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Impact of e-NAM on farmers' marketing decisions and constraints in agricultural marketing

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Abstract

The present study entitled "Impact of e-NAM on Farmers' Marketing Decisions and Constraints in Agricultural Marketing" was conducted to assess the socio-economic characteristics, awareness, digital literacy, ICT accessibility, impact of e-NAM and constraints faced by farmers in agricultural marketing. A total of 120 farmers were selected from four villages, with 30 farmers from each village, using a simple random sampling technique. Data were collected through a structured and pre-tested interview schedule and analyzed using frequency, percentage, mean and standard deviation. The findings revealed that the majority of farmers belonged to the middle-age group (56.67%), had medium farming experience (61.67%), medium annual income (56.67%) and small landholdings (38.33%). Nearly half of the respondents were partially aware of e-NAM (46.67%), while medium levels of market orientation (58.33%), digital literacy (48.33%) and ICT accessibility (51.67%) were observed. The impact of e-NAM was found to be medium among 56.67% of farmers, followed by high (25.00%) and low (18.33%) levels. The major constraints were lack of proper awareness about e-NAM (78.33%), lack of digital literacy (73.33%), poor internet connectivity (71.67%) and difficulty in using mobile phones/computers (68.33%). The study highlights the need for strengthening awareness programmes, digital literacy, training, internet connectivity and institutional support to improve the effective utilization of e-NAM and enhance farmers' marketing decisions.

Keywords: e-NAM, agricultural marketing, farmers, marketing decisions, digital literacy, ICT accessibility, constraints, market orientation

Introduction

Agriculture remains a major component of the Indian economy and plays an important role in employment, rural livelihoods and food security. The agriculture and allied sector contributed 18.0 per cent to India's Gross Value Added (GVA) at current prices in 2024–25, while agricultural workers accounted for 54.6 per cent of the total workforce. Furthermore, marginal holdings of up to one hectare constituted 68.45 per cent of the total operational holdings in 2015–16, indicating the predominance of small and marginal farmers in Indian agriculture. These farmers often face difficulties in accessing timely market information, obtaining remunerative prices and strengthening their bargaining position. Therefore, efficient and transparent agricultural marketing is essential for improving farmers' income and reducing marketing-related constraints (Department of Agriculture & Farmers Welfare, 2025) ^[1].

To improve the agricultural marketing system, the Government of India launched the National Agriculture Market (e-NAM) in 2016 as an electronic platform for transparent and competitive trading of agricultural commodities. The platform facilitates online bidding, price discovery, quality assaying, real-time market information and electronic payment, thereby providing farmers with

opportunities to make more informed marketing decisions. The scale of e-NAM has expanded substantially; by March 2026, 1,656 mandis across 23 States and 4 Union Territories had been integrated, with more than 1.80 crore farmers, 2.73 lakh traders and 4,724 Farmer Producer Organisations (FPOs) registered. Cumulative trade through e-NAM reached 13.25 crore metric tonnes, valued at ₹4.84 lakh crore, since its inception (Ministry of Agriculture & Farmers Welfare, 2026) ^[5]. Despite this expansion, effective utilization of e-NAM may still be affected by farmers' awareness, digital literacy, internet accessibility, technical knowledge and institutional support. Hence, the present study was undertaken to examine the impact of e-NAM on farmers' marketing decisions, particularly regarding the timing of sale, choice of market and price negotiation behaviour and to identify the major constraints faced by farmers in using e-NAM.

Materials and Methods

A comprehensive list of farmers actively participating in agricultural marketing through Small e-NAM and having access to digital platforms was obtained from local agricultural offices, regulated market committees and extension institutions such as Krishi Vigyan Kendras

(KVKs). The list served as the sampling frame for identifying eligible respondents. Farmers who were involved in agricultural marketing activities and had access to digital facilities relevant to e-NAM were considered for inclusion in the study.

From the prepared sampling frame, a total of 120 farmers were selected as respondents for the present study, with 30 farmers selected from each of the four selected villages. The respondents were selected through a simple random sampling technique, which provided each eligible farmer an equal opportunity of being included in the sample. This procedure helped minimize selection bias and ensured a fair representation of farmers participating in Small e-NAM-based agricultural marketing activities.

The selected respondents were personally contacted for data collection using a structured and pre-tested interview schedule. Information was collected regarding their socio-economic characteristics, awareness and participation in e-NAM, access to ICT tools, digital literacy, market orientation, extension contact, training received and the perceived impact of e-NAM on their agricultural marketing decisions. The collected data were subsequently classified, tabulated and subjected to appropriate statistical analysis to achieve the objectives of the study.

Results and Discussion

The results of the present study entitled “Impact of e-NAM on Farmers’ Marketing Decisions and Constraints in Agricultural Marketing” are presented in this chapter based on the specific objectives of the study. Data were collected from 120 farmers using a structured interview schedule and analyzed through appropriate statistical tools. The chapter covers the farmers’ personal and socio-economic characteristics, awareness and participation in e-NAM, digital literacy, ICT accessibility, marketing decisions, perceived impact of e-NAM and major constraints faced in agricultural marketing.

The findings of Table 1 revealed that the majority of farmers (56.67%) belonged to the middle-age group (36–55 years), followed by old-age (25.00%) and young-age (18.33%) groups. Regarding farming experience, 61.67% had medium experience (9–24 years). In education, the largest proportion (35.00%) had secondary-level education. With respect to landholding, 38.33% were small farmers, followed by semi-medium (25.00%) and marginal farmers (23.33%). More than half (56.67%) of the respondents belonged to the medium

annual-income category, while 60.00% had medium-sized families. Agriculture was the main occupation of 53.33% of the farmers.

In terms of awareness and institutional characteristics, 46.67% of farmers were partially aware of e-NAM, while 31.67% were fully aware. Medium levels of social participation (55.00%), extension contact (56.67%) and access to information sources (53.33%) were observed among the majority of respondents. Similarly, 46.67% of farmers had medium training exposure, whereas 35.00% had low training exposure. These findings indicate that although farmers had reasonable exposure to agricultural extension and information sources, there was still a need to strengthen awareness and training related to e-NAM.

Regarding market and digital characteristics, the majority of farmers had medium market orientation (58.33%), medium digital literacy (48.33%) and medium accessibility to ICT tools (51.67%). Finally, the impact of e-NAM was medium among 56.67% of the respondents, while 25.00% reported a high impact and 18.33% reported a low impact.

The findings of the present study are supported by earlier research on e-NAM. Raju *et al.* (2022) ^[7], based on 120 farmers in Andhra Pradesh, reported that the majority had a medium level of knowledge about e-NAM, with education, extension contact, market orientation and social participation significantly related to knowledge. Shinde *et al.* (2024) ^[8], in a study of 120 farmers in Maharashtra, found that 58.33% had medium awareness, while 22.50% had high and 19.17% had low awareness, closely supporting the present finding of 46.67% partially aware farmers. Raghavendra *et al.* (2023) ^[6], studying 240 farm households, found that farm size and distance to market were important determinants of e-marketing participation and emphasized the need for capacity-building programmes. Similarly, Rani *et al.* (2022) reported that around 30% of registered farmers were unaware of e-NAM, while inadequate infrastructure and delayed payments were major constraints. A recent study by Sri Lekha *et al.* (2026) ^[9] involving 390 respondents found that education, social participation and digital literacy significantly influenced e-NAM participation, while low digital literacy and technical difficulties were major constraints. Thus, the present findings of predominantly medium awareness (46.67%), digital literacy (48.33%), ICT accessibility (51.67%) and e-NAM impact (56.67%) are broadly consistent with previous studies.

Table 1: Distribution of Farmers Socio-economic, Awareness, Digital Characteristics and Impact of e-NAM (n=120)

S. No.	Variable	Category 1	f (%)	Category 2	f (%)	Category 3	f (%)	Category 4	f (%)	Category 5	f (%)
1	Age	Young (Up to 35 years)	22 (18.33)	Middle (36–55 years)	68 (56.67)	Old (Above 55 years)	30 (25.00)	—	—	—	—
2	Farming experience	Low (Up to 8 years)	18 (15.00)	Medium (9–24 years)	74 (61.67)	High (Above 24 years)	28 (23.33)	—	—	—	—
3	Education	Illiterate	14 (11.67)	Primary (1–4 Std.)	18 (15.00)	Secondary (5–10 Std.)	42 (35.00)	High school (11–12 Std.)	28 (23.33)	Graduate & above	18 (15.00)
4	Landholding	Marginal (Up to 1 ha)	28 (23.33)	Small (1–2 ha)	46 (38.33)	Semi-medium (2–4 ha)	30 (25.00)	Medium (4–10 ha)	14 (11.67)	Large (Above 10 ha)	2 (1.67)
5	Annual income	Low (Up to ₹1,00,000)	24 (20.00)	Medium (₹1,00,001–₹2,50,000)	68 (56.67)	High (Above ₹2,50,001)	28 (23.33)	—	—	—	—

6	Family size	Small family	26 (21.67)	Medium family	72 (60.00)	Large family	22 (18.33)	—	—	—	—
7	Occupation	Agriculture	64 (53.33)	Allied activities	18 (15.00)	Agricultural labour	16 (13.33)	Non-agricultural	10 (8.34)	Mixed	12 (10.00)
8	e-NAM awareness	Fully aware	38 (31.67)	Partially aware	56 (46.67)	Not aware	26 (21.66)	—	—	—	—
9	Social participation	Low	28 (23.33)	Medium	66 (55.00)	High	26 (21.67)	—	—	—	—
10	Extension contact	Low	24 (20.00)	Medium	68 (56.67)	High	28 (23.33)	—	—	—	—
11	Sources of information	Low	26 (21.67)	Medium	64 (53.33)	High	30 (25.00)	—	—	—	—
12	Training exposure	Low	42 (35.00)	Medium	56 (46.67)	High	22 (18.33)	—	—	—	—
13	Market orientation	Low	24 (20.00)	Medium	70 (58.33)	High	26 (21.67)	—	—	—	—
14	Digital literacy	Low	34 (28.33)	Medium	58 (48.33)	High	28 (23.34)	—	—	—	—
15	Accessibility to ICT tools	Low	30 (25.00)	Medium	62 (51.67)	High	28 (23.33)	—	—	—	—
16	Impact of e-NAM (Dependent Variable)	Low	22 (18.33)	Medium	68 (56.67)	High	30 (25.00)	—	—	—	—

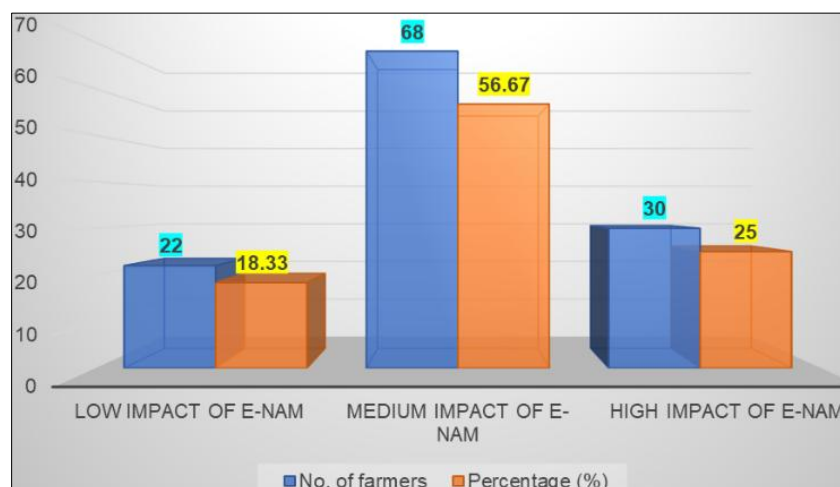


Fig 1: Categorization of respondents according to the impact of e-NAM on farmers (n = 120)

Constraints faced by farmers in using e-NAM

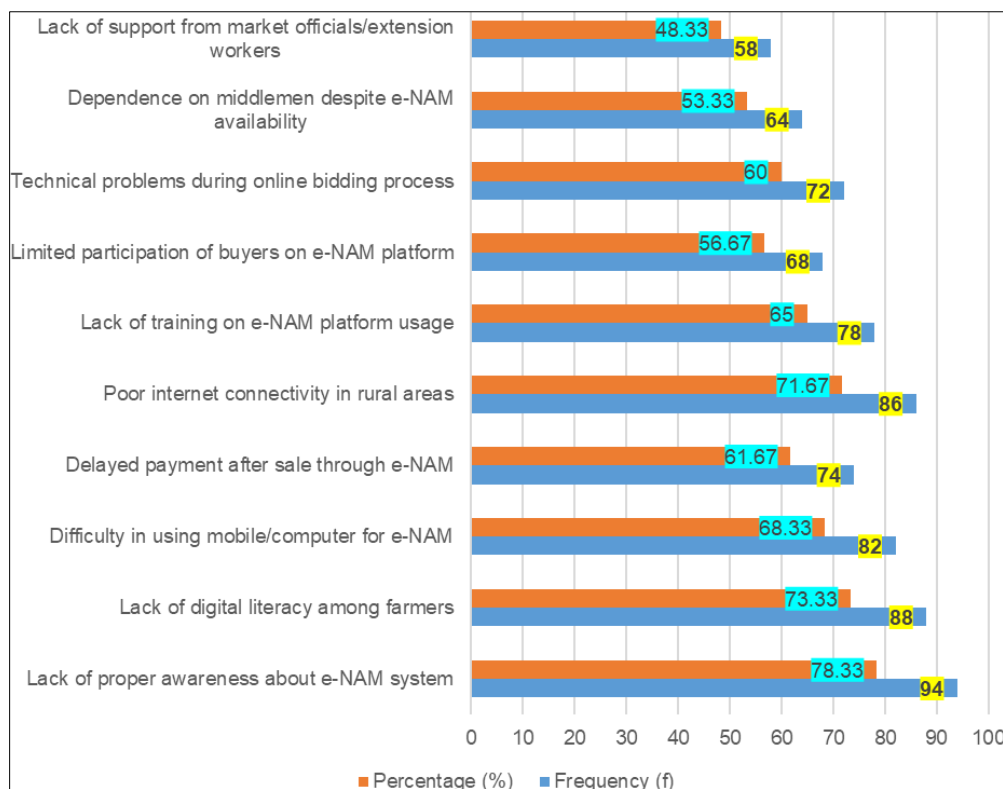
The findings of Table 2 revealed that lack of proper awareness about the e-NAM system was the most important constraint faced by farmers, reported by 94 respondents (78.33%) and ranked I. This was followed by lack of digital literacy (73.33%, Rank II) and difficulty in using mobile phones/computers for e-NAM (68.33%, Rank III). Poor internet connectivity in rural areas was reported by 71.67% of farmers and ranked IV, while delayed payment after sale was reported by 61.67% and ranked V. Other major constraints included lack of training on e-NAM (65.00%), technical problems during online bidding (60.00%) and limited participation of buyers (56.67%). Dependence on middlemen (53.33%) and lack of support from market officials/extension workers (48.33%) were ranked IX and X, respectively. Overall, the findings indicate that awareness, digital literacy, technical difficulties, internet connectivity

and inadequate training were the major barriers limiting effective utilization of e-NAM among farmers.

The findings of the present study are in line with the findings of earlier studies. Kaur *et al.* (2021) ^[3] reported that lack of knowledge, complicated procedures and payment-related problems were major constraints in e-NAM adoption. Similarly, Gautam *et al.* (2022) ^[2] identified difficulties in digital transactions and limited computer knowledge as important barriers. Kumar *et al.* (2024) ^[4] highlighted inadequate knowledge and market infrastructure, while Sri Lekha *et al.* (2026) ^[9] reported low digital literacy and technical difficulties as major constraints. These findings closely align with the present study, where lack of awareness (78.33%), digital literacy (73.33%), poor internet connectivity (71.67%) and difficulty in using digital devices (68.33%) were the leading constraints.

Table 2: Constraints faced by farmers in using e-NAM (n = 120)

S. No.	Constraints	Frequency (f)	Percentage (%)	Rank
1	Lack of proper awareness about e-NAM system	94	78.33	I
2	Lack of digital literacy among farmers	88	73.33	II
3	Difficulty in using mobile/computer for e-NAM	82	68.33	III
4	Delayed payment after sale through e-NAM	74	61.67	V
5	Poor internet connectivity in rural areas	86	71.67	IV
6	Lack of training on e-NAM platform usage	78	65.00	VI
7	Limited participation of buyers on e-NAM platform	68	56.67	VIII
8	Technical problems during online bidding process	72	60.00	VII
9	Dependence on middlemen despite e-NAM availability	64	53.33	IX
10	Lack of support from market officials/extension workers	58	48.33	X

**Fig 2:** Constraints faced by farmers in using e-NAM (n = 120)

Conclusion

The study concluded that e-NAM had a moderate impact on farmers' agricultural marketing decisions, with 56.67% of respondents falling under the medium-impact category. Most farmers had medium levels of farming experience, income, market orientation, digital literacy, ICT accessibility, extension contact and information access, indicating a reasonable base for e-NAM utilization. However, lack of awareness (78.33%), digital literacy (73.33%), poor internet connectivity (71.67%) and difficulty in using digital devices (68.33%) were the major constraints. Therefore, strengthening farmer awareness, digital literacy, practical training, internet connectivity and extension support is essential for improving effective participation in e-NAM and enhancing the benefits of digital agricultural marketing.

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