

Emerging Risk Forum
"Cash, Check, or Cell Phone?"
Protecting Consumers in a Mobile Finance World

The Mobile Payments Landscape

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Agenda

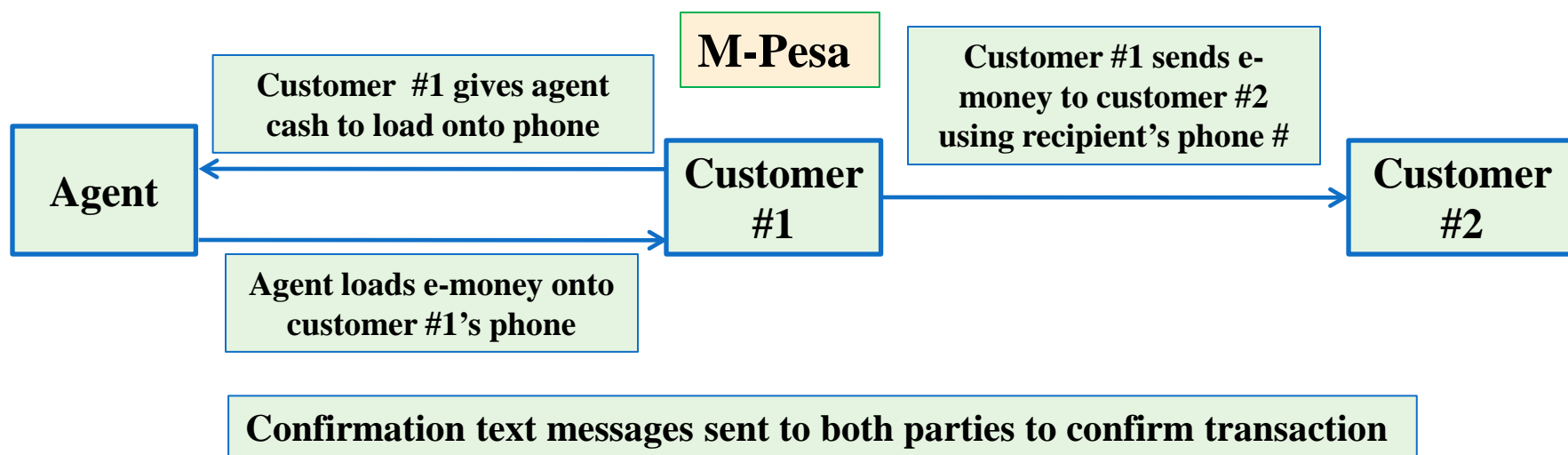
- International Mobile Payment Landscape
- U.S. Mobile Payment Landscape
- Business & Regulatory Framework
- Role of Central Bank in Mobile Payments

International Mobile Payment Applications in Developing Countries

- *Developing* countries are using mobile text messaging/SMS for remittances & money transfers between people
 - Remittances are a huge market in countries with high unbanked populations & high mobile phone penetration
 - e.g. Philippines, India, Kenya
 - Market for remittances totaled \$433 billion in 2008 (World Bank)
- Countries lack banking infrastructure to reach people located remotely
- Mobile Network Operators (MNOs) usually take lead role with extensive networks of local agents, outstripping presence of local banks
- Mobile payments can replace ‘risky’ cash since not many payment alternatives exist

Mobile Money P2P Application in Kenya

- Kenya has a limited banking/branch network
- 50% of Kenyan population has mobile phones
- Safaricom (MNO) & Vodafone started M-Pesa Kenya in 2007
 - 8.3 million registered customers
 - About 21% of the entire population or 40% of adults
 - Early adopters were young male urban migrants who sent money home to families in country
 - Safaricom customers can send money to any mobile phone user, including non-Safaricom customers.
 - Use has expanded to school fees, cab fare, other basic money transfers



Regulatory Oversight for Mobile Payments in Developing Countries

- India - illegal to receive remittances to mobile phone
 - Egypt - security requirements mandate more non-SMS authentication
 - Nigeria
 - “Lead” in mobile payments model must ensure solutions/services meet Central Bank regulatory requirements
 - Forbids MNOs to allow use of prepaid airtime value for payments or to transfer monetary value
 - Kenya
 - Authorities concerned with M-Pesa lack of bank status
 - Ordered audit over possible pyramid scheme
 - New bill regulates M-Pesa outside banking regulation under money transfer & payment systems
- ❖ *Above examples highlight need for banks to work with MNOs in developing countries to add their financial services skills, experience & risk/compliance expertise*

International Mobile Payment Applications in Developed Countries

- *Developed* countries use mobile phones with NFC (near field communication) chips to pay for transit and/or retail purchases
- Most successful are technologically advanced with highly concentrated banking markets and/or leadership of MNO to partner with banks, government, transit authorities
 - Japan, Singapore, Korea
- Debit card is not major payment method; mobile payments typically replace cash
- Governments are more willing to intervene to ensure success of mobile payments

Mobile NFC Retail Payments in Japan

- JR East, major commuter RR, first implemented Sony's NFC technology, FeliCa, in a re-loadable prepaid card
 - Merchants near train stations installed readers to expand use of NFC cards to purchases
- NTT DoCoMo is a major mobile carrier with 50% of the market in Japan
 - 2004
 - DoCoMo launched FeliCa on mobile phones with an e-wallet application
 - 2005
 - DoCoMo allowed consumers to use credit cards for mobile payments
 - Other major mobile carriers implemented FeliCa for mobile payments
 - 2006
 - DoCoMo entered consumer credit business
- October 2009
 - 60 million FeliCa handsets in circulation
 - On average, 30% of consumers with mobile FeliCa handsets use them regularly

U.S. Mobile Payment Landscape

Consumer demand for mobile payments is low

	<u>2009</u>	<u>2008</u>
• Bank account adopters	93.0%	93.8%
• Mobile banking adopters	10.2 %	8.2%
– Used mobile banking last 12 months	8.9%	n.a.
• Cell phone adopters	89.5%*	n.a.
– Mobile payment adopters	3.0%	n.a.
• Paid using SMS/Text**	2.0%	
• Paid via contactless mobile	1.1%	

**Consistent with industry estimates of mobile phone subscribers by household*

***Before Haiti earthquake*

*FRBB SCPC Survey of Consumer Payment Choice
Conducted Nov/Dec. 2009. 2000+ respondents.
Preliminary and unofficial statistics, subject to revision*

U.S. Mobile Payment Landscape

Why U.S. may 'lag behind' with NFC mobile payment adoption

- U.S. has a well-established & widely adopted electronic payment system
- Many payment options exist to meet most consumer needs
 - Most consumers carry and use credit and debit cards
 - Although this may not address the unbanked in the U.S.
- Growth of debit card in U.S. in recent years made payments for small value purchases quicker & more convenient
 - Debit card regulation eliminated need for merchant to return receipt for POS purchases under \$15 & some electronic (vending) purchases
- Cash is used much less in U.S. than in countries where retail mobile payments most successful
 - And cash users have easy access to cash at banks & over 400,000 ATMs across the U.S.

U.S. Mobile Payment Landscape

Supply-side issues also create barriers to NFC Mobile Payments

- U.S. banks have very low market concentration compared to other countries
- U.S. MNOs are more concentrated but extremely competitive
 - Top 4 have 90% of market
- Low merchant interest due to real/perceived costs of implementation
- Technological inconsistencies
 - 1500 handsets, over 450 configurations, screen sizes, different operating systems and functionalities
 - Span of handset age and capabilities
- Security concerns & emerging risks
 - Authentication and fraud, especially cross-channel
 - Lost/stolen phones, dropped calls
 - Secure access via wireless network

U.S. Mobile Payment Landscape involves many stakeholders

- Financial Institutions
- Customers and merchants
- Debit/Credit Card Networks
- Clearing/settlement organizations
- Software solution providers
- Third party payment processors
- MNO/wireless carriers
- Handset/chip manufacturers

- Each party views its responsibilities & liabilities differently
- Roadmap is needed to sort out the infrastructure & functionality surrounding the transaction
- Success requires collaboration between industries that have never worked together before with a shared infrastructure

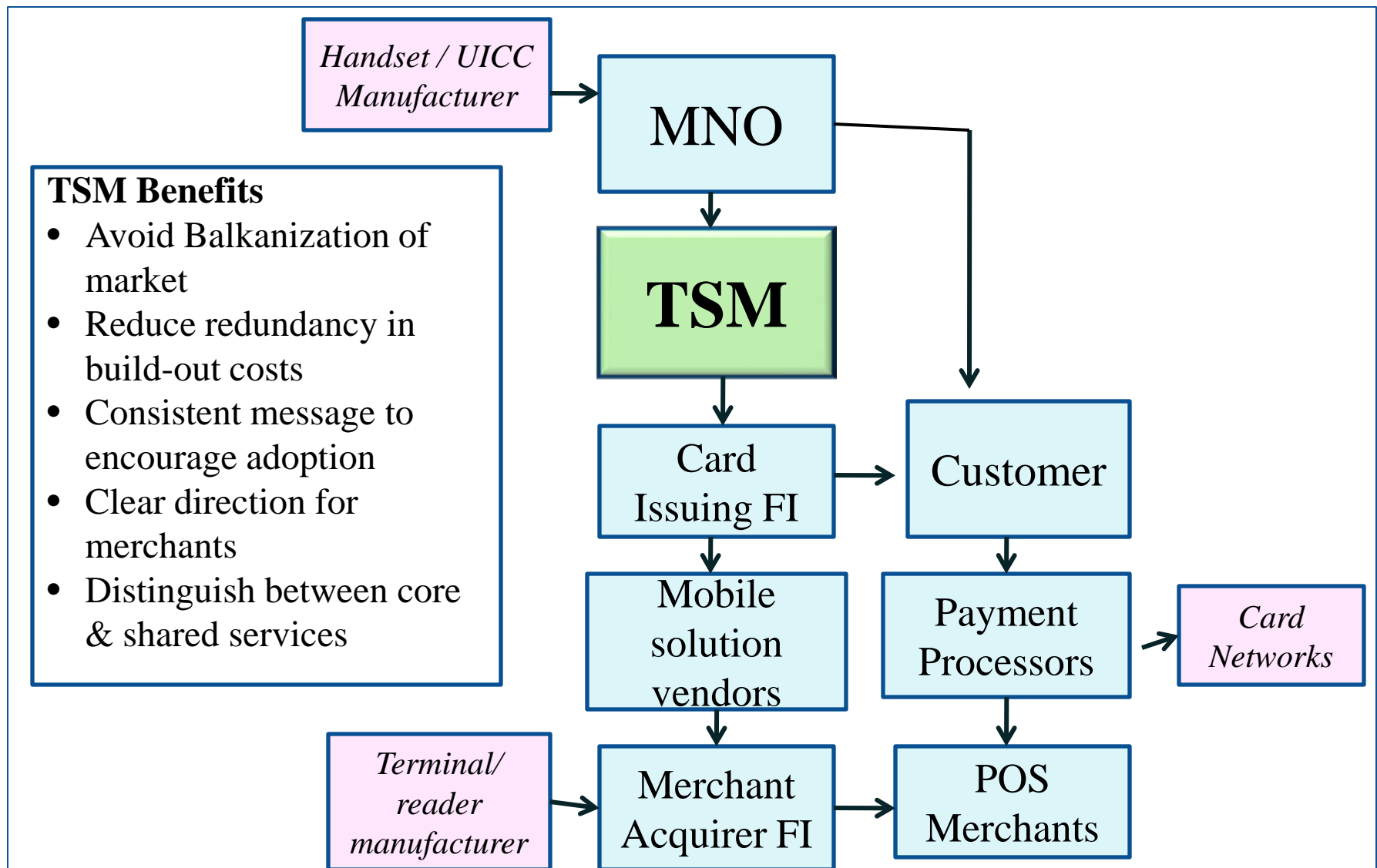
What needs to be done to develop Mobile Payments in the U.S.?

- Bring stakeholders together in a neutral environment to discuss and resolve issues
 - Agree on business model for revenue-sharing & customer ownership
 - Develop customer value proposition & education
 - Address merchant cost issues
 - Address security concerns & emerging risks
 - Address technology inconsistencies
 - Develop standards to address interoperability among payment systems and networks, and a common security model
 - Address regulatory uncertainty

What needs to be done to develop Mobile Payments in the U.S.?

- Consider a collaboration model & Trusted Service Manager (TSM) infrastructure
 - TSM would be a neutral intermediary to oversee business & operational requirements for mass deployment of mobile payments
 - TSM functions could include:
 - Management of business rules, authentication
 - Connect MNOs and service providers
 - Guarantee end-to-end security; manage secure element key
 - Application life cycle management for MNO, hand-set & customers
 - End-to-end customer support
 - TSM does not participate in actual NFC contactless transaction process
 - Transactions process over existing payment rails (credit/debit card networks, ACH)
 - TSM would facilitate secure authentication to the edge of the network, prior to transmission over existing rails

TSM role in Mobile Payments



Does the legal framework need to be adapted for mobile payments?

- Many regulatory agencies touch payments and/or wireless transactions
 - Financial Institutions: Federal Reserve, NACHA, FDIC, OTC, OCC, NCUA, SEC, FTC
 - Mobile carriers: FCC
- Underlying payment methods are covered by existing bank regulations & rules for credit, debit & prepaid cards, ACH transactions
- Financial service and MNO regulations differ significantly
 - Carriers are unfamiliar with payments/banking requirements:
 - e.g., KYC, BSA/AML, money transmitting, compliance & consumer protection
- Mobile channel may create gaps where coverage and liability unclear
 - What regulations are impacted?
- Clear guidance is needed on where current regulations cover mobile payments & where they do not

Where is oversight needed?

- Ubiquitous mobile financial services
 - Fair access for all consumer segments
- Consumer Protection & Customer data privacy
- Interoperability among networks and handsets
- Security Controls & Risk Management
 - Authentication
 - Protect against unauthorized transfer of funds anywhere in process
 - Protect against unsolicited text messages, malware, and spyware on mobile devices
- Customer Notification & Recourse
 - Provide adequate and timely disclosure of risks, responsibilities and liabilities of mobile transactions to customers
 - Identify recourse for technical failures
 - Establish grievance procedures

Why the Fed cares about Mobile Payments

- Fed has history of involvement in payments as regulator and operator
 - Evolution of check imaging has its roots with Fed
- Mobile payments enter the payment system through a new channel
- Fed must ensure mobile payments meet requirements of other payments
 - Don't add risk to payment system
 - Comply with consumer fraud protection requirements
 - Ensure customer data privacy
- May require Bank exam procedures to be updated as well
- Fed's neutrality can facilitate discussion between banks and non-banks
 - Determine how roles get apportioned related to customer, data, money, liability & risk
 - Help ensure new non-bank players entering ecosystem - MNOs and others such as Google, Apple, PayPal - are prepared to handle the 'banking' aspects.

Current Fed activities related to Mobile Payments

- Industry mobile workgroups
 - FSTC
 - NACHA
 - ISO/X9 Standards
- Dialogue with key stakeholders in mobile ecosystem
- Primary and secondary research & data collection
 - *2008 Mobile Banking & Payments Survey of New England Bankers*
 - *Survey of Consumer Payment Choice*
 - Consumer mobile payments pilot