# Growing Inclusive Markets
Business Works for Development ● Development Works for Business

**CASE STUDY**

**Sub-Saharan Africa • Ghana**

# Esoko Networks: facilitating agriculture through technology

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**Sector • Agriculture; ICT**
**Enterprise Class • MSME**

# Executive Summary

Esoko Networks owns and operates Esoko, a technology-based market information system (MIS) classified as agricultural informatics or e-agriculture. Esoko provides agricultural stakeholders like farmers and traders with market information such as prices, and a platform for advertising and negotiating buy/sell offers. For agricultural institutions like farmer associations, Esoko facilitates direct marketing campaigns using short messaging service (SMS).

Created in Ghana, Esoko is a multi-currency, multi-commodity, multi-market MIS developed to provide information on who has what to sell and where, developed for the Internet and mobile channels. On the Internet, Esoko provides pricing and buy/sell information to all users and serves as a platform for organisations that desire a presence on the World Wide Web. On the mobile telephone, Esoko registers members that have requested to receive SMS alerts of commodity market prices and offers to buy/sell.

Since it was developed in 2006, Esoko has evolved from a donor or NGO-financed project-based system to an independent commercial standalone system. As a project-based system, Esoko supported the goals and objectives of the funding agency/NGO with the inclusion of commodities of interest and the commodity price tracking; however, as these funded projects were often time-bound and short-lived, the long-term continuity and sustainability of Esoko, led to its transformation in 2008 from a project-based system to a standalone MIS capable of serving multiple markets and projects and commercial ventures in multiple countries. This flexibility makes Esoko adaptable by internationally funded projects, agricultural associations and communities and other participants in the agricultural value chain.

Developed in Accra, Ghana, by a team of local and international professionals for African markets, Esoko or 'markets' in Swahili, prides itself of its African origins.

# Introduction

> *"It's the perfect job: anthropology + technology + profitability and impact on peoples' lives."* Mark Davies, founder & CEO, Esoko Networks

Mark Davies reflected on the bold step he had taken in the transformation of TradeNet to Esoko, a standalone market information system (MIS). While TradeNet had been supported by projects usually funded by international development agencies, Esoko would be a commercially available MIS. As Mark mused at the various changes the business had undergone, he thought of the additional surprises that awaited his team.

After the 'four year pilot', Esoko was finally ready to be launched as a commercial, multi-country venture whose rollout was scheduled to be initiated in Ghana. In spite of this, Mark was still particularly concerned about the commercial viability of Esoko - an independent MIS application system for farmers, traders, and other stakeholders in the agriculture value chain. Given the considerable amount he had invested into this venture, he not only needed to demonstrate success as he had done in the past, but he also needed additional expansion funding to complete the business and product transformation.

Though well received by partner agencies/NGOs (see Graph 1 below for timeline), Mark could not help but wonder if Esoko could really be commercially viable as a standalone product. As he pondered on his consumers - farmers - that were perceived as one of the poorest in the world, Mark wondered if Esoko could really serve the needs of the farmers, its clients, and also sustainably produce a profit.

### Graph 1: Esoko Timeline
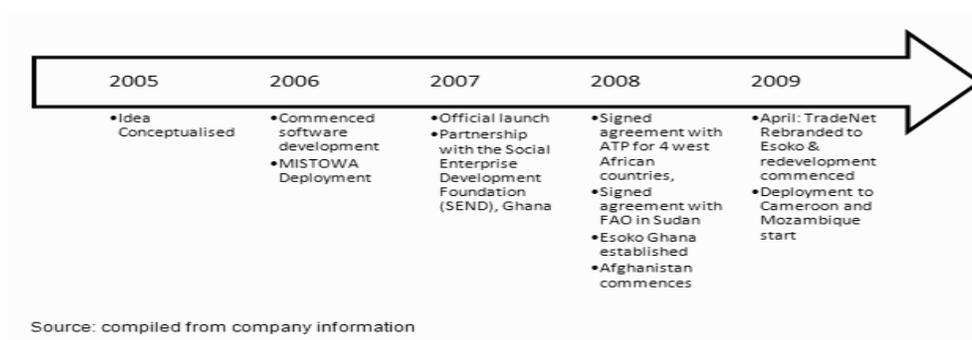
| 2005 | 2006 | 2007 | 2008 | 2009 |
|------|------|------|------|------|
| • Idea Conceptualised | • Commenced software development <br> • MISTOWA Deployment | • Official launch <br> • Partnership with the Social Enterprise Development Foundation (SEND), Ghana | • Signed agreement with ATP for 4 west African countries, <br> • Signed agreement with FAO in Sudan <br> • Esoko Ghana established <br> • Afghanistan commences | • April: TradeNet Rebranded to Esoko & redevelopment commenced <br> • Deployment to Cameroon and Mozambique start |

Source: compiled from company information

# Market Information Systems (MIS)

Esoko is amongst a growing number of MISs tagged 'agricultural informatics' developed to reduce transaction and information search costs and increase transparency in the agricultural value chain and thus increase the incomes of small-scale farmers.

**Graph 2: Agricultural value chain**

| Grow | Trade | Consumer |
|------|-------|----------|
| • Process of planting and harvesting produce | • Produce may be traded several times | |

Source: compiled from interviews

Farming, the primary source of livelihood of rural African dwellers, is often remote to the market exchange that occurs in urban markets. Whilst these distances often restrict farmers to their farms, they create multiple trading cycles that are controlled by middlemen or intermediaries referred to as buyers (when acting in their own capacity) or buyer agents (when acting on behalf of others), before the goods reach consumers (See Graph 2 on the next page for simplified illustration of agricultural value chain); and a scarcity of accurate and reliable market information. The net effect of these gaps results in inefficient markets with higher transaction costs, longer distribution cycles, and a lack of commercial farming due to the low returns. Prior to MIS's like Esoko, farmers were usually oblivious of market prices and this lack of information reduced their bargaining powers amongst buyers and buyer agents that took their produce to the markets and consumers.

Market Information Systems (MISs) were conceptualized to reduce information asymmetries in the agricultural value chain and empower farmers with up-to-date market information, direct access to markets (by eliminating intermediaries), higher incomes through their informed ability to negotiate trades, and ultimately develop commercialized farming activity.

MISs are public information services that gather and distribute commodity prices to farmers, traders, consumers, policy makers, etc. using various media technologies such as the mobile phone, Internet, or radio. Synonymous with agricultural markets, the application of MISs in agriculture has been widely supported as a mechanism to reach farmers on the continent; such that by mid-2009, at least 60 private project-based MISs were operational in Africa. These MIS's employ diverse mediums and channels like SMS, voice, interactive voice response (IVR), Internet, TV, email, multimedia, business centres, etc., and support information services that range from prices, and offers to platforms that share agriculture-related information like weather, pest infestations and general Q&A forums.

# About Esoko

Esoko was conceptualized as a single (public) market MIS operated by a centralised organization such as a government agency or other interested party that gathered and distributed market prices using the Internet and Global Systems for Mobile (GSM) that were gaining acceptance across Africa.

*"The idea was it would be MIS 1.0, it would be a single market, a big public market, with one set of data, one set of prices, driven and provided by a centralised institution like a ministry or outsourced by the ministry to another organization."* Mark Davies

In April 2009, due to the diverse nature of markets and needs of customers, TradeNet was upgraded and replaced with Esoko.

> *"We realised a number of critical lessons learned. One is there's not one market, there's thousands of markets, thousands of businesses and individuals that are trading with their own group of suppliers, their own distributors, with their own sets of prices, their own sets of offers; some of these may be public and some of these may be private. So there are lots of networks...."* Mark Davies

Esoko was designed and developed to make transaction chains and markets work better through the creation of access to markets for all stakeholders in the agricultural value chain. Thus, in essence, the Esoko MIS is a repository of current market prices, buy and sell offers, and contacts that are accessible through SMS and the Internet. Esoko serves to inform producers/sellers in the agriculture value chain with real-time market prices, commodity availabilities, buy/sell contacts, and personalized websites (See Annex 1 for Screenshots; Annex 2 for illustration of prospective user community; and Annex 3 for Summary of Esoko Services).

Using the mobile phone as a channel, pre-registered fee-paying subscribers receive up to 10 SMS text alerts monthly and uploaded buy/sell offers directly to the system. Esoko Ghana operates as a fully independent business entity that will develop local markets through subscription (bronze, silver, gold, and platinum) sales to individual and corporate customers. The bronze subscription fees charged to individuals for receipt of SMS alerts are used to offset the cost of SMS text messages charged by GSM operators in the country of operation (see Table 1 below).

**Table 1 : Esoko Ghana Subscription Tiers**

| Tier | Services Offered | Target | Annual Cost (USD/GHc) | # Licenses sold |
|------|------------------|--------|-----------------------|-----------------|
| Bronze | Mobile alerts of market prices and offers. Each subscriber receives an average of 10 SMSs per week | Individual farmer/trader | 36/56 | |
| Silver | SMS Push and Market sites | Small farmer associations with up to 200 member profiles | 250/360 | 5 |
| Gold | SMS Push, Market sites, Scout | Farmer associations/communities with 200 - 2000 member profiles | 1,500/2,148 | 7 |
| Platinum | SMS Push, Market sites, Scout | Unlimited member profiles | 8,000/11,454 | |

Source: company information

Farmers and traders who are the intended recipients of Esoko alerts are either registered through farm- or trade-based associations/communities that have acquired Esoko licenses or through Esoko agents in the local marketplaces.

In each country of deployment, mobile interconnect partnerships[1] with local GSM operators that defined the nature of the technical and commercial relationship were essential for the effective distribution of SMS text messages of prices, market alerts, etc. to subscriber phones. On the technical side, this interconnect agreement facilitated connectivity between Esoko systems and the SMS centres (SMSC) operated by the GSM Company for the automatic transmission of Esoko information by SMS. Because GSM telephony and SMS tariffs differed from country to country; the commercial side of the interconnect agreement documented the agreed transmission rates. For GSM operators, system-generated SMSs from systems such as Esoko produced a significant increase in SMS traffic over person-to-person SMSs that resulted in increased revenues. In Ghana for example, Esoko partners with MTN[2], the regional GSM operator with the highest subscriber base and coverage in Ghana. Under the terms of this agreement, Esoko computer systems are connected to the MTN SMSC using communications networks; and Esoko SMS alerts are charged below the average tariff of 0.045GHc (US$0.031).

On the Internet, all visitors to the Esoko website, www.esoko.com, have full access to the published market information. However, registration is mandatory for publishing rights online. The registration process requires user information (name, email), occupation/industry area (finance, processor, trader, etc.), and commodities of interest (see Annex 4 for commodities traded on Esoko). In addition to access to commodity information, registered users can post buy/sell offers, upload personal content, and thus create personalized

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[1] Commercial agreements on the carriage of SMS traffic over existing mobile networks.
[2] Out of 10.24 million subscribers, MTN accounts for 7.4 million. MTN is a regional operator doing business in 15 African countries.

MIS's. *"Anybody can create their own MIS on the platform and that's the beauty of what we hope Esoko will be. It will be defined and driven by the businesses, the consumers and the users,"* says Mark Davies.

## MARK DAVIES

Esoko was conceived through the efforts of Mark Davies, a 'dot com'[3] entrepreneur who, after having worked in the USA and UK, settled in Ghana. Mark was born in Cardiff, Wales in 1963 of British and South African parents. Educated in the United Kingdom, Mark obtained a degree in anthropology from Cambridge University after which he moved across the Atlantic.

Mark began his professional career in New York in 1986 where he worked in the publishing industry and ventured into technology and the Internet as a means through which publishing experiences could be extended. In 1995, he founded MetroBeat, a database-driven city guide, and then served as Vice President Product Development & Content with CitySearch. He moved back to England in 1998 and established First Tuesday, a social networking forum for technology entrepreneurs and companies seeking venture capital.

In 2000, driven by his passion for the African continent, Mark relocated to Accra, Ghana, in continuation of his entrepreneurial pursuits. Following his travels around Southern and Eastern Africa, Mark perceived the lack of entrepreneurial ventures on the continent as a 'crisis in financing', an anomaly in industrialized countries where bad ideas often received funding. This invigorated Mark's pursuit to contribute to entrepreneurial ventures on the continent.

Of all the African countries, Mark chose Ghana as it had a relative political and economic stability, as well as a high demand for advanced technology opportunities.[4] His choice of Ghana was affirmed when BusyInternet, Ghana's largest cybercafé with 100 personal computers (PCs) and business incubator, opened in the Ghanaian capital of Accra that same year. Mark continued his pursuits by establishing BusyLab, a software development company that built Esoko; Esoko Networks, the owner of Esoko; and Esoko Ghana, franchisee operation that distributes Esoko in Ghana (see Annex 5 for functional organization structure).

*"There is a bit of confusion with BusyLab who made the software; Esoko Networks who sells this thing; Esoko Ghana who is this thing in Ghana; and TradeNet who was."* Sarah Bartlett, Monitoring and Evaluation Team Lead

The origins of Esoko can be dated back to 2004 when Mark Davies, Founder and Chief Executive Officer of BusyLab was invited to Uganda under the auspices of the Food and

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[3] Dot.com entrepreneurs that evolved in the early 2000s were a group of entrepreneurs who developed internet businesses with venture capital funding.

[4] Ghana was one of the few African countries to participate in the global outsourcing trend.

Agriculture Organisation (FAO) to advise FoodNet - a Consultative Group on International Agricultural Research (CGIAR) initiative that focused on agri-business development like value chain analyses, market studies, market and marketing information, etc. - on software development practices in the development of an agriculture MIS. Motivated by his background in anthropology, his passion for technology and his moral compass, Mark's interest in this prospect was heightened by his perception of the marginalisation of the African farming community that employed about 60% of the population, yet lacked market information. Mark Davies explained, "*Agriculture is the market space where information is most poorly communicated that involves 60% of the population who make up some of the world's poorest. Big problem = big opportunities.*"

Mark recognised the business and market transformation opportunities presented by MIS's, but complete understanding of the current development efforts were not founded until he visited Uganda where he observed agricultural experts attempting to build software applications; a function he felt could be performed more effectively and at a lower cost by software development experts.

> "*For me it was a very obvious situation, agriculture projects were trying to build software and that was sort of a recipe for disaster. And I as a software person, and as a business person, I really thought that there was a great opportunity to build a product that would be cheaper for all of these programs and projects to use and better...Software companies build software and agriculture projects do capacity building or seed distribution; its different kind of skills for different companies.*" Mark Davies

## BUILDING ESOKO

TradeNet, the predecessor to Esoko, was conceptualised as a collaborative software development project with FoodNet in 2005. While FoodNet contributed industry knowledge of agricultural markets, Mark and his team of software developers in BusyLab designed and built the system.

BusyLab was a software development company founded by Mark Davies and located in Accra that specialised in the development of internet and mobile solutions. While Ghana had a high appetite for technology, most of the applications and software used in Ghana were imported; and this created a skill gap of experienced Information Technology (IT) personnel in non-programming activities.

> "*It is much more difficult for us to get experienced Information and Communications Technology (ICT) professionals who know how to do a needs assessment study; who know how to write a functional specification; who know*

*how to design interfaces because there's very little industry here. There's barely any software development industry at all."* Mark Davies

In spite of these skill gaps, BusyLab employed 23 ICT professionals who were infused with more experienced foreign workers.

Initial development financing was provided by Mark and Jim Forester, a US-based investor. After retiring from a distinguished career in Silicon Valley; of which 20 years were spent in Cisco Systems, Jim Forester, wanting to act on his belief that technology could be used to improve livelihoods in developing countries. Jim travelled for 2 years in search of notable projects and settled for Esoko and ApnaNet[5] in India. On Esoko he commented:

> *"I think the potential to transform value chains and market access through mobile is enormous and I believe this doesn't need to be about aid in the sense that we know it. Here's a local company building an innovative product to meet a local need and selling it in a profitable way. That's how I want to see Africa develop its own markets and capacities, and that's why I decided to support Esoko."* Jim Forester

## DISTRIBUTING ESOKO

Esoko was deployed using a business-to-business (B2B) model where it was funded by international agencies and NGOs and licensed to local business entities that either resold or relicensed subscriptions to farmers and traders (see Annex 6 for licensees and countries deployed). Using this approach, the partner development team of Esoko actively sought partnerships with international and regional agencies that funded agricultural projects. With the support of the development agencies, Esoko was guaranteed a market without additional marketing activities. For the international aid agencies and NGOs, Esoko offered a communication platform that correlated with their objectives and mandates to improve market information and trade. As described by Laura Drewett, Partner Director of Esoko Networks, *"A lot of NGOs are not software developers and that is our core competency. So why would they spend money and invest in building this software, hosting it and maintaining it when we can offer that to them."*

Another advantage of Esoko that was of importance to international trade agencies was its multi-currency operation that facilitated regional trade.

> *"There are not many other software applications that are standardized across many markets so that if you are a producer in Ghana, you can get a price in Burkina Faso on your mobile phone; and it is automatically translated from*

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[5] ApnaNet is an initiative that promotes internet culture by providing free homepages to Indians.

*CFA into Cedis because that is what you requested and that is what is relevant to you.*" Laura Drewett, Partner Director

One of such projects was the Market Information Systems and Traders' Organisations of West Africa (MISTOWA) project funded by the United States Agency for International Development (USAID) West Africa Mission (USAID/WA) in an effort to increase regional agricultural trade across West Africa. The programme selected Esoko (at the time called TradeNet) as the MIS platform to be implemented to facilitate the dissemination of market information. Targeted at all 15 West African countries, the MIS platform was initially deployed to track eight commodities (maize, rice, cassava, cattle, tomatoes, onions, Shea, and fertilizer) in six markets - Benin, Burkina Faso, Ghana, Mali, Nigeria, and Senegal.

The deployment under the MISTOWA programme was facilitated through Agribusiness Market Information Points (ABIPs) - business centres that assisted agricultural communities in commercial decision making and business management - that were established in collaboration with local farmer/trader partner entities. In addition to MIS operations, the programme provided capacity building skills in computer basics, market information management, and business management to designated managers; and grants in excess of US$1 million for ICT equipment (Internet connectivity, computers, etc). MISTOWA established over 150 ABIPs in West Africa, 20 of which were in Ghana.

Upon identification of deployment partners, effective implementation of Esoko lasted up to a year and involved three critical activities: 1) the development of an enumeration system that developed the local capacities required for the collection of market information; 2) depending on the deployment country, the formulation of an appropriate implementation business model through detailed market studies (see Annex 7 for operational business models); and 3) establishment of mobile interconnect agreements. These rollout activities were supported by the Esoko partner development team that trained partners in their daily use of Esoko and provided frequent coaching and assistance.

Through the MISTOWA programme, Esoko was deployed across West Africa and has since been implemented in other African countries and as far as Afghanistan. Although the MISTOWA project ended in September 2007, Esoko remains the MIS platform in the successful Agricultural and Trade Promotion (ATP) project in four West African countries - Burkina Faso, Côte d'Ivoire, Ghana, and Mali (see Exhibit 6 showing Partners, Countries and Markets).

In support of the projects, the communications team developed product collateral material such as product feature and how-to guides, tip sheets, etc for the operation of the system.

## COMMERCIALIZATION

In an effort to increase the reach of Esoko, a franchisee model targeting public sector, NGOs or private sector participants with interests in operating sustainable and commercially viable MISs, but lacking the technical capabilities and resources associated with software design and development, was established.

Under the franchise model, independent entities (franchisees) would acquire Esoko deployment licenses for the operation of independent market systems for a franchise license fees cost US$15,000 per annum. In return, franchisees are equipped with a franchisee toolkit with standardized material for franchisee business development of local Esoko operations - from market analysis to marketing presentations and collateral like flyers and brochures and enumeration processes (see Annex 8 for inventory of franchisee toolkit).

> "*What I think would drive this in the long term is a commercial interest; a service philosophy; a customer driven philosophy; so we have tried to develop a franchise model that presents it as a profitable business opportunity and we are looking to attract individuals, companies, organisations, partners in countries to do it that way.*" Mark Davies

While this concept is still under development, a pilot operation, Esoko Ghana, was established in 2008 and is being tested in Ghana. Esoko Ghana is a fully-owned subsidiary of Esoko Networks that will operate as a fully independent business entity that will develop local markets through subscription (bronze, silver, gold, and platinum) sales to individual and corporate customers (see Exhibit 6 for subscription details). Esoko Ghana's business comprises of four major activities - business management, monitoring and evaluation, enumeration, and marketing/business development. Mark Davies expressed, "*If we can demonstrate success, then we will have the operational approach to provide value to our partners and make them successful.*"

The marketing/business development function seeks local Esoko users; client support representatives assists customers with setup and administration; enumerators collect, verify, and publish market information; and the monitoring and evaluation assess the impact of Esoko.

Individual end-users of Esoko - farmers and market traders - are the target market group of Bronze subscriptions. The sale of bronze subscriptions is under the purview of information agents during their price collection exercises. In a pilot evaluation at a market in Accra, Nima market, more than 50% of the traders said they were willing to pay for Esoko.

Corporate users of Esoko are comprised of farmer/trade-based associations/cooperatives and other organised agro-communities, agro-allied businesses and service providers in the agriculture value chain. The corporate sales process commenced with a market segmentation

study using databases from institutions like the Ghana Export Promotion Council (GEPC) that resulted in the identification of registered exporters and trade specialists - likely Esoko users.

With a list of potential Esoko users, (estimated at about 100,000 businesses), Esoko began marketing activities through a series of interactive presentations that introduced the company and its features. In the course of these interactions, the Esoko specialists solicited information on current business operations of the prospective entity in a bid to match the product with the prospects operations. Where a match between the Esoko offerings and prospect operations was identified, the second stage of more formal and specific presentations commenced until the sale concluded. Depending on the number of individuals to be reached, Esoko sells corporate business subscriptions as silver, gold or platinum plans. In Ghana, a total of five silver and seven gold subscriptions have been sold.

Additional marketing and communications efforts that gave Esoko visibility were embarked upon through a vigorous marketing/public enlightenment campaign that ensured that the Esoko product featured on billboards, in the newspapers, etc (see sample flyer in Annex 9).

# Esoko Partners

Esoko operates a business-to-business model that has been made feasible through the involvement of partners that ranges from international development agencies/NGOs to the actual users (farmers, traders) of the MIS.

### INTERNATIONAL DEVELOPMENT AGENCIES

The enhancement and development of agricultural programmes in Africa depended on the involvement of international agencies that included USAID, the International Institute for Communication Development (IICD), The Manobi Development Foundation, etc. and Esoko was no exception. While the motivations that supported the deployment of MIS's varied across project/programme/agency, most focussed on improving market effectiveness - a core MIS feature. Esoko offered these time-bound projects/programmes shorter time to market in the deployment of MISs and supported agricultural extension programmes.

International development agencies such as USAID, with the Agriculture and Trade Promotion (ATP) project, funded the deployment and implementation of Esoko within the scope of their projects. Between 2004 and 2006, development costs were close to US$300,000 of which 50% was paid as license fees by the MISTOWA project. The funding usually included the development of local implementing partners (existing farmer/trade-based associations) with direct relationships to farmers and traders; and SMS mobile alerts to the farmers and traders.

## FARMERS ASSOCIATIONS/ORGANIZED COMMUNITIES

In contrast to the industrialized economies, open markets are still in majority in Africa. Whilst these markets seemed disorganised physically, they were well organised communities guided by elected executives and operating rules and regulations. Depending on their sizes, some of these organisations were clusters that fed into larger State or National entities. At their various levels, these entities partnered with international agencies and NGOs in the implementation of social, environmental, and economic programmes.

Using Esoko services such as SMS direct marketing, these organisations were prospective clients of Esoko silver and gold subscriptions; whilst their members were prospective bronze subscription customers. Under the MISTOWA programme, the Ghana Agricultural Producers and Traders Organization (GATPO) implemented the platform for improved communications.

> *"Before we came into partnership with MISTOWA and Tradenet we were using word of mouth for market information, but after we were introduced to the new software we were able to make our business more profitably than ever before."* Dorothy Quaye, Tomato trader and member of GAPTO, Ghana

Through its own direct marketing efforts, Esoko was adopted by 12 such organisations including the Social Enterprise Foundation of West Africa (SEND).

## BUYERS/BUYER AGENTS

In Africa, the agricultural value chains between producers and consumers are typically intermediated through middlemen otherwise known as buyers (when acting in their own capacity) or buyer agents (when acting on behalf of others). Although Esoko provides buyers direct access to market prices, sell offers from farmers and the ability to broadcast buy offers to a wider community of sellers/farmers, it also threatens buyer agents through the digital economy tenet - disintermediation; a concept that was yet to be confirmed in the use of Esoko. An instance of this is exemplified in the sourcing of vocanga, an exported African plant. Prior to Esoko, a buyer agent had to physically travel the country in search of vocanga collectors; however, one agent sought the assistance of the Agribusiness in Sustainable Natural African Plant Products (ASNAPP), originally a TradeNet partner that broadcast an SMS message to collectors. By this, the agent reduced the transaction chain from five people to three, reduced the collection cycle from 61 days to 29 and increased his revenue from 21% to 42%. These improved efficiencies in the sourcing of agricultural produce added further justification to the adoption of Esoko.

Although the reduction of trade transaction cycles and hand-offs made possible through Esoko had the potential for the disintermediation of middlemen, it also enabled them to access new trading partners and markets at reduced cost that shortened transaction cycles,
 *"Everybody is finding his place and also changing the way they see trading of the primary*

*commodity by using the producer,"* said Suzanne Ngo-Eyok, Partner Adviser to Esoko Networks.

Through usability feedback sessions with buyers/buyer agents, Esoko developed user-based filters that ensured that users specified and received relevant commodity, price, quantity/volume, and market information.

## ENUMERATION AGENTS

The local operation of Esoko provides jobs and income for the field enumeration agents that are separated from the Esoko team in Accra and employ low-quality (reliable and available) infrastructure that facilitates work. The 160-character limitation SMS messaging increases the difficulty in the remote operation and functionality of Esoko - only prices and offers are permitted for upload by SMS; and user profiles have to be registered using the web interface. In the upload of prices, a specific SMS format made up of market and commodity codes is mandatory (see Annex 13 for price upload mechanism)

## SELLERS

Farmers and traders engaged in the wholesale and retail of commodities were the main benefactors of the pricing information and offers aggregated by Esoko. With the low literacy levels in Africa, especially amongst the uneducated farmers, the text-based nature of Esoko posed a threat to its success. However, the overall benefits of Esoko outweighed this limitation where farmers still preferred receiving the information directly as opposed to sending scouts to various markets for prices.

> *"We can better compare prices. Before MISTOWA, we used to send somebody to check the prices and come back to inform us. Now, it is better with MISTOWA. We compare prices at different national and regional markets from Lagos and then we decide of where we should go."*
> James Salami, Trader, Mile 12 International Market, Lagos, Nigeria

The mobile alerts provide this group access to new markets and information across markets and commodities. *"Thanks to the mobile aspect of TradeNet, I am now able to use my cellular phone to find the best prices, buy and even track the movement of tomatoes I usually purchase from the rural areas,"* said Elizabeth Arhinful, trader and at the Agbogbloshie market in Accra, Ghana.

In some instances, farmers have acted on this market information and successfully increased their margins. This was the case of yam farmer, Jonathan Abudu, a participant in the SEND West Africa market information project who was offered GHc 56 (US$39) for 100 yam tubers by traders. However, by transporting the yams to Kumasi market, Mr. Abudu gained an extra GHc 168 (US$118) for the same yams.

## MOBILE OPERATORS

Telecommunications companies provided the necessary infrastructure that delivered the SMS alerts at the heart of Esoko. The deployment of systems like Esoko that distributed about 10 alerts monthly, represented increased traffic, revenue and utilization of deployed telecom equipment.

# Constraints

The development and implementation of Esoko was not without its challenges. While Mark reminisces on the progress they have made, he is also humble enough to admit that improvements to make the system easier are still necessary.

## ACCESS TO INFORMATION

One of the greatest challenges of market information systems is access to reliable and timely information. Although Esoko had been conceptualised on the assumption that farmers and traders utilized market data that originated from a central source like a Government-operated MIS, this myth was soon broken through interactions with farmers who perceived Government data as inaccurate and stale due to the paper-based mechanisms employed in their collation and dissemination, had more trust in the informal information available. Mark Davies explained, *"Most of the people in the market told us consistently from the start that they never trusted Government data. That they felt Government data was very difficult to access if it did exist; and that it was frequently inaccurate and the best data they could get was from themselves and from their traders."*

In order to overcome this critical success factor of the MIS, an enumeration process (See Annex 13) to acquire market information was built. However, this operation had coverage limitations. The resources required for effective enumeration have adverse effects on the growth capabilities of Esoko. Esoko Ghana currently employs 58 agents (27 information agents and 31 market agents) collecting prices of 60 commodities in 31 local markets. Under the guidance of an enumeration manager, information and market agents gather and verify market information respectively. With the deployment of social networking technologies, it is anticipated that enumeration can be any users' responsibility.

## ACCESS TO CONSUMERS

As a B2B product, Esoko was relatively unknown to consumers that were not involved in any project-led initiatives. Thus to assess the commercial viability of the product upon termination of the MISTOWA programme in Ghana, the Esoko team launched a pilot programme for traders in a popular Accra market, the Nima market. With the assistance of a market representative employed and resident in the market, over 200 traders were registered to receive SMS alerts. With this, Esoko is building direct relationships with consumers whilst learning about the development of retail strategies and trust-based issues relating to buy/sell offers supported by Esoko.

>    *"There were so many people getting these offers to buy and sell and it became this whole issue surrounding trust and they were saying 'how do I know that I can trust this person?' And it makes sense, you're not going to send someone your money if you don't know them and they're not going to send you the goods if they don't know you. So they started saying is there some sort of brokerage service, do you promise me that this person is going to work for us and he's going to send me the money. And we realized that its either you put one person in each market or you had to work through associations or businesses that people already trust."*
>    Sarah Bartlett, Monitoring and Evaluation Team Lead

Whilst this approach is successful for traders who are directly accessible in the markets, it poses challenges for direct access to farmers, in their rural communities where the most likely means of direct access is through community associations.

## TECHNOLOGY CHANGES

Whilst Mark and his team learned about African markets, technology advancements like social networking and Web 2.0 that led to the explosion of user-generated content using blogs, etc, were just emerging offering better development opportunities for Esoko.

>    *"As we better understood the markets and began to witness some of the ways in which technology was evolving with social networks like Facebook and where we saw more user-generated content, I think that's how we began to understand how we could use technology, how we can have many more stakeholders involved in providing content than maybe just a centralised Government or ministry. And you can find a creative form of competition that everybody could put content in and let the consumers choose and elect by filtering what they trust and what they wanted and that would create the kind of accountability."* Mark Davies

The actualisation of all these plans requires the funding of software technology, business expansion and impact assessment that is estimated to cost up to US$3.5 million. Mark has entered into preliminary discussions with the International Finance Corporation (IFC), the private sector arm of the World Bank, for equity investment of US$1.6 million that is yet to be concluded. The involvement of the IFC posed to increase the limited investment levels in Ghana's IT sector and the reputation of Esoko.

## ILLITERACY

While the population served by Esoko - farmers and traders - were mostly illiterate, the text-based nature of Esoko was somewhat limiting to the illiterate farming public. However, the mode of distribution of market information still had some appeal to farmers who appreciated

the ability to retain SMS messages for future reference. As Mark discusses his interactions with farmers in Northern Ghana, he realizes that such uses of Esoko could only be conceptualised from frequent usage.

"*I was amongst a group of 40 farmers in the North of Ghana, asking them a whole range of questions and feedback and so forth. And I said, a lot of people tell me that there's an issue with literacy and that these MIS systems with SMS won't work because they are written down. Is that true and would you like the phone to speak the message to you each week...If it rang and it spoke the price? And they said "Oh no!" And I said really, why not! And they said "oh then it won't be written down". And I said well that's the whole point. "But we need it to be written down because we check the previous weeks SMS to see the prices and we can then analyze the trends in the markets..."* Mark Davies

## TECHNOLOGY ACCESS & AWARENESS

While Esoko's direct marketing and website services target associations such as small farmer communities, access to IT systems (PCs and Internet connectivity) and knowledge are somewhat prohibitive to these entities. Where programmes like MISTOWA made allowances for this with the inclusion of office equipment and capacity building; Esoko Ghana client support team will provide the necessary assistance to small organisations in the establishment of their market places. On the consumer side, low levels of technology (mobile phone) usage awareness in countries like Burkina Faso and Mali and the weak market acceptance of the these tools are inhibitors to the reach of Esoko. Strategies such as extensive training and the engagement of market and community leaders are part of the actions taken by Esoko to improve mobile awareness and market acceptance.

## TELECOMS INFRASTRUCTURE

The telecom-based deployment of Esoko is fraught with challenges such as limited mobile coverage and poor quality of service that vary from country to country. However, Esoko has no impact on the improvement of mobile operations in the various countries it operates.

## IMPACT EVALUATION

As a project-based implementation, the responsibility of monitoring and evaluation (M&E) belongs to the implementing partner. However, to further develop the business case for Esoko as a commercially viable MIS, the need for independent M&E assessment is necessary. To address this and develop more comprehensive understanding of the impact to farmers and traders, an M&E unit was established. Using Ghana as its pilot, the M&E unit is to develop assessment tools that would be tested with local farmers and traders over two harvest cycles. Impact indicators to be measured include access, use and knowledge of technology; trading & growing information such as trading partners and markets; and livelihood questions such as family size, living conditions - house type, tin/thatch roof, access flush toilet, etc. Whilst the

Esoko team has broadly defined the impact measures, grant funds and academic partnerships are also being considered for the development of robust M&E framework.

# Rewards and Successes of Esoko

With Esoko, farmers obtain accurate pricing updates that improve decision making, negotiation and increase incomes; buyers reduce their risks as a result of the system's transparency and predictability; and associations and business entities broadcast and receive information to their respective communities in the marketplace. Esoko also brought recognition and acclaim to Africa through numerous international media coverage such as a featured segment on the CNN 'Inside Africa' programme and a 2007 feature in The Economist business periodical. In addition, Esoko was a recipient of the 2009 UN World Summit Award (WSA) for E-Content and Creativity (e-inclusion and participation category), a global initiative that selects and promotes the best e-content and innovative use of ICT applications.

## ECONOMIC AND SOCIAL IMPACTS

In the absence of an independent M&E programme, the Esoko team has been unable to assess the direct impact of Esoko on farmers trade; however, as of July 2007, over US$51 million in transactions had been attributed to the MISTOWA programme; of which 31% or US$15.90 were as a result of access to TradeNet. Currently, the Esoko platform has registered over 14,000 contacts (users of Esoko), 847,000 prices, 517 trade groups, and 480 markets.

For the farmers, Esoko benefits included increased trade through access to markets that ultimately resulted in increased business, information empowerment that improved the farmers' ability to negotiate and reduced risk.

> *"Ever since we started using TradeNet services, particularly SMS alerts, our business has continued to grow. On February 28, 2006 our association concluded a trade for 20 tons of shea butter, valued at CFA 5,000,000 with Madame Aissata Bah of Senegal, and that is only one of several deals we have been able to conclude so far."* Issa Keita, President of AMEPROC, Association of Malian Exporters in Agricultural Products, Bamako, Mali

The information gathered and distributed by Esoko empowers farmers/growers in the negotiation process that shifted the power equilibrium from buyers back to the farmers. Mme N'cho a vegetable producer from Alépé, Ivory Coast described, *"I check price information on the TradeNet every day. Now I know that the 500 CFA/25kg sac of aubergine that itinerant traders offer us is far below the CFA 3,000 I can get in Abidjan"*.

With the ready availability of access to current market prices, farmers willingly shunned buyers who visit their communities and offer low market prices. An example of this is the

case of Kujo Asumah, a groundnut farmer in Tamale, Northern Ghana who was registered to receive mobile price alerts through his producer cooperative (SEND)[6]. A prospective buyer had offered Kujo GHc320 (US$225) for his crop which he knew was traded at a higher price in Accra 700 km away. Kujo transported his crop to Accra and took the risk, eliminated the intermediaries and earned GHc672 (US$473).

Another form of empowerment attributed to Esoko information is the reduced influence of information brokers who have formed strong market cartels.

> *"TradeNet liberates us from dictates of the 'queen mothers'—spokespersons for women in West African markets," "Queen mothers regulate the availability of commodities, and decide which trader groups go to the hinterlands each week to buy what, to sell where, and at what price. The queen mothers often hold the information and power. But now we use our mobile phones to get the information we need on prices and products—and make our own decisions."*
> Comfort Quarshie, Yam wholesaler and GAPTO member, Ghana.

Esoko's ability to provide market information also reduced risk of loss through spoilage of goods in the search of suitable markets.

> *"Before, I would spend time and money to take goods to a market—only to realize that I had to sell at a loss because prices had gone bad. Now I use my mobile phone to find buyers as my crops ripen. And there are lots of interesting partners out there. Some will even send their own trucks to pick up the goods."* Akuffo Kofi, Member of GAPTO, Ghana

On the whole, the trade benefits facilitated by Esoko have increased the incomes of traders, farmers and their dependents.

> *"When I heard about MISTOWA training I was very reluctant. Another training, what for? I could not imagine that my life could have changed so drastically. Now, with my mobile phone I can check prices on several markets. Then I text the current prices to potential buyers saying that I am willing to sell at a discount price. And it works! With what I (now) earn I can support three of my children who are pursuing their university degree."*
> Usu Phoebe Mbasounn, Member of the Dawanau Market Development Association in Kano, Nigeria

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[6] SEND is one of the 24 farmer communities supported by the Eastern Corridor Agro-Market Information Centre (ECAMIC) an IICD project in Ghana. In addition to paying for Esoko licenses, the project also facilitated the procurement and distribution of mobile phones to farm families (IICD supported programme: Eastern Corridor Agro-Market Project- Ghana ).

Through his ventures in Accra, Mark provides high-tech job opportunities to a total of 75 employees - 12 in Esoko Networks, 40 in Esoko Ghana, and 23 in BusyLab. In addition to technical jobs, Esoko, under the franchise model, also provides entrepreneurship opportunities that could stimulate economic development across the continent. With a foot print in 8 countries, Esoko is yet to be scaled up into the multi-country, multi-currency, multi-product platform that it was designed to be. Esoko's goal within the next five years is to reach profitability and cover 32 countries.

### ENVIRONMENTAL IMPACTS

Primarily developed to improve the livelihoods of farmers and traders, Esoko had no direct environmental benefits, but some indirect impacts include the reduced use of transportation in search of markets and prices.

> "*There are many second level impacts that you can talk about because I think information cuts across. I'm sure people will be sending out wedding and death notices on the SMS. I think that they will be saving fuel costs and not in adding to the pollution, with transport, we'll be able to allow people to find trucks that are moving back and forth and reduce the number of trucks. So indirectly the impacts on the environment could be significant because you're just making markets work more efficiently....but it's very hard to guess what that would be at this stage.*" Mark Davies

# Looking Ahead

With the official launch and transition from TradeNet to Esoko, Mark acknowledged that while they had taken appropriate actions to support the independent deployment of Esoko, completion of the expansion that involved additional software development that incorporated social networking structures; the success of the franchisee model that distributed/marketed the product profitably; and monitoring and evaluation that measured the direct impact to farmers and traders were of concern.

> "*The challenge for this business is strictly: are you able to get usable information into the hands of people that need it? Because if you can, then we know that there is going to be impact and we know that we will be able to measure it and be able to make money out of it. The question is whether you can deliver that? That is the biggest challenge. We have seen that we can do it but whether we can scale it and expand it and do more of it, I think will tell us with this new platform and the funding that we need to keep doing it.*"

Mark Davies

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# Annex

## Annex 1: Esoko Screen Shots



ATP West Africa MIS displaying commodities, offers, contacts, news



MIS page on White corn showing price trends

*(Source: www.tradenet.biz)*

**Annex 2: User Community**
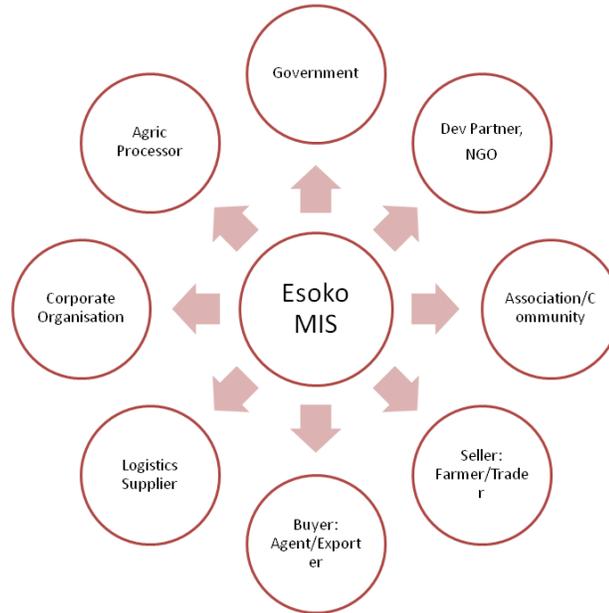


*(Source: compiled from interviews)*

**Annex 3: Summary of Esoko Services**

| Service | Description | Target | Distribution channel: S (SMS) I (Internet) |
|---|---|---|---|
| Mobile Alert | SMS text alerts of prices and offers despatched to subscribers based on defined preferences | Individual farmer/trader/buyer | S |
| Direct Marketing | An SMS-based direct marketing platform available to business subscribers to facilitate information sharing | Farming/Trade Association/Community | I & S |
| Scout | Applications that can be used to build polls by providing participants in the field send information back. This application can facilitate Q&A and other services. | Farming/Trade Association/Community, FMCG | I & S |
| Market sites | A promotional website for business subscribers. This is especially useful for those entities desirous of a web presence but lack the resources | Farming/Trade Association/Community | I |
| Prices | A historical collection of market-based commodity process | Individual farmer/trader/buyer | I |
| Buy/Sell Offers | Offers are user generated notifications/solicitations for products available for sale or purchase respectively. Esoko is a repository of buy/sell offers | Individual farmer/trader/buyer | I & S |
| News & Library | A general information area for sharing/distribution of any type of multimedia content | All | I |

*(Source: company information)*

## Annex 4: Commodities traded on Esoko

| Cereals | Pineapples | Roots & Tubers | Spices | Vegetables |
|---------|-----------|----------------|--------|------------|
| Maize | Passion Fruit | Cassava | Annatto | Cabbages |
| Millet | Prosposis | Potato | Black pepper | Carrots |
| Rice | Hides & Skins | Sweet potatoes | Ginger | Cauliflowers |
| Sorghum | Cattle hides | Yam | Grains of paradise | Chillies & Peppers |
| Wheat | Goat skins | Macabo Tubers | cloves | Corn |
| Fonio | Live animal products | cocoyam (taro) | coriander | Cucumbers & Gerkins |
| Oats | Milk | Seeds | salt | Garlic |
| Barley | Eggs | cabbage seeds | vanilla | Lettuce |
| Fertilizers | Honey | carrot seeds | Stimulants & Medicinals | Melons |
| Complex fertilizers | White Cheese (Cow's Milk) | cauliflower seeds | Hibiscus | Okra |
| Nitrogeneous fertilizers | Livestock | chillie & pepper seeds | clove extract | Onions & Shallots |
| Phosphate fertilizers | Bull | cotton seeds | cocoa | Tomato |
| Potash fertilizers | Cattle | cucumber seeds | coffee | Watermelons |
| Fibres | Goat | egg plant seeds | griffonia | Green beans |
| Jute | Sheep | green bean seeds | honeybush | beet |
| Seed Cotton | Camel | groundnut seeds | kola nuts | courgette |
| Silk | Chicken | lettuce seeds | mahogany bark | eggplant |
| Fish | Grasscutter | maize seeds | moringa | Pulses |
| Perches | Guineafowl | melon seeds | mucuna | Beans |
| Catfish | Pig | millet seeds | niaouli leaves | Cowpea |
| Smoked Fish | Nuts | okra seeds | rauvolfia | Peas |
| Tilapia | Cashew | onion & shallot seeds | voacanga | Bambara beans |
| Fruits | Tiger Nut | potato seeds | Sugar crops & sweeteners | Chickpeas |
| Apples | Oil-bearing crops | rice seeds | gum arabic | Lentils |
| Avocados | Coconuts | sorghum seeds | sugarcane | Pigeon peas |
| Banana | Groundnuts | tomato seeds | sweet berry | |
| Berries | Oil palm fruits | watermelon seeds | thaumatococcus | |
| Cashew | Shea | Slaughtered animal prods | Tobacco & rubbers | |
| Grapefruits | Allanblackia | Beef meat | rubber | |
| Grapes | Kombo | Sheep meat | Vegetable & animal oils | |
| Lemons & Limes | Olives | camel meat | Olive oil | |
| Mangoes | Sesame | chicken meat | dried okra | |
| Oranges | Soya Bean | goat meat | palm kernel oil | |
| Papayas | Sunflower | pig liver | palm oil (red) | |

*(Source: www.tradenet.biz)*

## Annex 5: Esoko Functional Organization Structure
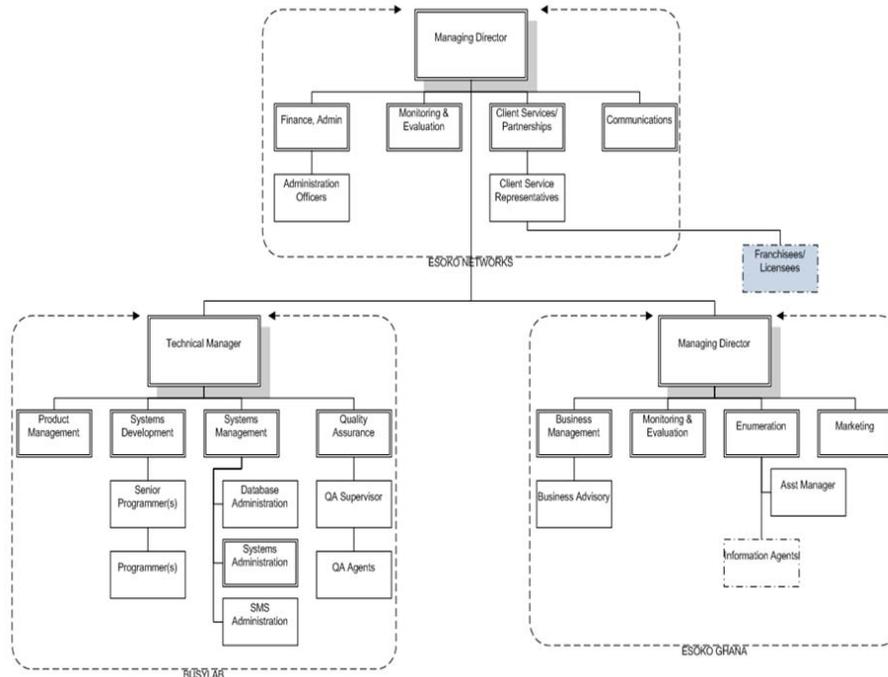


*(Source: company documentation)*

## Annex 6: Esoko Partner Location Map

| Country | Partner/Project | No. of markets |
|---|---|---|
| Afghanistan | | 3 |
| Burkina Faso | MISTOWA => ATP West Africa implemented by Association pour la Promotion de la Sécurité et de la Souveraineté Alimentaires au Burkina (APROSA-Afrique Verte) | 37 |
| Benin | MISTOWA | 32 |
| Cameroon | PNDRT and IFAD | 41 |
| Cote dÍvorie | MISTOWA => ATP West Africa implemented by the National Association of Agricultural Producer Organizations of Cote d'Ivoire (ANOPAC) | 95 |
| Ghana | MISTOWA => ATP West Africa<br>SEND West Africa | 60 |
| Madagascar | Millennium Challenge Account (MCA) and Chemonics | 50 |
| Mail | MISTOWA => ATP West Africa implemented by L'Association Malienne pour la Sécurité et la Souveraineté Alimentaires (AMASSA-Afrique Verte) | 38 |
| Mozambique | Technoserve | 47 |
| Nigeria | MISTOWA | |
| Senegal | MISTOWA | 43 |
| Sudan | FAO | 29 |
| Togo | | 21 |

*(Source: company information and www.tradenet.biz)*

**Annex 7: Franchisee/Partnership Models**
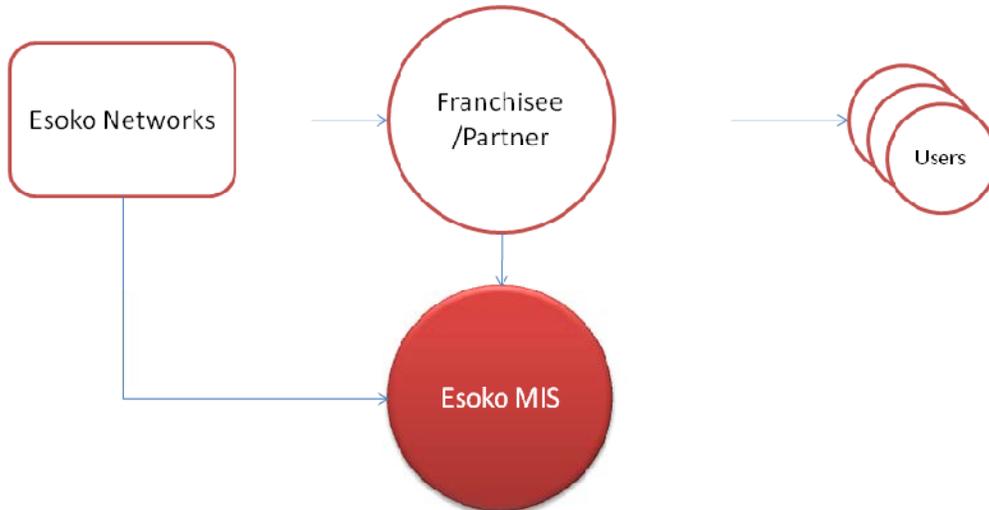


Under the standard franchisee model, the franchise operator/partner is responsible for the establishment, distribution management and operation of the MIS. Royalties for subscriptions sold are returned to Esoko Networks.
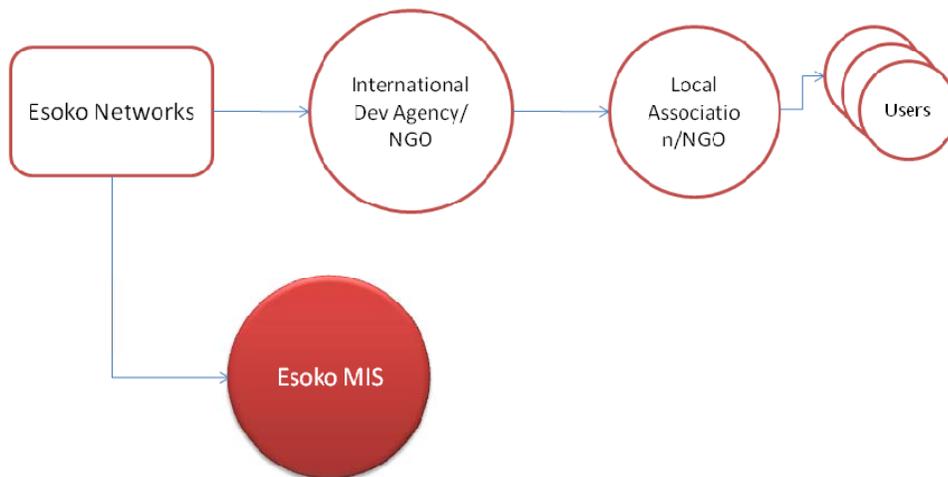


This variant of the franchise model has a local association/agency as the implementation partner whilst all license subscriptions are funded by an International development agency/NGO. Local implementation partners are charged with the establishment, distribution and management of the MIS.
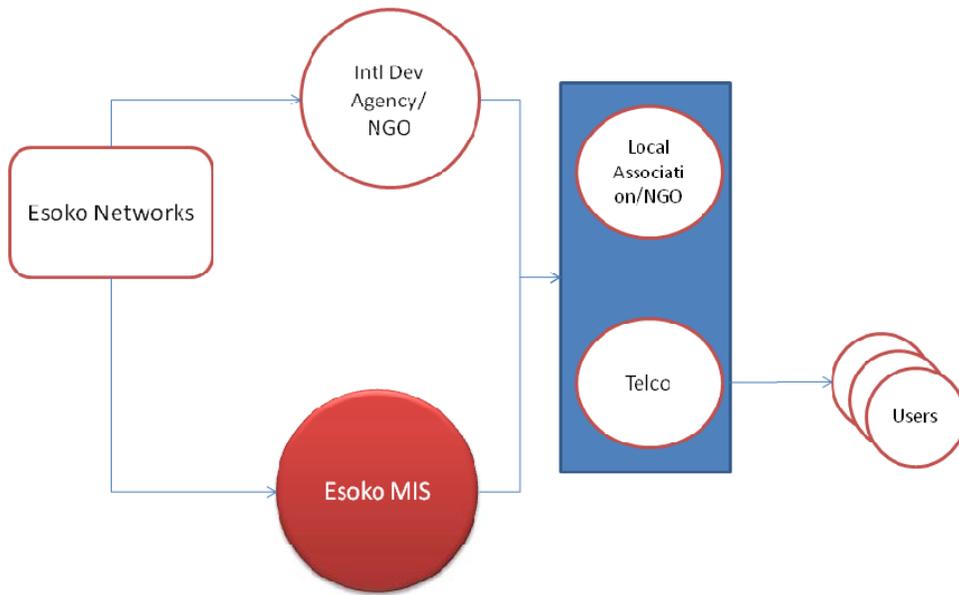
In this variant, the MIS management functions are managed by separate entities. Deployed in Afghanistan, the MIS operations functions are managed by a local NGO whilst enumeration and sales are managed by a Telco.

*(Source: compiled from interviews)*

**Annex 8: Esoko Franchisee Toolkit Inventory**
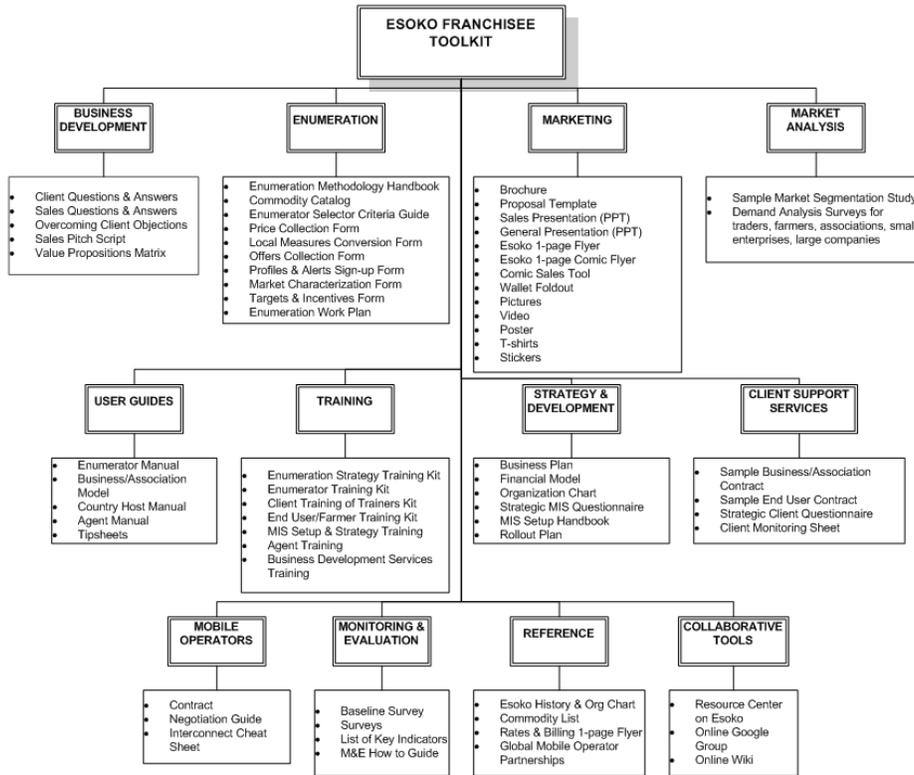


*(Source: company information)*

### Annex 9: Esoko Marketing Flyer



*(Source: Company information)*

**Annex 10: The Enumeration System**

In an effort to obtain reliable market information that is both timely and accurate, Esoko also developed a mobile-based enumeration process that facilitated the population of the MIS with market information from the field. The enumeration process employed the skills of enumeration managers (resident in Esoko offices), information and market agents. Information agents were part-time Esoko staff who visited the markets on market days for commodity prices; market agents were traders in the market that validated the information gathered by the information agents.

Figure 1: Communication Lines in the Enumaration Process

```
        ┌──────────────────┐
        │   Enumeration    │
        │      team        │
        └──────────────────┘
         ↗ weekly prices    ↘ validated prices
┌──────────────────┐   ┌──────────────────┐
│   Information     │   │     Market       │
│      agent        │   │      agent       │
└──────────────────┘   └──────────────────┘
```
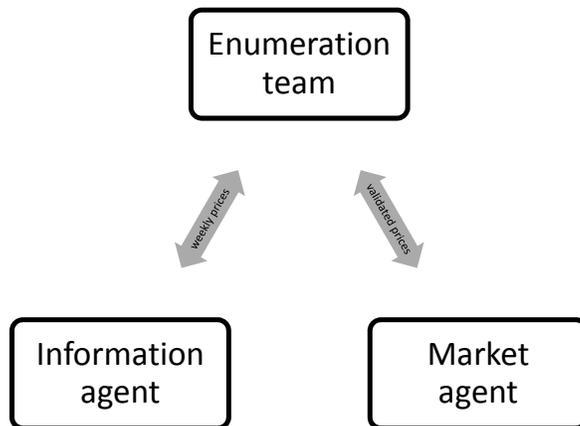
*Enumeration Resources*

Information agents are recruited from the local community in the vicinity of the markets. Information agents collect market prices, buy/sell offers from traders. In addition, they serve as Esoko marketing ambassadors and register traders to receive SMS alerts and built trust in Esoko buy/sell offers by providing brokerage services that intermediated between buyers and sellers.

The enumeration manager is responsible for all agent recruitments. Depending on the location of the markets, through community members, the enumeration manager usually seeks technology aware members of the community such as ICT teachers, etc. Market agents, on the other hand, are informally recruited during market visits. Where there is no mechanism for this process, the enumeration manager usually selects traders who have exhibited some curiosity about the product during interactions in the marketplace.

**COMPENSATION**

The compensation of information agents forms a large part of the operating expenditure of the Esoko franchise. It includes a base salary of GHc25 (USD 16) and is complemented variable performance-based earnings and an incentive of GHc15 ($10.5) on exceeding set targets. The average take home for information agents is about GHc 70 (USD 50). For services rendered, market agents are compensated with monthly call credit for their telephones.

## Process Flow

Table 1: Incentive Structure for Information Agents

| Information Category | Compensation per Unit | Monthly targets |
|---|---|---|
| Commodity Price | 10ps[7] ($0.07) | 160 (40/week) |
| Offer (Buy/Sell) | 30ps ($0.21) | 20 |
| User Registration Profile | 40ps ($0.28) | 30 |

**Figure 1: Enumeration Process Flow**
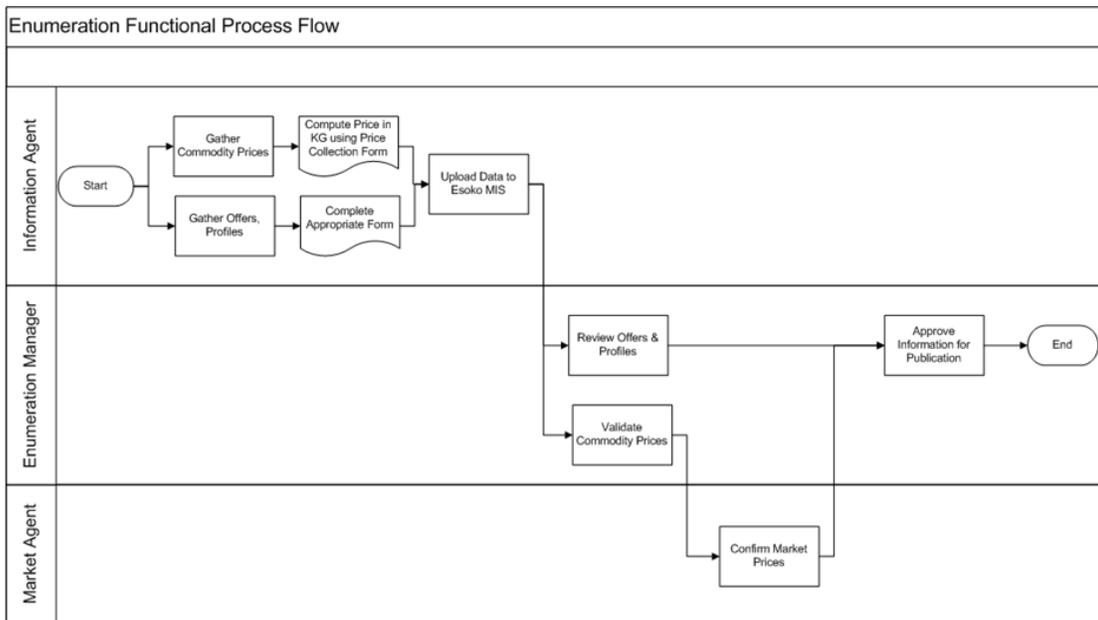


The enumeration process is initiated by information agents on the market day. After gathering commodity prices, etc from traders in the open market, the information agent computes prices in standard measures such kilograms using a price collection form (included in franchise toolkit). This information is then uploaded to the Esoko system using SMS text codes.

---

[7] 100 pesewas = 1GHC

**Figure 1: Sample SMS Price Upload**



This SMS transmits 4 commodity prices to the Esoko system:

+W: Wholesale prices (+R for retail)
 NAND: Market abbreviation
Commodity & Price 1: CASG800
Commodity & Price 2: BULA900000
Commodity & Price 3: MAIW600
Commodity & Price 4: MAIY700

Using an administrator interface on the Esoko system, the enumeration team in Accra review the prices using historical information available in the system and contact the market agents by telephone to validate commodity prices. Validated prices are approved by the enumeration team and made available on the Esoko system.

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