

# Mobile Phone Applications for Agriculture in Tanzania

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# Introduction

- Agriculture is the mainstay of the Tanzania's economy.
- Agricultural productivity in Tanzania is hampered by a combination of constraints
  - over dependence on rain-fed agriculture; poor farming practices; unreliable markets; climate change effects; poor transport infrastructure; low value addition to crops; poor post-harvesting practices; and poor policies
- These constraints are often aggravated by lack of access to timely, relevant and reliable **agricultural information** by different agricultural actors along the agricultural value chain

# Agricultural information includes...

- **Agricultural technologies:** Best practices, new varieties, demonstration results, diseases and pests control techniques, post-harvest techniques, technical assistance;
- **Market information:** Prices, quality requirements, input provision, credit availability, selling options, market trends, product planning, distribution;
- **Natural resource base and geography:** Climate & weather, soils, water sources, physical infrastructure;
- **Policy Environment, Laws, and Regulations:** Land titling, water access rights, environmental regulations.

- Actors have varying information needs along the chain
  - ◆ Farmers – need information to resolve problems such as pests, weeds, moisture insufficiency, low crop prices etc.
  - ◆ Extension workers - up-to-date research information that repackaged for other actors.
  - ◆ Researchers - research information on their fields.
  - ◆ Policy makers - synthesized and up-to-date information for informed decisions.
  - ◆ Business community - information on the availability, quantity and quality of agricultural produce; availability and quality of transport as well as price information.

- Rural areas in Tanzania, where majority of the farmers are located, have limited access to information services mainly due to
  - ◆ weak communication infrastructure; low literacy levels; lack of electricity; dearth of information services; geographical barriers; low income; and socio-cultural factors

- Traditionally, agricultural information reaches farmers mainly through extension services and other sources such as their social networks, cooperative organizations, universities etc.
- There are weak information flows between researchers, extension workers, farmers and other agricultural actors.
- The poor performance of extension services in the country is attributed to:
  - ◆ inadequate financial resources; few extension workers; functional illiteracy among many farmers; computer and information illiteracy among many agricultural actors; high with broadcast costs; unidirectional nature of extension services that regard farmers as ignorant recipients of information; poor physical infrastructure; poorly organized extension systems; and inadequate operating facilities such as vehicles, bicycles and computers.

# Agricultural uses of mobile phones



- Mobile phones can bridge existing information asymmetry and complementing the existing information sources such as radio, television and newspapers.
- Mobile phones have the potential to significantly reduce communication and information search costs.
- Phone calls and SMS can also replace the need for face-to-face interactions thereby reducing travel costs.



- Mobile telephony is one of the fastest growing sectors in Tanzania.
- By December 2011, there were 25,827,518 mobile subscriptions
- Increasingly, mobile phones are being adopted by the rural poor.
- The actual number of mobile phone users is often higher because of the sharing culture.
- A single subscription in a household often provides access to other household members.
- Some people may have more than one subscription (multiple SIM cards) which makes it difficult to obtain the actual number of subscribers.

**Table 1: Mobile phone subscribers**

<b>Year</b>	<b>Mobile subscribers</b>
2000	110,518
2001	275,560
2002	606,859
2003	1,298,000
2004	1,942,000
2005	2,963,737
2006	5,608,532
2007	8,322,857
2008	13,006,793
2009	17,469,486
2010	21,158,364
2011	25,827,518

Source: ITU (2011); TCRA (2011)

- different agricultural actors use mobile phones for exchanging agricultural information through different stages of agricultural value chain
- Significant usage of mobile phones in the Tanzania's agricultural sector to date has been on exchanging market information.

**Table 2: Use of Mobile Phones along the Agricultural Value Chain**

<b>Stage</b>	<b>Activities that can be facilitated through mobile phones</b>
Farming planning and decision	<ul style="list-style-type: none"><li>• Plan and decide on what crop to grow, how much land to allocate for each crop and also arrange working capital</li></ul>
Preparations for farming	<ul style="list-style-type: none"><li>• Buying inputs</li><li>• Coordinating labour</li><li>• Collecting weather information</li><li>• Preparation of manure for planting</li></ul>
Farming	<ul style="list-style-type: none"><li>• Pooling of labour for cultivation and weeding</li><li>• Organizing manure for use during planting</li><li>• Collecting and exchanging rain information</li><li>• Hiring/borrowing farming implements such as ox plough and tractors.</li><li>• Identifying types of seeds and their prices</li><li>• Identifying availability and prices of fertilizers and pesticides</li><li>• Consulting extension officers</li></ul>
Harvesting	<ul style="list-style-type: none"><li>• Organizing and pooling of labour for harvesting</li><li>• Arranging for storage equipment and warehouses/stores</li><li>• Identifying and acquiring of preservatives</li></ul>
Post-harvesting	<ul style="list-style-type: none"><li>• Identifying, organizing and calling for transport to warehouses and markets</li><li>• Calling market centres, traders, dealers and check prices and stocks of crops before settings deals with middlemen/agents or deciding to travel to obtain better opportunities.</li><li>• Contacting distant buyers</li><li>• Money transfers and payments</li></ul>

- Examples of mobile phone-based projects that aim at addressing market information asymmetries in Tanzania
  - ◆ The First Mile Project implemented between 2005 and 2009 in the northern and southern highlands of Tanzania used SMS, voice calls, and internet services to improve the availability, timeliness and quality of information on market prices, and to improve communication amongst market actors
  - ◆ local “market spies” locally known as *mkulima shushushu* were collecting information

- ◆ Vodacom worked with the Ministry of Industry, Trade and Marketing since 2002 to implement a seven year programme known as *Agricultural Marketing Systems Development Programme (AMSDP)*.
- ◆ Information is provided by the ministry to Vodacom where farmers and traders can access
- ◆ *Esoko* project provides real-time SMS alerts on market prices and offers that are automatically delivered to subscribers

- ◆ A project known as Livestock Information Network and Knowledge System (LINKS) address the needs for timely and reliable livestock marketing information for producers, traders and policy makers in the livestock subsector.
- ◆ The project covers 30 markets in Tanzania.
- ◆ Information on prices is downloaded from the web or accessed through SMS.
- ◆ In Karagwe district, a local NGO known as FADECO (Family Alliance for Development and Cooperation) uses radio for disseminating agricultural information and SMS to receive feedback and questions.

# Lessons Learnt

- Mobile phones can build on existing agricultural extension systems.
- Mobile phones can be used to address diversity by responding to information and communication requirements of different agricultural actors.
- As many projects on the use of mobile phones for extension services in Tanzania are fairly recent, empirical evidence on their success is still largely anecdotal.
- Strengthening capacity of extension systems will ensure appropriate exchange of information through mobile phones.
- Building the capacities of the information users such as farmers is also necessary.
- Since Kiswahili is the *lingua franca* of Tanzania, agricultural information should be repackaged in Kiswahili for easy adoption.



