

Predictions for Mobile Payment in the US

For the past five years, we've heard from both analysts and vendors that we're just a year away from widespread adoption of mobile payment solutions. Yet despite rollouts by Google, Isis (now SoftCard) and various others, mobile payment has not achieved broad consumer or merchant acceptance, and the Starbucks mobile app remains the only form of mobile payment seeing genuine usage by US consumers.

Disappointment has not discouraged innovation and investment in the space: Google has revamped its offering with Host Card Emulation (HCE); Apple is releasing Apple Pay, incorporating the latest tokenization technology; and MCX, the merchant-led wallet initiative, is finally planning to roll out its barcode-based solution (called CurrentC) in 2015. So will 2015 be, at long last, the year that mobile payment goes mainstream?

This is really a two-part problem. Consumers need to adopt mobile payment solutions, and merchants need to accept mobile payment in their store locations. This is often characterized as a "chicken and egg" problem, but in reality, merchant acceptance is the major obstacle to widespread use of mobile payment, since many barriers to consumer adoption can only be addressed with aggressive merchant participation.

Will we see widespread consumer use of mobile payment in 2015?

Consumer adoption of mobile payment is governed by the same rules governing consumer adoption of any new technology. Simply stated:

- Consumers must perceive a benefit to adopting the technology. This doesn't have to be an enormous benefit, but there must be some value perceived so as to motivate the consumer.
- The "friction" associated with acquiring the technology, learning how to use the technology and continuing use of the technology on an ongoing basis must be sufficiently low that it does not offset the perceived benefit for the majority of consumers.

The benefit side of the equation is fairly well understood for mobile payment:

- First, mobile payment is "cool". Especially for innovative users, there's a "wow factor" when it works.
- Second, mobile payment provides merchants with a platform for personal interaction with loyal customers. This can be integrated with merchant loyalty programs (e.g., the Starbucks card) to provide frequent shoppers with personalized benefits; it can also provide users with interactive value-add (e.g., maps to the nearest merchant location, calorie counts on menu items, order-in-advance). Clever app developers can no doubt find many ways to exploit the personal, interactive nature of mobile for additional benefit.

Given the fairly obvious benefits above, why hasn't mobile payment seen broad consumer adoption yet? Clearly the answer is that the friction has been too high. Let's examine the consumer's journey to understand the sources of friction, and how they might be reduced in the future.

1. *First, the mobile payment solution must be enabled on the consumer's smartphone.* This is an obvious but nontrivial step. While 60% of US consumers have smartphones, relatively few of these are fully outfitted for mobile payment.

Typically, mobile payment solutions are enabled by downloading apps for iOS or Android. Therefore, consumers must be made aware of potential benefits from mobile payment via marketing, and encouraged to download and activate the appropriate app.

Some mobile payment solutions (Apple Pay, SoftCard, Google Wallet) rely on hardware as well. This presents significant friction for consumers with older phones, but the friction can be minimized for new phones. Apple Pay, for example, is fully enabled on any iPhone 6/6 Plus, and SoftCard's carrier sponsors are making the requisite hardware a standard feature on many new phone models.

2. *Next, the consumer must associate a source of funding with the mobile payment solution.*

In order for a mobile payment to be usable, it must be linked to a source of funding; this could be a persistent link to the consumer's credit card, debit card or bank account, or simply a one-time transfer of funds. This is understandably a "big deal" for consumers; it requires establishment of trust and sharing of sensitive information, and could potentially involve a lot of typing on a tiny keyboard. There are several different approaches here, driven by the overall architecture of the mobile payment system as well as consumer experience considerations.

The most common approach is to steer consumers online to add payment options to a mobile wallet via a Web interface (presumably accessed from a PC rather than a smartphone browser). Payment options are associated with a mobile account via the more flexible Web environment, and stored in a "cloud wallet" that can be accessed from the mobile phone. It is typically possible to perform all these operations from the phone, but cumbersome (typing in 16 digit PAN, CVV, billing address, phone number etc. from a mobile device is painful). Google Wallet, PayPal and Starbucks all use this approach.

SoftCard wallet users, by contrast, must enroll in a new card program via their smartphone, inputting all the required data from the device. This can enable an American Express Serve card (which can subsequently be managed online) or a companion card to an existing Chase, Wells Fargo or American Express account. The new card credentials are pushed to the Secure Element on the consumer's smartphone asynchronously (and are not stored in the cloud). While this approach is more secure, it is likely a source of greater friction as well.

Apple has made an effort to minimize the friction here. Most Apple users have already added a payment card (credit or debit) to iTunes for music & app purchases, and Apple makes it easy for consumers to simply use this card in Apple Pay. For consumers adding a card for the first time, Apple will allow the card to be photographed rather than requiring manual entry of the card details. A token used for payments is subsequently delivered to the phone by Apple as a background

process. As long as your “card on file” for iTunes is issued by one of the banks supporting Apple Pay, this should be a fairly seamless process.

The two areas of friction discussed above can be reduced by mobile payment vendors through aggressive marketing and improved user experience design. Merchant participation in marketing efforts is beneficial but not essential. However, as we move further into the user journey, the importance of merchant participation grows.

3. *The consumer needs to know (a priori) which merchants accept the mobile payment solution.*

Consumers will only use mobile payment at locations where they know in advance that it will work. This is a huge advantage for merchant-branded solutions like Starbucks – these solutions establish confidence with consumers that the mobile payment experience will be positive. No consumer wants to risk embarrassment or confusion when making a purchase, especially in busy checkout environments.

If mobile payment is offered as a feature within a merchant-branded app (a model supported by most of the solution vendors, other than SoftCard), the friction here is overcome (assuming, of course, that the merchant has invested to enable mobile payment at every location). When the mobile payment feature is offered via a standalone wallet app, it is vital for the app vendor to include lists of participating merchants or merchant locations, and for merchants to leverage their own marketing to make consumers aware of the mobile payment option.

In theory, Google Wallet, SoftCard and (now) Apple Pay should work at any merchant POS enabled for NFC payment. However, this is not very helpful to consumers:

- First, most consumers do not know how to recognize an NFC-enabled POS. The EMVco NFC logo looks a lot like a WiFi logo, and there is no intuitive element at an NFC-enabled POS that consumers will respond to.
- Second, only about 9% of existing POS environments have NFC-capable equipment, and many of the POS environments that have NFC-capable equipment are not fully operational.

Perhaps at some point in the future, NFC acceptance will become ubiquitous, but this certainly won't happen in 2015. In the near term, consumers will only attempt mobile payment at merchants that have made an effort to promote acceptance.

4. *It must be easy for the consumer to habituate around use of mobile payment, at least in certain merchant environments.*

It's helpful to think of consumers as having a “default” payment ritual plus a “unique” payment ritual for certain merchants. When we're in an unfamiliar merchant, we use our “default” payment ritual (e.g., pay by swiping our favorite Visa debit card). But at certain merchants where we shop frequently, we have “unique” payment rituals (e.g., scan grocery loyalty card and then swipe Visa debit at the grocery, or use my Macy's-branded card at Macy's).

Unique payment rituals are learned through repetition of experience. This is often aided by merchant personnel, who are trained to prompt the consumer for unique credentials. In general, we only bother to learn unique payment rituals for merchants where we shop frequently; for others, it's not worth the mental space required.

Mobile payment vendors should not assume that their solution will become the consumer's "default payment ritual"; at least for the foreseeable future, mobile payment will be a "unique payment ritual" that the consumer learns for a specific merchant, or perhaps a handful of frequent merchant destinations. This underscores the importance to mobile payment vendors of penetrating high-frequency merchants (quick-service restaurants, grocery, drugstore, convenience, gas etc.).

What mobile payment vendors also need to think about is how to remind the user in advance when mobile payment is available (allowing for enough time for the user to unlock the phone and activate the app, if required). Possible tactics include use of geofencing or beacons, as well as in-store signage.

It's also important to integrate all components of the unique transaction. If the merchant has a loyalty program, it should be integrated with the mobile payment solution – the consumer should not be expected to use her phone to pay, but then to swipe a plastic loyalty card from her wallet.

This area has been a significant source of friction for mobile payment, and it makes clear why Starbucks has seen acceptance that others have missed. Starbucks is a very high-frequency merchant, and their mobile payment solution is fully integrated with the Starbucks loyalty program. Starbucks had already established a unique payment ritual around its Starbucks Card, so the mobile payment solution benefited from an existing base of Starbucks Card users. On iPhone, integration with Passbook brings the Starbucks card to the home screen when the user is in a favorite store. Other mobile payment solutions (Google, SoftCard, PayPal) have not so far found a comparable anchor merchant to build high-frequency consumer acceptance around.

The two preceding areas of consumer friction have both been significant barriers (so far) to consumer adoption of mobile payment, and both require high-visibility and committed participation from major merchants to resolve. Consumers are not going to look for an EMVco NFC logo; major merchants need to step up and promote availability of mobile payments. The next section of this paper deals with barriers to merchant acceptance in greater depth.

5. *Finally, the mobile payment transaction should "work" as simply and reliably as existing magstripe transactions.*

Occasionally, when a consumer swipes a magstripe card, they're asked to swipe again: perhaps the reader wasn't ready, or the swipe was not read properly on the first attempt. This usually happens before the consumer has put the card away, and is not a big deal to the consumer. Sometimes the issuing bank will reject the transaction over fraud concern or lack of funds. This is embarrassing and stressful for the consumer.

At minimum, a mobile payment transaction must be as reliable as swiping a card. Whether the user is touching a button in an app, scanning a barcode or tapping an NFC reader, the operation must be successful in the vast majority of cases, and if it needs to be repeated, it should be as simple as re-swiping a plastic card. Transaction rejection by issuing banks should not occur more often than with a magstripe card. Consumers will have very little patience here; it will only take one or two failures for the consumer to give up on a mobile payment solution.

When Starbucks rolled out its mobile app, the company installed imaging scanners to read 2D barcodes off phone screens in virtually all its store locations. Conventional laser barcode scanners are cheaper, but cannot reliably read codes off phone screens due to reflection from the glass. This is the kind of investment that's required to ensure a totally smooth and positive user experience.

Multiple mobile wallet solutions (Google, SoftCard, now Apple Pay) use NFC for in-store payments. NFC technology is mature, but implementations in the US have been problematic; both "tap failures" and "transaction failures" occur with higher frequency than in magstripe transactions. Apple's control of both hardware and software in its iPhone 6 gives it the opportunity to improve on "tap failures", but improving "transaction failures" requires cooperation from merchants and merchant service providers.

Some approaches to mobile payment expect the consumer's phone to have an active data connection during the transaction (e.g., if payment credentials are actually stored in a "cloud wallet"). This is likewise a source of friction, as a phone's data connection could be temporarily impaired for any number of reasons. If the mobile payment design requires an active data connection, it is vital to ensure that the merchant is prepared to provide this within the store (e.g. via an open WiFi network, or some other means).

This area again represents a potential source of friction in 2015 that can only be fundamentally solved with merchant participation.

Consumer adoption of mobile payment, other than the Starbucks mobile app, has been slow because the friction in the five areas above has been too high. Mobile payment will only see broad adoption when the friction in all these areas can be reduced sufficiently. As emphasized above, driving down friction requires evolution within the mobile payment solutions themselves (which is happening) but also demands robust merchant support.

As noted previously, this is not a "chicken and egg" problem. Mainstream consumer adoption of mobile payment cannot happen without mainstream merchant support; merchant support therefore must come "first". The next section of this paper examines the dynamics behind merchant support for mobile payment.

When will merchants adopt mobile payment?

At the launch of Apple Pay, Apple executives claimed that over 220,000 merchant locations in the US already support their solution, and listed over a dozen top merchants (including McDonald's and Subway) where the service could be used. Many observers noticed that many of the merchants named by Apple had previously been named as supporters of both

SoftCard and Google Wallet. Unsurprisingly, these are merchants where NFC payment has been enabled at the point of sale, so any NFC-based mobile payment solution should work there.

NFC, it should be noted, is only one technology option for mobile payment; alternatives include the use of barcodes (as in the Starbucks app) and app-based purchases. However, NFC is the only solution based on industry standards, and it certainly has the largest aggregate acceptance footprint of any solution in the US today. As more merchants upgrade their point-of-sale systems, either driven by the upcoming EMV liability shift or simply technology refresh cycles, NFC acceptance should become more common. But gradual, passive adoption of NFC by merchants will not be sufficient to reduce the consumer friction points discussed above; merchants need to make a visible and significant effort to promote mobile payment by their customers.

The Starbucks example is again useful. When Starbucks launched its mobile payment app, it invested across its entire footprint in 2D barcode reader technology, ensuring that virtually every location accepted payment from the app. Store personnel were trained on mobile payment and could assist consumers in using it. The app was tightly integrated with the Starbucks Card program and its loyalty rewards. This was not an experiment, but rather a key business strategy, and it was successful; as of summer 2014 Starbucks sees over 6 million mobile payment transactions per week, or 15% of its total revenue, and has over 12 million app users in North America.

A number of factors have worked so far to keep the majority of merchants on the sidelines when it comes to mobile payment. If mobile payment vendors can resolve these issues, merchants will embrace mobile payment and open the doors for robust consumer adoption.

1. *Improve alignment of mobile payment with merchant strategies for reducing transaction processing costs.*

All noncash payments carry some cost that is borne by the merchant. This varies quite a bit based on merchant size, method of payment (debit card, credit card, check etc.), payment circumstances (in-store “card present”, online “card not present”) and other factors. On average, merchants end up paying something like 2-3% of the transaction amount in transaction processing fees.

Especially in low-margin merchant segments, reducing these transaction processing costs is a priority, and merchants are pursuing a number of strategies to do so. These include shifting consumer spend to reloadable prepaid cards (such as the Starbucks Card), integrating directly with major banks (vs. going through intermediaries) and even encouraging payment via bank transfer (ACH) rather than via credit or debit card.

Unfortunately, most mobile payment solutions work against these initiatives and result in higher transaction processing costs to merchants. This is especially true for “cloud wallet” approaches, which shift in-store transactions to online transactions and thus increase the merchant’s processing rate (from “card present” to “card not present”). But even NFC solutions (which are “card present”) tend to shift transactions from lower-cost debit to higher-cost credit accounts, since NFC standards have not fully addressed the use of debit PINs. (Note that while the new tokenization approach used by Apple Pay has many unresolved questions around

debit, Apple Pay appears to have resolved these issues at least with some of its banking partners.)

Ideally, adoption of mobile payments should result in lower overall transaction processing costs for merchants. But if this isn't the case, the business justification (see below) needs to be stronger, to overcome the incremental costs. Either way, merchants need a clear understanding of the impact of mobile payment on these costs, and a clear path towards alignment of mobile payment with merchant payment strategies overall.

The challenges here exist both at a technical level (depending on how payment credentials are managed in the mobile payment system) and a business level (processing costs are set by payment networks and banks, and neither has a significant incentive to reduce them). One opportunity for a breakthrough (perhaps in 2015) exists with Apple Pay. Apple has built in biometric security and payment tokenization to create a novel, state-of-art payment solution; this could be the basis of a new "consumer present" rate for m-commerce transactions. This is still just rumor, but if it proves to be true, it could be a real breakthrough for merchant acceptance of Apple Pay.

2. *Mobile payment consumer and transaction data "ownership".*

Every consumer purchase creates valuable data that can be aggregated and mined to understand the consumer's preferences and better target future promotions. Some large merchants (e.g. Target) are quite sophisticated in use of this data. Today both the merchant and the card-issuing bank have visibility into the transaction; the merchant can see the full contents of the consumer's "basket" and knows what was purchased, while the issuing bank can see total transaction amounts across multiple merchants.

Mobile payment introduces the possibility that another party (the mobile payment platform) could acquire and monetize consumer transaction data. Many merchants are quite cautious about sharing this data with additional parties. "Basket data" – i.e. data on the specific items that a consumer purchased – is very precious to merchants and will almost certainly not be shared with anyone. "Transaction totals" are already shared with banks, but merchants may not be comfortable sharing this data with additional parties, especially if it could be used against the merchant's own interests (e.g., to help target advertising by competitors).

While monetization of transaction data may feel like a valid business strategy to mobile wallet vendors, if it inhibits merchant adoption, it's a barrier to growth. Note that Apple, MCX and SoftCard have been very clear that they do not gather transaction data. Mobile payment solutions that rely on monetization of transaction data will have a steeper hill to climb, especially with larger merchants.

3. *Alignment of mobile payment with other merchant mobile marketing and consumer loyalty programs.*

Large merchants are not standing still when it comes to mobile technology. A majority of large merchants have (or plan to have) their own mobile app; many also operate some form of consumer loyalty program, and are using a consumer database to send out special offers and promotions. Merchant mobile apps are

usually mobile expressions of the loyalty program and become valuable platforms for promotion, discovery and interaction.

It makes sense for merchants to have their own merchant apps, just as Starbucks has done, and it's natural for merchants to build mobile payment features into these apps. If a merchant works with a third-party mobile wallet app, it's important for the merchant's loyalty program to be integrated within the wallet app. What's vital overall is that mobile payment be tightly aligned with the merchant's broader strategies for mobile/digital marketing and consumer engagement.

Recently, both Apple and PayPal have enabled a "Pay" button that can be used within a merchant mobile app (and HCE technology on Android should facilitate this for others). This is a great step for mobile payment, as it enables merchants to incorporate payment within their own apps. Over the next few years, consumer adoption of mobile payment is very likely to be focused on a small number of high-frequency merchants, and merchant apps (rather than third-party mobile wallets) may rule the day.

4. *Overall business justification for aggressive deployment of mobile payment.*

Mobile payment represents an investment to merchants: it has associated costs, and there must be a business justification with a quantified return-on-investment in order for it to be prioritized above other projects.

There are costs associated with deployment of mobile payments. As noted above, there could be an increase in transaction processing costs. There could be costs for hardware and software upgrades at the merchant's point-of-sale locations, as well as other implementation costs. There will be training and marketing costs. Ideally the investment in mobile payment will be leveraged by multiple initiatives (mobile marketing/mobile loyalty, EMV acceptance, etc.) to further justify the costs involved.

Merchant investment in mobile payment must have a measurable return: it should result in revenue growth, increasing the size & number of transactions from existing customers and bringing in new customers. By tying mobile payment tightly with established consumer loyalty and promotional programs, merchants should be able to more easily measure and justify the return.

For a large merchant to make an impact on mobile payment acceptance in 2015, the project must be rolled out by summer 2015; it's already the 4th quarter of 2014, so the project must already be budgeted and probably underway. The most likely impact in 2015 will come from existing merchant apps that already have a base of acceptance; it will be straightforward for merchants to add a "Pay" button to the app, and if the merchant is using the m-commerce approach, the implementation could be entirely via software.

It's clear that widespread and fundamental adoption of mobile payment by top merchants is heavily dependent on close alignment and deep integration with merchant apps and other merchant marketing initiatives. Consumer adoption is held back by merchant adoption; merchant adoption is held back by the factors discussed above. Importantly, the key to consumer adoption is not simply in proliferation of NFC technology but in tight coupling of mobile payment with merchant solutions.

Conclusions

Without a doubt, the mobile payment landscape is fundamentally changed by the launch of Apple Pay. Apple has successfully eliminated several major areas of consumer friction and is positioned to remove some of the major obstacles to merchant adoption. The other players in the space are challenged to keep up with Apple.

The key to widespread adoption in 2015 is the merchant app. If multiple large merchants incorporate mobile payment into their apps, either via Apple Pay or HCE on Android, and promote the use of mobile payment, then consumer adoption will accelerate. NFC adoption can proceed in parallel, but this isn't (for now) the key to rapid expansion of consumer use.

Viewed in this light, the refusal by several major MCX merchants (WalMart, Best Buy) to deploy NFC isn't really an issue, if these merchants offer payment within an app as an alternative (as Target appears to be doing). But if merchants instead try to force consumers into an either/or choice between MCX and other forms of mobile payment, this will end up slowing overall adoption.

2015 should be a good year for mobile payment, with millions of iPhone 6 users trying out mobile payment for the first time. If merchants move quickly to add mobile payment within their apps, and promote this heavily by the end of the summer, 2015 could be the first significant year of mainstream growth for mobile payment. As this paper has emphasized throughout, the key is in how aggressively the major merchants are willing to move ahead.