The Role of Mobile Market Information Systems in Agricultural Development

Nyamwaya Munthali
PhD Candidate - Wageningen UR
Former Project Manager Lima Links Platform- iDE Zambia
Outline

- Introduction
- Results
- Challenges
- Next steps
Solution

Lima Links is a mobile phone-based application designed to provide farmers with up-to-date price information for fresh vegetable produce across a number of major wholesale markets in Zambia.
Market Locations and Crop Menu

1. Tomato
2. Onion
3. Cabbage
4. Pumpkin leaves
5. Sweet potato leaves
6. Chinese cabbage
7. Local kale
8. Local egg plant
9. Okra
10. Green maize
Lima Links - Growth Phases

2010 – 2015
Product & business model conceptualisation + proof of concept

2016 – 2018
Product enhancement & scaling up + testing business models

2019 -
Commercialisation & sustainability
Problem

- Open market major vegetable market – functioning through a brokerage system
- Volatile vegetable prices - driven by localised supply and demand
- Farmers experience difficulty in identifying the best price/market
- Further mobile price information systems dependent on enumerators - expensive and price inaccuracy
Lima Links - Intended Consequences

Farmer (interface)
- Provide accurate and timely market price information
- Foster transparency in transactions
- Make farmers aware of market options
- Enhance farmers negotiating position
Lima Links - Intended Consequences

Market agents (interface)
- Improve inventory management system
- Facilitate demand based supply planning
- Enable farmer targeted bulk SMS
Horticulture Output Market (before LL)  
Situation 1

1. Farmer requests price info via voice call to Market Agent

2. Market Agent gives lower market price to farmers

3. Farmer takes produce to market, based on the agreed price

4. Farmer arrives at market, learns actual price info

5. Market Agent sells produce at lower price than farmer expected

$ Farmer already paid for transport and time costs, must accept lower price $

6. Farmer feels cheated by system, makes very small margin on produce or meets cost

$ Low price $  

$ Transport $  

End result: REDUCED FARMER INCOME
1. Farmer has produce to sell and queries LL

2. Farmer transports produce to the market

3. Farmer establishes a relationship with a LL agent

4. LL market agent registers farmer and records amount of produce

5. LL market agent sells produce to retailers on behalf of farmer

6. LL market agent records details of the sales transaction

7. Other farmers query the system and receive aggregated live price
Horticulture Output Market (with LL)

Situation 2

1. Farmer checks live market info in LL – determines which market to go to

2. Farmer calls market agent to negotiate a price

3. Market Agent gives better market price to farmers

4. Farmer takes produce to market, knowing actual market price

$ Transport $

5. Farmer arrives at market, and makes contact with a LL Market Agent

6. LL Market Agent sells produce at fair price and enters sale in LL

6.1. Farmer receives SMS with final sale price / amount by LL Market Agent

7. Farmer collects fair sale price from LL Market Agent

END RESULT:
FAIR FARMER INCOME

ICT4D CONFERENCE
RESULTS
Straight Ahead
### Data Reliability

#### User’s perceptions of data reliability

<table>
<thead>
<tr>
<th>Rating</th>
<th>Male</th>
<th>Female</th>
<th>Farmer</th>
<th>Trader</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>1.9</td>
<td>7.0</td>
<td>1.7</td>
<td>11.4</td>
</tr>
<tr>
<td>Medium</td>
<td>97.2</td>
<td>93.0</td>
<td>97.4</td>
<td>88.6</td>
</tr>
<tr>
<td>Low</td>
<td>0.9</td>
<td>0.0</td>
<td>0.9</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Independent Evaluation Survey (IAPRI, March 2015)
Factors contributing to Lima Links accessibility:
- USSD based
- MTN and Airtel
- Free

Independent Evaluation Survey (IAPRI, March 2015)
Social Impact

- A reliable guide for which market to supply to - 85%
- Facilitates planning of next season’s crops - 72%
- Reduced cost of sourcing market price information - 52%
- Farmer income likely to increase - 47%
- Enhanced transparency in transaction with market agents - 61%

Independent Evaluation Survey (IAPRI, March 2015)
Commercialisation Potential

In 2 years:

- 6,000 register users (approx.)
- 11,858 hits peak (Jan 2015)
- Markets agents interest in Lima Links association
- Willingness to pay - farmers
- Willingness to pay - agri-businesses and farmer support organisation
- Strategic expansion partners identified
Data Quality

- Crop grading
- Exploration of quality control mechanisms
  1. Comparing data sets
  2. Periodic field verification

Figure 1. Weekly IAPRI and Lima Links Price Trends at Soweto Market, 2014
**Users**

- Sustainable incentives for market agents
- Lima Links’ effect on market politics
- Loan arrangements bonding farmers to market agents
- Multiple farmers using one registered users accounts
- Transition from free to pay service
Institutional

- Lack of private sector investment partners
- Limited Lima Links incubation options – ICT start ups lack technical expertise and capital
- NGOs transitioning into business thinking – limited experience
- Status of ICT business regulations
Next Step
Growth and Sustainability Framework

The key principles underlying the growth and sustainability framework are:

- adequate technical and financial resources to drive early stage development
- supporting robust transfer of knowledge to the local providers and users of Lima Links
- well managed growth of Lima Links based on a viable business service model
Anticipative
- Ownership challenge
- Scenarios

Inclusive
- Transparent
- Negotiation

Reflexive
- Ethics
- Farmer protection
- Social impact

Responsive
- Learning
- Human-centred design
- Politics of innovation

Responsible Innovation
Holistic Support for Farming Systems

1. Farmer Business Advisors as innovation intermediaries
2. Linkages to inputs, credit and markets

1. ICT and access to information
2. Holistic information package
Lima Links – Current Focus

Lima Links as a mobile information system (MIS) that provides key information and communication services to a variety of audiences

- Product enhancement
  - Including wider markets and crops
  - Configuring system to local languages
  - Including a ‘buyer and seller platform’

- Userbase expansion
  - Exploration of other services
Lima Links – Current Focus

- Robust quality control and farmer protection system
  - Exploration of sustainable data collection incentives
  - Post transaction SMS (farmer feedback)

- Business model testing
  - In depth willingness to pay study
  - Identifying viable revenue streams

- Strategic expansion partner network establishment
Contact Information:
Nyamwaya Munthali, PhD Candidate Wageningen UR
nyamwaya.munthali@wur.nl