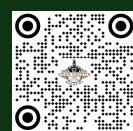# (A No. 164) Digital Empowerment of Farm Women Through Ai and Mobile Based Platform

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ABSTRACT

Women play a significant role in agriculture, contributing to crop production, livestock management and household food security. However, farm women often face limited access to information, extension services, financial resources and modern technologies, which restricts their productivity and decision-making power. Digital technologies have emerged as powerful tools to address these challenges and promote inclusive agricultural development. AI-based and mobile-based platforms enable timely access to agricultural advisories, weather forecasts, market information and decision-support services.

Agricultural Women play a significant role in agriculture, contributing to crop production, livestock management and household food security. However, farm women often face limited access to information, extension services, financial resources and modern technologies, which restricts their productivity and decision-making power. Digital technologies have emerged as powerful tools to address these challenges and promote inclusive agricultural development. AI-based and mobile-based platforms enable timely access to agricultural advisories, weather forecasts, market information and decision-support services. These tools reduce information gaps and enhance women's self-reliance in farming activities. Mobile platforms provide cost-effective and wide-reaching extension support, especially in remote rural areas. Integration of artificial intelligence allows personalized, location-specific and predictive recommendations for improved farm management. Digital empowerment also strengthens social connectivity and market participation among farm women. As mobile penetration continues to grow in rural regions, these platforms offer scalable solutions for women-centered extension. Despite challenges related to digital literacy and infrastructure, AI and mobile-based platforms hold strong potential for empowering farm women. This article examines their role in improving livelihoods and promoting sustainable agriculture.

ROLE OF MOBILE PLATFORM IN EMPOWERMENT

Enhancing access to information: Mobile platforms provide women with timely information on farming practices, weather forecasts, market prices, health and government schemes directly on their phones.

Reducing dependency on intermediaries: Women can access reliable information and services directly, reducing dependence on middlemen, extension agents, or family members for decisions.

Improving farm decision-making: Real-time advisories help women make better decisions on crop selection, input use, pest management and marketing.

Increasing confidence and autonomy: Regular use of mobile platforms builds digital skills, self-confidence and decision-making power, leading to greater independence.

STRATEGIES FOR DIGITAL EMPOWERMENT

The following strategies focus on making technology and information accessible and relevant to women farmers:

- **Gender-Responsive Platform Design:** Develop AI and mobile solutions with women's specific needs and literacy levels in mind, incorporating features like voice-first interactions (e.g., AI in regional languages) to overcome text literacy barriers.

- **Offline Functionality:** Ensure core features of mobile apps (e.g., pest

identification, weather info) are available offline, as rural internet connectivity can be unreliable.

- **Targeted Content & Training:** Provide information relevant to women's specific roles in agriculture (e.g., seed handling, nutrition, kitchen gardening) through participatory videos and e-learning modules.
- **Integrated Services:** Combine various essential services on a single platform, such as:
  - **Real-time Advisory:** AI-driven weather alerts, soil analysis and crop management advice.
  - **Market Linkages:** E-commerce platforms to sell produce and access inputs like seeds and machinery services.
  - **Digital Financial Services:** Mobile banking for secure payments, loans and insurance, which helps build financial independence.
- **Community-Based Support:** Leverage existing women's self-help groups (SHGs) and farmer producer organizations (FPOs) to facilitate collective learning, provide peer support and overcome socio-cultural barriers to tech adoption.
- **Digital Literacy Programs:** Implement dedicated training initiatives like the Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA) to build foundational digital skills among rural women.
- **Safe Digital Spaces:** Establish platforms with clear grievance redressal mechanisms and cyber safety training to build trust and confidence in using digital tools.

PLATFORMS FOR EMPOWERMENT

- **Digital Green:** Uses a participatory video approach to train women farmers on best practices, making knowledge accessible and culturally relevant.

- **Mahila E-Haat**: Mahila E-Haat is a government-supported online marketplace for women entrepreneurs and producers.
- **CABI Apps:** Tools like the CABI BioProtection Portal and Crop Sprayer app provide offline information on pest management, helping women access knowledge that might otherwise be a male domain.
- **Kisan Suvidha:** A government mobile app providing information on weather, market prices and plant protection, which is accessible to women farmers.

BARRIERS IN DIGITAL EMPOWERMENT

- **Socio-Cultural & Gender Norm Barriers:** Socio-cultural and gender norms place decision-making power with men and discourage women from using technology, which is often seen as a male domain. Heavy household responsibilities and mobility restrictions limit women's time and access to digital training. Low confidence and lack of support further reduce women's participation in digital and AI-based services**.**
- **Digital & Technical Barriers:** Digital illiteracy, poor infrastructure, lack of device ownership, language constraints, and complex app design limit women's ability to independently use digital technologies. These barriers reduce access to information and services, slowing the digital empowerment of farm women.
- **Economic & Institutional Barriers:** Limited affordability, poor access to credit and financial services and weak policy and extension support restrict women's ability to adopt digital technologies. These economic and institutional barriers reduce inclusion, awareness and effective utilization of digital empowerment initiatives.

EMPOWERMENT OUTCOMES
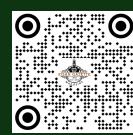
- **Improved Access to Information:** AI and mobile platforms provide timely, location-specific agricultural information to farm women.
- **Enhanced Decision-Making:** Digital tools support informed choices in crop management, inputs and marketing.
- **Increased Productivity and Income:** Better advisory services lead to higher yields, efficiency and improved farm income.
- **Market Engagement and Social Connectivity:** Mobile platforms strengthen market linkages and peer-to-peer networking.
- **Skill Development and Digital Literacy:** Continuous use of digital tools enhances technical skills and digital confidence.
- **Greater Self-Reliance:** Access to information and services increases autonomy and leadership in farming activities.

RECOMMENDATIONS

- **Policy and Institutional Support:** Government policies and schemes should address women's needs, ensure easy access to technology, credit, training and provide safety and support for women users. Formulate inclusive policies and provide subsidies to promote access to AI- and mobile-based platforms for farm women.
- **Capacity Building and Digital Literacy:** Implement gender-sensitive training programs to enhance digital skills and confidence among rural women farmers.
- **Infrastructure and connectivity:** Improve rural internet connectivity and ensure affordable access to smartphones and digital services.
- **AI-Enabled extension Services:** Integrate AI-driven advisory systems with agricultural extension to deliver personalized, real-time information.

- **Include women in planning and design:** Women should be involved in designing digital tools and programs so that technologies reflect their real needs, roles and challenges.

CONCLUSION

The integration of AI-based and mobile-based platforms represents a transformative advancement in empowering farm women within the agricultural sector. These digital tools enable women to transition from supportive labor roles to informed decision-makers by improving access to timely agricultural information, advisory services, markets and financial opportunities. Enhanced digital access strengthens women's confidence, productivity and income-generating capacity, while promoting independent farm management. Moreover, AI-driven personalization and real-time mobile services contribute to sustainable and climate-resilient agricultural practices. Although challenges such as digital literacy gaps and infrastructure limitations persist, supportive policies and capacity-building initiatives can accelerate adoption. Overall, digital empowerment through AI and mobile platforms fosters gender equity, inclusive growth, and long-term sustainability in agriculture.