Assessing Farmers' Knowledge on e-NAM: Advancing Agricultural Market Transformation in Nizamabad District, Telangana

ABSTRACT

The study assesses farmers' knowledge of the Electronic National Agriculture Market (e-NAM) in Nizamabad district, Telangana, a key agricultural hub producing crops like turmeric, maize, and pulses. Despite the potential of e-NAM to enhance price discovery, reduce transaction costs, and empower farmers, adoption has been slow due to factors like low awareness, limited digital literacy, and infrastructure challenges. The study involved 120 respondents, including 60 farmers, 20 market officials, 20 traders, and 20 commission agents. Findings revealed that 43.4% of farmers had medium knowledge, 40% had low knowledge, and 16.6% had high knowledge of e-NAM. In contrast, market officials showed a higher level of awareness, with 60% having high knowledge, followed by traders (60% with medium knowledge) and commission agents (65% with medium knowledge). The analysis indicates the need for targeted capacity-building programs, such as workshops and hands-on training, to enhance knowledge, especially for farmers, traders, and commission agents. Additionally, the study emphasizes the importance of user-friendly digital tools, video tutorials in local languages, and improved internet connectivity. Policy interventions, including subsidies for digital tools, are also recommended to bridge the digital divide. Strengthening the role of market officials through advanced training could help streamline e-NAM's implementation and support its adoption. Addressing these gaps will not only increase the platform's usage but also improve market efficiency, reduce reliance on intermediaries, and enhance farmers' income levels in the region.

Keywords: *e-NAM, Farmers' Knowledge, Agricultural Marketing, Nizamabad District*

1. Introduction

Agriculture remains the backbone of India's economy, contributing significantly to GDP and employing a majority of the rural population. However, the agricultural marketing system has long been plagued by inefficiencies, including the dominance of intermediaries, lack of price transparency, and inadequate infrastructure. To address these issues, the Government of India introduced the National Agriculture Market (e-NAM) in April 2016, a digital initiative aimed at

integrating the country's wholesale markets into a unified online platform. The primary objective of e-NAM is to ensure better price discovery for farmers, reduce transaction costs, and promote transparency in the agricultural marketing ecosystem (Chand, 2017). By enabling inter-state trade and providing access to a wider market base, e-NAM has the potential to empower farmers and improve their income levels.

The agriculture sector in India is a cornerstone of the nation's economy, providing livelihoods to nearly 50% of the population and contributing about 18% to the gross domestic product (GDP). Despite its critical role, the agricultural marketing system has faced longstanding challenges, including the dominance of intermediaries, limited market accessibility, and inefficiencies in price discovery mechanisms. To address these issues, the Government of India launched the e-NAM in April 2016, a path-breaking initiative aimed at creating a unified digital marketplace for agricultural produce. By fostering competition, ensuring transparent price discovery, and empowering farmers with greater market choices, e-NAM is envisioned as a transformative intervention in India's agricultural marketing ecosystem.

The e-NAM platform integrates Agricultural Produce Market Committees (APMCs) across India, enabling farmers to trade their produce digitally. Key features include real-time price discovery, e-bidding, a single license for trading, and integrated payments. By October 2024, e-NAM had onboarded over 1,000 mandis across 18 states and 3 Union Territories, facilitating trade worth over ₹2.5 lakh crore. While the platform's potential for revolutionizing agricultural trade is undeniable, its adoption by farmers has been uneven, often hindered by low awareness, inadequate digital literacy, and infrastructural challenges (Kumar *et al.,* 2021; Sharma *et al.,* 2023).

Significance for Telangana and Nizamabad District

Telangana, with its progressive agricultural policies, has integrated over 50 APMCs into the e-NAM system, making it one of the leading states in leveraging this platform. Nizamabad district, known for its production of turmeric, maize, and pulses, is a critical agricultural hub in the state. Despite this, the adoption of e-NAM by farmers in the district has been relatively low. Limited knowledge about the platform, coupled with challenges such as inadequate access to internet facilities and training, continues to impede the realization of its benefits (Reddy *et al.,* 2022; Gupta & Rao, 2021).

Farmers' knowledge and understanding of e-NAM play a pivotal role in its adoption and utilization. Key components of this knowledge include awareness of the registration process, the

use of digital tools, market linkages, and the benefits of transparent price discovery mechanisms. Studies indicate that farmers who are well-informed about e-NAM are more likely to use the platform effectively, leading to better price realization and reduced dependency on intermediaries (Singh *et al.,* 2020). However, gaps in awareness and technical proficiency remain significant barriers, particularly in rural areas where traditional market systems dominate (Das *et al.,* 2022).

This study seeks to assess the knowledge of farmers about e-NAM in Nizamabad district, identifying gaps and barriers to its adoption. By providing actionable insights, it aims to contribute to the effective implementation of e-NAM, ultimately enhancing market efficiency and improving the livelihoods of farmers in the region. The findings will also inform policymakers and stakeholders about necessary interventions to bridge knowledge gaps and strengthen farmers' participation in digital marketplaces.

2. Methodology

An ex-post facto research design was employed for the study, with Telangana state selected due to the researcher's familiarity with the local language and culture. The e-NAM market in Nizamabad district was intentionally chosen, as it registers a higher volume of commodity arrivals and transactions on the e-NAM platform. A list of farmers who conducted transactions through e-NAM during 2019-20 was obtained from the district marketing department, and 60 farmers were randomly selected as respondents.

To gain a holistic understanding of e-NAM implementation, additional key stakeholders were included in the study. From the lists of traders, commission agents, and market officials associated with the chosen market, 20 respondents were randomly selected from each group. This resulted in a total sample size of 120 respondents, comprising 60 farmers, 20 traders, 20 commission agents, and 20 market officials. Data was collected from respondents using a structured interview schedule, analyzed, and interpreted based on the findings. Appropriate statistical techniques were applied to ensure accurate analysis of the data.

3. Results and Discussion

The study identified a range of challenges and recommendations from stakeholders for the effective implementation of e-NAM. These challenges and suggestions were analyzed and prioritized using various analytical tools, which are outlined below.

3.1 Knowledge of respondents about e-NAM.

Table 1. Distribution of respondents according to their knowledge about e-NAM

			Respondents							
S. No	**Category**	**Class Interval**	**Farmers (n=60)**		**Market Officials (n=20)**		**Commission Agents (n=20)**		**Traders (n=20)**	
			F	**%**	**f**	**%**	**F**	**%**	**f**	**%**
1	**Low**	**8-15**	24	40.0	3	15.0	3	15.0	3	15.0
2	**Medium**	**15-22**	26	43.4	5	25.0	13	65.0	12	60.0
3	**High**	**22-29**	10	16.6	12	60.0	4	20.0	5	25.0
	Total		60	100	20	100	20	100	20	100

Table 1, indicated that 43.4 per cent of farmers had medium knowledge on e-NAM followed by low (40.0%) and high (16.6%). Majority (60.0%) of market officials had high knowledge on e-NAM followed by medium (25.0%) and low (15.0%). Majority (65.0%) of commission agents had medium knowledge level followed byhigh (20.0%) and low (15.0%). Majority (60.0%) of traders had medium level knowledge followed by high (25.0%) and low (15.0%). Market officials had high knowledge on e-NAMas they had high school to graduation education, attended and organized trainings to the stakeholders of e-NAM for its better implementation. This is in conformity with results of Ganesan and Seetha Lakshmi (2002).

To enhance the knowledge and adoption of e-NAM among all stakeholders, it is essential to implement targeted capacity-building programs. Regular workshops, seminars, and hands-on training sessions should be conducted, especially for farmers, traders and commission agents, to familiarize them with the platform's features such as e-bidding, online payments, and real-time price discovery. The development of user-friendly digital tools, such as mobile applications and video tutorials in local languages, can play a pivotal role in overcoming language and technical barriers. Collaborative initiatives involving Farmer Producer Organizations (FPOs), self-help groups, and cooperatives can amplify awareness and encourage collective participation in e-NAM. Additionally, policy interventions, including subsidies for purchasing digital tools and improved

internet connectivity in rural areas, are crucial to bridging the digital divide. Strengthening the role of market officials as facilitators through advanced training programs can further streamline the implementation process and ensure better support for other stakeholders. By addressing these areas, e-NAM can become a more inclusive and effective platform, ultimately benefiting the agricultural marketing ecosystem (Ganesan & Seetha Lakshmi 2002).

3.2 Relation between profile characteristics of respondents with their knowledge and perception on e-NAM.

To find out the relationship between Profile Charactestcis of respondents and knowledge and perception of respondents, the correlation coefficients were worked out and the results havebeen presented in below tables.

Table 2. Correlation coefficient (r-value) between Profile Characteristics and knowledge of respondents (farmers)

S. No	Independent variables	"r" values
1	Age	0.210 NS
2	Education	0.338**
3	Farming experience	0.170 NS
4	Land holding	0.194 NS
5	Indebtedness	0.171 NS
6	Digital literacy	0.213 NS
7	Information seeking behavior	0.307*
8	Training received	0.069 NS
9	Market intelligence	0.305*
10	Risk orientation	0.317*

**=1% Level of significance NS=Non-significant *= 5% Level of significance

Correlation between independent variables and knowledge of farmer respondents was given in Table 2. Education, Information seeking behavior, Market Intelligence and Risk orientation of farmer respondents had a positive and significant relationship with theirknowledge on e-NAM.

Education Vs Knowledge

There was positive and significant correlation found between Education and Knowledge of farmers. The result clearly indicated that as the education status of farmers isincreasing, their knowledge about e-NAM also increased. It is quite logical that more literatea farmer is, more scope

he has to gain knowledge and understanding from various information sources about e-NAM hence this result might have appeared in the study. This is in conformity with results of Gopinath (2005) and Thiyagarajan (2011).

Information Seeking Behavior Vs Knowledge

There was a positive and significant correlation between Information Seeking Behavior and Knowledge of farmers. The more information seeking behavior an individualhas, the more he tries to gather latest information and gain knowledge. Hence a direct correlation was observed between information seeking behavior of respondents and their Knowledge on e-NAM.

Market Intelligence Vs Knowledge

There was a positive and significant correlation between Market Intelligence and Knowledge of farmers on e-NAM. If a respondent has good knowledge on market prices, demand, supply trends, market opportunities etc he/she shall have equally good knowledge about his/her local e-NAM market. Hence a positive correlation appeared in the study between Market Intelligence and Knowledge about e-NAM

Risk Orientation Vs Knowledge

There was a positive and significant correlation between Risk Orientation andKnowledge of farmers on e-NAM. Individuals with more knowledge on the subject concerned are willing to take risk for the sake of associated benefits compared to low knowledge bearers. Hence a positive correlation appeared in the study. The results are in conformity to Shashidhar (2007) and Thiyagarajan (2011).

Table 3. Correlation coefficient (r-value) between independent variables and knowledge of respondents i.e. market officials, commission agents and traders.

S. No	Independent variables	"r" values		
		Market officials	Commission agents	Traders
1	Age	0.211 NS	0.310 NS	0.206 NS
2	Education	0.286 NS	0.530*	0.487*
3	Digital literacy	0.501*	0.215 NS	0.577*
4	Information seeking behavior	0.665**	0.214 NS	0.453*
5	Training received	0.453*	0.210 NS	0.335 NS
6	Market intelligence	0.522*	0.466*	0.745**
7	Risk orientation	0.573*	0.535**	0.557*

**=1% Level of significance NS=Non-significant *= 5% Level of significance

Correlation between independent variables and knowledge of market officials, commission agents and traders was presented in Table 3. Land holding, Farming experience and indebtedness were not studied for these groups of respondents. Digital literacy, information seeking behavior, training received, market intelligence and risk orientation had positive significant relationship with the knowledge of market officials. Education, market intelligence and risk orientation had positive significant relationship with knowledge of commission agents. Education, digital literacy, information seeking behavior, market intelligence and risk orientation had positive significant relationship with knowledgeof traders.

Education Vs Knowledge

There was positive and significant correlation found between Education and Knowledge of commission agents and traders. It might due to the fact that commission agents and traders have possessed high school to intermediate education and also as they work in e- NAM yard they have good knowledge on e-NAM. This is in conformity with results of Gopinath (2005)

Digital Literacy Vs Knowledge

There was a positive and significant correlation between Digital literacy and Knowledge of market officials and traders. Medium to high and medium digital literacy levels of market officials and traders respectively in terms of using mobile apps, websites, portals, attending online meetings etc. might have significantly contributed for a direct correlation on knowledge improvement on e-NAM. Similarly, low digital literacy levels possessed by majority of farmers and commission agents resulted in low knowledge on e- NAM. Hence it can be concluded that knowledge on e-NAM can be improved by imparting digital education to any category of respondents. Stakeholders should be trained on usage of mobiles for e-transactions, e-buying, e-selling, e-auctioning etc. through which one can improve knowledge on e-NAM to a greater extent.

Information Seeking Behavior Vs Knowledge

There was a positive and significant correlation between Information Seeking Behavior and Knowledge of farmers, market officials and traders. The more information seeking behavior an individual has, the more sources he/she searches for gathering information and the more knowledge they gain. Hence a direct correlation was observed between information seeking behavior of respondents and their knowledge on e-NAM.

Training Received Vs Knowledge

There was a positive and significant correlation between Training received and Knowledge of market officials. It might be due to the fact that regular and mandatory trainings for market officials coupled with interactions, experience sharing and discussions during trainings might have resulted in positive correlation between the training received and their knowledge on e-NAM.

Market Intelligence Vs Knowledge

There was a positive and significant correlation between Market intelligence and Knowledge of market officials, commission agents and traders on e-NAM. If a respondent has good knowledge on market prices, demand, supply trends, market opportunities etc he/she shall have equally good knowledge about his/her local e-NAM market. Hence a positive correlation appeared in the study between market intelligence and knowledge about e-NAM

Risk orientation Vs Knowledge

There was a positive and significant correlation between Risk orientation and Knowledge of all categories i.e. market officials, commission agents and traders on e-NAM. Individuals with more knowledge on the subject concerned are willing to take risk for the sake of associated benefits compared to low knowledge bearers. Hence a positive correlation appeared in the study. The results are in conformity with Huong Dien Pham and Hermann Waibel (2018).

4. Conclusion

The study reveals knowledge disparities about e-NAM, with 60% of market officials, 43.4% of farmers, 65% of commission agents, and 60% of traders having varying levels of awareness. To bridge these gaps, targeted capacity-building efforts, including workshops, training, and user-friendly digital tools, are essential. Collaborative initiatives with Farmer Producer Organizations (FPOs) and policy support such as subsidies for digital devices and improved internet connectivity can enhance adoption. Strengthening market officials' roles through further training will ensure smoother e-NAM implementation, contributing to greater market transparency, fair pricing, and increased profitability for stakeholders.

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