Scaling Up Agricultural Supply Chains in the Private Sector

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2020 VISION FOR FOOD, AGRICULTURE, AND THE ENVIRONMENT

FOCUS 19 • BRIEF 8 • JUNE 2012

PepsiCo is a global business operating in more than 200 countries and territories and rooted in creating and delivering iconic, great tasting foods and beverages. A critical aspect of its operations is the ability to take successes in one part of the business and scale them elsewhere. This is increasingly common in agriculture supply chains as participants replicate and adapt to ensure a reliable supply of raw materials that meet cost and quality standards. An important focus of the company's scaling practices is that sustainability issues be factored in at the start of supply chain development.

The ability to scale makes an especially significant impact when the company expands to new markets and creates new products that demand the development of a sustainable agricultural supply chain to provide raw material ingredients. Emerging markets present great opportunities, but they also present significant challenges. The latter includes an insufficient number of farmers growing targeted crops, gaps in yield and crop reliability, minimal access to capital for purchasing inputs or technology, inability to meet quality criteria or properly store crops, and inadequate infrastructure to transport materials and finished goods through the value chain to market. The ability to scale up, replicate, and adapt business models is crucial to success.

Company agronomists, procurement specialists, and business development associates working in the field develop and execute business models that expand agricultural supply chains to meet market demands. Associates often contract directly with the growers, training them on agronomic best practices, quality criteria, and storage practices that will help increase yields, productivity, and economic returns.

The PepsiCo model for scaling up agricultural supply chains, technology transfer, and agronomic education is used in similar fashion across countries and regions. In each case, the process is adapted to fit local culture, agricultural maturity, politics, and market demands. Following a description of the general scaling-up model, this brief examines two examples.

Seven steps for scaling up

The model has seven steps:

1. Develop a plan for new market entry or demand for new crop procurement. The market plan includes clear direction on the commodity needed, the delivery schedule, product specifications, and the cost and quality needed for product manufacture in order to make the business model work for that market.

2. Conduct sourcing survey(s). The agriculture procurement team identifies local sourcing opportunities for existing crops as well as growing parameters, such as climate zone and soil type, needed for crop expansion

3. Identify key players in government agencies, research groups, or consultancy groups. Partnerships with these players help identify current available agricultural capacity and existing local practices that can be leveraged across the grower base. It can deliver close grower relationships, familiarity with target crop(s), relevant research programs, and access to grower capital.

4. Initiate pilot trials. Over two to three growing cycles, agronomists determine the capability of crops to comply with business objectives—answering such questions as yield, quality, cost, and reliability of supply. Global knowledge and experience are brought to bear in the pilots including the use or development of new varieties and agronomic practices.

5. Assess existing infrastructure and needs for the business venture. This includes identification of new capital investment needed for storage, mechanization, or field equipment that will justify support of new improved practices. Agronomists identify new seed programs or varietal replacements necessary to increase yields, better fit local growing conditions, and meet product needs.

6. Continually improve. Agronomists focus on increasing grower yields; productivity and other learnings from pilots and existing practices are shared with growers to develop or refine their expertise. The company develops local resources and invests in research and development that will support the local crop production program.

7. Scale up. The model expands to work with more growers and as the company cycles back with continuous improvement it includes more growers. PepsiCo identifies new supply opportunities and brings these growers into its supply chain, sharing technology and agronomic training so they too can increase yields, productivity, and economic returns while providing the raw material supply needed.

Two examples of successful scaling up

Producing local corn supply in Mexico

Sabritas is PepsiCo's snack business in Mexico. It wanted a local corn supply for its product line. This represented geographic movement of an existing supply through the development of small-scale subsistence farmers. Sabritas already had a market plan. It knew the commodity it needed as well as the timing and specifications for that crop. It had conducted the sourcing survey and understood the corn grower landscape and potential yields on existing corn lands in close proximity to the company plant needing the supply. With this information, agronomists understood the opportunities for reaching yield goals and looked for organizations to partner with,

who could help the company and the growers meet these goals. Sabritas and the Sabritas Foundation reached out to the Mexican Foundation for Rural Development (FUNDAR)—an NGO with proven results in strong social and technical education programs and which could coordinate grower activities and participants. It also provided alliances with key nongrower organizations, such as Bayer, Tepeyac, and Monsanto, which supplied credit lines, backed up by grower guarantees, for agrochemicals, fertilizers, and corn seed, respectively. Together, the partnership initiated Educampo, a project to develop small-scale corn producers near Sabritas's Guadalajara plant by providing technical assistance, social education programs for grower behavior change, and a commitment from Sabritas to purchase the entire crop.

No pilots were necessary as the growers had been growing corn their entire lives and PepsiCo Mexico already knew how to increase yields. The infrastructure needed to make this work included training, extension, and a secure market for the farmers' crops, which presented a lower risk for financial institutions. PepsiCo provided the market security in the form of guaranteed contracts and FUNDAR facilitated training and extension. Through this partnership, PepsiCo scaled up the corn supply chain in Mexico through technology transfer and the sharing of practices already in use elsewhere in the country. At the same time, the project reduced freight cost by sourcing 40 percent of supply closer to the Guadalajara plant, and growers saw yields and incomes increasing more than 100 percent.

Navigating water scarcity in India's supply chain

The second example involves the demonstration and deployment of various technologies that significantly increase yields and overall productivity in India. PepsiCo began developing a potato supply chain in India in 1994 and gradually transitioned from working with aggregators to direct contracting with growers as government policy permitted. This change in policy allowed PepsiCo to work more closely with individual farmers, resulting in more efficient grower training, new technology deployment, and, thus, scaling up of the agricultural supply chain. In India, developing a market plan and the sourcing survey were carried out in parallel. Agronomists looked for climate conditions and soils suitable for potato production. After focusing on areas that fit the crop needs, PepsiCo sought to understand current production practices and opportunities to influence these to deliver the required quality and volume that would benefit both the farmers and the company. As in Mexico, the company sought out partner institutions that could help to gain access to farmers and provide necessary inputs. It found key partners in the Central Potato Research Institute and the National Bank of India.

One limitation to scaling up sufficient potato production was water. About 40 percent of potato farming in India is in water-scarce or drought-prone areas. Through pilots, the company confirmed that the introduction of drip irrigation, while not a new technology globally, had the potential to save significant amounts of water while increasing yields and tuber quality. To fill this infrastructure gap in technology and improvement of grower yields, PepsiCo helped to deploy drip irrigation in Maharashtra and Haryana states and currently has trials in Gujarat and West Bengal in India, as well as in some areas of China and the UK. In this case, the scale up has been both in expanding the potato supply chain in India and in transferring technology in areas where the company saw clear opportunity. As a result of this program, farmers found price stability, consistently higher returns, and training and technology transfer leading to an increase in productivity. In West Bengal alone, farmers gained access to technology, expertise, and the enabling environment that came from the company's partnership with the Central Potato Research Institute and the International Potato Centre for processing grade seed potato, with chemical companies for agrochemicals at subsidized prices, with loans from the state bank at an 8 percent annual interest rate, with crop and weather insurance companies, and with a cold chain company leading to new cold storage for 10,000 tons of potatoes.

Conclusion

In these examples, the barometer of success is that while PepsiCo's business in India and Mexico is expanding and has been established for the long term, the company has simultaneously mobilized the drivers—increased yields and successful technologies— for farmers to increase productivity and economic returns through successful scaling-up efforts in agriculture supply chains. These efforts entail three key lessons learned. First, it is imperative to ensure a market for the supply chains. Second, partnerships can help ensure access to a reliable supply that meets company standards and is mutually profitable to both grower and buyer. Third, overall costs are reduced when sustainability is part of the business plan from the start.

For further reading: P. Pinstrup-Andersen and D. Watson II, Food Policy for Developing Countries: The Role of Government in Global, National, and Local Food Systems (Ithaca, NY, US: Cornell University Press, 2011).

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