equally accessible to all, digitally accessible, and convenient, flexible and affordable.

The consensus on the panel was that interoperable, open-loop transit payment with minimal friction is needed to achieve maximum inclusion, and make transit accessible to all—city residents, visitors and migrant workers—without forcing them to queue up again or buy another piece of plastic. Panelists highlighted the need for a policy push and the need to incentivize the onboarding of new customers, especially from tier-2 and tier-3 cities, so that adoption of a range of interoperable, contactless payments becomes commercially viable in the long run.

Session Objective: To identify a digital roadmap for accessible transit for all citizens, areas discussed included:

	Barriers to interoperability
	Innovative ways of adopting open-loop standards across multiple transit systems
	Identifying gaps in current approaches, and developing viable business models based on global best practices
	Interoperating across cities through innovative platforms
	FASTag: Learnings, accelerating usage for tolls, leveraging for parking and other use cases

Discussion Point 1: 'Cash vs Digital': Addressing the Mindset Issue

In rural and much of urban India, cash is a key component that helps citizens budget their expenses and enables them to track transactions daily. They believe that using cash gives them more "direct visibility", and allows them to monitor what is coming in and going out each month. In rural India, most players across the value chain accept cash, reducing incentives for anyone to adopt cashless systems in the first place. Increasing the adoption of digital payments among rural masses and educating them on the importance of going digital remains a hurdle: this applies to much of the urban poor.

Current Scenario: Universality of acceptance and no transaction cost make cash the king of India's economy. RBI's latest annual report says Covid-19 drove households to hoard cash, increasing the currency to GDP ratio to pre-demonetization levels of 12% in 2019–20. Currency held with the public (CwP) accelerated from 11.3% as on 28 February 2020 to 21.3% by 19 June 2020. The RBI report highlights that the pandemic pushed people to 'rush to cash'.

The speed with which the cash-to-card transition is taking place in cities far outpaces that in the rural areas. According to a Credit Suisse report cited by RBI, 72% of India's consumer transactions take place in cash. Merchants and customers, especially in rural areas, remain unwilling to accept digital transactions due to issues around network connectivity, safety and security perceptions, and a lack of awareness of best practices.

Key Inference: To onboard new customers digitally and expedite their transition from cash to digital, the government and industry can look at ways to incentivize the customer until her mindset changes regarding the need to carry cash. A mix of incentives (monetary and non-monetary), along with policy support, can increase adoption by both merchant and customer. A significantly successful example is that of FASTag.

> FASTag is a case study: a single digital toll system pushed nationwide, saving time and money for users, with Rs 20,000 crore a year projected fuel savings, and Rs 10,000 crore a year revenue boost.

In July 2019, the FASTag program was collecting Rs 19 crore a day. This figure has gone up to over Rs 100 crore a day in 2021, following the mandatory use of FASTag at toll plazas from February 16. Incentives and penalties ("pay double for cash") helped. FASTag will help save Rs 20,000 crore per annum on fuel, the MoRTH union minister has said.

The Indian Highways Management Company Limited (IHMCL) is trying to take this further to allow all participating banks to support FASTag for fuel payments, too. IHMCL is also in talks with NPCI to prepare a blueprint so the Urban Affairs Ministry and respective urban local bodies can start FASTag adoption at a larger level.

Discussion Point 2: Solving for Customer Experience

Different mass transit systems, such as Delhi Metro, have used their own prepaid cards successfully, but without interoperability. Despite technology and business models in place, there are gaps in addressing other key issues, including providing inclusive systems that are as welcoming of poorer migrants as they are of resident white-collar workers. Today, the poor, including migrant workers, queue up for tickets, paying full fare, while richer travelers skip queues using prepaid cards--and even get discounts on fares. Truly inclusive mass transit must bridge this gap, and provide the same consistent customer experience to all its users.

Current Scenario: India is experiencing rapid urbanization. The United Nations estimates that India is expected to add the largest number of urban dwellers by 2050, and Delhi is projected to become the world's most populous city by 2028. To minimize congestion and reduce travel time, it is important to focus on providing adequate quality of public transport in cities. The Ministry of Housing and Urban Affairs estimates that USD 333 billion needs to be invested during 2011–31 in urban roads and mass transit. The adoption of modern mass transit needs to move up sharply to decongest our city roads and clean the air. Customer experience is also poor due to the absence of seamless intermodal travel, poor feeders for first and last mile connectivity, absence of integration of mass transit and feeder system schedules, and lack of integrated ticketing. Most of our mass transit systems are isolated, and run as silos. Low use of technology

and tracking data results in overcrowding or under-utilization. Rarely are surveys carried out to track customer satisfaction in near real-time.

Key Inference: To make mass transit the preferred mode of travel, it is essential to make customer experience friction-free. For example, Mumbai Metro adopted an approach where no queue would be more than 2 minutes. It replaced plastic tokens with disposable paper QR codes, which came in handy during Covid-19. This is one aspect of customer experience.

Similar targets should be aimed for and achieved at all levels of the value chain of customer experience— ranging from the first time she is nudged to go digital, to the time she completes an online transaction. An example is Mysore's Intelligent Transport System (ITS), implemented across its city bus fleet in 2012. There was a 50% dip in fatal accidents, fewer passenger vehicles on the road, a punctuality rate of over 90%, and less than 10 minutes' wait time for passengers at bus stops. Commuters get real-time information on arrival and departure times of buses, along with route and stoppage time, through SMSs and an app called MITRA. Providing wholesome customer satisfaction will improve digital adoption rates. Transport for London has evolved one such best practice.

Transport for London set an ambitious target to improve customer experience for 6.5 million bus passengers. Improving customer service skills of its 13,000 bus drivers was identified as a crucial area to drive loyalty and reduce complaints. London buses generated two-thirds of complaints for TfL.

TfL invested £6M in 'Hello London', a customer experience program for its network of drivers and staff, focused on tackling 'gain points' around bus drivers and customer interactions. Workshops were held with bus operators and staff to align drivers' duties with customer expectations. Interestingly, when asked how to improve customer experience, 2,600 ideas came from bus drivers themselves: the best of which were implemented on the network.

TfL saw a 77% increase in customer commendations and 57% rise in the frequency of drivers making announcements, two key measures of the impact of driver behavior. There was also an estimated annual saving of £40,000 in complaint-handling costs.

Going digital will allow fleet management, ticketing, security surveillance, traffic management and real-time passenger information, helping project demand and frequency, greatly impacting transit revenue and expenses.

Discussion Point 3: Lack of Interoperability and a Common Payment Acceptance Architecture among Systems of Mass Transit

Most large cities have multiple modes of public transport with metro trains and buses being the most common ones. However, a Delhi Metro card will not be accepted by Mumbai Metro, and vice versa. The same problem of lack of interoperability lies with state buses as well. Lack of standardization and acceptance of a common payment system makes it difficult to allow inter-state interoperability among mass transit systems.

Current Scenario: Challenges include fragmented governance, to achieve the kind of interoperability required to make mass transit systems popular. Different entities manage different components of transport systems, and coordination becomes a problem.

For example, Delhi Metro Rail Corporation owns and operates the Delhi Metro; the bus systems are managed by Delhi Transport Corporation, and the Delhi Integrated Multi Modal Transport System is a Delhi government joint venture with IDFC Foundation, and parking facilities and land use fall under the purview of Delhi Development Authority. Deploying modern technologies like contactless payments, NFC-based phone payments, e-ticketing, and digitized parking solution will require standardization and coordination among different entities—or would need the creation of a new entity under whose purview all responsibilities should fall.

Another issue is the lack of standard payment acceptance systems. The system deployed to collect fares by Delhi Metro is different from the system deployed by Pune Metro which differs from that of the state bus service provider in Mumbai, not allowing them to interact with each other. Even if the government successfully rolls out a National Common Mobility Card (NCMC), it is essential to understand that NCMC is more of a technical standard and a goal, with different means of getting there. Some paths require the re-issuance of another billion pieces of plastic, resulting, for many citizens, in one more card to be carried largely for accessing mass transit systems like buses and metros.

Even if integrated into a single card (One Nation One Card), a good question is whether we can better leverage already issued cards and existing standards, as well as use smartphones more effectively. An alternative way to use existing cards without the need to issue newer ones is to implement mobile-based contactless systems such as NFC technology, easing customer travel for smartphone users. TfL (Transport for London) has been amongst the earliest adopters of NFC technology for carrying out contactless payment at scale.

Key Inference: Alternatives to a new 'common card' center around NFC-based acceptance, so users can pay via their smartphones using popular systems like UPI or m-wallets, or use their already-issued contactless debit or credit cards. Another option is a common transit app for all cities. Many

city transit commuters now have a smartphone. An app where a commuter can just enter the destination, generate a QR code and use that to enter the transit system could be a good first step, as we move towards a fully open system like TfL's in London. If the industry can develop an interactive and practical ticketing system, Indian Railways could consider it too as it will have enormous benefits, including minimizing queues, and ease of use.

Standardization is required to promote interoperability across various verticals. If all industry players adopt standard architectures for achieving integration and promoting partnerships with banks, then interoperability can be achieved much faster and the proposition be more commercially viable. It is important to move from closed loop systems to open loop ones, and standard architectures will help catalyse the transition. Doing so will ensure that the same card or payment technique is acceptable across all modes of transport, thus helping in achieving commercial viability. So a person can use the same card (or app) to travel on Delhi Metro, Pune Metro, or a public bus anywhere. This can also be achieved by the city transit systems accepting standard modes of payments, such as smartphone apps using UPI over NFC, or contactless cards.

> The same card should let a person travel on the Delhi or Kochi metros or a DTC or BEST bus. This can also be achieved by transit systems accepting different modes of payment, such as apps using UPI or m-wallets over NFC, or contactless cards.

Many global cities have deployed automated fare collection (AFC) systems supporting smart cards and NFC-enabled devices, to increase the efficiency of mass transit. One such example is Singapore, and its EZ-Link smart card. It is a single, multi-purpose, stored-value contactless card used for fare payment, small-value retail purchases, taxi, and parking.

GLOSSARY

3GPP	3rd Generation Partnership Project
AA	Account Aggregator
AFC	Automated Fare Collection
AI	Artificial Intelligence
API	Application Programming Interface
BFSI	Banking, Financial Services and Insurance
BRAP	Business Reforms Action Plan
CERT-IN	Indian Computer Emergency Response Team
CISO	Chief Information Security Officer
CNP	Card not Present
COF	Card on File
CwP	Currency with Public
DBS	Development Bank of Singapore
DBT	Direct Benefit Transfer
DEPA	Data Empowerment and Protection Architecture
DFI	Digital Financial Inclusion
DMRC	Delhi Metro Rail Corporation
DPIIT	Department for Promotion of Industry and Internal Trade
DTC	Delhi Transport Corporation
ECLGS	Emergency Credit Line Guarantee Scheme
E-KYC	Electronic Know Your Customer
EoDB	Ease of Doing Business
FI	Financial Inclusion
FIPs	Financial Inclusion Plans
FPO	Farmer Producer Organization
FY	Financial Year
GAME	Global Alliance for Mass Entrepreneurship
GDP	Gross Domestic Product
GeM	Government Electronic Marketplace
GFX	Global Findex (World Bank)

GoI	Government of India
GPRS	General Packet Radio Service
GST	Goods and Service Tax
GSTN	Goods and Service Tax Network
GVA	Gross Value Added
IDFC	Infrastructure Development Finance Company
IDRBT	Institute for Development and Research in Banking Technology
IHMCL	Indian Highways Management Company Limited
IMF	International Monetary Fund
IoT	Internet of Things
iSPIRT	Indian Software Products Industry Round Table
ITS	Intelligent Transport System
JAM	Jan-Dhan Aadhaar Mobile
JDY	Jan Dhan Yojana
KYC	Know Your Customer
LSP	Licensed Site Professionals
MeitY	Ministry of Electronics and Information Technology
MFN	Mastercard Farmer Network
MITRA	Mobile Initiated Tracking & Rescue Application
ML	Machine Learning
MLAT	Mutual Legal Assistance Treaty
MoRTH	Ministry of Road, Transport and Highways
MSME	Micro, Small and Medium Enterprises
MUDRA	Micro Units Development and Refinance Agency
NABARD	National Bank for Agriculture and Rural Development
NAFIS	NABARD All India Financial Inclusion Survey
NBFC	Non-Banking Financial Company
NCMC	National Common Mobility Card
NCSS	National Cyber Security Strategy
NeGD	National Electronic Governance Division

NFC	Near-Field Communication
NPCI	National Payments Corporation of India
NPK	Nitrogen-Phosphorus-Potassium
OCEN	Open Credit Enablement Network
ONOC	One Nation One Card
OTP	One Time Password
P2P	Person to Person
PIDF	Payment Infrastructure Development Fund
PMJDY	Pradhan Mantri Jan Dhan Yojana
PoS	Point of Sale
PPP	Public Private Partnership
QoS	Quality of Service
QR	Quick Response
RBI	Reserve Bank of India
RRB	Regional Rural Bank
SaaS	Software as a Service
SCF	Supply Chain Finance
SIBDI	Small Industries Development Bank of India
SIM	Subscriber Identification Module
SME	Small and Medium Enterprises
TAT	Turn-Around Time
TfL	Transport for London
TLD	Top Level Domain
TPAP	Third Party Application Provider
TReDS	Trade Receivables Discounting System
ULPIN	Unique Land Parcel Identification Number
UMANG	Unified Mobile Application for New-Age Governance
UPI	Unified Payments Interface
UX	User Experience
VC	Venture Capital
WB	World Bank
WFH	Work From Home

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Report Curation Team

NITI Aayog

Ajit Pai Distinguished Expert, Economics and Finance

Janak Priyani Young Professional

Pankhuri Dutt Public Policy Consultant

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Mastercard

Ashutosh Chadha Vice President and Head – Public Policy

Latika Taneja Director – Public Policy

Ravi Aurora Senior Vice President and Group Head, Global Community Relations

Rohan Sirkar Director – Public Policy

FTI Consulting

Amrit Singh Deo Senior Managing Director

Pragya Gupta Senior Consultant

Prasanto K Roy Senior Director

Saksham Kotiya Consultant

Subhodeep Jash Director

Edited by: Indrani Dasgupta Consulting Editor, NITI Aayog

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LIST OF **SPEAKERS**

S.NO	NAME	DESIGNATION	ORGANIZATION
1.	Abhay Kumar Mishra	President & Chief Executive Officer	Mumbai Metro One
2.	Abhiraj Singh Bhal	Co-founder	Urban Company
3.	Ajit Pai	Distinguished Expert, Economics and Finance	NITI Aayog
4.	A K Sharma	Executive Director	Reserve Bank of India
5.	Alka Arora	Joint Secretary, Small Medium Enterprises	Ministry of Micro, Small and Medium Enterprises
6.	Amitabh Kant	Chief Executive Officer	NITI Aayog
7.	Amit Arora	Senior Technical Adviser, Rural Development Finance	World Bank
8.	Amrish Rau	Chief Executive Officer	Pine Labs
9.	Amrit Singha	Vice President, Operations	Indian Highways Management Company Limited
10.	Amrit Singh Deo	Senior Managing Director	FTI Consulting
11.	Anil Bhandari	Chief General Manager, Chief Information Security Officer	State Bank of India
12.	Anup Saha	Deputy Chief Executive Officer	Bajaj Finance
13.	Arindom Datta	Executive Director	RABO Bank
14.	Ashok Kumar	Director	Indian Cybercrime Coordination Centre
15.	Barkat Ali	Chief General Manager, Business Development	State Bank of India

S.NO	NAME	DESIGNATION	ORGANIZATION
16.	Challa Sreenivasulu Shetty	Managing Director, Retail and Digital Banking	State Bank of India
17.	G Narendra Nath	Joint Secretary	National Security Council Secretariat
18.	Gaurav Porwal	Chief Operating Officer	Ola Cabs
19.	Himanshu Bansal	Regional Director, Digital Inclusion and Strategic Growth	Mastercard
20.	Jyoti Prakash Gadia	Co-Chair, Small and Medium Enterprises & Finance Committee	Confederation of Indian Industry
21.	Karthik Ramanathan	Senior Vice President, Cyber and Intelligence Solutions, Asia Pacific	Mastercard
22.	Kishor Narang	Founder, Mentor & Principal Design Architect	Narnix Technolabs
23.	Dr. Leora Klapper	Lead Economist	World Bank
24.	Mallika Kodali	Product Manager	Google Pay
25.	Dr. Manisha Acharya	Chief Executive Officer	Indigram Labs Foundation
26.	Manoj Mittal	Deputy Managing Director	Small Industries Development Bank of India
27.	Dr. Neelam Patel	Senior Adviser, Agriculture	NITI Aayog
28.	Nikhil Agarwal	Consultant, Transport Division	World Bank
29.	Nishant Gupta	Director, Urban Mobility South Asia	Mastercard
30.	Pawan Bakhshi	India Lead, Financial Services for the Poor	Bill & Melinda Gates Foundation

S.NO	NAME	DESIGNATION	ORGANIZATION
31.	Porush Singh	Division President, South Asia	Mastercard
32.	Prasanto Kumar Roy	Senior Director	FTI Consulting
33.	Praveena Rai	Chief Operating Officer	National Payments Corporation of India
34.	Purvi Mehta	Senior Advisor and Head of Agriculture, South Asia	Bill & Melinda Gates Foundation
35.	PT Suresh	Chairman	Paycraft Solutions
36.	P Vasudevan	Chief General Manager, Department of Payment and Settlement Systems	Reserve Bank of India
37.	Rajat Moona	Director	Indian Institute of Technology, Bhilai
38.	Rajeev Kumar	Senior Vice President- Market Development, South Asia	Mastercard
39.	Dr. Rajendra Jagtap	Chairman and Managing Director	Pune Mahanagar Parivahan Mahamandal
40.	Rajiv Sabharwal	Managing Director and Chief Executive Officer	Tata Capital
41.	Rajneesh Kumar	Senior Vice President & Chief Corporate Affairs Officer	Flipkart
42.	Rama Vedashree	Chief Executive Officer	Data Security Council of India
43.	Ratnaboli Ghorai Dinda	Deputy Director General	National Informatics Centre
44.	Raul Rebello	Senior Vice President & Head of Rural Lending & Financial Inclusion	Axis Bank

S.NO	NAME	DESIGNATION	ORGANIZATION
45.	Ravi Aurora	Senior Vice President and Group Head – Global Community Relations	Mastercard
46.	Saloni Taneja	Field Officer	Small Farmers Agribusiness Consortium
47.	Sameer Ratolikar	Executive Vice President & Chief Information Security Officer	HDFC Bank
48.	Santosh Kumar	Vice President, International Markets	Mastercard
49.	Sarosh Amaria	Managing Director	Tata Capital Financial Services
50.	Shankara Nand Mishra	Director	Department of Telecommunications
51.	Shashi Verma	Director of Strategy and Chief Technology Officer	Transport for London
52.	Sonjoy Saha	Adviser	NITI Aayog
53.	Subhash Chand Joinwal	Chief General Manager, Small and Medium Enterprises & Supply Chain Finance	State Bank of India
54.	Subhodeep Jash	Director	FTI Consulting
55.	Venkatesh Murthy	Director	Data Security Council of India
56.	Vidya Krishnan	Chief General Manager, Digital & Transaction Banking - Products & Operations	State Bank of India
57.	Vineet Rai	Founder and Managing Director	Aavishkaar Group

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Mastercard is a global technology company in the payments industry. Our mission is to connect and power an inclusive, digital economy that benefits everyone, everywhere by making transactions safe, simple, smart and accessible. Using secure data and networks, partnerships and passion, our innovations and solutions help individuals, financial institutions, governments and businesses realize their greatest potential. Our decency quotient, or DQ, drives our culture and everything we do inside and outside of our company. With connections across more than 210 countries and territories, we are building a sustainable world that unlocks priceless possibilities for all.

About **NITI Aayog**

The National Institution for Transforming India, also called NITI Aayog, is the premier policy 'Think Tank' of the Government of India, providing both directional and policy inputs. While designing strategic and long-term policies and programs for the Government of India, NITI Aayog also provides relevant technical advice to the Centre and States. An important evolutionary change from the past, NITI Aayog acts as the quintessential platform of the Government of India to bring States to act together in national interest, and thereby fosters cooperative federalism.

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FTI Consulting, Inc. is a global business advisory firm dedicated to helping organizations manage change, mitigate risk and resolve disputes: financial, legal, operational, political & regulatory, reputational and transactional. With more than 6,300 employees located in 28 countries, FTI Consulting professionals work closely with clients to anticipate, illuminate and overcome complex business challenges and make the most of opportunities.

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