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# Re-examining M-banking: Linking Adoption, Impact, Design, and Use

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# Technology for Emerging Markets Group, Microsoft Research India



Computer-skills camp in Nakalabande,  
Bangalore

Understand potential  
technology users in  
developing communities

Adapt, invent, or design  
technology that contributes  
to socio-economic  
development of poorer  
communities worldwide

# M-Banking/M-Payments

A project exploring household impact, social context, and UI/UX challenges among low-income, 'unbanked' populations

Partnership w/ Consultative Group to Assist the Poor (CGAP)

## Research activities

- **Exploratory focus groups** with G-Cash and Smart Money users in Manila
- **Interviews** with small business owners in India about mediated credit relationships
- **Profiles** of Equity Bank and M-Pesa users in Kenya
- **UI/UX assessments** of low-literacy users of Wizzit in South Africa, G-Cash and Smart Money in Philippines, and a mobile-savings pilot in India
- **UI prototypes** for low-literacy users





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## Introduction

A closer look at m-  
banking use

Linking use to other  
perspectives

Well-worn paths and  
next steps

# An 'M-Banker'?

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A Kenyan coffee farmer uses SMS banking *once a month* to check his bank balance

He gets one deposit per month from one of his buyers

The 30 shillings he spends on the SMS saves him a 200 shilling trip to the ATM

He has memorized the exact code he needs to "send a text message to the ATM"

When he gets to the ATM, he withdraws almost every shilling, every time.



# No universal m-banking experience

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## Regulatory Structures

- KYC
- Anti-money Laundering
- Interest
- Bank partners

## Technical Platforms

- Airtime only
- SMS
- USSD
- GPRS/Java
- Browsers
- Smart cards

## Features /UX

- Agent Network
- Languages
- Texting norms
- Fee structures
- Where funds are held

Store value, cash-in and cash-out, and transfer value between accounts

# Low penetration of formal banking channels

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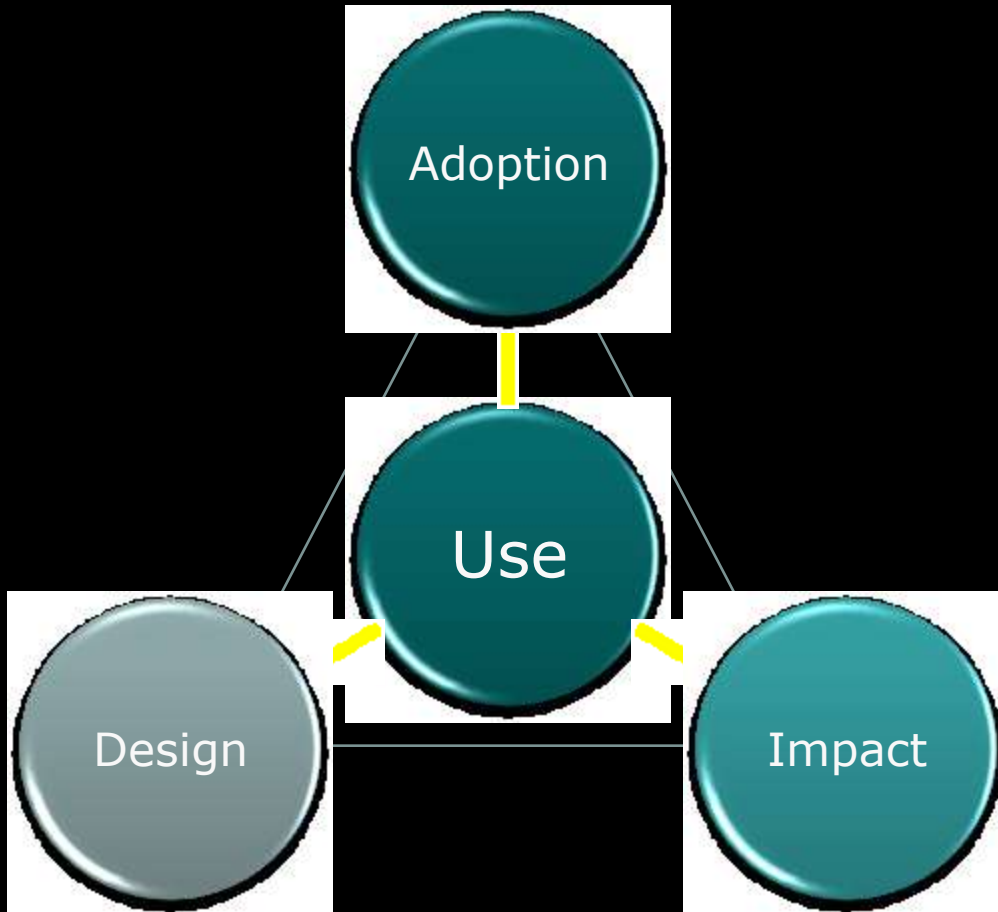
<b>Formal financial sector</b>	<b>India</b>	<b>S Africa</b>	<b>Philippines</b>	<b>Kenya</b>
Population	1.1B	47.8M	88.7M	37.5M
Per-capita GNI (USD, 06)	820	5390	1420	580
Literacy rate	61%	82%	92%	73%
Banking	29%	51%	30%	19%
Mobile Phone penetration	25%	>66%	>51%	30%
Urbanization (05)	29%	59%	63%	21%

# Prominent M-Banking Programs

Program	Bank	Services	Agent	Take-up
<b>Globe</b> – Philippines, Oct. '04	None	Stored value; domestic and <i>intl</i> money transfers; airtime top-up; retail payments	Prepaid talktime vendors	1.3M accounts in 17 months
<b>Wizzit</b> – South Africa, Dec. '04	South African Bank of Athens	Domestic money transfers; airtime top-up; bank a/c info services; utility payments	Bank branch for cash-in/ ATM for cash- out (using debit card)	>50K accounts in 24 months
<b>MPESA</b> – Kenya, March '07	None	Stored value; domestic money transfers; airtime top-up	Prepaid talktime vendors + bank branches	>1.6M accounts in 11 months >\$140M transacted

# Linking adoption, impact, design and use

M-Banking is generating excitement in the “Information Technologies and Development” (ICTD) community



To build, deploy, regulate, or assess m-banking/m-transactions systems, integrate research on *actual use*

One's enthusiasm depends on expectations\*

Similar issues are found in ICTD more generally – (Orlikowski, Latour, Silverstone, Beyer, Fischer etc)

Today's point: There is actionable information **in these links**



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# M-banking use is *complicated*

The development community is optimistic...

"The transformational potential of m-transactions"  
(a Vodafone sponsored report)

"A solution which will change the world"  
(a foreign policy blogger)

"A leap from the world of cash to the world of cellular banking" (Economist)

...which demands a closer look

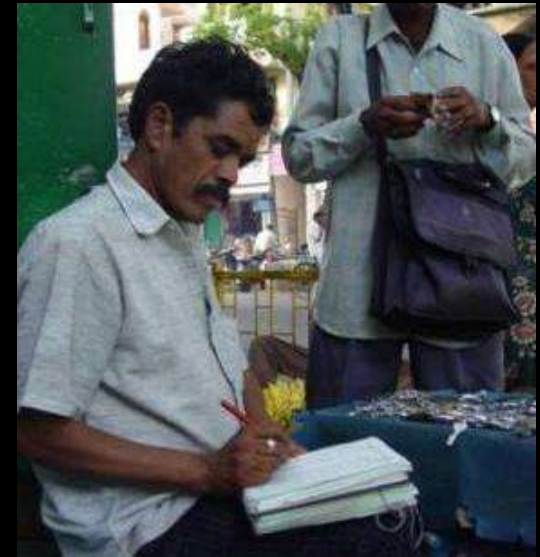
Existing transaction methods

Existing social and economic relationships strongly influence m-transactions

Accessibility and relevance may not be universal

# Existing Payment Mechanisms

“it is no longer acceptable for prospective providers not to inform themselves of what their future clients are already doing and what services they appear to need”, Ruthven (2002)



Not just Western Union....

- Hand Carry
- Pawn shops
- Post office
- “Flying money”/Hawala, etc.
- Busses (txt me the bus #)

The world’s 200 million diaspora used *something* to transfer \$320B in remittances\*

Hundreds of millions more use various strategies to save money\*\*

An ongoing repertoire\*\*\*

# Social Embeddedness of Transactions

“Family only... It is only to our relatives... If it is friends, then it is a loan. It is difficult, because we are not rich...we are already having difficulties sending to our parents so we cannot send to our friends anymore.”

“My friend asked me for a favor...he was our neighbor in Bacolod... Now he is my officemate. He asked, and please send to my sibling and then I will pay you on payday”



Manila focus groups

## Lending vs. Giving vs. Paying

# of  
transaction  
partners

Size and  
frequency of  
transactions

Handset  
sharing\*

Domestic  
Dynamics

# Mental models of mobile money

Is it a wallet, a box, or an envelope?

- Navigation and user-interface issues (discussed later)
- There are few ways to wrap or “gift” a digital money transfer\*
- How mechanics of system are (mis)understood (SMS to the ATM?)
- Lots of transactional assistance observed in Kenya, India
- Trust in the various elements of the network – agents, hardware, software, operator
- Misalignment in expectations and metaphors between operators, analysts, and users.





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# Linking use and adoption

Predictive adoption models require an understanding of daily use

## Observed Tensions

- Transfers imagined as gift vs. loan vs. payment
- Convenience balances for the banked, no balances for the unbanked?
- Formal informality and assisted transactions
- Appeal strongest in dispersed families (migrants, students)\*

## And other questions

- How many transfers make someone a user?
- What if one only receives funds?
- Only purchases airtime?
- Transfers only to one's self?



Dependent variables in explicit (or implicit) adoption models require careful explication

# Linking use and impact

## Example: A Kenyan water seller

- Migrated to Nairobi, whole family remains in village
- With MPESA, he has increased from 2 transfers to 3 per month
- Saves the 800ksh cost of the trip back home
- New amounts are smaller
- But the cumulative monthly transfer is sometimes larger (3000-6000 ksh instead of 3000-4000 ksh)\*



# Linking use and impact

What does using 'unbanked' imply about our view? Or 'transformational'?  
Sorting through the first-order effects alone will take time.

## Primary

- Lower fees
- Smoother or more frequent transfers
- Higher productivity (travel and waiting time)
- Lower risk
- Use for savings\*
- Access to credit(?)
- Paper trails for credit assessments(?)
- New transaction partners(?)

## Broader

- Altered rural-urban flows\*
- Changed dynamics in stretched families; gender differences?\*
- Changes to small enterprises
- Long-term 'life events'(?)\*\*
- Macroeconomic impacts (taxation, formality, float, money supply)(?)

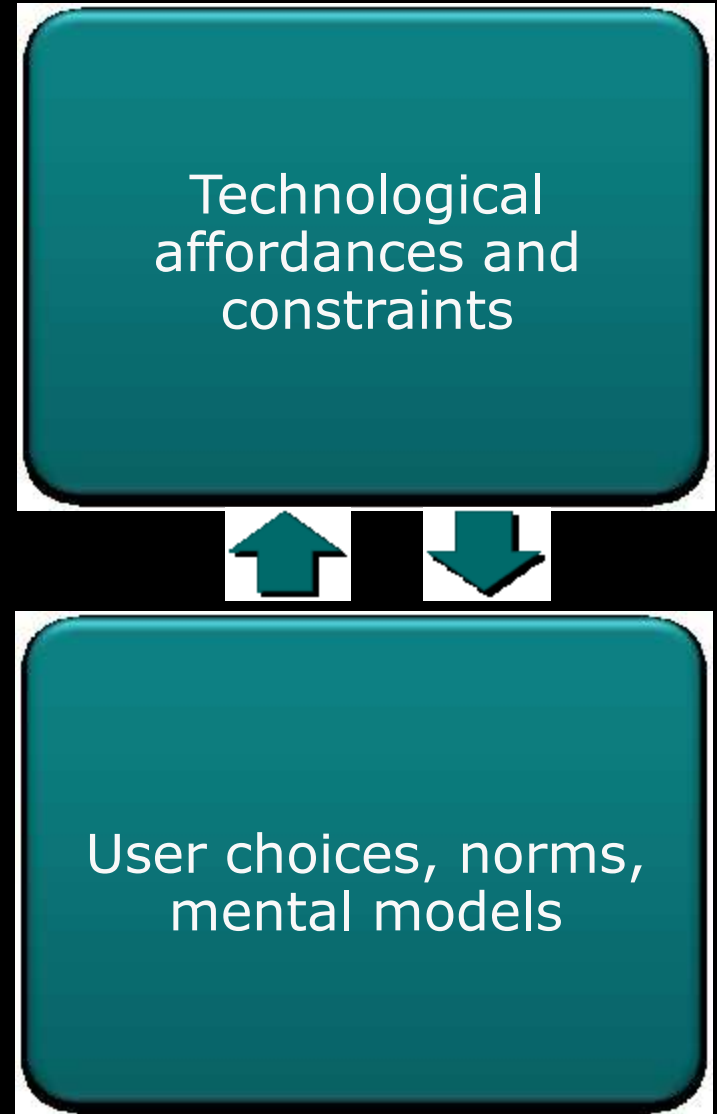


# Linking use and design (UX)

## M-Banking meets Contextual Design, User-Centered Design

### Observed Tensions

- Despite KYC regulations, we see lots of mediated transfers. Agents helping people, or accessing accounts on people's behalf. Mostly among users with low mobile exposure
- Proxy usage is not just assistance -- "Informal Formality"
- Writing down PINs
- Open vs. closed systems
- Density of agent network
- Gifting cues
- Cash availability at agents\*
- English-only interfaces -- not just a UI issue



# UI/UX findings for low-literacy users

From 90 interviews in Philippines, Kenya, South Africa, and India

## Challenges

- Difficult hierarchal menus
- Limited discoverability of deeply buried functions
- Vertical scroll bars hide options
- Confusing 'Soft Keys'
- Dense SMS and USSD syntax
- Complex PINs
- English interfaces, manuals, and text receipts
- Banking concepts (last transaction, balance, etc) are foreign

## Recommendations

- Avoid non-numeric text input
- Minimize hierarchies
- Avoid scroll
- Minimize soft-key function mapping
- Provide graphical cues
- Provide voice annotations support where possible
- Local language support in text and audio
- **Integrate human mediation/assistance**

# Coda: So many reasons to say 'no thanks'

Testing interest in mediated credit relationships among Bangalore's MSEs

"...it is not right to use SMS to remind customers about payments because it is too *impersonal*... it is just *not polite* to when it comes to monetary matters." - Sandeep



"We use SMS extensively for the food and chemical products section of the business, but I would also like to find a way to manage and update my client accounts while I am away travelling..." - Raju

"... The issue of credit is mostly dealt with *in person*, although I prefer to ask customers over the phone or SMS because it gets very *awkward for me* to ask them for money when we are *face to face*." - Meera



"...I use SMS to keep my clients informed about little things in order to not disturb them..." - Srinivas





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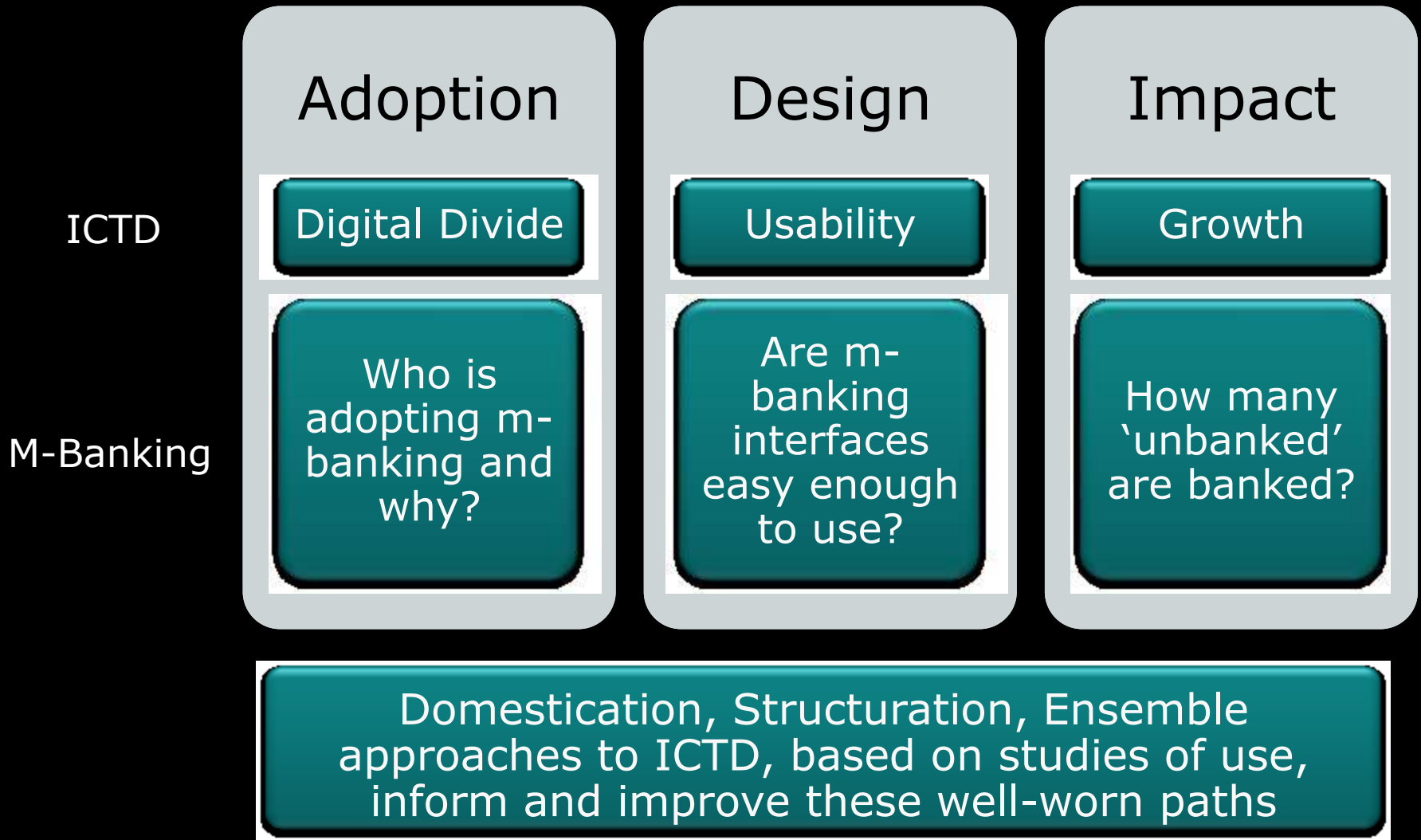
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# New questions follow well-worn paths in ICTD



# Next-step examples from *everyday digital money*

## Implications for 'm-banking the unbanked'

Helene: dis-embedding credit relationships

Timothy: mental models of credit cards

Bruce: 'meaning' created by financial projects

- Trust isn't the only sentiment which influences adoption
- What is the meaning of m-banking to 'the unbanked'?

Jan: missteps in Switzerland

- Use cases not just for end-users, but for every actor in the adoption process

Tapan: a proposal to rate the agent

- Example of design choice informed by ethnographic data (Olga on trust)

Sarah and Daisy: intangible monies

- Importance of gesture, spectacle, rituals of paying. How is an m-transaction interpreted by senders and receivers?

Scott and Camellia: new moneyscapes

- Intersections of money and (mediated+f2f) social networks

Jenna: repertoire of remittances

- How can m-transfers fit stretched-family consumption needs?

# Future research: some possible threads

Remove implied causal arrows

- Explore emerging norms of m-banking use e.g., “gifts not loans”
- Explore how m-banking is domesticated into user’s lives

Look for amplification *and* change

- Minor: look for ways m-banking amplifies existing relationships vs. enables new ones
- Major: explore m-banking in context of informational networks and broad social structure. Does it challenge the informational society *circa* 2008?\*

Disaggregate social capital

- The ‘weasel word’\* *trust* works at many levels – of the agent, the operator, the bank\*\*, the recipient, even of the user
- M-banking works within existing trust networks and possibly *expands* or *replaces* them. Which frame is best?

# Last thoughts: describing use of a breakthrough app

M-payments helped one interview respondent avoid a 10% fee on internal remittances, saved him a 4km walk to the bank and a two hour wait in line. Plus he gets a text receipt of his instantaneous transfer.

*Productive or Transformational?*



Paying close attention to new patterns of use can rapidly peel back expectations and assumptions about m-banking in the developing world, providing 'actionable information'\* to guide better designs, regulatory choices, and impact assessments.



# Thank You!

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