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ROLE OF E-NAM (NATIONAL AGRICULTURE MARKET) IN TRANSFORMING AGRICULTURAL MARKETING IN INDIA

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Abstract:

The National Agriculture Market (e-NAM) is India's flagship digital initiative to integrate fragmented Agricultural Produce Market Committee (APMC) mandis into a unified electronic trading platform, with the broad goal of improving price discovery, enhancing transparency, and ultimately raising farmers' incomes. Launched in 2016, e-NAM has expanded rapidly: by early 2026, 1,656 mandis across 23 States and 4 Union Territories were integrated, more than
1.8 crore farmers and 2.7 lakh traders were registered, and cumulative trade on the platform had crossed 13.25 crore tonnes with a value of about ₹4.84 lakh crore. This paper uses secondary data to critically examine the role of e-NAM in transforming agricultural marketing in India, focusing on its design features, progress, impact on marketing efficiency and price realisation, and the persistent challenges that limit its transformative potential.[1][2][3][4]

Drawing on government reports, policy documents and independent evaluations, the study finds that e-NAM has made meaningful strides in standardising market processes, enabling online bidding, integrating quality assaying, and offering remote bidding and mobile-based payments, thereby reducing some information asymmetry and improving transparency in wholesale markets. However, its impact on farmer incomes and on structural market power remains uneven because of issues such as limited inter-state trade, low adoption among small and marginal farmers, digital and physical infrastructure gaps, continued dominance of traditional intermediaries, and variability in state-level APMC reforms. The paper concludes that e-NAM is a necessary but not sufficient condition for transforming agricultural marketing; deeper complementary reforms and investments—especially in digital literacy, logistics, assaying infrastructure and farmer collectives—are required to convert the digital platform into inclusive marketing gains.[5][6][7][8][2][3][9].

Keywords: E-NAM; National Agriculture Market; APMC; agricultural marketing; digital platforms; farmers' income; India

1. Introduction

Agricultural marketing in India has historically been characterised by fragmented markets, regulated APMC mandis with varying rules across states, long chains of intermediaries and considerable information asymmetry between farmers and buyers. These structural features have often resulted in low price realisation for farmers, high transaction costs and limited competition, especially for small and marginal producers who depend heavily on the nearest mandi and have weak bargaining power.[8][2][3][9]

To address these inefficiencies, the Government of India launched the National Agriculture Market (e-NAM) in April 2016 as a pan-India electronic trading platform connecting existing wholesale mandis. The idea was not to replace APMCs but to overlay them with a common digital marketplace that would harmonise trading rules, facilitate online bidding and price discovery, and enable buyers from anywhere in the country to participate. Over time, the scope of e-

NAM has expanded from the initial target of 585 mandis to over 1,600 integrated mandis by 2026, covering a wide range of commodities.[6][1][10][2][3][4]

Table 1: Status of National Agriculture Market (e-NAM) in India (as on 28 Feb 2026)

Indicator	**Value / Status**
Year of launch	2016
States and Union Territories integrated	23 States and 4 UTs
Total mandis integrated with e-NAM	1,656 mandis
Farmers registered	1.80 crore (18,001,876 farmers)
Traders registered	2.72 lakh traders
Farmer Producer Organizations (FPOs) onboarded	4,724 FPOs
Cumulative quantity traded since inception	13.22 crore metric tonnes
Cumulative value of trade since inception	₹4,82,350 crore
Maximum grant support per mandi for e-NAM infra	Up to ₹75 lakh per mandi

In the context of an MBA course on Rural and Agricultural Marketing, e-NAM is an important case study of how digital platforms can be used to reform traditional market structures. It brings

together issues of regulation, technology, infrastructure, behavioural change and institutional economics. This paper therefore aims to analyse how far e-NAM has moved India's agricultural marketing system towards a more unified, efficient and farmer-friendly model, and what bottlenecks still remain.

2. Literature Review

2.1 Policy design and objectives of e-NAM

Official operational guidelines describe e-NAM as a common e-market platform intended to integrate selected regulated wholesale markets across states by providing a single online trading portal. The main objectives are to integrate markets to facilitate pan-India trade, streamline and standardise marketing procedures, remove information asymmetry, promote real-time price discovery based on demand and supply, and provide better marketing opportunities and improved price realisation for farmers.[6][2][3]

e-NAM is promoted by the Small Farmers' Agribusiness Consortium (SFAC) under the Ministry of Agriculture and Farmers' Welfare, which provides grants for hardware, software, assaying equipment and training to participating mandis. The platform supports electronic auction, online payment, warehouse-based sale modules, and integration with quality assaying to enable "price on quality". Recent updates include artificial intelligence and machine learning–based assaying machines in several mandis, integration of Farmer Producer Organizations (FPOs), and mobile app features for farmers and traders.[1][2][3][4][6]

2.2 Progress and outreach

Since launch, e-NAM's coverage has steadily expanded. Government data indicate that by October 2024, 1,389 mandis had been integrated, with 1.78 crore farmers, 2.62 lakh traders and over 4,250 FPOs registered, and trade worth ₹3.79 lakh crore recorded on the platform. By February 2026, these numbers had risen to 1,656 mandis, 1.80 crore farmers, 2.72 lakh traders and 4,724 FPOs, with cumulative trade value touching ₹4.82–4.84 lakh crore and quantity exceeding 13.2 crore tonnes. Statista estimates show around 1,466 registered e-NAM mandis as of March 2025, with Tamil Nadu, Rajasthan and Gujarat among the leading states by number of mandis onboarded.[11][1][12][4]

These figures suggest that e-NAM has achieved considerable scale in terms of network coverage and user registrations within a decade of its launch. However, aggregate numbers do not directly reveal how intensively the platform is used by individual farmers, the distribution of trade across commodities and regions, or the extent of inter-mandi and inter-state trade.

2.3 Impact on agricultural marketing efficiency

Theoretically, by integrating mandis and enabling remote bidding, e-NAM should enhance competition among buyers, reduce spatial price dispersion and allow farmers to realise better

prices than in a purely local market. Digital cataloguing of lots, transparent auction processes and online dissemination of live prices can reduce information asymmetry and transaction time. In addition, integration with assaying labs and warehouse-based sales enables buyers to trust quality certificates, which is crucial for trade in higher value and inter-state transactions.[6][1][2][13][3]

Empirical assessments and case studies provide a mixed but cautiously positive picture. Evaluations of digital agriculture initiatives note that platforms like e-NAM and mobile-based apps can broaden market connectivity and support better price discovery, especially when combined with improved digital literacy and local infrastructure. Some mandis have reported reduced transaction time, quicker payments and improved transparency due to online bidding and e-payments. However, other studies highlight that physical constraints such as inadequate assaying facilities, congestion, and limited warehouse capacity still constrain the full realisation of these efficiency gains.[5][8][2][13][4][9]

2.4 Adoption barriers and digital divide

Despite the impressive headline numbers, several studies point out that e-NAM remains underutilised in many states. Research on Goa and other regions, for example, finds that awareness of e-NAM among farmers is uneven, with higher adoption among more educated farmers and those with better digital access. Barriers include limited internet connectivity, lack of user-friendly interfaces in local languages, and low confidence in using smartphones or computers for trading. More broadly, literature on digital tools for smallholder farmers emphasises that poor connectivity, low digital skills and inadequate training of both farmers and extension workers are key obstacles to effective use of digital platforms.[5][14][8][13]

In addition to digital gaps, behavioural and institutional factors hinder adoption. Farmers often prefer traditional face-to-face trading in local mandis, where they rely on commission agents for credit, logistics and risk-sharing. Traders and intermediaries may resist e-NAM because greater transparency and competition can erode their margins and influence. In many mandis, the use of e-NAM is confined to intra-market digital auctions, while inter-mandi and inter-state trade, key to creating a truly national market—remain limited.[7][9][5]

2.5 Inter-state trade and market integration

One of the central promises of e-NAM is pan-Indian market integration. Yet, parliamentary data show that inter-state trade volumes on e-NAM remain a very small share of total trade and have even declined in recent years. For instance, inter-state trade volume reportedly fell by about 78 percent between 2023–24 and 2024–25, even as the overall number of mandis and registered users increased. This suggests that most e-NAM transactions are still intra-mandi or intra-state; physical movement and cross-border arbitrage are not yet widespread.[7]

Analysts point to several reasons: incomplete harmonisation of state APMC Acts and fee structures, logistical challenges such as transportation and storage, and trust issues around quality and contract enforcement in remote transactions. Without addressing these deeper structural constraints, the digital platform alone cannot fully integrate national agricultural markets.[5][9]

2.6 e-NAM within the broader digital agriculture landscape

The literature also situates e-NAM within a wider trend of digital agriculture, including mobile advisory services, digital extension, and private e-commerce platforms for farm produce. A systematic review of digital extension services in Asia and Africa finds that while digital tools can improve information access and learning, they face persistent barriers in connectivity, data quality, and two-way interaction between farmers and service providers. In India, e-NAM interacts with other initiatives such as FPO promotion, crop insurance, and agri-logistics schemes; its effectiveness depends on how well these complementary institutions function.[14][8][13]

3. Methodology

3.1 Type of data

This study relies exclusively on secondary data. It synthesises information from government publications (Press Information Bureau releases, operational guidelines, and official dashboards), policy briefs, academic journal articles, evaluation studies and reputable secondary sources such as Statista and established civil services preparation sites. Both quantitative data (mandis, users, trade volumes) and qualitative assessments (case studies, conceptual analyses) are used to develop a comprehensive picture of e-NAM's role in agricultural marketing.[11][6][1][12][3][9]

3.2 Sources of data

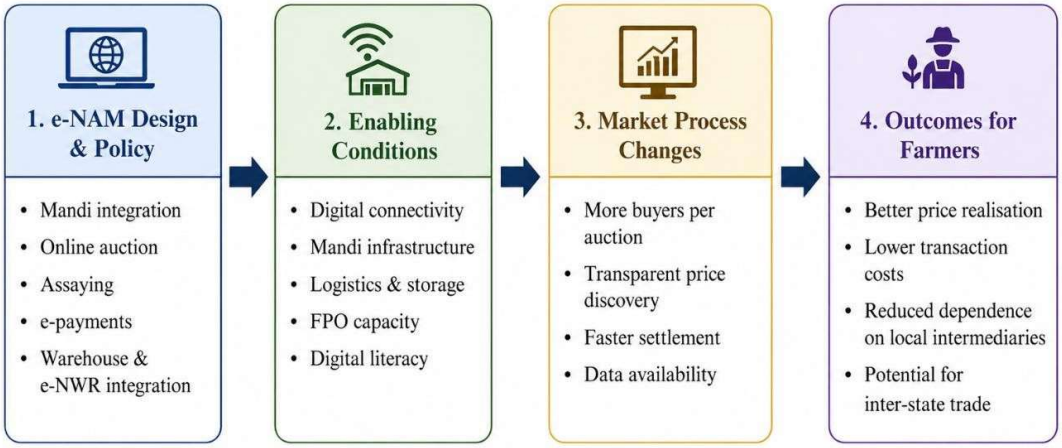
Key sources include:

- Government of India documents and press releases detailing e-NAM's objectives, implementation status, and statistics on mandis, registered users and trade volumes.[11][1][2][4]
- Official operational guidelines of e-NAM issued by the Ministry of Agriculture and Farmers' Welfare and SFAC.[6][2]
- Policy notes and explanatory articles from credible organisations and educational platforms explaining the design and expected benefits of e-NAM.[15][3]

- Academic and policy research examining digital agriculture, e-NAM adoption barriers, farmer digital literacy and the digital divide.[5][14][8][13][9]
- Statistical databases and visualisations (e.g., Statista) summarising the state-wise distribution of e-NAM mandis.[12]

3.3 Conceptual framework and propositions

Figure 1: Conceptual framework – Role of e-NAM in agricultural marketing



Source: Author's framework based on Government of India and secondary literature on e-NAM.

The conceptual framework for this study links e-NAM's design and implementation features to marketing outcomes through a chain of intermediate factors. The main constructs are:

- **Platform design and policy environment**: coverage of mandis, legal reforms of APMC Acts, availability of online auction, assaying, warehouse-based trading, and payment integration.[6][2]
- **Digital and physical infrastructure:** internet connectivity, hardware, assaying labs, storage and logistics facilities at mandis.[1][8][13]
- **User capacity and behaviour:** digital literacy, awareness, trust in the platform, and willingness of farmers, traders, FPOs and commission agents to use e-NAM.[5][14][9]
- **Market performance outcomes:** transparency of price discovery, competition among buyers, spatial price integration, transaction costs, and farmer price realisation.[2][3]

Based on the literature, the paper advances the following broad propositions (not empirically tested here):

- **P1:** Greater integration of mandis and advanced platform features (online auction, assaying, warehouse trading) are positively associated with improvements in market transparency and efficiency.
- **P2:** The transformative impact of e-NAM on farmer price realisation is mediated by farmers' digital literacy, access to infrastructure and the strength of farmer collectives such as FPOs.
- **P3:** Without complementary reforms in state APMC regulations, logistics and dispute resolution, e-NAM's contribution to inter-state trade and national market integration will remain limited.
- **P4:** Digital divides related to connectivity, skills and language can exacerbate existing inequalities, with better-resourced farmers benefiting more from e-NAM than small and marginal farmers.[14][8][13]

3.4 Time frame of reviewed data

The review focuses on material from 2015 onwards, covering the period of e-NAM's conceptualisation, pilot launch in 2016 and subsequent expansion up to early 2026. Earlier literature on APMC reforms and agricultural marketing is used selectively to contextualise the need for e-NAM but the emphasis is on the digital platform era.[10][2][4]

3.5 Analytical approach

The study adopts a qualitative synthesis approach, organising the reviewed literature into thematic areas, design and objectives, progress and outreach, marketing efficiency, adoption barriers, inter-state trade and digital inclusion. Within each theme, findings from different sources are compared to identify convergences, divergences and gaps. Quantitative indicators such as number of mandis, registered users and trade volumes are used illustratively to support the analysis rather than as the basis for formal statistical modelling.

4. Analysis and Discussion

4.1 e-NAM's contribution to market integration and transparency

At the most basic level, e-NAM has succeeded in creating a common digital layer over India's previously fragmented mandi system. With over 1,600 mandis connected and millions of farmers and traders registered, the platform has established the infrastructure for a pan-India market. Electronic cataloguing of lots, online bidding and real-time price displays reduce the scope for opaque price setting and collusion in auctions, at least within participating mandis.[6][1][2][4]

For many farmers, the ability to see bids from multiple traders on a screen and to receive payments electronically can improve trust in the auction process and reduce payment delays. Quality assaying integrated into the platform allows prices to be linked to measurable parameters, which is particularly important for high-value commodities and for buyers located outside the mandi. These features collectively push the system towards more transparent and rule-based functioning compared to pure spot negotiations on the mandi floor.[1][2][4]

However, the transformation is uneven. Some mandis use e-NAM mainly as a digitisation tool for recording transactions that would have happened anyway, without attracting additional buyers or enabling genuine competition beyond local players. In such cases, the platform's

impact on price discovery and farmer welfare is modest. True integration requires not just technical connectivity but also active participation by diverse buyers, including processors, exporters and organised retailers.[5][9]

4.2 Participation of farmers, traders and FPOs

Registration numbers suggest that e-NAM has achieved wide formal outreach, but actual usage patterns vary significantly by state, commodity and type of user. Educated and better-resourced farmers, often with larger holdings or membership in FPOs, are more likely to use the platform actively. Many small and marginal farmers continue to rely on commission agents for sale decisions, as agents provide credit, advance inputs and handle paperwork and logistics, creating a relationship of dependence that is not easily replaced by an app.[11][5][1][8][9]

The onboarding of thousands of FPOs onto e-NAM is a promising development, as collective marketing can aggregate volumes and bargaining power, reduce per-unit transaction costs and make remote trade more viable. Successful case examples show FPOs using e-NAM to auction lots of pulses and oilseeds to buyers in other districts, sometimes achieving better prices than local traders. Yet, FPO capacity is highly uneven across states, and many organisations lack professional management and working capital to exploit the platform fully.[1][8][2][3][4]

Traders also display varied responses. While some see e-NAM as an opportunity to reach new suppliers and standardised lots, others resist due to fears of increased competition, more stringent documentation and reduced scope

for informal margins. Their support or opposition matters because traders control much of the infrastructure and relationships in existing mandis.[5][9]

4.3 Digital and physical infrastructure constraints

Digital connectivity and infrastructure form the backbone of e-NAM. Where mandis have reliable internet, adequate hardware, functional assaying labs and trained staff, e-NAM operations tend to be smoother. Conversely, weak connectivity, power cuts, outdated equipment or lack of trained operators can slow down auctions, creating frustration among users and pushing them back to manual methods.[5][2][13][4]

Broader reviews of digital tools for farmers underscore similar issues: poor rural connectivity, low technical skills among farmers and extension staff, and limited two-way interaction reduce the effectiveness of digital platforms. These constraints mean that e-NAM's gains are often concentrated in relatively better-developed regions, while the very areas that most need market access, remote, rain-fed and tribal regions, struggle to benefit fully.[14][8][13]

Physical infrastructure such as storage, grading and logistics is equally important. Without adequate warehouses and assaying facilities, farmers may be forced to sell immediately after harvest, even if e-NAM indicates better prices elsewhere. Transporting small quantities to distant buyers can be uneconomical, especially for perishable commodities. Thus, while the digital platform can signal opportunities, realising them depends on complementary investments in logistics and aggregation.[9][5]

4.4 Inter-state trade: promise versus reality

The sharp decline in inter-state trade volumes on e-NAM reported for 2024–25 illustrates the gap between the platform's national vision and current practice. Despite more mandis being integrated, inter-state volumes remain a tiny fraction of total trade, and most transactions take place within the same mandi or state.[7][12]

Several factors explain this shortfall. Many states have not fully harmonised APMC fees, cess structures and regulations, making cross-border trade administratively complex. Buyers may hesitate to procure from distant mandis due to concerns about enforcement of contracts, quality disputes and reverse logistics for rejected lots. From the farmer's perspective, the benefits of inter-state trade are not obvious if local prices are acceptable and logistical risks are high. Consequently, e-NAM has so far functioned more as a network of digitised local markets than as a truly integrated national market.[5][2][9]

Table 2: Selected states on e-NAM – mandis, farmers and trade value (since inception)

State	Mandis on e-NAM	Farmers registered	Total volume traded (MT)	Total value traded (₹ crore)
Rajasthan	173	15,54,645	3,16,38,799	1,30,772.69
Haryana	114	27,27,271	3,80,63,267	1,23,474.09
Tamil Nadu	213	4,75,472	36,12,036	9,837.03
Maharashtra	181	12,47,627	62,07,325	23,067.37

Uttar Pradesh	162	33,05,648	83,76,688	16,558.71
Gujarat	144	8,69,922	32,00,731	12,740.83

Source: Press Information Bureau, "e-NAM integrates 1,656 mandis, benefits over 1.80 crore farmers with ₹4.82 lakh crore trade since inception", 17 March 2026.

4.5 Inclusion and the digital divide

An important question is whether e-NAM is inclusive or whether it mainly benefits better-off farmers. Evidence from digital agriculture studies suggests that higher education and digital literacy strongly correlate with awareness and use of platforms like e-NAM. Older, less educated and resource-poor farmers tend to be passive participants, relying on others to access digital services.[5][14][8]

Language and usability barriers also matter. Interfaces that are not available in local languages or that use complex menus discourage adoption. Gender gaps in phone ownership and digital skills mean that many women farmers, especially in smallholder households, are effectively excluded from direct participation in e-NAM and other digital tools. Without deliberate design choices and capacity-building efforts, there is a risk that digital platforms could widen existing inequalities, with more connected farmers capturing the bulk of benefits.[14][8][13][5]

4.6 Positioning e-NAM within rural marketing strategy

From a rural and agricultural marketing perspective, e-NAM should be seen as one component of a broader strategy rather than a standalone solution. It complements, rather than replaces, physical mandi infrastructure and traditional linkages. For agribusiness firms and processors, e-NAM offers an additional channel to source standardised lots from multiple locations, but they still need on-ground collection centres, quality control and relationship management with FPOs and traders.[1][4]

For policymakers, e-NAM provides rich data on arrivals, prices and trading patterns that can improve market intelligence and inform interventions such as buffer stocking or import-export decisions. For farmers, especially when organised into FPOs, e-NAM can be part of a portfolio of marketing options, alongside contract farming, direct purchase centres, private markets and digital-first B2B platforms. The key is to build farmer capacity to compare alternatives and choose the most advantageous channel for each crop and season.[2][4]

Table 3: Role of e-NAM in transforming agricultural marketing – benefits and constraints

Dimension	**Transformative role of e-NAM**	**Key constraints / risks**
Market integration	Creates a common digital layer linking 1,656 mandis across 23 States and 4 UTs.	Inter-state trade on e-NAM remains a very small share and has even declined recently.

Price discovery & transparency	Online bidding, real-time price display and assaying improve transparency within mandis.	In many mandis, e-NAM is used only to record local trades; actual buyer competition is limited.
Farmer participation	1.80 crore farmers and 4,724 FPOs are registered, giving formal access to the platform.	Awareness, digital skills and trust are lower among smallholders; many still rely on commission agents.
Transaction efficiency	Electronic weighment, e-payment and online gate	Connectivity failures, lack of trained staff and weak logistics often push users back to manual processes.
	entry can reduce time and cash-handling risks.	
Inclusion and equity	In principle, any farmer with access can view prices and bid through FPOs, reducing local monopoly power.	Digital divide by education, gender and region means better-off, digitally literate farmers benefit more. sir.advancedleadership.

5. Conclusion

The National Agriculture Market (e-NAM) represents a major step in India's efforts to modernise agricultural marketing by using digital technology to integrate APMC mandis, enhance transparency and facilitate wider competition. In less than a decade, it has created a sizable digital infrastructure: over 1,600 mandis connected, millions of farmers and traders registered, and trade worth several lakh crore rupees conducted on the platform. These achievements demonstrate that large-scale digital transformation of traditional markets is feasible in the Indian context.[11][1][2][3][4]

At the same time, the analysis shows that e-NAM's transformative impact on farmer welfare and market structure is still a work in progress. Usage is uneven, inter-state trade remains limited, and significant digital and physical infrastructure gaps persist. Many small and marginal farmers continue to depend on intermediaries, and traders' incentives to fully embrace transparent online auctions are mixed. Without supportive reforms in APMC regulations, logistics, assaying and dispute resolution, e-NAM risks becoming primarily a digitisation initiative rather than a deep structural reform.[5][7][9]

Overall, e-NAM can be viewed as a necessary foundation for a more efficient and integrated agricultural marketing system, but not a sufficient condition by itself. Its full potential will be realised only when combined with investments in rural connectivity, farmer digital literacy, FPO strengthening and complementary market channels that together shift bargaining power closer to farmers while maintaining efficient supply chains.[14][8][13]

6. Limitations of the Study

This study is based entirely on secondary data; it does not generate new primary evidence from farmers, traders or mandi officials. As a result, the analysis depends on the accuracy, scope and methodological rigour of existing government reports, academic papers and policy briefs, which may contain their own biases or data constraints. The secondary sources also vary in their time periods, definitions and measurement approaches, making exact quantitative comparisons difficult.[11][1][9]

Most academic evaluations of e-NAM and related digital agriculture interventions are still relatively recent and often focus on specific states or small samples, limiting the generalisability of their findings to all of India's diverse agro-climatic and institutional contexts. In addition, there is limited rigorous empirical work directly linking e-NAM usage to outcomes such as farmer income, price volatility or spatial price convergence over time; much of the discussion relies on qualitative assessments or case studies rather than panel data or experimental designs.[5][14][8][13][9]

Conceptually, the paper emphasises market integration, transparency and digital inclusion, but does not deeply examine related issues such as environmental sustainability, crop diversification or the interaction of e-NAM with input markets and credit. Nor does it analyse political economy dimensions in detail, such as the lobbying power of trader associations or the distributional impacts across states with different levels of reform. These omissions create scope for more specialised future research.

7. Scope for Future Research

Future studies could address these limitations by collecting primary data from farmers, traders and FPOs in multiple states to understand actual usage patterns, perceived benefits and barriers to e-NAM adoption. Large-sample surveys combined with transaction-level data from mandis could be used to quantify the impact of e-NAM participation on price realisation, income stability and marketing costs for different categories of farmers. Longitudinal designs would help track whether benefits persist over time or are concentrated in initial years.[14][13]

Experimental or quasi-experimental methods could compare mandis with and without advanced e-NAM features (such as assaying or warehouse-based trading) to estimate causal effects on market efficiency and farmer outcomes. Researchers could also examine the relative performance of e-NAM vis-à-vis private digital platforms and contract farming arrangements to understand where public digital infrastructure has a comparative advantage.[8][13]

From an inclusion perspective, future work should explore strategies to close the digital divide, including targeted digital literacy programmes, language-localised interfaces, and women-focused interventions that enable direct participation in digital markets. There is also room for interdisciplinary research linking e-NAM to broader themes such as climate-resilient value chains, sustainable procurement by food processing firms, and the role of data generated by e-NAM in informing agricultural policy and risk management.[14][8]

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