

Agri Tech Startup and Rise of Technology in Indian Agriculture Industry

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Abstract

Indian agriculture is undergoing a transformative shift because of government regulations, evolving consumer preferences, and modern technologies, offering new opportunities for farmers, the rural economy, and the nation. More than 1,000 agri-tech businesses have emerged in India in the past decade, mostly driven by a rise in both domestic and foreign investment. Initiatives like Startup India, Digital India, and PM-KISAN have fostered an innovation-friendly environment, promoted digital inclusion and stimulated demand for agri-tech solutions. Notable startups, such as DeHaat and Ninjacart, are leading advancements across the agricultural value chain. The industry's future relies on the ongoing use of biotechnology, blockchain, AI, IoT, and drones, which will allow for better traceability, real-time crop monitoring, and predictive analytics. Agri-tech holds transformative potential for sustainable agriculture and food security in India. Collaboration among startups, the government, and farmers is essential to maximize the impact, support scalable solutions, and ensure benefits reach smallholders and large agribusinesses.

Introduction

Agriculture, also known as the backbone of the nation, is a major contributor to the Indian economy. The revolutionary shifts that Indian agriculture has experienced recently, is due to the industry is changing as a result of government regulations, changing consumer tastes, and the use modern technologies. For Indian farmers, the rural economy, and the country as a whole, these shifts present both opportunities.

Role of agripreneurship:

Agripreneurship serves a variety of purposes in the expansion and development of the national economy by encouraging entrepreneurship, which raises income levels and increases employment opportunities for both urban and rural residents. Smallholder farmers benefit from agribusiness by increasing their output and gaining access to local, national, and international



markets. By lowering food costs, increasing availability, and enhancing nutrition, it helps both rural and urban citizens of the nation. By expanding and diversifying revenue and offering business opportunities in both urban and rural locations, it also fosters growth.

With more than 1,000 businesses actively innovating across the agriculture value chain, India has witnessed a boom in agri-tech startups over the last ten years. Both local and foreign investors are paying more and more attention to agri-tech businesses. Funding for Indian agri-tech has increased significantly in recent years, with investments focused on technological development scale-up, and expansion.

A climate that is conducive to innovation has been created by government initiatives such as Startup India, Digital India, and agri-tech incubators. Farmers can also benefit from digital inclusion through government programs like the Pradhan Mantri Kisan Samman Nidhi (PM-KISAN), which increases demand for digital solutions.

There are well-known Indian agri-tech startups includes information about their distinctive contributions to the industry such as:

1. **DeHaat** – it focuses on Agri-tech platform with full-stack functionality offers farmers complete services, such as market access, financial services, inputs, and crop consultancy., employs AI-based recommendations to increase crop productivity and precision farming. Also facilitates effective supply chain management by putting institutional buyers and farmers in touch. Now it positioned itself as fastest-growing agri-tech firms in India, with over a million farmers using its platform.
2. **Ninjacart** –it mainly focuses on Farm-to-market logistics. It Lessens the need of conventional middlemen by creating an effective fresh produce supply chain. reduces waste and transportation expenses by putting farmers in direct contact with retailers and final customers. Also reduces delivery times, optimises logistics, and preserves the quality of fresh fruit by using data analytics. By establishing a clear and direct path to market, Ninjacart's creative business model has greatly increased farmers' revenue.

Agri-Tech Future in India:

- ✚ **Use of IoT, Sensors, and Data Analytics:** Get up-to-date information on temperature, fertiliser levels, and soil moisture. It enhances productivity and lowers waste by enabling accurate resource management, fertilisation, and irrigation.

- ✚ **Use of Drones and Satellite Imagery:** Track crop health, evaluate soil quality, and control water use. It enables early identification of problems such as water stress and pest infestation, maximising actions.
- ✚ **AI & Machine Learning Use:** Predictive analytics for disease diagnosis, pest management, and yield forecasting. It increases precision in managing possible risks and forecasting crop results.
- ✚ **Blockchain Application:** Guarantees supply chain traceability and transparency. Benefits include increased quality control from farm to consumer, decreased fraud, and increased trust.
- ✚ **Application of Biotechnology and Genomics:** Developments in biofortification, GM crops, and agricultural breeding. Benefit: Produces nutrient-rich, pest-resistant, high-yield

Conclusion

India's Agri-Tech Future: Approaches to Sustainable Agriculture and Food Security
The agri-tech industry in India has the potential to significantly impact rural development, sustainable agriculture, and food security.

By bringing innovative ideas that improve farmers' productivity, sustainability, and profitability, agri-tech entrepreneurs are transforming Indian agriculture. These firms are tackling important problems by optimising resource use, cutting waste, enhancing crop resilience, and guaranteeing supply chain transparency with technologies including artificial intelligence (AI), the Internet of Things (IoT), blockchain, and biotechnology.

Cooperation between agri-tech companies, the government, and farmers is crucial in achieving this change. By facilitating financial availability, supportive legislation, and broader use of cutting-edge technologies, this alliance can guarantee that all farmers—from smallholders to huge agribusinesses—benefit.

Reference

Trivedi, Mr.Yash Piyushbhai & Patel, Baxiskumar. (2024). A Study on The Impact of Agri-Entrepreneurship in The Development of The Agricultural Sector Resulting in Upliftment of The Indian Economy. Darshan - The International Journal of Commerce and Management (DIJCM). 4. 37-47.