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# ICT Applications for Agricultural Outgrowing Operations

*Case studies of private-sector led models in Africa*

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# Background



## Outgrowing with Smallholders a Challenge

- Resource-intensive extension and financing needs
- Data management of large #s of suppliers with small volumes
- Cost effective communication, avoiding side selling
- Scaling up a commercially viable model



## Growth of ICT in Africa Offers Solutions

- Efficiencies in data collection, management, useful analysis
- Alternative communication channels
- Agricultural Extension
- Financing and Payments



## Learning from Business Experiences: FACET Research

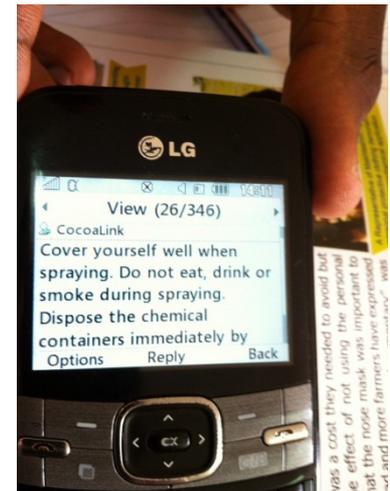
- Highlights from firms embracing ICT solutions in outgrowing
- Highlights of products relevant for private sector outgrowing operations
- Development Perspective: Implications for Donor Programs

# *What is “Outgrowing”?*

- Agreement (verbal or written) between farmers and buyers for production or supply of agricultural products
- Benefits for farmers: increased access to improved inputs, technology and technical assistance provided by buyer
- Benefits for development organizations (DOs): supports pro-poor economic growth strategies.

# Components of Outgrowing Operations

- Outgrowing operations consist of various activities including:
  - ✓ *determining feasibility* of outgrowing (cost/benefit analysis, risk analysis)
  - ✓ *communicating* with outgrowers (agronomic, procurement, production targets, etc.)
  - ✓ providing *technical assistance* to outgrowers (training, coaching, extension)
  - ✓ ensuring outgrower *access to appropriate inputs* (pre-finance discounts, supplier links, etc.)
  - ✓ *procuring* from outgrowers (traceability, grading, payments, transport, recordkeeping)
  - ✓ *storage, processing and packaging*
  - ✓ *marketing* final products
  - ✓ other operational aspects
  
- ICT-enabled applications are being used to improve many outgrowing activities



# Common ICT Solutions for Outgrowing

## ICT Application

Mobile transactions for procurement

SMS, Voicemail for extension and alerts, farmer communication, supplier coordination

Digital weighing/ receiving

Supply chain management software

Traceability software, hardware

Geographic Information Systems

## Benefits

Improved transparency in payments; increases trust between stakeholders; eases paper burden

Cost efficient; builds direct and timely communication channel between farmer and buyer

Improves accuracy in receipts; reduces paper burden; lessens corruption by agents; lays groundwork for direct payments to farmers

Groundwork for MIS; allows for efficiencies throughout the supply chain; procurement planning and forecasting

Improved transparency; assists with supply chain efficiency improvements

Enables highly accurate product traceability for farmers and processors; significantly improved production planning

# Common ICT Solutions for Outgrowing

## ICT Application

Mobile transactions for procurement

SMS, Voicemail for extension and alerts, farmer communication, supplier coordination

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Supply chain management software

Traceability software, hardware

Geographic Information Systems

## Examples

Dunavant (Zambia); Parmalat (Zambia);  
E-zwich/P4P (Ghana); Illovo Sugar (Tanzania);  
M-Pesa (Kenya)

Tanga Fresh Dairy (Tanzania);  
Hershey's CocoaLink (Ghana);  
Crop Nutrition (Kenya)

AgriManagr (Kenya, Tanzania);  
Illovo Sugar (Tanzania); Tanga Fresh (Tanzania)

Exporter (Kenya); Amajaro Cocoa (Ghana);  
FarmForce, AgriManagr (Kenya, Tanzania)

Geotraceability (Ghana), Muddy Boots (Kenya)

Geotraceability (Ghana)

## Summary Case Studies

# ICT-enabled Applications in Africa for: **OUTGROWING**



# Mobile Transactions: E-Vouchers

**Who?** Dunavant (major cotton company) and ZoonA (mobile transactions) in Zambia



## How?

- Outgrowers, company, and participating retailers/service providers establish ZoonA account
- Buyer pays with e-vouchers (in lieu of or with cash)
- Farmers use e-vouchers at participating retailers (agro-input dealers, etc.) or redeem for cash or other services (e.g. school fees)
- Transaction value immediately debited from company and credited to participating retailer/service provider account



## Benefits?

- Increased security for company and outgrowers; reduced risk of cash delivery/receipt
- Payment to outgrowers quicker and more efficient; Dunavant has 164,000 total outgrowers
- Database of outgrower purchases developed for company tracking and monitoring
- Retailers/service providers receive instant payment and offer alternative payment option

# Supply Chain Management Software

**Who?** Virtual City (software company) in Kenya



**Agrimanagr**

**How?**

- Time and location of deliveries are recorded by GPS
- Product is weighed on digital scale and recorded automatically
- Farmers are given printed receipt of transaction (volume, quality, etc.)
- Product tracked from collection point to warehouse in real-time; weighed at beginning and end

**Benefits?**

- Farmers receive record of all transactions; can be used as proof of income
- Payments to farmers up to two months faster
- Input Supply companies improve inventory management, reduced administrative costs, and gain access to real-time supply chain information



# SMS for Soil Testing Services

**Who?** Crop Nutrition in Kenya

**How?**

- Farmer collects soil specimen bags from agro-dealer.
- Farmer returns specimen bag to agro-dealer and pays for testing service
- Crop Nutrition representative collects specimens from agro-dealer
- Crop Nutrition runs tests and returns results directly to farmer by SMS
- Farmers can quickly use recommendations to treat their fields

**Benefits?**

- Agro-dealers receive income and attract new customers
- Lower testing costs and SMS-based reporting makes service available to remote smallholder farmers
- Crop Nutrition able to expand pool of clients
- Outgrowing operations can encourage farmers to use crop support services to improve production



# Bulk SMS and Radio Farmer Extension

**Who:** Tanga Fresh (major dairy company in Tanzania)

**What:**

- Weekly bulk SMS to 2,500 outgrowers (using MyPhoneExplorer)
- Weekly 30-minute radio shows
- Two full-time staff dedicated to SMS and radio content, responding to farmers, etc



**Benefits:**

- Develop direct communication between Tanga Fresh and outgrowers increases transparency, reduces bias from intermediaries, and increases information accuracy
- Tanga Fresh can react directly and quickly to farmer problems or concerns – and mobilize farmers to advocate for industry concerns as well
- Trust, credibility, and brand recognition improved between outgrowers and company
- Farmer uptake is high: Tanga Fresh receives 500 SMS from farmers weekly

# Input Tracking System

**Who:** Armajaro Trading in Ghana, cotton

**What:**

- Receipt for farmer inputs is printed with a unique scannable barcode
- When input credit is taken, Amajaro staff scan the barcode with handheld scanner, revealing farmer's individual code and volume of inputs
- Linked database system tracks order and calculates farmer credit
- Company field extensionists visit farms and send SMS to company with farmer code and input-specific usage which is included into database system



**Benefits:**

- Armajaro can track inputs used and therefore probable field productivity
- Increased transparency in input sales on credit
- Farmers establish recorded credit history and prove commercial viability

# Integrated GPS and GIS for Traceability, Supply Chain Management

**Who:** GeoTraceability Ltd and Armajaro in Ghana (cocoa)

## **What:**

- Handheld GPS and scannable paper surveys used to map farms, infrastructure, capture farm/farmer data
- 20,000+ cocoa and cotton farmers surveyed, mapped
- Data stored until it can be loaded into central database
- Linked to a GIS with customized access levels for field staff, senior managers, and Armajaro global buyers

## **Benefits:**

- Improved traceability and more effective geographic targeting
- Better understanding of plantation size and productivity improves planning and farmer profitability
- More accurate advancement of inputs (based on actual plantation size); farmers better able to repay input loans





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# Implications for Donor Programs and Development Practitioners

- ICT solutions can reduce common challenges and risks associated in outgrowing with **smallholders**: *Development organizations/donors can reduce risk companies face in developing and pilot testing applications*
- Small 'resource-lite' technologies can yield big benefits to agribusiness companies and farmers: *opportunities for commercially-driven initiatives independent of donor support*
- Development organizations/donors should engage private sector value chain actors in participatory dialogue
- Many opportunities to adapt existing ICT applications for agriculture

# Implications for Donor Programs and Development Practitioners

## CAUTIONS:

- Some solutions require pre-requisite investments in other technologies or infrastructure
- Look for unintended negative side-effects
- ICT is often an overlooked supporting service market
- ICT is a tool - not a panacea: not all solutions fit all business models or contexts, or make economic sense (e.g. ROI)



# Facilitating the Integration of ICT

- Development organizations should invite companies with outgrowing operations ***to propose their own ideas and strategies***
  - can present different examples of opportunities for ICT integration
  
- Donor program can solicit proposed ideas and strategies using an **“Invitation for Application” (IFA)**:
  - describes program objectives to encourage company investments in new ICTs they might not otherwise make (due to high costs and risks)
  - presents conditions of donor program participation (cost share, etc.) and
  - describe technical and facilitation activities that can be provided



## Using Question Guides to assist companies in planning ICT initiatives

- General Questions:
  - What role will the ICT play in your operations?
  - What are the set up and recurring costs of the ICT application?
  - What cost savings or new sales will the ICT generate?
  - How will you train your staff and/or farmers in the use of the ICT?
  - How will the ICT be sustained after the program support ends?
  - etc.
  
- Additional questions developed based on specific ICT application
  
- Development org/donor staff guide company in strategic planning process – company answers and thinks through all relevant questions
  
- Puts development organization/donor staff in proper role of “facilitator”
  - allows company to develop and define their own approach for developing or integrating ICT-based solutions



# Facilitating the Integration of ICT

- Development organizations provide cost-share support to company initiatives to integrate ICT solutions
- Principle of cost sharing support to companies is important:
  - ensures companies are committed and making substantial investment in their proposed initiatives
  - should support costs related to research and development, exposure visits, testing, training, etc.
  - *should not* support costs for company staff, working capital, or fixed assets
- Additional technical support by development org. can include:
  - access to ICT technical expertise
  - exposure to successful applications in other places
  - assistance to assess and analyze costs and benefits of new ICTs (e.g. question guides, business planning, etc.)
- Memorandums of Understanding (MOUs) used to structure collaboration with companies and describe all aspects of program support for company's ICT initiatives

# Summary



Outgrowing with Smallholders a Challenge



Growth of ICT in Africa Offers Solutions



Learning from Business Experiences: FACET  
Research

- Briefing Paper: [ICT-enabled Outgrowing Operations: Highlights from Africa](#)
- ICT Applications for Agricultural Outgrowing Operations:
  - [Armajaro's Input Tracking System](#)
  - [GeoTraceability](#)
  - [Tanga Fresh](#)
  - [Agrimanagr](#)
  - [CocoaLink](#)
  - [MojaCast](#)
  - [Parmalat](#)
  - [Dunavant](#)
- Additional USAID/FACET Resources: [www.ictforag.org](http://www.ictforag.org)
- [AFE's Manual for Facilitating Outgrowing Operations](#)
- Watch For : *USAID's Connected Farmer Alliance*

# Thank You!

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