



Factors Constraining Farmer's Adoption of the E-National Agriculture Market (eNAM) in Sultanpur District of Uttar Pradesh

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

The study attempt to analyse the constraints faced by the farmers and traders in the adoption of eNAM in the Sultanpur district of Uttar Pradesh. Data were collected by personal interview with 90 farmers and 30 traders in the district as the survey schedule were prepared. The methodology were used to analyse the constraints faced by the farmers and traders in the adoption of eNAM is Garrett's ranking technique in terms of ranks and total mean (score). This study reveal that major constraints faced by the farmers in the adoption of eNAM were they need cash payment to meet immediate expenses (I), strong trust in physical presence for selling (II), problems regarding receiving payments for produce, and lack of faith on the online transaction(III), difficulties in the online payment process(IV), Farmers were uncomfortable using technology/computers(V), digital

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payments were a barrier in repayment of informal loans taken (VI), etc. in case of traders the major constraints were faced by them in the adoption of eNAM i.e. high transportation cost(I), management problems of produce unsold (II), complaints settlement(III), fear of invasion by large traders (IV), insufficient number of computer operators (V), difficulty in getting a license (VI), etc. were the major constraints which had a great impact in adoption of e-NAM among farmers and traders. Therefore government should take some steps regarding the awareness of farmers that they faced significant challenges due to complicated and time consuming methods of trading in the eNAM system.

Keywords: e-NAM; APMC; pan-India; e-trading; digital payment; garret ranking technique.

1. INTRODUCTION

India has 1.3 billion inhabitants and produces the second-most agricultural output globally (FAO, 2021). There is no doubt that the Indian economy's most significant industry is agriculture. The Indian agriculture industry contributes 18% of the country's GDP (Gross Domestic Product) and employs 50% of its workforce. Net sown area still makes up over 47% of the total area under cultivation in India, a country with a large agricultural economy (approximately 49% of the population is dependent on agriculture). About 35% of our country's income comes from the production of pulses, rice, wheat, spices, and spice goods, all of which are produced in India. Both human food and animal feed are provided by it. India has a variety of industries to pick from, including dairy, meat, poultry, fishery, and food grains, among others. The world's second-largest producer of fruits and vegetables is now India. [1].

“The agriculture, forestry, and fishing sector accounted for 16.4% of the gross value added (GVA) in 2021. In contrast, the sector is serving as a primary source of livelihood for more than 50% of the country's population. Low and stagnant income across these sectors remains a focal point of policy debate in India. These sectors account for the majority of the poor in the country. Recent estimates show that about 220 million people are poor in India. One of the most prominent pathways to enhance farmers' income is the adoption of improved agricultural technologies” [2]. “Development in the agricultural sector is one of the exclusive tools to end extreme poverty, boost shared success and feed an expected 9.7 billion people by 2050” [3].

India is among one of the top producers of agricultural commodities, the farmers face uncertain marketing facilities, lack of infrastructure, transportation problems, and

interference of middlemen [4] “Marketing of agricultural produce serves as a link between the farm sector on the one hand and other sectors on the other hand. An efficient marketing system helps in the optimization of resource use, output management, increase in farm incomes, widening of markets, growth of agro-based industry and addition to national income through value addition and employment creation” [5]. “The current agricultural marketing system in the country is the outcome of several years of Government interventions. The system has undergone several changes during the last sixty years owing to the increased marketed surplus; increase in urbanization and income levels and consequent changes in the pattern of demand for marketing services, increase in linkages with distant and overseas markets; and changes in the form and degree of government interventions” [6].

The Government of India recognizes the importance of effective agricultural produce marketing for the sector's growth to address the above-stated problems, including developing and upgrading the country's agricultural marketing mechanism. The most significant intervention has been developing controlled markets to ensure public scrutiny of the entire marketing system. The APMC bill was primarily based on a Model APMC Act (2003), to resolve problems with the traditional marketing system by creating processes for proper produce sale, weighing, assaying, grading, and standardization, proportional to the services provided, timely payment without unjustified deductions, and so on. The Union Government took the initiative to encourage farmers of other states and UTs' of India to market their agricultural produce through an electronic platform for agriculture marketing i.e., e-NAM, which is the replica of Karnataka Model; ReMS (Rashtriya e-Marketing Services). E-NAM aims to recreate a similar model for trade in agricultural marketing to support farmers and traders [7].

“In the digital era, the government of India started digital agriculture marketing by providing an Electronic National Agriculture Market portal which creates the link between the existing APMC mandis/ market to create a unified national market for agricultural commodities based on a virtual network. Electronic National Agriculture Market (e-NAM) is a nation-wide trading portal which connects the existing APMC mandis electronically (web portal) creating a unified national market for agricultural commodities. It provides a single window service for all APMC-related information and services such as commodity arrivals & prices, buys & sell trade offers, and provision to respond to trade offers, among other services. The agriculture produce would continue to flow through the markets, while the online platform market helps in reducing the transaction costs and information asymmetry” [8].

“National Agricultural Market (NAM), the most needed e-platform for the integration of agricultural markets across India is considered as an appropriate solution to overcome the challenges and problems faced by the present stakeholders of the Agri-marketing system. Related issues like states fragmentation into multiple market areas monitored by APMCs, different and numerous levy structures, multiple licenses requirements for trading across different mandis, interventions of high net worth bidders in price-fixing, inadequate infrastructural facilities in reaching mandis, and non-usage of e-bidding technology, problems of information dissemination causing asymmetry, lack transparency in price discovery, high market charges, movement controls between state to state, etc are to be addressed on priority basis in order to benefit the farmers and other stakeholders of the agri-marketing industry. The need for an effective unified system across the country combining all agri-marketing platforms both at the State and National level is the need of the day and has been well understood by our Prime Minister of India, Sri Narendra Modi, and his team. The initiative is taken to have a sustainable environment through National Agricultural Market, which was launched on April 14, 2016. This enables a better price for farmers on their produce & improves the efficiency of the supply chain. Sustainable development is one that meets the needs of the present without compromising the ability of future generations to meet their needs” [9]. Considering the challenges and problems were faced by the farmers and traders by adopting e-Nam.

2. REVIEW OF LITERATURE

Bara [10] with reference to e-NAM and rural mandis, investigated the marketing infrastructure of APMCs in Jharkhand. Poor infrastructure, payment delays, excessive mandi charges, and high transportation expenses were identified as the top issues faced by local farmers, according to the survey. According to the survey, just 8.53 percent of farmers in India adopted e-NAM, contributing only 0.08 percent in monetary terms. Because of the low quantitative and qualitative produce issues, only 2% of registered traders were found trading through e-NAM, according to the author. To enhance online commerce and tackle market-related concerns, the study proposed strengthening infrastructure and adding people.

Reddy and Mahjabeen [11] in the study they filled a research vacuum by outlining the impact and issues faced by farmers after the implementation of the e-NAM platform. The implementation of e-NAM has been modest, but it is steadily increasing due to certain greater benefits such as e-auction, prompt payments, reduced stakeholder disputes, and a rise in the price obtained by farmers for their produce. As a result, it had a positive impact on farmers' income. Farmers, traders, and commission agents' interest must also be piqued by giving transparent benefits to all stakeholders, as well as the addition of markets, warehouses, and other organisations such as FPOs.

Saleem and Khan [12] thy study on "E-Nam Portal – A Step to Regulate the Unorganized Agricultural Market," concluding that the report primarily focused on the rapidly changing technological environment in which everyone wants to buy and sell things online. In this current era of communication, everyone is full of information since they are aware of the greatest product quality, whether it is close by or far away. Agriculture should not be separated from the technical world because it is the foundation of all production. Agriculture is a key source of employment in India. We cannot overlook the majority of our economy, as India is considered to dwell in villages.

Kaur et al. [13] “the study's main purpose was to look at how prices and market arrivals changed before and after e-NAM was installed, as well as the problems that stakeholders face when using this technology. Data was obtained from randomly selected farmers and dealers, cum

commission agents, and committee officials based on the facilities gained from the designated APMCs linked with e-NAM through personal interviews. In order to achieve this goal, several users were interviewed about the numerous issues faced by e-NAM stakeholders while participating in the selling and buying process on the e-NAM site. Farmers in the selected APMCs experienced considerable obstacles due to the e-NAM system's complicated and time-consuming trading procedure, a lack of expertise about e-trading (farmers usually do not comprehend the meaning presented in the machine), and frequent trips to the bank for payment realization”.

3. MATERIALS AND METHODS

The present investigation was conducted in Sultanpur district of Uttar Pradesh during 2021-22 Amhat Mandi was chosen on purpose since he was the only Mandi who was integrated with the e-NAM system. The survey included 90 farmers and 30 traders from Amhat Mandi. The respondent for the study was operationally defined as the farmers who registered and traded with e-NAM in Amhat Mandi of Sultanpur. The primary data were collected personally with the help of Survey schedules; the interviews were conducted in farmer's fields or in their homes through face-to-face contact.

To find out the constraints faced by the farmers and traders in adopting of eNAM in Sultanpur district of U.P, Garret's ranking technique was used to rank the constraints faced by them. The respondents were asked to rank the problems faced by them in adopting eNAM. Then, the ranks given to a constraint by the respondents changed into percent positions by using the following formula:

$$\text{Percent position} = \frac{100(R_{ij}-0.50)}{N_j}$$

Where,

R_{ij} is rank given for i th item by j th individual, and N_j is the number of items ranked by j th individual.

The percentage position of each rank is converted into scores by referring table given by Garret. Then for each constraint, the scores of individual respondents are added together and divided by the total number of respondents for whom scores are added. Thus, the mean score

for each constraint is ranked by arranging them in descending order [14].

4. RESULTS AND DISCUSSION

4.1 Constraints Perceived in the Adoption of e-NAM by Farmers

Constraints perceived in adoption of e-NAM by farmers were presented in Table 1. It was evident from the results that the farmers need cash payment to meet immediate expenses, strong trust in physical presence for selling, and problems regarding receiving payments for produce and lack of faith on online transaction, difficulties in online payment process, Farmers were uncomfortable using technology/computers, digital payments were barrier in repayment of informal loans taken, management of perishable produce, especially storage in mandi, lack of basic infrastructure for cleaning, weighing etc, no proper assaying laboratory, insufficient number of computer operator, sale process was complicated, e- auction takes much longer than conventional process, lack of proper information transmission, were the major constraints which had impact in adoption of e-NAM among farmers with a Garret's score of 59.48, 56.94, 56.32, 53.27, 51.56, 51.08, 50.18, 50.23, 49.21, 48.74, 48.52, 46.17, 45.72 and 42.63 respectively. Price realization was difficult and also perceived as an important constraint with Garret's score of 41.00.

In other words, because they were conventional and unaware of modern technologies, farmers had numerous issues when adopting eNAM.

4.2 Constraints Perceived in the Adoption of e-NAM by Traders

Constraints perceived in the adoption of e-NAM by traders were presented in Table 2. It was clear from the results that high transportation costs, management problems of produce unsold, complaints settlement, fear of invasion by large traders and an insufficient number of computer operators, difficulty in getting a license, and technological illiteracy, affect on the business of small traders badly, difficulty in price realization, inappropriate dissemination of information, complicated sale process were the major constraints which had a great impact in adoption of e-NAM among traders with Garret's score of 53.13, 52.60, 52.59, 52.57, 52.37, 51.47, 50.53, 50.13, 49.27, 46.60, 44.87 and 44.88

Table 1. Constraints perceived in the adoption of e-NAM by farmers

Constraints	Sum of garret value	Mean	Rank
Lack of proper information transmission.	3837	42.63	XIV
e- auction takes much longer than conventional process	4115	45.72	XIII
Bidding may be not satisfactory and problems regarding unsold lots	4794	53.27	IV
Insufficient number of computer operator	4367	48.52	XI
Strong trust in physical presence for selling	5125	56.94	II
Management of perishable produce, especially storage in mandi	4516	50.23	VIII
Digital payments were barrier in repayment of informal loans taken	4516	50.18	VII
No proper assaying laboratory	4387	48.74	X
Farmers were uncomfortable using technology/computers	4597	51.08	VI
Problems regarding receiving payments for produce and lack of faith on online transaction	5069	56.32	III
Difficulties in online payment process	4640	51.56	V
Lack of basic infrastructure for cleaning, weighing etc.	4429	49.21	IX
Sale process was complicated	4155	46.17	XII
Price realization was difficult	3690	41.00	XV
Farmers need cash payment to meet immediate expenses	5353	59.48	I

Author calculation

Table 2. Constraints perceived in the adoption of e-NAM by Traders

Constraints	Sum of garret value	Mean	Rank
Technological illiteracy	1516	50.53	VII
Adverse Effect on business of small traders	1504	50.13	VIII
Insufficient number of computer operator	1571	52.37	V
Difficult Price realization	1478	49.27	IX
Sale process was complicated	1346	44.87	XI
Fear of invasion by large traders	1577	52.57	IV
Difficulty in getting license	1544	51.47	VI
High transportation cost	1594	53.13	I
Awkward complaints settlement	1578	52.59	III
Difficult online payment process	1346	44.88	XII
Inappropriate dissemination of information	1398	46.60	X
Management problems of produce unsold	1578	52.60	II

Author calculation

respectively, Difficult online payment process was also perceived as a chief constraint having Garret's score of 52.57 percent.

5. CONCLUSION

From the above discussion, we highlight the fact that constraints faced by farmers and traders in the adoption of e-NAM in which the most important problem identified by the farmers that they need cash payment to meet immediate expenses, strong trust in physical presence for selling, problems regarding receiving payments for the produce and lack of conviction on online

transactions were the major constraints which had a great impact in adoption of e-NAM by the farmers. And the last major constraints of the farmers were thought to be unsatisfactory bidding and issues with unsold lots.

In the case of traders' High transportation costs, Management problems of producing unsold, and awkward Complaints settlements were three major constraints that would have an impact on the adoption of e-NAM by the traders. The perception of huge traders invading was seen as another significant barrier.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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