Computing and Financial Services for the Poor: The UW Digital Financial Services Research Group

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Financial services for the poor

Improved access to financial services is recognized as an important mechanism for raising people out of poverty

• Financial Services for the Poor
  – Remittances
  – Savings accounts
  – Government payments
  – Digital payments
  – Insurance
The success pathway

• Near universal access to mobile phones provide an interface with a financial system
• Mobile carriers, in partnership with agent networks and possibly financial institutions can lower the cost of financial services
• Address central financial needs
The challenges

• Inconsistent uptake of services
• Obstacles at consumer level
  – Usability, trust, understanding of services
• Obstacles at implementation level
  – Security, detecting fraud, know your customer, infrastructure failure, managing agents
• Obstacles at system level
  – Multiple carriers, regulatory regime
Our hypothesis

• Computer scientists, in partnership with others, can address some of these challenges
• Many organizations have been working in mobile money and publishing studies
  – GSMA, CGAP
• Economists and political scientists are studying impact
• Work needs to tie into Mobile Operators and Financial Institutions
The research project

• UW Faculty
  – Richard Anderson
  – Kurtis Heimerl
  – Josh Blumenstock
  – Franzi Roesner
  – Yoshi Kohno

• Project launched January, 2016
Basic Financial Services

• Mobile Money
  – Send money to remote location
  – No bank accounts, but mobile phones
  – Rely on basic mobile phones
Background: mPesa in Kenya

• Considered most successful mobile money product
• Implemented by Safaricom (Kenya’s dominant mobile carrier)
• Large CICO (cash in, cash out) agent network
• Works on basic mobile phone through USSD/Sim App
• Send money to a mobile number – various messages and pins to withdraw money from an agent and issue a receipt
DFS Challenges

1. Fraud
2. Cyberattacks
3. Proximity payments user experience
4. Identity and on-boarding
5. Analytics for product development, risk scoring, and fraud detection
6. Cash-in/Cash-out (CICO) agent recruitment, training, and management
7. Financial management for end users
8. Reach and robustness of infrastructure
Consumer risk areas (CGAP)

- Inability to transact due to network outage
- Insufficient agent liquidity
- Complex/confusing User Interface
- Poor customer recourse
- Fraud that targets customers
- Inadequate data privacy/protection
Why this might be interesting

- New technical domain
- Start of new research effort
- Combination of technology and development
- “Full stack” problem
  - From clients to telcos
Research approach

• Judicious landscaping to identify research areas
• Launch a set of small projects
  – USSD
  – Security
  – Computer Science / DFS survey
• Identify area for larger scale implementation
  – Prototype toolkit
  – Work with Financial partners for in country evaluation
  – Refine and handoff to partners
Basic assumption and focus

• Must focus on reach of financial services to the poor
• CICO (cash in, cash out) network is a key component
• Technologies
  – Must allow basic phone for clients
  – Can assume better technology for agents (e.g., Android phone)
  – Robust to infrastructure failure
Research challenges / Security

• Security of mobile money
  – Basic protocols including receipts
  – GSM level security
    • USSD or SIM Apps
  – Android app security
Research challenges / Usability

• Client side
  – Simplification of process
  – Increasing transparency

• Proximity payments
  – Point of sale device
  – Identity (know your customer)
  – Simplified biometrics
Research Challenges/Use of data

• Credit scoring
  – Use of data on phone usage to determine likelihood of default

• Fraud detection
  – Transaction records to detect potentially fraudulent use
  – Analysis to identify patterns of fraud (existence of fraud)

• Call records data to understand potential services
Research Challenges/Consumer education

• Promotion of good financial practices
• Understanding of basic financial instruments
• How to use of financial services
• Promotion of financial services

• Application of ICT/Behavior change
  – Messaging
  – Community Led Video Education
Research Challenge / Integration

- Integration of mobile money into broader services
  - Payment for services (e.g., school fees)
  - Consumer subsidies
- Community networks
  - Local cellular