



eAgriculture: Using Technology to Empower Farming Communities

Innovative project creates sustainable agricultural ecosystems in rural India



Introduction

As global population growth continues to soar, food security—the availability of and access to food—is an increasing concern. At the same time, high costs and inefficiencies have made farming an increasingly unviable profession for small farmers in developing countries.

A successful eAgriculture project in the state of Odisha, India, demonstrates how technology can be used to address these issues and improve the livelihoods of small farmers. In just over one year, the eAgriculture project helped 6,000 farmers increase their incomes as much as 300 percent, and created job opportunities for local entrepreneurs.

Organizations and governments that care about farming can learn from and apply the eAgriculture model that proved successful in Odisha. It provides a unique opportunity to support small farmers in developing countries—and potentially increase food security, create jobs, and support long-term economic growth.

For Small Farmers: High Demand, Low Profits

Human life depends on food, and in developing countries most of that food is produced by small farmers. Despite the vital role farmers play in food security, most struggle to make a living—and many more are leaving farming to pursue economic opportunities in urban areas. The rural-urban migration creates societal imbalances with severe consequences to development and growth.

Government subsidies and other assistance provide some relief, but many small farmers remain illiterate and impoverished, with limited access to mainstream services. They operate in isolation, with little or no bargaining capacity. They also lack access to capital and credit as well as high-quality agricultural practices and markets that could improve their productivity.

What these farmers need are reliable, convenient, and sustainable solutions that address their challenges.

Technology-Based Project Delivers Results

The eAgriculture project in Odisha, India, is a private initiative developed by Grameen Intel Social Business and partners to improve the lives and livelihoods of small farmers in the state.

As with other eAgriculture initiatives, the goal of the project is to use technology to strengthen the local agricultural system and improve productivity for everyone in the agriculture value chain—including small farmers.

eAGRICULTURE ECOSYSTEM

eAgriculture initiatives bring together a wide array of local and regional stakeholders to form a mutually beneficial value chain.

- Grameen Intel and other social businesses: Information and expertise, consulting services, technology, and programs to reach rural and impoverished markets.
- Governments and multilateral development agencies: Program support to enable and increase rural outreach, improve food security, create jobs, and develop partnerships with local businesses and community organizations.
- Banks and other financial institutions: Credit, capital, and other financial instruments (crop insurance, subsidies, etc.) for entrepreneurs and farmers.
- Universities and agriculture extension systems: Technology to strengthen extension systems; advice and technical support for farming communities; training and capacity-building for entrepreneurs; research and development projects designed to solve problems faced by farming communities.
- Supply chain (e.g., suppliers, commodity markets, aggregators): Best-of-class products and services for farmers that improve returns to all stakeholders, including farmers.
- Technology companies: Internet connectivity, hardware, and software solutions that create access to new markets, value chains, and business models.
- Community organizations (e.g., farmer cooperatives, rural telecenters, government- and NGO-run agriculture service centers): Help entrepreneurs, provide grassroots agriculture domain and business support, and enable programs to scale efficiently.



How it Works

An Odisha-based business called eKutir launched the eAgriculture project in 2009. As shown in the figure below, the project began with hiring and training local entrepreneurs, who would work closely with farmers throughout the project.

Farmers discussed their challenges with the entrepreneurs, who used netbooks to collect demographic details such as the types of crops grown, nutrient soil capacity, and access to irrigation and inputs.

The entrepreneurs, then advised farmers and found ways to help them lower costs and improve productivity. Using broadband access at local kiosks the entrepreneurs connected the farmers to remote stakeholders in the agriculture chain, including suppliers and buyers.

The entrepreneurs used specialized software designed by Grameen Intel Social Business to give farmers detailed information and low-cost assistance with seeds, fertilization, cultivation, and other key aspects of farming. For instance, entrepreneurs used a new soil testing module to replace the existing soil testing method in the Odisha area, which is rarely available,

requires weeks, and costs more than USD 40. With the new software, entrepreneurs completed soil testing and analysis for less than USD 3, and within hours identified the optimal amount and price of the relevant fertilizers to be procured.

In addition to working closely with farmers, the entrepreneurs also worked with suppliers. By aggregating local farmers' demands for products, the entrepreneurs could negotiate bulk purchase prices, develop relationships with trusted suppliers, and connect suppliers directly to farmers.

As the program continues, entrepreneurs will track farmers' businesses, and provide ongoing support in areas such as soil analysis, seeding, nutrient management, pest and disease control, harvest management, market price discovery, and produce sales.

The venture has proven economically sustainable, with farmer incomes rising as much as 300 percent. Entrepreneurs, with income based on membership and service fees, became profitable within a few months, with long-term incomes as much as four times greater than previous jobs.

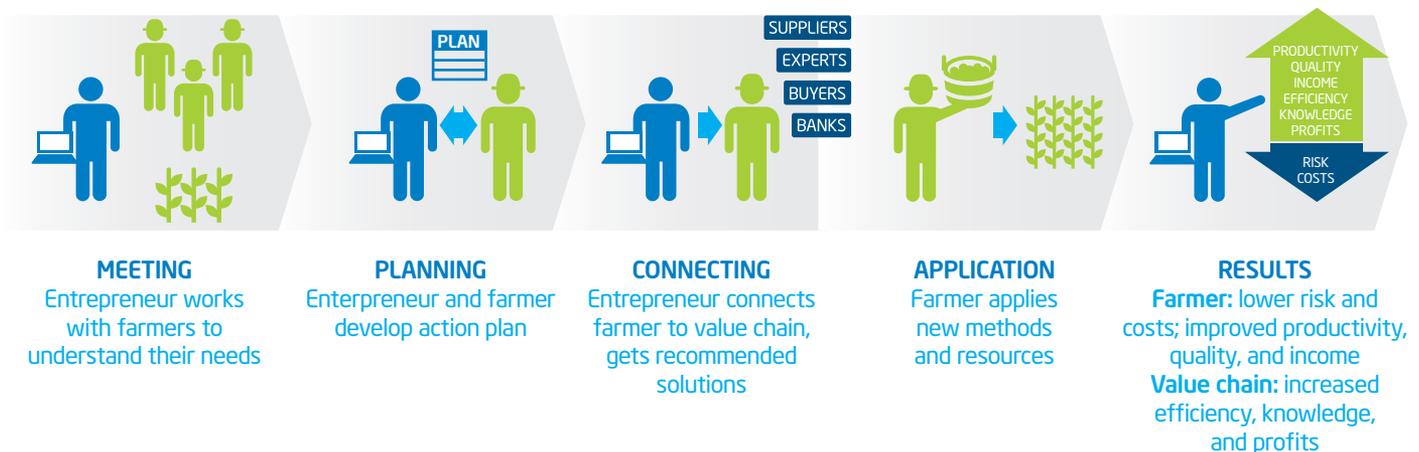
Many other benefits have been achieved, especially for small farmers involved in the project. By aggregating demand, they have lowered the cost of supplies while also developing stronger relationships with trusted suppliers. Access to technology, aided by the entrepreneurs, has given farmers a convenient and cost-effective way to access best practices from universities and other expert sources, which has enabled them to increase crop yields and overall productivity.

Encouraged by the success of the initial project, eKutir and its partners plan to expand. Their goal is to create 25,000 kiosks to serve 12.5 million small farmers and their families by 2014-15.

Results

In just 14 months, eKutir established 12 kiosks, serving a total of 6,000 farmers. Each kiosk is run by a local entrepreneur who serves farmers within a 5 kilometer radius.

The eAgriculture Solution



GRAMEEN INTEL SOCIAL BUSINESS

Formed as a joint collaboration between Intel Corporation and Grameen Trust, Grameen Intel Social Business creates technology solutions to address some of the most pressing social problems in developing countries. These problems include low agricultural output, which has a direct relation to rural poverty and food security.

The initiative is strongly supported by Nobel Laureate Muhammad Yunus, who founded Grameen Bank, chairs Grameen Trust, and is on the board of directors for Grameen Intel Social Business.

Grameen Intel Social Business provides support for eAgriculture programs, including:

- Software that helps improve farmer productivity
- Technology advice
- Marketing support
- Social business and eAgriculture expertise from its partners network
 - Guiding principles to set up and run a "small farmer-centric" social business
 - Agriculture ecosystem building
 - Community empowerment approach
 - Entrepreneur training and capacity building
 - Technology training

eAgriculture Opportunities

eAgriculture projects like the one in Odisha provide opportunities and benefits to a wide range of stakeholders, from small farmers to businesses and governments.

Entrepreneurs

- New job opportunities with growth potential
- Opportunities to deliver much-needed services to farmers (soil testing, financing, logistics, farm machinery, etc.)

Farmers

- Lower costs
- Increased productivity and income
- Better risk mitigation (e.g., pests, disease, weather)
- Greater access to expert information, services, and best practices

Governments

- Economic growth and job creation in rural areas
- Greater food security
- Improved relationships with rural communities

Market aggregators

- Ability to directly and cost-effectively source produce in bulk
- Ability to optimize market efficiency by connecting buyers and sellers

Microfinance institutions

- Access to detailed information on farmers to better assess credit-worthiness and manage risk
- Ability to serve new customers who previously had no formal access to affordable finance
- Better understanding of unmet financial needs, enabling creation of innovative financial products such as crop loans and insurance

Suppliers

- Direct, inexpensive, and transparent access to larger groups of farmers
- Better forecasting for greater efficiency and fewer losses
- Stronger relationships with farmers

Technology companies

- New business opportunities using a proven model that increases readiness for technology adoption
- Ability to reach new customer base early, for longer-term benefits
- Opportunity to achieve business and social benefits by increasing access to technology

Universities and extension offices

- Direct access to otherwise unreachable farmers
- Ability to test and validate academic research and innovation in real-world applications
- Opportunity to solve practical problems and share best practices with aggregated groups of farmers
- Enhanced student learning through hands-on projects

eAgriculture Changes a Farmer's Life

Charana Sasmal is a small farmer who grows vegetables on his three-acre holding about 180 km from Bhubaneswar, the capital of Odisha, India. Before he began working with the eAgriculture program, Sasmal's debt was spiraling as he struggled to support his family of six. Seeds, fertilizer, and pesticides were expensive and of low quality, and he didn't know how best to apply them.

With his family at risk, Sasmal considered quitting farming and moving to the city—until he heard about the eAgriculture program. In just one crop season, Sasmal increased his sales by 122 percent and raised his net income by more than 200 percent. He nearly tripled his surplus rupees, and used the money to repay his debt, provide food and other essentials for his family, and finance his next crop.

For Sasmal, the keys to the program's success included:

- A direct connection to a trusted supplier of seeds and fertilizer
- Access to cultivation best practices (land preparation, soil testing, best seeds and fertilizers, etc.)
- The benefits of aggregation, which drove better bargains
- Reduced fertilizer, pesticide, labor, and other costs, thanks to higher-quality seeds and improved processes based on best-practice information



“Earlier we were cultivating in the traditional manner. Now, on the advice of eKutir, we have adopted [a new] method in our paddy field. We are spending less and getting more yield.”

Chittaranjan Bhoi, farmer in Odisha, India

Conclusion

The plight of small farmers is an issue that matters to all of us. Only by making their work more efficient, more profitable, and more sustainable can we meet the ever-increasing need for available and affordable food.

As demonstrated in the project in Odisha, India, eAgriculture provides a cost-effective and sustainable way to help small farmers. The impact on farmers' lives is potentially immense, as they are able to lower costs, improve productivity, and increase incomes.

The impact on society of this bottom-up, collaborative business model is equally powerful, as countries can achieve greater food security, while also creating jobs and strengthening long-term economic growth.



Get Started

Grameen Intel Social Business and other organizations are ready to help develop an eAgriculture initiative for your country.

Contact:

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and Head of eAgriculture Program

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Ask for the "eAgriculture: ICT for Farmers" white paper.

For More Information

eAgriculture video

www.youtube.com/playlist?list=PL9CD B6EFA1D89560B

Grameen Intel Social Business

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