

# Communication, Search and Mobile Phones

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# Overview of Talk

- Motivation and Research Question
- Context and Intervention
- Sampling and Experimental Design
- Data and Outcomes
- Progress to Date and Next Steps

# Motivation



Dillon, Kamanzi, Aker and Blumenstock

Kichabi

# Motivation

- Information is costly, especially in remote rural areas
  - Costly information can lead to inefficient market outcomes
- Mobile phones have reduced the costs of searching for information and improved market efficiency, but how these gains are distributed is poorly understood
  - Empirical evidence on the impacts on agricultural outcomes is mixed (Fafchamps and Minten 2012, Cole and Fernando 2012, Casaburi et al 2014, Aker and Ksoll 2013)
- Why?

# Motivation

- The reduction in search costs associated with mobile phones is typically constrained by the size of one's social network
  - Mobile phones reduce the cost of communicating within a social network, but their impacts on searching for new contacts is based on pre-existing social connections
  - An issue for firms and households
- In many countries, this constraint has been partially addressed by providing an “information clearinghouse” (telephone directory or the internet)
- In sub-Saharan Africa, mobile phones have proliferated without a complementary service providing information about other members of the network
- How can this be overcome?

# Research Question

- **Research Question:** How do information constraints related to household-agricultural firm communications affect firms' and households' behavior and productivity?
- **Approach:** Randomly vary households' access to an informational tool (a mobile phone directory of agricultural firms) that lowers households' search costs, as well as firms' access to potential clients
- **Outcomes and mechanisms:** Revenues, profits, number of employees, number of customers, number of calls, sales volume
- **Our project:** A proof of concept to see how and whether a reduction in households' search costs affects firms' profits

# Agricultural Markets in Tanzania

- Purchased inputs are available at trading towns and larger villages
  - Stock-outs are frequent, especially for improved seeds and agro-chemicals
- Other inputs (labor, animals, tractors) are available but access is mediated (almost entirely) by face-to-face contacts
- Focus groups and previous survey work indicate that
  - Many farmers incur large transaction costs in searching for inputs
  - Mobile phones are rarely used for business purposes
  - Few farmers have access to phone numbers of individuals that they have not met face-to-face
- From the firm perspective, there are few mechanisms for advertising services

# Intervention: Kichabi

- Kitabu cha biashara
- A mobile phone directory of all agricultural firms within a given area

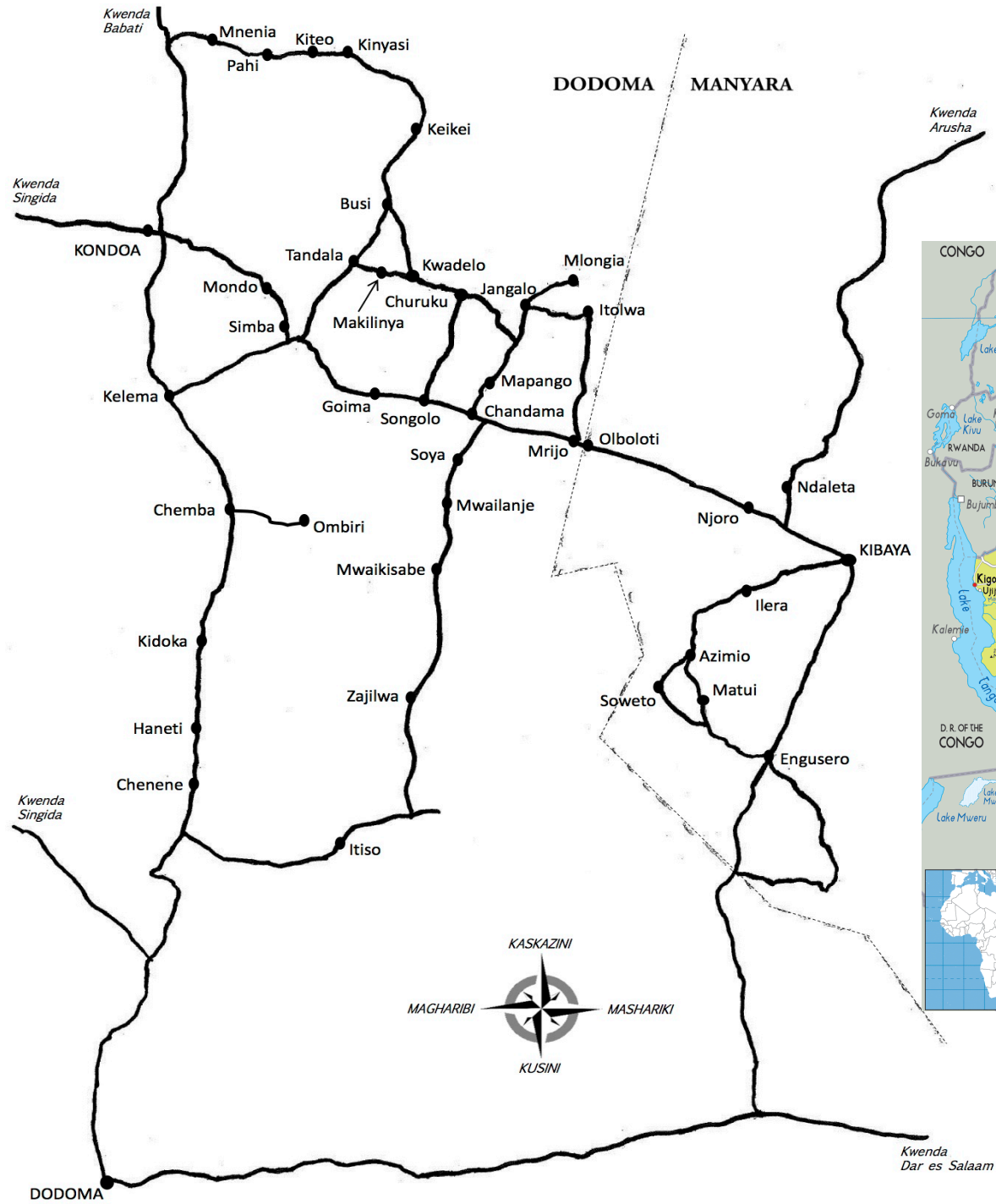


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# Intervention: Kichabi

- Conduct a census of all agricultural-related formal and informal firms in trading towns (villages) in central Tanzania
  - These include agricultural input suppliers, output sellers, transporters, laborers and pharmacies (eight sectors)
  - Collect data on their name, ownership status, firm size, sector (service), location and contact information
- Produce a mobile phone directory listing (a subset of) firms
- Distribute directories to agricultural households
- The treatment will affect both firms and agricultural households, although we will primarily be focusing on firm-level outcomes at this stage



Credit: [www.ezilon.com](http://www.ezilon.com)

# Sampling

- Six districts (27 contiguous wards) and 108 villages in the Dodoma and Manyara regions
- Of the 108 villages, we chose 49 villages (with 136 sub-villages) in which to conduct the firm census (“Group A”) – based upon minimum population size
  - Remaining villages are “Group B”
- Within these 49 villages, we conducted a census of all informal and formal agricultural firms across eight sectors
  - 1506 firms participated (about 70 percent take-up)
  - After cleaning = 1495 firms
- 1/3 of these firms were sampled for the baseline (after stratifying by village and sector)

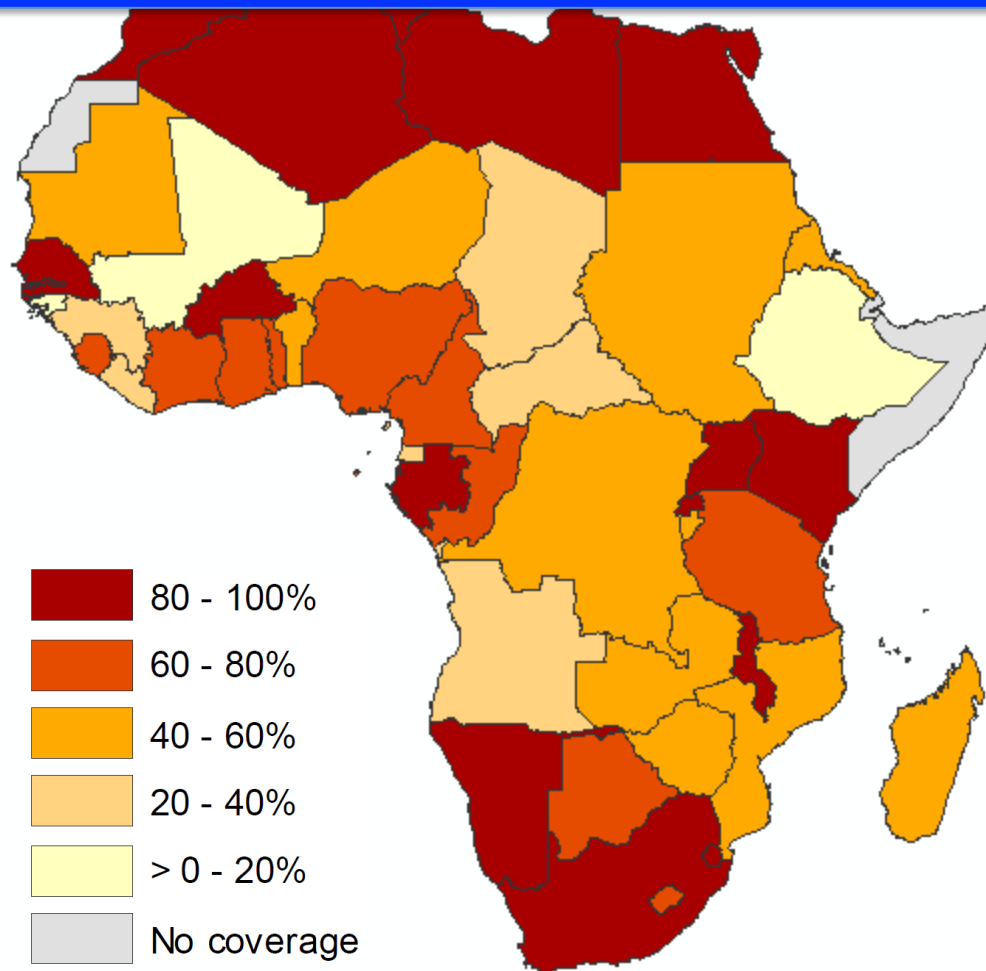
# Characteristics of Firms in our Census

Sector	Count	Percent
Trading and Wholesale	244	16.32
Merchant/Retail	704	47.09
Transport	61	4.08
Hiring and Labor	41	2.74
Agri Processing	114	7.63
Repairs	188	12.58
Non-Agri Services	102	6.82
Financial Services	35	2.34
Other	6	0.40
Total	1,495	

# Characteristics of Firms in our Census

	Mean	s.d.	Min	Max
Respondent is male (=1)	0.82		0	1
Respondent age	37.96	11.33	15	76
No. of employees	1.35	3.74	0	62
Own mobile (=1)	0.99		0	1

# Motivation



Source: GSMA 2009

# Proposed Experimental Design

- First stage: Stratify by district and ward and randomly assign villages to either treatment (list some firms in that village) or control (no firms listed)
- Second stage: Within treatment villages, stratify by sector and randomly assign sub-village sectors (firms) to be included in the directory or not
  - Choice based in part on research questions, cost, feasibility of randomization
- Distribute directories to all villages (Group A plus Group B)
- Compare outcomes of firms in treatment villages with those in control villages
- Compare outcomes of control firms in treatment villages with control firms in control villages (within-village spillovers)
- We will be unable to measure for between-village spillovers

# Proposed Experimental Design

- Across 49 villages and with 8 sectors, we have 400 strata (actually 300), or 5 firms per strata
- Within the strata we have 516 clusters (sub-village sector groups), or 2 clusters per stratum
- Within each cluster, have 3 firms (varies by sector)



# Data and Outcomes

- Baseline survey (October)
- Follow-up survey (May-July)
- Phone surveys (maybe)
- Firm-level outcomes
  - Direct: Number of calls, number of contacts, foot traffic
  - Indirect: Sales, revenue, employment, inventories

# Progress to Date

- Firm census completed
- Baseline firm survey completed
- Randomization in process
- Phonebooks in the process of being printed

# Next Steps

- Finalize directory printing and distribution
- Organize firm phone surveys
- Plan for follow-up surveys