

ICT4D: Hope or Hype? Figuring Out What Works in ICT4D Projects



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“In 10 short years, what was once an object of luxury and privilege, the mobile phone, has become a basic necessity in Africa.”

Paul Kagame, President of Rwanda, 2008

A device that was a yuppie toy not so long ago has now become a potent force for economic development in the world's poorest countries.

The Economist, May 29, 2008

“[With a cell phone], in record time, I have all sorts of information from markets near and far...”

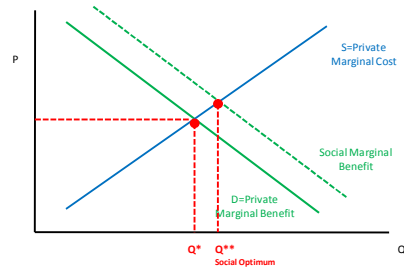
Grain trader in Magaria, Niger

Are people in developing countries better off because of mobile phones?

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Impact of Mobile Phones

Direct and Indirect Effects



Mobile Phone Services and Development Projects



Channels of Impact

- Improve communication among social networks and reduce risk
- **Reduce search costs, increase access to information and improve market efficiency**
- Improve coordination between buyers and sellers and improve input and output supply chain management
- Facilitate service delivery (insurance, credit, inputs)
- Generate employment

Empirical Research on the Impact of Mobile Phones

- Fisheries in India (Abraham 2007, Jensen 2007)
- Grain markets in Niger (Aker 2008, 2010)
- Farmer participation in Uganda (Muto and Yamano 2009)
- Internet kiosks and soybean prices in India (Goyal 2009)

Empirical Research on the Impact of Mobile Phones

$$Y_{it} = \alpha + \beta cell_{it} + \gamma Z_{it} + a_i + \theta_t + \varepsilon_{it}$$

Price dispersion
Price levels
Agents' behavior
Welfare measures

Omitted variables
Reverse causality

Empirical Research on the Impact of Mobile Phones

- Mobile phones improve access to information and market efficiency for those products and countries
- Welfare improves with market efficiency, but how welfare is distributed is ambiguous
- Increase in fisherman's profits and a reduction in waste (Jensen 2007)
- Traders' profits increase (higher prices) and consumer welfare (Aker 2008)

Mobile Phone-Based Services and Development Projects

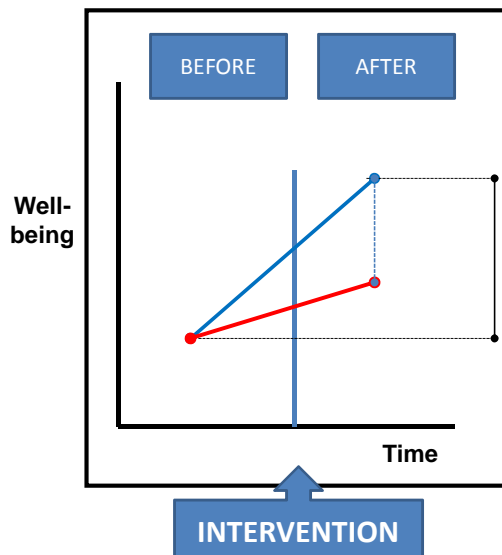
Services

- Mobile **Early warning** banking (M-PESA, Zap, G-Cash)

Development Projects

- **Market information systems** (Esoko Ghana, IMAC Niger)
- **Health information systems** (Satellife Mozambique)
- (Lake Victoria project, *Ushahidi*)
- **Governance** (PVT hotlines, voter education Mozambique)
- **Village Phone** (Bangladesh, Rwanda, Uganda)
- **Literacy** (Niger, Senegal)

How can we measure the impact of ICT projects on rural development?



- We often do “before-after” interventions
- In other words, we conduct a baseline study with beneficiaries before and compare the indicators before and after the project
- Ignores the common trend
- Positive impacts might have occurred even without the program (or with the non-ICT program)

Challenges to Measuring Impact of ICT-Based Projects

- What should we **measure the impact of mobile phones on** – knowledge, adoption, prices, income?
- Are observed changes in outcomes **due to the ICT project or other factors?**
- Are these changes due to the **ICT project or access to the mobile phone itself?**
- Does the ICT-based program have positive or negative impacts on **non-project participants?**
- How do the **benefits and costs** from the ICT-based approach differ from the “traditional” approach?
- Do these results have **external validity?**

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How can we measure the impact of ICT-Based Projects?

- **Pilot** new ICT4D projects
- Use a **rigorous evaluation approach**
 - Collect data pre- and post intervention
 - Follow project participants and non-participants
 - Compare the ICT and “traditional” approaches
- Identify the **mechanisms behind the effects** (e.g., ask “Why”? not just “What?”)
- Combine **quantitative with qualitative** approaches
- **Report results** (positive and negative, feedback)

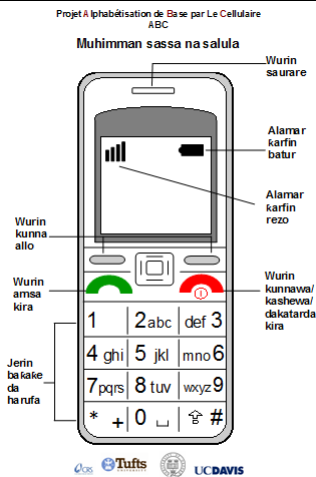
Examples of Impact Evaluations of ICT-Based Development Projects

- **Project ABC** (Mobile Phone Literacy): CRS, Tufts and Oxford
- **IMAC** (SMS-Based Market Information): CRS, Tufts and Oxford
- **Mobile phone cash transfer project:** Concern, Tufts , EU



Project ABC (*A*lphabétisation de *B*ase par *C*ellulaire)

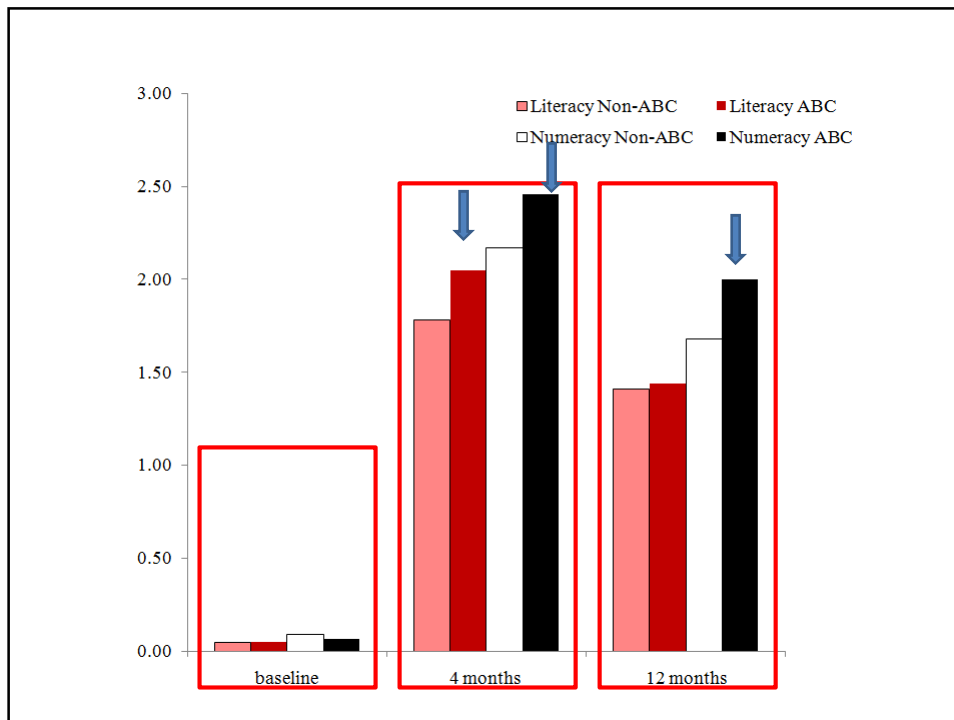
- Learn where to find numbers and letters on mobile phone handset
- Learn how to make and receive a call
- Learn how to send and receive SMS
- Organize into solidarity groups to access mobile phones (5 per mobile phone)



Impact Evaluation Approach

- Implemented in 140 villages in two regions (Dosso and Zinder) of [Niger](#)
- **Randomized phase-in over time** and **random assignment of villages to mobile phone literacy (ABC) and normal literacy program**
 - Half of the villages began the program in 2009, the rest in 2010
 - Half of the villages in each year participated in the mobile phone literacy project
 - Mobile phone module started 6 weeks before the end of classes

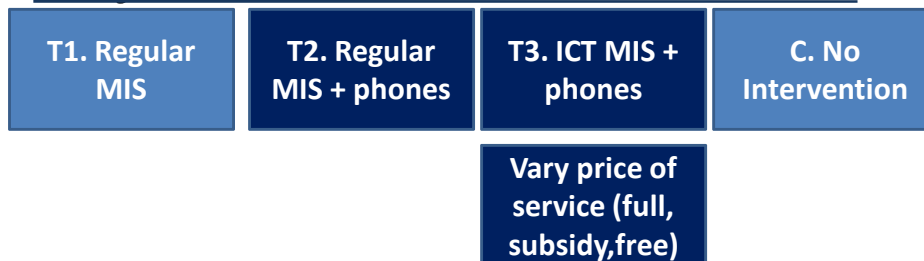
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SMS-Based Market Information Project (IMAC)

- Agricultural market information system that provides market prices to farmers via SMS (demand-driven)
- Integrated with the mobile phone literacy program
- If we assess the impact of the program by comparing prices and income before and after the program, we cannot determine:
 - Whether these changes would have occurred anyway
 - If the SMS-based approach is “better”

SMS-Based Market Information Project



- Farmers with access to information (T1, T2, T3) are better off than those with no information
- The SMS-based program (T3) is better than T1
- But, not much difference between T2 and T3

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A Way Forward

- Empirical evidence suggests that mobile phones improve market efficiency and increase welfare for specific products and markets
 - Might not translate into GDP or macroeconomic gains
- More rigorous evidence needed to assess the development potential of mobile phones
 - Successes and failures
 - Feedback loop with communities and implementing partners
- The staggering rate of mobile phone adoption can provide lessons for adoption of other technologies (agriculture, water, health)
- Mobile phones are not the silver bullet

