

Mobile phone based Integrated Market Access System (i-MAS) in rural Tanzanian farming communities

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Summary

This factsheet underscores the rationale of using a mobile phone-based system to access market and nutrition related information by smallholder farmers and food traders. i-MAS has the potential to improve the performance of the food system.

Objective

The i-MAS system seeks to improve market access by addressing asymmetries in market information. The system also improves awareness through complementary after-transaction nutrition and health messages. Access to food markets matter for rural farming households as the majority are net buyers of food, if not the whole year around, but at some point in time.

Key Lessons Learned

Two major lessons were learned:

- Farmers are eager to benefit from available technologies provided as such technologies address their needs. This includes the use of mobile phones, a technological advancement common, even in remote areas.
- The use of i-MAS functions similar to a “snowball system” – as more people use it, it becomes more interesting for the non-users as benefits likewise increase.

Constraints & Objectives Addressed

The following issues were observed:

- Farmers had to wait after learning about the system before it was implemented, delaying practical experience
- Majority of farmers are not used to texting, while old and illiterate farmers had to rely to other members or farmers
- Mobile network coverage is limited
- Farmers and traders without smartphones were unable to use the Android App option.
- The system uses the server installed at SUA, some recharge cost for bulky SMS needs to be incurred for the system to respond back to the users.

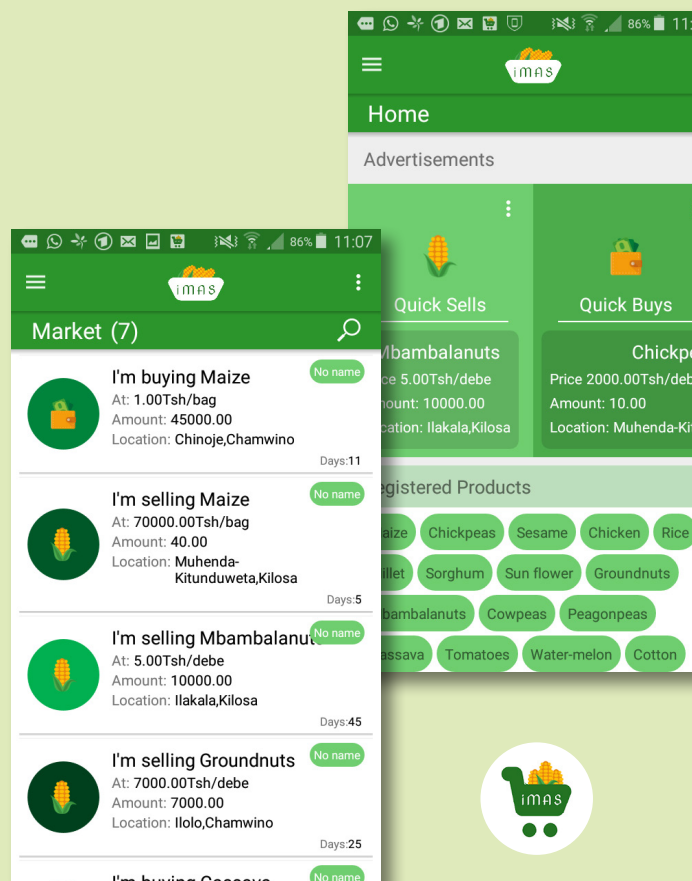
Description of Innovation

The system is designed to improve the market transparency through a mobile phone based market information system.

The i-MAS platform enables farmers to efficiently interact with buyers and sellers for both profitably selling their produce and affordably buying food from the markets. The system uses both SMS-based, which is ideal for normal cellphones, and an Android application for smart phones. Based on the offered produce, unit price, volume available and validity of time period with which the offer holds – a buyer or seller bid will be matched with requirements of respective selling or buying customers.

The first time a phone number is used, there is a registration process. This enables the farmers to continue receiving nutrition and related health messages regularly.

The system uses a server hosted by the computer center at SUA. The server was bought under the sister project (Trans-SEC), also supported by the German government. The server must be running with some recharge of bulky messages to communicate back to the user community of the system.



Screenshots of i-MAS Android App (English version, also available in Swahili)

Proven Success in TZ and Beyond

i-MAS was developed with some improved features in contrast to already existing IT systems that allow access to agricultural information. The system has a flexible SMS based platform for farmers who cannot afford smart phones and an Android app for users with smart phones. The system provides nutrition sensitive information and related health messages that users receive automatically during transactions. There is evidence that farmers have benefited from using of ICT to access market information, resulting into improved producer prices and farm incomes for rural poverty reduction.

The WHO's m-Health mobile app has succeeded in educating consumers about preventive health care services across countries. Cell-phones have allowed informal communications between rural growers and urban sellers, releasing growers from the old problem of isolation and near complete dependence on middlemen.



Considerations & Criteria for Outscaling

To access the system and to receive nutrition messages,

1. a strong and comprehensive mobile phone network is essential: The Android App requires strong network signals for an internet connection. However, the SMS based platform works with limited signals.
2. Ownership of mobile phones is necessary.
3. Farmers must also know how to use SMSs and the internet. The respective proficiency of farmers is often limited due to literacy and low familiarization.
4. For wider promotion of i-MAS, it is indispensable to ensure a critical mass of bided volumes of crop and livestock products and an adequate number of buyers for effective demand.
5. Finally the long-term sustainability of the system depends on the affordability of SMS and internet bundles.

Technical & Social Specifications

The technical design of the i-MAS system is based on a web application program interface (API) using representational state transfer technology (REST). This so-called RESTful technology communicates between an Android App and the i-MAS server based at the Sokoine University of Agriculture (SUA) computer center. The i-MAS under Scale-N explicitly includes a flexible feature of SMS that works without a smart phone. Farmers who want to sell crops are connected to their matched buyers (fellow villagers and traders) through the mobile phones.

Additionally, distant traders can learn the volume they can get from certain village farmers within their geographical locations and the sales details like price and volumes offered for sale. Whoever interacts with the system also receives nutrition sensitive text messages. The i-MAS has an integrated interface to monitor the transactions within the system. This administrative user interface can also be used by the district planners to monitor the transactions of food crops.

Fuata mfano huu katika simu yako



SMS-interface of i-MAS

Wewe Mtandao wa Simu

0789 778326 SOKO Send	0789 778326 Chagua 1 Kuuza 2 Kurunua
0789 778326 1 Send	0789 778326 Chagua 1 Ilakala, Kilosa 2 Changarawe, Kilosa 3 Ilole, chamiwino 4 idifu, chamiwino
0789 778326 1 Send	0789 778326 Chagua zao 1 Mahindi, 2 Mpunga, 3 Mbaazi, 4 Kunde 5 Choroko, 6 Uwele 7 Mtama, 8 Alizeti 9 Karanga, 10 Njugu 11 Ufuta 12 Mibogo
0789 778326 1 Send	0789 778326 Chagua kipimo 1 Kilo 2 Debe 3 Sado
0789 778326 10000 Send	Chagua Bel kwa kipimo
0789 778326 5 Send	Chagua jumla ya kiasi
0789 778326 7 Send	Hongera, umekamilisha mchakato

Comment from the Field

Better business!

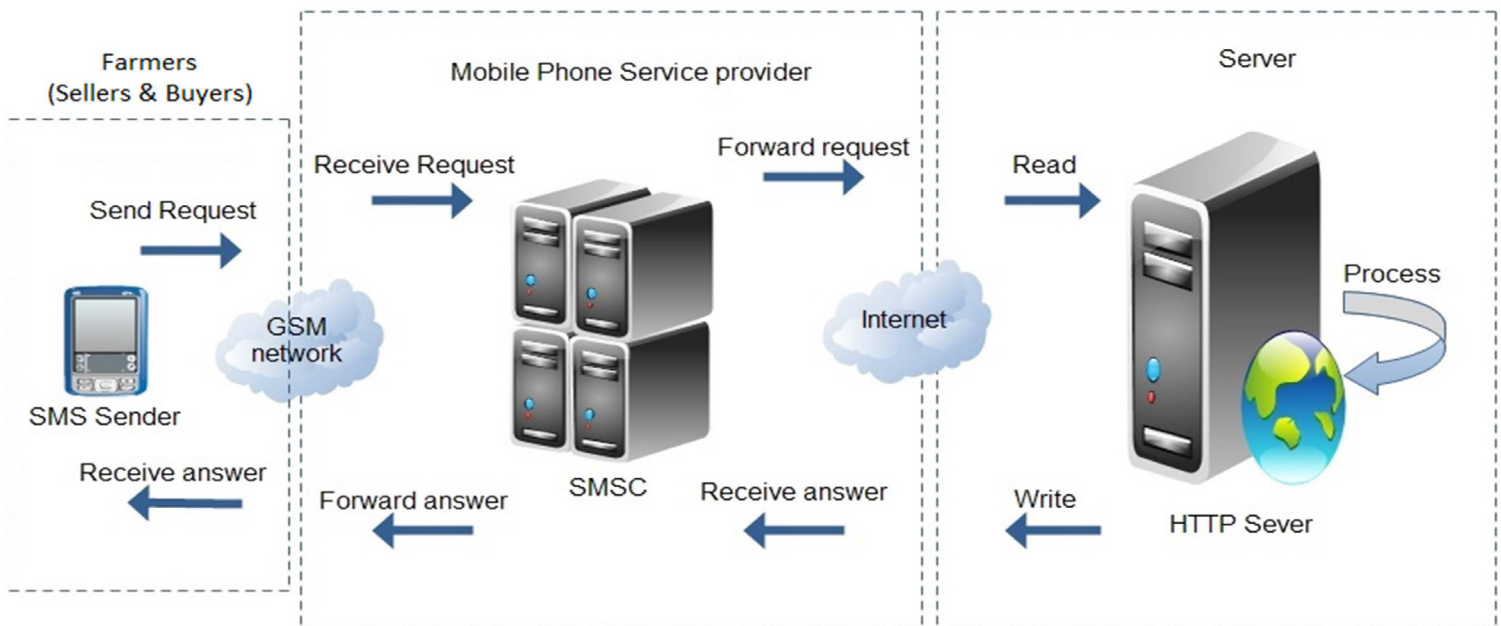
“This system works - now I will be doing the business of selling my crops in a modern way – and I can receive nutrition and health information through it”.



Selemani Zayo, Tindiga village in Kilosa district

Lessons Learned

The potential of the i-MAS system to advance food and nutrition security is incredibly high. It can operate as an innovative tool that enables efficient reorganization and coordination of food markets in Tanzania. The system is – through its conventional SMS and Android App based options – also scalable to larger food systems with flexibility of use for different categories of food systems players including farmers, local traders, wholesales, and food system governing institutions. In order to reap much of the potential vested in the i-MAS platform, the scalability and sustainability constraints and conditions underpinned earlier must be addressed. Indeed, more time and investments in action research are needed to improve the user interface and to more widely promote the i-MAS system.



Scheme of the i-MAS trading system

Scientific References

Aldoory, L.; Yaros, R.A.; Prado, E. and R.L. Briones (2016): Piloting Health Text Messages for Rural Low-Income Mothers: Effects of Source Similarity and Simple Action Steps. *Health Promot. Pract.* 17 (5): 702-710.

Mwakaje, A. (2010): Information and Communication Technology for Rural Farmers Market Access in Tanzania. *Journal of Info Tech Impact*, Vol. 10(2):111-128.

Further Reading & Websites

- FAO (2011): mHealth: New horizons for health through mobile technologies: http://www.who.int/goe/publications/goe_mhealth_web.pdf



i-MAS App is available at the Google Play Store:
<https://play.google.com/store/apps/details?id=com.shiza.imas>



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