Upwardly Mobile

A Long & Winding Road for Mobile Payments

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Introducing the Speaker

**Tomasz Smilowicz** is a Managing Director and Global Head of Mobile Solutions with Citi Transaction Services (CTS). Tomasz created the global mobile solutions business for CTS. He started the effort in 2009, and within three years under his management the bank has achieved a global leadership position. Tomasz has played a key role in partnering with the largest corporations, mobile network operators and governments in the world — helping them leverage mobile technology in financial services and information management contexts. He continues to advise regulators and central banks on mobile financial services policies and best practices. Prior to his current role, Tomasz managed Citi’s Global Transaction Services and Global Subsidiaries Group in Poland and prior to that he managed three Citi franchises in Central Europe and co-led strategy development for Citi Global Transaction Services businesses in Europe, the Middle East and Africa. Prior to joining Citi, Tomasz was with Creditanstalt Investment Bank and he is a graduate of Warsaw Technical University.
Universal Interest in Mobile Payments

The driver behind interest in Mobile Payments varies depending on the entity.

Mobile Payments = A potential lucrative new revenue source

Why are Industry Participants Optimistic About Mobile Payments?

- The vested interest in the eventual widespread adoption of Mobile Payments is on the rise, across governments and corporations in multiple verticals.
- Optimism around the growth of Mobile Payments is largely due to the high levels of penetration of mobile phones.
- This optimism has translated into real investment in the field. By 2015-16, investment estimates exceed: $1 Trillion.

Source: Citi Research, Citi GTS, GSMA Mobile Money For Unbanked

Electronic vs. Cash
15% vs. 85% penetrations

Bank Accounts vs. Mobile Solutions
1.8 billion vs. 5.9 billion (reach)
220+ years vs. 25 years (pace)
Mobile Payments is an incredibly exciting and fast-moving field

6 months of > 10 announcements / day*

ISIS, the mobile commerce joint venture created by AT&T, T-Mobile and Verizon, made its mobile wallet available in Austin & Salt Lake City

ParkMobile USA is launching a new NFC-enabled mobile parking service in Michigan to allow motorists to pay for parking via their mobile phones

PayPal announced that consumers with Android devices can pay at Starbucks using its payment service

Apple released the iPhone 5, with a host of new hardware and software features, but not NFC support

Telefonica has struck global direct-to-bill deals with Facebook, Google, Microsoft and RIM, enabling users to pay for content through their mobile phone bills

MoneyGram partnered with Dutch digital security provider Gemalto to allow mobile money transfers to any of its 248,000 global locations

* Period between 3/2012-9/2012
## Participants in Mobile Payments

We consider 5 key categories of participants investing in Mobile Payments. Their achievements include:

<table>
<thead>
<tr>
<th>Category</th>
<th>Achievements</th>
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</table>
| **Card Networks**         | - Unveiled incremental details about their respective wallets  
- Worked on expanding their funding reach beyond traditional bank relationships by investing in prepaid and cash-based funding options  
- Focused on targeted offers through either M&A or specific merchant arrangements or both |
| **Banks & Financial Processors** | - Processors have unveiled products that could extend mobile payments capability to smaller financial institutions  
- Larger U.S. banks have agreed to collaborate/exchange data to facilitate P2P transactions  
- Unveiled regional inter-bank or bank/telecom collaboration on wallets |
| **Telecom Companies**     | - Introduced direct-carrier billing relationships in several geographies  
- Made progress on SMS based mobile payments in several emerging markets  
- Continued the process of starting regional partnerships to introduce wallets (partners include card networks, technology companies and banks) |
| **Technology & Internet Companies** | - Invested in supporting technology to enable security and funding  
- Introduced chip-and-pin support in addition to standard card swipes  
- Introduced credible alternatives to NFC-centric technology- includes PayPal’s fast evolving offline approach and Google’s redesigned wallet approach |
| **Merchants**             | - Continued rapid support of non-traditional card acceptance systems, especially the smaller and micro-merchants  
- Expended their vision of a “by the merchants, for merchants” Mobile Payments ecosystem through a venture called “Merchant Consumer Exchange” (MCX) |
This is just the beginning…

As quick as the market is moving, the Mobile Payments is still in its infancy

- Although we are now able to take a guess at the lay-of-the-land for a future Mobile Payments ecosystem, we still look for a multi-year path to reasonably widespread adoption
- It may be a long and winding road, but every day brings us closer to reality
- Let us address some of the key topics in the industry around Mobile Payments
1. Processing “Rails” & Transactions
Introducing mobility comes along with introducing changes to the payment value chain.

There are potentially two ways in which the mobile payment transaction differs from a traditional transaction:

**Integration to a Commerce Platform**
- The mobile phone is now an overlay to the payment transaction itself:
  - Information
  - Interaction
- Creates potentially large adjacent markets
- Gives rise to new business models:
  - Social/commerce aspects could be integrated

**Transaction Mechanism**
- The underlying transaction mechanism can change
- Consumer can use NFC technology to perform a transaction
  - Form factor change from a credit card to a smart phone
- Process of authentication and clearing

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**Integrated Social Platform**

<table>
<thead>
<tr>
<th>Research</th>
<th>Loyalty / Offers</th>
<th>Purchase Transaction</th>
<th>Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Attributes&lt;br&gt;• Cost&lt;br&gt;• Availability&lt;br&gt;• Maps&lt;br&gt;• Comparison</td>
<td>• Points&lt;br&gt;• Discounts&lt;br&gt;• Targeted Offers</td>
<td>• Payment form-factor changes but traditional 4-party system used for payment&lt;br&gt;• Authentication and clearing different from traditional&lt;br&gt;• Carrier-direct billing</td>
<td>• Security&lt;br&gt;• Fraud protection</td>
</tr>
</tbody>
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**Integrated (Local) Commerce Platform**
2. Card Network Incumbents and their actions
Card Network Incumbents: Visa, Mastercard, Amex

Although card network incumbents are not at the risk of material disintermediation of their business model, they have invested in non-traditional models to increase market relevance.

**Visa** - Drive more volume and commit to a B2B model
- V.me
- Cyber Source
- Square
- Fundamo
- Vodafone

**MasterCard** - Drive more volume and commit to a B2B model
- Paypass
- Western Union
- Google
- Telefonica
- Truaxis

**American Express** - Enter new market segments and build new geographies
- Serve
- Twitter
- Facebook
- Four square
- Lianlian Group
3. Targeted Offers & Data Ownership
Targeted Offers: Examples

<table>
<thead>
<tr>
<th>Data Type</th>
<th>Data Collected</th>
<th>Offer Made</th>
</tr>
</thead>
<tbody>
<tr>
<td>Merchant-Level Purchase History</td>
<td>Customer has Completed Several Recent Purchases at Local Golf Course</td>
<td>Sporting Goods Store Offers $20 off Purchase of $100 or more</td>
</tr>
<tr>
<td>SKU-Level Purchase History</td>
<td>Customer Purchases E-Book Reader at Bookstore</td>
<td>Bookstore Offers 15% Discount on Compatible Accessories (Case / Headphones)</td>
</tr>
<tr>
<td>Purchase History + Real-Time Location</td>
<td>Frequent Coffee Drinker is Driving by Popular Coffee Shop</td>
<td>Coffee Shop Offers 25% Discount at Nearby Location</td>
</tr>
<tr>
<td>Browsing History + Real-Time Location</td>
<td>Consumer Recently Searched for Jeans and is Walking by Clothing Store</td>
<td>Clothing Store Offers $10 off Purchase of Jeans at Nearby Store</td>
</tr>
</tbody>
</table>

Given the trend in advertising industry towards tangible return on investment based on efficient targeting, financial transaction data is considered a extremely valuable resource.
The ownership of financial transaction data is a tricky with each player having access to different elements

- **Card issuers** are well-positioned given their direct access to consumers, but they lack SKU level data. The scope of their information is also narrow to the spend on their cards.
- **Card networks** have the fullest view of broad payment trends given their vast volumes, but they lack direct access to consumers and to SKU-level data.
- **Merchants** have the richest SKU-level data, but often lack direct access to consumers and have a narrow view of spending only at their stores.
- **Private label credit card** providers have access to full array of data. They are well-positioned to make targeted offers, though the scope of this offering is typically limited to singular programs.
4. Ecosystem Evolution
Ecosystem Evolution

New and existing players are increasing their offerings in the Mobile Payments space.

Mobility clearly complicates the traditional payment ecosystem and process flow. It introduces to the picture more steps, more roles and more role-players in the ecosystem.

We are no longer dealing with the traditional 4-party ecosystem consisting of:
- Consumer
- Merchant
- Issuer
- Acquirer

Mobile Payments creates new roles due to:

- The integration of social/commerce functionality into the purchase transaction
- Changes in how the purchase transaction is executed
5. The Technology Choice
**The Technology Choice**

Which technology is likely to win and become the global standard for Mobile Payments?

<table>
<thead>
<tr>
<th>Near-Field Communications</th>
<th>Radio-Frequency Identification</th>
<th>Quick Response Code</th>
<th>SMS Technology</th>
<th>Cloud-based Technology (Internet &amp; Wi-Fi &amp; GPS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Presumed de-facto standard</td>
<td>• Uses radio waves to transfer information</td>
<td>• Uses two-dimensional bar codes to store unique information</td>
<td>• Very useful in emerging markets since it can be used without a Smartphone</td>
<td>• Uses the wireless internet to pass payment information from the consumer's phone to the merchant's POS servers</td>
</tr>
<tr>
<td>• Allows mobile devices with an NFC chip to send data to an NFC enabled POS device</td>
<td>• Information is transferred from and RFID tag to an RFID reader</td>
<td>• When a Smartphone is placed in front of a scanner, the identifier is passed to the mobile payment system and then to the POS</td>
<td>• Text messages are used to transfer money</td>
<td>• Information is pushed over a cellular and/or Wi-Fi network</td>
</tr>
<tr>
<td>• Secure element that saves confidential data in an encrypted format</td>
<td>• “Tap &amp; Pay”</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

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6. Global Standards & Regulation
Mobile Payments Regulation in US: A case study

Consumer protection is of paramount importance and many regulators are focused on this area

Multiple regulatory agencies could issue or influence the regulation for the mobile payments industry

Complex regulatory environment with variable standards depending on the status of the participants
Mobile Payments Regulation in US: A case study

We expect regulation to be a focal point as the industry grows

- Consumer Protection Regulation
- Better Mobile Specific Technology (Ex: Facial Recognition)

= Wide spread consumer adoption

Source: Fumiko Hayashi, Federal Reserve Bank of Kansas City, July 2012

Appropriate consumer protection regulation can clearly help the adoption of mobile payments
7. Mobile Wallet Attributes
Desirable Mobile Wallet Attributes

Desirable attributes differ based on participants but a few characteristics are universal

- Security
- Speed & Ease of Use
- Ubiquity
- Convenience
- End to end experience
- Ecosystem integration
- Cost
Desirable Mobile Wallet Attributes: Examples

**End to end experience**

- **It Works Today**: Does not need any additional hardware or a special phone
- **Not Just Payments**: Takes consumer centric approach by consolidating useful consumer tools
- **Loyalty/Rewards**: Makes it easy to earn, check and use loyalty points
- **Mental Accounting**: Allows for partitioning of money for coffee (essentially a gift card that the consumer can reload)

Starbucks mobile wallet has grown to 42MM transactions by focusing on the entire **wallet experience**

**Ecosystem integration**

- **Search**
  - Google Search, for a restaurant
- **Research**
  - Research choices with Zagat
- **Offers**
  - Allow merchants to present Google Offers
- **Pay**
  - Payment via Google Wallet
- **Share**
  - Share the experience with Google Plus

Google’s integration of products show how wallets fit into larger information ecosystem
8. Consumer Adoption
We remain believers in the multi-year adoption of mobile payments. There are several factors that support our view.

Consumers typically adopt if they see value
- M-Pesa
- Starbucks

Behavioral change is in progress
- Level Up
- Park mobile

Broad adoption of ecosystem players
- Including small merchants
- Including small banks
It’s time for your
Questions?
Citi works with its clients in greenhouse gas intensive industries to evaluate emerging risks from climate change and, where appropriate, to mitigate those risks.

Citi believes that sustainability is good business practice. We work closely with our clients, peer financial institutions, NGOs and other partners to finance solutions to climate change, develop industry standards, reduce our own environmental footprint, and engage with stakeholders to advance shared learning and solutions. Highlights of Citi’s unique role in promoting sustainability include: (a) releasing in 2007 a Climate Change Position Statement, the first US financial institution to do so; (b) targeting $50 billion over 10 years to address global climate change; includes significant increases in investment and financing of renewable energy, clean technology, and other carbon-emission reduction activities; (c) committing to an absolute reduction in GHG emissions of all Citi owned and leased properties around the world by 10% by 2011; (d) purchasing more than 234,000 MWh of carbon neutral power for our operations over the last three years; (e) establishing in 2008 the Carbon Principles; a framework for banks and their U.S. power clients to evaluate and address carbon risks in the financing of electric power projects; (f) producing equity research related to climate issues that helps to inform investors on risks and opportunities associated with the issue; and (g) engaging with a broad range of stakeholders on the issue of climate change to help advance understanding and solutions.

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efficiency, renewable energy and mitigation