



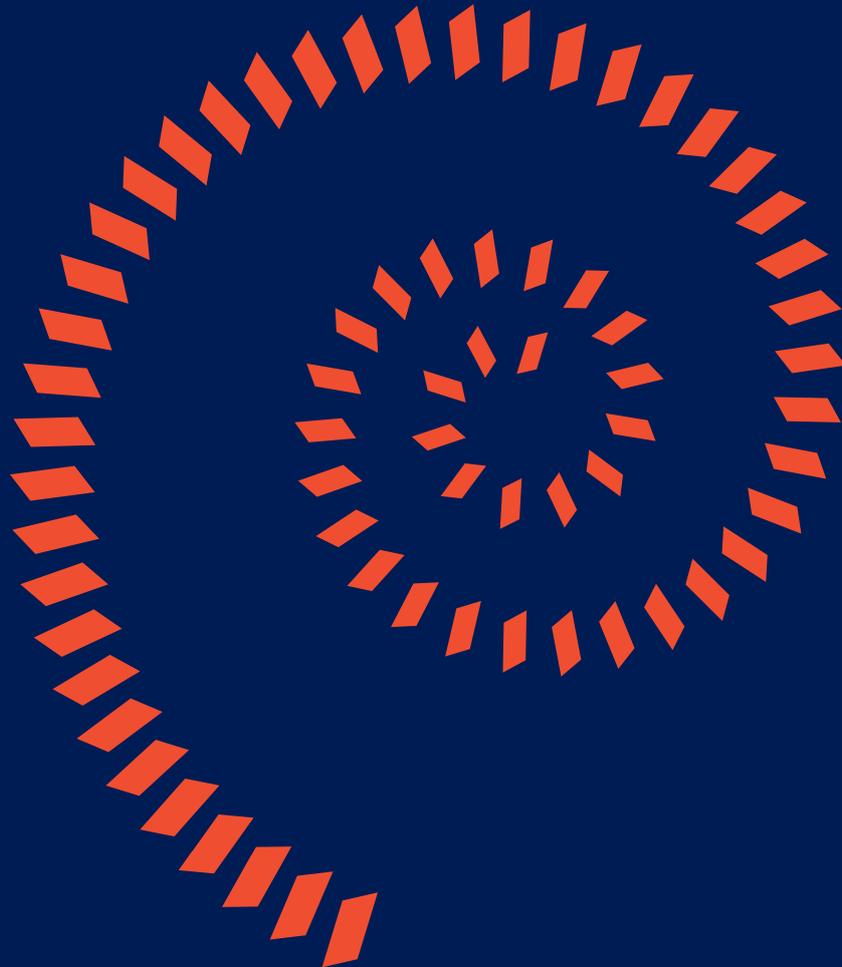
**MARS**



**Economics  
of Mutuality**

# Agriledger & Agunity

An Economics of Mutuality case study



**Responsible Business Forum: The Economics of Mutuality**

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# Agriledger & Agunity

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## **About the Responsible Business Forum Case Studies**

This series of case studies explores how mutual approaches to business can help companies and their partners tackle some of the most pressing global challenges. The businesses featured in this series share a commitment to objectives beyond purely financial performance, as well as a serious intent to implement mutual practices through new forms of ownership, governance, leadership, measurement and management.

In particular, these cases address the measurement of multiple forms of capital, ecosystem shaping approaches, leadership development, business education, and policy formulation through laws and regulation that promote mutual conduct. The authors appreciate the collaboration of participating companies in creating these cases.

These cases were first developed for the annual Responsible Business Forum, the convening event of the Mutuality in Business Project, a joint research programme between Saïd Business School, University of Oxford, and the Catalyst think tank at Mars, Incorporated. The Responsible Business Forum brings together global companies, MBA candidates, scholars and activists to share their experience in confronting key challenges in their ecosystems to generate financial, social and environmental value.

## **Authors' Note**

The conclusions and recommendations of any Saïd Business School, University of Oxford, publication are solely those of its author(s), and do not reflect the views of the Institution, its management, or its other scholars. These cases are based on information provided to the researchers by participating companies.

## **Mutuality in Business**

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# Executive Summary

## Agriledger & Agunity

The AgTech startup AgUnity Ltd., established in 2017, is an Australian blockchain-based, for-profit commercial operations arm of the AgriLedger Hong Kong Charitable Trust. AgriLedger is the philanthropic organisation linked to AgUnity that helps smallholder farmers across developing countries.

AgriLedger is a mobile application designed to assist farmers. Based on blockchain technology, AgriLedger enables farmers in developing contexts to coordinate within cooperatives, track prices and global trends, and improve their business.

### Pain point and Mutality Strategy

Within agricultural supply chains, farmers often are disadvantaged, selling goods for below market price, suffering from inefficiencies in the system and missing opportunities to access financial services.

Co-operatives help improve inefficiencies, but even these rely on paper-based records, and other forms of volatile agreements accompanied by a lack of transparency.<sup>1</sup> This can lead to corruption and a lack of coordination.

Overall, problems with trust (social capital) reduce farmers' ability to coordinate, even within cooperatives, and place them in the weakest position in this system.<sup>2</sup>

### Unique contribution to EoM

AgUnity initiated AgriLedger to improve trust and the decision-making power of farmers. The approach helps farmers generate and capture financial capital by creating technological tools that enable greater trust (social capital) within cooperatives.

More specifically, the AgriLedger app enables farmers to keep track of their products, book-keeping, accountability and prices:

- Transactions are collected via the app throughout the pilots, improving transparency and efficiency among all stakeholders
- Farmers get more power on setting prices and thereby improve their income
- AgUnity uses its own equity capital to fund its projects and will use future profits to reinvest into business growth for more pilots and scale existing projects.

### Performance

Evidence suggests a 2-3 times material increase in farmers' incomes through the use of the ArgiLedger application and blockchain technology. The principal metric is the change in farmer's family income per growing season, based on assessment of the prevailing harvest yield and commodity prices, compared to results generated through the projects.

### Prognosis

At the moment, AgUnity is still lossmaking because it is an early stage start-up, but is expected to improve income and decrease initial costs of distributing smartphones and setting up co-operatives. AgUnity expects to cut down those costs to approximately \$50 per farmer, while growing royalty revenue to \$250 per farmer.

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1 "Who we are," AgriLedger, <http://www.agriledger.com/index.html#about>

2 "Who we are," AgriLedger, <http://www.agriledger.com/index.html#about>

# Agunity Ltd

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## About the company

The AgTech startup AgUnity Ltd., established in 2017, is an Australian blockchain-based, for-profit commercial operations arm of the AgriLedger Hong Kong Charitable Trust. AgriLedger is the philanthropic organisation linked to AgUnity that helps smallholder farmers across developing countries. Its mission is to improve farmers' economic condition and overall bargaining power with blockchain and smartphone solutions, which reduces food waste and farmer inefficiency. AgUnity also works with various international organisations, such as the World Food Organisation, to resolve the global problem of food waste and poverty of agricultural producers.

AgriLedger is also the name for the mobile application that records and transacts all activities using blockchain technology. It encompasses a complete framework of integrated services for "delivering an even playing field to farmers and co-ops."<sup>3</sup> Although still a start-up, the initiative shows the promise of mobile and blockchain technologies to help address persistent issues in agricultural supply chains.

AgriLedger's success is built on a simple concept: Create trust within African and Asian cooperatives by recording traditional, and mostly oral, contracts into the blockchain. AgriLedger is designed to capture these transactions on both mobile and tablet devices for illiterate farmers.

To date, Agriledger has been deployed in the following areas to help farmers record their business operations: Kenya (wheat and sugarcane), Bougainville, Papua New Guinea (cocoa, sea cucumber and VCO), Solomon Islands (cocoa), Indonesia (cocoa), Myanmar (coffee), Turkey (honey), Ecuador (cocoa and coffee) and at Planning Stage in Laos (coffee), Ghana (cocoa), Cambodia (nuts), Vanuatu (cocoa), Timor Leste (coffee), Vietnam (fruit), Colombia (cocoa and coffee).

**40% of the world's population earn their income from Agriculture**

**Up to 50% of smallholding farmers' crop value gets lost between harvest and sale due to production inefficiency and a lack of transparency**

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3 "Home," AgriLedger, <http://www.agriledger.io/home/>

## Pain points and mutality strategy

AgUnity and AgriLedger have identified two major ecosystem pain points:

- Smallholder farmer food production inefficiency
- Trust deficit between smallholder farmers and cooperatives

According to UN reports, 46.1% of overall production is wasted before food consumption,<sup>4</sup> which amounts to a loss of \$940 billion each year between harvest and table.<sup>5</sup> Although a large part of the population globally lives in poverty, 50% of food produced in Africa is wasted. According to the UN Food and Agricultural Organisation, the amount of food wasted on the continent would be enough to feed the 300 million people living in Africa.<sup>6</sup>

This inefficiency affects smallholder farmers, in particular, who may lose up to 50% of their crop value between harvest and sale. Given that 40% of the world's population earn its income from agricultural production and small farmers supply 80% of food in developing countries, addressing such challenges represents an urgent matter.

Of particular concern, smallholder farmers suffer from a lack of transparency and a trust deficit within the community. Farmers frequently pay inflated prices for essential supplies in small quantities and then face constraints to access better markets. Goods are often sold below market prices since farmers have limited access to information on market prices of food.<sup>7</sup> Furthermore, farmers tend to lack access to insurance, banking and other basic financial services. Although smallholder farmers often join co-operatives, a lack of trust and feasible audit systems leave space for corruption and graft. Paper-based systems are labour intensive, prone to error and often difficult to understand.

Motivated to address the problem of food waste and improve the lives of millions of farmers worldwide, AgUnity initiated a blockchain technology via a mobile app to reduce the information asymmetry and improve farmers' bargaining power. AgUnity aims to streamline operations of co-operatives by giving every smallholder farmer a simple distributed cryptolegger mobile app to improve access to information and keep track of all transactions.

The company then equips smallholder farmers with mobile phones to sell harvests and supply more efficiently. AgUnity believes that, through this strategy, employees and investors will generate measurable positive social and environmental impacts as well as a financial return.



4 Peter Alexander et al., "Losses, inefficiencies and waste in the global food system," *Agricultural Systems* 153 (2017): 190-200.

5 "About," AgriLedger, <http://www.agriledger.com/index.html#about>

6 "About," AgriLedger, <http://www.agriledger.com/index.html#about>

7 "Home," AgUnity, <http://agunity.com/>

## AgUnity Mobile App

Before the final release of the mobile app, AgUnity spent months in Kenyan communities meeting with farmers in order to understand their needs.

One of the challenges was high levels of illiteracy amongst the community. In response, the application's interface came about through constant feedback from the users. People, for example, responded better to certain images and were confused by others. The interface converged towards a hybrid design with semi-abstracted graphics containing elements of words in a simple setting. These initial preparations helped create user-friendly software that integrates all necessary functions, enabling planning, transactions and monitoring. The app focuses on a set of six core functions: planning, tracking, processing, transfers, market and wallet:

**1. The PLANNING** function helps farmers indicate when crops are ready for collection or when equipment is needed. It also enables co-operatives to share information and plan together more efficiently.

**2. TRACKING** records every step of the supply chain, which ultimately traces back to the farmer. Buyers pay premiums for assurance of quality and ethical traceability, which can increase crop value by over 50%.

**3. PROCESSING** gives farmers confidence about every step from field to market as they get insight into their produce being processed or sold in real time.

**4. TRANSFER** replaces paper records by secure phone-to-phone QR code transactions stored in the blockchain. This feature limits misunderstandings and disputes.

**5. MARKET** exposes farmers to an agricultural market where they can purchase quality goods such as multifunctional solar kits.

**6. WALLET** serves as a micro-banking system for farmers. Payments from crop sales immediately appear in the wallets of farmers, enabling them to directly withdraw money from the co-operative or make purchases via the app.

**7. LOAN:** In the future, AgUnity plans to enable the provision of micro-loans to farmers enacted via the app. In this model, farmers would have a "Loan" option which would ask them to select a reason and a repayment plan (e.g., the next 2-3 harvests). The cooperative would then validate the request and send all details to the lender (MFI). Equipped with this information, the lender (MFI) would approve all requests online without the need for farmer's physical presence. Upon approval, the farmer would receive the credit via the Wallet function within just a few minutes. The payments could then be automatically deducted in accordance with the approved repayment plan.

## The Business Model

AgUnity, in cooperation with the AgriLedger charitable trust, equips farmers with smartphones that are used for transactions via the AgUnity App. This enables the distribution of smartphones with the AgUnity app at a cost of \$30 per farmer. The charitable trust helps generate the finances needed to equip farmers with free phones. The charitable trust is self-sustainable because it is a shell entity with no recurring costs that require ongoing financing. One of its principal mandates is to hold custody of grant funding in order to remove any potential conflicts of interest that might mobarise if a for-profit entity were to act as the custodian.

Cooperatives pay a premium to farmers, who produce harvest in return. AgUnity has also developed an online marketplace supplying all equipment needed for the production. Farmers can order via the app, while cooperatives pay for those orders via the app and deliver the supply to farmers. Suppliers pay a commission of approximately 10% to AgUnity.

## Ethical Traceability for Quality Insurance and Ecological Footprint

Introducing the blockchain technology to the supply chain helps track the quality of the agricultural production through sensitive steps of the supply chain, from field to export. The traceability helps build a sustainable supply chain to support claims on fair trade certificates and helps collect evidence to calculate the ecological footprint of the supply chain.

One of the examples introduced by David Davies, CEO of AgriLedger, is the process of ensuring the timely preparation of sea cucumbers for export from Vietnam. Dried sea cucumbers with a clean, unbroken and appealing form have a better market value. The AgUnity app can record the time of processing, capture photos of the transaction, and offer a functionality of traceability in addition to the transactional record.

### The Position of Smallholder Farmers

AgUnity applies thorough feasibility studies to assess the needs of farmers who represent the initiative's core target. At the initial stage, AgUnity collects macro-level economic data for each pilot. This process aims to identify steps in a value/supply chain that can be introduced and eventually improved. AgUnity then designs steps to boost production and productivity, relying on the collected data to target identified pain points.

The farmers are given a free smart phone with the AgriLedger application installed, which helps farmers to become more efficient through planning and cooperation among each other. The farmers retain ownership of all data captured through their use of the application, and at a future point will be able to opt in to sharing this data with AgUnity's ethical third-party commercial partners to access services such as micro loans and insurance.

### Performance

#### Financial Feasibility

Although it is still too early to make broad conclusions about impact, it is possible to track some initial results. In terms of financials, AgUnity is loss-making now because it is an early stage company, but the venture has already recorded its first revenues in 2017. There are several ways to generate more revenues, but aiming to increase the number of farmers and cooperatives is the primary focus. Another goal is to provide more valuable toolkits that will aggregate more financial gains. The cost to equip a farmer with a smartphone along with the related costs to form a cooperative is around \$100.

AgUnity has been using its own equity financing of \$300,000 AUD raised from its investors to fund its initial pilot projects, including the cost of deploying the smartphones and app to farmers. Another \$2,500 of revenue has been generated through the sale of its solar kits at the AgUnity online marketplace. The second round of investment aims to raise \$2,500,000.

So far, two pilots have been initiated in Bougainville and Kenya. The Bougainville pilot brought in \$2,500 from its first revenues, which suggests that the business model has a relatively fast payback period for customer acquisition costs. If the business results persist in this manner, expected revenues will enable the "cycling" of equity financing to scale AgUnity's projects

#### Contribution to Human and Social Capital

The overarching aim of this project was to bring smallholder farmers out of poverty, which is why the second component of the AgUnity business model refers to the impact on farmers' material and financial wellbeing. To measure this component of the business model, the initiative compares harvest yields and sales prices realised over the course of successive growing seasons.

Some evidence has already been collected which indicates that there has been an increase of farmers' material income. Although an increase of 2-3 times is ambitious in many locations, even more is possible in places like Papua New Guinea where AgUnity could increase incomes by 5-6 times in a few years. In other more developed locations such as Bali and Turkey, AgUnity aims only to get an increase of 25%.



## Prognosis

Even though AgUnity is still in its initial stage, evidence suggests that the business has the potential to scale. Challenges may accompany with these attempts to scale because achieving financial viability to sustain the business in the long run involves reducing costs as well as increasing the number of customers and farmers within the business.

The enterprise has raised \$2,500,000 for its next round of five pilots through royalties to pay for the deployment of 3,000 phones, but plans to raise this amount to \$2.5 million and scale even further. Another set of pilots is set for 2018 targets in various agricultural sectors in Indonesia, Turkey, Solomon Islands and Ethiopia. On the grounds of current trends, it is expected that the costs of setting up cooperatives and equipping farmers with mobile phones can be recovered through royalty revenue within the first few years of operation. It is also expected that costs will be brought down to under \$30 per farmer over the coming years, while at the same time growing royalty revenue to \$250 per farmer. This would mean an increase of five times relative to previous 2-3 times increase. Taken together, more than 200,000 farmers are expected to be covered by the project.

In order to grow its community and facilitate greater best-practice sharing, AgriLedger plans to create a system of chat and photo sharing between African farmers and Australian farmers. The platform might also be used in the future to offer additional services for training, localisation, and more.

Although more research remains to be done, the initial results and planned future initiatives suggest the financial feasibility and self-sustainability of the enterprise. As a result of its model, the AgUnity business has contributed to the economics of mutuality in multiple ways. From improving farmers' lives at micro level to reducing food waste at macro-level, AgUnity has prioritised human, social and natural capital within the ecosystem. AgUnity has developed a comprehensive measurement that goes beyond pure financial performance. The initiative also builds trust among farmers, food suppliers and consumers because the app improves transparency in ways that ensure price accuracy, increased income and convenience on ethical standards in the agricultural production. Lastly, AgUnity deserves credit for its contribution to natural capital because it helps address the crisis of global food waste

Deploy 3K phones 5 initial projects	\$252,842	10%
Cost of phones	\$122,967	49%
Data plans	\$14,875	6%
Deployment costs	\$65,000	26%
Support costs	\$50,000	20%
Ramp-up team to prepare for scale	\$1,311,600	52%
Staff - Core	\$339,960	26%
Staff - Core	\$157,500	12%
Staff - Core	\$229,440	17%
Staff - Core	\$584,700	45%
Build further brand equity	\$438,535	18%
Marketing	\$124,500	28%
Travel	\$131,160	30%
General Admin	\$182,875	42%
Prepare equity & raise capital	\$350,000	14%
Consultancy costs	\$350,000	100%
Contingency	\$147,023	6%
Contingency	\$147,023	100%
<b>Total use of Funds</b>	<b>£2,500,000</b>	<b>100%</b>



Saïd Business School at the University of Oxford blends the best of new and old. We are a vibrant and innovative business school, but yet deeply embedded in an 800-year-old world-class university. We create programmes and ideas that have global impact. We educate people for successful business careers, and as a community seek to tackle world-scale problems. We deliver cutting-edge programmes and ground-breaking research that transform individuals, organisations, business practice, and society. We seek to be a world-class business school community, embedded in a world-class university, tackling world-scale problems.

### **Mars Catalyst and the Economics of Mutuality programme**

Mars' approach to business has long since been guided by five principles – quality, responsibility, efficiency, freedom and mutuality. Together they inform and guide the actions of all Mars associates every day as they do their jobs and interface with the outside world.

The origins of the Mutuality principle go back to 1947 when Forest Mars Snr, who led and grew the business through the 1920's to the 1960's, wrote a letter to all 500 associates of the company that said "the sole purpose of the company is to create a mutuality of benefits with all stakeholders that the company touches; from suppliers to customers as well as governments and competitors and naturally associates and shareholders." This far-sighted thinking, that the company could only be successful if everyone around the company was being successful, has been a cornerstone of Mars' business philosophy ever since.

Mars has therefore always been interested in how it can best live up to this principle; and to find new ways of driving mutuality with all stakeholders it touches. This led to Mars'

leadership tasking its economic research unit, Catalyst, to start new work into unexplored territory for business; to identify critical drivers of mutuality and, using business pilots, to develop and test new metrics and management practices that can help boost mutuality in business situations. This work has been called the Economics of Mutuality.

This work has established promising links between increasing social, human and natural capital (that can be measured with simple & stable metrics) and a corresponding increase in financial capital – demonstrating how a company can do both good and well at scale. A number of pilots have now been completed in the areas of micro-distribution, the employees of Mars and in agricultural development that suggest that these relationships are true in different places and situations.

### **The Oxford Mars partnership**

On the back of these promising findings, a multiyear partnership with Oxford University's Saïd Business School was established in 2014 to focus on the development of a business management theory for the Economics of Mutuality with corresponding teaching curriculum, new management practices, and case study research. The research programme has combined the pursuit of normative questions – what is

mutuality and how should it be enacted? – with grounded, ethnographic research on current thinking and practices. This has led to the development of field experiments and case studies examining how large corporate actors conceive of and pursue responsible business practices, and how these relate to their financial and social performance.

### **Mutuality in Business**

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