

INCLUSIVE INNOVATIONS

Multi-Stakeholder Platform

Mobile- and web-based platforms enable connectivity between various actors in the agricultural value chain to improve market efficiency and farmer incomes

HIGHLIGHTS

- Multi-stakeholder ICT platforms reduce information asymmetries along the value-chain by enabling two-way communication between farmers and other stakeholders.
- These platforms facilitate management of out-grower schemes and contract farming models, thereby increasing the exportability of smallholder produce.
- Input suppliers, extension service providers, financial institutions, transporters, agro-processors, exporters, traders, governments, and NGOs can tailor their products and services to specifically suit smallholder farmer needs based on interactions with farmers on the platform.



Scott Wallace / World Bank

Summary

Smallholder farmers are often subject to limited access to formal markets, excessive dependence on middlemen for post-harvest services and information asymmetries that ultimately lead to poor bargaining power and sale of produce at undervalued prices. The upsurge in stringent food safety and export standards are making it harder for uninformed small-scale farmers to sell their produce in global markets. Ultimately, the lack of integration amongst agricultural stakeholders results in eliminating smallholder farmers from global supply-chains, forcing them to operate in isolation.

Several enterprises have designed integrated electronic and digital platforms that connect farmers, input suppliers, agriculture experts, finance providers, logistics companies, processors, distributors, government entities and NGOs. These platforms enable streamlined forward and backward linkages along the value chain, facilitating information flows and business transactions. They encourage collaborative communication amongst different stakeholders and increase transparency in supply-chain management.

Development Challenge

Smallholder farmers face several challenges that restrict their growth and sustainability. At the pre-harvest stage, their farm productivity is impacted by information asymmetry about yield-enhancing inputs and farming practices, markets, prices, certification standards and government policies. Farmers suffer from inadequate market linkages, both with input suppliers and with end buyers. Poor connectivity to markets impacts their incomes more directly and keeps them in a cycle of low investment, low productivity and low incomes. In contract farming and outgrower relationships, agribusinesses lack transparency of progress on smallholder farming activity and farmers' adherence to compliance standards, thereby forcing these farmers out of formal supply chains.

Even when there is information available, remotely located farmers have to incur high search costs, and therefore continue to operate without credible information. A study of farmers in Colombia revealed that 26 percent of the farmers were unaware of the price of their product when purchased at the farm, 43 percent were oblivious to the price of their product at the municipal market and 63 percent didn't know the price of their product in the urban markets of Bogotá.¹ Highly dysfunctional and disconnected agricultural value chains restrict smallholder farmers from realizing market prices for their produce.

As a result, these farmers resort to selling their produce locally or through agents and middlemen. Farmers are not presented with opportunities to exchange information directly with other ecosystem stakeholders, further restricting their awareness of market trends. On the other hand, stakeholders such as input suppliers, finance providers, extension agents and traders have limited information about smallholder farmers and struggle to design contextual products and services. In a workshop held by the Business Call to Action and UNDP in Nairobi, agricultural stakeholders cited that lack of transparency and fraud along the value-chain were one of the primary drawbacks of working with smallholder farmers.²

Stricter food safety and certification standards are creating immense challenges for farmers in terms of quality assurance and process management. After the EUREPGAP³ requirements were released in January 2005, it was estimated that Kenyan smallholder farmers contributed to less than 50 percent of the total export volumes in comparison to 75 percent in the 1990s.⁴ In 2013, the European Union's (EU) mandatory pesticide inspection resulted in a rejection of 10 percent of the beans and peas that arrived at EU ports from countries including Kenya. Kenya's USD 930 million horticulture export industry saw a 50 percent decline in total exports; smallholder farmers were the most affected as they produce 80 percent of these exports.⁵

Agribusinesses that work with these farmers also find it difficult and cost-intensive to monitor and manage smallholder farm produce in line with compliance standards. This results in reluctance of large players to source produce from smallholder farmers. A case study in Yucatan, Mexico brought to light the interest that large international supermarkets like Wal-Mart had in sourcing from smallholder farmers. However, farmers' lack of infrastructure, technology and information on quality control and compliance requirements resulted in the farmers not being able to sell to these retailers.⁶ Similarly, multi-national processor, Frito-Lay, was unable to source potatoes from Ecuadorian smallholder farmers since the produce did not meet compliance requirements.

Lack of communication portals that facilitate information and transaction exchange between stakeholders engaged in agricultural activities from planting to sale of produce, combined with an increase in food sustainability and compliance standards have minimized the opportunities for remotely located smallholder farmers to be included in global agricultural value-chains.

Business Model

A number of enterprises have developed mobile and web based platforms that enable connectivity between various actors in the agricultural value chain. On these platforms, stakeholders can communicate with each other through SMS, voice calls, interactive voice response (IVR), call centre, smartphone applications and online web based portals. The platforms facilitate exchange of information and transactions between all registered participants. Typically, stakeholders register on the platform by paying a subscription fee. Enterprises earn a commission on every transaction made between farmers and other stakeholders on the platform. Most multi-stakeholder platforms are open group. Platforms specifically designed to support smallholder farm management are closed group; agribusiness clients select the stakeholders to register on the platform.

Figure 1. Two-way flow of information and transactions facilitated by multi-stakeholder platforms

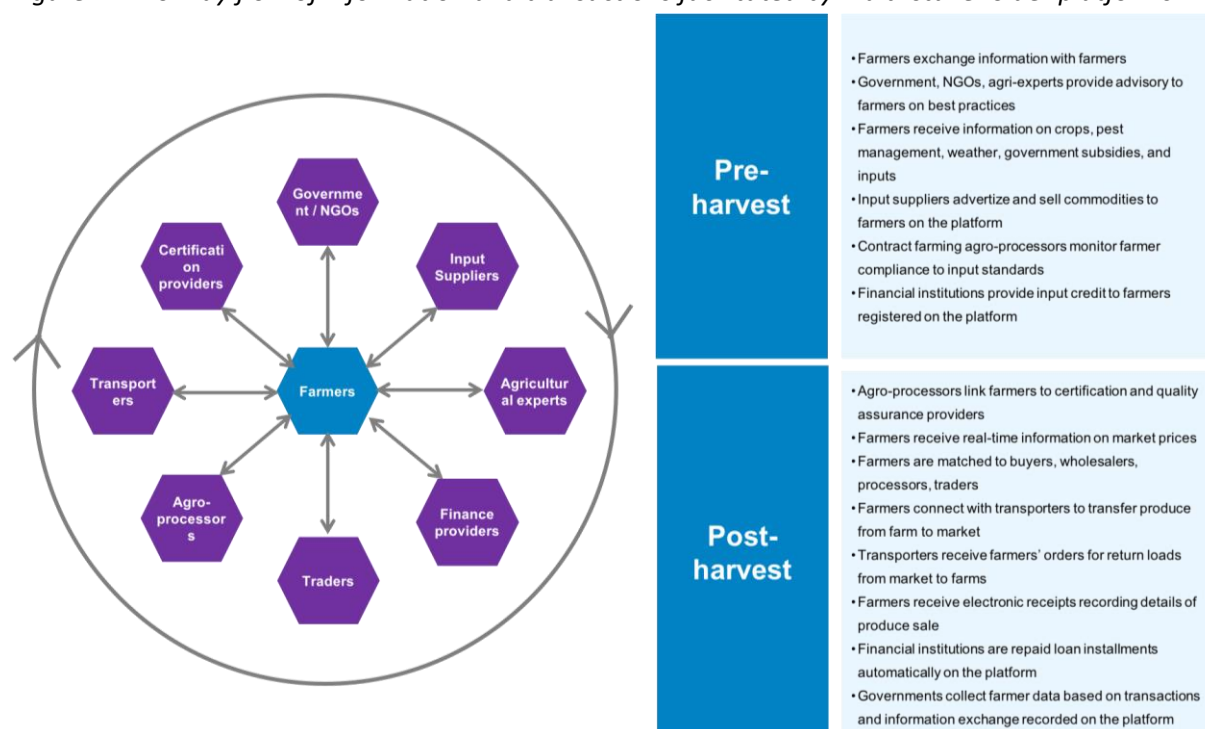
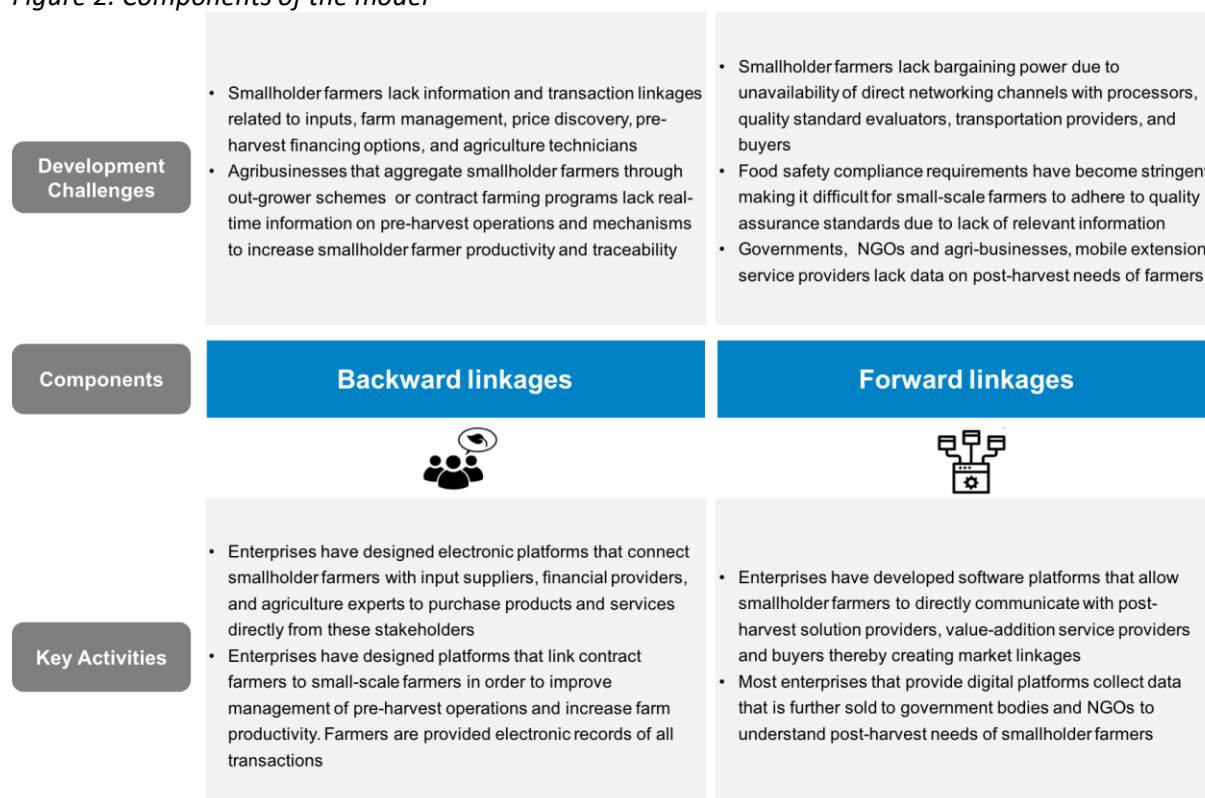


Figure 2. Components of the model



Integrated platforms enabling backward links

In the pre-harvest phase, all platforms enable farmers and stakeholders to exchange information with each other and transact goods and services leveraging ICT. The platforms enable farmers to interact with other farmers, input suppliers, extension agents, NGOs, governments and finance providers on information regarding farming best practices, quality inputs, and input credit. Input suppliers and extension agents advertise and sell their products and services to farmers using these

platforms. For example, Kenya based, Cowsoko's digital platform enables farmers to connect with different value chain actors including input suppliers, veterinary specialists, and dairy experts. Farmers can purchase cows on the platform, use the platform to identify practical training programs and source dairy related information. Esoko allows input suppliers to advertise their commodities to farmers, provides information on weather and connects farmers to extension agents.

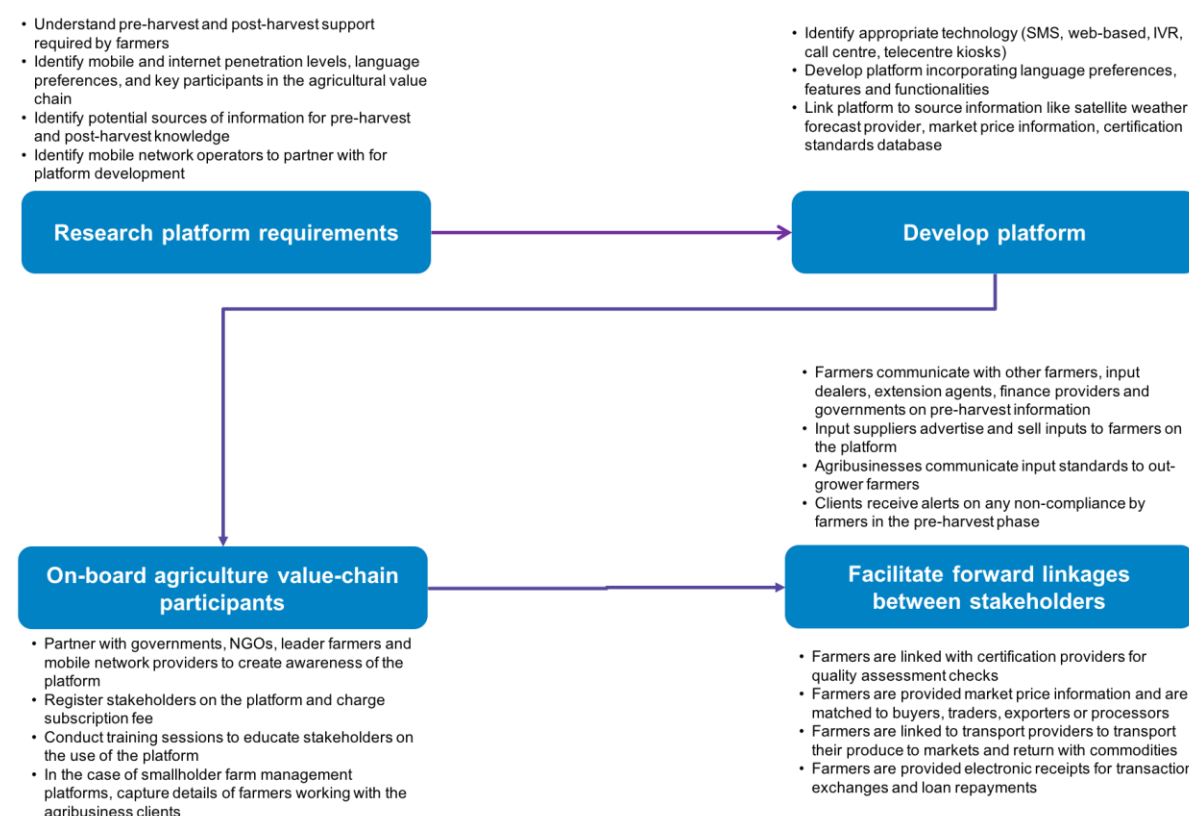
ICT enabled platforms open up the larger ecosystem to smallholder farmers, bringing in efficiencies that are either impossible or very expensive to achieve in brick and mortar fashion. WeFarm, an enterprise based in Peru and Kenya operates a multi-lingual mobile based platform that enables farmers to exchange insights with other farmers. The platform also provides linkages between farmers and other stakeholders, including governments and agricultural businesses to interact and provide information to farmers during the pre-harvest phase. Ricult, in Pakistan, provides farmers information on quality inputs and matches farmers to input suppliers. In addition, the platform enables farmers to access loans from financial institutions registered on the platform. Some platforms are designed to support agribusinesses to effectively manage their out-grower and contract-farming schemes.

These platforms connect farmers with agribusiness agents through ICT and enable them to interact with each other on pre-harvest protocols, global food safety compliance standards, and use of inputs in line with these standards. For instance, Farmforce, which operates in 25 countries across Latin America, Africa and Asia, provides agricultural businesses, aggregators, cooperatives, exporters and agricultural processors the facility to connect with farmers and receive real-time information on pre-harvest activities through a centralized platform. Clients register the farmers that they work with and receive alerts on non-compliance to input and other pre-harvest activities.

Integrated platforms enabling forward linkages

ICT enabled platforms have the potential to shrink global agriculture markets; mainstreaming smallholder farmers on a level playing field in the post-harvest stage. Farmers can leverage these platforms to directly communicate with processors, and quality assessment certifiers to enhance the value of post-harvest products. They can also directly engage with buyers (both, domestic and global) and connect with transporters on the platform to deliver produce. Thus, platforms reduce the effort (manpower, time) as well as investment (own trucks for distribution, sales force) for every stakeholder group they onboard. Cowsoko connects farmers to buyers and transporters to undertake delivery of produce. Esoko, based in Africa, connects farmers to agro-processors and exporters who can use the tool to track their produce across the supply-chain. In India, ITC's e-Choupal enables farmers to trade directly with wholesale buyers. MFarms, an enterprise that operates in multiple countries across West Africa, brings together farmers, aggregators, warehouse operators, agro-input dealers, transport companies, government and NGOs. Farmforce links farmers to certification providers who can assess the quality of the produce in line with global compliance standards.

Figure 3. Process of the model



Cost Factors

Initial technology development represents the largest capital cost borne by enterprises providing multi-stakeholder collaboration solutions. For instance, Farmforce, incurred 100 percent of its costs in initial platform design and development; over the 4.5 years of operations, the enterprise has stabilized its platform and currently incurs about 10 percent of overall costs in maintenance of the platform.⁷ Esoko incurred an upfront investment of USD 800,000 to develop and set up its platform, including purchase of hardware, salaries for staff engaged in developing the platform and in collection of market price information⁸.

Owing to the fast pace at which technology changes, coupled with the need to constantly enhance content on the platform, enterprises incur significant costs on maintaining their ICT platforms. Enterprises continuously upgrade platform software, features and functionalities. For example, Esoko spent USD 700,000 in 2015 to upgrade and maintain its platform. It is also in the process of integrating an input wallet solution as part of its platform. The estimated investment requirement for the m-commerce platform is USD 2 million.⁹ Other enterprises are less capital intensive, ITC Limited incurs INR 70,000 to INR 100,000 (USD 1050 to USD 1500) to set up its e-Choupal kiosks in rural villages.¹⁰

Multi-stakeholder platforms differ from ICT extension platforms in that they enable connectivity among a larger set of agricultural value-chain participants and provide two-way communication channels. Enterprises offering multi-stakeholder linkages on their platforms must necessarily on-board relevant stakeholders to the platform. Enterprises therefore incur significant costs in marketing and acquiring these different participants to be part of the platform. Enterprises must also design features and functionalities on the platform that will cater to different agricultural value-chain participants. Staff costs and marketing costs are other key cost components involved in this model. Enterprises incur

Esoko's initial platform development cost was USD 800,000. A software and platform upgrade cost the enterprise USD 700,000 in 2015. Its input wallet solution is estimated to cost USD 2 million.

significant costs in hiring staff that can gather and validate data on prices and demand prior to disseminating this information to farmers.

Revenue Streams

Enterprises that provide multi-stakeholder platforms earn revenues in different ways—through subscription fees, commission fees, third party license fees and fees based on revenue-share with partners. Enterprises price their services based on the customer segments as well as the services provided to clients, such as market information, or pre-harvest advisory, market access or produce tracking services. Revenue streams may differ based on customizations required by clients, including the platform technology that they select and language preferences, and number of licenses or devices provided to clients.

Typical revenue streams of multi-stakeholder platforms include subscription fee for registration of stakeholders on the platform, commission fee for any transactions, and revenue-share with mobile network operators on communication.

Typically, farmers are not charged a fee or are charged a minimal transaction fee. Cowsoko charges farmers a transaction fee for every product that they sell to end buyers registered on the platform; agricultural extension workers registered on the platform pay the enterprise a subscription fee to advertise their advisory services to farmers; agro-input dealers pay Cowsoko a subscription fee to advertise inputs on the platform and pay a commission fee on every input commodity that is sold to farmers.

Platforms draw on some anchor tenants to keep revenues flowing in, even as they leverage the presence of some stakeholders to draw in smallholders or agribusinesses by the convenience they provide. Cowsoko, for instance, currently does not charge transport and logistics providers a fee; instead, it leverages the presence of transporters to attract farmers and input dealers to the platform.¹¹ Farmforce charges agribusinesses a subscription fee to use its tool to manage their out-grower schemes, but also allows them to extend it to their partners to multiply efficiencies as well as grow the ecosystem on-board the platform. Farmforce clients, thus, extend the Farmforce license to other third-party participants such as food certification assessors, financial institutions, agronomists, input suppliers and extension service providers; in such cases the client pays Farmforce an additional third-party license fee.¹² WeFarm does not charge farmers to be on its platform. The enterprise's *WeFarm Insights* and *WeFarm Reach* business lines involve providing information about farmers to other stakeholders including agribusinesses, governments and NGOs for a fee. These stakeholders can also advertise their products and services to remotely located farmers registered on the platform.¹³

In order to make their paid services affordable, platforms adopt modular structures and tiered pricing to selectively charge stakeholders that will be willing to pay for a service. On Farmforce, clients can select from a range of module packages such as basic farming module, SMS communication, compliance features and other traceability solutions. DrumNet charges either a transaction fee or commission fee based on the customer segment—farmers, buyers, transporters, input suppliers and banks. The enterprise typically deducts a 10 percent service charge from the gross proceeds of every marketing transaction facilitated by the platform prior to the disbursement of net funds back to the farmer. In addition, DrumNet collects a fee for managing the credit program on behalf of the bank.¹⁴ Esoko charges farmers and farmer organizations based on a tiered subscription fee model which range from USD 36 for individual farmers to USD 8000 for farmer groups.¹⁵

Enterprises adopt differential pricing for different stakeholders. Farmers Online Market charges farmers USD 3.17 and agents USD19. Esoko charges individual farmers USD 36 and farmer groups (with unlimited membership plus additional services) USD 8,000.

ICT platform enterprises provide data collection and farmer survey services to clients on a subscription model. Agro-processors, exporters and input suppliers are also charged a subscription

fee to advertise their products and services to farmers and to be matched to farmers. Esoko partners with mobile network operators (MNO) on a revenue-share model; the MNOs retain 70 percent-80 percent of the communication fee and Esoko is paid 20 percent-30 percent of the SMS or call center charge. The enterprise plans to integrate an input wallet solution with the platform, and will start to charge input suppliers a commission fee for every input commodity (for example, seeds and fertilizer) sold to farmers on the platform.¹⁶ Farmers Online Market charges differential prices based on the customer segments, for instance, farmers are charged Nigerian Naira 1000 (USD 3.17) and agents are charged Nigerian Naira 6000 (USD 19).¹⁷ MFarms generates revenue through annual subscription, customization, training, and credits for SMS and IVR messages conveyed through the platform.

Financial Viability

The financial sustainability of the model hinges on multiple factors: using the appropriate technology that enables maximum reach, structuring profitable revenue-share models with mobile network operators to enable enterprises to earn higher margins on communication costs, attracting higher number of paying customers in comparison to non-paying customers, and providing a combination of information and transaction related services for all stakeholders. However, once these elements are in place, recurring costs are limited to upgrades, maintenance and staff salaries, resulting in high margins. As long as the platform is able to build significant traction of paying customers, they remain viable.

Multi-stakeholder ICT platform enterprises need to invest time to understand the support that farmers require in the pre-harvest and post-harvest phases. They also need to continuously maintain the platform by adding and improving both, content and functionality. Enterprises typically leverage donor grants and patient capital to support initial costs until they can interest banks and other investors to finance their growth. As noted above, Esoko spent USD 800,000 as upfront costs to develop the platform, of which USD 200,000 was donor-funded.¹⁸ Initial development costs for Farmforce was supported by the Syngenta Foundation for Sustainable Agriculture, a non-profit organization and co-funded by the State Secretariat for Economic Affairs of Switzerland.¹⁹

Initial costs involved in technology development are funded by donors.

Most enterprises try to create diversified revenue streams to ensure consistent revenue flow. They leverage their knowledge of different customer groups to estimate their ability and willingness to pay for different services. For example, when linking farmers to transport providers to deliver produce to end markets, enterprises examine possible revenue streams such as charging transport providers for information on return loads; the platform could match them with farmers who require commodities from markets on the transporters' return trips.

Most ICT platform enterprises design their marketing and pricing strategies to acquire farmer groups and agribusinesses that work with farmers as opposed to acquiring individual farmers; this helps in reducing the cost of services to each farmer while increasing revenue earning potential for the enterprises. For instance, Esoko charges individual farmers USD 36, while farmer groups with up to 200 members pay USD 250 (translates to USD 1.25 per farmer)²⁰. With a larger number of farmers on the platform, agribusinesses and other stakeholders including government and NGOs are willing to pay higher prices to be part of the platform. Platforms also increase their participant numbers by offering discounts which they share with vendors who offer the services. This impacts viability of the model; although the strategy increases the topline, it is difficult to encourage clients to transition to paying full prices at a later time.

Enterprises typically market their platforms to farmer groups instead of individual farmers in order to on-board larger number of farmers.

Most platforms use information and content as the hook to interest subscribers; and content creation needs upfront investments. Data collection and marketing are key costs associated with this

model.²¹ Passive support such as solely providing information does not earn revenues – clients often expect enterprises to offer this for free. The more passive support a platform offers, the less profitable or viable it is likely to be. Successful platform enterprises focus on creating content that customers will be willing to pay for or tag the content to services that directly lead to business and revenues for customers.

For example, Esoko has a dedicated team of enumerators who source and cross-verify market price information prior to disseminating it to farmers and traders registered on the platform. Esoko also provides market access to farmers to sell their produce to agro-processors and export companies. Agrinet sources price information by linking SMS to physical information boards located in markets. In order to cover these costs, it charges a commission fee for each brokered deal based on the information provided by Agrinet.²² Strategic partnerships with reliable information sources such as weather forecasting companies and market price information agencies help enterprises to continue providing trustworthy and value driven information to farmers and other stakeholders, thereby increasing customer stickiness and willingness to pay.

Enterprises incur initial costs in training farmers and other stakeholders on the use of the platform. However, given that training needs to be undertaken only at the point of on-boarding customers, the Return on Investment (ROI) steadily grows over the years. A study by NYU in 2011 compared the cost of Esoko's service with the estimated benefits to farmers. At that point Esoko offered its services to farmers at GHS 24 (USD 6); Esoko's ROI was over 200 percent, after considering cost of the service and cost of training farmers on the use of the platform.²³

Partnerships

Enterprises establish partnerships with mobile network providers, development organizations and government agencies for data collection, information dissemination and increasing their reach to farmers. Enterprises work with local government bodies to reach remotely located smallholder farmers and build trust in using the platform. In collaboration with government agencies, they also provide training to farmers on internet and mobile use. Strategic partnerships with mobile network operators can be beneficial to enterprises. Sharing revenues earned through SMS and voice service communication between stakeholders on the MNO's networks could serve as an additional source of income for enterprises. They can increase the number of customers on the platform by lowering text package prices. They can also expand network infrastructure to reach remote rural areas thereby increasing target customers.²⁴

In order to facilitate the traceability of smallholder produce and compliance with the Food and Drug Administration's Food Safety Modernization Act (FSMA), Farmforce in partnership with Mercy Corps used the tool to support the export industry in Guatemala to enable export of smallholder farmer produce to the United States of America. The enterprise also partnered with the European Union on a project related to export of produce from Kenyan smallholder farmers to Europe. Partnering with development foundations with similar agendas in seeking to support smallholder farmers helps in increasing acceptance of multi-stakeholder ICT tools among farmer groups and agribusinesses.

Implementation: Delivering Value to the Poor

Awareness

Enterprises market their platforms to a wide variety of participants across the agriculture value chain. Typically, they conduct training and education programs on the role of internet and mobile technology in partnership with rural government agencies, NGOs and farmer co-operatives. They conduct training sessions for farmers and traders on effective market linkages and mentor traders in undertaking transparent trading without manipulating farmers. They broadcast their services on local radio, newspaper and market price information boards. Most enterprises involve local farmer leaders in spreading awareness about their platforms. Ricult identifies middlemen that farmers are

comfortable trading with and train these middlemen in using the technology; the middlemen visit farmers and on-board them to the Ricult platform. Cowsoko markets its platform on Facebook and other social media platforms. It also places advertisements in dairy societies, and publishes blogs in local newspapers. Farmforce interacts with agribusinesses and explains the benefits of using the tool for their out-grower and contract farming management; the enterprise also relies on early adopters to further spread awareness of its platform.

Acceptance

Prior to product design and deployment, enterprises invest time to understand pre-harvest and post-harvest support required by farmers, mobile and internet penetration levels, local languages, and key participants in the agricultural value chain. Farmers are more receptive to platforms that allow two-way communication. Enterprises, therefore, create open communication platforms. Prior to listing agricultural experts on Cowsoko's platform, the enterprise trains them on basic business and farmer interaction skills. It is also critical for them to offer their tools in local languages. For example, Farmforce works across Latin America, Africa and Asia. The enterprise offers its platform in English, Spanish, French and Portuguese to cater to farmers and agribusiness clients in these regions. WeFarm has a network of volunteer translators for international answers. Farmers from across the globe interact with each other; for example, a Kenyan farmer's reply in English or Swahili is translated to Spanish for a farmer in Peru. The platform also offers French and Haitian Creole as language options.

Accessibility

Ease of accessibility and user interface are critical for stakeholder adoption, particularly for smallholders. Multi-stakeholder platforms leverage mobile and internet technology to connect farmers with other agricultural stakeholders for real-time information and transaction exchange. Farmers are not required to travel to central markets for information on produce planning, market access or certification requirements. Ricult undertakes door step delivery of input commodities to farms; the enterprise also provides on-farm soil testing services.²⁵ Other value-chain actors can provide information to farmers that enable them to produce commercial export quality crops. These value-chain actors can also interact with each other to assess farmer default risks and plan their activities accordingly. For example, Farmforce enables interaction between contract-farming agribusinesses, input suppliers, certification providers, and financial institutions, and collaborate to provide support to smallholder farmers that they manage. Most enterprises provide multi-media platforms including SMS, Android application, web platform, Interactive Voice Response (IVR) and call center services. Farmers Online Market and Esoko provide call center options for farmers who are less educated and provide interactive mobile and SMS based communication platforms for advanced users.

Affordability

Multi-stakeholder platforms are typically free of cost for farmers. Some enterprises charge nominal rates in terms of SMS communication costs or commission on the sale of farmer's produce to buyers. Ricult offers a 30 percent discount to farmers on input commodities.²⁶ Services to other stakeholders are also priced competitively in order to attract more customers onto the platform. Stakeholders also have the option to advertise their products and services directly to farmers, which is a more cost-effective alternative for them in comparison to visiting remote locations to undertake marketing activities.

Results and Cost Effectiveness

Multi-stakeholder platforms facilitate inclusion of smallholder farmers in formal value-chains by reducing information asymmetries and enabling knowledge sharing and transaction exchange among different agricultural stakeholders. The use of the model in increasing transparency and traceability in food production and supply-chain processes enables agribusinesses to source from small-scale farmers and opens doors to global markets for these farmers.

Scale and Reach

Multi-stakeholder platforms move beyond providing piecemeal support to farmers to offering an array of services by bringing together different participants across the value-chain. This, combined with the leverage that the internet offers, enables them to scale up their operations significantly within a few years of operation. The increasing spread of mobile and internet technology in developing countries (estimates show that approximately 70 percent of the bottom fifth of the population in developing countries own a mobile phone; Peru's statistic agency estimates that 85 percent of Peru's households owns at least one mobile phone and 40 percent of the population has access to the internet²⁷) is promoting the uptake of these platforms among small-scale farmers. With the increased scrutiny on food safety standards, agribusinesses are keen to adopt tools that allow them to monitor and trace smallholder farmer activity without involving a high-touch on-ground model. Enterprises are able to attract and on-board many customers on their platforms since the platform caters to improving incomes and productivity for a wide variety of stakeholders in the agriculture sector.

Platforms that are free or heavily subsidized for farmers are able to attract large number of farmers within a few years of operation.

Generally, platforms that are free of cost or heavily subsidized to farmers are able to on-board a large number of farmers immediately following the launch of the platform. For example, within just one year, WeFarm on-boarded 69,000 small-scale farmers and 10.1 million interactions have taken place between farmers and other stakeholders listed on the platform.²⁸ ITC operates 6,500 internet kiosks across 40,000 Indian villages reaching about 4 million farmers.²⁹ Since the beginning of its operations, Esoko is present in 10 countries in Africa, and serves over 400,000 smallholder farmers and 35 agribusinesses, government agencies and NGOs registered on its platform. Over 9.5 million messages have been sent between stakeholders on the platform, and 1 million prices have been requested.³⁰ Within the first 2 years of its operation, DrumNet had facilitated over 7,000 marketing transactions on behalf of its 647 registered farmers and generated over USD16,700 in gross revenue.³¹ MFarms had over 5,000 farmers and 4 large scale agribusinesses registered on its platform within the first 2 years of operation.³² Agrinet has over 300,000 small-scale farmers and 10 buyers registered on its platform.³³

Platforms that focus heavily on transaction related services in addition to information exchange attract more users across the value chain.

Scale and reach of smallholder farm management tools are dependent on agribusiness clients' network of farmers. Since these platforms typically cater to contract farming companies who export smallholder farmer produce these enterprises are able to reach clients across multiple geographies. For instance, Farmforce works across 25 countries and has reached 150,000 farmers through its smallholder farmer management tool.

Table 1. Examples of companies and their reach

Company	Country of operation	Years of operation	Number of farmers reached
Agrinet	Uganda	8	<ul style="list-style-type: none"> • 300,000 small-scale farmers • 10 buyers
e-Choupal (ITC Limited)	India	16	<ul style="list-style-type: none"> • 4 million farmers
Esoko	Ghana, Kenya, Malawi, Zimbabwe, Mexico and Pakistan, Benin, Nigeria and South Africa	8	<ul style="list-style-type: none"> • 400,000 farmers
Farmforce	Africa: Ghana, Ivory Coast, Kenya, Malawi,	4.5	<ul style="list-style-type: none"> • Over 150,000 farmers

	Mozambique, Nigeria, Rwanda, Senegal, Tanzania, Uganda, Zambia <u>Asia</u> : Bangladesh, China, India, Indonesia, Singapore, Thailand, Turkey, Vietnam <u>Latin America</u> : Brasil, Guatemala, Haiti, Honduras, Nicaragua, Peru		
WeFarm	Kenya, Peru	1	<ul style="list-style-type: none"> • 84,798 users • 142600 questions asked • 207400 answers • 12.9 million pieces of transferred information

Improving Outcomes

Multi-stakeholder ICT platforms support small-scale farmers by providing them a multitude of advisory services and market access linkages: knowledge on quality inputs, linkages to input suppliers to purchase inputs, improved access to credit, linkages to exporters and processors, linkages to certification providers, information on government policies and certification standards, and transparency in supply-chain processes. Electronic receipts and record management lower the chances of discrepancies and errors in transactions between smallholder farmers and other stakeholders. These platforms don't stop at only providing one-way communication flows to farmers, instead they connect participants involved across the chain and facilitate backward and forward linkages between them; other stakeholders use the platform to understand farmer needs, interact with farmers in comparison to only pushing information to them and use these insights to design better products and services.

DrumNet farmers were able to earn 86 percent of the sale price in comparison to 65 percent earned by non DrumNet farmers.

While there is scope for more third party validation and assessment of the impact of multi-stakeholder platforms on farmers, research studies and development organizations have conducted some impact studies on such platforms. Esoko's farmers earned 20 percent-40 percent more incomes after using the platform.³⁴ Esoko farmers were also found to have a 12 percent higher repayment rate in comparison to a control group farmers that had received loans from the same bank, but were not Esoko registered farmers.³⁵ In another study of 600 Esoko smallholder farmers in northern Ghana, the French National Institute for National Research (INRA) found that farmers have seen a 10 percent revenue increase since they began receiving and using Esoko SMS market prices.³⁶

A study by USAID on farmers in the Kinangop region of Kenya using MFarms for collective selling showed that these farmers were able to receive more than double the price for certain types of produce, such as snow peas and sugar snap peas, than what they were able to receive when selling their produce individually. Feedback from farmers using the service has also revealed that access to current market information has given them a transparent bargaining platform to use when selling individually to brokers or agents.³⁷ A study conducted in 2009 on DrumNet's platform involving interviews with farmers, input dealers, Equity Bank, rural assemblers, transporters and BIDCO Ltd. revealed that farmers registered on the platform earned 86 percent of the price paid by BIDCO (including the transportation fee of 9 percent of BIDCO's price deducted by BIDCO, and 5 percent DrumNet commission fee charged to farmers) in comparison to non DrumNet farmers who earned

only 65 percent of the sale price.³⁸ Similarly, in India, research on web-based e-Choupal indicated that there was a transfer of 1 percent to 5 percent margins earned from traders to farmers.³⁹

Improved traceability and smallholder farm management helps agribusinesses in facilitating farmers to receive global certifications and tracking compliance with food safety standards, thereby enabling an increase in incomes that farmers can make. For example, between 1991 and 2003, a study in Kenya showed that stricter enforcement of food safety and quality standards resulted in the export value of fresh vegetables increasing from USD 23 million to USD 140 million.⁴⁰ Ricult, a multi-stakeholder platform in Pakistan estimates that by using the platform, farmers are able to earn an additional USD 219 per year.⁴¹

Multi-stakeholder platforms have helped increase the income-generating potential of small-scale farmers. Real-time communication between farmers and other value-chain actors has resulted in farmers gaining relevant information about global markets and in stakeholders being able to integrate these farmers in formal value chains.

Cost Effectiveness

Multi-stakeholder platforms decrease information and market access search costs for farmers. For example, estimates show that farmers in Niger spend USD 0.80 in per-search costs to travel to central markets to gather information, whereas the cost of using mobile technology to obtain this information is USD 0.20.⁴² Another study showed that information search costs across the value chain amount to more than 69 percent of total transaction costs for farmers in Sri Lanka.⁴³ This study suggested that an integrated system using a mobile phone platform that provides information to farmers and other stakeholders from the planting stage to selling stage will significantly reduce information search costs and associated transaction costs.⁴⁴

Farmers typically trade their produce using supply chains comprising multiple stakeholders such as transport providers, agents, processors, wholesalers, retailers and other intermediaries. The information asymmetries brought about by disaggregated communication amongst all these players results in lower profits for farmers. A platform that integrates participants across the value chain enables transparency in information flow and transaction exchange. Research shows that farmers associated with DrumNet reduced costs in trading their produce through traditional supply-chains; of the total sales value, they saved 9 percent in transporter fees, 23 percent in broker commission fees and 3 percent involved in marketing activities.⁴⁵ Farmers reduce transaction costs by accessing both credit and markets on DrumNet's single platform; they can pay their loans with their farm produce proceeds on the platform as well.

Information search costs dropped from USD 0.80 to USD 0.20 for farmers in Niger who used mobile technology to source information.

Besides farmers, multi-stakeholder platforms are also cost-effective for other stakeholders. For example, large processors and buyers registered on DrumNet's platform reduce costs involved in managing transaction intensive credit programs.⁴⁶ Government agencies who use such platforms to provide agricultural information directly to farmers benefit from lower costs involved in SMS-based services. In the absence of such platforms, government extension agents would visit remotely located farmers in rural areas.⁴⁷ Since these platforms enable two-way information flow, governments can also conduct large scale farmer surveys using mobile and internet technology versus field surveys. Agribusinesses are also able to reduce costs involved in aggregating and monitoring smallholder farmers; instead of sending their agents to visit farmers on a frequent basis, these businesses can now leverage farm management tools to manage out-grower schemes on a real-time basis.

DrumNet farmers saved 9 percent in transporter fees and 23 percent in broker commission fees.

Taking it to Scale

Challenges

Given that costs involved in development and maintenance of multi-stakeholder ICT platforms are high, enterprises face difficulties in accessing credit to fund these operations. Banks and other financial institutions are risk averse to funding internet and mobile based platforms. However, since the primary target group of customers is smallholder farmers, enterprises are forced to keep prices low. These enterprises cross-subsidize low prices charged to farmers by charging other stakeholders a fee to be on their platform and largely rely on this source of revenue to fund their operations.

Data in most developing countries continues to be expensive and unaffordable for smallholder farmers. As a result, although access to these platforms is free or affordable for farmers, they find it expensive to communicate using SMS or voice services. For example, in South Asia, the total cost for an enterprise to deliver a single agricultural text is estimated to be around USD 0.02. While this seems affordable, research shows that most farmers are highly cost sensitive and reluctant to bear these costs.⁴⁸

Taking into consideration that reliable information to all stakeholders is the backbone of such platforms, enterprises face difficulties in sourcing consistently dependable and timely data at low costs. Most government related data on weather is not accurate. Enterprises therefore partner with private agencies that use sophisticated satellite imagery to source such information.

Role of Government and Policy

Government processes and regulations related to affordability of mobile communication, and availability of reliable data play a pivotal role in the manner in which enterprises structure their multi-stakeholder ICT platforms.

Governments in some countries, have structured policies that promote healthy competition amongst mobile network providers, and boosted availability of reliable data sources to feed into the ICT platforms. For instance, in Kenya, the open and enabling ICT regulatory environment has helped to increase competition among mobile network operators and reduce mobile phone tariffs.⁴⁹ Enterprises can leverage low mobile communication costs to attract more farmers to the platform. In Turkey, emanating from a need to strengthen weather data and expand data collection beyond urban areas, a publicly funded project set up 5 small meteorological stations and 14 small reference farms. The establishment of these rural data collection points helped in providing accurate microclimate forecasts to dispersed small-scale farmers.⁵⁰ Enterprises can source information from the government, thereby decreasing costs on information acquisition from third party private organizations.

Governments can leverage these platforms to disseminate data on weather, pest management and other farming best practices to a wider network of farmers.

Enhancing telecom infrastructure in rural regions helps multi-stakeholder ICT platforms flourish. Governments can work with mobile network operators to expand their services to remote areas. They can also influence network providers to lower SMS and communication costs. A research study to understand the impact of mobile-phone technology platforms on smallholder farmers in India showed that most farmers could not afford the services. At package prices of approximately USD 1.50 per month, only half of the sampled farmers planned to renew their package despite stating that the services had helped them negotiate better prices, gained better access to quality inputs and increased incomes.⁵¹ These farmers went back to relying on newspapers, radio or public information boards as sources of information. MNOs earn high margins on SMS messages; however, regulators can frame policies such that SMS rates for transmission of public-good information can be reduced.⁵² This will increase affordability for farmers and encourage them to use these platforms.

Research also indicates the need for governments to strengthen education services in the ICT sector. It is critical for enterprises to hire good talent to develop and maintain multi-stakeholder platforms. However, the lack of talent proves to be a challenge for these enterprises. For example, in Kenya, only 5,000 of the 30,000 university graduates in 2008 were deemed suitable for employment in the ICT industry.⁵³

Conclusion

Multi-stakeholder platforms have the potential to reach a vast number of participants across the agricultural value-chain. The possibility of two-way communication and transaction flow between smallholder farmers and other ecosystem players is an attractive solution to all stakeholders in the chain. However, initial platform development costs, platform customizations to cater to varied segments of players in the chain, and creation of relevant content make this model significantly investment heavy.

Since platform use is typically provided free of cost to farmers, enterprises must structure their parallel sources of revenue charged to other stakeholders in a manner in which communication and data collection costs are covered, at a minimum. In order to secure a robust revenue stream for platforms, it is also important for enterprises to identify the optimal blend of information services along with transaction exchange services that ultimately result in an economic benefit to all stakeholders. Region-specific policies on ICT and costs involved in service delivery have a direct impact on the uptake of the platform by stakeholders, and thereby the financial sustainability of the model. Partnerships with information sources, governments and mobile network operators influence the model's success.

Table 2. SEs: Multi-Stakeholder Platforms

Company	Country	Solution Description
Agrinet	Uganda	Agrinet offers market linkages for agribusiness value chain actors including smallholder farmers, traders, large-scale processors and exporters. It provides agricultural market intelligence, transaction security service, product marketing, agro-processing and value addition services. It sources commodities on behalf of its buyers, organizes auctions on behalf of sellers and manages forward contracts for a range of commodities.
Cowsoko	Kenya	Cowsoko facilitates backward and forward information and transaction exchanges between multiple stakeholders. The platform connects farmers with other farmers, buyers, input suppliers and transporters for delivery of produce and input commodities. The platform also hosts agricultural extension providers and trainers for a subscription fee.
DrumNet	Ghana	DrumNet links smallholder farmers, finance providers, large-scale buyers, transporters, and field agents through an integrated marketing and payment system. Farmers can access inputs at local input providers through an established line of credit from DrumNet. During the pre-harvest phase, DrumNet negotiates contractual arrangements between buyers and farmers, and at harvest time coordinates produce aggregation, grading, and transportation through agreements with local field agents and transporters.
e-Choupal	India	e-Choupal is an initiative of ITC Limited's Agri Business Division. Internet enabled e-Choupal telecentre kiosks are established in rural areas and are operated by trained farmers. Farmers can avail information on pre-harvest related topics, can gather market and price information, and linkages to buyers.
Esoko	Ghana, Kenya, Malawi, Zimbabwe, Mexico and Pakistan, Benin, Nigeria and South Africa	Esoko is a mobile based technology platform that enables input suppliers, agro-processors, export companies, farmer co-operatives, finance providers, governments, mobile operators and NGOs to provide critical information to farmers. Agribusinesses can advertise their products and services to farmers. Agro-processors and exporters can manage supply-chain processes. Stakeholders can also request data collection and farmer surveys through the platform.
Farmers Online Market	Nigeria	Farmers Online Market is a web and mobile-based platform that connects farmers, buyers, input suppliers, agents, transporters, cooperatives, governments, financial institutions and consultancy service providers. Stakeholders can exchange information with farmers about their products and services such as seeds, fertilizers, farm machinery, input loans, trainings and workshops to farmers. Farmers also receive updates on government policies, programs and subsidies on the platform.
Farmforce	<u>Africa</u> : 11 countries <u>Asia</u> : 8 countries <u>Latin America</u> : 6 countries	Farmforce is a web and mobile-based smallholder farm management and traceability tool. Initially developed by Syngenta Foundation for Sustainable Agriculture, an NGO, Farmforce is currently in the process of transitioning to become a for-profit entity. Clients include agribusinesses that manage out-grower schemes and work with smallholder farmers on a contract basis. Clients can extend their Farmforce licenses to third parties including finance providers, certification assessors and agricultural experts.
MFarms	Ghana, Benin, Burkina Faso, Cote D'Ivoire	MFarms is a web and mobile based communication and management platform connecting farmers to agribusinesses. They communicate with each other and undertake transaction of goods and services. The platform also enables governments to track the distribution of subsidized fertilizers and seeds and adherence of importers to allocated budgets. Agro-dealers are able to track their stock.
Ricult	Pakistan	Ricult is an online marketplace that connects farmers to farm input sellers, farm produce buyers, banks, insurance companies, veterinary services, and farm advisory services. The platform enables information and transaction exchange between farmers and other stakeholders.
WeFarm	Kenya, Peru	WeFarm's mobile based platform enables peer-to-peer (P2P) knowledge

		sharing between smallholder farmers in rural communities. Farmers can post their questions via SMS short codes and receive answers from other registered users Through its WeFarm Insights and WeFarm Reach modules, stakeholders can interact with farmers and request data on small-scale farmers for a fee.
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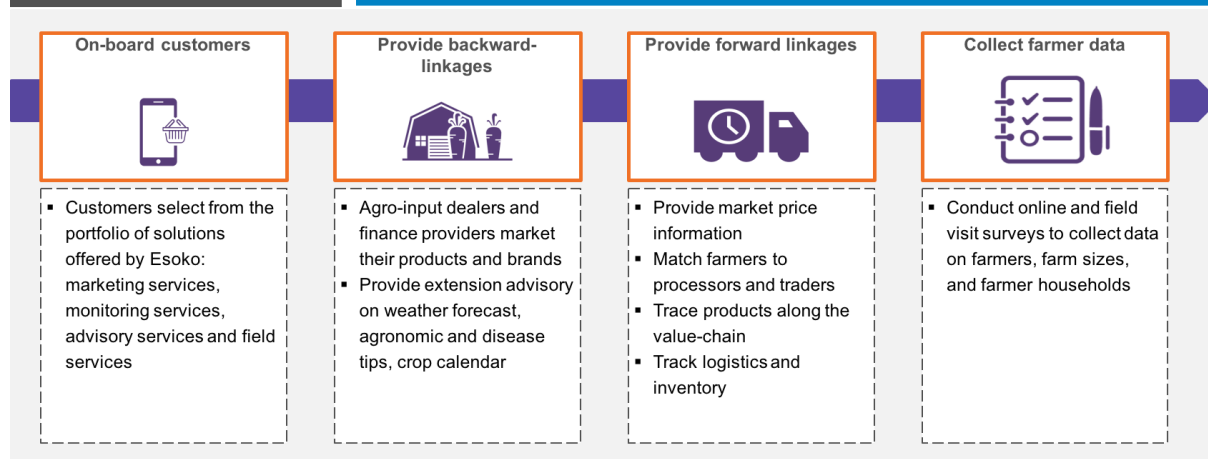
CASE STUDY: ESOKO



Founding year: 2008
HQ: Accra, Ghana
Countries of operation :
 Ghana, Kenya, Malawi, Zimbabwe,
 Mexico and Pakistan, Benin, Nigeria
 and South Africa
Orientation: For-profit
Employees: 60
Turnover: USD 4 million

Smallholder farmers in Africa lack reliable information on productivity-enhancing practices, timely price and demand information and linkages to formal markets. On the other hand, input dealers, agricultural businesses, finance providers, and policy makers lack reliable data on and connectivity with small-scale farmers, thereby restricting these stakeholders from marketing appropriate inputs, delivering tailored extension services and reaching remotely located farmers to procure their produce and sell in global markets.

Esoko is a market information platform that leverages mobile and web technology to bring together different stakeholders in the agriculture value chain. The services provided on the platform include SMS alerts, extension information messages, farmer survey and SMS polls, marketplace matching, and data collection. The platform provides two-way communication and information flow between farmers and other value-chain actors. This has led to increased farmers' knowledge and access to quality pre-harvest inputs, expanded access to credit, and extended access to formal markets. Esoko operates in 10 countries across Africa and has reached 400,000 farmers till date.



Operating Model

Initially established as a mobile and web-based repository for price information in Ghana, Esoko has transformed over the years to a platform that connects stakeholders across the agricultural value chain. The platform provides information on pre-harvest practices and real-time market prices. In addition, the platform serves as a marketplace for farmers and buyers to make offers, and for input suppliers to advertise input commodities. The platform also provides data collection, product traceability and logistics tracking services.

The platform enables real-time exchange of information between stakeholders across the value-chain. Esoko's technology platform differs from traditional ICT systems, which are designed to solely push information to farmers, in that it is a platform that enables two-way information flow between farmers and other agricultural stakeholders. This decreases information asymmetries along the chain.

Esoko's customers include farmers, farmer groups, input suppliers, financiers, mobile operators, agro-processors, exporters, farmer co-operatives, government agencies, and non-governmental organizations. Farmers receive real-time SMS feeds on price and demand information, location of seed and fertilizer outlets, weather forecasts, disease prevention tips on their mobile phones. They are also matched to buyers, including traders and processors. Agribusinesses can use the platform to monitor farm activity, market their products to farmers and receive feedback from farmers. Stakeholders can also receive information on crop cycles, and farmer yields. Co-operatives, NGOs and government bodies can use the service to broadcast critical information to farmers using Esoko's bulk text messaging service. Esoko provides data collection services to clients as well. For example, it conducted a poverty assessment study for the Government of Ghana to analyze the

impact of social benefits on farmers. For the purpose of such studies, enumerators employed by Esoko visit farms and capture farmer related data on Android apps. The enterprise also caters to mobile operators, for instance, in partnership with Vodafone Farmer Club in Ghana, Esoko provided information to farmers. As part of the club, member farmers can make free calls to other farmers in the network, and are allowed to access Esoko's content at no cost. Financial institutions can leverage farmer profile data to appropriately assess default risk and accordingly provide credit to farmers.

Financial Sustainability

The enterprise invests significant costs in development and maintenance of the platform. The initial upfront investment to set up the platform included USD 600,000 of personal capital and USD 200,000 in donor funds¹. The primary cost components constituted new hardware, staff to operate the hardware and work in the commodity markets to collect price information. Esoko continuously strengthens its multi-stakeholder platform; it spent USD 700,000 in 2015 on upgrading and maintenance. In pursuit of expanding services delivered on its platform, Esoko is set to launch an input wallet solution in that will allow purchase of input commodities directly on its platform by linking farmers to input suppliers, along with financial institutions playing a role in input finance.

To support its operations, Esoko employs a differentiated revenue model: subscriptions and revenue share. Subscriptions are paid primarily by enterprise customers to use the platform. Revenue share is with the mobile operators; typically mobile operators retain 70 percent-80 percent of the value of the communication (SMS costs or call center charges) and Esoko is paid 20 percent-30 percent of the value of the communication. With the introduction of the input wallet solution, input sales will be based on a commission model. Farmers and farmer groups are charged based on a tiered subscription model.

The table below provides an indicative farmer pricing model²:

Tier	Services	Target Customers	Annual Cost (USD)
Bronze	Mobile alerts of market prices and offers. Average of 10 SMSs per week	Individual farmer	36
Silver	SMS Push and market sites	Farmer groups with up to 200 members	250
Gold	SMS Push, market sites, scout polling	Farmer groups with 200 - 2000 members	1500
Platinum	SMS Push, market sites, scout polling	Unlimited farmers	8000

In addition to these revenue streams, Esoko also pursues public-private partnerships to improve sustainability. Government stakeholders are important in designing interventions appropriate to smallholder farmers.³

Impact

The consolidated impact on all stakeholders on Esoko's platform is yet to be assessed. However, the service is believed to have increased efficiencies across the value-chain. For instance, an export company registered on Esoko's platform undertook the procurement process in 31 days with 3

¹ ICT in Agriculture: Connecting Smallholders to Knowledge, Networks and Institutions, The World Bank, Nov 2011

² Esoko Networks: facilitating agriculture through technology, UNDP, Jan 2010

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employees as opposed to 60 days and 5 employees prior to using Esoko.⁴ Farmers' self-reported evidence showed an increase of 20 percent-40 percent in revenue.⁵ A banking study conducted by IDinsight and financed by Acumen indicated that Esoko farmers who were provided loans from an agricultural bank in Kenya had a 12 percent higher repayment rate than farmers who were provided loans from the same bank but not registered on Esoko.⁶ According to Esoko, the reason for the higher repayment rate could likely be attributed to the customer loyalty engendered by the services provided on the Esoko platform; customers valued the content and were inclined to stay in good standing with the bank, as opposed to only receiving repayment reminders which were more distressing in nature to the farmers.⁷

Challenges and Lessons

Esoko's primary challenges are linked to access to finance and working capital. Given the high costs involved with technology development, architecture and maintenance, cash flow is a significant challenge. Another challenge is finding talent at affordable prices – a large part of its business model relies on accessing data and verifying the authenticity prior to disseminating it to stakeholders across the value-chain. Keeping abreast on government regulations is also a key consideration for Esoko; for example, any changes in telecom regulations may affect Esoko's service delivery. The enterprise was recently under pressure by the meteorological department in one of the countries of Esoko's operation to mandatorily get the enterprise's weather feed approved by the meteorological society prior to disseminating it to farmers.

⁴ ICT in Agriculture: Connecting Smallholders to Knowledge, Networks and Institutions, The World Bank, Nov 2011

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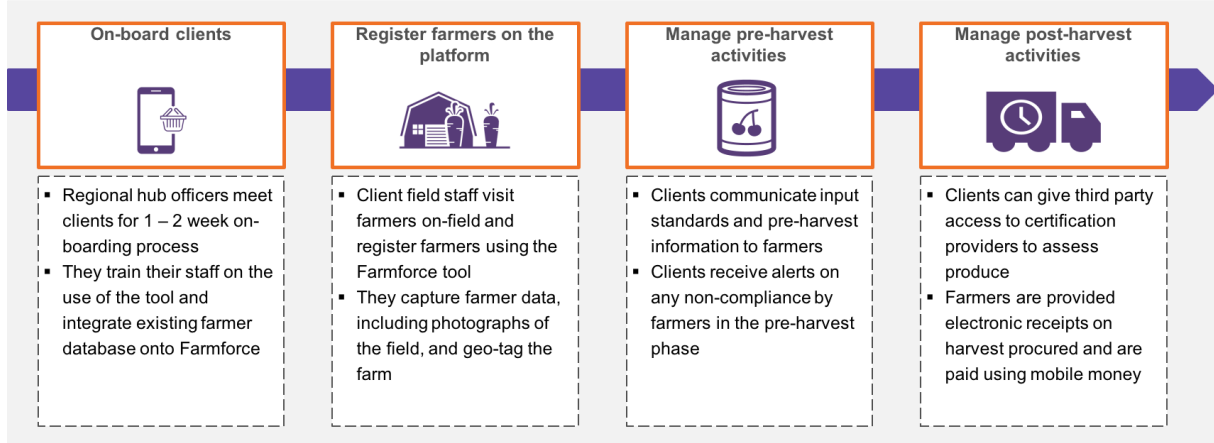
CASE STUDY: FARMFORCE



Founding year: 2012
HQ: Guatemala, Kenya, Thailand
Countries of operation :
 25 countries across Latin America, Africa , and Asia
Orientation: Currently in the process of converting to for-profit
Employees: 12
Turnover: Not disclosed

Smallholder farmers in developing countries face a multitude of challenges right from planting all the way up to selling end produce. Small land holdings, limited knowledge on quality agricultural inputs, and lack of access to finance result in low yields and limited bargaining power. Added to these challenges, information asymmetries linked to price information, government policies, global certification standards, and knowledge on profitable markets make it even more difficult for farmers to move away from subsistence farming and realize higher prices for their produce. Aggregators and export companies, who could potentially provide increased incomes to farmers by helping them surpass middlemen, are reluctant to work with these farmers owing to lack of traceability and quality assurance data across the value-chain.

Farmforce is a cloud-based traceability software application that enables agribusinesses working with smallholder farmers on a contract basis to efficiently manage backward and forward linkages across the agriculture value chain. Stakeholders on the platform include farmers, exporters, processors, certification providers and financiers. The enterprise has reached over 150,000 farmers till date.



Operating Model

Farmforce is a web and mobile based platform solution for agricultural businesses, aggregators, exporters and agricultural processors to manage relationships with smallholder farmers. Farmforce is active in 25 developing countries across Latin America, Africa and Asia for a variety of crops, such as horticulture, cereals, coffee, cocoa and works with more than 150,000 smallholder farmers.

International markets require compliance with food safety standards and transparency in quality of inputs used in production. Small-scale famers lack the resources or the information to adhere to these strict norms and thereby lose out on the opportunity to sell to global markets. On the other hand, agribusinesses that work with large numbers of smallholder farmers rely on paper records and frequent on-field farmer interaction to manage contract farming operations, making it an expensive and time-intensive process.

The Farmforce platform enables digitizing contract farming and out-grower schemes, thereby increasing efficiencies in smallholder farmer management and expanding opportunities for these farmers to be part of global formal markets. Once the tool is sold to clients, Farmforce representatives from the respective regional hub meet with client staff either in person or over online media. Clients undertake a one-week onboarding training where Farmforce agents assess client requirements, train the client users on the tool's communication and data management features, and integrate the client's existing farmer database on to the Farmforce platform. The enterprise also operates an online support centre to address any client issues via screen sharing and video calls.

Farmforce enables agribusinesses to track compliance to pre-harvest protocols in line with global certification standards.

Clients use Farmforce to gather data on farmers, and their locations using geo-referencing and Google Maps. In addition, they can record information on type of crops grown, soil fertility, quality of fertilizers and other inputs used. During the pre-harvest phase, farmers can communicate with field agents on the farming protocols. Field agents can verify the inputs used by farmers in line with certification standards, inspect the crops and forecast yields. Farmforce's photo capture and GPS features also enable companies to ensure that their extension officers and field agents are monitoring the farmers on a regular basis.⁸ The tool's finance monitoring feature allows companies to interact with finance providers and manage input loans and cash advances made to farmers. The platform stores information on the farmer's loan history and send SMS reminders to farmers for outstanding loans. In addition, certification bodies on the platform assess the quality of inputs used and compliance to food safety standards prior to awarding certifications such as the Good Agricultural Practices (GAP). The tool's strong association with certification providers also enables real-time communication to farmers on changes in certification standards or regulatory policy that may impact the production process.

Farmforce offers a transparent harvest procurement mechanism wherein the tool is linked to digital weighing scales and a Bluetooth printer at collection centres. The produce is weighed using these scales and an electronic receipt is printed and given to farmers for their records. The receipts include information on the quantities delivered by farmers, traceability data and produce prices. The tool allows automatic deduction of outstanding input loans from harvest sales. Companies use mobile money platforms or electronic bank transfers to pay individual farmers.

Financial Sustainability

The software-as-a-service was developed by Syngenta Foundation for Sustainable Agriculture, a non-profit organization and was co-funded by the State Secretariat for Economic Affairs of Switzerland.⁹ Initially established as a project, Farmforce is currently in the process of being converted to a for-profit enterprise.

Farmforce earns its revenues by sale of licenses to a variety of agricultural stakeholders including exporters, processors, and co-operatives to use its web and mobile platform. Clients can further extend the license to other third party stakeholders such as agronomists, trainers, input providers, certification bodies and financial institutions for a fee paid to Farmforce. Smallholder farmers are not required to pay for the tool. Revenue streams include subscription fees, set up fees and fees for customizations required by the client. Prices may vary based on the features, functionalities and suite of languages desired by the client and the number of devices required by the client. Packages could differ by the modules requested by the client, such as basic farming module, SMS communication, compliance functionalities and other sophisticated tracking features.

The enterprise incurs significant costs in developing and maintaining its software platform. Initial upfront costs involved in designing the technology and user interface represented almost 100 percent of the total costs. Over the 4 years of operation, this cost has been brought down to less than 50 percent of the total costs. Maintenance and continuous development of the platform, salaries paid to local support staff and marketing and business development activities in customer acquisition represent other major operational costs incurred by Farmforce.

The tool is built taking into consideration a large variety of crops thereby creating a generic tool that can be customized for individual client at an additional fee; this helps decrease costs for

⁸ Technological Innovation for Inclusive Agribusiness: How can ICT innovations be leveraged to address value chain challenges? Insights from the Kenya Workshop Report, Business Call to Action, 2015

⁹ Grow Africa Smallholder Working Group Briefing Paper: Information and Communication Technology

development of the tool. The tool is also designed for use in different languages - English, Spanish, Portuguese, French, Vietnamese, Chinese, Thai, Turkish, Hindi, Bahasa Indonesia, which helps in increasing sales to companies managing smallholder farmers across different geographies. In order to strengthen financial sustainability, Farmforce is seeking long-term franchisee partners for resale of its tool. It currently partners with a leading supplier of software for the Agricultural Industry in Southern Africa which undertakes marketing and sales of Farmforce tools and pays Farmforce a commission.

Impact

Farmforce's tool has a dual impact on smallholder and marginal farmers: one, by helping agribusinesses in streamlining their smallholder farmer management processes, it indirectly helps farmers in growing quality produce and reaching formal markets and two, in improving technical support and transparency in harvest procurement. The system enables effective monitoring of adherence to food-safety and sustainability standards, which eventually translate to higher produce prices for the farmers.

Farmforce increases market access for smallholder farmers on the one hand, and minimizes risks for agribusinesses procuring from small-scale farmers on the other.

The increased use of data allows exporters to estimate yields and advise farmers on production planning and appropriate inputs, and on the other hand enables financiers to provide input loans in accordance to quality assessment of risk. The use of ICT in monitoring field activities allows extension workers to provide more targeted advice to farmers at the right time. The ability to link multiple stakeholders on one platform increases communication flow and traceability at every point of the value-chain. This results in minimizing any leakages between planting and sale of the produce.

Challenges and Lessons

Given the geographies that Farmforce operates in, most clients and target customers have limited experience with using technology in farmer management. Many of these companies are risk-averse to digitizing records and prefer to interact with farmers using a high touch engagement model. Therefore, Farmforce invests significant time in demonstrating the value of the tool in tracking farmer compliance to food-safety certifications and the potential for cost savings in monitoring remotely located dispersed farmers using mobile technology vis-à-vis on-ground management.