

Case study:

Tracing coffee from the bush to the cup



Tanzania Coffee Board

The Tanzania Coffee Board was established in 1993 to regulate and monitor the activities of the domestic coffee industry, replacing an older agency called the Tanzania Coffee Marketing Board (TCMB). It serves to supervise, advise, coordinate and represent players along the entire coffee supply chain from the farmers to the buyers. For coffee business operators, it provides licenses and conducts coffee auctions on a weekly basis.



A coffee bush with ripe coffee beans

Boosting the coffee sector

The Tanzanian government has been working for over a decade to boost the coffee sector with a series of programs addressing quality, efficiency, communication and marketing. As a leader in this movement, the Tanzanian Coffee Board is implementing a modernized information system to ensure product tracking from the farm to the customer.

Tanzania is a small but significant producer of arabica and robusta coffee. Due to the ideal acidity levels and full flavour of Tanzanian coffee, the beans have been chosen for some

of the best blends in Japan, Europe and North America. Today, the country exports over 50,000 tons annually and represents 0.8% of global coffee production. Within Tanzania, the coffee industry provides income for over 7% of the population including 450,000 families spread over the countryside.

Despite the sector's economic importance, it has faced a number of challenges both at home and abroad in maintaining its market share. Between 1985 and 1994, coffee production declined and new competitors entered the coffee market, threatening Tanzania's position. At the same time, the coffee industry depended on a paper-based information system which exacerbated grading disputes and hindered modernization.

In 1993, the Tanzania government re-established the Tanzania Coffee Board (TCB) to oversee the coffee industry and to implement key improvements regarding coffee production and quality. However, information management has remained a hurdle.



A meeting of coffee farmers in Marangu

Since all of the production and trading records were stored in paper files, the board struggled to update and share key documents. Moreover, the board lacked a channel for identifying and communicating with all the disparate coffee producers. Even though quality assurance and yield statistics were primary concerns, it was difficult to track farms yields over time, share timely information or collaborate on long term improvements.

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Therefore the TCB made the strategic decision to work with a service provider called TraceSoft to implement an electronic information management system using

TraceTracker’s Global Traceability Network (GTNet). The main goals were **to ensure quality, improve communication between industry players, and provide assurance for customers through transparent product documentation.**

From paper to electronic traceability, challenges and solutions along the way

Bringing experience from the Ugandan coffee industry, TraceSoft was able to work efficiently, setting up a new information system for the TCB as a pilot project funded by UNIDO (United Nations Industrial Development Organization). The initial pilot aimed to demonstrate the feasibility of an electronic system which could then extend to the entire sector.

“The system is intended to improve business performance by allowing access to trade and export documentation online thereby enhancing the overall efficiency of the coffee industry,” explained Rosemary Amondi, the Managing Director of TraceSoft. “The system will also include SMS communications back to farmers on yields, which will improve farming interventions and provide accountability of payments due. In addition, it will capture information from all of the stakeholders including millers, cooperatives and farming locations,” she said.

As a first step, TraceSoft conducted a thorough analysis of the TCB’s existing paper-based system for tracking products. They carefully examined the efficiency of the system, the type of information that was collected and the needs of the players along



the production chain. "Luckily, the TCB already had a type of traceability system in place. So we were able to model the new system after it, and build improvements on top of what was already there," explained Amondi.

After the initial solution was proposed and approved, work began implementing tracking systems based on the TraceTracker's Global Traceability Network (GTNet).



Roasted coffee beans

The GTNet is an online, network platform that aggregates product information from every stage of the production and processing to create a complete product history for each unique package or trade item. Using the GTNet simply requires that suppliers have unique identification codes for each trade and the means to electronically capture data in a form that can be convert to XML.

Normally, players along a supply chain automatically upload product data files to the system in an XML format on a daily basis. These data files often include records of shipments, deliveries, process steps, quality data or documentation relating to individual trade units identified by codes such as bar

codes, lot numbers or RFID codes. Then, the GTNet matches the data from each identified raw material or trade unit to the final product that it is associated with, creating a full picture of the product history from the farm to the retail shelf.

With a simple web connection, supply chain partners can look up trade units and access dynamic charts of the complete product history. Customers can receive immediate responses to questions about production locations, methods and quality procedures. In addition, customized reports and quality documentations are available, as well information needed to monitor production and enact recalls.

For the milling stations and curing sites in Tanzania TraceSoft developed simple Axxess-based spreadsheets for entering data and uploading information to the GTNet. However, to use the spreadsheets the stations required additional support in the form of hardware and software. Many of the sites lacked basic hardware and internet connectivity. And, among those who could access the internet, the connections were highly unstable. Back at the TCB, additional needs were identified. Besides a product tracking system, a basic information system for transactions was needed.

Accordingly, the initial scope of the project was expanded to include the procurement of hardware and software for the curing sites, and a comprehensive information management system to interface with the GTNet. With approval and support from UNIDO and the TCB, the project moved forward.



One last challenge remained, the adoption at the production sites. While TraceSoft had the full support from the top management at the TCB, the workers at the curing and milling stations were accustomed to the paper based system. TraceSoft worked with the TCB to communicate the benefits of a new automated system and to train personnel as needed. IT staff from the TCB were also trained to manage, maintain and update the system.

After a testing period, the system was ready to launch in April of 2009. Both the ministry of agriculture and the TCB director accepted the final pilot results and issued a mandate that it should be implemented across the sector by all the industry players from the small farmers to the exporters.

Immediate benefits

At the end of the pilot phase the immediate benefits were clear. First and foremost replacing the paper-based system with an electronic one increased both the accuracy and speed of transactions. If a dispatch note is needed, the new system automatically creates the appropriate form and fills in standard, repeated content. Automatic

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calculations of weight and mass reduce administrative tasks which are prone to human errors.

As far as traceability information is concerned, the GTNet provides a common reference point for quality data, reducing conflicts and disputes. "This system will help us analyze yield and quality statistics by growing region so we can make improvements; allow Tanzania to engage in new marketing efforts differentiating its organic and specialty coffees; reduce costs in paper based transactions; and help us manage recalls incase of contamination anywhere along the value chain," said the Adolph Kumburu, the TCB Director General.

Looking ahead to complete roll out

Now that the pilot stage is complete, the TCB is looking ahead to the full rollout, which it will fund and support directly. Key to the success of the full implementation will be partnerships and alliances. The wider implementation will require a sustainable solution and TraceSoft intends to work with a communication company to install the appropriate hardware and software the 28 curing houses.

The complete rollout will also involve new elements including the management of export documentation and direct communication with all the industry players.



"In the past exporters travelled to the TCB to obtain needed export documents, but now they can easily download documentation from the web. And, for the first time the TCB will have a way to contact all of the growers,



Fresh Tanzanian coffee

producers and processors," said Amondi. "After the completion of an upcoming questionnaire and survey, each farmer will be given a unique identification number. Then the TCB can begin tracking quality and yield information on a farm by farm basis."

In addition, the final solution will open marketing opportunities for the Tanzanian coffee industry. The goal is to use the newly available quality and traceability information to promote Tanzanian coffee around the world. In this way the TCB will be able to help exporters differentiate their products, selling speciality coffees based on additional production information. Appearances at industry trade shows with demonstrations of the hardware and software are in the plans.

Coffee traceability for all of East Africa

The pilot has shown that the Tanzanian system can benefit other coffee growing countries in the region. UNIDO, TraceSoft and the TCB will host a series of regional workshops to present their findings to a wider audience.

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"The vision is that the Tanzanian case can serve as an example of best practices for improving the efficiency of coffee supply chains, standardizing traceability data and customizing the GTNet for their own purposes," said Amondi. "This is a key technology that can bring forward and promote the strengths of other countries."

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