

Original Research Article

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Impact of Online Agriculture Marketing Policy – e-NAM (electronic National Agriculture Market) on Prices and Arrivals of Agricultural Commodities in Punjab, India

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ABSTRACT

The Govt. of India has created an online trading display place named National Agricultural Market or e-NAM for marketing agricultural commodities. e-NAM accommodates farmers with smooth marketing procedures for their products at a better price than the regular Agricultural Produce Market Committee's (APMC's). Recently new 25 commodities are added to the NAM on 29-08-2020 for trading. Now a total of 175 commodities are available for trade (www.enam.gov.in). This paper make an attempt to analysis of the market profile, status of e-NAM implementation in Mansa APMC of India's Punjab state, and prices of major agricultural commodities prior to and after e-NAM implementation was done. In terms of variation in different commodities prices specially in cotton prices, which was the primary commodity traded in the APMC, before e-NAM was executed in few selected APMC, it was observed that the coefficient of variation was high (11.54%) as compared to the after unification of APMC with e-NAM (10.94%). Increases in cotton post-unification prices are due to more farmers' and traders' participation in the e-NAM system. Though, there is huge possibility for higher price discovery in the e-NAM system if further traders are encouraged to take part and invite aggressive bidding. It may be done by creating awareness and organized training programs for traders and farmers.

Keywords

Agriculture, Online trading, eNAM, APMC, Prices and Arrivals

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Introduction

Until independence, the government's essential worry about agricultural marketing was to hold food prices in control for customers and agro-raw materials in control

for industry (Crawford, 1997). However, after independence, the need to protect farmers' interests and make available them with opportunity prices to increase agricultural commodity output was still felt (Wikipedia, 2020). Recognizing faults such as losses to

farmers in terms of low rates, higher marketing costs, and significant physical losses of goods in the agricultural marketing system suffered by farmers, the administration has implemented a lot of compulsory regulations from time to time to develop a framework for tracking consumer behavior. In India, a rural display is administered by a set of public possessed discount markets set up during the pilgrim period under the APMC Act. The administrative instrument, which is over 100 years of age, presumably, has set up some excellent highlighting rehearses ((planning commission, 2011). Not with standing, because of different administrative instruments and limitations on exchanging farming wares, it is laden with the frameworks' weaknesses. Against this setting, India's Government carried out changes to the division through the Model Act 2003 and APLM Act 2017. The Model Act imagines expulsion of restrictions on the growth of wares, the single duty of market charge, advancement of elective advertising framework, advancement, and ICT. The goal of every one of these endeavors is to get changes, for most of the part, to expel limitations in agrarian exchange and prompt a problematic situation by guaranteeing increasingly more support of traders by utilizing ICT (Dalwai, 2017).

As mentioned about the sophisticated administrative instrument and limitations, the Union Budget 2014-15 proposed the possibility of a bound together normal market stage, propelled on 14 April 2016, a Pan- India electronic exchanging entryway known as National Agriculture Market (e-NAM). It is a virtual market connecting the current APMC *Mandis* electronically with a subject of "one country, one market." e-NAM advances consistency, smoothing out of systems over the incorporated markets, evacuates the data hole among purchasers and dealers, and advances ongoing value disclosure dependent on genuine interest and flexibly in the market.

It gives straightforwardness in the closeout procedure and access to an across the nation market to both the gatherings. The present study was undertaken to analyze the market profile, status of e-NAM implementation in Mansa APMC of India's Punjab state, and prices of major agricultural commodities earlier than and subsequent to e-NAM implementation in Mansa APMC (e-NAM-2018).

Materials and Methods

Selection of market

Select the market, e-NAM transactions of the significant market were recorded and based on the highest e-NAM transactions, APMC Mansa was selected. The significant commodities were cotton, paddy, and wheat.

This research conducted in the New Grain Market *Mandi*, APMC Mansa. The time frame of this study was from November 2019 to June 2020 in APMC Mansa. The e-NAM was introduced in APMC Mansa from 18-March-2018; at the time of the second execution of e-NAM in India, APMC Mansa was interlinked specially with the e-NAM web portal. The study was based on primary as well as secondary data. Primary and secondary data was collected from *mandi* officials and APMC officials, Agmarknet, and e-NAM Portal. The present study was exploratory research. The methods used for data analysis included tabulation in the view of the cited objectives.

They were interpreted by absolute, relative change, average (mean), standard deviation, and variation coefficient.

Results and Discussion

The outcomes and conversation of the examination are introduced below. Based on the objectives in view, the results are shown under the following heads;

To analyze the market profile and the status of e-NAM in Mansa APMC

To analyze the arrival and prices of significant commodities before and after e-NAM implementation in Mansa APMC

Market profile and the status of e-NAM in APMC Mansa

Mansa *Mandi* was established in the year 1956 as a rural market in Mansa district under the control of the district agriculture marketing committee. It is known as the old grain market in Mansa city (Punjab Govt GAZ, 1953). In 1960-61, the market was regulated under APMC. Government of Punjab gazette 8-November-1963, *Mandi* is notified as a regulated market under Punjab Agricultural Produce Market Act 1961 (Department of Agricultural and Farmers Welfare, 2019). Under this *Mandi*, it has two sub-market yards.

At Sardulgarh-starting from the old bridge of river Ghagar towards the new Ghagar Bridge and the west wing of the village, Sardulgarh.

At Bhikhi-starting from the crossing of Mansa-Budhalada road towards the police station Bhikhi and the north side of village Bhikhi and then from the police station to Government High School. Punjab Government has implemented e-NAM in 19 APMCs of the State (enam.gov.in). The Mansa *Mandi* profile in terms of year of establishment, class of *Mandi*, notified area, notified commodities being traded, the strength of different functionaries, and warehouse facilities inside the *Mandi* are presented in Table 1.

Implementation of e-NAM in APMC Mansa

To requisite infrastructure for the development of e-NAM *Mandis* in the State, the Central

Government provides financial assistance of 75 lakhs per *Mandi* (sfacindia). Out of total assistance, up to Rs. 30 lakhs per market is for IT and quality assaying lab-related infrastructure development, up to Rs.40 lakhs is for the development of sorting/grading and packaging facility, and the remaining Rs.5 lakhs are for compost unit development

The profile of e-NAM in APMC Mansa in terms of establishment, phase of implementation and present infrastructure available in APMC Mansa are shown in Table 2.

The necessary facilities in the Mansa APMC, such as electronic bidding, display board, POS machine, weight machine, assaying labs, are necessary for the successful implementation of e-NAM.

The APMC Mansa found that it does not have any necessary facilities integrated with the e-NAM portal. However, there were missing links among the APMC Mansa concerning the integration of weightment and warehouses with the e-NAM portal. These missing links are limiting the online trade in the *Mandi*.

Table 3 shows the implemented e-NAM infrastructure's status in the electronic gate pass, bidding and display board.

Comparison between recommended and existing e-NAM structure

Small Farmers Agri-business Consortium has prescribed requisite human resources and infrastructure for the execution of e-NAM.

Hence, to ascertain whether the APMC Mansa has the infrastructure or not, a comparison was made, and the results of the same are presented in Table 4. It was revealed from the results presented in the table that most of the markets did not have requisite infrastructure

except for computers and printers. However, the market had the requisite internet speed required for online trading.

Further, a sufficient number of moisture meters and weighing scales were available in the *mandi*, and they are not using the trading the commodity, respectively. The *mandi* had quality testing equipment and sampling equipment.

Hence, it suggested that gradually the market should have the requisite infrastructure as recommended by SFAC, but it was not functioning properly under e-NAM of APMC Mansa.

Stakeholders registered

E-NAM is a platform that is expected to provide a win-win solution to all the stakeholders are connected with the graceful chain of agricultural produce.

In Punjab, every Market Committee has proactively registered farmers with the necessary details like name, village, mobile number, bank details, producer company details.(Primary observation in APMC Mansa).

All the commission agents and traders of the e-NAM *Mandi* of APMC Mansa have been linked to e-NAM. Punjab state did not convert the license of commission agents/traders into a unified license. If the license is unified, traders/commission agents can perform inter-*mandi* trade with a single license.

The bank-related information has been kept optional. Some of the farmers and Farmer Producer Organizations have shown reluctance to share their bank details and participate (Primary discussion with the APMC Mansa officer). The details of stakeholder registration are given in table 5

and table 6. It was revealed from the table that a maximum number of farmers were registered in the state Punjab and APMC Mansa under the e-NAM. A similar trend was recorded for other market functions.

Percentage of commodity traded within Mandi under e-NAM Platform in New Grain Market Mansa APMC

The respective percentage share calculated based on the arrival of commodities (provided by these ller during Gate-Entry) and traded commodity (up to the

creation of sale agreement). It also depicts that APMC Mansa in this *mandi* trading is not performing under e-NAM. Data was collected from a farmer after the produce sale to retailers and the Cotton Corporation of India. Data was updated to the e-NAM portal as 100 percent of the notified commodity's online trading within the *mandi* through e-NAM.

Bidding performance

A scientific method of price discovery, transparency, and competition is one of the objectives of e-NAM. It may not be achieved all the way through the manual method of bidding operation. The *mandi's* trade efficiency is assessed based on the lots managed by the markets even during peak season.

As per the SFAC recommendation, bidding is necessary for the purchase of any product, but the new grain market, Mansa, has not started any bidding activities.

They are just updating the data without assessing the lot bidding under the e-NAM. In this market, *Arhtiyas*, commission agents, and intermediaries play a significant role in selling the farm produce.

Table.1 Implementation of e-NAM APMC Mansa

S. No.	Particulars	Marketing committee Mansa (Punjab state Marketing Board)
		New Grain market
1	District	Mansa
2	Year of Establishment	1956
3	Notified Area(No. of <i>Gram Panchayat</i>)	73
4	Notified Commodities	Rice, Cotton
5	Godowns(Number)	NA
6	Godowns (Capacity)in MT	NA
7	No. of Traders	69
8	No. of Commission Agents	521
9	Officers/Staff	17
10	Staff(Outsourced)	5

Source: Data Collected from APMC Mansa Note: NA - Not Available

Table.2 Status of manpower and infrastructure availability e-NAM in APMC Mansa

S. No.	Particulars	Units	Marketing committee Mansa (Punjab state Marketing Board)
			New grain market
1	e-NAM Introduced	Date	18-March-2018
2	NAM Bidding Hall	Number	NA
3	e-Gate entry Facility	Number	NA
4	e-Gate entry at Display Shed	Number	NA
5	Net Connection-e NAM Hall	Mbps	NA
6	Net Connection Gate Entry	Mbps	NA
7	Generator	Number	1
8	Electronic Weighing	Number	NA
9	POS Machine	Number	NA
10	Data Entry Operator	Number	3
11	IT Staff	Numbers	1
12	<i>Mandi</i> Analyst	Numbers	1
13	Grading Staff	Numbers	NA

Source: Respective of Mandi officer and primary observation Note: NA - Not Available

Table.3 Status of implemented e NAM infrastructure in sample *Mandi*

S. No.	Particulars	Marketing committee Mansa (Punjab state Marketing Board)
		New grain market
1	Electronic Gate Passes	Yes
2	Electronic Bidding	No
3	Electronic Display	No
4	Exit Pass Generated	No
5	e-Agreement	Yes
6	Generation of Sale Receipt	Yes
7	Assaying Lab	Yes
8	Announcing highest bid price to the farmer by SMS	No
9	Integration of weighment with e-NAM portal	No
10	Online Settlement	No
11	Warehouse Integration	No

Source: Primary observation by research investigator & information collected from the respective farmer, trader, and mandi officers.

Table.4 SFAC recommended existing manpower and infrastructure in sample *mandi*

Particulars	Description	Required Unit/ No.	Available Unit/No in APMC Mansa
Gate entry	Computer	2	0
	Printer	2	0
	Handhold device	2	0
	Computer Operator	2	0
	Internet	5-6 MBPS	0
Quality testing lab	Building for lab	1	1
	Lab Equipment		
	a) Moisture Meter	2	0
	b) Weighing Scale	2	0
	c) Computer	1	1
	d) Printer	1	1
	e) Other ancillary equipment required for quality testing	As for needed	0
	f) Sampling Equipment	As for needed	0
	g) Sampler	2	0
h) Lab Analyst	2	0	
	Internet	5-6 MBPS	5-6 MBPS
E-auction	e-Auction Hall	1	1
	Projector/LCD Screen	1	1
	Computer for administration	1	1
	Computer for users	5	4
	Internet	5-6 MBPS	5-6 MBPS
	Human resources/Computer Operator	5	3
Weight bridge	Electronic Weighbridge	1	5
	Weigh Scale	-	0
Exist gate	Computer	2	0
	Printer	2	0
	Computer Operator	2	0
	Internet	5-6 MBPS	0
Power backup	Generator	1	1
	UPS	As for needed	0

Table.5 Overall Stakeholders' registration in e-NAM Mandi in Punjab, till 1 May 2020

S. No.	Punjab	Stake Holder's			
		Farmer's	FPOs	Trader's	Commission Agent
1	Stake holder in e-NAM	2,10,438	1	1,385	5,256

Source: *enam.gov.in*

Table.6 Stakeholders' registration in e-NAM APMC Mandi Mansa, till 1 May 2020

S. No.	Punjab Mandi Board (PMB)	Stake Holder's			
		Farmer's	FPOs	Trader's	Commission Agent
1	New Grain Market Mansa	34,838	0	69	521

Source: *Primary data from APMC Mansa*

Table.7 Arrivals and price of cotton Before E-NAM

S. No.	Year	Month	Arrivals (Tonnes)	Minimum Price(Rs/Quintal)	Maximum Price(Rs/Quintal)	Modal Price(Rs/Quintal)
1	2017	February	1840.00	6225	4900	5300
2	2017	March	1221.00	6340	5100	5500
3	2017	April	10.00	6115	5250	5500
4	2017	May	210	6100	5100	5500
5	2017	June	75*	6000	5200	5600
6	2017	August	46*	4721	3925	4300
7	2017	September	390	4750	3700	4300
8	2017	October	60202	4850	3935	4100
9	2017	November	156	4865	3800	4500
10	2017	December	695	5420	4100	4600
11	2018	January	1003.7	5415	4200	4500
12	2018	March**	1482	5020	3800	4900

Source: **Data from APMC Mansa official and agmarknet.gov.in,*

Note: ***Up to 18-March-2018*

Table.8 Arrivals and price of cotton after E-NAM

S. No.	Year	Month	Arrivals(Tonnes)	Minimum Price(Rs/Quintal)	Maximum Price(Rs/Quintal)	Modal Price(Rs/Quintal)
1	2018	July	7.7	5470	5470	5470
2	2018	September	1702.2	5220	5630	5430
3	2018	October	8350	5115	5355	5250
4	2018	November	5030	5360	5575	5450
5	2018	December	6714.1	5300	5475	5400
6	2019	January	8230	5355	5490	5400
7	2019	March	4270	5995	6125	6040
8	2019	April	3055.1	6295	6320	6300
9	2019	September	520.3	5661	5721	5500
10	2019	October	6630.8	5000	5230	5100
11	2019	November	10338.8	5135	5275	5160
12	2019	December	9324.5	5000	5450	5300

Source: *agmarknet.gov.in, *Data, from 19 March 2018 onwards*

Analyses of arrival and prices of significant commodities before and after E-NAM in Mansa APMC

Appearance and costs of significant products previously, then after the fact the Unification of selected APMC with the e-NAM platform have been analyzed from the collected data. Month wise arrival and prices for the year from 2017-18 to 2018-19 were analyzed.

Mansa APMC

In APMC Mansa, the article of trade that was brought by the farmers to the market was cotton.

Arrivals and prices of cotton have been analyzed, and it was identified that the total arrival of cotton in APMC Mansa increased over the year, which can be seen from table 7. When APMC was unified with the e-NAM platform in March 2018, there was a slight decrease in the arrivals compared to 2017-18.

Before e-NAM

Average arrivals (tonnes) 5610.892 Average
Modal price (Rs. /Qtl) 4883.333

Standard Deviation (tonnes) 17202.76
Standard deviation (Rs. /Qtl) 563.8074

Coefficient of variance (%) 306.595
Coefficient of variance (%) 11.54554

After unification with e-NAM

Average arrivals (tonnes) 5347.792 Average
Modal price (Rs. /Qtl) 5483.333

Standard Deviation (tonnes) 3479.659294
Standard deviation (Rs. /Qtl) 348.3293

Coefficient of variance (%) 65.0672186
Coefficient of variance (%) 6.352511

Changes after unification with e-NAM

Absolute change (tonnes) -263.1 Absolute
change (Rs./Qtl) 600

Relatively change (%) 4.689 Relatively
change (%) 10.94225. The arrival of cotton in Mansa APMC (Table 8) have analyzed and found an absolute change of -263.1 tonnes and a comparative change of 4.689 percent after the Unification of this APMC with the e-NAM system. It may be due to the detail that more sellers and traders participate post-unification of APMC than pre-unification. However, regarding the variation in the arrivals, it was identified that the coefficient of variation was more in the case of pre-unification with 306.595 percent of CV compared to post-unification of e-NAM with 65.06 percent.

The highest percentage of CV pre-unification was a considerable variation in the monthly arrival of cotton to the APMC.

Regarding the monthly modal prices of cotton in Mansa APMC was presented in table 7 and table 8. It can be seen from the table that there was an increase in the average modal price of cotton by Rs. 600 per quintal after implementation of e-NAM with this APMC and showing a comparative change of 10.94 percent over the pre-unification prices.

In terms of deviation in prices, before e-NAM was implemented in the selected APMC, it was observed that the coefficient of variation was more (11.54 %) compared to the Unification of APMC with e-NAM (10.94 %). An increase in the prices of cotton post-unification may be due to more farmers' and traders' participation in the e-NAM system. Helping e-NAM sellers realized high prices. However, there is still scope for higher price discovery in the e-NAM system if more traders are encouraged to participate and invite aggressive bidding. It may be done by creating

awareness and organized training Programmes for the traders, the functions and benefits of the e-NAM system.

In the Mansa APMC, the commodity that was brought by the farmers and traders for trading in the e-NAM system was cotton. So prices and arrivals of cotton were analyzed before and after the unification of e-NAM with the APMC. It was found that the significant commodity brought to the APMC by the sellers for sale in the e-NAM auction was a single commodity, i.e., cotton. The number of traders and farmers registered with the APMC was less during APMC Mansa's post-unification with e-NAM. The staffing pattern and the staff's strength in the selected APMC were very few compared to the government guideline given for the APMCs. It was observed that APMC Mansa had fixed the market charges. In the selected APMC, 1 percent of the market fee has been fixed for cotton. After the monthly arrival of cotton pre and post-unification of e-NAM in the APMC has been analyzed, it was found that there existed an absolute negative change and relative change of -263.1 tonnes and 4.689 percent, respectively. It has also been seen that there was a change in the modal price of cotton after the unification of the selected APMC with the e-NAM system. The absolute change and relative change were found to be Rs—600 per quintal and 10.94 percent, respectively.

Regarding the variation in terms of arrival, it was found that the coefficient of variation was more in of pre-unification in the selected APMC with 306.59 percent CV compared to post-unification of e-NAM with 65.06 percent CV respectively. Whereas in case of prices, it was 11.54 percent CV pre-unification and 6.35 percent CV post-unification APMC. However, the highest percentage of CV pre-unification was a considerable variation in the monthly arrival of cotton to the APMC. Since, largely

respondents were ranging from the average age group of 45 years, indicated that sample distribution was mostly taken the middle age lot, resulting from observing an enthusiastic and enlarged response to the research study's various objectives, as were responded by the sample respondents during the scheduling. As the middle age, farmers were slanted to analyze and learn different parts of the electronic method of National Agriculture Marketing perspectives.

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