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Digital Extension Services in Horticulture Marketing: Transforming Access, Markets, and Farmer Prosperity

*Akash Motilal Nathjogi[1], Gangaprasad Rajappa Rajpod[1], Yogesh Arjun Jagdale[2] and Rushikesh Murlidhar Bhusari[3]
[1]P.G. Scholar, Department of MBA (Agribusiness Management), College of Agriculture, Pune, (MPKV, Rahuri), Maharashtra, India
[2]P.G. Scholar, Department of Agronomy, College of Agriculture, Dhule, (MPKV, Rahuri) , Maharashtra, India
[3]Ph.D. Scholar, Department of Horticulture (Fruit Science), Post Graduate Institute, MPKV, Rahuri, Maharashtra, India
*Corresponding Author's email: akashnathjogi1998@rediffmail.com

In the 21st century, horticulture in India is at the cusp of a digital transformation. Traditional extension services—restricted by infrastructure, human resources, and geographic reach—are now being revolutionized through Information and Communication Technologies (ICT) and digital platforms. In horticulture marketing specifically, digital extension services leverage mobile applications, national e-market platforms like e-NAM, social media, and ICT tools to bridge information gaps, enhance price discovery, and empower farmers to access markets directly. These interventions are reshaping how farmers receive advisory messages, sell produce, and interact with buyers in real time. Digital extension goes beyond mere dissemination of crop production advisories; it integrates marketing information, agri-market linkage platforms, and direct connectivity between producers and buyers, thereby enhancing both economic returns and livelihood resilience for horticultural growers across India.

Digital Extension Tools and Their Roles

Mobile Applications: The Farmer's Handheld Extension Hub

Mobile apps designed for the agricultural sector have emerged as the frontline interface between farmers and crucial market information:

- Government-led apps like **mKisan** and **AgriMarket** provide *market prices, weather forecasts, advisory alerts, and location-based pricing within 50 km* of the user's position, enabling market-responsive decision-making.
- Numerous agritech platforms such as **AgriApp**, **BigHaat**, and **Plantix** support farmers with crop advisories, pest diagnosis, and networking, all through simple smartphone interfaces.

Such tools ensure that even remote farmers can receive *real-time insights*, overcome isolation, and make *data-informed choices* about where and how to sell their produce. Researchers have noted that mobile phones significantly expand extension reach at a low cost, allowing messages to be sent to thousands simultaneously.

e-NAM: National Level Digital Marketing Platform

The **National Agriculture Market (e-NAM)**, launched in 2016, is India's flagship digital marketing platform connecting existing APMC mandis with an online trading portal to enable *transparent price discovery* and expanded **market access** for farmers.

Recent e-NAM statistics (June 2025):

Key Indicator	Value
Mandis integrated	1,522
Total traded volume	12.03 crore MT*
Value of trade	₹4,39,941 crore
Registered farmers	>1.79 crore
Registered FPOs	4,518
Commodities listed	238

*Includes countable commodities like coconut, lemon, etc.

This platform's *multi-stakeholder ecosystem*—comprising farmers, traders, and Farmer Producer Organizations (FPOs)—supports digital bidding, price visibility, and online payment mechanisms via integrated UPI and banking solutions.

Social Media and ICT Tools: Amplifying Outreach and Engagement

Social media platforms like **WhatsApp, Facebook, YouTube**, and regional forums have become powerful tools for extension:

- Horticultural departments and NGOs use **video messages, live Q&A sessions, and market alerts** via WhatsApp groups, significantly accelerating reach.
- Social media campaigns help disseminate success stories, marketing trends, and e-commerce opportunities for fresh produce (e.g., direct consumer delivery through local groups).
- ICT tools such as **interactive voice response (IVR), GIS data, and SMS advisories** provide multilingual support and overcome literacy barriers.

Such tools enable *two-way communication*, empowering farmers to ask questions and receive timely responses, a leap beyond unidirectional traditional extension methods.

Benefits of Digital Extension Services in Horticulture Marketing

Digital extension services offer a host of *tangible advantages*:

1. Market Efficiency and Price Discovery

Platforms like e-NAM provide competitive bidding, transparent pricing, and broader buyer reach, leading to *better price realization* for horticultural produce compared to traditional local mandi sales.

2. Timeliness and Targeted Advisory

Digital tools deliver *weather alerts, pest/disease warnings, and market trends* directly to farmers' phones—supporting decisions that can optimize harvest timing and reduce post-harvest losses.

3. Enhanced Farmer Participation

Mobile apps and social media outreach reduce geographic and infrastructural barriers. Studies show that usage of mobile extension services significantly improves farmers' access to new practices and market information.

4. Inclusivity and Reach

Digital platforms can *reach larger, diverse audiences* including women, youth, and smallholders more effectively than conventional face-to-face extension alone.

Challenges and Future Directions

Despite rapid uptake, digital extension in horticulture faces obstacles:

- **Digital literacy** and **connectivity gaps** in rural areas impede full participation.

- Awareness about platforms like e-NAM remains low among many farmers, especially regarding operational procedures such as quality assaying and e-bidding.
- Ensuring quality data feeds, local language support, and tailored advisory content remain priorities for scaling impact.

Future advances: such as AI-driven crop diagnosis, blockchain for traceability, and integration with global e-commerce marketplaces could further transform horticulture marketing.

Conclusion

Digital extension services are forging a *new paradigm* in horticulture marketing—one where data, connectivity, and transparency converge to empower farmers. From local mobile apps providing real-time advisory to national platforms like e-NAM enabling competitive market access, digital tools are democratizing horticulture marketing in unprecedented ways. These innovations not only improve price discovery and market efficiency but also enhance farmers' decision-making capacities and livelihood sustainability. Continued investments in digital infrastructure, capacity building, and localized content will be crucial to realizing the full potential of digital extension services in horticulture.