The changing face of transit: Emergence of a multimodal integrated ticketing system

September 2020

pwc

Click to launch

Foreword

Dear readers,

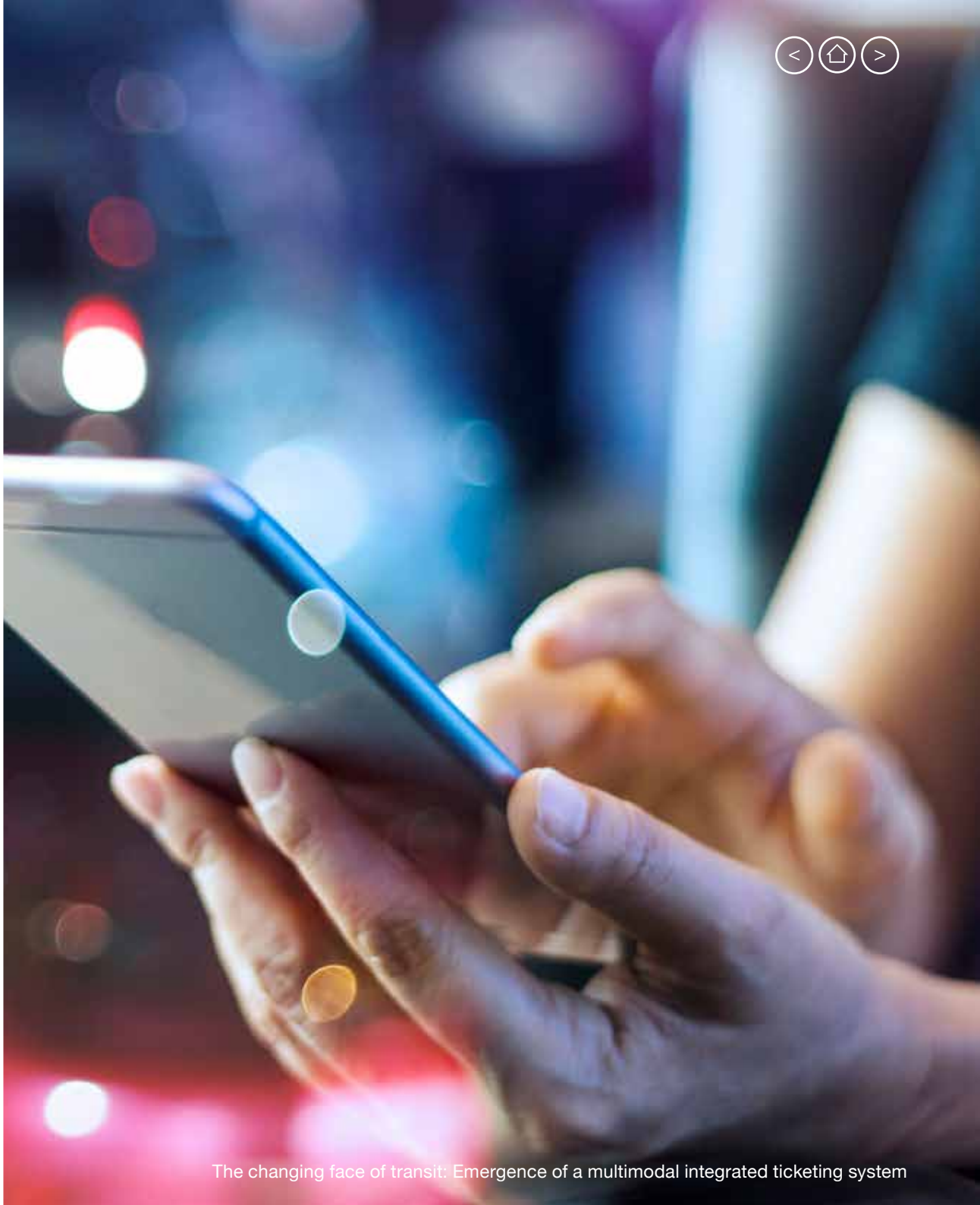
It is my pleasure to bring to you the latest edition of PwC's Payments newsletter. In this edition, we explore how a move towards a multimodal integrated ticketing system (ITS) will help realise the vision of a 'one nation one card' in the Indian transit landscape.

Based on our extensive experience across the FinTech and payments landscape, along with insights from our work with clients, we have explored the key considerations for public transport operators (PTOs) for successfully operating the ITS. Similarly, we have detailed the critical success factors for financial institutions (FIs) focusing on business, operations and technology.

I hope you will find the newsletter to be a good and insightful read.

For details or feedback, please write to:

vivek.belgavi@pwc.com **or** mihir.gandhi@pwc.com



In this issue

Evolution of a multimodal integrated ticketing system

01

Evolution of a multimodal integrated ticketing system

The evolving expectations of customers have changed the way transit ticketing operates. Globally, paper-based tickets have been replaced by tokens, smart cards and mobile apps. India too envisages the development of a cashless fare payment mechanism which will work across all the public transport systems and day-to-day retail payments systems in the country. Approximately 80% Indians have bank accounts and 845 million debit cards[1] are currently in circulation. The focus on the replacement of existing cards with National Common Mobility Cards (NCMCs) will help provide increased mobility and a seamless travel experience to the customers. As the NCMC is an open-loop smart card, users will also get various benefits like reward/loyalty points and cashbacks. NCMCs also adhere to the Reserve Bank of India (RBI) guideline of processing near-field communication (NFC) transactions below INR 2,000 without a personal identification number (PIN).

With the proposed New Umbrella Entity (NUE) drafted by the RBI, there will be an increased focus on innovative products that can act as payment enablers for interoperability in transit payments.

The rising popularity of multimodal integrating ticketing

The classic case of Singapore

- Policies have been drafted to have transit systems integrated with new commercial development.
- The metro network is connected with the bus network.
- TransLink enables the usage of a common fare card across all modes.

Australia – a test bed for the future of integrated and connected mobility

- The project is called the Australian Integrated Multimodal Ecosystem (AIMES).
- Tap-and-go payments can be made through existing NFC-enabled cards.
- Data on where and how people are moving is collected.
- The connectivity of all modes of transport, including walking, is considered.

Key points of the NCMC

Bank-issued standard and secure payment method based on dual interface and EMV+ standard	Service area (reserved space) on card for storage of passes, last-tap information	Common payment standard, applicable for prepaid/debit and credit cards	Provision of stored value (money) cards which can be accessed offline and speed up transactions

1 https://rbidocs.rbi.org.in/rdocs/ATM/DOCs/ATM12BAC674B07F4949B581713AFAC63691.XLSX

Key considerations for public transport operators

02

Key considerations for public transport operators

Currently, the transit fare payment systems are fragmented across most Indian cities and not cost effective for public transport operators (PTOs) and banks. Lately, transit operators have realised the importance of establishing a multimodal transit system that will be interoperable across cities. Thus, transit payments are gaining traction and the concept of an interoperable multimodal transit ecosystem has gained popularity in a few cities with the help of smart fare media which operates on RuPay EMV card technology. It is the need of the hour to have one standardised technology across all the PTOs and banks. This will eliminate fragmentation of the PTOs and adaptation of non-standardised fare collection. Standardisation will also act as a catalyst and reduce costs due to economies of scale.

What PTOs should think about	
Consensus on fare pricing and revenue sharing	Set up a special purpose vehicle (SPV) for the overall management of the ITS
Intent to invest for upgradation to AFC technology	Agreement on operational functions like reconciliation

Source: PwC analysis of data from internal research

There are certain key aspects which need to be considered by PTOs/ transport authorities/the transit industry for the implementation of a multimodal integrated ticketing management system.

A. Acceptance of transit cards issued by multiple issuing entities

Currently, transport operators implementing the usage of NCMCs are onboarding a single issuing bank with 3–5 years of exclusivity to stabilise the system and further providing an opportunity to the bank to earn higher revenue during this period. This model is cost effective for PTOs since it enables the bank to quote a lower bid during the tendering phase and share some of the profits with the transport operator as income from royalty.

With the implementation of an ITS, transport operators may need to onboard multiple players or at least accept NCMCs issued by other banks or PTOs.

If transport operators begin accepting transit cards issued by other issuing entities, they would also need to own the responsibility of paying the merchant discount rate (MDR) to cover the:

- payment scheme switching charges
- interchange amount to the issuer.

B. Setup of acquiring banks

The main function of the acquiring bank is to facilitate an acceptance infrastructure. As this is largely a back office function, it is up to the operator to choose an acquiring bank which minimises the operating cost while maximises the transaction efficiency. PTOs can explore the following alternative options that provide a fundamentally different paradigm for providing integrated fare payment systems:

Common single acquiring bank: A fully integrated and efficient architecture for an ITS would require a common acquiring bank that could be appointed for the special purpose vehicle (SPV) that is responsible for all acquiring transactions through the transit ecosystem for the entire state/region. In this scenario, a single acquirer bank is appointed by the SPV to handle all the ITS transactions, while multiple banks have the permission to issue scheme-specific cards to the customers.

Transport operator wise acquiring bank: Alternatively, each PTO could opt to engage with separate acquiring banks. Though the ITS scheme will be managed by the SPV, the responsibilities of the SPV should be restricted to planning, testing, certification and issuing specifications. While this gives operational independence to individual operators, the overarching scheme will only have the interoperability of smart cards without an ITS.

C. Blacklist management

One of the key challenges for transport operators is communicating details related to blacklisted cards to the validators via the central scheme player. Besides the processing of transit transactions, the mechanism needs to be derived to transfer the list of blacklisted cards by the issuer bank to the central scheme and from the scheme to the acquiring bank, and there onwards to the validators. The stakeholders need to agree upon developing a risk management system as well.

D. Revision in settlement process

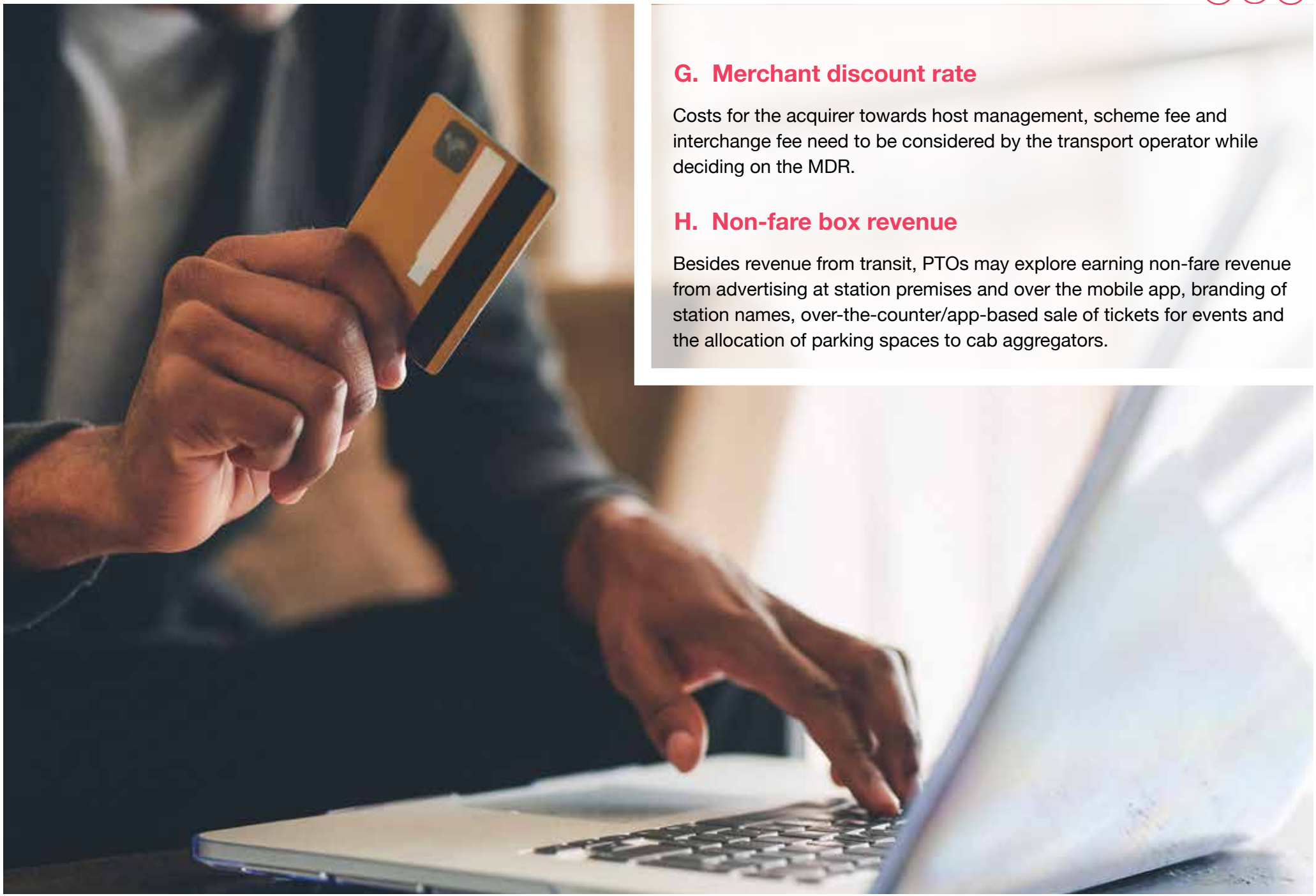
The settlement process may be revised considering the multiple stakeholders like schemes, PTOs, issuing banks and acquiring banks. It must cover the interchange fee, switching fee, sharing of fare transactions, top-up fee, card issuance fee, etc., between the PTOs and respective banks for both transit and non-transit transactions.

E. Data analytics

The vast amount and wider variety of data being generated by various transit sources are extremely valuable for service planning and operations management. This data is generated in real time and is immensely useful for planning future routes or introducing new fare rules like flat fares and integrated fares. This data can also be monetised.

F. Management of card service area

The implementation of a multimodal transport system will see the usage of one card in multiple metro gates. Though the usual single-journey validations may work, the service area in the EMV card has to be specific to the PTO to issue various period passes. The passenger may avail metro services using specific period passes if such passes can be used for separate services. This may help in analysing the trips at the metro stations.



G. Merchant discount rate

Costs for the acquirer towards host management, scheme fee and interchange fee need to be considered by the transport operator while deciding on the MDR.

H. Non-fare box revenue

Besides revenue from transit, PTOs may explore earning non-fare revenue from advertising at station premises and over the mobile app, branding of station names, over-the-counter/app-based sale of tickets for events and the allocation of parking spaces to cab aggregators.

Critical success factors for FIs

03

Critical success factors for FIs

In an ITS environment, the FI (bank) plays the crucial roles of issuing and acquiring. As discussed above, the models may involve multiple issuers and multiple acquirers, which in turn will impact banks at business, technology and operations levels.

A. Operations

The regulations apply to new issuance and replacement/upgrade requests.

- Additional certifications such as switch, clearing and settlement, issuer host-level certifications, white plastic certifications and new bank identification number (BIN) will be required.
- The blacklist management process needs to be considered and implemented by both the issuer and the acquirer bank.
- An efficient settlement and reconciliation system, and the process to manage the off-us and on-us transactions, are required to be implemented.

B. Business

- New business use cases for the customers to increase the usage of smart cards by enabling cab/auto payments for reaching metro stations, buying beverages or booking of dormitories at station premises should be defined.
- Advertisements of banks at counters, smart cards and station premises will lead to an increase of business use cases for banks.
- Discounts/offers given to smart card holders for usage at specific retail merchant locations will enhance the user base.
- A plan for geolocation and time-based offers to encourage customers to use the card for all their payments, including transit and retail, should be developed.
- With a multimodal ecosystem, the bank needs to access payments from any PTO-/bank-issued cards. However, the bank can still strive to get issuance exclusivity for at least a minimum of 3–5 years under the condition that a high-volume PTO should go live first.
- The bank should be allowed to charge customers with certain issuance fees to cover up its investments.
- In case of a multi-issuer and multi-acquirer setup, the bank should strive for a minimum transaction volume commitment from the PTO to have a considerable float income.
- The bank should be able to negotiate for fixed pricing for on-us transit transactions.
- There is a potential to earn MDR on non-transit usage.

C. Technology

- **There will be enhancement costs factored in the card management system for:**
  - secondary account creation for local balances
  - service area usage in cards issued by other issuing entities
  - supporting an additional leg of transactions, i.e. offline (contactless) transactions
  - supporting the recharge of cards issued by other issuing entities.
- There should be a key sharing mechanism to secure the off-us transactions and accept payments from any transit card issued anywhere in the country.
- The blacklist should be updated online as soon as the account balance goes below the threshold defined by the issuer bank/authority.
- A validator can hold multiple secure access module (SAM) cards to validate the EMV cards issued by various banks. The SAM and terminal ID mapping is to be done at the issuing bank's end and the gate.

Way forward

04

Way forward

Although the above section focused more on PTOs and FIs, it will be the responsibility of all the stakeholders in the transit industry to work towards the phase-wise approach to enable interoperability.

For PTOs, besides being able to accept interoperable payments from other bank/PTO-issued cards, finalisation of the risk matrix between all the stakeholders will be the key. Payments scheme operators need to agree on the process of blacklist management, along with the release of standards for transit transaction changes, to enable interoperability.

Designing effective business models for the participating stakeholders will add more value and drive more customer acceptance in the market.

To enable interoperability and implement a multimodal ecosystem, there are certain additional contemplations, besides the smart card based future ecosystem, that need to be taken care of in the future:

- **Host card emulation (HCE):** The certification of smart cards with payment schemes and HCE providers needs to be built and deployed to move customers to mobile-based payments.
- **QR code based payments:** Common QR code standards for transit operations need to be defined by a central agency and ecosystem players for easy integration of the transit system with a third-party application for QR code issuance and transaction processing. The COVID-19 pandemic has resulted in social distancing to be followed in public transport. Passengers would expect less waiting time and faster payment transactions, and this could be achieved smoothly by implementing QR code based payments across transport networks.
- **Open API standards:** A set of open API standards for transit should be considered by central agencies for easy API integration with any third-party mobile application for services like phone recharge, card renewal, application for pass and others.

FIs

The role of an onboarded FI is also crucial in the success of an ITS programme. Although exclusivity on the usage of a card issued by an onboarded bank is eliminated with interoperability, authorities can avoid involving multiple issuers for the initial few years, thus helping the banks to recover their investments.

Further, FIs need to focus on other non-transit revenues to expand their business cases by leveraging the transit ecosystem. Providing value-added services along with enhancing the customer's journey via a marketplace and mobile gaming apps can help in the expansion and retention of the customer base.

Payments technology updates

05

Payments technology updates

Chennai metro rail to bring national mobility card in 6 months

The Times of India

In another six months, Chennai Metro Rail Limited (CMRL) will be launching a national common mobility card (NCMC). The agency has floated tenders to look for a partner bank for digital fare collection and issuing the card.

Read more.

Transit-focused payments startup CityCash raises $1 million in seed funding

Mint

According to the company, this infusion of new funds will be used for expanding market access, building out the merchant acceptance ecosystem, development of its technology to deploy Open loop NCMC and digital ticketing solutions.

Read more.

ADB approves $1 billion loan for Indian rapid transit system

Intelligent Transport

The rapid transit system is said to be a first of its kind in India and will include multimodal transport hubs to ensure smooth transition between modes. The Asian Development Bank (ADB) has approved a $1 billion loan to support construction of the high-speed Delhi–Meerut Regional Rapid Transit System.

Read more.

Why Multi-Modal Public Transport Is an Important Part of India's Climate Action

The Wire

To minimise the use of private transport facilities, major Indian cities have been moving towards a multi-modal urban transport network. Such networks could help integrate different public transport options and provide end to end transportation facilities for the people.

Read more.

Contact us

Vivek Belgavi
Partner, Financial Services Technology and India FinTech Leader
PwC India
vivek.belgavi@pwc.com

Mihir Gandhi
Partner and Leader
Payments Transformation
PwC India
Mobile: +91 99309 44573
mihir.gandhi@pwc.com

Contributors

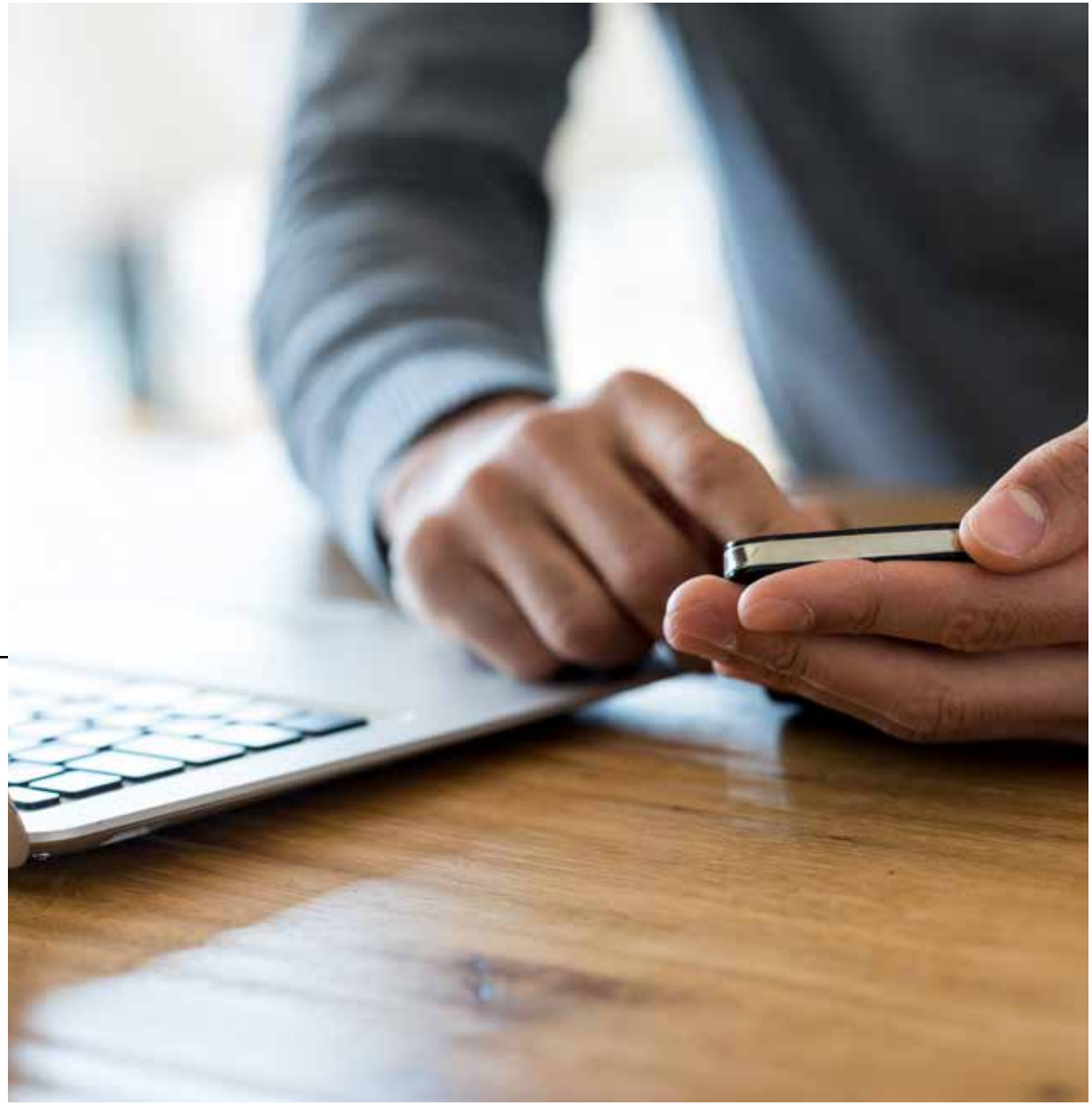
Yogesh Shetye

Mohit Singh

Jaya Gupta

Anand Jeyachandran

Aarushi Jain



About PwC

At PwC, our purpose is to build trust in society and solve important problems. We're a network of firms in 157 countries with over 276,000 people who are committed to delivering quality in advisory, assurance and tax services. PwC refers to the PwC network and/or one or more of its member firms, each of which is a separate legal entity. Please see www.pwc.com/structure for further details.

For more information about PwC India visit us at www.pwc.in

pwc.in

SG/October 2020-M&C8688