



**CREATING A SUSTAINABLE
FUTURE LEVERAGING
DIGITAL FARMING PLATFORMS**

Agriculture is one of the least digitalized sectors. Digital Farming Platforms can improve digital adoption and create significant value for agriculture stakeholders. Digital Farming Platforms need to work on usability, scalability, functionality, and cost-benefit for creating value. This PoV discusses the value creation in Digital Farming platforms with the example of ITC Infotech Digital Farming Platform.

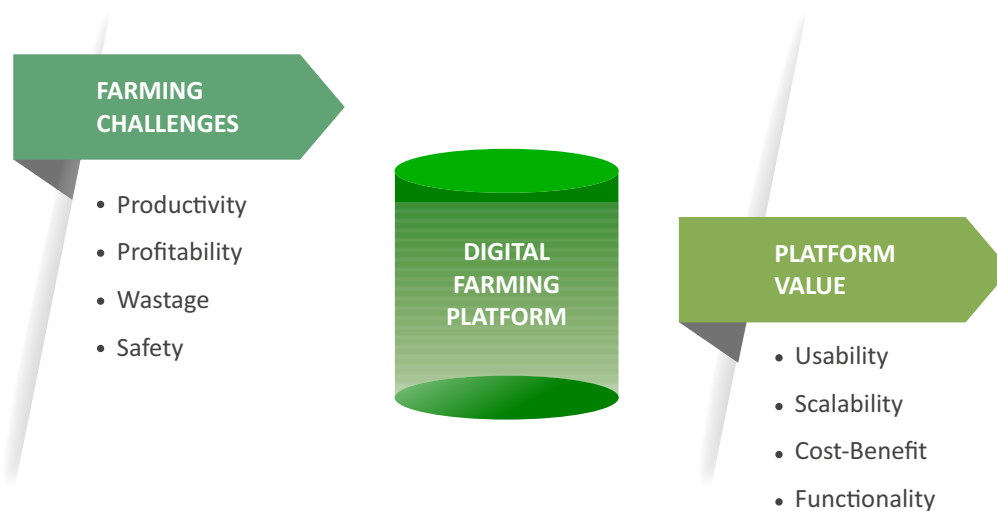


Exhibit 1: Digital Farming Platform Value Creation

Source: EIRTrend

Solving agriculture challenges by Digital Farming Platforms

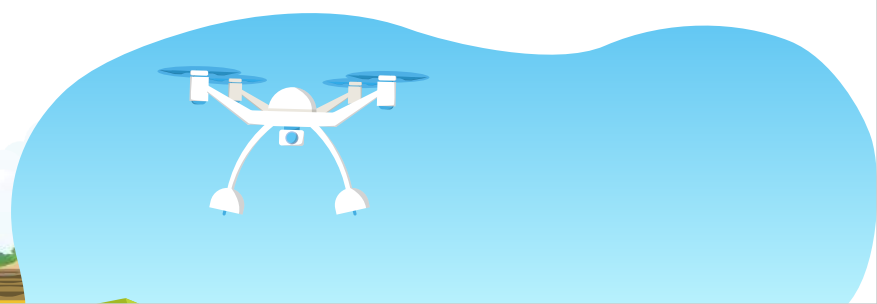
Agriculture contributes to about 6% of the world's GDP and has 26% of the world's employment. In emerging countries, the contribution of Agriculture is even higher. In India, agriculture contributes to about 16% of GDP and 41% in employment. The economic impact of agriculture is across many industries such as CPG, retail, chemicals, pharma as these industries depend upon agriculture for input. There are some industries such as agriculture inputs (seeds, fertilizer, plant protection chemicals, equipment), which depend upon agriculture for their output.

More than economic and employment contribution, agriculture produces food, which is our basic need and essential for the sustainability of human life on earth. It is imperative we constantly look for improving the sustainability of agriculture by incorporating the latest in technology. Many industries have embraced digitalization and got benefited, but agriculture has been laggard. To improve digitalization in agriculture, we need to understand the major challenges faced by agriculture and how they can be solved.

The agriculture sector is facing the following major challenges



Productivity. Increasing population, increasing per capita consumption of agricultural commodities demand a significant increase in agricultural production. Currently, yields are not good in many regions. The reducing land availability for farming, deteriorating quality of natural resources available for agriculture coupled with climate change are threatening agricultural production and productivity further. It is imperative to reverse the degeneration of natural resources, equip farmers to improve agricultural production, productivity in an economically viable and environmentally sustainable manner.





Profitability. The cost has been increasing faster than prices in agriculture, reducing profitability and attractiveness of this sector for investment, talent.



Wastage. There is huge wastage in agriculture, and much of the produce is perishable, and if it is not sold, processed, or stored in time, it is wasted. This wastage further contributes to the declining profitability of this sector. This could be with lack of information, infrastructure, transportation, etc.



Safety and Traceability. Food safety has been an important aspect of food value chains. Regulation around safety has been increasing across the globe. It is imperative to have farm to plate traceability to maintain food safety.

There is a need for a technology solution that increases efficiency, productivity, improve economic viability, reduce wastage, increase transparency and traceability to make sustainable progress in agriculture. Now with digital farming platforms, it is possible.

How to create value from Digital Farming Platforms? Functionality is necessary, but not sufficient.

Digital farming platforms can help to address challenges, create value, and make sustainable progress. For any technology solution, functionality, though, is necessary but not sufficient to create a sustainable proposition. It has to be supplemented by usability, scalability, and cost-benefit, as discussed below.



Usability. Usability is a concern for most enterprise applications. And this concern is more in farming as users are not necessarily very tech-savvy. The technology or functionality is of no use if users can not access and use them properly.



Scalability. If platforms aspire to make an impact, they need to be scalable and help communities of a large number of farmers and other ecosystem stakeholders. Platforms have to evolve in collaboration with farmers, communities and other stakeholders having flexibility of scale up and scale down capabilities.

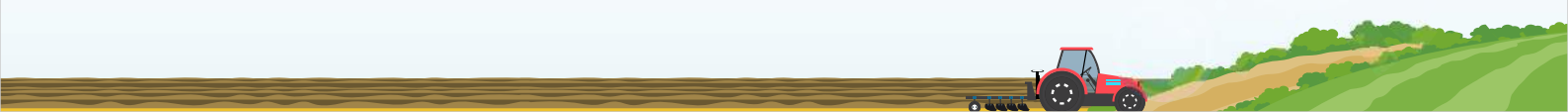


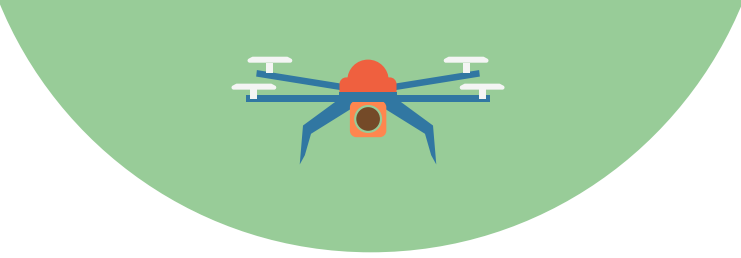
Cost-Benefit. Any solution should pass the cost-benefit gate. The cost of the solution cannot exceed the value it is providing. That means it has to be frugal and not too much technology and nice to have features. Platform has to add value to all the participants in the ecosystem.



Functionality. Finally, it is all about functionality. The use cases should solve the problems which farmers and other stakeholders are facing and help create value for them. Two key functionalities critical for success of farmer centric platforms are assisted access and offline functionality. Assisted access is needed as field assistants/agronomists handholding farmers is critical for success of such platforms. Consistent and continuous network connectivity is a challenge in rural areas and farmer's fields. Hence it is essential to have offline capabilities for data entry and data synchronization. With changing context, functionality might change or evolve, but it should be about solving problems or jobs to be done.

ITC Infotech designed a Digital Farming Platform, keeping the farmer at the center, connecting the farmer with relevant product and service providers, as shown in Exhibit 2. The platform seamlessly integrates with other services, facilitating easier connect for global humanitarian organizations, public institutions, enterprises, and the farming community. It provides FMCG companies direct access to the farmers, thus enabling direct sourcing, bringing the benefit of better pricing and personalized interactions. Digital Farming Platform equips every farmer to effortlessly engage with a complete range of services, products, and information ecosystem.





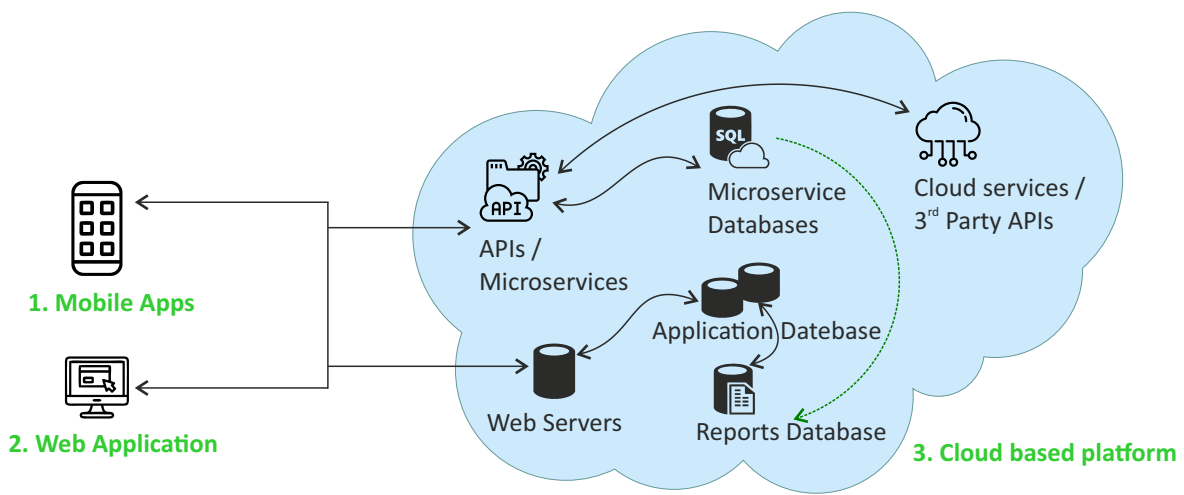
Source: ITC Infotech

Exhibit 2: ITC Infotech Digital Farming Solution

ITC Infotech Digital Farming Solution

It is a prebuilt solution accelerator consisting of reusable components including Architecture, Design, Cross platform mobile app (Android iOS), Cloud-ready microservices, SQL Databases, Web Front end for Admin. It was built leveraging experience of working with farmers, field assistants, crop development managers for the last 20+ years.

ITC Infotech built the platform, by leveraging advances in technologies like GPS, mobile, cloud, analytics. The Platform comprises a mobile interface for farmers, field assistants/Agronomists, a web admin console for system admins, managers, cloud-based platform to configure the mobile and web interfaces. It is a modular platform built on microservices architecture, as shown in Exhibit 3.



Source: ITC Infotech

Exhibit 3: Platform Technical Architecture



Details about the Platform's key modules, platform features, farmer enablement, and impact created are outlined in the below exhibit.

Exhibit 4: Platform Details



Key Modules

- **Farmer Forums:** Connecting farming community among themselves and with the service providers
- **Crop Advisory:** Providing agriculture best practices and support in managing farming activities
- **Crop Monitoring:** Comprehensive tracking of crop progress by capturing information about different crop stages and activities
- **Market Place:** Providing direct access to agricultural products and services
- Farmer Profitability tracking by capturing cost of cultivation and revenue. Yield estimation tools provide early visibility in to crop yields.



Platform Features

- Multilingual support to farmers in different regions, facilitating easier access to information and interaction with the service providers
- Intuitive User Interface delivers easy navigation and interaction for different user groups, including farmers, Field Assistants/ agronomists, horticulturists, and crop development managers
- Geo-location Integration equips farmers to map their land by plotting on the map or simply walking along their farmland boundary
- Easy Connect to Applications with built-in support for multiple apps leveraging the grower, field, and other data, as well as linking other apps on the platform
- No-Code Configuration allows easy addition and update of data forms at grower and field level, as well as data elements creation and configuration for crop stage monitoring
- Self Service Capabilities to empower farmers to interact with the platform independently after initial handholding by agronomists/Field Assistants
- Image Capture and Notes to simplify interaction with experts on crop growth, problems, and issue-specific advice



Farmer Enablement

- Selection and Buying Process for products and services are now simplified for grass root level empowerment
- Farm profitability tracking is now easier for the rural masses, equipping them to stay competitive and manage crop economics better
- Marketing, Storage and Financial Management equips growers to seamlessly connect with the market and services ecosystem
- Crop Planning and Production is now monitored and tracked on pre-defined metrics as per crop-specific data elements



Impact Created

- More than 100,000 farmers are registered on the digital platform orchestrated by one of the leading Agri business companies which is powered by ITC Infotech Digital Farming Platform
- Farmers participating in the Integrated Spice Crop Development Program achieved improved productivity of 12.8% and 31.1% in net returns

ITC Infotech Digital Farming Platform: Usability, Scalability, Cost-benefit, and Functionality Create Value for All Stakeholders

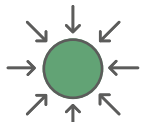
The Platform is built on two decades of experience working closely with farmers and agronomists, and it is continuing to create value for a large number of stakeholders in India. The value creation is summarized in Exhibit 5.

Exhibit 5: ITC Infotech Digital Farming Platform Value Creation
(Based on the Digital Platform run by the leading Agri Business of India)



Usability

- Used by Farmers, Field Assistants, Crop Development Managers, Horticulture Officials as key stakeholders
- Self-service mode for farmers and assisted access provided through field assistants
- Supports multiple languages including Indian vernacular languages like Hindi, Telugu, Kannada, etc.
- Supports multiple crop Value Chains (e.g. Chili, Cummins, Wheat, Soya Beans, etc.)



Scalability

- Scaled from 0 to 25,000 and 25,000 to 1,00,000+ in a very short period of time in one of the initiatives
- Scale up and Scale out without any code changes



Cost-Benefit

- Farmers participating in one of the initiatives using this platform - Integrated Chilli Crop Development Program – achieved improved productivity of 12.8% and 31.1% in net returns
- Provides end to end traceability of food safe produce fetching premium pricing
- Saves time for Field assistants by digitalizing data capture process there by reducing cost of field supervision



Functionality

- **Farmer Forums:** Connecting farming community among themselves and with the service providers
- **Crop Advisory:** Providing agriculture best practices and support in managing farming activities
- **Crop Monitoring:** Comprehensive tracking of crop progress by capturing information about different crop stages and activities
- **Market Place:** Providing direct access to agricultural products and service

Source: EIRTrend, ITC Infotech



Bottom Line:

Leverage Digital Farming Platforms for our sustainable future

Digital Farming platforms have the potential to transform agriculture, but platform providers need to think beyond functionality and put greater focus on usability, scalability, and cost-benefit to increase penetration of the platform. Once the penetration is achieved at then, there is potential to reimagine more and more use cases for all stakeholders and ultimately solving big challenges of agriculture, i.e., productivity, profitability, wastage, safety and traceability. That way, we can ensure sustainable agriculture and, thus, our sustainable future.

Authors



Venkatakrishna is a Business and Technology professional with more than two decades of experience in managing CPG, Food, Agri businesses and Consulting. He has worked with Indian and global CPG, Food and Retail organizations in the areas of supply chain management, customer engagement and information management. He played a key role in setting up and scaling up multiple food chains and delivered business transformation programs for global Food Retail corporations. Venkat is part of e-Choupal, a transformative rural program of ITC for the last thirteen years, where he played multiple roles in Retail Operations, Agri Services and Digital Farming Solutions. Currently he leads CPG-Industry Consulting at ITC Infotech and helps CPG Businesses and customers to take advantage of the emerging and digital technologies like Automation, Industry 4.0, Advanced Analytics, Agriculture 4.0.



Pareekh Jain is Founder and Lead Analyst of EIR Trend and Pareekh Consulting. A seasoned professional with 20+ years of experience, Pareekh has seen the engineering and manufacturing industry from four perspectives: service provider, sourcing advisor, enterprise buyer, and industry analyst. Pareekh's expertise is in providing actionable insights by analyzing market trends. He is regularly quoted in the media on engineering services, IoT, and outsourcing trends, including Harvard Business Review (HBR), NDTV, Times of India, Economic Times, Business Standard, Hindu, Business Line, Livemint, Financial Express, and Business Insider. Pareekh is a thought leader, having authored various publications on topics related to engineering, IoT and Industry 4.0. Pareekh received his MBA from the Indian Institute of Management (IIM), Bangalore and his Bachelor of Technology degree from the Indian Institute of Technology (IIT) Delhi.

About ITC Infotech

ITC Infotech is a leading global technology services and solutions provider, led by Business and Technology Consulting. ITC Infotech provides Business-friendly Solutions to help clients succeed and be future-ready, by seamlessly bringing together digital expertise, strong industry specific alliances and the unique ability to leverage deep domain expertise from ITC Group businesses. The company provides technology solutions and services to enterprises across industries such as Banking & Financial Services, Healthcare, Manufacturing, Consumer Goods, Travel and Hospitality, through a combination of traditional and newer business models, as a long-term sustainable partner.

ITC Infotech is a fully-owned subsidiary of ITC Ltd, one of India's foremost private sector companies and a leading multi-business conglomerate.

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