Original Research Article

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

Abstract

The eNAM (electronic National Agricultural Market) is a pan-India e-trading platform that networks the traditional APMC mandis to create a unified national market for agricultural commodities. The main aim of this study is to analyze the constraints faced by the farmers and traders in the adoption of eNAM in the Sultanpur district of Uttar Pradesh. The study is based on a personal interview with 90 farmers and 30 traders in the district. Garrett's ranking technique was employed to find out the constraints faced by the farmers and traders in the adoption of eNAM were explained in terms of ranks and total mean (score).This study finds that the major constraints faced by the farmers in the adoption 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 payments were a barrier in repayment of informal loans taken(VI), etc. in case of traders the major constraints faced by them in the adoption ofeNAM 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. This study reveals that farmers have numerous challenges in adopting eNAM, such as a lack of faith in online payments, a preference for cash currency, a lack of storage space, and so on. andtradersalso face high transportation costs, awkward feelcomplaints about the settlement, etc. these are the main constraints which affect the willingness to adopt eNAM by traders and farmers

Keywords: eNAM, APMC, pan-India, e-trading,digital payment, garret ranking technique

Comment [U1]: Author can use the limitations and or problem statements as introduction for the abstract.

Comment [U2]: "to analysis the constraints....." (analysis is used for analyzing the relationship) or " to identify....."

Comment [U3]: Are these the theme developed from the overall findings?
Author should include the implications (managerial & theoretical)

INTRODUCTION

India has 1.3 billion inhabitants and produces the second-most agricultural output globally. 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. (**Sharma *et al.*, 2019**)

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 (**Joshi and Varshney 2022**).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(**Jatana and Goswami 2021**).

India isamong one of the top producers of agriculturalcommodities, the farmers face uncertainmarketing facilities, lack of infrastructure,transportation problems, and interference ofmiddlemen (**Saxena *et al.*, 2017**)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 **(Acharya and Agrawal 2004)**. 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

Comment [U4]: Literature review should be separated from introduction.
Introduction should cover the problem statements followed by the objectives.

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pattern of demand for marketing services, increase in linkages with distant and overseas markets; and changes in the form and degree of government interventions (**Kalamkar*et al.*, 2019**).

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 agriculturalmarketing mechanism. The most significantintervention has been developing controlledmarkets to ensure public scrutiny of the entiremarketing system. The APMC bill was primarilybased on a Model APMC Act (2003), to resolveproblems with the traditional marketing systemby creating processes for proper produce sale,weighing, assaying, grading, andstandardization, proportional to the servicesprovided, timely payment without unjustifieddeductions, and so on.The Union Government took the initiativeto encourage farmers of other states and UTs'of India to market their agricultural producethrough an electronic platform for agriculturemarketing i.e., e-NAM, which is the replica ofKarnataka Model; ReMS (Rashtriya e-MarketingServices). E-NAM aims to recreate a similar modelfor trade in agricultural marketing to supportfarmers and traders (**Singh and Alagawadi 2021**).

In the digital era, the government of India started digital agriculture marketing by providing an Electronic National Agriculture Market portal which createsthe 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 connectsthe existing APMC mandis electronically (web portal) creating a unified national market foragricultural commodities. It provides a single window service for all APMC-related informationand services such as commodity arrivals & prices, buys& sell trade offers, and provision to respondto trade offers, among other services. The agriculture produce would continue to flow throughthe markets, while the online platform market helps in reducing the transaction costs andinformation asymmetry(**Subash *et al.*, 2018**).

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 (**Prasad and Rao 2014**).

MATERIAL AND METHODS

Comment [U7]: Author should mention the research methodology type of the study?

The present investigation was conducted in Sultanpur district of Uttar Pradesh during2021-22AmhatMandi 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 AmhatMandi.The respondent for the study was operationally defined as the farmers who registered and traded with e-NAM inAmhatMandiof 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.andSecondary datawere collected from the official website of eNAM, and the market head office of AmhatMandi.

Comment [U8]: Does these targeted population are enough? Why this targeted population? How to select these targeted respondents?

Comment [U9]: What type of secondary data?

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

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

Where,Rij is rank given for ith item by jth individualand

Nj is the number of items ranked by jthindividual.

The percentage position of each rank is converted into scores by referring table given byGarret. 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 scorefor each constraint is ranked by arranging them in descending order (**Raghav and Sen 2014**).

RESULTS AND DISCUSSION

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Constraints perceived in adoption of e-NAM by farmers

Comment [U11]: Author should describe the demographic profile of the studied respondents.

Constraints perceived in adoption of e-NAM by farmers were presented in Table No. 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 also perceived as an important constraint with Garret's score of 41.00.

Comment [U12]: Author can summarize the findings based on the Table and highlight the findings of the outputs.

Table No.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	4115	45.72	**XIII**

process			
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**
Farmerswere 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 should advise to insert the "source")

Constraints perceived in the adoption of e-NAM by Traders

Comment [U13]: Author can highlight the findings instead of reporting everything.

Constraints perceived in adoption of e-NAM by traders were presented in Table 2. It was clear from the results that high transportation cost, management problems of produce unsold, complaints settlement, fear of invasion by large traders and insufficient number of computer operators, difficulty in getting license, technological illiteracy, effect on 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 respectively, Difficult online payment process was also perceived as a chief constraint having Garret's score of 52.57 percent.

Table No.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**

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CONCLUSION

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Besides, author should cover the implication (managerial and theoretical) of the study

From the above discussion we highlight the fact that the constraints faced by farmer and trader in adoption of eNAMin which the mostimportant problem identified by the farmersthat 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 werethought to be unsatisfactory bidding and issues with unsold lots.

In case oftraders'High transportation costs, Management problems of producing unsold, and awkward Complaints settlementswere three major constraints that would have an impact

onthe adoption of e-NAM by the traders. The perception of huge traders invading was seen as another significant barrier.

REFERENCE

Comment [U15]: Please ensure that all used citations are listed in the references. Besides, author is advised to read more articles and support the content of paper.

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