

State of the Industry: Fare Payment Technology



Fare payment technology is evolving, and this fact sheet provides a snapshot of the state of the industry. Fare payments are the actual mechanism used by passengers to pay a fare; this differs from fare systems, which encompass the entire fare collection process. This includes the technology that calculates the fare type, paying the fare, and the verification of payment/access control process. The fare payment mechanisms covered in this fact sheet are contactless bank cards - Europay, Mastercard, and Visa (EMV) secure payment technology, mobile payments, and smart cards.

EMV

Contactless enabled bank cards or EMV - are cards that have a chip embedded and have a symbol that looks similar to a WiFi icon on the front or back of the card. The chip, in turn, allows for contactless payment transactions. Debit, credit, and prepaid cards enabled with EMV technology can also be stored in a digital wallet online accessible via computer, smartphone, smartwatch, tablet, or other smart devices. Individuals pay by tapping the card or device on a point-of-sale terminal, such as a validator on board a transit bus.

Mobile Payment

With mobile payments, the smartphone operates as a virtual card and can store multiple passes, fare types (e.g., flat fare, variable fare, etc.) or stored cash value. The rider selects a fare type and pays the fare using the smartphone. Mobile fare payments can be visually validated by the operator, by scanning the phone under a barcode scanner, or by holding it up to a proximity validator. Readers can be integrated with existing electronic fareboxes or be stand-alone units.

Smart Cards

Smart cards are hard plastic cards, roughly the size of a credit card, enabled with a microchip or radio frequency identification (RFID) technology that allows the user to simply tap the card on a reader. Unlike with EMV cards, smart cards are specific to a transit system and can only be used to pay a transit fare.



Why invest in fare technology?

- » Decreased fare disputes
- » No need for exact change or making change
- » Revenue security = reduces cash collected onboard
- » Allows individuals to pay fares without cash
- » Allows for contactless payment
- » Opportunities for improving equity with fare capping
- » Increased data access and visibility into operations
- » Easier revenue reconciliation = less staff time for counting cash
- » Quicker boarding = improved schedule adherence
- » Decreased farebox maintenance

BENEFITS

CHALLENGES

EMV

- » Eliminates the need and costs for riders to obtain an additional card for transit
 - » Ease of use for those not familiar with a transit system
 - » Does not require the use of electronic fareboxes, ticket vending machines (TVM), or to have an inventory of cards
 - » Increased operational efficiency by eliminating the need to distribute cards
 - » Easily integrates with mobile wallets and other mobile devices, further increasing rider flexibility and convenience
 - » Increased convenience for transit riders
- » Low-income riders and youth are more likely not to have access to a credit/debit card
 - » Fees for micropayments
 - » Additional equipment is needed to process the fares
 - » Requires rider to have a bank account that issues EMV compatible debit or credit cards
 - » Each rider is required to have their own card to use on board vehicles and cannot do multiple taps per trip
 - » First-ride risk - card not processed in real-time on first tap and may not have the funds to pay
 - » Difficult to implement fare-capping and to setup reduced fares or special passes for eligible riders
 - » Credit card transaction fees can be high for transit agencies

Mobile Payment

- » Easily configured to the existing fare structure
 - » Increased convenience for transit riders
 - » Reduced fares can be verified easily
 - » Configurable to handle special pass types
 - » Can be white-labeled - branded to remove vendors name and appear as if made by the transit agency
 - » Tickets are in one central location
 - » Riders can store multiple tickets in their account
 - » Ability to integrate with trip planning phone apps
 - » It does not require the use of electronic fareboxes, ticket vending machines, or the manufacturing of physical cards
 - » No additional on board equipment needed with visual validation = quicker to launch
- » Requires a smartphone or smart device with power
 - » To purchase tickets, WiFi or cell service is required
 - » A vendor often manages the platform, including any changes to the fare structure
 - » Additional customer service support may be needed for those who may not be tech-savvy
 - » Vendor transaction fees
 - » Non-US based smartphones or devices may not work
 - » Not all people own a smartphone or smart device

Smart Cards

- » The transit agency, 3rd party authorized user, or the rider can easily view the account and manage the stored value on the card
 - » Riders are not required to have a smartphone, smart device, or bank account for physical smart cards
 - » Easily integrates fare capping
 - » Cards can be configured to allow for multiple taps/fare types, including family passes
 - » Can be reloaded at designated retail locations
 - » Increases the protection of lost or stolen cards with card registration
- » Cost to purchase the card is often passed onto riders
 - » Higher capital costs (fareboxes, readers, TVM, cards)
 - » Virtual smart cards require a smartphone
 - » Smart cards are required to be disbursed to riders by the transit agency
 - » Cards are more likely to be lost by passengers
 - » Not interoperable - card serves one purpose
 - » Not environmentally friendly - requires the manufacturing of plastic cards