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

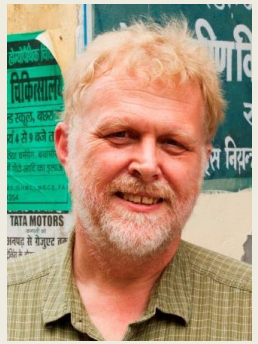
- Inconsistent uptake of services
- Obstacles at consumer level
  - Usability, trust, understanding of services
- Obstacles at implementation level
  - Security, detecting fraud, know your customer, infrastructure failure, managing agents
- Obstacles at system level
  - Multiple carriers, regulatory 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 evalutation
  - 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