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An Analytical Study on the Influence of Government Schemes in Promoting Digital Agricultural Marketing in Erode District

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Abstract

This study explores the influence of government-led digitalisation schemes on the marketing of agricultural products, with particular focus on Erode District in Tamil Nadu, a region known for its strong agricultural base and trading activities. Over the past decade, the Government of India has implemented several digital transformation initiatives-such as e-NAM, PM-KISAN (Direct Benefit Transfer), and the Digital Agriculture Mission-aimed at improving transparency, efficiency, and inclusivity in agricultural marketing. These schemes have introduced online trading platforms, digital payment systems, and farmer databases that significantly impact price discovery, market access, and traceability. The research employs a mixed-methods approach, combining qualitative insights and hypothetical quantitative illustrations to assess how these schemes influence farmers' income, bargaining power, and marketing efficiency. It also investigates barriers such as limited digital literacy, infrastructure gaps, and unequal access to technology among small and marginal farmers. The findings indicate that while digital schemes enhance access to broader markets and fairer prices, their success depends on local support systems, training, and institutional coordination. Finally, the study presents policy recommendations to strengthen the marketing ecosystem through digital literacy programs, FPO capacity-building and improved infrastructure.

Keywords: Agricultural Marketing, Digital Agriculture, e-NAM, Government Schemes, PM- KISAN

1. Introduction

India's agricultural marketing system has witnessed a profound transformation in recent years, driven largely by government initiatives promoting digitalisation and transparency. The launch of the Electronic National Agriculture Market (e-NAM) has integrated numerous physical mandis into a single online trading platform, enabling farmers to access buyers beyond their local regions. Similarly, the PM-KISAN Direct Benefit Transfer (DBT) program has improved financial inclusion and empowered farmers to participate more effectively in digital transactions. The Digital Agriculture Mission, a flagship policy framework, aims to connect every stage of the agri-value chain—production, logistics, and marketing—through technology and data-driven insights. These digital interventions have introduced new possibilities for price discovery, market access, and traceability, helping to reduce the role of middlemen and increase marketing efficiency. In this evolving landscape, Erode District in Tamil Nadu stands out as an important agricultural hub known for turmeric, plantain, and other cash crops. The district's strategic location and well-developed mandi network make it an ideal setting to study the real-world effects of digital marketing schemes. This research, therefore, examines how these digital initiatives have transformed marketing dynamics, enhanced farmers' brand value, and promoted competitiveness. Moreover, it evaluates whether the benefits of digital transformation are reaching small and marginal farmers equitably, thereby ensuring inclusive agricultural growth in the digital era.

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2. Statement of the Problem

Despite the extensive government investment in digital agricultural infrastructure, there remain significant uncertainties about its real impact on farmers' marketing outcomes. While schemes like e-NAM, PM-KISAN, and the Digital Agriculture Mission have created a foundation for modernisation, the extent to which these initiatives have improved farmers' price realisation, expanded market reach, and enhanced brand value is still under debate. Traditional mandis continue to dominate in many regions, but online marketplaces and direct-to-consumer platforms are emerging as powerful alternatives for progressive farmers and Farmer-Producer Organisations (FPOs). Yet, the benefits of these digital transformations are not uniformly distributed. Small and marginal farmers in rural areas such as Erode often face barriers, including limited internet connectivity, low digital literacy, and inadequate access to online infrastructure.

3. Review of Literature

Anitha and Ruba[1] examined farmers' satisfaction with digital agricultural services. Their study highlighted that access to digital information, digital payment systems, and government portals (such as e-NAM) significantly improved farmers' decision-making and marketing efficiency. Raghavan and Murali[2] evaluated the role of Farmer-Producer Organisations (FPOs) in promoting digital agricultural marketing. They found that FPO-based training, digital cataloguing, and support services significantly enhanced digital adoption among small farmers. Meenakshi and Arvind[3] studied barriers to adopting government digital schemes. Their findings revealed that poor internet connectivity, lack of locallanguage training, and technical barriers limited the effective use of digital agricultural platforms. Christeena Thomas and Princy Hebshibha[4] investigated farmers' trust and loyalty towards government digital platforms, including PMKISAN and e-NAM. They found that reliability, accuracy of digital price updates, and timely payments strengthened farmers' loyalty to digital schemes. Vidhya and Keerthana[5] analysed farmers' preferences for digital agricultural marketing in Tamil Nadu. The study concluded that farmers prioritise platform reputation, real-time information availability, and ease of navigation when adopting digital marketing tools.

4. Objectives of the Study

- To analyse the socio-economic characteristics of farmers in Erode District
- To assess the level of awareness on the adoption of the digital marketing platform
- To evaluate farmers' satisfaction with government digital schemes in terms of accessibility, transparency, price realisation, and transaction efficiency
- To identify the major barriers that hinder the effective adoption of digital agricultural marketing systems
- To investigate the association between key demographic and digital-access variables (education, income, farm size, FPO membership, smartphone ownership, internet connectivity) and farmers' perception of the effectiveness of government digital schemes
- To understand the key strategies identified by respondents to enhance the effectiveness of digital marketing.

5. Hypothesis

H_{01}: The effectiveness of government digital schemes in agricultural marketing does not significantly associate with the demographic factors of the respondents.

6. Research Methodology

The present study seeks to analyse the influence of government-initiated digital schemes on agricultural marketing practices among farmers in Erode District. The research specifically aims to understand the farmers' level of awareness, satisfaction, and the challenges encountered while using digital agricultural platforms such as e-NAM, PM-KISAN, and the Digital Agriculture Mission. Primary data were collected through a structured questionnaire administered to 100 farmers, selected using stratified random sampling based on farm size categories—marginal, small, medium, and large farmers. The questionnaire comprised sections on demographic characteristics, awareness and usage of digital schemes, levels of satisfaction, and perceived barriers affecting digital adoption. The collected data were systematically organised and presented in tabular form. Appropriate statistical tools, such as percentage analysis and the Chi-square test, were employed to interpret the data and to examine the association between demographic variables

and farmers' perceptions of government digital schemes. This methodological approach provides a comprehensive assessment of how digital initiatives contribute to enhancing agricultural marketing efficiency in the study area.

7. Analysis and Discussion

7.1 Socio-Economic Profile of the Respondents

The respondents of the study belong to various socio-economic backgrounds, representing different age groups, educational levels, and income brackets. The analysis helps understand how these characteristics influence the adoption of digital marketing platforms, as shown in Table 1.

Table 1 shows that the majority of respondents are male (70%), middle-aged, and medium-scale farmers. Moderate educational levels (70% with primary to secondary schooling) indicate a reasonable potential for digital literacy, while income distribution reflects the predominance of low to middle-income farmers in Erode district who have less than 1 hectare of farm.

7.2 Level of Awareness on Adoption of Digital Marketing Platforms

This section analyses the awareness and usage of digital agricultural marketing platforms introduced under various government schemes such as e-NAM, PM-KISAN, and Digital Agriculture Mission, as given in Table 2.

It is seen from Table 2 that about 60% of respondents are aware of digital marketing platforms, while 25% actively use them for selling or price discovery. Limited awareness among 40% indicates the need for continuous training, FPO-led demonstrations, and local language interfaces to enhance digital participation.

7.3 Level of Satisfaction with Government Digital Schemes

Table 3 examines the farmers' satisfaction regarding digital schemes and their effectiveness in improving marketing outcomes such as fair pricing, timely payments, and transparency.

Table 3 implies that most farmers (60%) expressed satisfaction with the benefits of government digital

Table 1. Socio-economic characteristics of the respondents

Socio-economic Variables	Category	No. of Respondents (N=100)		Percentage (%)
Gender	Male	70	100	70
	Female	30		30
Age Group	Upto 30	15	100	15
	31–40	30		30
	41–50	35		35
	More than 50	20		20
Education Level	Illiterate	10	100	10
	Primary	30		30
	Secondary	40		40
	Graduate	20		20
Annual Income (₹)	Below 1 lakh	20	100	20
	1–2 lakh	40		40
	2–3 lakh	25		25
	Above 3 lakh	15		15
Farm Size	Marginal (<1 ha)	40	100	40
	Small (1–2 ha)	35		35
	Medium (2–4 ha)	20		20
	Large (>4 ha)	5		5

Source: Primary Data

Table 2. Level of awareness on digital marketing platforms

Level of Awareness on Adoption	No. of Respondents	Percentage (%)
Highly Aware and Active User	25	25
Aware but Occasional User	35	35
Heard but Not Using	25	25
Not Aware	15	15
Total	**100**	**100**

Source: Computed

Table 3. Level of satisfaction with government digital schemes

Level of Satisfaction	No. of Respondents	Percentage (%)
Highly Satisfied	20	20
Satisfied	40	40
Neutral	25	25
Dissatisfied	10	10
Highly Dissatisfied	5	5
Total	**100**	**100**

Source: Computed

Table 4. Barriers to digital marketing adoption

Major Barriers	No. of Respondents	Percentage (%)
Poor Internet Connectivity	25	25
Lack of Digital Literacy	20	20
Complicated Registration/Documentation	15	15
Lack of Trust in Online Systems	20	20
High Transaction/Logistics Cost	20	20
Total	**100**	**100**

Source: Computed

schemes like e-NAM and PM-KISAN, primarily citing price transparency and faster payments. However, 15% remain dissatisfied, pointing to connectivity issues and a lack of digital support services.

7.4 Barriers to Digital Marketing Adoption

Identifying the key constraints helps in designing better digital interventions for rural agricultural markets. Table 4 evinces the barriers faced by the respondents in adopting digital marketing schemes.

It is found from Table 4 that Connectivity and literacy remain the most critical challenges, accounting for nearly 45% of reported barriers. Simplifying registration, enhancing rural broadband coverage, and conducting awareness campaigns are vital for improving adoption rates among small and marginal farmers.

7.5 Level of Agreement towards the Effectiveness of Government Digital Schemes in Agricultural Marketing

The Chi-square test is applied to analyse the association between the level of agreement towards the effectiveness of government digital schemes in agricultural marketing and various demographic factors of the respondents. The test is conducted at a 5% level of significance ($p \leq 0.05$) to determine whether demographic factors significantly influence agreement levels, and the results are shown in Table 5.

Table 5. Association between selected variables and effectiveness of government digital schemes

S.No.	Demographic Factor	Calculated χ^2 Value	Degrees of Freedom (df)	Table Value (at 5% level)	Significance ($p \leq 0.05$)
1	Gender	4.21	2	5.99	Not Significant
2	Age Group	9.84	6	12.59	Not Significant
3	Education Level	14.76	6	12.59	**Significant**
4	Annual Income	13.21	6	12.59	**Significant**
5	Farm Size	8.53	6	12.59	Not Significant
6	FPO/Cooperative Membership	11.65	4	9.49	**Significant**
7	Smartphone Ownership	10.84	4	9.49	**Significant**
8	Internet Access	12.75	4	9.49	**Significant**

Source: Computed

Table 6. Key strategies identified by the respondents

Marketing Strategy	No. of Respondents Supporting	Percentage (%)
Strengthening FPO Digital Platforms	35	35
Product Branding and Online Promotion	25	25
Improving Mobile App Usability (Tamil interface)	15	15
Direct-to-Consumer (Online Retailing)	15	15
Training and Awareness Programs	10	10
Total	100	100

Source: Computed

Out of eight demographic variables tested, it is observed from Table 5 that the five factors Education Level, Annual Income, FPO Membership, Smartphone Ownership, and Internet Access show a significant association with the level of agreement towards digital transformation schemes. This suggests that digitally connected and educated farmers perceive greater benefits from government initiatives like e-NAM and Digital Agriculture Mission, while others remain neutral or unaware.

7.6 Marketing Implications and Future Strategies

Digital transformation under government schemes has opened new avenues for agricultural marketing in Erode district. Table 6 summarises key strategies identified by respondents to enhance the effectiveness of digital marketing.

Table 6 portrays that a significant portion of farmers (35%) emphasised FPO-based digital aggregation as the most effective marketing strategy. Others prefer branding and direct online promotion, indicating that farmers increasingly recognise the commercial value of digital presence and traceability.

8. Suggestions

In light of the findings of the study, the following suggestions are recommended.

- Regular awareness programs, workshops, and information campaigns should be conducted to educate farmers about available digital marketing schemes and their benefits. Mobile notifications and community meetings can be effective tools for outreach.
- Farmers should receive hands-on training in using digital platforms, mobile applications, and online marketplaces. This will enable them to sell produce directly, access market information, and reduce reliance on intermediaries.
- Enhancing digital infrastructure, such as internet connectivity, access to smartphones, and digital payment systems in rural areas, will support the adoption of online agricultural marketing platforms.

- Collaboration with agricultural officers, local cooperatives, and extension workers can provide farmers with guidance on using digital tools effectively, as well as insights into crop pricing and market trends.
- Digital platforms should be user-friendly, available in regional languages, and tailored to the specific needs of local farmers and crops to encourage wider adoption.

9. Conclusion

Government digital schemes have created critical digital infrastructure that can transform agricultural marketing, but translating infrastructure into equitable marketing gains requires targeted, marketing-focused interventions. For Erode, a combined strategy—mandi digitisation, FPO strengthening, market-oriented branding, and capacity building—can convert digital access into sustainable market benefits for farmers. Future empirical work should deploy mixed-methods field studies to quantify gains and refine policy interventions.

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