

# Mobilizing for the next wave of U.S. payment innovation

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## Abstract

The U.S. payments landscape has undergone change throughout its history and the pace of change has accelerated over the past decade due to innovation. As financial services institutions (FSIs) position themselves to be at the forefront of the next transforming trend in payment innovation, they are now paying close attention to mobile payments. Using a plausible future scenario we hypothesize how mobile payments innovations could transform daily American life in the years to come and lead to electronic wallets, the integration of cross industry payment product offerings, and a cashless society. We then examine the emerging applications that serve as precursors to what will be the eventual realization of true, robust mobile payment products and services in the U.S. From there, we identify the barriers currently faced by financial institutions that are slowing the pace for achieving this future state. Finally, we recommend effective strategies for FSIs to overcome these challenges and become viable competitors as growth accelerates and mobile payments become pervasive in the mass market.

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### A day in the life of Ben, August 24, 2018

Monday morning had gotten off to a fast start for Ben. Times were hard and Ben's wholesale clothing business, Ben'sMart, had come under a cash crunch. Ben had been on the phone since 6:00 in the morning with overseas suppliers and local retail clients. At 10:00 a.m. he got a little respite. As he sipped coffee in his home office he thought about the past five years since he started Ben'sMart in his garage in 2013. A lot had changed. The company had grown from a single-product, one-man shop to a multi-product business with 50 employees. While he had opened a store-front in New York City in 2015, most of his employees and business associates worked from virtual offices. Ben employed the latest technologies to allow his employees to collaborate in managing and growing the venture. He was in his early forties and had the time to nurture his business. State-of-the-art technologies were critical to managing his time and his business.

Ben needed to get to his midtown office today to meet a potential client for lunch at 1:00 p.m. He opened his desk drawer to get his car keys, mWallet, and battery charger in case he could not use the solar charging pads on his mobile device. Next to his keys was the old leather wallet that he no longer carried since he decided to 'go electronic.' The mWallet, provided by his wireless carrier, came at an additional charge of \$3.95 per month but Ben liked its many features. For example, he could receive on-the-spot savings offers from his favorite retailers, download transactions for all his credit cards, and use it to scan and buy items at self-service shopping outlets. Thus he could sort out his personal and business expenses and instantly see his rewards at the retailers he regularly visited. Additionally, the mWallet's 'scan and buy' feature offered quick checkouts at convenience stores, coffee shops, and vending machines. Finally, the product acted as an image scanner, allowing him to scan his paper receipts on the go.

Apart from his mWallet, Ben did not need anything else in his pocket. His mWallet acted as a catch-all for his credit cards, debit cards, and loyalty accounts. Ben checked his cash balance using the mWallet and saw that he had \$159.50 available in his bank account. It should be enough for the day, he thought. He also checked to make sure that his 'bank debit' personal account was set as the primary means for payments. He needed to remember to manually override the setting to 'corporate charge card' for lunch so he added a validation step for each payment today by clicking the 'validate' radio button next to the account. Simple, he thought. Before leaving the house he pressed 'offers' and was presented with several coupon and 'bonus-points' offers from retailers along his usual route to the city. It looked as if Starbucks had a new coffee blend to try today. If he tried it he could receive ten percent off as a frequent customer, in addition to the usual loyalty points and 10 frequent flyer miles.

On his way to Starbucks, Ben called his assistant on his mWallet to

let her know that he was on his way. At Starbucks, he walked up to a self-service screen to order a coffee to go, proceeded to pay for his purchase and received his discounts by waiving his mWallet at the screen. He validated the account to be charged on the mWallet and an 'approved' message instantly appeared on the merchant's ordering screen. The receipt for the purchase was electronically transferred and saved on his mWallet. Unbeknown to Ben, his banker and wireless provider were happy that he made this purchase as they both received a small portion of the marketing fee for prompting Ben with the offer to visit this Starbucks today. Before leaving the in-store screen, Ben saw a reminder suggesting that as an mWallet holder he could also place the order online and the order would be prepared and ready to go at the drive-in window when Ben arrived. He took note to remember that for tomorrow's order. Thankfully today Ben's coffee order was ready by the time he walked up to the 'orders counter.' He was relieved that he avoided the line at the cashier's station.

As Ben entered his office building, he waived the mWallet's smart chip near a reader at the security guard's desk and placed his index finger on the biometrics pad for identification. As Ben settled into his desk at work, he caught up on his emails. After chatting with his assistant, he left the office at noon to head to his meeting. The global positioning application on his mWallet told him that it would take him 20 minutes to reach his meeting place, which seemed about right to him since the traffic was light today.

After reaching the restaurant, Ben sat at the bar, ordered coffee and waited for his prospective buyer. As he waited, Ben suddenly became very anxious. He had recently launched his second retail outlet, a storefront in the trendy Greenwich Village area of Manhattan. In addition, he had upgraded his online store for sales of his company's more popular, inexpensive merchandise. Quickly, he turned to the touchscreen on his mWallet, pushed a few buttons and was relieved to learn that the retail and online store sales were doing very well. He checked his revenue and cash position and found that his cash position was more than adequate. He was thrilled with his decision to have chosen his bank. He was impressed with the bank's ability to verify and authorize point-of-sale consumer payments and convert them to electronic transfers, providing him with accurate and real-time cash positions. Furthermore, the bank was at the forefront of adopting a secure online authorization solution for e-payments, enabling direct ACH payments without security or credit risk to Ben.

Relieved that month one of the newest retail venture seemed to be a success, Ben grew anxious as he thought of a text message he had received the day before. A new retail buyer he had signed on a month and a half ago still had a large outstanding payment due. He was concerned because the initial order was large and he had taken a chance with a relatively unknown buyer. However, the prospec-

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tive buyer for today's lunch meeting arrived, and Ben pushed the issue to the back of his mind.

As he met with his new potential buyer, Ben could not focus. This outstanding payment still plagued him. Just as he was ready to excuse himself from lunch to deal with the situation, he felt his mobile device vibrate. As he looked, he saw it was a bank alert; the payment he was concerned about had been received. As he opened the mobile office application provided by the bank, he was able to see the specific details of the payment and the matching invoice. Ben was amazed at how this day was going.

At the end of a successful lunch meeting, Ben tapped his mWallet on the server's card reader to pay for lunch. With an extra push of a key, he changed his payment account in order for the expense to be charged directly to the company and against his business development budget. Upon submitting the payment, he received a confirmation of approval within the company expense guidelines, followed by a receipt to be stored on his mWallet.

As Ben began his drive back to the office, he felt great about the events of the day – a successful start to the retail business, his fears about the outstanding payment alleviated, and an excellent meeting with a prospective buyer. During his drive, his mWallet phone rang. His son had made a surprise trip home from college and wanted to play golf with him in the afternoon. Despite the fact that much work awaited him at this critical time for his company, Ben always put family first. Plus, he knew that work was only a touchscreen away.

Sure enough, as Ben pulled out his driver on the third hole, his CFO called. The cost of shipping for the specialty line of clothing sold in the retail outlet and online was prohibitive. While Ben's retail venture

was performing nicely, shipping costs could significantly erode profits. Ben did not panic. He immediately went onto his mobile executive office application to the purchasing division. The procurement network his bank operated provided other freight companies ready and willing to do business with Ben'sMart. His bank had guaranteed Ben'sMart as a 'trusted' buyer. As he searched through his options of suppliers, he noticed that Long Distance Hauling (LDH), a company he had used in the past, was offering a 20% discount on pre-purchase of a minimum usage contract. Ben knew LDH did an excellent job, and with the strong cash position based on the other events of the day, the decision was easy. He immediately created the order on his mWallet, and authorized an ACH credit payment to LDH. Minutes later, the CEO of LDH called him to thank him for coming back, and guaranteed him the highest quality of service and customer care. After the quick call, Ben smiled and returned to the most important matter of the moment, his 8 foot putt for birdie on the 3<sup>rd</sup> green.

The story of Ben foretells how payments innovations can transform the daily American life. However, several barriers must be overcome to reach this level of impact. The industry players that can break through these barriers will be well positioned to be the 'solution' providers for the likes of Ben. Below, we will examine the drivers of payments innovation, evolving payments landscape, market readiness, and some of the bets being placed on new technologies. We will also discuss strategies to overcome the barriers in achieving mobile payments transformation.

## Change and innovation in the U.S. payment system

Fundamental change and innovation have always characterized U.S. retail payments systems. However, in the recent past, the methods by which payments are initiated, cleared, and settled have been changing at a breathtaking pace. Innovation in the U.S.

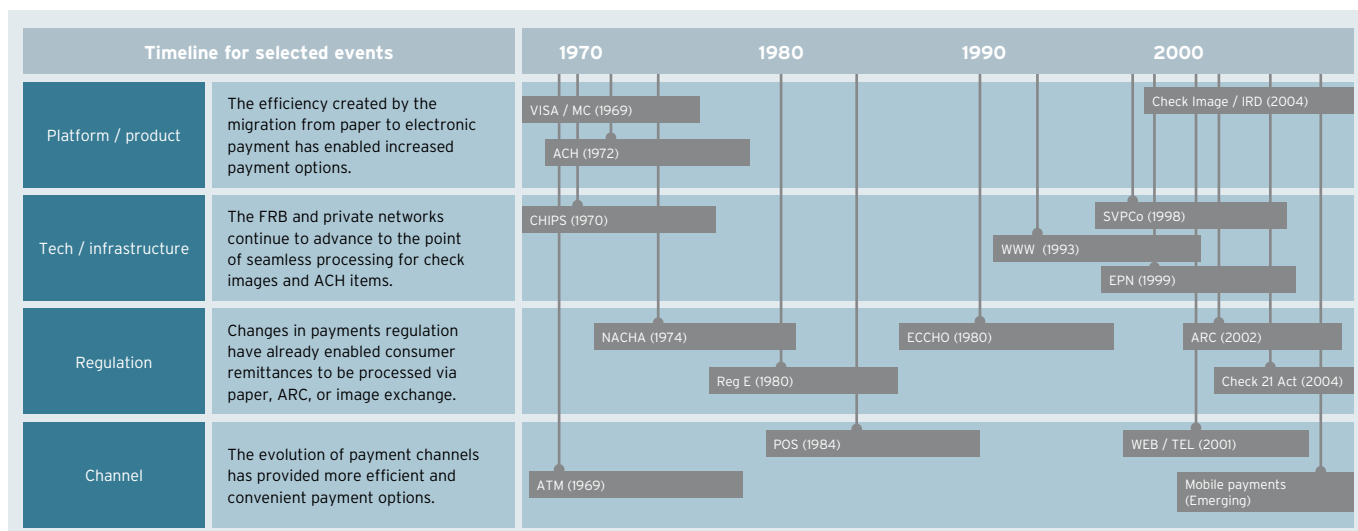


Figure 1 - Transforming events in U.S. retail payments

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	Payment volume 2003	2013	Compound annual growth rate (2003-2013)
PIN debit	202	994	17.30%
Prepaid cards	89	345	14.50%
ACH/electronic	445	1419	12.30%
Signature debit	370	1145	12%
Credit cards	1057	2100	7.20%
Private label credit and debit	392	557	3.60%
Check	2093	1379	-4.10%

Credit cards remain important, but will continue to give ground to debit and alternative payment products that leverage the retail bank relationship  
Source: The Nilson Report, card company disclosures, forecasts by Novantas LLC, New York

Figure 2 - Growth in new payments vehicles

payments landscape is being driven by several factors. Increase in the usage of electronic payments, debit cards, and prepaid/stored value cards is providing further impetus to the emergence of new products. Simultaneous advances in the payments infrastructure, for example, check imaging and electronic presentment, are driving new opportunities for innovation. Centralized payments gateways have been the key to delivering these capabilities. Additionally, the U.S. payments regulatory environment is proving to be change-friendly. For example, the Check 21 Act and Accounts Receivable Conversion (ARC) rules have both driven the conversion of paper checks to alternative, electronic forms of payments. Finally, changes in consumer behavior and lifestyles have opened doors for new payment channels. Internet banking and mobile payments are excellent indicators of such changes in the U.S. retail sector. Figure 1 summarizes many of the major transforming events in U.S. retail payments over the past four decades.

The rapid rate of change and innovation in the U.S. payments infrastructure continues to drive change in the way retail consumers adapt to new payment methods. For example, the payments infrastructure has experienced rapid declines in check (and cash) payments this decade. Simultaneously, there has been a continuing acceleration in the usage of more efficient and less costly means of payment processing, such as ACH/electronic, signature debit, and PIN debit. These methods not only leverage bank relationships but also offer greater consumer convenience. The use of newer payment vehicles, such as prepaid cards, continues to accelerate as well (Figure 2).

The changes in the U.S. payments infrastructure have fueled innovation by financial services institutions (FSIs) as well. On the revenue side, FSIs have focused on expanding their customer base by leveraging newer but maturing payment channels (i.e., Internet banking, telephone banking) to cross-sell other products. Furthermore, as consumers have begun to exploit the availability of an increasing number of payment methods, FSIs are seeking ways

to consolidate the data obtained through payments transactions into a centralized view of customer behavior. Increasingly, industry leaders are implementing enterprise payment gateways to attain this capability. The gateways are not only providing FSIs with a 360-degree view of the customer, but also a better tool for managing risk, developing new products, and marketing.

The payment gateways are also helping FSIs to reduce their operating costs. Joint ventures with technology vendors and cross-industry partnerships are some other examples of how FSIs have attempted to improve revenues and achieved cost efficiencies. These changes have been welcome in an industry characterized by processes fragmentation.

Broadly, these changes also indicate a shift toward alternative channels for payments. In particular, mobile payments are currently receiving a lot of attention from industry players. The proliferation of hand-held mobile devices in the U.S. and continued advances in the mobile applications has motivated FSIs to pay greater attention to this channel. According to HSBC, more than 40 million people in the U.S. are already users of mobile Internet; this number is growing at a fast rate. The number of U.S. subscribers who pay for mobile Internet services increased by 28 percent between the first quarters of 2007 and 2008<sup>1</sup>. Consequently, it is both an opportunity as well as a competitive necessity for FSIs to invest in mobile payments. Tower Group projects that mobile purchases will reach U.S.\$2.5 billion by 2012, representing an approximate 49 percent compound annual growth rate over the next four years<sup>2</sup>. Thus, mobile payments are likely to be at the forefront in the next wave of payment innovation.

In the remainder of this article, we will review the state of mobile innovation in U.S. and how FSIs are approaching this emerging channel. We will examine the mobile banking and payments trends in the near future by focusing on the following questions: what is the current state of activities within mobile channels, what trends are shaping mobile payments innovation, what are the challenges FSIs must overcome to drive innovation in mobile banking and payments products, and what should FSIs do to meet the challenge of delivering mobile banking and payments products? Finally, we will offer some suggestions regarding what FSIs must do to compete in this space.

### The state of mobile banking and mobile payments

In examining the current state of mobile applications in the retail financial services space, it is important to distinguish between mobile banking and mobile payments. We define mobile banking as the ability to provide cross product and channel integrated banking services anytime anywhere, such as the ability to access account information, transfer funds between accounts, locate banking facilities, or use online bill-pay functionality via a mobile channel

1 Luscombe, L., 2008 "Mobile commerce - TAWPI 2008 Forum and Expo," August 27  
2 Vyas, C., 2008, "Mobile banking and payments: making waves moving toward a flood," Tower Group Live, June 19

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such as a cellular phone, personal digital assistant (PDA), or other hand-held electronic devices. We define mobile payments as the transfer of value (i.e., monetary, credit, loyalty programs, rewards, information, etc.) between market constituents directly from bank accounts, credit lines, prepaid accounts, or card-based products, via a mobile device such as a cellular phone or PDA. The device may use contactless, text messaging, and other means of payment initiation. Excluded from our mobile payments definition are prepaid, contactless products such as transportation transponders, smart cards, prepaid cards, or touch-and-go key fob devices.

### Mobile banking

Adoption of mobile banking offerings is well underway within the U.S. According to a Harris Interactive study, 16 percent of wireless customers are already using some form of mobile banking, and 35 percent are interested in having the ability to check balances and transfer funds on their mobile devices<sup>3</sup>. Banks are taking notice and seeing significant adoption of their mobile banking offerings. Bank of America, for example, reported having 1 million active users of its mobile banking service as of June 2008. According to Lance Drummond, eCommerce and ATM executive at Bank of America, "Mobile banking is a critical channel for our customers now and into the future." To that end, Bank of America developed a strategic partnership with mFoundry to further invest in and commit to mobile solutions<sup>4</sup>.

Given the emphasis banks are placing on mobile solutions, the rate of consumer adoption, and the ongoing pressures financial institutions face in the consumer space, we agree with Tower Group's claim that "mobile banking is emerging as an indispensable business asset for banks to retain customers and reach unbanked segments<sup>5</sup>." For the value proposition to remain viable, however, mobile banking must take the next step, and provide the full integrated financial experience that consumers are seeking. Thus, in our view, payments and related services must be effectively delivered in conjunction with mobile banking offering.

### Mobile payments

In our portrayal of Ben, he is depicted as a user of a future mobile payments product in 2018, which we have named the 'mWallet.' We envision that Ben is using a smart phone and PDA device combination, with debit card linkage to his bank account and credit linkages to his personal and business credit and charge cards. In addition, we project Ben as the owner of a small enterprise that leverages many of the same technologies that 'Ben the consumer' uses in conducting routine business transactions. Finally, we see how Ben leverages his relationships with banks and other service providers while acting as an individual consumer and a small business owner.

In constructing this future view we have looked at the current state of mobile payments around the world. Recently, nascent

mobile payment offerings have begun to take hold around the globe. For example, in Japan, NTT DoCoMo introduced its mobile wallet, Osaifu-Keitai, in the third quarter of 2004. Additionally, in Singapore, StarHub signed a memorandum of understanding with NTT DoCoMo in June 2008 to explore a mobile wallet concept similar to Osaifu-Keitai for future implementation<sup>6</sup>.

The pace of growth of mobile payments in the U.S., however, continues to be a subject of much debate amongst banking professionals and industry observers. Some critics point to lagging consumer demand and interest in mobile payments in the U.S. In our view, that muted demand is temporary and simply a matter of timing, given that mobile payments are in their relative infancy. Evidence suggests, however, that as FSIs and other providers refine the value proposition, the market is ripe for rapid growth in the U.S. For example, in early 2008, First Data Corporation commissioned a survey of consumers, 18 years of age and over, to assess their overall interest in and the likelihood of use of contactless prepaid payment devices such as NFC stickers or tags<sup>7</sup>. The results were positive: 65% of respondents were interested in learning more about the concept, 78% of self purchasers indicated interest, 60% of those interested indicated a likelihood of using contactless stickers at least once a week, and 40% expected to use it even more frequently.

This research suggests that while mobile device-enabled electronic wallets (i.e., mobile payments) may be viewed by some as a leap of faith for consumers today, contactless payment devices such as 'tap and go' gift cards or consumer-friendly NFC form factors (i.e., a sticker attached to a person's mobile device or ID badge, a wristband, or a key fob) may gain traction with consumers.

Critics point to factors such as product usability and customer experience, merchant acceptance of contactless payments, customer security concerns, technical complexity, and variation as potential barriers to the growth of mobile payments in the U.S. We believe, however, that these hurdles can be overcome to achieve mobile payment offerings similar to those described in our futuristic scenario.

### Trends in U.S. mobile payment innovation

The foundations and precursors of mobile payment offerings are being built, tested, and implemented in the U.S. consumer market. Many of these new products have the potential to offer compelling enhancements to the lifestyle of consumers. Examples of some of these products are provided in this section.

**E-ZPass** – a precursor to mobile payments, E-ZPass is the electronic toll collection system that is common in the U.S. E-ZPass has captured widespread user acceptance and has spread to 12 states since its first installation in 1993. It has brought conve-

3 Factiva.com, 2008, "Cellular South launches mobile banking with BancorpSouth and Firethorn in a move that makes 'cents' for consumers and businesses," Cellular South, Science Letter, May 20

4 Sausner, R., 2008, "B of A invests in mFoundry", Bank Technology News, online edition, July 1

5 Garcia, V., 2008, "Mobile financial services: when technology and customer needs collide," Tower Group, May 29

6 Mobile Payments World, 2008, "StarHub pilots service - NTT's Osaifu-Keitai m-wallet," Issue 117, June

7 First Data Corporation, 2008, "Contactless payments: consumer trends and usage preferences," January

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nience, as well as time and cost savings, to highway travelers by handling high-volume, small dollar toll transactions electronically via RFID tags deployed in each traveler's vehicle. In the state of Virginia alone, there are more than 685,000 active E-ZPass RFID transponders and users account for 11 million electronic toll payment transactions a month. During peak hours, 75 percent of all toll transactions in Virginia are E-ZPass transactions<sup>8</sup>. E-ZPass has tested and extended its use beyond its initial purpose of toll collection. Parking fees and fines for automated violation tickets are now collected via the E-ZPass transponder. It is not difficult to envision further extensions for the E-ZPass prepaid account. Examples could include small retail payments and commercial vehicle identification capabilities. All of this can be achieved with a contactless smart tag device void of the benefits of a robust user interface similar to those of mobile PDAs and phones. Offerings that capitalize on the robust interface and the other technical capabilities of mobile devices could be compelling for consumers.

**GO-Tags™** – while FSIs are addressing the complexities of mobile payments, new and innovative technologies and prepaid account-based business models continue to emerge. For example, First Data tested their GO-Tag™ technology during the 2008 Democratic National Convention. GO-Tags™ are contactless form factors (i.e., stickers attached to a mobile device or ID badge, a wristband, or a key fob) that consumers can use to pay for goods and services at the point of checkout. GO-Tags™ leverage First Data's existing gift card transaction processing infrastructure to enable contactless payments and account balance replenishment. First Data's vision is that GO-Tags™ and similar products will eventually replace cash for low dollar payments. For consumers, GO-Tags™ and similar contactless devices are convenient and easy to use. For merchants GO-Tags™ are expected to help speed transaction processing at the point of purchase, improve customer satisfaction, increase impulse spending, and reduce cash handling costs. First Data has signed new merchant accounts, such as Blockbuster Entertainment, to use the GO-Tag™ technology. In relation to this agreement Blockbuster Chief Executive James W. Keys has stated that "the ultimate goal is to eliminate the need for cash in our stores<sup>9</sup>." Similar to the E-ZPass example, GO-Tag™-enabled prepaid transactions are most likely to be the precursors of fully functional mobile payments capabilities in the future.

**MasterCard PayPass®** – a mobile payments example emerging in the U.S. financial services card sector is MasterCard's PayPass® product. PayPass® is a secure, contactless 'tap and go' method for consumers and businesses to pay for goods and services using a MasterCard account and a PayPass®-enabled credit, debit, or business card, key fob, or mobile device at specially equipped merchant card readers. Several large U.S.-based financial institutions, such as Bank of America, JP Morgan Chase, and Citibank, have already rolled out PayPass® plastic card products to enable their customers to tap and go at U.S. retailers such as CVS pharmacies, 7-Eleven

convenience stores, BP gas stations, Best Buy electronic stores, and McDonalds fast food restaurants. Although this product has been implemented in the marketplace, financial institutions have yet to roll out true mobile payment PayPass® offerings in the U.S. To do so, mobile devices would need to be equipped with near field communication (NFC) capabilities and over the air personalization (OTA) solutions to configure handsets for PayPass® use. To implement true mobile payment capabilities using PayPass®, FSIs will most likely need to address many complexities, such as who owns the customer, who will market what, and how will we share revenues, amongst merchants, mobile handset manufacturers, mobile service providers, and other key stakeholders. If these issues can be addressed, and all stakeholders mutually promote mobile payment services, PayPass® has the potential to enable a wave of mobile payments innovation that will spur customer adoption in the U.S. and result in an eventual future outcome not too dissimilar from the one we presented in our "day in the life of Ben" example.

**Bay Area rapid transit pilot** – another example of mobile payments innovation was the Bay Area Rapid Transit (BART) pilot in San Francisco. BART, in conjunction with First Data, Sprint Nextel, and an array of other participants, conducted a four-month mobile payment pilot in early 2008. A total of 230 BART customers were provided with special, NFC chip-equipped Samsung phones. These mobile devices enabled the pilot customers to wirelessly download content from 'smart' Sprint and Jack in the Box BART station advertisements as well as to 'tap' their phones to purchase discounted transportation tickets and pay for meals in Jack in the Box restaurants. The pilot phones were loaded with initial balances of \$48 and could be reloaded automatically, via credit card or cash tendered in Sprint stores, when the stored value dropped below \$10. Although the results of the pilot have not been published we expect that participants realized product value via its ease of use and the discounts offered by BART and Jack in the Box that were normally reserved for customers participating in their loyalty programs. Interestingly, no credit card companies or banks participated in this mobile payments pilot although the secondary source of funds for the prepaid accounts is supported by consumer credit and debit cards. The prepaid account business model used for this pilot has already been proven (i.e., retailer gift cards, E-ZPass) and represents a competing model to mobile payments that directly use debit cards, credit cards, bank accounts, and other FSI provided vehicles as a source of funds for payment.

**Continental Airlines** – finally, a wide array of innovative products and services, of interest to mobile payment market participants and hopefuls, continue to be rolled out as retailers capitalize on the user interface of mobile devices. For example, Continental Airlines has launched a mobile boarding pass service, where customers can both check-in and receive a boarding pass for their flights on a mobile phone or PDA. At the airport security checkpoints and gates, passen-

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gers simply have the barcode image on their screen scanned to pass through and board. While in its initial stages, this mobile capability has keen interest amongst frequent travelers. According to Forrester, 47 percent of these passengers are interested in mobile check-in, while 42 percent are interested in using mobile boarding passes<sup>10</sup>. It is reasonable to assume that adoption will grow and financial institutions might be wise to follow this adoption curve, as compelling mobile banking and payments products may follow a similar path.

### Challenges to successful mobile innovation

The task of implementing mobile financial services in the U.S., especially payments via hand held mobile devices such as PDAs and phones, is daunting. There are many roadblocks that will impede customer adoption of mobile banking. Even more hurdles exist for mobile payments. FSIs should not assume the mentality of “if you build it, they will come” in the case of mobile banking or mobile payments. When FSIs build their business cases for these services they must consider how to overcome the key factors that could inhibit success. These hurdles include product usability and customer experience, merchant acceptance of contactless payments, customer security concerns, and the complexity of delivering services.

**Product usability and customer experience** – initial launches of consumer mobile banking services failed in the U.S. in the early 2000s for a number of reasons, foremost being the lack of customer experience and familiarity with similar products and poor product design. For example, FSI customers at the time did not have adequate experience with products like online banking nor did they have positive usability experience with the new mobile service itself. Initial users of mobile banking services in 2000 experienced poorly designed and often slow customer interfaces as well as difficulties in topping up electronic wallets<sup>11</sup>.

**Merchant acceptance of contactless payments** – a study by the Aite Group estimates that the penetration of contactless-enabled merchant locations in the U.S. will reach only 2.5 percent of all merchant locations by 2014<sup>12</sup>. The tempered growth in merchant acceptance of contactless payments can be largely attributed to the costs of enabling contactless payments at the point of sale (POS). POS upgrades required to enable radio frequency identification or other forms of contactless payments could amount to as much as U.S.\$100 per terminal<sup>13</sup>. Terminal installation, maintenance, and employee training further add to the merchant’s expense. To date, the incentives provided to merchants by FSIs have been less than compelling to overcome these costs.

**Customer security concerns** – mobile payment adoption could be hampered by consumer security concerns. Fears about mobile data security and identify theft remain prevalent. Consumers continue to be worried about privacy and fraud issues, such as having details of the transaction and the underlying data intercepted. Furthermore,

customers are concerned about the relative security in the event of loss or theft of mobile payment devices. With existing payment cards and checks, customers are protected by varying degrees of identification checks (i.e., picture IDs, chip, or PIN) at the point of sale, plus indemnification in the case of fraudulent activity from theft or loss. With tap-and-go payments, the authentication capability is lost.

**Complexity of delivering mobile payments services** – the needs of several different industry players must be taken into consideration when delivering mobile payment services. These constituents include financial services firms (both bank and non-bank), the wireless operators, payment processors, merchants, and software/hardware providers. For mobile banking, the financial services institutions own the customer relationship. However, for mobile payments the wireless and financial services firms might need to share ownership of the customer relationship. It is not simple to construct an economic business case where revenues and costs would be shared and all business model participants (including the consumer) would be winners.

### How should U.S.-based FSIs tackle these challenges?

Despite the challenges, it is apparent that mobile banking consumer adoption is well underway in the U.S. As early adopters of mobile banking offerings grow comfortable with the service, financial services firms are likely to encourage those users to migrate to mobile payment offerings. To that end, a recent Gartner study notes that “consumer interest in contactless payments increases substantially for transit applications and when making a transaction in a high-velocity sales environment such as a convenience store<sup>14</sup>.” This position is reinforced by the 2007 customer usage data from Japan that shows Osaifu-Keitai usage was dominant for consumer shopping, restaurants, and public transportation payments. Clearly, based on available market research and history from other markets such as Japan, there are growth possibilities today to offer mobile payments within the U.S.

As all interested parties sort out the business case for mobile payments, now is the time for FSIs to make sure they are ready to compete in the current and future waves of mobile payment innovation. The threat of technology-based non-FSI competitors entering the mobile payments arena, such as PayPal and Google Checkout, combined with the ability of cross industry players to build parallel payment networks using prepaid accounts further underscore the imperative to compete and be innovative. FSIs should consider the following strategies to help overcome some of the challenges discussed above and increase their ability to compete in the fledgling, but emerging, U.S. mobile payments space.

**Make the consumer feel that they “have to have it”** – FSIs will need to learn from the struggles of early mobile banking opportunities and ensure that their mobile payments offerings meet the

10 Stellin, S., 2008, “Paper is out, celphones are in,” The New York Times, online edition, March 18

11 Graeber, C., C. Johnson, and B. McGowan, 2007, “Raining on the mobile banking parade - widespread consumer adoption will prove elusive” Forrester Research, Inc., Executive Summary Excerpt, September 18

12 Aite Group, LLC., 2008, “Contactless payments and NFC in the United States: beyond science fiction,” January 30

13 Boyer, M., 2008, “Analysts, MasterCard differ on contactless views,” ATM & Debit News, March 20

14 Furlonger, D., 2007, “The future of money,” Gartner Inc., Dec 18

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customer's lifestyle and needs. First and foremost, that will require the delivery of compelling customer functionality via mobile payments applications. For example, FSIs may partner with merchants to offer special frequent shopper incentives and discounts to users, to enable instant saving offers when the customer is tracked to be in or near a store, to permit shoppers to bypass the register and checkout lines, and to allow them to download receipts and track overall spending habits. Each of these offerings serves to address one or more of the critical drivers for consumers: convenience, cost savings, and control. Successful FSIs could drive "word of mouth" demand for mobile payments by emphasizing the aforementioned factors as well as the expediency and security of not having to carry an array of cash, credit cards, rewards/membership cards, store coupons, and paper receipts as a convenient lifestyle enhancement.

**Ensure consumers can actually use it** – while compelling consumer offerings will speed adoption, FSIs will need to pay particular attention to optimizing the user experience. The end benefits of mobile applications are shunned quickly when the usability (complexity) and speed of the experience is poor. Institutions can overcome that by leveraging partnerships with third parties with expertise in mobile technology combined with in-house consumer experience experts. This will help ensure that the expectations of the mobile payment customer experience are met and exceeded by best in class mobile technologies. Both in-house skill and external knowledge are critical to designing and developing compelling, easy-to-use mobile payment product offerings.

**Sing music to the merchant's ears** – without acceptance from merchants, mobile payments will continue to face significant challenges. To combat this, FSIs must focus on making mobile payments as compelling for merchants as they will be for consumers. The key to this is to create win-win scenarios for merchants to replace alternative forms of payments and sometimes even cannibalize their own store branded cards. For example, as in our Starbucks' scenario above, FSIs should seek to partner with specific, well-known, high-volume merchants to migrate their most loyal customers to use mobile devices for self-service payments, thus resulting in shorter store lines and potentially lower transaction costs. Merchants should be allowed to benefit from the ability to cross sell and target market through mobile-enabled data. Examples could include using global positioning to determine when the customer is near a particular retailer, offering complimentary products or specials via opt-in text messages, or suggesting sponsored personal assistant type services such as dining and entertainment advice.

**Make security paramount** – Nothing can derail any payment application faster than security concerns. Thus, FSIs will need to make assurances of safety and security a priority when developing a compelling value proposition. FSIs should work with their partners

to add distinct electronic security features to the mWallet (beyond what is possible with plastic cards), such as the capability to lock the product with one encoded text message or providing specific consumer guarantees if the mWallet is lost or stolen (similar to the indemnification provided for fraudulent card purchases). Other potential options for enhanced security are features protecting a customer from accidentally being charged when in the proximity of mobile readers and the ability to track lost or stolen mWallets through global positioning.

As early adopters of mobile payment technologies share their positive customer experiences with others in the mass market and the technology is viewed as stable, secure, and convenient, customers will follow as they see how the technology will better meet their needs and adds value to their lives.

### Conclusion

Although the entry barriers to mobile payment implementation and customer adoption are high, mobile banking appears to be gaining significant traction in the U.S. Consumer acceptance of mobile banking functionality, such as mobile bill pay and prepaid accounts, will help FSIs build the business case for further investment in, piloting, and roll out of mobile payment products in the U.S. Given that working business models of mobile payments already exist (i.e., mobile payments in Japan) and new, viable, and true mobile payment business models continue to be tested and implemented in the U.S. (i.e., E-ZPass, PayPass®, GO-Tags™, BART Pilot) we concur with Tower Group's projections and expect that consumer adoption of PDA and/or mobile phone-based payment products will grow significantly within the next three to five years.

The market penetration of mobile payments in the next three to five years, as well as the mobile payment business model we referenced in our "a day in the life of Ben" example, depends on many factors. Successful market penetration of mobile payments on handheld devices is dependant upon all stakeholders (i.e., financial services players, merchants, handset manufacturers, and mobile service providers) coordinating the delivery of eloquent mobile payment value propositions to consumers. If all parties involved can come to eventual agreements and partnerships on business drivers such as customer ownership, revenue sharing, and product design, the mobile payment services offered in the U.S. over the next five years will provide robust high value functionality to consumers. If coordination between the key stakeholders continues to be fragmented, mobile payment offerings are likely to continue to be less than optimal and will struggle to saturate the marketplace. With fragmented implementation, new competitors will most likely emerge and challenge the existing players, namely FSIs, thus increasing the urgency for cooperation and accelerated implementation. This said, even with the right alliances in place, our view is that the growth rate of mobile payment products and services is likely to take some time to reach a

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true tipping point in the marketplace. A complex array of factors and industries must come together to make the offering valuable to consumers and businesses alike. Any business case for mobile payments should address this likelihood when projecting outcomes.

The U.S. is on the path to eventually becoming a cashless society. All of the building blocks are in place, and it is only a matter of time before current or new business model participants piece together more value-added mobile payment service offerings. Financial institutions that do not become active in the mobile banking and payments market in the near future might find it more difficult to catch up with the established leaders. The best opportunities and partnerships could go to the early movers as they continue to move down the learning curve. This is likely to be most true for the more complex mobile payments offerings where multiple business model participants must interact.

Financial services firms must understand and predict their customers' needs while building and continually enhancing their mobile banking and payments offerings. These offerings will be critical for the industry players to differentiate themselves from one another and defend their market share of the payments sector going forward. By offering these value added services they will ultimately unlock new revenue channels and opportunities in the years to come.

