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Role of ICT in Linking Farmers to Markets
a transaction costs perspective from Sri Lanka

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Fundamental problem

- Farmers stuck in subsistence agriculture and **unable** to move towards commercial agriculture
  - Household needs vs. market needs
Basic economics

- For commercial agriculture to succeed, efficient markets are a pre-requisite.
- Information is critical for efficient functioning of markets.
- But,
  - Costly information $\rightarrow$ High transaction costs $\rightarrow$ inefficient markets.
Specific role of ICT

- Reduce information search costs → lower transaction costs → increase efficiencies in agricultural markets → increase welfare both for farmers and consumers
Many attempts to reduce information search costs

- Focus on information related to the Selling stage of the value chain [VC]
  - Reduce search cost of market prices [particularly for perishables]
The ICT example: GGS pilot as hypothesis test for eSriLanka
**Before:** Costly information search inside the market
Price capture at trader stalls

At the trader stall

Walking data collectors
After: Spot price information disseminated at DDEC
GGS Price Boards at DDEC

- Lowest price and time
  - Price: 0.0
  - Time: 0.0
  - Stall number: 0.0

- Highest price and time
  - Price: 35.0
  - Time: 7:12 PM

- Last traded price, time and stall number
  - Price: 23.0
  - Time: 7:38 PM
  - Stall number: A1-8
So, the question is...

- Has all this helped reduce information search costs → lower transaction costs → increase efficiencies in agricultural markets → increase welfare both for farmers and consumers

- Well...
  - Some benefit
Tomato prices at DDEC
January 2004 – June 2009

Tomato Prices at DDEC
Average Monthly LKR/Kg 2004 Jan to Jun 2009 [Courtesy GGS]

[Graph showing monthly tomato prices from January 2004 to June 2009, with a downward trend line.]
Selling price alone won't do

- Need to apply ICT to reduce information search costs along the value chain
Demand for information [small scale vegetable farmers around DDEC] market driven; not centrally planned

- Visit farmer association to decide on a crop
- Cost of calls to agriculture officers to find information about the crops
- Obtaining information on financing

- Cost of finding information about a particular type of seed
- Cost of machines to prepare the land
- Cost of traveling to purchase seeds if the seeds were not available

- Costs of finding labor
- Costs of finding fertilizer, pesticides, weedicides etc
- Costs of traveling to purchase fertilizer, pesticides, weedicides etc if those were not available

- Costs of finding market prices
- Costs of finding labor
- Costs of finding storage, packing materials etc

- Costs of comparing prices of different traders
- Costs of finding transport

Decision 2*

**GGS pilot objectives**

If produce already brought to DDEC market

→ **Help farmer get best possible price**

If produce harvested, but not brought to DDEC

→ **Help farmer decide whether to bring to DDEC or not**

If produce just about to be harvested

→ **Help farmer decide whether to harvest today or tomorrow or day after**

If not planted, or many days to harvest

→ **Help farmer enter into FSC**

*Source: Central Bank of Sri Lanka Forward Sales Contract Brochure*
Only 5 had any information: Banana 1; Guava 1; Paddy 2; Papaw 1; Tomato 17
43 had no entries
Growing

45% cost of production; 20% relative information cost

1:3 13:1 18:1 4:1 45:1 5:1

**Decision**
- Visits to meet farmer association officials to decide on a crop
- Cost of phone calls to agriculture officers to find information about the crops

**Seed**
- Cost of finding information about a particular type of seed
- Cost of traveling to purchase seeds if the seeds were not available

**Land and planting**
- Costs of finding labour
- Costs finding machines to prepare the land

**Growing**
- Costs of finding fertilizer, pesticides, weedicides etc
- Costs of traveling to purchase fertilizer, pesticides, weedicides etc if those were not available

**Harvesting, Packing, Storing**
- Costs of finding market prices
- Costs of finding labour
- Costs of finding storage, packing materials etc

**Selling**
- Costs of comparing prices of different traders
- Costs of finding transport
Growing 2*  

- Main cost is on information search on (ineligible) fertilizer subsidy

"The vegetable growers were further hit because they are not entitled to the fertilizer subsidy which is only available for paddy cultivators."

Gone to the cows: This picture taken last morning shows a mound of brinjals being thrown away by disheartened farmers.
Growing 3

- Department of Agriculture Audio Visual Centre
  - 30 Interactive Multimedia CD-ROMs (also helpful in other stages of the VC)
  - Toll-free (3 min) 1920 Govi Sarana
- Demand-driven agriculture extension
Selling
8% cost of production; 17% relative information cost

1:3 13:1 18:1 4:1 45:1 5:1

Decision
- Visits to meet farmer association officials to decide on a crop
- Cost of phone calls to agriculture officers to find information about the crops

Seed
- Cost of finding information about a particular type of seed
- Cost of traveling to purchase seeds if the seeds were not available

Land and planting
- Costs of finding labour
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- Costs of finding fertilizer, pesticides, weedicides etc
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Harvesting, Packing, Storing
- Costs of finding market prices
- Costs of finding labour
- Costs of finding storage, packing materials etc

Selling
- Costs of comparing prices of different traders
- Costs of finding transport
Selling 2

- If at market price boards, word of mouth
- If not arrived
  - Telephone
  - GGS IV
Where from here?
Vision for agriculture in Sri Lanka

- The 10 year policy framework
  - “To transform subsistence agriculture to a commercially oriented and highly productive sector”
Role of ICT in agriculture*
sufficient and relevant information

- Reduce information search costs → increase efficiencies in agricultural markets
  - Move from subsistence to commercial agriculture
  - Household demand → market demand

- Integrated systems that address individual information needs from Decision to Selling
  - Closing the loop: Decision ←→ Selling
  - Forward sales contracts (FSC)
A start was made...

GGS pilot objectives

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If not planted, or many days to harvest
→ Help farmer enter into FSC
Role of ICT in agriculture 2**
accessible (and affordable) information

- Internet PC vs. mobile phone focus
- LIRNEasia 6-country study T@BOP3; Sri Lanka, September-October 2008
  - 77% used a phone in the ‘previous week’
  - 73% had access to a phone in the home
    - Up from 41% in September 2006
  - 53% used sms regularly
  - But, only 3% had access to the internet
Future of **ICT** for agriculture will be mobile-centric

- PC as central interface was old paradigm
- New paradigm will have mobile or emerging 3G enabled devices
- Agriculture information on ubiquitous mobile devices
  - When and where user wants it at very low cost of use; no opening and closing hours
And that future will be here soon

GGS Dialog partnership

SPOT & FORWARD MARKET PRICES

Together with Govi Gnana Seva (GGS), Dialog eZmart will provide market prices. Mobile users can receive market prices through SMS.
GGS-Dialog
Quasi – forward market solution

Matching criteria:
specific date/ date range,
specific vegetable,
quantity

Actual transaction happens offline (sale,
logistics, etc.)

Farmer

Post a sell order for specific
date/ date range

Subscribe to spot price alerts

Subscribe to matching buy orders

Buyer

Post buy order for specific
date/ date range

Subscribe to spot price alerts

Subscribe to matching sell orders

Dialog – GGS
SMS, USSD, WAP, Internet

Meegoda Wholesale market
DDEC Wholesale market
Narahrenpita Retail market
End ICT objective
a joint private-public-academic partnership

- Use mobile-centric, demand-driven, value-chain based, accurate and timely information to
  - lower transaction costs
  - Which will increase efficiencies in agricultural markets

- So that farmers will move from subsistence to commercial agriculture, that will

- Increase welfare both for farmers and consumers
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