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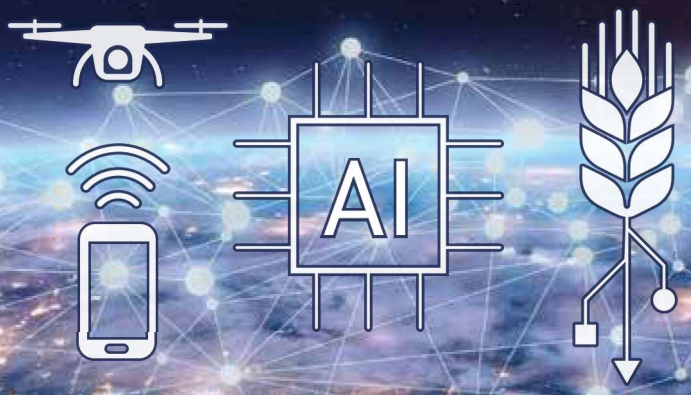

Smart farming

TRANSFORMING AGRICULTURE WITH ARTIFICIAL INTELLIGENCE

CTA

A global perspective on agribusiness and sustainable agriculture

NIGERIA

Artificial intelligence: matching food demand and supply

A Nigerian start-up is using AI to guarantee markets for smallholder farmers and improve procurement efficiencies for large buyers.

Oluyinka Alawode

Foodlocker, a Nigerian foodstuff and grocery aggregator for large buyers, uses deep learning (a sub-branch of AI) for forecasting demand for farm produce and consumer goods. Deep learning uses layers of algorithms, called 'neural networks', and large amounts of data to enable computers to solve complex problems; the more the algorithms learn, the better they perform.

Launched in 2017, Foodlocker uses deep learning for assessing demand from its clients (food processors, exporters, hotels, restaurants, bars and retailers) for different commodities or food products (including rice, yam, legumes, poultry, condiments, cooking oils, cereals and beverages) through its e-commerce platform. Deep learning is then used to analyse historical trends data and forecast the quantity of each commodity that will be needed at certain times of year. This information is provided free to smallholder farmers the company is working with – through mobile phones and field agents – helping to take the guesswork out of what to produce, in what quantities and when.

Farmers are also provided by Foodlocker with offtaker guarantees, which specify quantities and pricing of goods as a way to guarantee them with a market. "I started out raising 100 kg of chicken for Foodlocker," says chicken farmer, Emperor. "Now demand is close to 1.8 t every month and I have had to expand and partner with other farmers."

"Deep learning allows us to not only anticipate and forecast demand, but also plan production schedules, influence the production programmes of smallholder farmers, and procure efficiently in order to meet expected demand," explains Foodlocker co-founder, Jennifer Okoduwa. "Deep learning is a very effective tool that allows us to provide clear demand requirements to farmers and guarantee market access." For large buyers of food commodities and products, deep learning enables Foodlocker to guarantee pricing regularity and the availability of quality produce.

Okoduwa adds, "We also provide inputs, access to high-yield varieties, and extension support through our partners. This ensures that farmers suffer fewer losses, increase their production and thus their profits, and are more incentivised to produce." Once harvested, Foodlocker collects the fresh produce from the farms and delivers it directly to its large buyers, who have pre-ordered. In addition, Foodlocker provides logistics and cold storage infrastructure, and lightly processes smallholder farmer outputs to be sold to other buyers through the firm's e-commerce platform or other sales channels. For example, the firm will clean and package rice into small bags, cut chicken into fillets, and degut fish.

© FOODLOCKER

Jennifer Okoduwa's company, Foodlocker, uses AI to forecast demand for farm produce to help farmers know what to produce, in what quantities and when

"Given the perishability of food and the infrastructural challenges in Africa, deep learning gives us a solid advantage over businesses that are just e-commerce platforms," Okoduwa adds. With accurate forecasting of future demand for food items, Foodlocker is able to reduce waste compared to other platforms that may over- or under-estimate food needs, and can provide assurances to its customers that they will be able to meet their demands. "Our aim is to upscale the business, from 600 smallholder suppliers currently to over 20,000 suppliers within the next 10 years," Okoduwa states.

In recognition of its innovative use of deep learning, in September 2019, Foodlocker won CTA's Pitch AgriHack Data Analytics Award. As well as receiving €10,000 in prize money, Foodlocker will also benefit from additional business support to help it improve its use of AI and grow the enterprise.