"Knowledge level, challenges perceived by traders in the Functioning and Price Variation of Apple Marketing through e-NAM in Sant Kabir Nagar District of Uttar Pradesh"

Abstract

The e-NAM (electronic National Agriculture Market) is a pan-India, e-trading platform that networks the traditional APMC mandis to create a unified national market for agricultural and horticultural commodities, providing a transparent price discovery mechanism to ensure profitable prices for farmers. This research explores the potential and utilization of the e-NAM portal for agricultural produce sales, focusing on apple marketing, price realization in Sant Kabir Nagar district, Eastern Uttar Pradesh. Naveen Sabji Mandi, Khalilabad, was registered via the e-NAM portal from Sant Kabir Nagar district. A total of 120 traders were chosen randomly from the registered traders list using the proportionate allocation method and data were collected with pre-structured survey schedule. In this study Guttman scale was used to assess traders awareness, it was observed that traders were lacked knowledge about e-NAM and its process. Garrett ranking technique was used to assess constraints which were faced by trader's i.e. Dissatisfaction with APMC's grading system, complexity of e-NAM trading compared to open auctions, traders lacked sufficient training, struggled to purchase produce without manual price inspection, last-minute bidding, time-consuming auctions, and limited bidding time. Apple marketed through e-NAM were able to fetch higher price as compared to the apples marketed without e-NAM.

Keywords:- APMC, e-NAM, Garrett ranking technique, Guttman scale and price.

Introduction

The Economic Survey for the year 2023-24 indicates that the agricultural sector in India sustains the livelihoods of approximately 42.3 percent of the population and constitutes 18.2 percent of the nation's Gross Domestic Product at current pricing. The horticultural output in India for the year 2023-24 is projected to be around 352.23 Million Tonnes, reflecting a decline of approximately 32.51 Lakh Tonnes (0.91%) in comparison to the year 2022-23. The anticipated production of fruits is expected to achieve 112.63 Million Tonnes, primarily driven by increases in the yields of Banana, Lime/Lemon, Mango, Guava, and Grapes. Conversely, the production of Apple and Pomegranate is forecasted to decline

relative to the previous year, 2022-23. (pib.gov.in 2024)

The Electronic National Agricultural Market (e-NAM) framework was inaugurated in July 2015 and was rendered operational by designating the Small Farmers' Agribusiness Consortium (SFAC) as the principal implementing entity responsible for the operation and upkeep of the e-NAM platform. SFAC is a registered society under the Department of Agriculture, Cooperation & Farmers' Welfare (DAC&FW) within the Ministry of Agriculture & Farmers' Welfare (MoA&FW). SFAC is engaged in the development, operation, and maintenance of the e-NAM platform with technical assistance from the Strategic Partner, namely M/s Nagarjuna Fertilizer and Chemicals Limited, initially for a duration of three years from 2015-16 to 2017-18. The Cabinet Committee on Economic Affairs sanctioned a Central Sector Scheme for the Promotion of e-NAM through the Agri-Tech Infrastructure Fund (ATIF). The government has allocated Rs. 200 crore to the ATIF. The e-NAM system was first inaugurated in India on 14 April 2016, with an initial coverage of 21 mandis across 8 states and facilitating trading in 24 commodities on a pilot basis (Press Information Bureau, 2016). Since that time, the number of mandis integrated with e-NAM has escalated to 470 by October 2017 (http://www.enam.gov.in), and as of 21 February 2018, a total of 479 mandis across fourteen states and one union territory are encompassed (The Economic Times, 2018), with a target of linking 585 mandis by March 2018 (Sekhar and Bhatt, 2018).

The Economic Survey 2023-24 indicates that to enhance efficiency in agricultural marketing and facilitate improved price discovery, the government has instituted the e-NAM Scheme; as of 14th March 2024, over 1.77 Crore farmers and 2.56 Lakh traders have successfully registered on the e-NAM portal. In 2020, the Government of India initiated the scheme aimed at establishing and promoting 10,000 Farmer Producer Organizations (FPOs) with a financial allocation of ₹ 6.86 thousand crore projected until 2027-28. As of 29 February 2024, a total of 8,195 FPOs have been officially registered under the new FPO scheme, and equity grants amounting to ₹ 157.4 crore have been disbursed to 3,325 FPOs. Additionally, a credit guarantee cover totalling ₹ 278.2 crore has been extended to 1,185 FPOs.(pib.gov.in 2024).

Temperate fruits, including apples, pears, plums, and peaches, are predominantly cultivated in the mountainous regions of Kashmir, Himachal Pradesh (HP), and Uttarakhand within the nation. Apples, in particular, represent nearly fifty percent of the global population

of deciduous fruit trees. China occupies the leading position in apple production, contributing approximately 49% to the worldwide output, followed by Turkey, the United States, Poland, and India. The principal apple-producing states in India are Jammu & Kashmir (77.85%), Himachal Pradesh (19.22%), Uttarakhand (2.53%), Arunachal Pradesh (0.32%), and Nagaland (0.09%). The overall apple production in India totals 2,057 thousand metric tonnes, cultivated over an area of 312 thousand hectares. The per capita monthly consumption of apples is 0.06 kg in rural regions and 0.19 kg in urban areas (Bharti *et al.*,2023).

The most recent information

As of the 25th of November 2023, a total of 1389 mandis from 23 states and 4 Union Territories have been incorporated into the e-NAM platform. The commodity category comprises a total of 219 commodities, including 35 food grains/cereals, 14 oilseeds, 45 fruits, 59 vegetables, 16 spices, and 50 miscellaneous items. As on 31, March 2023 More than 1.75 crore farmers & 2.43 lakh traders have register on e- NAM platform and 3366 FPO's have been on boarded on e-NAM platform.(e-nam.gov.in).

Workflow of e- NAM

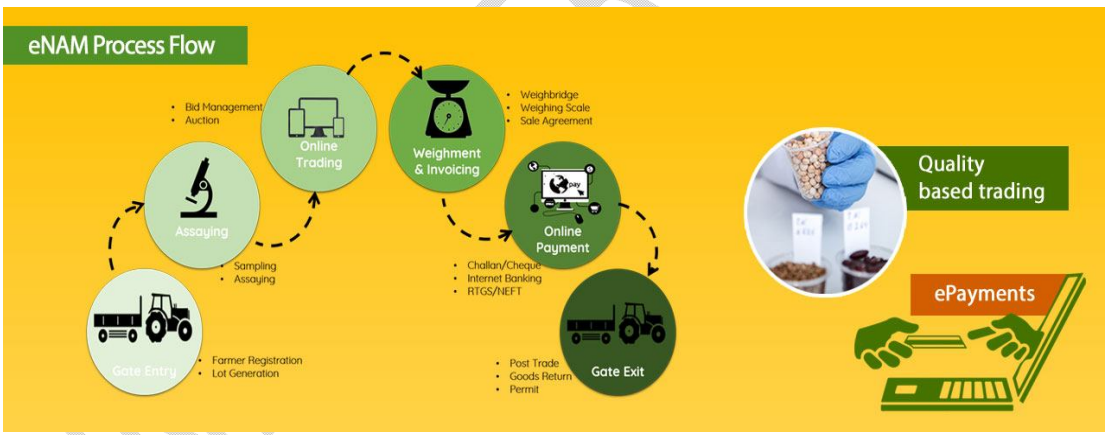

Fig No. 1 Source: (e-nam.gov.in)

- **Gate Entry:** Agricultural producers obtain a gate pass containing particulars such as time, date, vehicle classification, weight, type of produce, and pass identification upon entry into the mandi.
- **Lot Management:** Commodities are stored properly to prevent mishandling and loss.
- **Sampling and Assaying:** A specimen of the commodity is gathered and analyzed for quality to establish pricing.
- **Approval for Trade:** Based on testing, the quality of the commodity is sanctioned for trade.

- **Bidding:** The bidding procedure encompasses bid formulation, the actual bidding activity, and bid announcement.
- **Weightment:** Guarantees precise monitoring of commodity inflow and outflow at the mandi.
- **Sale Agreement:** Subsequent to bidding and weightment, a sale agreement is formulated, encompassing commission fees, market cess, and labour expenses.
- **Settlement:** All participants must possess a bank account registered with e-NAM for the settlement process.

Objectives of the Study

1. Tostudy aboutfunctioningofe-NAM inSantKabirNagar.
2. To analysed theConstraints perceived by traders during trading on e-NAM platform in selected APMC.
3. To compare the price variation of Apple procured through e-NAM andother agencies.

MATERIALS AND METHODS

Sampling framework

The study was conducted in Sant Kabir Nagar district of eastern Uttar Pradesh during 2023-24. Sant Kabir Nagar district was selected as mandi was operating with e-NAM

Sampling Method

Purposive cum random sampling technique was used for the selection of district. Multistage random sampling technique was used for the selection of respondent /traders (Primary wholesaler, Secondary wholesaler and Retailer) for present investigation.

Selection of Mandi

The mandi which was connected to e-NAM in Sant Kabir Nagar district where major crops (fruits and vagetables specially Apple were sold and purchased) was selected for the study. (i.e Naveen Sabji Mandi, Khalilabad).

Selection of Traders

The various categories of traders participating in the electronic National Agriculture Market (e-NAM) are as follows: Primary wholesalers at Mandi, secondary wholesalers at Block and district levels, and retailers at Village, Block, and District levels. The number of traders engaging with e-NAM and those not utilizing the platform are recorded separately for each category. In the case of Primary wholesalers at Mandı, there are 14 traders using e-NAM and 8 traders not using it, resulting in a total of 22 traders in this category. For secondary wholesalers at Block and district levels, the figures stand at 17 traders using e-NAM and 29 traders not using it, making a total of 46 traders. Lastly, retailers across Village, Block, and District levels show that 7 traders are utilizing e-NAM while 45 traders are not, bringing the total number of traders in this category to 52. Overall the data reveals that there are a total of 38 traders using e- NAM and 82 traders not using the platform, with a grand total of 120 traders across all categories.

Table No.-1: Selection of traders

S.No.	Types of traders	No. of traders with e-NAM	No. of traders without e-NAM	Total no.of traders
1.	Primary wholesaler * (at Mandi level)	14	8	22
2.	Secondary wholesaler ** (at Block and district level)	17	29	46
3.	Retailer *** (Village,Block and District level)	7	45	52
	Total no.of traders	38	82	**120**

* Primary wholesaler are those traders which directly purchase through e-NAM portal and then sale it to the secondary wholesaler and retailer at mandi level.

**Secondary wholesaler are those traders which directly purchase from Primary wholesaler and then sale it to the Retailer at block and district level in the study area.

*** Retailer are those traders which directly purchase through e-NAM portal or primary wholesaler at mandi level or secondary wholesaler at block/district level and then directly sale to the consumers at village, block and district level.

Collection of Data

In order to address the objectives of the study, primary as well as secondary data were collected for the study

Primary data

The primary data with respect to marketing of Apple through e-NAM or without e-NAM were collected from the sample respondents/traders by personal interview with the help of specifically prepared schedule. Each of the respondent were contacted several times in order to fill in the schedules.

Secondary data:

Information from other than primary sources were collected from different published and official sources, for example official website of e-NAM, office of marketing committee, market head office and mandi office.

Analytical tools and techniques.

Guttman scaling: Guttman scaling was developed by Louis Guttman (1944, 1950) and was first used as part of the classic work on the American Soldier. Guttman scaling is applied to a set of binary questions answered by a set of subjects. Guttman scaling is also sometimes known as cumulative scaling or scalogram analysis. Here in the analysis, awareness level among farmers and traders was recognized using Guttman scale. A single dimensional set of question/statement was prepared these questions were asked regarding working of e-NAM completely.

Garret ranking: To achieve the goal of analysed the constraints faced by e-NAM traders in SantKabirNagar District of Uttar Pradesh the Garret ranking technique was used to identify the most significant constraints that influence e-NAM adoption. According to this method, respondents were asked to rank all constraints, and the results of that ranking were converted into score value using the following formula (Harshit, 2024;Gautam*et al.*, 2022).

$$\text{Percent position} = \frac{100(R_{ij} - 0.5)}{N_{ij}}$$

R_{ij}= rank given for i^{th} (i=1,2,3……9) factor by the j^{th} (j=1,2,3,….9) individual

N= Number of factor ranked by j^{th} individual

Once the percentage position was determined the percentage position of each rank was converted to scores using the table provided by Garret and Woodsworth (1969). The score for each factor was then averaged across the number of sample farmers who ranked that factor. Total scores were obtained in this manner for each of the reason, and mean score were

calculated by dividing the total score by the number of respondents who provided ranks. Finally, the overall ranking of the nine reason was determined by assigning rank 1,2,3,…,9 in descending order of mean scores.

RESULTS AND DISCUSSION

Tostudy aboutfunctioningofe-NAM inSantKabirNagar.

Distribution of traders according to level of awareness about e-NAM: Nine questions were raised to traders in succession to assess their level of awareness about e-NAM and its process. It was observed that from the Table No.1 about 55 per cent traders from sample were aware about e-NAM, while 45per cent were not. About 44.17 per cent of traders had less knowledge about e-NAM while 55.83 per cent traders had not knowledge about e-NAM. 40 per cent Traders were acquainted about registration procedure and 31.67 per cent knew about licensing procedure. It also revealed that only 31.67 per cent traders were cognizant about the validity of licensing in a state. About 31.67 per cent and 28.33per cent of the traders knew about online bidding and highest bidder system respectively. 25 per cent were informed of online receipt of procurement and only 20.83 per cent were aware that e-NAM was also associated to logistics services.

Table No.2Distribution of traders according to level of awareness about e-NAM

S.No	Questions framed under Guttman scale	Awareness		
		Yes	No	Total
1.	Have you heard about e-NAM?	66 (55)	54 (45)	120 (100)
2.	Do you have any idea about e-NAM?	53 (44.17)	67 (55.83)	120 (100)
3.	It requires registration before taking part in e-NAM portal.	48 (40)	72 (60)	120 (100)
4.	It requires license needs to be made for trading on e-NAM portal.	38 (31.67)	82 (68.33)	120 (100)
5.	The validity of license is limited for one state only.	38 (31.67)	82 (68.33)	120 (100)
6.	Online bidding can takes place via smartphone/PC also.	38 (31.67)	82 (68.33)	120 (100)
7.	The highest bidder were allow to pay through e-NAM portal.	34 (28.33)	86 (71.67)	120 (100)
8.	The highest bidder were allowed to receive online receipt for his procurement.	30 (25)	90 (75)	120 (100)
9.	Logistics were associated to e-NAM portal for procured	25	95	120

	entity?	(20.83)	(79.17)	(100)

(Figure in Parenthesis indicate the percentage)

Constraints perceived by traders during trading on e-NAM platform in selected APMC

Constraints perceived by traders during trading on e-NAM platform is depicted in table no. 3. Reviewing the table it can be stated that traders were not satisfied with the grading system performed by APMC for trading on e-NAM portal and ranked first among all the constraints. while Second major problem reported that complexity of e-NAM trading compared to open auction, thirdly traders were faced difficulty as they were not sufficient training about e-NAM system and fourthly difficult to purchase produce without manually inspecting the price. Traders feel problem with last minute bidding, time consuming in e-NAM auction and less problem reported by traders were less bidding time and was ranked as fifth, sixth and seventh respectively.

Table No. 3: Constraints perceived by traders during trading on e-NAM platform at Sant Kabir Nagar Mandi

S.No.	Particulars	Percent Position	Garrett Score	Total Score	Average score	Rank
1.	Difficult to purchase produce without manual checking	7.14	79	6284	52.37	IV
2.	Not satisfied with grading	21.43	66	6998	58.32	I
3.	Less bidding time	35.71	58	5326	44.38	VII
4.	Complexity of e-NAM trading compared to open auction	50.00	50	6529	54.41	II
5.	Time consuming in e-NAM auction	64.29	43	5439	45.33	VI
6.	Last minute bidding	78.57	35	5478	45.65	V
7.	Not sufficient training about e-NAM system	92.86	22	6306	52.55	III

Marketing constraints of e-NAM were minimized by introduction of proper checking of available produce, making of proper and consistent grading facilities with training programme about the e-NAM the above constraints faced by the traders could be minimized. Related to the bid time, since, most of the traders wait for the last minute bid so it is very important to increase the bidding time, so that more numbers of traders can utilize the last minute bidding facility without any hesitation.

To compare the price variation of Apple procured through e-NAM andother agencies.

Price variation is a measure of volatility (standard deviation) used by traders and analysts to reflect how much a commodity value changes. In this study the price variation of Apple marketing is discussed. In Table No. 4 presented that month wise price differences and figure no 2 showed month wise trend analysis of Apple crop in Sant Kabir Nagar district during 2022-23

The month-wise variation in apple prices showed a comparison between those marketed through e-NAM and without e-NAM. Generally, prices with e-NAM are higher in most months compared to without e-NAM. For instance, in January, the average price without e-NAM is Rs. 4897.63 per quintal, while with e-NAM it is Rs. 5648.32 per quintal. February followed a similar trend, with prices at Rs. 5307.87 per quintal without e-NAM and Rs. 6071.43 per quintal with e-NAM. The highest prices were observed in May, with Rs. 11676.51 per quintal without e-NAM and Rs. 11203.45 per quintal with e-NAM. Conversely, June and September show higher prices without e-NAM at Rs. 10448.57 per quintal and Rs. 7334.78 per quintal respectively, compared to Rs. 9723.56 per quintal and Rs. 6748.87 per quintal with e-NAM.

Table No. 4: Monthly wise variation in Apple's price through e-NAM and without e-NAM Market.

S.No.	Months Name	Without e-NAM average price (Rs/Qtl.)	With e-NAM average price (Rs/Qtl.)
1.	January	4897.63	5648.32
2.	February	5307.87	6071.43
3.	March	7276.09	7762.68
4.	April	7976.95	8276.50
5.	May	11676.51	11203.45
6.	June	10448.57	9723.56
7.	July	8793.89	8634.33
8.	August	8167.78	9248.12
9.	September	7334.78	6748.87
10.	October	6189.65	6206.80
11.	November	5337.06	5776.35
12.	December	4518.30	5178.67

The analysis indicates that marketing of apples through e-NAM generally results in higher prices for most months, reflecting the platform's potential to offer better market access and pricing for sellers. However, there are exceptions in certain months where prices without

e-NAM are higher, suggesting market fluctuations and other external factors may influence pricing. Overall, e-NAM appears to be a beneficial platform for achieving higher average prices in the apple market.

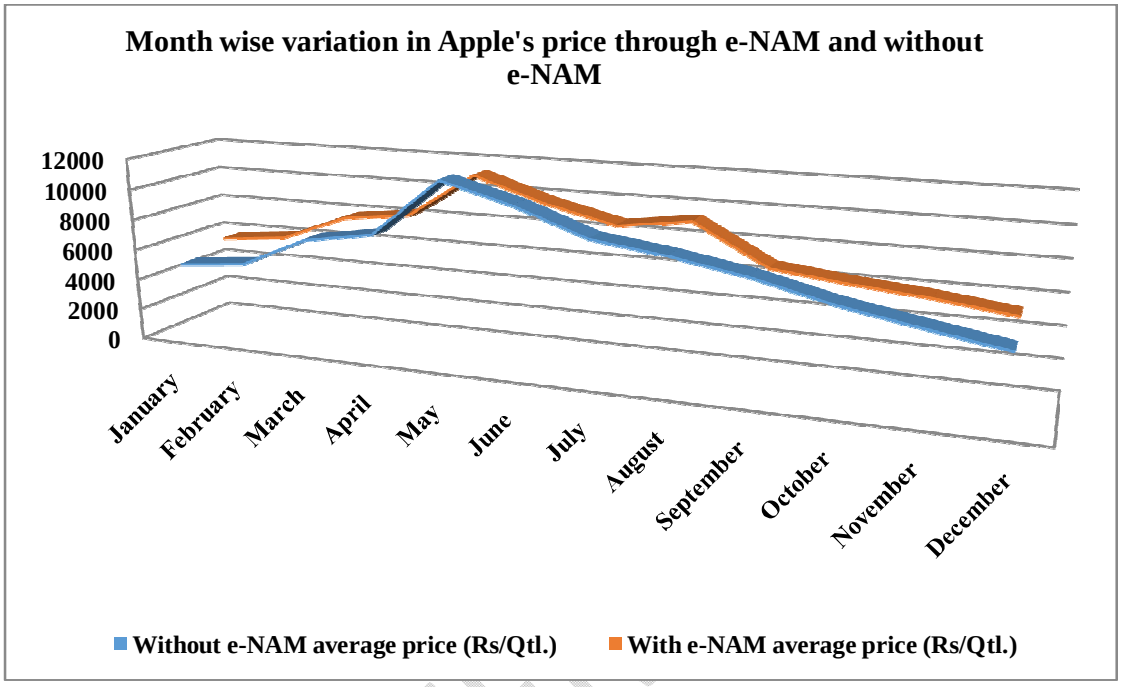

Figure No.2 Month wise variation in Apple's price through e-NAM and without e-NAM

Conclusion

Using scalogram analysis (i.e., Guttman scale), it was determined that the level of awareness about e-NAM was quite low. Only 55per cent were aware of the platform, while 45per cent were not. Of those surveyed, 44.17per cent had limited knowledge, and 55.83per cent had none. Only 40 per cent knew about the registration procedure, and 31.67per cent were familiar with the licensing process. Additionally, 31.67per cent understood license validity, 31.67per cent knew about online bidding, and 28.33per cent were aware of the highest bidder system. Knowledge about online procurement receipts was at 25%, and only 20.83per cent knew that e-NAM was linked to logistics services.

Traders' constraints on the e-NAM platform. The top concern was dissatisfaction with APMC's grading system. The second major issue was the complexity of e-NAM trading compared to open auctions. Third, traders lacked sufficient training. Fourth, they struggled to purchase produce without manual price inspection. Last-minute bidding, time-consuming

auctions, and limited bidding time ranked fifth, sixth, and seventh, respectively.

Suggestions from the research: Implementing targeted awareness campaigns to educate farmers and traders about the advantages of utilizing e-NAM.Establish local help centers to assist farmers and traders with registration and usage, ensuring they can navigate the system effectively.Improve Grading and Quality Assessment.

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