



The promise of mobile payments

London

May 9, 2014

* Views expressed are strictly the author's.

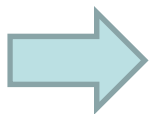


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- The environment
- Key mobile-payments stakeholders, positions and interests, who's at risk, winners and losers near and long term.
- Mobile acceptance
- Proximity payments
- Digital/mobile wallet landscape
- Mobile-phone-operator-centric payment systems
- Carrier billing solutions
- Mobile commerce
- Bank-driven mobile-phone-#-keyed payment systems
- Other
- What does the future hold?

A sea change in the mobile environment

- Mobile phone invented in 1973. In 1990 there were 12 million feature cell phone subscribers. –a)
- 6.8 billion mobile phones in 2013 –b)
- Explosive smartphone growth
 - In 2013 smart-phone shipments surpassed dumb-feature-phone shipments. –c)
 - Smartphones reached 71% US market share in March, 2014
- Pan-mobile-operator operating systems
 - 92% of smart phones use Android or iOS OS –b)
 - Platforms on which payments, marketing, promotional and loyalty program, and inventory management applications can be developed and deployed.



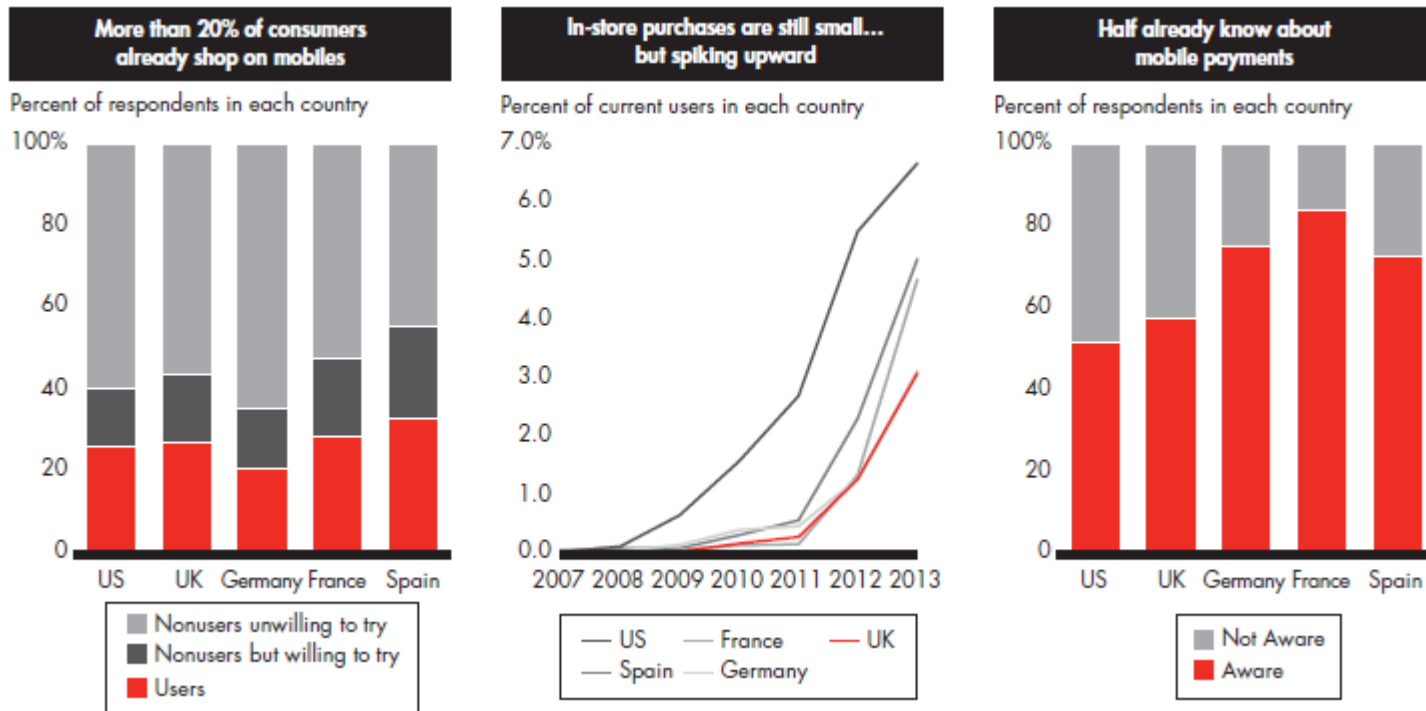
Billions of Internet-connected-processor consumer and merchant endpoints on standardized operating systems massively extends the payments opportunity space.

(a- [Worldmapper](#))

(b- International Telecommunications Union)

(c – IDC)

A sea change in the mobile environment



-a)

(a- Bain online survey. Self-selection bias. Directionally correct, but overstates mobile payment participation.

Number of Global M-Payments Transactions Forecast

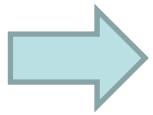


-a)

(a- Cap Gemini

Stakeholders

- Banks
 - Play major though diminishing payments role
 - Anchor current account
 - Primary credit, debit and prepay issuers in most national markets
 - ACH
 - Bill payment
 - Own many retail payment schemes (Visa EU, China UnionPay, Cartes Bancaires, Pago Bancomat, RuPay et al)



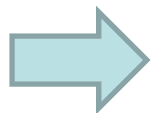
Mobile is a powerful channel, enables enhanced security, potentially makes relationships stickier, offers opportunity to generate fees, and exposes banks to new and nontraditional competitive threats. Banks have to play.

Stakeholders

- Banks
 - Emerging versus developed market banks
 - Mobile payments is a greater threat and opportunity for emerging-market banks where mobile-phone penetration is generally much greater than the percent banked, and payment-card issuance and acceptance while growing, are weak.
 - P2P driver
 - Banks use to enroll unbanked.
 - US versus European banks
 - All major electronic retail payment systems in US are independent of banks, whereas in Europe most are still owned by banks.
 - Retail payment fees substantially greater in US
 - Nonbanks in the US and UK play a greater role in merchant acquiring. France is at the opposite pole. European payments markets however are trending decidedly toward greater nonbank roles.
 - Thousands of small US banks have to rely entirely on third-party processors such as FIS and Fiserv to support mobile channel.
 - EU payments institute and e-money licensing lowers entry barriers for nonbanks.

Stakeholders

- Payment card networks such as MasterCard and Visa
 - Have put multiple irons in fire, e.g MasterCard and Telefonica's jv Wanda, Visa acquiring Fundamo and investing in Monitise and Square, etc.
 - Mobile POS boosts acceptance in developed markets
 - Mobile enables reaching and serving billions of unbanked in emerging markets.
 - Need to keep brands prominent at point of transaction.



Must stay engaged. Near and intermediate term branded retail payment schemes relatively insulated.

- Mobile-phone operators
 - Every major mobile-phone operator has payments ambitions. Most take rich fees (30 to 50%) on payments within their ecosystem but have thus far been unsuccessful in the general-purpose retail payments space. Want to reduce subscriber churn and generate fees.
 - Tension with retail banks over payments-relationship primacy.

Stakeholders

- Retailers
 - Merchant Customer Exchange consortium
 - Aims to attack network interchange fees and enhance members' existing proprietary payment, loyalty, rewards and promotional programs.
 - Auchon “Flash and Pay”
 - Loyalty, couponing and payments.
 - QR-code based. Subscribe online. Mobile phone is customer access device.
 - Intended to be multi-merchant solution serving non Auchon merchants as well.
 - Starbucks
 - Amazon
 - Tiny, casual and mobile merchants

Stakeholders

- Alternative payment networks
 - E-commerce phenom PayPal aims to be a full-spectrum retail-payment network, digital wallet provider, processor and provider of mobile acceptance.
- Processors
 - Monitise
 - Vocalink
 - FIS
 - Fiserv
 - ROAM Data (Ingenico)
 - WorldPay
 - Atos Worldline
 - First Data
- POS system, card and handset suppliers
 - Ingenico and Verifone
 - Gemalto provides TSM
 - Samsung has a digital wallet

Stakeholders

- Alternative value-add networks
 - Search gorilla Google first plunged into payments in 2005 with Checkout.
 - Has had multiple stumbles, but is persisting.
 - Aims to capture enriched data and facilitate ad-revenue generation.
 - Facebook generates ~ 15% of its revenue from payments within ecosystem
 - Seeking e-money license in Ireland –a)
 - Reportedly in discussions with three London money-transfer startups: TransferWise, Moni Technologies and Azimo. –a)
- Apple
 - Very profitable payments within its ecosystem
 - Wants to enhance iPhone franchise and payment-related offer to iTunes customers.

(a- [The Financial Times](#))

Stakeholders

- Money transfer networks
 - Western Union
 - Mobile money transfer active in 17 national markets, serving banked consumers through mobile channel and unbanked by partnering with MNOs such as Safaricom/M-Pesa users.
 - Both Western Union and MoneyGram offer prepaid MasterCard and Visa cards coupled with mobile
 - Domestic and cross-border money transfer including Western Union, MoneyGram, M-Pesa, GCash, Smart Money et al, accounted for ~ 71% of estimated global 2013 mobile-payment volume of \$235 billion. –a)

(a- [Gartner](#))

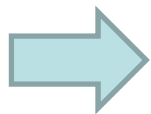
Mobile acceptance

- More than 200 mobile-acceptance providers including much ballyhooed Square, iZettle, Payleven, Sumup, Intuit, PayAnywhere, and WorldPay Zinc, employing proven acquirer business model(s), taking credit risk and owning merchant relationships.



Mobile acceptance

- In 2010 and 2011 ~ 75% of smartphones and tablets used for acceptance were being used by merchants who had not previously accepted payment cards. -a)
- By 2011 4 million mobile devices were being used for acceptance, in 2012 9.5 million and in 2013 ~ 17 million -b)
- By 2017 it's estimated mobile acceptance devices will reach 38 million -b)



Early growth was substantially in the US and Western Europe. Impact should be greater in emerging markets.

(a- Mercator Group
(b- Timetric

Mobile acceptance

- Monitise, Ingenico (Roam Data) et al process mobile-acceptance for PSPs
- Square
 - 2.75% merchant discount rate
 - Raised \$340 million in venture capital –a)
 - Promotes its brand
 - Low-cost retail origination model
 - Rapid abbreviated credit underwriting
 - No live merchant support
 - Primarily serves small and casual merchants
 - Explosive growth
 - Uses Chase as acquiring bank and processor
 - Lost ~\$100 million in 2013 –a)
 - In December, 2013 Square was valued at \$5 billion –a), implying ~ 30x revenue valuation multiple, which its current business doesn't support.

(a- WSJ

Mobile acceptance

- Intuit GoPayment

- 2.75% discount rate, and 1.75% for select cards
- Leverages proprietary channel selling payment acceptance to merchants using its financial software
- Processing with First Data in the US and Global Payments in the UK



- North American Bancard PayAnywhere

- 2.69% discount rate

- PayPal

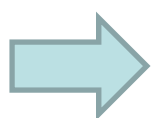
- 2.7% MSC

- WorldPay Zinc

- Europe's and the UK's largest merchant acquirer owned by Bain Capital and Advent International,
- 1.95% to 2.75%, 3 to 4 day funding

Mobile acceptance

- iZettle
 - 1.5% to 2.75%, 3 day settlement
 - Investors include American Express, Banco Santander, MasterCard, Greylock Partners, SEB Private Equity, Index Ventures and Creandum
- Payleven
 - 2.75% merchant discount rate, 5 to 11 days settlement
 - Focused on Western Europe
- Sumup
 - 1.95% merchant discount rate, 7 to 10 days settlement
 - Backed by American Express, BBVA Ventures, Groupon, b-to-v Ventures and Tengelman Ventures.
- Amazon plans to launch a Kindle-Fire-based checkout and acceptance service for physical merchants later in 2014 -a)



Mobile acceptance is commercially real now and enhances the existing retail payment system. Most traditional bank and nonbank merchant acquirers have embraced.

(a- [WSJ](#))

Proximity payments

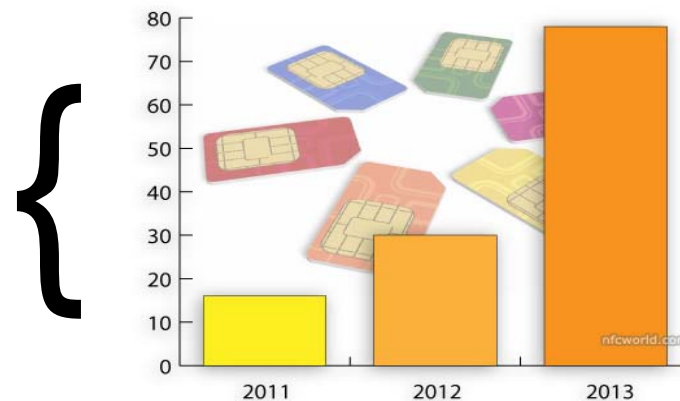
- Payment key(s) stored on or accessed in the cloud from mobile handset, passed to physical pos system. The most widely promoted transmission mechanism is NFC, but could also be via low-energy Bluetooth or QR codes.



Proximity payments

- To date proximity payments in general and NFC have disappointed
➔ Need to achieve critical mass of NFC-capable pos terminals, NFC-enabled handsets, and consumers enrolled in digital wallets.
- Only 3.3% of handsets were NFC in 2012 –a) All major handset providers except Apple are shipping NFC phones.

NFC-enabled SIM shipments
By SIMalliance members rose
by 159% in 2013 to 78m units –b)

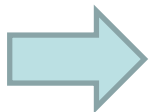


(a- Berg Insight
(b- [NFC World](#))

-b)

Proximity payments

- Heady growth to 2.1 billion NFC handsets by 2017 forecast and that 87% and 68% of POS terminals in the EU and North America respectively estimated will be NFC in 2017. –a)
- In Poland greater than half of pos terminals are NFC –b) and more than 10% of retail payments are contactless, albeit primarily from cards not handsets.



However, in developed markets existing retail payment systems work well. Need to provide compelling benefits to consumers and merchants to spur proximity mobile-payments adoption.

(a- Berg Insight

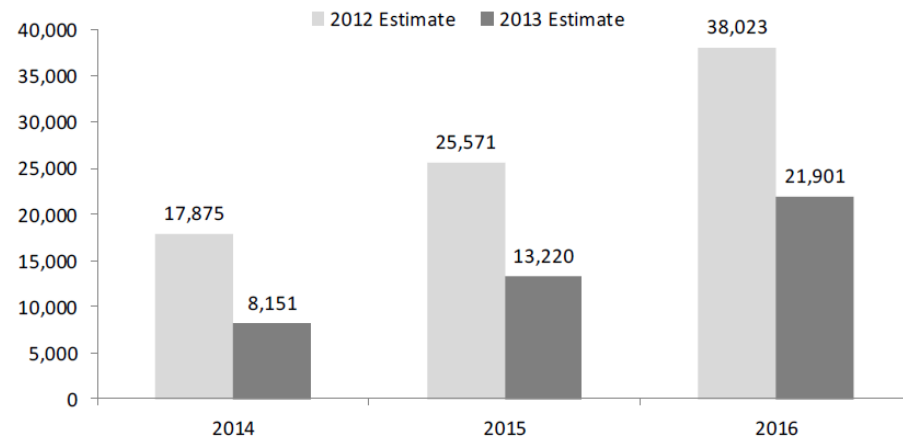
(b - [Lafferty](#))

Proximity payments

NFC adoption estimates
Have been overly aggressive
And are being scaled back.



Exhibit 2: Global Change in Forecasted NFC Spending Volumes (\$M)



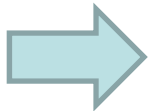
Source: Gartner

- Only 2.3% of US smartphone users surveyed in December, 2013 said they definitely expect to make a mobile payment at the physical POS in the next year. –a)

(a- [Consumers and Mobile Financial Services, March, 2014, The Federal Reserve System](#))

Proximity payments

- PayPal pushing low-energy Bluetooth (Beacon)
- The most successful proximity payments use case is Starbucks proprietary QR code based system accounting for ~ 10% total sales
 - For the most part proximity payments simply shift payments from plastic cards to handsets. Will at least modestly accelerate displacement of small cash transactions.
 - Prospective benefit is additional value wrapped around payments. Location and transaction-history-aware promotions.
 - Traditional distinctions between e-commerce, m-commerce and physical pos payments, increasingly, will blur.



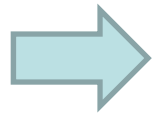
Proximity payments

- Zapp retail payment scheme
 - Full-spectrum network
 - Supports NFC, Bluetooth low energy and QR codes
 - UK Bank-owned Vocalink retail payment system harnessing handsets and ACH, to compete with MasterCard and Visa payment cards.
 - WorldPay (close to 50% UK acceptance), Optimal, Realex, Optimal, Sage Pay, and Elavon (U.S. Bank), collectively reaching > 60% UK merchants.
 - HSBC, First Direct, Nationwide, Santander and Metro Bank will roll out Zapp to UK consumers. Collectively they reach > 35% UK consumers.
 - Charges fixed transaction fee, varying by channel, to acquirers.
 - Shares on the order of 70% of transaction fee with bank issuers.
 - Aims to take 10% of retail transactions by 2017, primarily from debit. To the extent however Zapp takes credit-card-transactor share, for banks it's a revenue loser.

.....Proximity payments assume digital wallets.

The digital wallet maelstrom

- Why the excitement?



Offers a powerful connected platform for managing payment credentials, proprietary loyalty and reward programs, and customer and merchant preferences. Facilitates proximity and mobile-commerce payments.

- Framework for thinking about
 - One and two-tier wallets
 - General-purpose and in-app,
 - in-app viable today, e.g. Uber.
 - Open versus closed
- More than 180 digital wallets, most of which will not survive
- O2's wallet RIP
- Google Wallet
 - NFC based
 - Two-stage
 - Economics based on match making around payments.

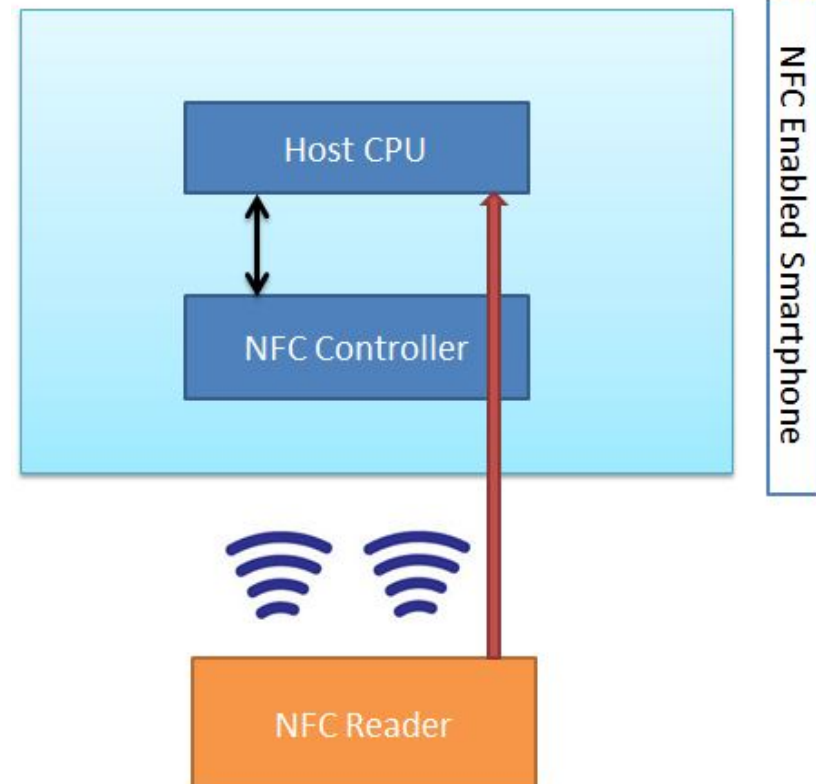
The digital wallet maelstrom

Host card emulation (HCE)

- HCE enables applications to bypass mobile-phone-operator controlled secure element, to retrieve payment credentials from cloud. Greater flexibility and storage for a raft general purpose and proprietary payment products, reward, loyalty and promotional programs.
- Android Kitkat operating system supports HCE.
- In April Google ended support for secure element for tap and pay.
- In 2014 MasterCard and Visa announced HCE support.
- Isis considering supporting HCE –a)
- Opening up payments on the handset may jump start NFC, and Google wallet.

(a- [NFC World](#))

NFC Card Emulation without Secure Element

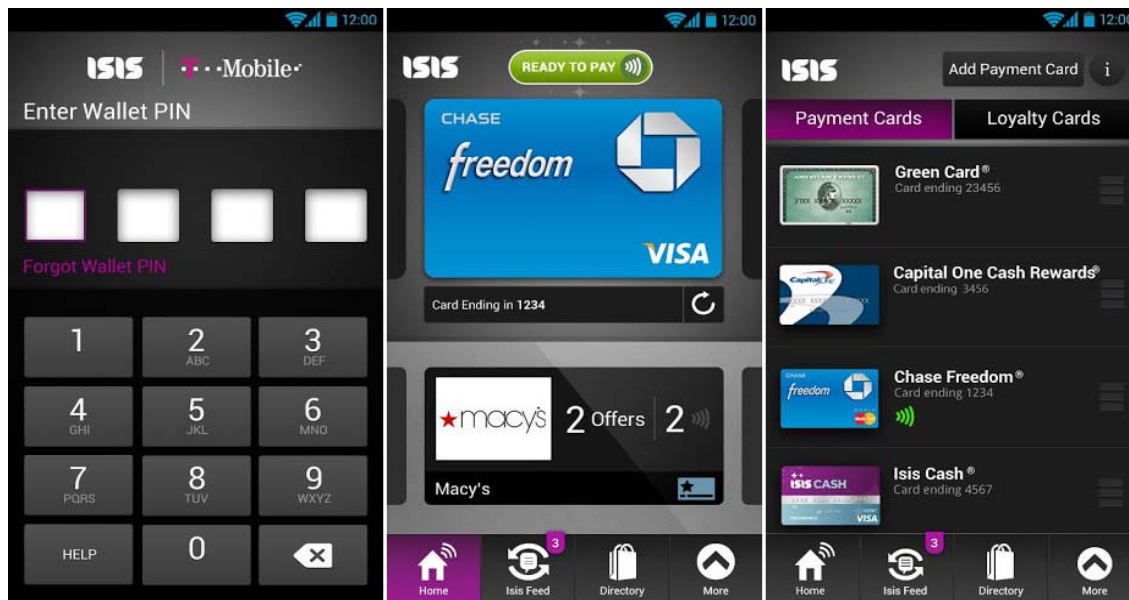


The digital wallet maelstrom

- Paydiant
 - White label provider. Clients include MCX and Subway
- Uber
 - In-app single-purpose wallet
- Merchant Customer Exchange (MCX)
 - Coalition including Wal-Mart, 7-11, Target, Lowe's et al, generating more than \$1 trillion in US sales
 - QR code based
 - Two years gestating. Still not live.
- LevelUp
 - Initially no merchant payment transaction fees. Morphed to 1.95% plus 40% of merchant-funded credits redeemed by new customers.
- PayPal
 - Cloud-based payment credentials
 - Trying to provide queue-busting and faster-order benefits at the pos.

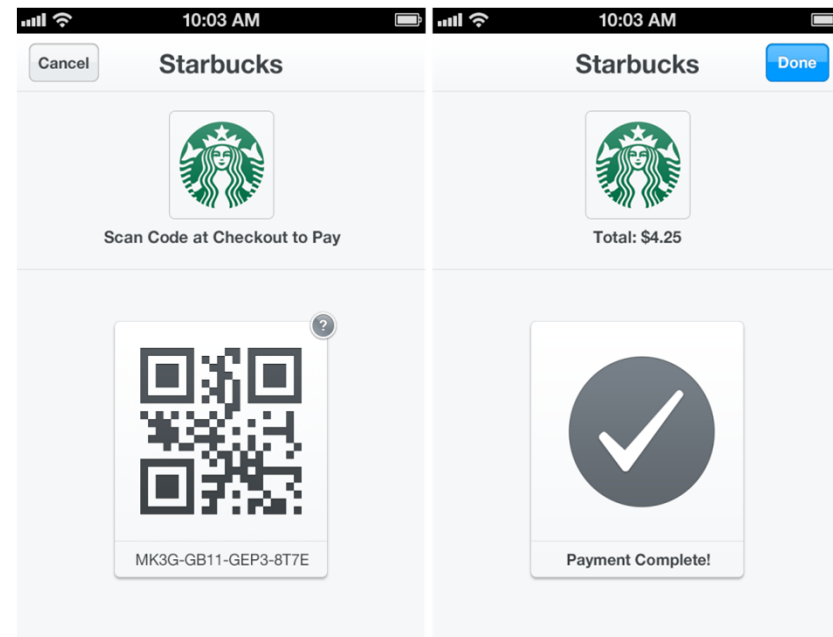
The digital wallet maelstrom

- Isis
 - AT&T, Verizon, and T-mobile jv
 - One-stage container wallet
 - NFC based, with payment credential stored in the handset's secure element
 - Open, permitting Visa, MasterCard, Amex and Discover
 - Volume disappointing



The digital wallet maelstrom

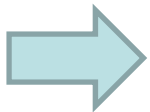
- Starbucks single-purpose wallet
- Square Wallet
 - While Square's signature card-acceptance business is not disruptive, Square's closed Wallet potentially is. Rationale for money-losing Starbucks relationship -a) is to build wallet critical mass.
- Visa V.Me
- Amex Serve
 - Based on Revolution Money assets.



(a- [The WSJ reported Square lost \\$20 million with Starbucks in 2013.](#))

The digital wallet maelstrom

- Amazon
 - Cloud-based payment credentials
 - Incrementalist approach
- Apple Passbook
 - Can leverage > 800 million iTunes customers with registered payment cards. First step QR-based
 - Could move market, if and when, it jumps in with a NFC iPhone.
- MasterCard PayPass
 - Acquired white-label wallet provider C-SAM
 - Everything Everywhere, Deutsche Telecom, Telefonica, Turkcell, Orange/Barclays Quick tap
 - Weve (UK Vodafone, O2, and EE mobile payments/marketing jv) partnership



Potentially a game changer, but too early to pick winners and losers. Successful two-stage wallet from an uber-brand and uber-network could erode issuer relationships and payment network value.

Mobile-phone-operator-centric systems

- Viable in some emerging markets, but a nonstarter in the UK and US.
- Mobile-payments user base forecast to reach 154 million in 2015.-a)
- M-Pesa is the exemplar
 - SMS-based handset anchored P2P system, now also at physical pos.



(a- Cap Gemini/IE Market Research

Mobile-phone-operator-centric systems

- M-Pesa
 - In Kenya it has 18 million subscribers, 11.6 million of whom were active within the last 30 days, 79 thousand agent outlets, and acquiring 33 thousand merchants –a)
 - 5 million subscribers in Tanzania – b), and is also live in Afghanistan and South Africa and within the last year launched in Egypt, India, Lesotho, Mozambique and Romania.

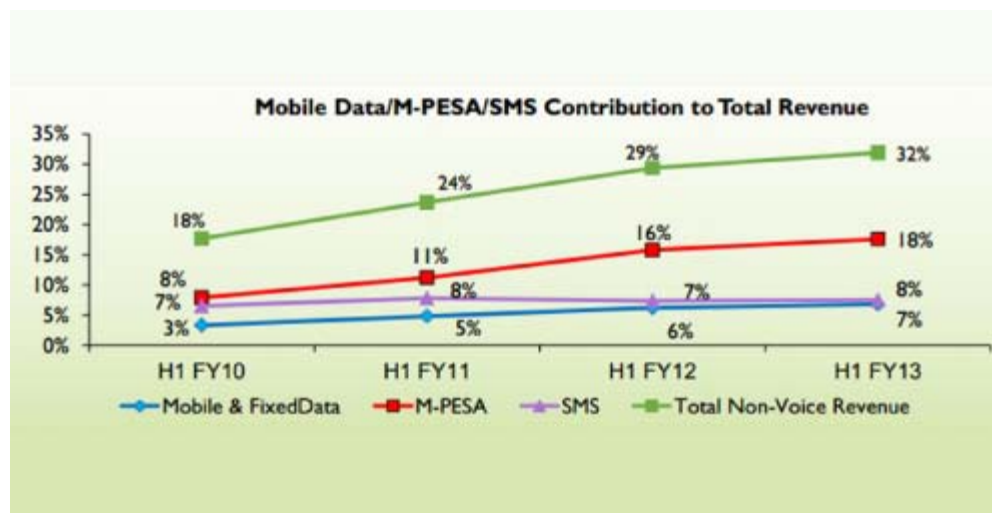
(a- Safaricom

(b- [Vodacom Tanzania](#))



Mobile-phone-operator-centric systems

- M-Pesa
 - Generates payment-and-transfer-size tiered transaction fees



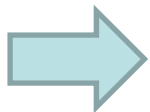
-a)

- CelPay mobile payment scheme was active in Zambia, Zimbabwe and Tanzania. Struggling. January, 2014 the Zambian central bank revoked its operating license.
- Mobipay Namibian mobile payment system enabling money transfer, bill payment, buying airtime and electricity, and pos payments.

(a- Safaricom

Mobile-phone-operator-centric systems

- Philippines
 - Leading mobile-phone operator Smart Communications' Smart Money
 - Mobile-phone operator electronic wallet enabling bill payment, airtime reloads and money transfer
 - Can send funds to 51 million SMART subscribers in the Philippines
 - Companion co-branded MasterCard
 - 12 partner banks
 - 5000 physical branches
 - Global remittance network through MoneyGram partnership
 - Number two MNO Globe Telecom
 - Globe Cash – P2P money transfer
 - Globe Charge – Mobile acceptance for SMB owners



Hybrid co-branded payment and money-transfer systems are a logical endgame.

Mobile-phone-operator-centric systems

- Most significant mobile-operator payments effort in developed markets SimPay failed
 - Joint venture of Vodafone, Orange, T-Mobile and Telefonica Moviles, using First Data as processing platform
 - Attempted to build mobile-phone-centric payment system in Europe.
 - Had unrealistic pricing expectations, no retail acceptance network and no issuance, ergo a huge chicken-and-egg issue. Pulled the plug in 2005

Bill-to-carrier payment systems

- In theory, threaten traditional retail-card payment networks, issuers and processors.
- Build branded acceptance networks
- Mobile-phone operators (issuers) take credit risk
- Primarily serve un and underbanked
- Greatest penetration is for digital goods.
- 12 to 18% merchant discount fees typical in competitive retail payments markets such as Korea and the U.S.
- For many emerging markets however, low-ticket digital goods still priced ~ 50% discount rates.
- Bill-to-carrier payment networks include Boku, PayOne, Danal, Mopay, Fortumo, Coda Payments and Zong (acquired by PayPal).
- Boku
 - 260 plus mobile operators. Active in 68 countries
 - Going to the physical pos for parking meters
 - Backed by NEA, Telefonica Digital, Andreessen Horowitz, Benchmark Capital, DAG Ventures, Index Ventures and Khosla Ventures.

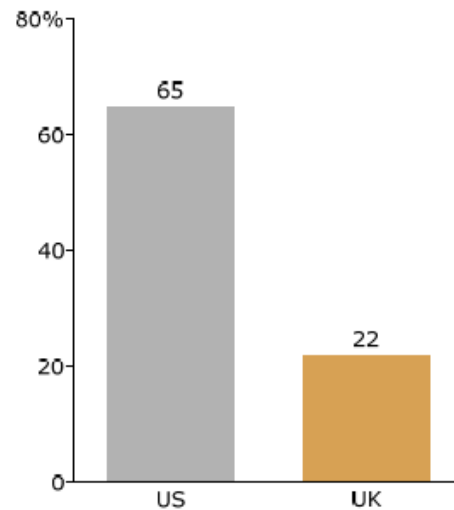
Mobile commerce

- Greater and more convenient consumer ability to conduct commerce and for merchants to market to and real time engage consumers.

With increased mobile web access, increased mobile commerce opportunity.



Smartphone owners who have attempted a card payment transaction on their device (2013)



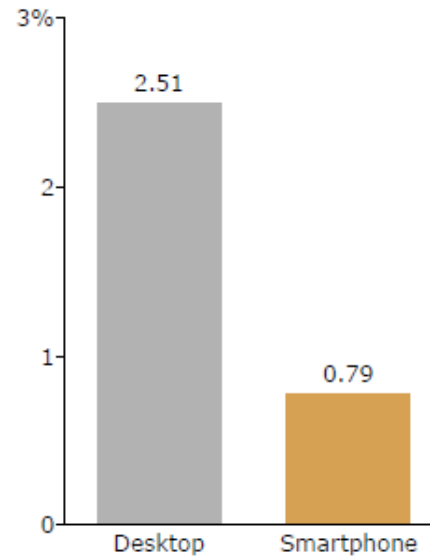
-a)

Mobile commerce

However, huge conversion and abandonment issues.



Visit to purchase conversion rate by source

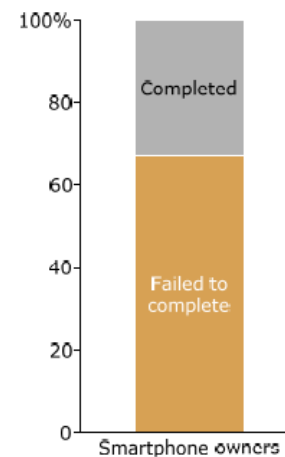


-a)

51% "Too hard to enter my credit/debit card information"
41% "Checkout too difficult"
23% "Transaction didn't go through"



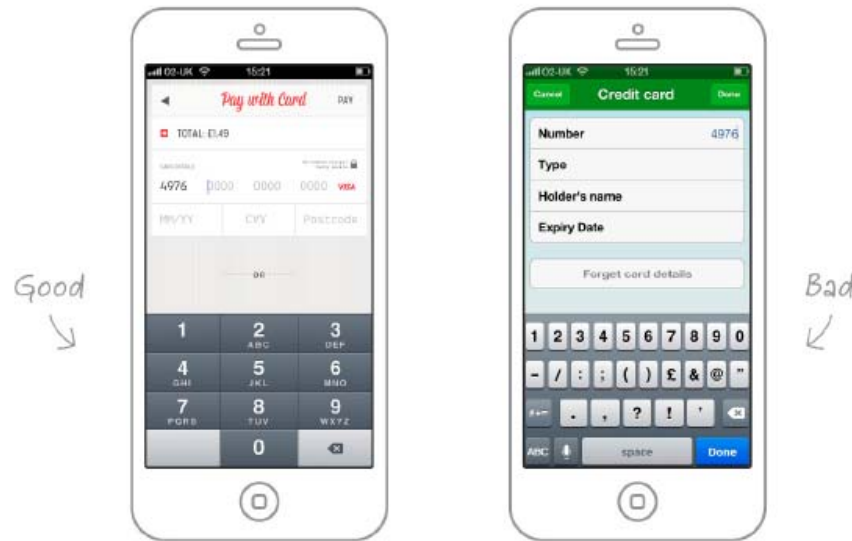
Smartphone owners experiencing at least one failed transaction



-b)

(a- Judo Payments, Monetate 2013 Ecommerce quarterly
(b- Judo Payments, Harris Interactive, March, 2013)

Mobile commerce



-a)

- On the mobile web – particularly from handsets, the payments process must be close to frictionless. A range of startup specialists are addressing:
 - Paddle pilot with Marks and Spencer
 - Judo payments, 2.4% plus £.20 per transaction

(a- Judo Payments

Bank-driven mobile-phone-#-keyed payment systems

- National Payment Corporation of India Inter-bank Mobile Payment Service
 - Launched September, 2012
 - Enables mobile subscribers to make payments to merchants
- Paym
 - Following launch of Barclays Pingit based on Vocalink Faster Pay and Vocalink's Zapp, Paym was launched in May
 - Bank-owned Vocalink processes
 - Bank-supported P2P current-account-to-current-account payment system relying on mobile-phone # aliases.
 - At outset Bank of Scotland, Barclays, Cumberland Building Society, Halifax, HSBC, Lloyds Bank, Santander, TSB and Danske Bank customers can enroll.
 - Revenue model unclear

Other

- Mobile channel reduces branch, ATM and call-center use/costs
- Mobile check deposit widespread in US where though declining ~ 20 billion checks per year are still written. Mitek is a specialist providing white-labeled service and technology licensing for banks. Verification algorithms are crucial
- 30% of Lloyds banking logins now mobile –a)
- Enables more robust risk management (e.g. Payfone).
- A robust mobile payments and banking offer is now table stakes for acquiring and retaining customer. A 2nd quarter 2013 survey found among US smartphone/tablet owners who switched primary banks in the last year, 48% said mobile was either “important” or “extremely” important. –b)

(a—[Finextra](#))

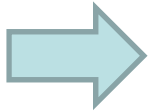
(b- AlixPartners)

What does the future hold?

- Mobile will be an increasingly important and in cases the primary channel for engaging and delivering payments to consumers and merchants.
- Consumers will manage and invoke payment keys from plastic, a variety of aliases, and digital wallets stored in the cloud and/or on Internet-connected mobile handsets
- Merchant payment-card acceptance will be several hundred million, over half from mobile devices
- In mature payments market, mobile will spur modest additional electronic payments growth. In emerging markets mobile enables accelerated cash displacement by electronic payments
- Mobile, e-commerce and physical pos payment distinctions will blur.

What does the future hold?

- Mobile will facilitate additional fee-generating services being bundled or delivered with payments.
- While a handful of interesting national mobile and hybrid mobile/card payment systems will gain traction, still two genuinely global retail payment schemes: MasterCard and Visa Federation.



For existing retail payments players a mobile-payments strategy is not optional.

Q&A