<u>Marianne Crowe</u>

Marianne Crowe:
Jim kind of focused on the micro level on the consumer side of what's going on with mobile. And I'm going to take it up to a higher level, kind of, across the landscape, to give you the bigger broad picture of what's going on, primarily on the mobile payments side versus the mobile banking side. So just to give you a quick highlight of what's going on in the international landscape, just a quick bit because there's a lot going on there, then take a look at what's going on in the U.S., or what isn't going on in the U.S. as far as mobile payments, then a little bit about where we are in terms of, perhaps, some needs for regulatory review or looking at some of the other risks and where the Federal Reserve or the Central Bank might play a role. These are just some things to think about as the day goes on for further discussions in this area.

So first of all, taking a look at the international landscape, it's kind of split between the developing countries and the developed countries. And, so, if we look at the developing countries, we see that they're using mobile in a different way than we think of as mobile payments, more text messaging and remittances to transfer money. They're dealing with people who are primarily unbanked, but, interesting they're -- ironically, they're unbanked but they have mobile phones. So they need a way for doing banking or moving money, and the companies, particularly the carriers, are going in there and allowing them, stepping in where the banks perhaps can't provide the services to allow them to transfer money. Some of the countries, Philippines, Kenya, India, certainly are high in terms of remittances across border, in some cases, or within the country, as in Kenya, to move money around.

Now, as you can see, there's a huge market, potentially, for remittances in the world. So as I said, these countries lack the banking infrastructure to support the services for people. I'm using some acronyms, mobile network operator, you'll see MNO, that's the telecom, that's the phone carrier. So if you see that across the presentation, that's what I'm talking about. They're stepping in, and they've set up quite extensive networks and agents in some of these countries, in order to move money. And, again, these countries, the alternative is trying to get cash, and that's a risky thing to do to move money long distances, or just to be carrying it. So they are meeting a need, not without its risks or problems, but they are meeting a need in some of these countries.

So just a quick -- if you look at a case study, Kenya, M-PESA is a product that they've been using and developed in that country. And you read a lot about that in the news. They have a limited banking network, 50 percent of the people in Kenya have phones, and Safaricom, which is the mobile network operator, teamed up and started this company a few years ago. And they've already got about 8 million registered users, which is about 40 percent of the adult population. So it's showing that there's a need. People, again, working in remote areas trying to get money back, as it says here, to the, you know, migrants who have families in the city, needing to transfer money back and forth to their families to support them, and to do it in a way that's efficient, and to use their mobile phones. And it's expanded to other uses as well.

So a very simple picture here is what you're seeing, is that the customer, again, has to hand cash over to the agent to start this off. But the agent will load the money onto the phone, or onto the electronic money service, and that's how the person makes a deposit. And then the person's able, through prompts on the screen, to actually transfer money to the recipient at the other end, who then still has to go to the agent and get the cash. So it's still not a pure electronic to electronic method, but it is a way to move money in a way that they couldn't do beforehand.

You look into the more developed countries, and not the U.S. at this point, but some of the other -- oh, I'm sorry, skipping the slide here -- but, looking at some of the regulatory issues or oversight that's come up in these developing countries. As it's happened, not necessarily that the regulators stepped in at the beginning, but they've looked at what's going on, they've seen some issues, and in India, for example -- and the wording's kind of awkward here -- but, what it says is, “It's illegal to receive remittances.” It really should say, “To a mobile phone.” So I can send a remittance through my phone, but the recipient has to get it through the ATM or through an agent in cash. It's not loaded onto the phone. And India's done some other regulatory work in the past few years and more recently has updated some of their regulations as well, in terms of electronic payments and [unintelligible] mobile. So they're looking at what's going on and trying to address the issues that come up in terms of fraud or risk.

And Egypt, just as an example, that they said we've got to mandate more non-SMS authentication, so I'm thinking more multi-factor authentication, that they needed some more controls around moving money. Nigeria has gone so far to say that, if the lead in the mobile payments model, so if it's a non-bank, a mobile network operator, they have to identify who that is. And they're responsible for meeting some regulatory requirements that the bank has set up in order to move money, and that they don't allow them to use prepaid airtime minutes in terms of money for these transactions.

Kenya, which we talked about with M-PESA, has also taken a look at what's been going on with money movement. And, because the mobile network operator's not a bank, they did some auditing. They were concerned about some pyramid schemes. And, so, they have created some new regulation to regulate non-banks, or, you know, payment systems outside of the banking system. So I think the main point here is that these examples really highlight the need for the banks, and for others with banking experience who understand risk and compliance, and the financial services needs, need to work together with the mobile network operators to make success -- to have a success in terms of moving money through your mobile phone in these countries.

So if we look at the developed countries, here we're talking about -- Jim talked a little bit about this a few minutes ago -- we're talking about mobile proximity payments, or payments that you can make with a Near Field Communication chip in your phone or contactless payments which we're probably all familiar with in terms of contactless chips in debit and credit cards. So this is to talk about having something like that technology inside your phone. And that's what the developed countries who are more successful in doing this with mobile payments, Japan, Singapore, Korea, that's what they're focusing on.

And the difference here between these countries and some of the other countries is that they tend to have highly concentrated banking markets and/or strong leadership of a mobile network operator in that country who has taken the lead to develop this, has employed the technology, and has worked either with their banks or with government agencies or with others, transit authorities being a big one in Japan, and some of the ones who got started earlier. But they worked together. But somebody outside of the bank took the lead in making this happen, and implementing it in their country.

The other thing in these countries, unlike the United States, is the debit card didn't really take off in most countries. And so there was a need, particularly, they were more cash intensive, these countries. So there was more of a need to do something else electronic. People had cell phones. There was this -- the value proposition for the consumer as well as the businesses was there. And, again, the governments were either more willing to intervene, or to allow, or to partner with the businesses to make this happen. So those are some of the differences.

An example, Japan, it's probably the leader in the world in terms of mobile payments with Near Field Communication. Just a little bit of background, it started with a commuter railroad that implemented Sony's Near Field Communication on cards. And, so, it did start with cards several years ago, and then for transit transportation, and then it spread out to the retailers around the transit system so that they also could partner, and so people could now use that contactless card to take the train, to commute to work, but also to buy things in the local retailers around the area. And that's a model that's worked well there.

And then NTT DOCOMO is the company, the major mobile carrier in Japan. They got involved; they had a huge part of the market for mobile phones in the country. And then they took that same technology and launched it on their phones. And, really, from there that's grown a lot. They've expanded so that you can do it with a credit card. Other mobile carriers then adopted it. So it went across the country. It wasn't just focused on one carrier, so it wasn't limited to only people who had that phone. And, again, you don't see any banks in there. So but they expanded it, offered credit, and today, you know, as of October of last year there are 60 million of these Near Field Communication handsets in circulation in Japan. And 30 percent of the consumers use them on a regular basis. So it's still not across the board, but it's certainly a lot more than what we'd see in other countries and compared to almost zero in this country.

So my one, kind of, consumer micro-slide that I want to put in here is because in Boston we do a survey, “Consumer Payment Choice and Behavior.” We've done it for two years across a spectrum of payments trying to understand the behavior. But, in the past one that we did this last October, I was able to get a few questions in about mobile. We'll hopefully to expand that next year. But, we figured I'd pull out the data that we had on it and compare it to our '08 study. And, just in terms of looking at overall bank account adopters, it's almost 100 percent. Mobile banking adopters went up a little bit to 10 percent. And our survey, the '08 survey, was about 1,000 respondents, the '09 survey about 2,000 respondents. Just about 1,000 were the repeats from the year before, and the others were new people. But you saw that going up and so the use of mobile banking is growing a bit.

Looking at cell phone adopters, our survey showed almost 90 percent, which is in the same range, around the 90 to 94 percent that we'll see in industry surveys and others, so it's consistent. But if you look at mobile payment adopters, we didn't have the information for '08. For '09, it was three percent, about 2,000 people. Two percent said they did it using SMS text messaging, like the Haiti example, everybody could use their phone, put the code in, and send money. And only one percent said they actually used it for contactlesss. And I was actually surprised to see the 1.1 percent, because unless you're doing a pilot of something, it really isn't commercially available in this country. I mean, there are stickers and there are other things that we'll get into, but that number's not surprising.

So the question is, well, why -- some people say, "Well, we lag behind other countries." And I don't know if it's that we lag behind or we're just different, and I think it's maybe a little of both. But, we have a well-established banking system, and we have many payment options, and an electronic system that works well in this country. It's not perfect, but it works well and consumers have choices in terms of making payments. So there's not a burning need to do something else. We have a good credit and debit card system, and, again, this necessarily doesn't help the unbanked, which we do need to look at from a mobile perspective, but for the general population we have a system that works.

Our debit cards have grown tremendously in the past several years. And so the use of those has grown, and we've continued to make it easy and convenient and quick to use debit cards. Whether they have a contactless chip in them or they don't, they're easy to use. The regulation that said you didn't have to give a receipt for under $15 that changed a year or two ago continued to help that process along. So and again, unlike the countries that we mentioned before where debit card's not a big payment method, in our country it's here. And, so, we have something that's easy to use.

Cash also, although we think we use a lot of cash in this country, again, relative to other countries, we're not considered a high user of cash for payments, the general population. And, so again, there wasn't this gap there. And at the same time if you are a cash user in this country, we have over 400,000 ATMs and banks and you can get it at point of sale, plenty of places to get cash from your account if you need it. Those things don't necessarily exist in some of the other countries that we saw.

On the supply side we have other barriers in terms of trying to implement, in this country, mobile payments using the NFC, Near Field Communication technology. We have very low market concentration. We have thousands of banks in this country of all sizes. The mobile network carriers in our country, we don't have -- we have more, I mean, but we have four who have 90 percent of the market. But not one of them has 50 percent. I think the highest one they have around 30 percent, and they're very competitive. So those are some of the barriers. We also have issues with costs, perceived or real, that the merchants have in terms of, “I need to install technology and readers at the point of sale.” I mean, someone has to pay for the chips to put in the phones that consumers use. So that's a barrier.

Other technical inconsistencies, there are many handsets. There are all sorts of configurations and screen sizes. Last night, I should have gone to bed early but I was watching a little bit of the Olympics and a commercial came on for a phone carrier and phone device, and I won't mention which one, but in one commercial they mentioned four different models of that one phone. So I was totally confused because I was half-paying attention, but I thought okay, well which one? What's the difference? So think of, you know, consumers when there are all sorts of phones and options out there. How do they know what's good? How do they know what's safe? How do they know what works for them? And then we've got old and new handsets, people need to replace them; they're tied to contracts, so, all sorts of things that affect people's interest and use of phones for mobile payments.

Finally, we have something very important, security concerns, and potential emerging risks. You still have to worry about authentication and fraud issues as Jim mentioned. And now you have cross channel, you have mobile as a new channel that's moving into the payment system. But, now you have, “What if I lose my phone?” “What if I break my phone?” “What if it falls in the water?” “What if somebody steals it?” “What if I'm making a transaction and the call drops and the transaction doesn't go through?” Depending on the technology, there are backups and contingencies, but things like that have to be addressed. And we all talk about them, but most things have not yet been worked out, and so whether they're real or perceived risks, they're out there and we need to address them.

Another sort of barrier is, in our country maybe more so than other countries, look at all the organizations and businesses that are involved potentially in one mobile payment transaction. We have the banks. We have the customer and the merchant. We've got a debit or credit card network because you might decide in your mobile wallet you want to pay through your debit account or through your credit card account. We have the clearing and settlement organizations. It can be ACH or it can be credit or debit. We've got the solution software providers, third-party processors, and then the carriers and then the organizations that make the chips and make the handsets. All of those have to work together. And work together to build the process and then on any daily basis there could be a potential problem with any one of them and how do you know where it started and who's supposed to fix it?

So each of them, you've got the sort of financial side of that group and you've got the industry side. They think differently about what their responsibilities and liabilities are to the customers and to their businesses. And so we probably do need to think about some sort of a road map to build an infrastructure around these, and determine all the steps in the process, and what happens where, and who's responsible if something goes bad in one place or another. And I really do think that, I'm not sure how we're going to get there yet, but success does require collaboration between all of these groups who need to think differently because they've not all worked together before. So it's very new to some of them.

So what do we need to do in this country? And, again, this is more thought for discussion for today and for later to think about these things. None of this really exists today, but what could we do? Well, if we could bring all of these groups together that we saw on the previous screen in some sort of a neutral environment and start talking about what these issues are openly. And really it should sort of, you know, leave aside their competitive issues and talk about what could be done if we really want to make this a success in the United States. Think about what would be the right business model from a revenue sharing and the customer ownership perspective. And that's important, obviously, because we want it to be a win-win for everybody.

Customer ownership's a sensitive issue because you get into data privacy, and consumer protection, and you get into data mining, and marketing of data. And, so, who owns all that stuff and how does that -- how do they take advantage of it, but how does it also protect the consumer? The consumers need to know why they should use mobile payments. What's in it for them? What is the value added beyond the basic transaction before they're going to think about moving to it?

And they also need education. I mean, we saw that with online banking, we saw it with Internet use. People learned -- people in this room are familiar with this stuff in many senses. But regular people don't know how to use these things, or if something goes wrong, what they should do, or what they should trust. And they don't read the fine print. So we do need user friendly education, I think, for people in general. We need to address the cost issues for the merchants, because it's the chicken and egg thing, one's not going to do it if the other one doesn't do it, the security concerns, the emerging risks, being the risks that we don't even know yet, that could come beyond what we know today, and then the technology inconsistencies. And then the standards, obviously: interoperability and a common security model. And, finally, you know, regulatory uncertainty. It's not so much that, "Will we have it or won't we have it?" It's, "What's it going to be," "Who's going to do the regulating?" You know, "What parts of it?" We all need to know that and understand it.

So what could be done in considering that? And, so, one area, if we say, well let's look at a model that's potentially collaborative, and again, this is a concept in this country. And what I'm going to talk about for the next couple of minutes is a TSM or trusted service manager, also a trusted service provider. But think of it as, it's a neutral intermediary who might sit in the middle of all these stakeholders and parties who what to make this process work and to help really deploy, across the board, mobile payments in this country.

And so some of the things that a TSM might do are listed here. So you know, look at the business rules, connect the providers and the mobile network operators, guaranteed security, manage some of the secure elements or the pieces that control the authentication and the verification of who's passing transactions in and out of the system, and doing customer support. So it might take things that take away from the stakeholders and things that aren't necessarily the core competencies or aren't necessarily things they want to invest in one on one to do in the middle and make this process work with everybody around that's supporting it. But, they wouldn't necessarily participate in the individual day to day transactions.

So just to look quickly at this picture, just to see, again, all the parties involved in the process, the trusted service manager would kind of sit in the middle, and things would flow between the different parties and everybody would be connected. So some of the benefits would be, you know, you don't have a balkanization of the market. You can reduce some of the redundancy in costs and investments that have to be made because one company may not want to make an investment that's going to benefit everybody else and not necessarily recoup all of their costs. It would show some clear consistency around the infrastructure which might help build some positive reception in terms of adoption and clear direction for the merchants and then allow people to focus on their individual strengths and let perhaps, this -- [unintelligible] outsource -- but this intermediary handle things that are shared responsibilities of all the parties in terms of supporting the customer and protecting them.

So the next question is, well, then what about the legal and regulatory framework? Does anything have to change here? We saw just at a very high level on the international side there have been areas where they're starting to look at that in other countries, whether they're the developed or the developing countries, to worry about it. In our country, we, again, we have a different structure than others. We have many organizations that support the banking, but on the mobile side we have the FCC. So it's very different. They think differently. We need to understand who does what. The carriers aren't banks, so they need to understand what it means if they're going to have any involvement in financial transactions, what they need to know about, what about money laundering and compliance issues and consumer protection the way the banks do it versus the way the carriers do it. So a lot of things to think about, and some areas perhaps to even talk about later today in terms of, you know, what kind of guidance is needed to move ahead?

Potential areas where it might need oversight or at least talk about it to make sure that the system's fair for all consumer segments, it's interoperable, we're focusing on consumer protection and privacy, we've got the right security controls, and we're doing the risk management the way we would do on the banking side in order to protect them on the new areas that might touch the mobile phone. And then the last one, which, you know, everyone, it's always after the fact, the same thing is notifying customers and telling them when something goes wrong, what their recourse is, who they should contact so they don't have to contact -- “Do I call the bank? Do I call the MNO? Do I call the software provider? What do I do?” Making sure that people are clear in terms of what they have to worry about.

So another reason that, you know, we heard today and that was asked, “Why should the

Fed or the Board of the Central Bank care about this? Why would we even think about being involved?" Well, certainly, as a regulator and as an operator, we have a long history in terms of being involved in payments, emerging payments, new payments, we're the ACH operator.

Someone mentioned to me, you know, that the analogy of the check imaging, we played a very strong role in that over the past several years, moving it towards electronic. But, Paul Connolly, our first vice president in Boston, years ago when check imaging was sort of just a thought for people started working with the Treasury in terms of getting it going, and he tells a story about how they took pictures, they taped checks to a drum and took a Polaroid and took pictures of the checks and that was the first check imaging process that we started. So we've come a long way since then, but I'm not quite sure how that worked.

But we've had an interest, and an involvement, and certainly knowledge in this area for a long time. So I think it makes sense for the mobile channel to be part of that process. And it is a new channel. So we want to make sure it doesn't add risk to the payment system and that we are protecting people. We also examine banks and banks are going to be involved in this process. We have to look at, well, do we need to add additional procedures to that as well. And then, again, we can help facilitate some of the discussions that I mentioned earlier.

So just to conclude here, what are we doing today in this area? We're very interested in it, which is one of the reasons why this group is here today, but we're trying to start getting involved. We're involved in some of the industry groups that are looking at mobile, whether it was the Financial Services Technology Consortium that did a mobile group for the past year and a half, NACHA has a mobile group, we have somebody who sits on the X9 and the ISO group, the International Standards Organization Work Group that's focused on mobile payments and their standards. And we're starting dialog with some of the key players in the industry. We're doing primary and secondary research and some survey work.

So we're trying to start, you know, be as informed as we can be and learn from this process so that we're ahead of the game rather than behind. And again, having discussions like we're going to have today will continue to [unintelligible].

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