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e-NAM as a Catalyst for Agricultural Market Transformation in Jharkhand

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The Electronic National Agriculture Market (e-NAM) was launched by the Government of India in 2016 to create a unified national market for agricultural commodities through the digital integration of Agricultural Produce Market Committee (APMC) mandis. The platform aims to enhance transparency in price discovery, improve market access, strengthen competition among buyers, and increase farmers' participation in organized agricultural markets. The present article examines the status, performance, and challenges of e-NAM implementation in Jharkhand using secondary data obtained from the Small Farmers' Agribusiness Consortium (SFAC), Ministry of Agriculture and Farmers Welfare, e-NAM portal reports, and other official sources. Descriptive statistics, comparative analysis, ratio analysis, and percentage share analysis were employed to evaluate market integration, stakeholder participation, market utilization, and infrastructure efficiency. The findings reveal that Jharkhand has integrated 19 mandis under e-NAM and registered 268,737 farmers and 2,593 traders on the platform. The state accounts for 1.15 per cent of total e-NAM markets and 1.49 per cent of registered farmers in India. However, its contribution to national trade volume and trade value remains only 0.03 per cent and 0.02 per cent, respectively. The analysis further shows that each mandi serves more than 14,000 registered farmers on average, while the average trade value generated per mandi is only ₹3.85 crore. These findings indicate a considerable gap between market integration and actual market utilization. Limited trader participation, inadequate market infrastructure, insufficient assaying and grading facilities, low digital literacy, and weak transaction intensity continue to constrain the effectiveness of the platform. The study concludes that while Jharkhand has made notable progress in expanding digital agricultural marketing infrastructure and stakeholder registration, greater emphasis is required on enhancing transaction volume, strengthening trader participation, improving market infrastructure, and promoting farmer awareness. Addressing these challenges will be critical for realizing the full potential of e-NAM in improving market efficiency, price realization, and farmer welfare in the state.

Keywords: e-NAM, agricultural marketing, digital agriculture, market integration, market utilization, Jharkhand.

Introduction

Agriculture continues to be the backbone of the Indian economy, supporting the livelihoods of nearly half of the country's population. While considerable progress has been achieved in increasing agricultural production since the Green Revolution, the benefits of higher production have not always translated into higher farm incomes. One of the major reasons is the persistence of inefficiencies in agricultural marketing systems. Farmers often face challenges such as fragmented markets, inadequate storage and transportation facilities, multiple intermediaries, limited access to market information, and lack of transparent price discovery mechanisms. These constraints weaken farmers' bargaining power and frequently

result in distress sales, particularly among small and marginal farmers who constitute the majority of India's farming community (Acharya & Agarwal, 2022). Historically, agricultural marketing in India has been regulated through the Agricultural Produce Market Committee (APMC) system. Although APMC markets were originally established to protect farmers from exploitation and ensure fair trade practices, over time several structural limitations emerged. Agricultural markets became fragmented across states, traders faced regulatory restrictions in operating across multiple markets, and farmers often had limited options for selling their produce. As a result, significant price differences persisted across regions, reducing market efficiency and limiting the realization of competitive prices for agricultural commodities (Chand, 2016). Recognizing the need for market reforms, the Government of India launched the Electronic National Agriculture Market (e-NAM) in April 2016 as a pan-India electronic trading platform integrating existing APMC mandis into a unified national market. The initiative was designed to facilitate transparent price discovery, improve market access, enhance competition among buyers, and promote efficient movement of agricultural commodities across states. By leveraging digital technology, e-NAM aims to create a "One Nation, One Market" framework where farmers can access a wider pool of buyers and obtain better prices for their produce (Ministry of Agriculture & Farmers Welfare, 2024). Since its inception, e-NAM has expanded significantly across the country. Thousands of mandis have been integrated into the platform, and millions of farmers, traders, and farmer producer organizations (FPOs) have been registered. The platform has introduced several reforms, including electronic bidding, unified trading licenses, quality assaying facilities, and digital payment systems. These interventions are expected to reduce transaction costs, improve transparency, and strengthen market integration. Studies have shown that well-functioning digital agricultural markets can contribute to improved price realization, greater market efficiency, and enhanced farmer welfare by reducing information asymmetry and expanding market opportunities (FAO, 2022; Chand, 2016).

However, the performance of e-NAM has varied considerably across states. While some states have successfully utilized the platform to generate substantial trade volume and value, others continue to face challenges in translating market integration into actual trading activity. The effectiveness of e-NAM depends not only on the number of integrated markets or registered stakeholders but also on the extent to which farmers and traders actively participate in online transactions. Factors such as digital literacy, internet connectivity, assaying facilities, market infrastructure, trader participation, logistics support, and institutional capacity play a crucial role in determining the success of the platform (NABARD, 2023).

In this context, Jharkhand presents an interesting case for examining the progress and challenges of digital agricultural marketing. Agriculture remains a major source of livelihood in the state, with a large proportion of farmers operating on small and fragmented landholdings. Despite possessing considerable agricultural potential, the state continues to face several marketing-related constraints, including inadequate market infrastructure, weak value chains, poor storage facilities, and limited access to remunerative markets. Such challenges often restrict farmers' ability to benefit from market opportunities and obtain fair prices for their produce.

The introduction of e-NAM in Jharkhand was expected to address many of these constraints by improving market connectivity, expanding trading opportunities, and enhancing transparency in agricultural transactions. Over the years, the state has integrated several mandis into the e-NAM network and registered a substantial number of farmers and traders. Public investments have also been made to strengthen digital market infrastructure and improve market facilities. Nevertheless, an important question remains: Has the expansion of e-NAM infrastructure translated into meaningful improvements in market participation and trade performance? Understanding this issue is particularly important because market integration alone does not necessarily guarantee market utilization. A state may successfully register farmers and establish digital infrastructure, yet continue to

experience low transaction volumes if institutional and operational bottlenecks persist. Therefore, evaluating the performance of e-NAM requires an assessment not only of infrastructure creation but also of actual market outcomes.

Against this backdrop, the present article examines the status and performance of e-NAM in Jharkhand using recent state-level data on mandi integration, farmer registration, trader participation, unified licensing, trade volume, trade value, and public investment. By comparing Jharkhand's performance with national trends and leading states, the study seeks to identify the extent of market integration achieved, evaluate the efficiency of market utilization, and highlight the opportunities and challenges that remain in strengthening digital agricultural marketing in the state. The findings are expected to provide useful insights for policymakers, researchers, extension agencies, and other stakeholders interested in promoting inclusive and efficient agricultural markets in India.

Process flow of e-NAM transactions

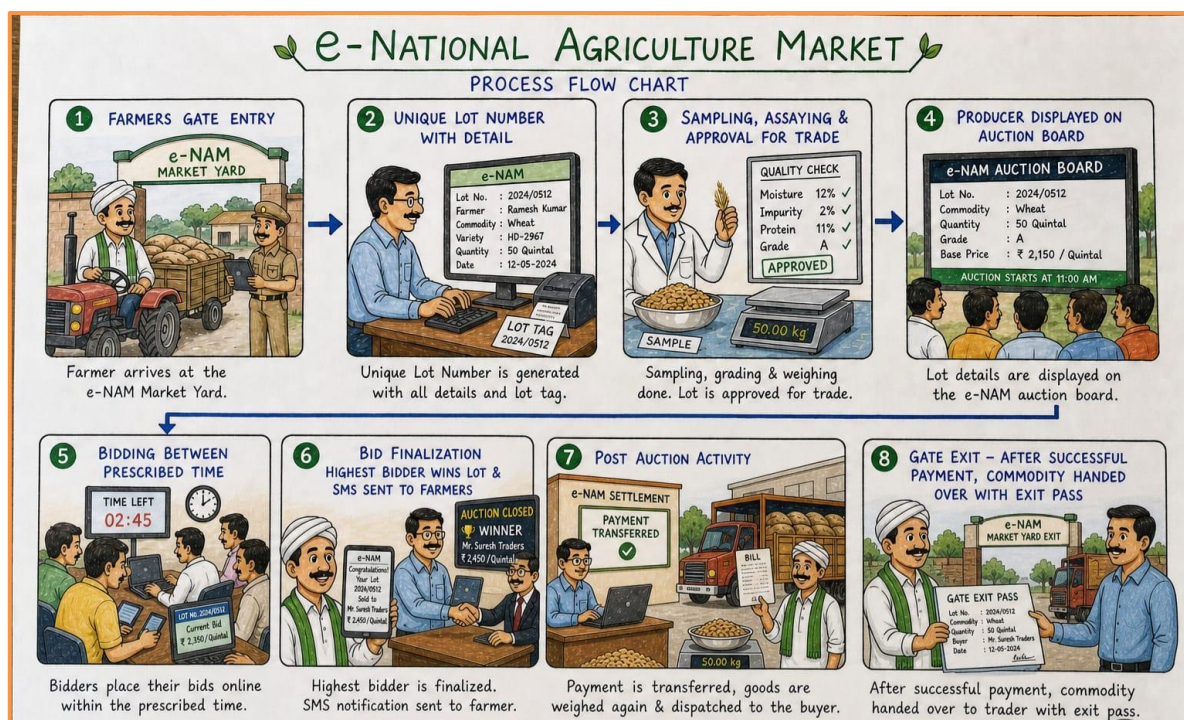


Fig 1: Process flow of e-NAM transactions

Data and methodology

The present study is based entirely on secondary data collected from official sources related to the Electronic National Agriculture Market (e-NAM). Information on the number of integrated markets, registered farmers, traders, unified licences, trade volume, trade value, and fund allocation was compiled from state-wise progress reports available through the Small Farmers' Agribusiness Consortium (SFAC), Ministry of Agriculture and Farmers Welfare, Government of India, and e-NAM portal reports. Additional information on aspirational districts and market coverage was obtained from official government databases and reports published by NITI Aayog. The data represent the latest available status of e-NAM implementation across states and Union Territories, with particular emphasis on Jharkhand. To provide a broader perspective, the performance of Jharkhand was compared with leading states in terms of market integration, farmer participation, and trade performance. To assess the performance of e-NAM in Jharkhand, descriptive statistics, comparative analysis, ratio analysis, and percentage share analysis were employed. Indicators such as traders per mandi, farmers per mandi, trade value per mandi, and fund release per mandi were calculated to evaluate the intensity of market participation and the utilization of digital market infrastructure.

The analysis is organized around four key dimensions of e-NAM performance:

1. **Market Integration** – assessed through the number of e-NAM-enabled mandis and market coverage.
2. **Stakeholder Participation** – assessed through farmer registration, trader registration, and unified licensing.
3. **Market Utilization** – assessed through trade volume and trade value generated through the platform.
4. **Infrastructure and Investment Efficiency** – assessed through fund allocation and performance indicators calculated on a per-mandi basis.

Result and discussion

Since its launch in 2016, the Electronic National Agriculture Market (e-NAM) has emerged as one of the most significant agricultural marketing reforms undertaken in India. The platform was envisioned as a mechanism to overcome market fragmentation by integrating Agricultural Produce Market Committee (APMC) mandis into a unified national market. Over the years, the network has expanded substantially, connecting hundreds of markets across states and facilitating participation by millions of farmers, traders, and Farmer Producer Organizations (FPOs). However, the performance of e-NAM has not been uniform across states. Significant variations exist in terms of market participation, trade volume, and trade value. These differences largely reflect disparities in agricultural commercialization, market infrastructure, digital connectivity, trader participation, and institutional preparedness. States with relatively stronger agricultural marketing systems have generally been able to utilize the platform more effectively than states where market infrastructure and institutional support remain limited (Chand, 2016).

Table 1. Comparative performance of selected states under e-NAM

State	No. of Markets	Farmers Registered	Trade Value (Rs. Cr)	Fund Release (Rs. Lakhs)
Andhra Pradesh	33	1,454,269	63,416.08	1,970
Uttar Pradesh	125	4,075,775	25,677.39	7,500
Rajasthan	144	4,405,904	24,523.31	8,640
Gujarat	123	2,477,461	24,624.85	7,380
Jharkhand	19	268,737	73.15	1,330

Source: Official e-NAM state-wise statistics, 2026.

The state-wise comparison reveals a striking difference in trade performance across India. Andhra Pradesh has emerged as the leading state in terms of trade value generated through the e-NAM platform, followed by Uttar Pradesh, Gujarat, and Rajasthan. These states have benefited from stronger market infrastructure, greater commercialization of agriculture, higher trader participation, and better integration between physical and digital market systems. Although Jharkhand has successfully integrated markets and registered farmers on the platform, the value of trade generated remains substantially lower than that of leading states. The findings indicate that the success of e-NAM is not determined solely by the number of integrated markets or registered stakeholders. Rather, market performance depends on the extent to which stakeholders actively participate in digital transactions and utilize the available infrastructure. Similar observations have been made by NABARD (2023), which highlighted the importance of complementary investments in logistics, assaying facilities, and digital literacy for improving the effectiveness of agricultural marketing reforms. The state-level comparison therefore suggests that while market integration is a necessary condition for the success of e-NAM, it is not a sufficient condition. The real challenge lies in converting market access into actual market transactions.

Status of e-NAM in Jharkhand

Jharkhand has integrated 19 mandis under the e-NAM platform. The state has registered 2,593 traders and issued 85 unified licenses. Further, about 268,737 farmers have been

registered under the platform. Total agricultural trade through e-NAM in the state reached 36,206.77 metric tonnes with a trade value of Rs. 73.15 crore. Government fund release for e-NAM-related activities in Jharkhand amounted to Rs. 1,330 lakh.

Table 2. Jharkhand's share in national e-NAM Performance

Indicator	India total	Jharkhand	Share of India (%)
E-Nam markets	1,656	19	1.15
Farmers registered	18,001,880	268,737	1.49
Trade volume (MT)	132,183,900	36,206.77	0.03
Trade value (₹ cr)	482,350.81	73.15	0.02
Fund release (₹ lakh)	68,970.48	1,330	1.93

Source: Computed from state-wise e-NAM progress data (March 2026).

The analysis of Jharkhand's contribution to the national e-NAM ecosystem reveals a considerable gap between market integration and actual market utilization. Although Jharkhand accounts for 1.15 per cent of the total e-NAM markets and 1.49 per cent of registered farmers in India, its share in national trade volume and trade value is only 0.03 per cent and 0.02 per cent, respectively. This indicates that the expansion of digital market infrastructure and farmer registration has not yet translated into comparable levels of market transactions. This discrepancy suggests that the creation of digital market infrastructure has not yet translated into corresponding market utilization. Similar observations were made by Bisen and Kumar (2018), who argued that successful implementation of e-NAM requires simultaneous improvements in infrastructure, institutions, and information systems rather than mere market integration. The findings suggest the need for greater emphasis on trader participation, market linkages, assaying facilities, logistics support, and farmer awareness to improve the effectiveness of e-NAM in the state.

The findings indicate that while institutional adoption of e-NAM has progressed, actual participation in digital agricultural trade remains limited. Previous studies have highlighted that successful implementation of e-NAM depends not only on market integration but also on factors such as grading and assaying facilities, logistics support, trader participation, and awareness among farmers (Chand, 2016; SFAC, 2024). The low share of trade volume and value despite a reasonable share of markets and registered farmers indicates substantial untapped potential for digital agricultural marketing in Jharkhand. Furthermore, Jharkhand received nearly 1.93 per cent of total national fund allocation under e-NAM, which is higher than its share in markets and farmers. This demonstrates the government's commitment to strengthening market infrastructure in the state. However, the low level of trade activity suggests that investment outcomes have yet to fully materialize in terms of market transactions and value generation.

Market participation

While state-level statistics provide a broad understanding of e-NAM implementation, efficiency indicators offer deeper insights into how effectively the available infrastructure is being utilized. The performance of any digital agricultural market depends not merely on the number of registered stakeholders but also on the intensity of participation and the volume of transactions generated through the platform.

Table 3. Market efficiency indicators for Jharkhand

Indicator	Value
Traders per mandi	136.47
Farmers per mandi	14,144
Trade volume per mandi (MT)	1,905.62
Trade value per mandi (₹ crore)	3.85
Fund release per mandi (₹ lakh)	70.00

Source: Computed from state-wise e-NAM progress data (March 2026).

The efficiency indicators provide deeper insights into the operational performance of e-NAM mandis in Jharkhand. On average, each mandi serves approximately 14,144 registered farmers and 136 registered traders. While these figures indicate a substantial outreach of the platform, the average trade value generated per mandi is only ₹3.85 crore and the average trade volume is about 1,906 metric tonnes. The contrast between high farmer registration and relatively low trade value suggests that many registered users may not be actively participating in online transactions. Similar observations have been reported in several states where e-NAM registration expanded rapidly but actual digital trading remained limited due to infrastructural and institutional constraints (NABARD, 2023). The results imply that the challenge in Jharkhand is no longer merely expanding enrolment but enhancing the quality and frequency of transactions conducted through the platform. The average fund allocation of ₹70 lakh per mandi reflects significant public investment in market modernization. However, to achieve higher returns on these investments, greater emphasis must be placed on strengthening market linkages, improving assaying facilities, promoting electronic bidding, and encouraging farmer producer organizations (FPOs) to participate actively in digital trading.

Trader participation and licensing structure

One of the primary objectives of e-NAM is to enhance competition among buyers and facilitate seamless trading across markets. In this context, trader participation and unified licensing play a critical role in determining market efficiency.

Table 4. Trader and licensing structure in Jharkhand

Indicator	Value
Registered Traders	2,593
Unified Licences	85
Traders per Licence	30.51
Farmers per Trader	103.64

The trader participation indicators provide valuable insights into the functioning of the platform. Although Jharkhand has registered 2,593 traders, only 85 unified licences have been issued. Consequently, each licence corresponds to more than 30 traders on average. Unified licensing is one of the most important reforms introduced under e-NAM because it enables traders to participate across multiple markets without obtaining separate licences for each mandi. A higher number of unified licences generally indicates greater market integration and improved opportunities for interstate trade (Ministry of Agriculture & Farmers Welfare, 2024). The relatively low number of unified licences in Jharkhand suggests that interstate participation may still be limited. This could restrict competition among buyers and reduce the benefits of transparent price discovery that e-NAM seeks to promote. Farmers derive maximum benefit from digital markets when multiple buyers compete for their produce, leading to more competitive prices and improved bargaining power.

Another important finding is that each registered trader potentially serves more than 103 registered farmers. While this ratio does not necessarily imply a shortage of traders, it does indicate that trader participation has not expanded at the same pace as farmer registration. As the platform grows, attracting additional traders from within and outside the state will be essential for improving market depth and transaction efficiency. The evidence suggests that increasing trader participation should become a key policy priority in Jharkhand. Simplifying licensing procedures, strengthening interstate market linkages, and encouraging private-sector participation can help create a more competitive and vibrant digital marketplace.

e-NAM and aspirational districts: opportunities for inclusive growth

Agricultural marketing reforms are particularly important in economically vulnerable regions where farmers often face significant barriers in accessing markets. In this regard, the

Aspirational Districts Programme launched by NITI Aayog provides a useful framework for understanding the developmental significance of e-NAM.

Table 5. Aspirational districts and e-NAM coverage

State	Aspirational Districts	e-NAM Mandis
Jharkhand	15	16
Odisha	10	20
Bihar	8	—
Madhya Pradesh	8	24
Uttar Pradesh	7	—

The findings of aspirational districts provides an important developmental perspective on e-NAM implementation. Jharkhand has the highest number of aspirational districts among the selected states, with 15 districts identified under the Aspirational Districts Programme. However, the state has only 16 e-NAM mandis, which is lower than the mandi coverage observed in states such as Odisha and Madhya Pradesh.

This finding suggests that digital agricultural marketing infrastructure has not expanded proportionately to the developmental needs of economically vulnerable regions. Aspirational districts are characterized by relatively low performance in areas such as agriculture, income generation, infrastructure, and human development. Expanding e-NAM coverage in these districts can contribute to improved market access, better price realization, and stronger integration of farmers with formal agricultural markets (NITI Aayog, 2023). The evidence indicates significant scope for strengthening digital market infrastructure in underserved districts of Jharkhand. Future policy interventions should prioritize the establishment of additional e-NAM-enabled markets, capacity-building programmes for farmers, and improved connectivity in aspirational districts to ensure that the benefits of agricultural market reforms reach marginalized farming communities.

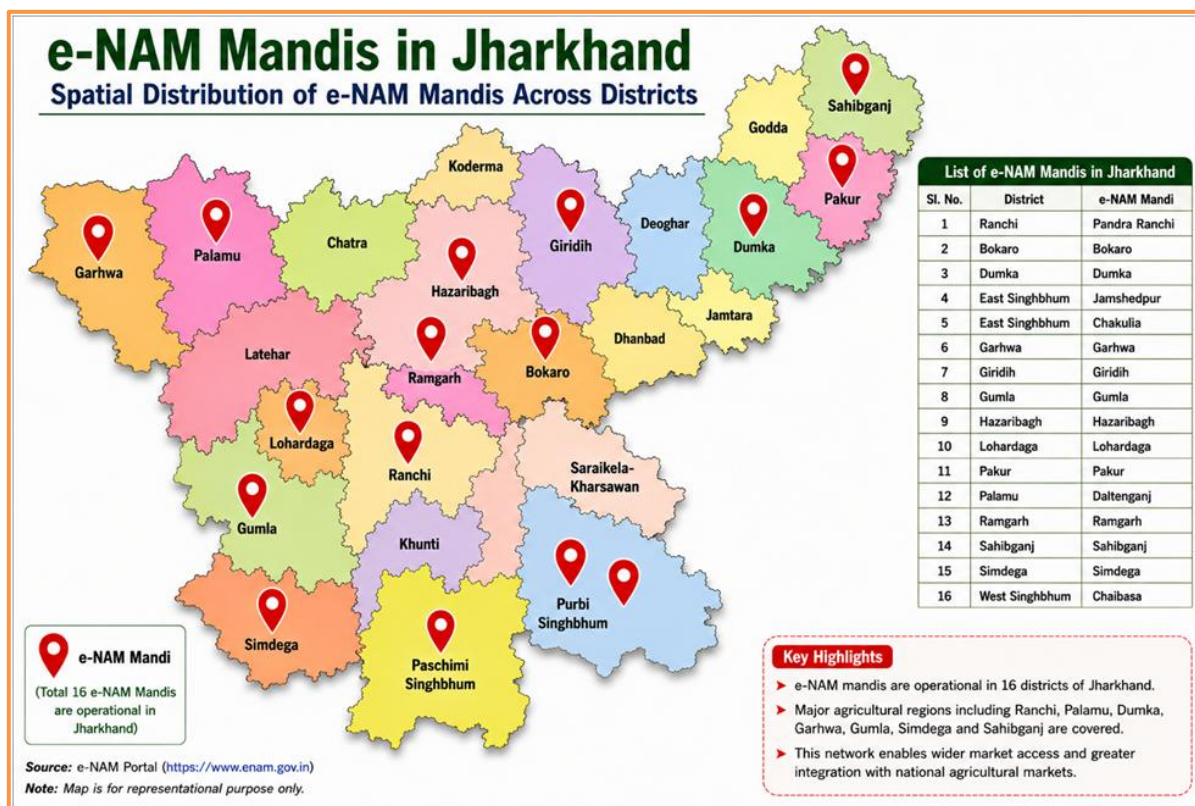


Figure 2. Spatial distribution of e-NAM mandis across districts of Jharkhand

Figure 2 illustrates the geographical distribution of e-NAM-enabled mandis across Jharkhand. The network covers major agricultural regions including Ranchi, Palamu, Gumla, Simdega, Dumka, Sahibganj, Bokaro, Hazaribagh, and East Singhbhum. The spatial spread of e-NAM markets indicates that the state has established a reasonably broad

digital agricultural marketing infrastructure across diverse agro-climatic regions. Notably, e-NAM coverage extends to several districts characterized by smallholder farming and developmental challenges, thereby creating opportunities for wider market access and improved price discovery. However, as the subsequent analysis reveals, geographical coverage and market integration have not yet translated into proportionate levels of trade volume and trade value.

Key challenges limiting the effectiveness of e-NAM in Jharkhand

Although the findings indicate notable progress in market integration and stakeholder registration, several challenges continue to constrain the effectiveness of e-NAM in Jharkhand.

The first challenge relates to the gap between registration and active participation. The analysis demonstrates that farmer registration has expanded considerably, but transaction volumes and trade values remain relatively low. This suggests that many stakeholders may not yet be fully utilizing the platform.

Second, inadequate physical and digital infrastructure continues to affect market operations. Reliable internet connectivity, scientific assaying facilities, grading infrastructure, storage facilities, and transportation networks are essential for efficient digital trading. Deficiencies in these areas can discourage participation and reduce transaction efficiency (NABARD, 2023).

Third, digital literacy remains a significant concern. Many small and marginal farmers possess limited familiarity with online trading systems, electronic bidding mechanisms, and digital payment platforms. As a result, they often continue to depend on traditional intermediaries despite being registered on e-NAM.

Fourth, limited trader participation and relatively low issuance of unified licences may restrict market competition. Since competition among buyers is central to achieving better price realization, expanding trader participation is critical for the long-term success of the platform.

Finally, behavioural and institutional factors also influence adoption. Farmers frequently prefer traditional marketing channels due to familiarity, immediate cash payments, established relationships with local traders, and lower perceived risks. Overcoming these barriers requires sustained awareness generation and trust-building efforts.

Policy Implications and Way Forward

The findings of this study provide several important policy lessons for strengthening digital agricultural marketing in Jharkhand.

First, future efforts should focus on improving market utilization rather than merely expanding registration. The state has already achieved considerable success in enrolling farmers and integrating mandis. The next phase of reforms should concentrate on increasing transaction frequency and market activity.

Second, investments in grading, assaying, warehousing, and logistics infrastructure should be strengthened. These facilities are essential for building trust among buyers and facilitating efficient online transactions.

Third, targeted awareness and capacity-building programmes should be organized for farmers, traders, and market functionaries. Training on electronic bidding, quality assessment, digital payments, and market information systems can help improve participation.

Fourth, Farmer Producer Organizations (FPOs) should be encouraged to play a greater role in e-NAM transactions. By aggregating produce from smallholders, FPOs can reduce transaction costs and enhance bargaining power.

Fifth, expanding trader participation through simplified licensing procedures and stronger interstate market integration can improve competition and strengthen price discovery mechanisms. Finally, special emphasis should be placed on aspirational districts. Expanding

e-NAM infrastructure in these regions can contribute simultaneously to agricultural development, income enhancement, and rural transformation.

Conclusion

The present analysis highlights both the achievements and limitations of e-NAM implementation in Jharkhand. The state has made significant progress in integrating mandis, registering farmers and traders, and establishing the institutional foundations necessary for digital agricultural marketing. Public investment in market modernization has also been substantial, reflecting a strong commitment towards agricultural market reforms. However, the findings reveal a clear disconnect between market integration and market utilization. Although Jharkhand accounts for a reasonable share of registered farmers and e-NAM markets, its contribution to national trade volume and trade value remains extremely low. The evidence suggests that infrastructure creation and stakeholder registration have progressed faster than actual market participation.

The challenge facing Jharkhand is therefore no longer one of market access alone but of market activation. Increasing transaction intensity, strengthening trader participation, improving digital and physical infrastructure, and enhancing farmer awareness will be crucial for realizing the full potential of e-NAM. If these challenges are effectively addressed, the platform can become a powerful instrument for improving market efficiency, strengthening price realization, and enhancing the livelihoods of farming households across the state. The experience of Jharkhand also offers a broader lesson for agricultural market reforms in India. Digital platforms can create new opportunities for farmers, but their success ultimately depends on how effectively stakeholders utilize them. Moving from registration to active participation will be the key to unlocking the transformative potential of e-NAM in the years ahead.

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