THE EDGE MARKETS
MAKE BETTER DECISIONS

Cover Story: Fintech for farmers

Nurul Halizan Ahmad Dewi keeps every invoice — even scribbled chits detailing the quantity and cost of chillies sold to her neighbours — tracking all of her farms' business activities and piling them neatly in cardboard boxes. Although a novice at planting chillies, she is meticulous when it comes to keying in the payables and receivables in a spreadsheet daily.

Halizan and her husbanfd, Ibrahim Harun, are among the few smallholders who keep accurate records, especially those that involve expense increases and price fluctuations, in the hope that the income statements could one day be used as leverage to develop their business. The only drawback is that she spends hours — that could otherwise be used on planning and strategising expansion — on crunching numbers.

When Halizan discovered Kapitani Sdn Bhd, a financial technology (fintech) start-up that aims to simplify financial services for underbanked farmers, her dream of developing her 2½-acre chilli farms in Jeram and Bestari Jaya (formerly Batang Berjuntai) into technologically advanced cultivations came closer to being realised.

"We still remember her [Halizan] breathing a sigh of relief when we showed her what we could do for her," says Kapitani CEO Nazrul Hazeri Nazirmuddin. "Unlike farmers who have been in the business for generations, Halizan and Ibrahim were new to farming and they did not have much experience apart from the passion for growing good produce and turning it into a successful business.

"Because they weren't traditionally farmers, they knew they couldn't rely on hunches or guesswork for their farming decisions — and they shouldn't — which was the reason Halizan, a former operations manager for a property firm, took it upon herself to keep tabs on their farms' finances.

"Bookkeeping, or the lack thereof, is the primary reason many smallholders are unable to build up a solid track record of their farm's business performance to forecast their future growth potential and prove their credit and investment worthiness to potential financiers. Most smallholders in Malaysia still run their farm the traditional way by mixing personal income and farm revenue with limited bookkeeping."

This is why Kapitani — a portmanteau of kapital (capital) and petani (farmer) — has developed a bookkeeping app that makes the chore a bit easier and puts information in an easy-to-deduce format that farmers such as Halizan can use to make management decisions.

Founders Nazrul and Iskandar Mohd Lot, who is Kapitani's chief operating officer, had been toying with the idea of building such an app since 2019. They had learnt at a start-up boot camp organised by the Malaysian Global Innovation & Creativity Centre (MaGIC) that only 8% of the

country's arable land was used for local food production. (Abdul Hadi Fikri Abdul Hamid joined the founding team later as chief technology officer.)

The main reason for the minimal use of land for this purpose is that small farms are seen as making little economic sense even though agriculture was the third-highest contributor to the country's GDP in 2019 at 7.1%, or RM101.5 billion, and accounted for 11% of employment — thanks to cash crops such as oil palm and natural rubber.

Smallholders, most of whom are still classified as being in the B40 (bottom 40% income group), lag behind large-scale farming and agribusinesses in terms of productivity and efficiency as they grapple with structural issues such as tenurial status and lack of access to technology, innovation, financial support, infrastructure and opportunities.

Making bookkeeping less of a chore

The problems faced by Malaysian smallholders is one that the global agriculture industry faces. Rapid population growth, dietary shifts, resource constraints and climate change are issues of concern for farmers who need to produce more with less, says the World Bank.

Indeed, the Food and Agriculture Organization (FAO) estimates that global food production will need to rise 70% to meet the projected demand by 2050. "This is an opportunity and indication of the demand for food in the future," says Halizan, 36, who hopes to continue farming until she retires.

To achieve this level of production, it is essential to efficiently manage and optimise the use of farm inputs such as seeds and fertiliser, says Nazrul.

But managing these inputs efficiently is difficult without consistent and precise monitoring. For smallholders, getting the right information will help increase production gains. Unfortunately, many of them still rely on guesswork, rather than data, for their farming decisions.

"We have found that Malaysia's overreliance on imported food is a symptom of a vicious cycle that has trapped our agricultural sector and stunted the growth of our food production for decades," says Iskandar.

"It all started with underinvestment and low adoption of technology that led to low efficiency, stagnant yield and high production costs. All these factors make locally grown food less competitive than imported ones. Our overreliance on food imports has stifled the economic opportunities in the sector and made it unattractive for both farmers and investors."

Even though several initiatives — such as funding start-ups with agriculture technology (agritech) solutions and microfinancing schemes for farmers to adopt agritech — involving both

the public and private sectors have been rolled out to drive the growth of agritech over the years, the participation of smallholders remains negligible.

In 2018, Malaysia Digital Economy Corporation (MDEC) piloted a project to spur the yield and quality of crops using Internet of Things (IoT)-enabled fertigation — combining fertilisation and irrigation — via a public-private partnership with Pertubuhan Peladang Kawasan Kuala Langat (PPKKL). Fertigation is a method of applying fertilisers, in which they are dissolved in water and delivered through the irrigation system to the crops.

PPKKL reported that the system helped its chilli farmers lessen the use of fertiliser by 20%, reduce their dependence on monthly manpower by 25% and increase the overall quality of yield — or Grade A chillies — by up to 90%.

Upon graduating from the MaGIC boot camp, Nazrul and Ibrahim sought out PPKKL to find out how the latter persuaded its members to adopt IoT and fork out the investments needed to kick-start the initiative.

Technology-enabled fertigation costs around RM60,000, which is reasonable for farmers with one- or two-acre farms, says PPKKL general manager Mohd Shakran Shamsudin.

For beginners, the cost may be a little steep, as they need capital to lease or buy farmland. Still, they can apply for a grant from the Ministry of Agriculture and Food Industries, which has allocated RM10 million for technology adoption and financing to be disbursed through Agrobank, says Shakran.

“The cost of investing in technology is expensive for a smallholder, but it is low for a bank. The problem is, farmers have no records and [most have] zero data. No bank will want to give them loans without anything to go on.

“At PPKKL, we have records of farms’ size and supply, but we have no financial records. Kapitani came to us, we explained the problem and they built the system. We want to help our community see agriculture as a viable business.”

After the meeting with PPKKL, Nazrul and Iskandar embarked on a three-month journey travelling more than 1,500km around Peninsular Malaysia to meet with the farming community and seek their input on the problems they faced as smallholders.

Nazrul says, “The smallholders understood what smart farming was and how technology such as IoT would help them improve on efficiency and productivity. When we asked why they weren’t adopting technology, the first thing they said was, ‘Mahal lah’ (too expensive).

“These farmers were among the more successful ones; most of the time, there is a constant demand for their produce — which, in their case, is chillies. But when we asked them how much profit they made when the market price of chillies was skyrocketing and what happened

to it, they started to pluck figures out of thin air. They were just guessing whether they made a profit or suffered a loss.

“Only a couple of farmers we met during that trip maintained some form of record. Nizam, whom we met in Ipoh, recorded the inputs and outputs of his farm on a whiteboard. Zamir Ghazali, CEO of Terengganu-based GM Peladang Sdn Bhd, used Google Sheets to keep records.

“It is not like they aren’t planning for the future, but they aren’t diligent when it comes to keeping accounts, so they can’t objectively review or track how the money is being spent or whether it is properly invested.

“That is why the first solution we rolled out was an agricultural bookkeeping app. We want to empower farmers to start keeping a systematic record of their farms’ expenses, activity, production and revenue, as these key data points are essential in making informed business decisions.

“We felt this was the best way to go about changing their mindset, so that they can take the first step in becoming an entrepreneur and adopt a more organised way of managing their farms, like any other business.”

The app was designed based on the tips that Nazrul and Iskandar picked up from Zamir’s spreadsheet, and it tracks farm finances, weather, pests, tillage, fertilisation, planting, crop protection, irrigation, harvesting, resources and inventory, as well as provides analytics and reports on farm management.

The team is still beta testing its bookkeeping solution with about 100 farmers. For now, it is available to Android users by invitation only.

“Most people put off the task of filing accounts because they already have so much to do at the farm. With a bookkeeping app that is easily available on a smartphone, the task becomes a lot easier and a farmer can immediately key in inputs or outputs and pull up data anytime,” says Iskandar.

Microlending and digital credit scoring for farmers

The bookkeeping app is just the first of Kapitani’s extensive plans. It aims to connect smallholders with potential lenders via peer-to-peer financing platforms and establish databases to help farmers make informed decisions using data instead of relying on guesswork. The team is already laying the foundation by integrating benchmarking tools that provide growers with a breakdown of their crop performance after every season.

“Recently, we introduced a new feature to ascertain farm worthiness (kebolehtanian petani), whereby farmers can benchmark their performance based on seasons,” says Iskandar.

“With this feature, farmers can better understand their current operations and compare it with previous seasons to better grasp what they are doing right or wrong,” says Nazrul, adding that Kapitani’s primary goal is to break the cycle of poverty with its digital collaborative platform, which covers the whole agricultural ecosystem, and bridge the financial and technology gaps faced by farmers nationwide.

“Once our bookkeeping and analytics or Farm Management Decision Support app takes off, we intend to provide credit scoring; enable microlending via peer-to-peer financing; set up an agriculture knowledge centre or agricultural advisory services; establish a crops marketplace to provide market access and connections; and have curated agritech and farm supplies that focus on climate-smart agriculture and input supply,” he says.

There are many agriculture loans offering relatively low interest rates, but farmers are reluctant to borrow because they lack financial data to make informed decisions — which is a psychological barrier that prevents local smallholders from obtaining a loan to upgrade their farm with agritech. That is why Kapitani wants to help banks and investors expand their agricultural lending to farmers and agribusinesses by automating the credit assessment process

“By providing an efficient and standardised scoring tool for agricultural loans, it will be easier for banks to assess the creditworthiness of farmers,” says Nazrul.

As for establishing a marketplace, Iskandar points out that there is no standard body that decides on the prices of crops grown by smallholders.

“Let’s say, the price of chillies at the end of last year was RM8 per kg. But in the last few weeks, the price fell to RM2 per kg, and the cost [of growing those chillies] is RM4.50 to RM5. Let’s say, the prices have fallen so drastically because there is an influx of imported chillies. The farmers, however, don’t know this and continue to grow chillies. They are also unaware of the production capacity of other chilli farmers throughout the country. So, they end up undercutting each other when there is more supply.”

According to the Department of Statistics Malaysia’s self-sufficiency ratio (SSR) issued last August, there is an adequate supply of seven types of vegetables for domestic needs: tomatoes (131.2%), brinjals (119.3%), spinach (112.6%), lettuce (112.5%), cucumbers (110.8%), long beans (107.0%) and lady’s fingers (104.4%).

At 5.3kg per year, round cabbage recorded the highest per capita consumption, followed by mustard (4.4kg) and tomatoes (3.6kg). Chillies recorded the highest import dependence ratio at 73.6%.

“We want to create a database where we can share all this valuable input such as market insights. The Ministry of Agriculture and Food Industries and the Department of Statistics

Malaysia have high-level data, but we don't know how this information is collated. It is not a bottom-up approach," says Iskandar.

"Once we have market insights, farmers can cooperate and schedule their crops accordingly. Let's say, there are six farms in Putrajaya, and for the first six months of the year, three farms grow chillies and the others grow something else, and then they rotate.

"This way, if the market needs 10 tonnes, they produce 10 tonnes. If there is excess at any point, we want to have proper data to be able to manage the situation."

A transparent marketplace is also an objective of PPKKL. It formed Kumpulan Fertigasi Hijau in 2015 to address the issue of consistency, specifically in the supply of chillies.

"For the longest time, smallholders just start farming with no proper fundamentals. All they want to do is plant, reap, harvest and sell. They don't know how much their produce will fetch in the market or how much the others are planting. They don't know anything about demand and supply, and end up undercutting each other," says Shakran.

Once 800 farmers enlisted under the umbrella of Kumpulan Fertigasi Hijau — which started with just a handful of them — PPKKL could create a consistent supply chain and promote their produce better.

"When we talk to big retailers such as supermarkets and other big grocers, they want a consistent supply. They are not looking at price, whether cheap or expensive. Without the guarantee of a consistent supply, they are under no obligation to commit to any specific farmer. Also, when there is consistency, we can lock in future prices and they can offer better pricing to end-consumers. This means stable income for farmers," says Shakran.

"There were many new entrants in 2019 and early 2020 because the demand for chillies during Ramadan in 2018 was very good. In the initial stages of the pandemic, however, they were badly affected because many were unable to sell their produce, which was eventually dumped. The farmers under Fertigasi Hijau were better protected because we had already established a supply chain."

As for the microlending scheme, the team is still raising the minimum paid-up capital of RM5 million. At present, the plan is to roll out the P2P financing platform by the fourth quarter of 2022.

"We notice there has been a surge in public interest to invest in farming, owing to demand for cash crops such as chillies, rock melons and cucumbers. But the opportunity to invest is limited for ordinary Malaysians because of its high barrier to entry in terms of farming skills and experience, land requirements and high initial capital investment," says Nazrul.

"We aim to connect the Malaysians who wish to do impact investing with their idle capital, but do not have farming skills or land, with smallholders who need capital."

The bookkeeping app will be able to feed real-time farm-level data to its agriculture-based microlending model to offer personalised profit-sharing and repayment terms based on the financial health and farm operation of individual smallholders.

“Our proprietary credit rating model is designed specifically to offer farmers a fair and effective risk assessment without the need for a conventional financial assessment. It will ensure only the most qualified can proceed to P2P microlending application,” says Nazrul.

As agriculture is most affected by the risks of climate and natural disasters, Kapitani is looking to mitigate those risks with crop insurance, where the cost of the premium could be shared by both farmers and funders. Until that takes off, the focus is to onboard at least 1,000 users on the bookkeeping app by year end, he says.

The coronavirus pandemic and constant lockdowns have thrown a wrench into the works as cross-border travelling is prohibited. So, Kapitani is currently hosting webinars and promoting ambassadors, including novice farming couples such as Halizan and Ibrahim, as well as seasoned growers such as Zamir, to encourage more smallholders to use the app.

Beyond helping farmers improve their production, Kapitani also hopes to entice the younger generation to get into agriculture. Nazrul estimates that the average age of a Malaysian farmer is 52.9 years — a somewhat worrying statistic.

“Kapitani’s mission is to revitalise the local agriculture industry and transform it into a sector with rewarding job and economic opportunities. We want it to be a collective effort to enhance our self-sufficiency levels by reducing food imports and, ultimately, improve Malaysia’s food security,” he says.

For Halizan, the next step to work on is to improve the output of chillies and experiment with crops such as brinjals. Once these take off, she hopes to raise funds to expand her operations to include hydroponics and aquaponics. “Agriculture will always be relevant and, if done right, it can be a lucrative industry,” she says.

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