

Key findings at a glance

For Smallholder Farmers, Market Access and Integration are Out of Reach

These two statements converge on a more poignant issue: smallholder farms lack convenient access and integration into markets.⁴ More than 80% of the global food supply is provided by about 570 million smallholder farms.⁵ Many of these small family farms are unable to participate in the world food economy directly as they lack the knowledge and funds to optimally produce safe food, which fundamentally results in poor access to suitable markets for their produce (Figure 2).

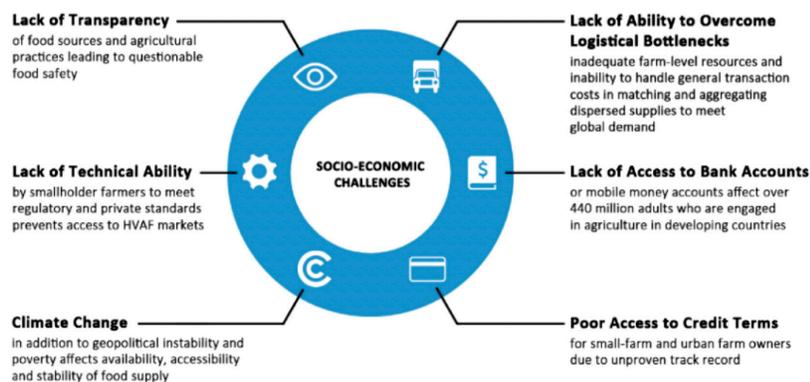


Figure 2: Socio-economic challenges faced by smallholder farmers.

This inherent mismatch of supply (from the farmers) and demand (from the consumer markets) is a reason why small-scale farmers are usually trapped in a vicious cycle of poverty, through a systemic cut-off from potential buyers. Hence, despite increasing consumer and market demand for higher safety and quality produce, smallholder farmers are unable to leverage on market opportunities and generally suffer from lower economic returns.

Unable to reinvest in sustainable and safe farming practices, they remain entrenched in a cyclical loop that further alienates them from market access. Coupled with the expected increase in world population, a detachment between small-scale food providers and direct consumers raises the urgency for a digitally connected, decentralized, scalable, and safe farming solution to be found.

The traditional agribusiness financing model is inefficient and slow to address this gap due to perceived high risks where most of the farmers are small stakeholders. Out-grower programs developed by large agriculture corporations have also not gained significant traction as they are not trusted by small farmer communities.⁶

Summary

To tackle the challenges of enabling smallholder farmers to have convenient market access and integration, Netatech has been working for over a decade to develop a cooperative platform for farmers. This platform, called CrowdFarmX, which Netatech claims is the world's first cooperative farming platform on the blockchain, will enable farms of all sizes to have direct access to the best-practice farming protocols, monitoring, and control of their farms to maximize food safety and production. Farmers will be able to receive reliable, up-to-date, and contextually relevant information in a practical format.

⁴ P. Arias et al. 2013. *Smallholder Integration in Changing Food Markets*. Rome: FAO.

⁵ B. E. Graeb et al. 2016. *The State of Family Farms in the World*. *World Development*. 87. pp. 1-15.

⁶ M. Mwambi et al. 2016. Does Contract Farming Improve Smallholder Income? The Case of Avocado Farmers in Kenya. *Journal of Agribusiness in Developing and Emerging Economies*. 6. pp. 2-20.

Empowering Farmers through CrowdFarmX

CrowdFarmX will provide farmers with financial, trading, and proprietary industry knowledge—to empower them with the capacity to produce high-yielding safe food and ensure food security. Powered by Internet of Things (IoT) technology and Smart Food Contracts on the blockchain, it seeks to form the base of a decentralized and self-sufficient community of farmers and agronomists and aims to ensure stable and secure access to a demand and distribution network (Figure 3).

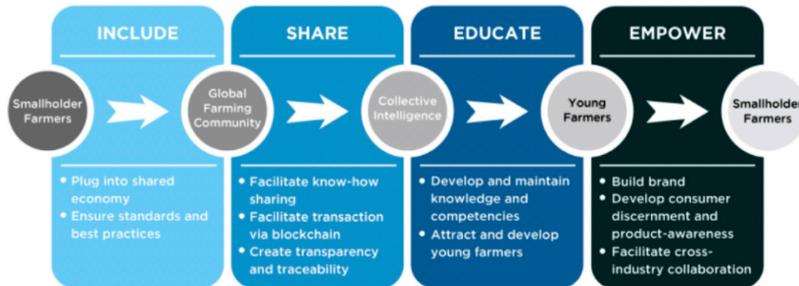


Figure 3. Proposed Onboarding Strategy

Transactions will be made possible within the platform itself, through the integrated online marketplace, which will also facilitate other functions such as crowdsourcing, crowdfunding of farm infrastructure, peer sharing of agronomic information such as pest control with minimal use of pesticides, and innovative methods of improving quality and yields. Smart Food Contracts that are executed on the CrowdFarmX platform will run on the hyperledger blockchain due to higher throughput compared to existing public blockchain technology.

The CrowdFarmX platform has the potential to enable primary produce farmers to participate in aggregated contract farming, where farm produce will be tokenized via Smart Food Contracts and contracted by buyers. Through the platform, farmers are assured of produce up-take in future dates and buyers can benefit from reduced prices with the elimination of intermediaries and the lowered costs of production.

CONTACT



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David Tan is a serial entrepreneur with over 28 years of experience in information technology (IT), control engineering, and fast-moving consumer goods supply chain management. He was responsible for optimizing the McDonald's and KFC cold chains, as well as global distribution for the Jardines Group. He was also a dotcom entrepreneur during the early 2000s, specializing in supply chain application service provider (ASP). In the last 10 years, he has worked closely with Singapore government agencies and established Netatech as one of the leading providers of water and food sustainability technologies in the country.

In 2014, he led his team to build the first Food Cradle in Singapore, which supplies pesticide-free vegetables to the Singapore market. By combining blockchain technology with farming, he aims to bring his vision of transforming farms and transforming lives to the world through CrowdFarmX.

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