



TECHNOSERVE
BUSINESS SOLUTIONS TO POVERTY

Leveraging SMS Technology to Create Transparency and Growth in Coffee Value Chains

JANUARY 14, 2014



Understanding the problem

Imagine a farmer-owned coffee wet mill operating in rural East Africa



Access to sufficient and timely working capital financing is perhaps the most critical success factor for a wet mill



Now let's think of a leading commercial bank lending in the region



It has extended working capital loans to 20 coffee wet mills

Its total exposure is US\$ 2 million

Between now and the end of the coffee processing and sale period, it can follow one of two strategies...

The loan officer's two options are...

Strategy 1: Continuously Monitor & Advise

Monitor cherry prices at
each wet mill

Monitor global coffee prices
and advise

Monitor how cash is being
spent on major cost centers

Monitor your collateral (i.e.,
parchment)

Strategy 2: Hope, Pray & Wait

Hope

Pray

Wait

While monitoring seems like the smarter choice, it is easier said than done

- **Wet mills are remote** – it costs time and money to physically visit each wet mill regularly.
- **Wet mills in many parts of EA are off grid** – books and financial records are paper-based since many wet mills may not have access to computers, electricity, internet, computer literacy.
- **Wet mills are complex businesses** – your bank analysts and lending officers may lack the in-depth expertise of the coffee market, and may not be able to assess performance metrics and detect risks early on.



So the bank chooses Strategy #2 and here's what happens...

First, the good news

The majority of wet mills are profitable and pay back their loans plus interest

And now, the bad news

The **global coffee market declined** over 50% since the beginning of 2013, eating into the profit margins of washing stations that didn't follow the market closely and adapted corresponding cherry price guidelines.

Some washing stations **spent too much**, resulting in losses.

10% of **collateral (i.e., dry parchment)** is **lost/stolen** – the theft is not noticed by the bank

Lack of accurate, timely and “smart” information exposes all market actors to risks and threatens the coffee sector

Market Needs

Cooperatives need capital

Lenders must monitor risk

Cooperatives need marketing services

Traders require accurate, updated stock data

Barriers

Remote businesses – site visits difficult and costly

Paper accounting books – difficult to share

No computers – high cost of hardware and training

Impact

Ineffective risk monitoring

Inability to target sales

Diminished output and profits

No price risk management



ICT to the rescue

TechnoServe partnered with market actors to provide a technology-based solution: SMS bookkeeping

Mobile Accounting and Stock Tracking

Paper-based bookkeeping

- Difficult to share
- Information delay
- No analytics
- Easy to falsify data at end of season



SMS bookkeeping

- Easy to share
- Information updated daily
- System analyzes performance metrics
- Historical data stored for review

SMS bookkeeping facilitate accurate, timely and “smart” information sharing to support all actors in the coffee industry

SMS Bookkeeping



Step 1:
Wet-mill
accountant
sends stock
and finance
data contained
in paper books
via SMS

Step 2:
System sends
accountant a
summary and
asks
accountant for
confirmation

Step 3:
Confirmed data is analyzed

Message is sent to
observers via SMS and
displayed to lenders and
service providers online

SMS bookkeeping's smart design capitalizes off of existing technology, making it scalable and flexible

Utilizes existing technology

- Accountants have mobile phones
- **No hardware costs**
- No high risk technology investment
- No need for costly hardware training

Scalable

- Low marginal cost to scale
- \$0.03 per message
- Reverse billing = **free for farmers**
- Low monthly hosting fee for ct.com

Flexible

- Messages displayed in English or local East African language
- Messages can be edited during season
- Cooperative leadership can be added as recipients or removed



Tailored to each user's needs...

Simple for Farmers

SMS interface

Confirmation, edit/undo
functions for accountant

Reports shared with wet-mill
observers

Targeted broadcast messages
based on wet-mill performance

Sophisticated for lenders and companies

Cloud-based online interface

Compliance data and editing
functions

Portfolio and Individual wet-mill
view

Performance Metrics Analyses

SMS bookkeeping requires accountants to send 1 daily message and 2 weekly messages



Daily Cherry Message

- Kilos cherry purchased
- Cash/credit spent on cherry
- Cash advanced to sites

Weekly Cash Message

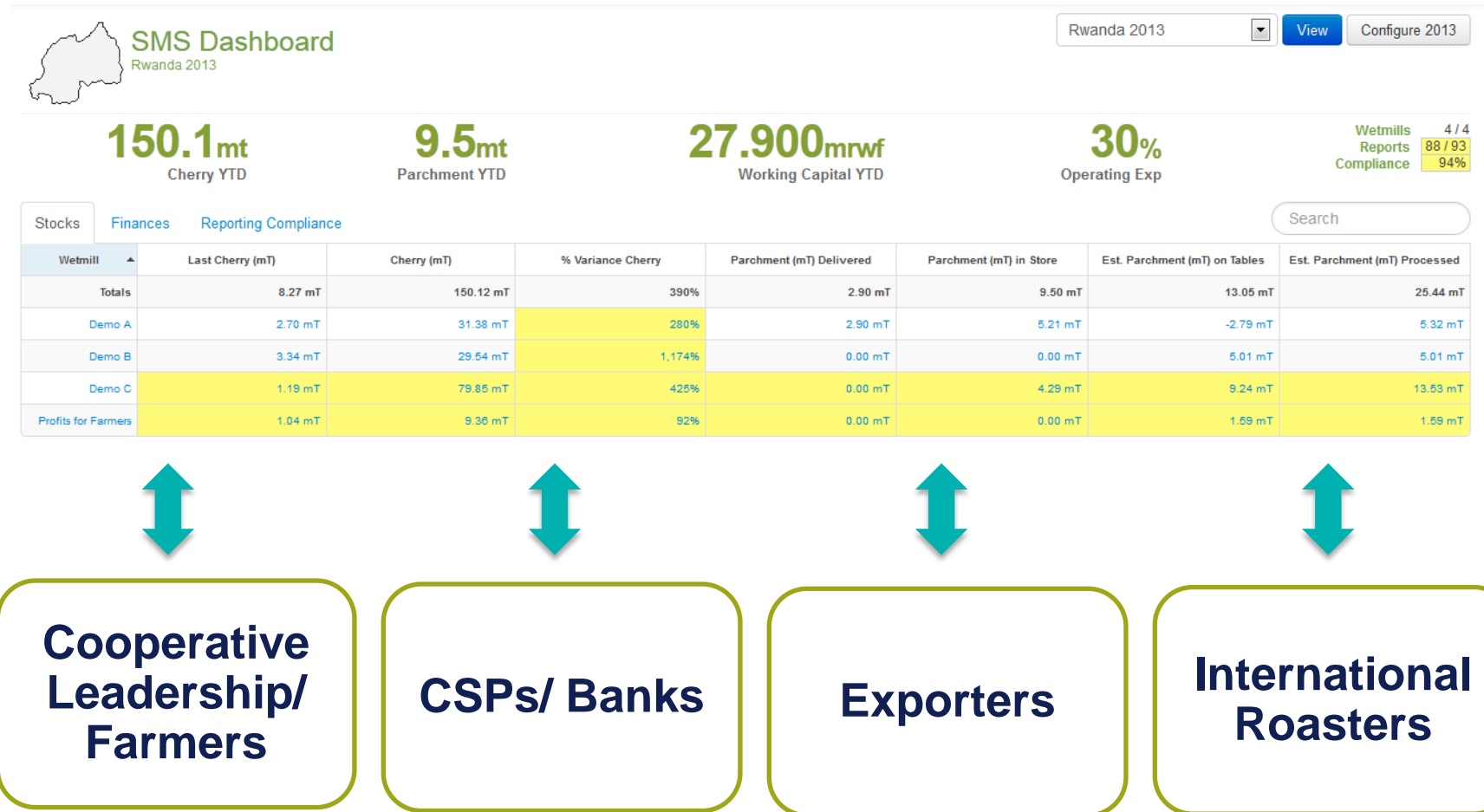
- Opening cash balance
- Working capital received
- Expenses (by cost center)

Weekly Stock Message

- Parchment moved to store
- Parchment shipped to dry mill



Data from the SMS is analyzed and shared with relevant parties (cooperative leaders, lenders, etc.)



Let's test it out

Let's test it out and see how it works...

- Step 1: Accountant and Observers register in their roles
- Step 2: Accountant sends cherry message
- Step 3: Accountant confirms message
- Step 4: Observers receive summary report

To register as an observer, send the following message to 3076:

obs [wet mill name] [your first name] [your last name]

Example: obs demo john smith



Here's what happened at YOUR washing station yesterday

- The accountant advanced 1,000,000 RWF to all site collectors
- No cash was returned by site collectors to the accountant
- The site collectors spent 74,400 RWF on purchasing cherries
- They didn't purchase any cherries on credit
- They purchased 620 kilograms of cherry in total
- Here's the message that the accountant sent at the end of the day or early the next day...

**ibitumbwe [cash advanced] [cash returned] [cash
spent] [credit] [kilos] [day.month]**

Ibitumbwe 1000000 0 74400 0 620 13.01

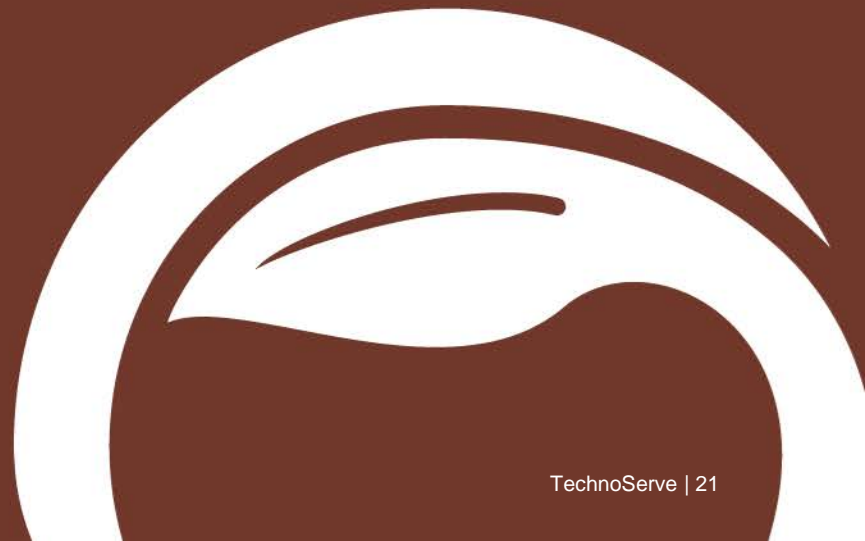


Let's look at the website....

- [Home Page](#)
- [Dashboard](#)
- [Demo Wet-mill Accounts](#)



Opportunities for scale and scope



SMS Bookkeeping has been successfully implemented – existing technology with massive potential in scope and scale

AFRICA



Implemented

Ethiopia

Tanzania

Rwanda

POTENTIAL FUTURE DEVELOPMENTS

- A. Increase coverage in countries, where SMS bookkeeping has already been implemented
- B. Include new countries in SMS bookkeeping
- C. Develop innovative transparency modules complementary to SMS bookkeeping – such as QR enabled traceability

CENTRAL AMERICA

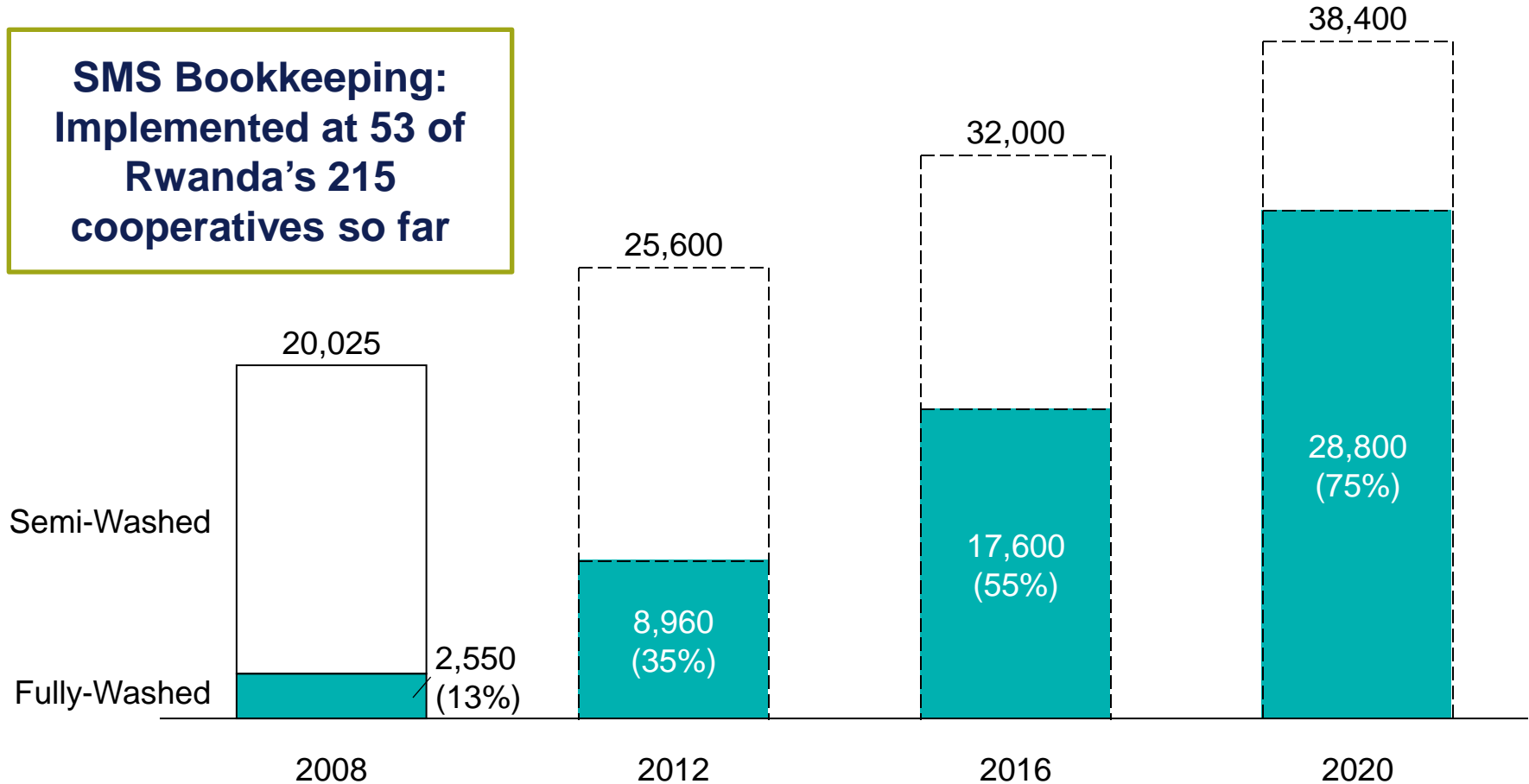


Implemented

Guatemala



A. Rwandan coffee washing stations will require over \$65 million in working capital financing to meet the country's fully washed export target



B. Given scalable technology used and coffee market structure, including new countries to SMS bookkeeping is easy

AFRICA

Implemented

Ethiopia

Tanzania

Rwanda

Potential

S.Sudan

Kenya

Uganda

CENTRAL AMERICA

Implemented

Guatemala

Potential

Honduras

Columbia

FACTORS OF SCALING

- SMS is ease to use, off the shelf technology, available in even the lowest income countries – low set-up and operating costs
- The SMS Bookkeeping system is flexibly designed to integrate new countries and languages
- TechnoServe has the gained sufficient experience to implement quickly and efficiently
- The coffee industry essentially operates in similar structures – only slight alterations may be needed, when adding a new country



C. Complementary modules to SMS bookkeeping such as QR enabled traceability increase the scaling potential

USE OF QR CODES IN GUATEMALA



Produce
coffee



Attached on
coffee bags



Scan at wet
mill

- **Pilot project** with two wet mills and 400 farmers
- **Transparency provided by SMS Bookkeeping is enriched by QR code** system at low cost – system allows to trace the coffee back to the producer
- The QR Code is scanned when coffee is delivered, capturing: delivery date, location, volume, price paid, etc. – e.g. allowing incentivize the farmers according to market movements



Voices from the industry

Rwanda Trading Company

Type - Exporter

Location - Rwanda, Kigali



USE OF SMS BOOKKEEPING

- Rwanda Trading Company is a CSP and also financing some wet mills
- Closely monitor the wet mills to obtain up-to-date stock and cash movement information
- In a falling market they were able to put up a hedge for the cooperative

EFFECTS

- Hedge earned approx 232 RWF/kilo or 16 cents/lb
- Without hedge, cooperatives would have made a loss

NIB International Bank

Type - Bank

Location - Ethiopia, Addis Ababa



“At NIB we closely monitor our cooperatives with the help of the SMS Bookkeeping system”

USE OF SMS BOOKKEEPING

- Cooperatives in ETH don't have any collateral – parchment is used, making close monitoring, also of world market paramount
- NIB monitors SMS bookkeeping on a daily basis and bases its distribution of working capital on the system

EFFECTS

- Improved understanding of coffee market's requirements and key metrics for bank
- Quicker access to more working capital
- Prevention of mismanagement and corruption



Thank you!

Any questions? Please get in touch.

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