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Payment Strategies

Would you like a ride with that?

How mobile payments are transforming transit

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Overview

The ability to use a mobile device for payments is expanding from retail to the transportation sector and transforming how transit operators can offer and riders can access services. This brief discusses how different mobile technology and payment solutions, including mobile wallets, contactless open payments, virtual fare cards,[1] and ticketing, enable new service options and provide greater efficiency and convenience for both transit agencies and their customers.

Transit agencies in the United States (U.S.) are leveraging mobile technology to lower costs and improve services and customer experience. Transit customers are among the 77 percent of Americans who own smartphones.[2] For example, 89 percent of the Massachusetts Bay Transportation Authority (MBTA) customers[3] and 73 percent of Dallas Area Rapid Transit (DART) customers[4] have smartphones. By using mobile solutions similar to those in retail venues, transit customers can purchase fare tickets, remotely add value to fare cards, pay for fares with mobile NFC wallets, and request rides on-demand.

Mobile technology and the digitization of fare collection allow new capabilities that were not previously available with traditional, physical fare media-based systems. For example, transit customer data (e.g., when and where passengers get on/off; ticket purchasing behavior, etc.) collected through account-based systems can be used to improve operational efficiency and route planning, and to administer new fare policies such as fare capping.[5] Mobile device technology also enables transit agencies to offer apps that better meet the needs of different customer segments, such as audio features for the visually impaired and multilingual apps. More importantly, using a mobile solution helps remove customer pain points associated with paying for transit fares, e.g., long lines at ticket vending machines, cash-only transactions, and navigating unfamiliar fare systems.

[1] In this report, *fare cards* (virtual and physical) refer to proprietary closed-loop transit fare media.
[2] Mobile Fact Sheet, *Pew Research Center*, Feb 5, 2018.
[3] MBTA 2017 Biennial Intercept Survey, Apr-Jun 2017.
[4] "DART rolls out MyDART mobile ticketing app," *Business Record*, Oct 16, 2017.
[5] Fare capping limits the amount a customer pays for transit in a given period, e.g., single day, week or month.

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Mobile NFC Wallets Improve Transit Experience

Transit agency acceptance of mobile NFC wallets, such as Apple Pay, Google Pay, and Samsung Pay, extends customer use of these solutions from traditional retail environments into the transportation space. To pay for a fare, a transit customer taps his mobile NFC wallet at the fare gate using contactless open payment or a virtual fare card stored in the mobile wallet.[6] A rider can use a transit mobile app to purchase a transit ticket, similar to the process for buying a movie or concert ticket; or use an in-app payment button (e.g., Apple Pay, Google Pay) to add value to a fare card, comparable to reloading a Starbucks or Dunkin' Donuts card.

Contactless Open Payment Options

Transit agencies in Chicago, Portland (OR), New York, Boston, Dallas and other U.S. cities are implementing fare systems that support contactless open payments, where riders tap a mobile NFC wallet or contactless credit/debit card on the card reader at the turnstile or on the bus to pay. Open payments benefit transit commuters and occasional riders by eliminating the need to obtain and maintain fare cards as well as figure out the fare pricing system.

One challenge to broad adoption of contactless open payments in the U.S. is limited consumer awareness. Not many consumers are familiar with card-based tap and pay because few issuers offer contactless cards, and typically only for specialized customer segments, e.g., international travelers. And while most issuers allow their credit and debit cards to be added to mobile NFC wallets, even mobile contactless payment adoption has been relatively low.

Payments experts are hopeful that the availability and adoption of contactless payment cards will increase when larger U.S. transit systems, e.g., New York's Metropolitan Transportation Authority (MTA) and Boston's MBTA, implement open payments. This may motivate more riders to pay with contactless cards and mobile NFC wallets. For example, in the United Kingdom where contactless payments are widespread, half of all Transport for London (TfL) pay-as-you-go trips are made using open payments, of which 12.5 percent are initiated through mobile NFC wallets.[7]

Some transit pricing features, such as discounted fares and free transfers, may not work with open payments and may discourage commuters from using open payments if traditional fare media offer better fares. Transit agencies try to address these discrepancies through fare capping, which offers greater flexibility for transit riders who purchase single rides. Fare capping eliminates the risk of buying too few or too many rides in advance, or paying upfront for an unlimited weekly or monthly pass, which may not be cost-effective or financially feasible for some customers.

[6] Some agencies also enable mobile wallet features to set a default transit card, or tap and pay at a fare gate without unlocking a mobile phone or opening an app.
[7] Amelia Heathman, "Half of all London Tube journeys are now made using contactless payments," *Evening Standard*, Apr 28, 2018.

Virtual Fare Cards

One of the advantages of virtual fare cards over contactless open payments (card or mobile) is the ability for transit operators to offer the same fare pricing and benefits as those available on physical fare cards. Given transit customers are already accustomed to using physical fare cards, they may feel more comfortable using virtual fare cards than open payments. As a result, some transit agencies are partnering with mobile wallet providers (e.g., Apple, Google and Samsung) to offer virtual fare cards. Portland's TriMet added its virtual Hop Fastpass fare card to the Google Pay mobile wallet in 2018.[8] While Apple Pay does not support virtual fare cards for U.S. transit agencies, it allows virtual fare cards in some Asian markets.[9] As interest in mobile payments continues to grow, both Google and Apple are considering support for more virtual fare cards and features in U.S. transit systems.

Mobile Ticketing

A mobile ticketing app is a relatively low cost and easy way for transit agencies to accept mobile payments.[10] Most of these apps also provide information on transit routes, schedules and fares, allowing customers to plan and pay for trips more seamlessly and conveniently. Some mobile ticketing apps also enable the purchase of tickets across regional transit agencies and modes, along with complementary transportation services (e.g., parking, rideshare), and admission to public events (e.g., state fair, zoo, sports games, etc.).

Transit agencies that offer mobile ticketing have observed higher levels of customer satisfaction and reductions in ticket sales through other channels, including ticket vending machines, fare boxes, retail outlets and cash. Larger transit agencies have offered mobile ticketing apps for several years with strong customer adoption. Boston's MBTA launched its *mTicket* app in 2012 and currently sells 61 percent of its commuter rail tickets via mobile.[11] Small and mid-sized transit agencies are also following the trend to meet growing customer demand for mobile capabilities. Smaller operators may implement third-party mobile ticketing apps, such as Token Transit, which supports ticketing and fare products for multiple agencies.

[8] For more information, see Roberta Altstadt, "Portland's Virtual Hop Fastpass transit card now available to all Google Pay users," *TriMet News*, Apr 16, 2018.
[9] In Beijing and Shanghai, China Apple uses location-based technology to alert iPhone users of nearby transit with the option to purchase a virtual fare card through Apple Pay. For information on Apple Pay for transit, see https://support.apple.com/en-za/HT207958.
[10] For more information on transit mobile ticketing and payments, see Elisa Tavilla, "Commuting Gets a Little Easier with Transit Mobile Payments," May 18, 2016 and "Transit Mobile Payments: Driving Consumer Experience and Adoption," Feb 1, 2015.
[11] Interview with MBTA, Aug 2018.

Mobile Solutions Connect Public and Private Transportation

Transit agencies and other transportation service providers (e.g., rideshare, bikeshare, carshare, microtransit) are collaborating to provide customers with more robust mobile solutions to plan and pay for transportation. These partnerships help reduce fragmentation and inefficiencies in trip planning, and improve access to and payment options for services across multiple transportation modes.

It can be financially unfeasible for transit agencies to operate services on underutilized routes. These potential service gaps pose challenges for riders who live and work in the impacted areas. To address such gaps and reduce operational costs, some transit agencies, including Austin's Capital Metropolitan Authority (Capital Metro), Boston's MBTA and Dallas' DART, have partnered with local transportation network companies (TNC) to pilot on-demand transportation and dynamic carpooling service options. Transit customers can use a mobile app to request on-demand paratransit[12], shuttle and carpooling services that are managed by a partner TNC. Results from pilots show improved efficiency in service, better customer satisfaction, and some cost savings for transit agencies. Boston's MBTA found that customers take approximately 40 percent more total paratransit trips after joining the pilot program. Additionally, a paratransit trip provided via Uber/Lyft is nearly 60 percent cheaper on average than a trip provided through one of the MBTA's traditional paratransit vendors.[13]

Ridesharing companies are also making it easier for their users to access public transit through their apps. Recently, Uber partnered with Masabi[14] to integrate transit mobile ticketing into the Uber app, giving Uber customers the option to purchase and activate participating transit agencies' mobile tickets in the rideshare app. This feature allows for a seamless transfer from ridesharing to public transit service for convenient multimodal journeys.[15] Lyft is providing a *Nearby Transit* option in its app with transit route and schedule information for users in select cities and is considering inclusion of capabilities such as transit directions and fare payments.[16]

Mobility-as-a-Service (MaaS)

Some transportation industry stakeholders in U.S. and global cities are working towards mobile solutions that embody the Mobility-as-a-Service (MaaS) concept. MaaS relies on a digital platform that integrates end-to-end trip planning, booking, electronic ticketing, and payment services across

[12] Paratransit is a transportation service for people with disabilities, often provided as a supplement to fixed-route bus and rail systems by public transit agencies.
[13] Data provided by MBTA, Oct 2018. Despite lower operational costs, the pilot program has had a negligible impact on total savings for the MBTA due to increases in total paratransit trips. For more information on the MBTA On-Demand Paratransit Pilot Program, see https://www.mbta.com/accessibility/the-ride/on-demand-pilot.
[14] Masabi is a mobile ticketing and Software-as-a-Service (Saas) based fare collection for public transit provider. Masabi's customers include Boston's MBTA, New York's MTA, and Los Angeles' Metrolink.
[15] "Uber adds Masabi public transit mobile ticketing to app," *Finextra*, Apr 11, 2018.
[16] Alex Davies, "Lyft's bid to rule the streets now includes public transit," *Wired*, Sep 13, 2018.

all modes of public and private transportation.[17] Although consumers have increasingly embraced new mobility options and apps (e.g., ridesharing, bikesharing, trip planning), typically each operator requires its own app with a separate interface and payment mechanism; and each service maintains its own customer relationships. MaaS could combine these individual solutions into a common platform to enable customers to seamlessly plan and pay for multiple transportation services through a single payment channel, and personalize options based on user preference (e.g., time, cost, convenience, etc.). Users could pay per trip or enroll in a monthly subscription. Some potential challenges associated with MaaS include how to appropriately compensate each transportation mode for its portion of a customer's trip as well as control of and access to customer data. The *Whim* mobile app, the first comprehensive MaaS solution, was launched in Helsinki, Finland in 2016.[18] Several MaaS solutions are also being piloted in Austin, Boston, Portland, Washington, and other U.S. cities.

Looking Ahead

Mobile device technology and services have made it more convenient for transit agencies and consumers to access transit information, plan trips, and handle payments. Partnerships between public and private transportation businesses continue to enhance service options for customers. These developments highlight many parallels between the transit mobile payments environment and the retail mobile commerce space, as well as the benefits, and should be leveraged to help drive more adoption of mobile payments. The growing acceptance of mobile solutions and contactless open payments in U.S. transit systems over the next few years will likely drive a substantial increase in mobile payments use among transit riders and influence their payments behavior for retail purchases. Transit will continue to be integrated into mobile transportation and retail solutions in innovative ways – potentially an optional *Add Transit Ride* button for mobile event tickets, rideshare trips, or even in-store pick-up retail transactions.

[17] Warwick Goodall, Tiffany Dovey Fishman, Justine Bornstein, and Brett Bonthron, "The rise of mobility as a service: Reshaping how urbanites get around," *Deloitte Review*, 2017.
[18] For more information, see Kati Pohjanpalo, "How Helsinki arrived at the future of urban travel first," *Bloomberg*, Jul 15, 2018.