

Tata Consultancy Services: Providing Advisory Services to Indian Farmers



“Telecommunication is likely to bring about meaningful, large scale, transformation in developing countries, especially in rural areas where infrastructure is limited. IT has both business interest and social responsibility in enabling these transformations. mKrishi is an experiment in this direction.”

-K. Ananth Krishnan, Vice President and Chief
Technology Officer, Tata Consultancy Services



Initiative Description

In 2008, Tata Consultancy Services joined the Business Call to Action with a pledge to expand its platform offering personalized agricultural advisory services to farmers in India.

Tata Consultancy Services' Goals

- Enable farmers to send queries specific to their land and crop to receive personalized replies from agricultural experts
- Build a consortium of partners to provide integrated services to farmers that generate fee-based revenues for the company

Business Model

In India, where there are over 20 official languages and more than 35 percent of the adult population is illiterate, making services available in the local language is key to reaching customers at the base of the pyramid. Despite widespread penetration of cell phones in rural areas, few services have been customized to address the needs of such a geographically and linguistically diverse population.

Tata Consultancy Services (TCS), the Tata Group's information and technology firm, seeks out new opportunities for applying technology solutions to development challenges. In 2007, a TCS research team set out to understand how technology could improve the agriculture sector in India. Through intensive interviews with farmers in the Vidarbha district in the state of Maharashtra, the research team came to understand that the biggest challenge rural farmers faced was the lack of access to credible sources of information and effective market linkages. Farmers had questions about water, pesticide and fertilizer use on their land with nowhere to turn for answers. However, what the farmers did have was access to mobile phones. TCS realized that the power of mobile connectivity and technology solutions could be harnessed to address the needs of farmers in a holistic way.

The TCS team created a customizable Mobile Agro Advisory System called mKrishi that would address farmers' specific queries in real time. The name mKrishi combines “m” for mobile and “krishi,” which refers to agriculture in many Indian languages. The mKrishi service was launched as a pilot in 2009 in the Borgaon region of Maharashtra. The location was selected based on the availability of agri-experts willing to work for TCS and progressive farmers eager to use new technology. The service provides information in local languages on weather, soil conditions, fertilizer and pesticides, the price of grains, and other agriculture-related advice a farmer may need. In the initial pilot, more than 25 farmers successfully used this service for more than a year and reaped benefits. As a result, TCS decided to expand the initiative. Since then, 12 additional mKrishi pilot projects have been introduced in the Indian states of Punjab, Uttar Pradesh, Maharashtra, Gujarat, Andhra Pradesh, Tamil Nadu and Rajasthan. Today, mKrishi currently serves about 10,000 farmers in all markets.

TCS is investing in mKrishi with the goal of improving farming practices for India's farmers, ultimately leading to further business opportunities in the

agriculture sector. mKrishi is also anticipated to be a good investment for TCS; as more farmers using this fee-based service means growing profits.

How it Works

With over 60 percent mobile phone penetration throughout India, TCS built the mKrishi software application so that it is easy for farmers to get expert advice on their mobile phones. The mobile phones can be of any type or configuration. The process is simple: the farmer can send a text message, call in a voice-based message in their local language, or send a picture to the mKrishi platform. The agri-experts access mKrishi on the web to address the queries of the farmers. Each query is automatically assigned an identification number and assigned to an appropriate expert. After analysis of the query, the expert's advice is sent back to the farmer's mobile phone, as either a text or voice message. The mKrishi platform also allows for sending out FAQs and best practices to farmers' mobile phones, reducing the number of routine queries coming to the agri-expert for response.

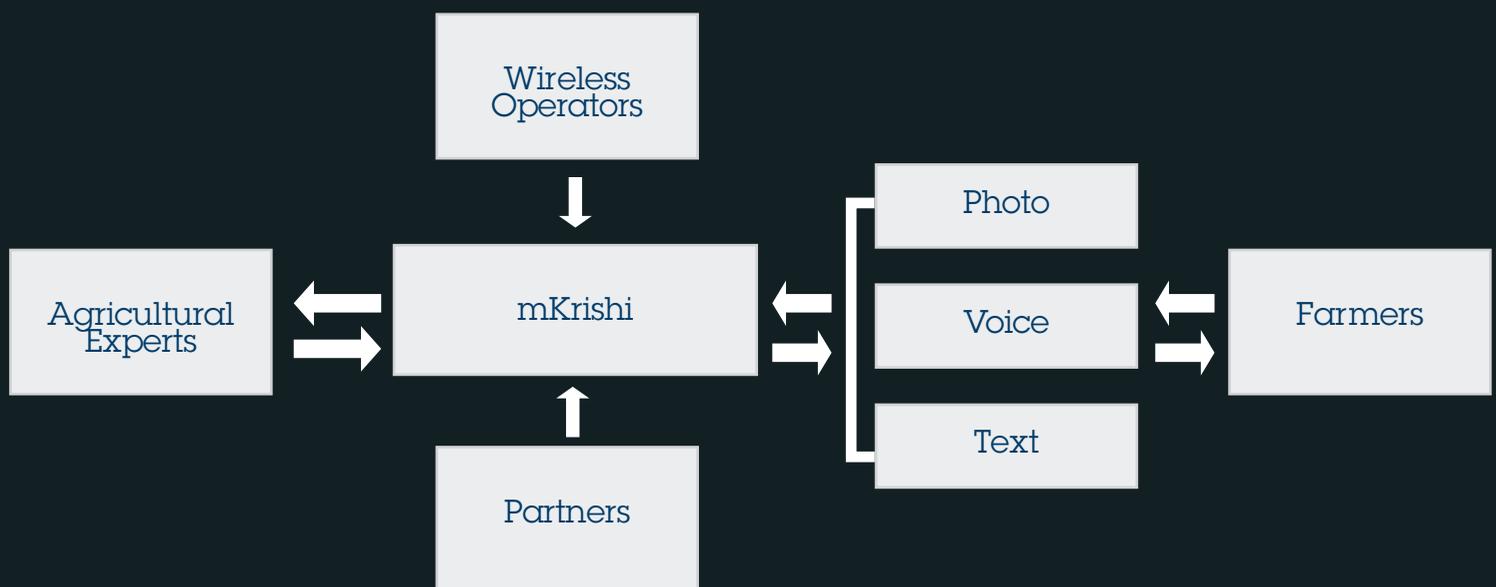
The mKrishi platform offers three different levels of services. With mKrishi Lite, the Interactive Voice Response (IVR)-based system, users send and receive voice messages from the agri-experts. With mKrishi Regular, farmers download the mKrishi application on their phones and receive messages by text. TCS has also set up mobile mini sites in select villages to assist farmers to install the application onto their phones. Finally,

mKrishi Plus offers an Automatic Weather Station (AWS) along with the mKrishi Regular service. The AWS uses sensors placed on the farmer's land and sends updates about rainfall, temperature, moisture, etc. at regular intervals.

The mKrishi platform is mainly funded by TCS through the research and development budget allocated to TCS Innovation Labs by Tata Group. TCS is able to generate revenue on fees paid by farmers. Typically, mKrishi Lite costs between 60 rupees (US\$1.2) a month, while Regular and Plus are 100 rupees (US\$2) and 150 rupees (US\$3) respectively. Bulk orders reduce costs for farmers. However, the biggest source of revenue is from companies using the platform to reach farmers. The pricing varies between the different offerings.

TCS's role in this project is to build a strong technology platform that connects farmers with stakeholders and to build a consortium of partners to deliver services to farmers in an integrated fashion. The mKrishi platform brings together a wide variety of actors. Partners include agri-input, warehouse, and farm machinery companies; poultry and dairy, irrigation and crop insurance companies; testing and certification labs; agricultural universities; non-governmental organizations, wireless operators, weather bureaus, commodity exchange, rural banks, and procurement agencies. Since the platform is capable of providing on-demand location specific and time specific information on agri-inputs and the supply of certain produce such as grapes, TCS expects supply chains to improve.

mKrishi Business Operations Model



Results Achieved

Since 2008, more than 20,000 farmers in 400 villages have subscribed to the mKrishi service.

Business Impact

TCS is testing various business models to provide mKrishi services to farmers on a sustainable basis. However, TCS has realized that it takes time to convince smallholder farmers to pay for this service, as it is not always possible for them to see the immediate benefit. As a result, the mKrishi pricing model is evolving, and depends largely on the various services. The anticipated values from using the mKrishi service are:

1. Yield increases; cost reductions; better prices and availability of agri-inputs; weather alerts; and knowledge of the occurrences of pest attacks and plant diseases.
2. A cost reduction in reaching farmers would be attractive to various companies. Gaining knowledge of the location and time specific demands of agri-inputs would create efficiencies in the agricultural supply chain.
3. Access to field micro-data for analysis and policy making, and farmers' direct links to agriculture research.

The mKrishi platform currently has 10,000 active users. The company has seven pilots running and will continue to offer its services in the six other locations where it previously had pilots.

Development Impact

The mKrishi platform provides farmers with much-needed agricultural information and advice. With changes in climate and demand, using the TCS service provides several benefits to farmers. They receive technical advice on best farming practices, including the selection of seeds and growing patterns. As a result, it is anticipated that the farmers spend less on pesticides and fertilizer, and will experience increased crop yields. Finally, access to real-time local market prices enables farmers to negotiate more effectively with food traders and agents.

In a country where more than 35 percent of the adult population is illiterate, the mKrishi platform is also breaking literacy barriers. As the solution uses local language interfaces, including voice messaging system, mKrishi is also accessible to semi-literate and number-literate users.

The mKrishi platform is directly addressing the Millennium Development Goals (MDGs). By providing farmers with access to information that can improve their livelihoods, mKrishi addresses MDG 1 - eradicating extreme poverty and hunger. Indirectly, mKrishi is addressing MDG 7 - ensuring environmental sustainability - as farmers are taught better farming practices, and MDG 8 - developing a global partnership for development - by making available new technologies, especially related to information and communications.



Tata Consultancy Services (TCS) is an IT services, consulting and business solutions organization, delivering real results to global business. TCS offers a consulting-led, integrated portfolio of IT, business process outsourcing (BPO), infrastructure, engineering and assurance services through its unique Global Network Delivery Model™.



Key Success Factors

Employee engagement

TCS's investment in the mKrishi platform is mainly in the form of staff time and commitment to develop the technology. Since the platform integrates several new technologies such as using sensor networks for weather-based information, wireless, mobile and voice technology etc., the company can harness the skills developed by its staff in other parts of its business.

Establish a scalable business model

The technical adaptations of the mKrishi Mobile Agro Advisory System has the potential to reach a large underserved population. It provides another channel for stakeholders in the agriculture sector to address the needs of farmers.

Overcome technology challenges through collaboration

TCS faced challenges in installing sensors in remote fields and receiving uninterrupted data during all seasons, especially during the monsoon season. These challenges were overcome in the first two years. However, TCS continuously faces a number of technology challenges as a result of providing new services, reducing the cost of the service or handling huge volumes of traffic. Some of the technology challenges are solved by working with faculty at premier technological institutes like the Indian Institute of Technology.

Partnership model

Several organizations have approached TCS with an interest in joining the consortium of partners, offering services through the mKrishi platform to farmers.

Next Steps and Spin Off Effects

The mKrishi platform has been able to influence several deals for setting up IT-systems for agri-businesses. Governments of various countries, including Ghana and the Philippines, and other international organizations have approached TCS to understand the mKrishi platform and its replication.

Expansion and Replication

TCS has been selected by the United Kingdom Government's Department for International Development (DFID) to receive funding and expert advice from the Business Innovation Facility (BIF) to widen the horizon of mKrishi services and to evaluate its various business models.

Environmental Sustainability

TCS may require significant electricity for its servers in the future if it expands its user base to millions of farmers. In that case, TCS plans to use cloud computing services rather than installing its own server farm.

mKrishi and Health

TCS tuned the mKrishi platform to address health care for villagers. In an initial pilot, TCS taught health care professionals in rural primary health centres to use a blood analyzer that sends results to a remote doctor's console allowing for an immediate read of 20 blood parameters. This mHEALTH initiative will be launched in March 2012.

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