Manuscript ID:
IJEBAMPSR-2025-020615

Volume: 2

Issue: 6

Month: December

Year: 2025

E-ISSN: 3065-9140

Submitted: 08- Nov.-2025
Revised: 15-Nov.-2025
Accepted: 18- Dec.-2025
Published: 31-Dec.-2025

Address for correspondence:
Dr. Sapna Ashish Nandeshwar
Assistant Professor, (CHB), JNC, Wadi, Nagpur
Email:
dr.sapna.a.nandeshwar@gmail.com

DOI: 10.5281/zenodo.19060299

DOI Link:
https://doi.org/10.5281/zenodo.19060299

The Growing Importance of Digital Agriculture Platforms in Indian Agriculture

Dr. Sapna Ashish Nandeshwar
Assistant Professor, (CHB), JNC, Wadi, Nagpur

Abstract

Indian agriculture is undergoing a profound transformation in response to mounting economic, environmental, and technological challenges. Climate change–induced uncertain Abnties, rising input costs, fragmented landholdings, market inefficiencies, and limited access to timely and reliable information have adversely affected agricultural productivity and farmers' incomes. In this context, digital agriculture platforms, enabled by advancements in information and communication technologies (ICT), big data analytics, artificial intelligence (AI), Internet of Things (IoT), and mobile connectivity, have emerged as crucial instruments for agricultural modernization. This paper examines the concept, significance, role, challenges, and future prospects of digital agriculture platforms in the Indian agricultural sector. The study highlights how these platforms enhance farmer empowerment, improve productivity and cost efficiency, promote market integration and price transparency, strengthen financial inclusion, and support sustainable agricultural development. The paper concludes that digital agriculture platforms can play a transformative role in achieving inclusive, resilient, and sustainable agricultural growth in India, provided that supportive policies, infrastructure development, and capacity-building measures are effectively implemented.

Keywords: *Digital Agriculture, Digital Agriculture Platforms, Indian Agriculture, Sustainable Development, Farmer Empowerment*

Introduction

The agricultural sector is still the cornerstone of India's economy, employing close to 50% of the national labor force and playing a vital role in the GDP. However, it is confronted with issues like conventional techniques, fragmented supply chains, and increasingly erratic weather. As we move towards 2025, the digitalization of agriculture in India is not just a concept for the future; it is a pressing and crucial driver for changing agricultural practices.

Agriculture holds a crucial place in the Indian economy, with a majority of the population relying on it for their livelihoods. However, conventional farming methods, restricted access to technology, and shifting economic conditions have hindered growth in this sector. In this landscape, the Digital Agriculture Revolution, especially through digital agriculture platforms, offers renewed hope for advancing the agricultural landscape.

Defining Digital Agriculture Platforms

Digital agriculture platforms are digital systems that provide farmers with diverse agricultural services through mobile apps, web portals, cloud computing, and data analytics. These platforms consolidate information, technology, markets, and financial services in one location, facilitating informed and timely decision-making by farmers.

These platforms gather data from multiple sources—such as sensors, drones, and satellite images—to aid in making informed decisions throughout the agricultural value chain, thereby promoting more sustainable food production methods. They serve as key centers for overseeing farm activities, enhancing resource use, and assessing environmental effects.

Study Objectives

This analysis aims to:

- Clarify the concept of digital agriculture platforms
- Evaluate their significance in the context of Indian agriculture

How to Cite this Article:
Nandeshwar, S. A. (2025). The Growing Importance of Digital Agriculture Platforms in Indian Agriculture. International Journal of Economic, Business, Accounting, Agriculture and Management Towards Paradigm Shift in Research, 2(6), 98–101. https://doi.org/10.5281/zenodo.19060299

- Investigate their role in enhancing farmer empowerment
- Identify the challenges that digital agriculture platforms must overcome
- Propose future enhancements and directions.

Research Methodology

The research is based on secondary data sourced from government reports, scholarly articles, journals, books, and credible online resources. A descriptive research approach was utilized to analyze the data.

The Importance of Digital Agriculture Platforms in Indian Farming

1. **Access to Information and Knowledge**

Digital platforms provide farmers with timely information on weather conditions, crop advisory services, and pest and disease control.

2. **Boosting Production and Efficiency**

Data-driven farming encourages the efficient use of water, fertilizers, and pesticides, which helps reduce costs and increase agricultural yields.

3. **Market Connectivity and Transparency**

Platforms like e-NAM allow farmers to connect directly with markets, minimizing the roles of intermediaries and ensuring transparent pricing, which ultimately enhances farmers' income.

4. **Financial Inclusion and Institutional Access**

These platforms improve access to formal financial services such as digital payments, crop loans, insurance, and government support, thereby fostering financial inclusion for farmers.

5. **Promoting Sustainable Agriculture**

By supporting precision farming and resource-efficient techniques, digital platforms contribute to environmental sustainability and the development of climate-resilient agricultural practices.

Recent Trends and Statistical Evidence on Digital Agriculture Platforms in India

1. **Growth of Digital Agricultural Markets (e-NAM)**

The National Agriculture Market, known as e-NAM, is a key digital platform launched by the Government of India that has seen significant growth recently. By 2025, over 1.79 crore farmers will have registered on the e-NAM portal, which helps them discover prices transparently and access markets directly. The total value of agricultural goods traded through e-NAM has exceeded ₹4.39 lakh crore, covering more than 247 different products.

Figure 1: Growth of Farmer Registration on e-NAM (2016–2025)

Year | Registered Farmers

2016 | 0.15
2018 | 0.50
2020 | 1.00
2022 | 1.30
2024 | 1.60
2025 | 1.79

(This shows how quickly farmers are adopting digital market platforms over time.)

This swift increase shows that farmers are becoming more confident in using digital platforms to sell their crops and are relying less on traditional middlemen.

Figure 1 displays the rapid rise in farmer registrations on the e-NAM platform.

Source: Ministry of Agriculture & Farmers Welfare; e-NAM Official Reports; FAO; AgriTech Industry Reports (2024–2025)

2. **Growth of Digital Farmer Identification (AgriStack & Digital IDs)**

As part of the Digital Agriculture Mission, the Government of India has launched Digital Farmer IDs to combine land records, crop information, and details about beneficiaries. By 2025, around 6.1 crore farmers in various states will have received these Digital IDs, with a goal to reach 11 crore farmers by 2027.

Figure 2: Increase in Digital Farmer IDs in India (2024–2027)

Year | Farmers with Digital ID
2024 | ~4
2025 | ~6.1
2026 | ~8 (estimated)
2027 | ~11 (goal)

Digital identification enhances the distribution of subsidies, crop insurance, loans from institutions, and advisory services. This technology will be essential for future digital agriculture systems.

Source: Ministry of Agriculture & Farmers Welfare; e-NAM Official Reports; FAO; AgriTech Industry Reports (2024–2025)

3. **The Importance of Agritech Platforms and Startups**

Figure 3: Reach of Major Digital Agriculture Platforms for Farmers (2025)

Platform | Estimated Farmer Reach (Millions)

DeHaat | 1.5
Fasal | 0.01
CropIn | About 16 million acres (~1.6)
NinjaCart | 0.10

Private agritech platforms have significantly helped grow digital agriculture services. Platforms like DeHaat, CropIn, Fasal, and NinjaCart together support millions of farmers by providing advice, precision farming tools, and market connections.

- DeHaat connects with over 1.5 million farmers. - CropIn manages more than 16 million acres of farmland online. - Precision platforms such as Fasal have cut water use by up to 50% while boosting crop yields by roughly 20%.

Source: Ministry of Agriculture & Farmers Welfare; e-NAM Official Reports; FAO; AgriTech Industry Reports (2024–2025)

Figure 3: shows how many farmers each major digital agriculture platform reaches.

4. **Digital Connectivity Supporting Agriculture Platforms**

The growth of internet access in rural areas and the rise in mobile phone usage have greatly helped farmers use digital agriculture tools. By 2025, it is expected that nearly 900 million people in India will be online, with more smartphones available in villages. Moreover, about 85% of the population now has access to 5G networks, which allows for real-time farming advice and data-driven methods. This improvement in infrastructure creates a solid base for expanding digital agriculture platforms across the country.

Challenges to Adoption of Digital Agriculture Platforms

Digital agriculture platforms encounter significant challenges in achieving widespread adoption among farmers globally, particularly affecting smallholder farmers in regions like India.

Economic Challenges

High initial costs for equipment, sensors, software, and maintenance hinder uptake, especially for small-scale farmers with limited financial resources. Additionally, ambiguous returns on investment and financial constraints make these platforms appear unaffordable, despite their potential long-term advantages.

Infrastructure Issues

In rural areas, poor internet connectivity and unreliable electricity hinder real-time data access and the overall functionality of platforms. Moreover, the lack of standardization among systems complicates integration, forcing farmers to deal with multiple incompatible tools.

Skills and Knowledge Deficiencies

Many farmers lack digital literacy, technical training, and the confidence needed to navigate complex platforms. This is further complicated by language barriers and resistance based on age, which leads to underutilization of available technology.

Data and Trust Concerns

Fears surrounding privacy, data security, and the reliability of platforms that gather sensitive information diminish trust. Additionally, problems with interoperability and the quality of available data in rural areas exacerbate these concerns.

Future Directions and Policy Recommendations

To fully realize the advantages of digital agriculture platforms, the following measures are suggested:

- Enhancing rural digital infrastructure and internet access
- Creating user-friendly platforms available in local languages
- Offering ongoing digital literacy and capacity-building programs for farmers
- Strengthening collaboration among government, private sector, and research organizations
- Ensuring that small and marginal farmers have equitable access

Conclusion

The rising significance of digital agriculture platforms in Indian agriculture underscores their capacity to tackle critical issues related to productivity, market access, and sustainability. These platforms mark a shift toward more knowledge-based and technology-driven farming practices. With enabling policies, effective implementation, and active farmer engagement, digital agriculture platforms can play a crucial role in the long-term transformation and sustainability of Indian agriculture.

Acknowledgment

The author sincerely expresses gratitude to all the scholars, institutions, and organizations whose reports, research articles, and publications have contributed significantly to the completion of this study. Special appreciation is extended to the Ministry of Agriculture & Farmers Welfare, Government of India, and various agri-tech platforms for providing valuable data and insights that enriched this research.

Financial support and sponsorship

Nil.

Conflicts of interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

References

1. Aker, J. C. (2011). Dial “A” for agriculture: Utilizing information and communication technologies for agricultural extension in developing countries. Agricultural Economics, 42(6), 631–647. https://doi.org/10.1111/j.1574-0862.2011.00545.x
2. Food and Agriculture Organization of the United Nations. (2022). The state of food and agriculture 2022: Utilizing digital technologies for an inclusive and sustainable transformation of agrifood systems. FAO. https://www.fao.org
3. Klerkx, L., Jakku, E., & Labarthe, P. (2019). A review of social science on digital agriculture. NJAS – Wageningen Journal of Life Sciences, 90–91, 100315. https://doi.org/10.1016/j.njas.2019.100315
4. Ministry of Agriculture & Farmers Welfare. (2023). Annual report 2022–23. Government of India. https://agricoop.nic.in

5. Mittal, S., & Mehar, M. (2016). Socio-economic factors influencing farmers' adoption of modern information and communication technology in India. Journal of Agricultural Education and Extension, 22(2), 199–212. https://doi.org/10.1080/1389224X.2015.1074076
6. National Agriculture Market. (2023). e-NAM annual progress report 2022–23. https://www.enam.gov.in
7. NITI Aayog. (2021). Digital agriculture: Transforming Indian agriculture via digital technologies. Government of India.
8. Sharma, V. P., & Kumar, A. (2020). Digital transformation of agriculture in India: Opportunities and challenges. Indian Journal of Agricultural Economics, 75(2), 123–138.