

Performance of eNAM in Rajasthan

—A CASE STUDY



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**“Focusing on Implementation of eNAM, Farmers Perception,
Challenges Effect of eNAM on price realization and
other Stakeholders response”**

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December, 2019



CCS National Institute of Agricultural Marketing

(An Autonomous Organization of Ministry of Agriculture and Farmers' Welfare, GoI)

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ISBN: 978-81-943252-2-2

Printed at:

Thesis Centre

Showroom No. 5, Narayan Singh Road,

Near Teen Murti Circle, Jaipur, Rajasthan.

Published by:

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(An Autonomous Organization of Ministry of Agriculture and Farmers' Welfare, GoI)

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Foreword

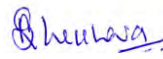
Agriculture is an important sector from the point of Food Security, Nutritional Security and Income Security. It is also important from the point of equity as half of our population depends on Agriculture. Still, Agriculture contributes only around 14% of the GDP of the country. Hence, there is lot of scope for increasing contribution of Agriculture by raising income of the farmers.

Agricultural Marketing plays important role in enhancing the income of farmers. The time and place of sale, price obtained, payment procedure, weighment are important in marketing process. In traditional markets, the factors are in favour of buyers rather than farmers.

Introduction of eNAM by Ministry of Agriculture & Farmers Welfare is a game changer in Agricultural Marketing. eNAM ensures proper weighment, reward for quality, competitive bidding, transparent marketing process, instant payment and linkage with warehouse and logistics. Hence, it is important to ensure that eNAM is implemented in letter and spirit and the benefit goes to farmer.

The present research initiated by CCS NIAM aims at understanding the process of operationalizing eNAM, identification of weak areas and suggesting the solutions. This work of Mr. Sathyendra Kumar and team has examined all the dimensions of eNAM implementation and provided implementable solutions. The team deserves compliments.

I hope this study would make significant contribution for strengthening implementation of eNAM ultimately benefitting farmers.


(Dr. P. Chandra Shekara)



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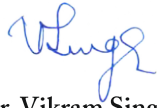
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Preface

Agriculture is the largest livelihood provider in rural India, with 14 percent contribution in GDP. However, distressed agriculture with 2.9 percent growth rate can't be enough to help India becoming 5 trillion economy. Towards this endeavour sustainable agriculture, in terms of food security, income security, inclusive growth, sustainable natural resource management and biodiversity protection, are the essentials for holistic development of the agrarian economy. As of now, Indian agriculture and allied activities have witnessed a successful growth in terms of production of agricultural commodities through green revolution, white revolution, yellow revolution and blue revolution. However, the sector faces problems in the marketing activities of agricultural produce.

Today's agricultural marketing undergoes a series of exchanges in the entire supply chain from farmer to consumer and thereby increasing cost for consumer and reduced farmer's share in consumer's rupee. Even with the number of initiatives and programmes taken up for agricultural marketing, farmers are not able to reap the advantages of the schemes to realize right prices of their commodity.

To answer some of these problems, Government of India proposed an idea of unified common market platform and started a Pan-India electronic trading portal known as National Agriculture Market (eNAM) in 2016. In order to understand the performance of eNAM in Rajasthan, CCS NIAM initiated a research study with a focussed objective to understand farmers' perception, challenges, effect of eNAM on price realization by farmers and perception of eNAM by other stakeholders such as Government officials, traders and commission agents covered in the study. The outcome of the study is very interesting and suggestions and recommendations may be helpful for policy maker to revise and review the strategy for effective implementation of eNAM.


Dr. Vikram Singh

Acknowledgment

It has been an intense journey of more than ten months, since I initiated the proposal of “*Performance of eNAM in Rajasthan - A Case Study*” to Director General CCS NIAM, Jaipur. The Research Team has itself undergone pulsating new learnings on eNAM, in its deliberations through these ten months. For all concerned with the research team, it has been a sail up the positive learning curve, beginning with status of Agricultural Marketing System in the country, benefits of online marketing system and impression of farmers and other stakeholders on eNAM.

I finally sit down, pensive, to thank everyone on behalf of the research team as also myself, for their support for come out with this small study.

If there is only a person, whom, the research team in general and me in particular, would like to thank for providing both guidance and freedom to work on this research study, it would be Dr. P Chandra Shekara, Director General, CCS National Institute of Agricultural Marketing, Jaipur. It would be difficult to keep sentiments at bay when thanking him for his leadership and personal counsel to the research team.

On behalf of the research team and personally would like to express my deepest gratitude to Professor S.S. Acharya, Former CACP Chairman, an author and an eminent academician for his valuable insights about the Agricultural Marketing and eNAM in India.

The research team would also like to thank Shri Tara Chand Meena, Director, Dr. Keshar Singh, Dy. Director & Nodal Officer of eNAM Rajasthan and Shri T.R. Meena, Dy. Director, serving in the Department of Agricultural Marketing, Government of Rajasthan. The research team thanks, Shri Shiv Singh Bhati, Mandi Secretary, Sri Ganga Nagar (Grain), Shri Ram Singh Sisodiya & Smt. Kajal, Mandi Secretary's, Jodhpur (Grain), Shri Om Prakash Choudhary, Mandi

Secretary, Sri Madhopur, Shri Deewakar Dhadhich, Mandi Secretary, Ramganj Mandi, Shri Rajendra Kumar, Mandi Secretary, Nokha, Shri Kranti Kumar Meena, Mandi Secretary, Deoli and Smt. Mamta Gupta, Mandi Secretary, Mandawari. Each of them has been a steady and purposeful supporter during the field survey.

On behalf of the research team and personally would like to acknowledge Dr. Vikram Singh, Dean, PGDM (ABM), CCS National Institute of Agricultural Marketing, Jaipur. He has continuously nurtured it by providing total support, guidance and hand holding. The research team remains obliged to him for the opportunity given and the mentorship provided. I personally thank Dr. Irina Garg, (Principal Commissioners of Income Tax & Former Director General, CCS NIAM) to give me a space to work on present study.

The research team would also like to thank all the faculty and staff members of CCS National Institute of Agricultural Marketing, Jaipur also gave the useful insights to research team.

Able and personal support, as one puddled through the wet fields, came from distant Hyderabad & Karnataka. I could rely upon them for any urgent research. I would like to thank personally Dr. K.C. Gummagolmath, Director (Monitoring & Evaluation, MANAGE, Hyderabad), Dr. Lakshmi Murthy, Deputy Director, MANAGE, Hyderabad and Prof. Siddayya (Professor, Department of Agricultural Marketing, Co-Operation & Business Management, UAS, Bengaluru) for their valuable time and efforts and Smt. Poonam Thakur (Agriculture Consultant, Hyderabad) for professional editing.

I wish to record the voluntary and spirited services of Dr. Satish Chandra Pant, Assistant Professor, CCS NIAM, Mr. Ravi Kumar Chandra, State Coordinator of eNAM, Rajasthan & the team of Nagarjuna Fertilizers and Chemicals Limited, Strategic partner of eNAM. who have shouldered the total responsibility and worked diligently and doggedly by treating this task as their own.

I cannot end this unarguably long acknowledgment without recognizing the members of the research team who evinced keen interest and made sharp contributions and unwaveringly provided their mind and time space in helping to conduct this study and prepare policy suggestions to strengthen the eNAM in the country and they deserve special appreciations and thanks.

The research team thanks everyone else who made efforts to contribute to this study. As we submitting this report, I and the research team, trust that the work and policy suggestions would be relevant and will connect the farmers and other stakeholders to eNAM Market and strengthen the existing agriculture value chain in the country.

Jaipur
December, 2019

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Abbreviations

APLM act	Agricultural Produce and Livestock Marketing (Promotion & Facilitation) Act 2017
APMCs	Agricultural Produce Market Committee
ATMA	Agricultural Technology Management Agency
CAs	Comission Agents
DMI	Directorate of Marketing and Inspection
eNAM/e-NAM	Electronic National Agriculture Market
FPCs	Farmer Producer Companies
FPOs	Farmers Producer Organisation
KCC	Kisan Credit Card
KUMS	Krishi Upaj Mandi Samiti
KVKs	Krishi Vigyan Kendras
MANAGE	National Institute of Agricultural Extension Management
NAM	National Agriculture Market
NFCL	Nagarjuna Fertilizers and Chemicals Ltd
NIAM	National Institute of Agricultural Marketing
NWR	Negotiable Warehouse Receipt
ReMS	Rashtriya e-Market Services
RIMMS	Rajasthan Integrated Mandi Management System
SFAC	Small Farmers Agri-business Consortium
SOP	Standard Operation Procedure
UTs	Union Territories
WDRA	Warehouse Development and Regulation Authority

Executive Summary

Agricultural Marketing system in India is governed by a set of public owned wholesale markets, which were established during colonial period under Agricultural Produce Market Committee Act (APMC Act). The regulatory mechanism which is more than 100 years old no doubt, has put in place some of the good marketing practices. However, due to various regulatory mechanism and restrictions on trading of agricultural commodities, fraught with few shortcomings in the systems.

Against this backdrop, Government of India has brought reforms to the sector through Model Act 2003 and APLM Act 2017. The Model Act envisages removal of restriction on movement of commodities, single levy of market fee, promotion of alternative marketing system, promotion of ICT etc. In this backdrop, the Union Budget had proposed in 2014-15, the idea of unified common market platform and launched on 14th April, 2016, a Pan-India electronic trading portal known as National Agriculture Market (eNAM).

In order to understand the performance of eNAM in Rajasthan and farmers' perception, challenges and remedies in implementation of eNAM in the country, a study was carried out by research team of CCS NIAM. The study covered the issues like adequacy of infrastructure, technology adoption and its operations and farmers' participation & challenges faced by them. In addition, effect of eNAM on price realization by farmers and perception of eNAM by other stakeholders were also studied. The study was conducted in selected seven eNAM Mandis in the state viz., Ramganj Mandi, Sri Ganganagar (Grain) mandi, Jodhpur (Grain) mandi, Deoli, Mandawari, Sri Madhopur and Nokha.

Rajasthan is one of the leading states in implementation of eNAM. Prior to implementation of eNAM in Rajasthan, the State had adopted an internet based mandi management system known as Rajasthan Integrated Mandi Management System (RIMMS) and implemented in all 144 Agricultural Produce Market Committees (APMCs) of the state

in 2016. In April 2016, while rolling out eNAM in the country, APMC Ramganj Mandi in Kota district of Rajasthan, was given the status of pilot eNAM mandi and subsequently 10 mandis were integrated in the first phase and 14 mandis in second phase, so far, 25 mandis are connected well with eNAM in the state and within the mandi, inter-mandi and interstate trade for various commodities is taking place in state.

The status of implementation of eNAM in selected mandis was found to be effective for online trading within the mandi and also is integrating the intra mandi and interstate trade process. The eNAM platform in Rajasthan provide a better interface among various stakeholders for effective online trading. Results of the study shows that better price discovery has been achieved through online trading on eNAM platform in the state. eNAM has captures cent percent arrivals of commodities in the market, increase the stakeholder's registrations, average number of bidding per lot is an increase, which indicates growing competition among the buyers resulting better price discovery of commodities in the mandi. Scientific way of assaying also providing effective information to the stakeholders to fix the price for their produce. However, few challenges are identified during the survey includes, edification of online system among the stakeholders, assaying machinery, basic infrastructure, online payment etc., and also need to understand the other facets of the market environment and socio-economic attachment among the farmers, commission agents and traders to take eNAM process in a rational way.

In view of above challenges, a need is felt to develop a scientific method of sensitization to popularize the eNAM among the stakeholders in the state as well as in the country. Suggestions are offered to promote eNAM for benefit of stakeholders in this study.

In addition, the development of technology & infrastructure like, commodity specific uniform assaying machine & laboratory, skilled human resources to operate on technology, integration of warehousing

and weighment facility for online portal and other logistic services are to be place for successful implementation of eNAM in the state.

Furthermore, the states have an obligation to amend APMC Act considerably. In addition, fully automation of marketing system, standard operating procedures (SOP) for the utilization of funds for creating necessary condition in the market, good governance, proper dispute settlement mechanism, administration stability in the mandi etc., would enhance integration of eNAM in the mandi.

To overcome the challenges faced by the farmers and other stakeholders in entire agri-value chain, eNAM has to provide proper solution through holistic development in the marketing system includes, reforms in the state APMC Act, education of the stakeholders, development of necessary infrastructure facilities in the market, institutional support & good governance to address the dispute during the online trade. As farmer is one of the important stake holder in eNAM platform, there is a need to provide proper non-monetary incentive to farmers in terms of creation of awareness along with monetary incentives to brand flagship programme called eNAM.

CHAPTER 1

Introduction

1.1 Overview

In India agricultural marketing is governed by a set of public owned wholesale markets which were established during the colonial period under the APMC Act. The regulatory mechanism, which is more than 100 years old, no doubt, has put in place some good marketing practices. However, due to various regulatory mechanisms and restrictions on trading of agricultural commodities, it is fraught with shortcomings in the systems. Against this backdrop, the Government of India brought reforms to the sector through the Model Act 2003 and APLM Act 2017. The Model Act envisages removal of restrictions on movement of commodities, single levy of market fee, promotion of alternative marketing system, promotion of ICT etc. The objective of all these attempts is to bring in reforms, mainly to remove restrictions in agricultural trade and induce a competitive environment by ensuring more and more participation of traders by leveraging ICT.

In view of the above, to address the complex regulatory mechanism and restrictions, the Union Budget 2014–15 proposed the idea of a unified common market platform, launched on 14th April, 2016, a Pan-India electronic trading portal known as National Agriculture Market (e-NAM). It is a virtual market linking the existing APMC Mandis electronically with a theme of “one nation, one market”. e-NAM promotes uniformity, streamlining of procedures across the integrated markets, removes the information gap between buyers and sellers and promotes real time price discovery based on actual demand and supply in the market. It provides transparency in the auction process and access to a nationwide market to both the parties.

Against this background, the National Agriculture Market was rolled out with the following vision, mission and objectives.

Vision: To promote uniformity in agriculture marketing by streamlining of procedures across the integrated markets, to promote free trade across the states, removing information asymmetry between buyers and sellers and promoting real time price discovery based on actual demand and supply.

Mission: Integration of APMCs across the country through a common online market platform to facilitate pan-India trade in agriculture commodities, providing better price discovery through transparent auction process based on quality of produce and ensure timely online payment.

Objectives of e-NAM:

1. A national e-market platform for transparent sale transactions and price discovery initially in regulated markets. Willing States to accordingly enact suitable provisions in their APMC Act for promotion of e trading by their State Agricultural Marketing Board/APMC.
2. Liberal licensing of traders / buyers and commission agents by State authorities without any pre-condition of physical presence or possession of shop /premises in the market yard.
3. One license for a trader valid across all markets in the State.
4. Harmonisation of quality standards of agricultural produce and provision for assaying (quality testing) infrastructure in every market to enable informed bidding by buyers. Common tradable parameters have so far been developed for 125 commodities.
5. Single point levy of market fees, i.e on the first wholesale purchase from the farmer.
6. Provision of Soil Testing Laboratories in/ or near the selected mandi to facilitate visiting farmers to access this facility in the mandi itself

Features of e-NAM:

e-NAM is the largest e-trading platform for farmers in India. It is envisaged to protect the farmers' as well as consumer's interest in fair

agricultural marketing practices. Many features such as the provision of online trading for better transparency and accountability, assaying facilities for fair prices against quality, online auction for fair and transparent price discovery, weightment integration for accuracy, online payment for right time price realization makes e-NAM superior to the traditional system. In addition, e-NAM Mobile application provides handy information to the stakeholders at any place and time.

The e-NAM Portal helps in providing a single window service in all aspects like commodity arrivals & prices, buy & sell trade offers, provision to respond to trade offers etc. while material flow (agriculture produce) continues to happen through Mandis (markets). An online market reduces transaction costs and helps in overcoming the information asymmetry. It also helps in scientific price discovery through increased participation of traders across the country. A Unified Agriculture Market has its positive impacts on the Institution and physical environment, balanced development across the states, competitiveness, farmer's participation, better price, price transparency, reduction in number of intermediaries and creation of new markets.

1.2 Provisions for e-NAM under Model APLM Act, 2017

In April 2017, the Union Ministry of Agriculture and Farmers Welfare drafted the Model Agricultural Produce and Livestock Marketing (Promotion & Facilitation) Act, 2017. Salient features with respect to e-NAM under the new Model Act are as under-

1. Abolition of fragmentation of market by removing the concept of notified market area within the State/Union Territory (UT), which means, the APLM Act provides for the recognition of a state/UT as a single market.
2. The act advocates the promotion of direct interface between farmers and end users/processors/exporters/bulk-buyers to reduce the price spread thereby bringing advantage to both the parties involved in a trade.

3. Enhancement of Transparency through e-trading in various trade operations and integration of markets across geographies.
4. Provision of single point levy of market fee and unified single trading license across the State/UT to realize cost-effective transactions.
5. Promotion of the national market for agricultural produce through provisioning of inter- state trading license, grading and standardization and quality certification.

1.3 Provision of Requisite Manpower and Infrastructure for e-NAM Mandis

To achieve the desired objective of e-NAM, an action plan for development of Model Mandis has been prepared by Small Farmers Agri-business Consortium (SFAC). The plan is focused on the component of e-marketing, standard process flow and monitoring, which requires state of the art infrastructure. Therefore, SFAC has suggested to all 585 e-NAM Mandis for creation of requisite infrastructure and provision of manpower under e-NAM for which financial support is being provided by SFAC to these Mandis. The details of the requisite manpower and infrastructure provided under this scheme is mentioned in the table 1.1.

1.4 Status of e-NAM in India

With the aim of promoting uniformity in Agricultural Marketing in India, 585 Mandis have been integrated across 16 states and 2 Union Territories. The details of Mandis covered under e-NAM are depicted in the table 1.2 and figure 1.1

Table 1.1: Requisite Manpower and Infrastructure for Mandi under e-NAM

Particulars	Description	Required Unit/ No.
Entry gate	Computer	2
	Printer	2
	Handheld Device	2
	Computer Operator	2
	Internet	5-6 MBPS
Quality Testing Lab	Building For Lab	1
	Lab Equipment	-
	a) Moisture Meter	2
	b) Weighing Scale	2
	c) Computer	1
	d) Printer	1
	e) Other ancillary equipment required for quality testing	As needed
	f) Sampling Equipment	As needed
	g) Sampler	2
	h) Lab Analyst	2
	Internet (5 -6MBPS)	-
e-Auction	Auction Hall	1
	Projector / LCD Screen	1
	Computer for Administration	1
	Computer for users	5
	Internet	5-6 MBPS
	Manpower / Computer operator	5
Weight Bridge	Electronic Weighbridge	1
	Weigh Scale	-
Exit Gate	Computer	2
	Printer	2
	Computer Operator	2
	Internet	5-6 MBPS
Power back up	Generator	1
	UPS	As needed

Source: SFAC, 2017

Table 1.2: e-NAM Markets Across India

Sl. No	State	Total
1	Andhra Pradesh	22
2	Chandigarh	1
3	Chhattisgarh	14
4	Gujarat	79
5	Haryana	54
6	Himachal Pradesh	19
7	Jharkhand	19
8	Madhya Pradesh	58
9	Maharashtra	60
10	Odisha	10
11	Puducherry	2
12	Punjab	19
13	Rajasthan	25
14	Tamil Nadu	23
15	Telangana	47
16	Uttar Pradesh	100
17	Uttarakhand	16
18	West Bengal	17
Total		585

Source: <https://enam.gov.in/NAM/home/mandis.html>

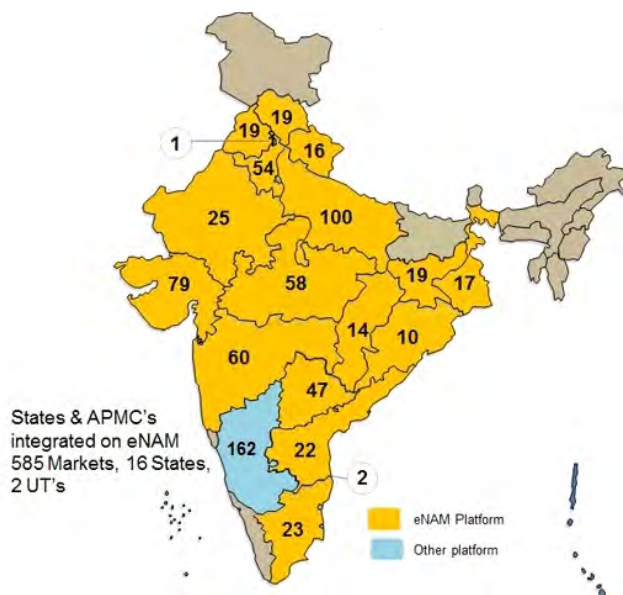


Fig. 1.1: e-NAM Coverage states

Commodities traded under e-NAM: So far, till 31st March, 2019, 2.46 Crore MT of produce worth Rs 66,237 Crore has been traded through e-NAM portal, covering 124 commodities. Table 1.3 shows the breakup of total 124 commodities traded under e-NAM.

Table 1.3: Commodities traded under e-NAM

Commodities	Total Number (till 31st March 2019)	Total Number (from June 2019)
Food Grains / Cereals	19	25
Oilseeds	12	13
Fruits	24	29
Vegetables	36	40
Spices	11	14
Miscellaneous	22	29
Total	124	150

Source: <https://enam.gov.in/web/commodity/commodity-list>

Recently, in June 2019, another 26 commodities have been added to the e-NAM platform and thus a total of 50 commodities are being traded under e-NAM.

1.5 Status of e-NAM in Rajasthan

In 2016, while rolling out e-NAM in India, Ramganj Mandi (Kota) was given the status of a pilot e-NAM Mandi in Rajasthan and subsequently 10 more Mandis were integrated in the first phase and 14 Mandis in second phase. Prior to implementation of e-NAM in Rajasthan, the State had already adopted an internet based Mandi system i.e. Rajasthan Integrated Mandi Management System (RIMMS) and implemented in all 144 Agricultural Produce Market Committees (APMCs) of the state in 2016.

So far, 25 Mandis of Rajasthan are connected with e-NAM and intra-mandi, inter-mandi and interstate trade for various commodities is taking place. In the case of inter-state trade, eight commodities have been traded with six states namely Gujarat, Maharashtra, Haryana, Madhya Pradesh, Uttar Pradesh and Andhra Pradesh (till 31st March, 2019). The present status of e-NAM in Rajasthan is stated in the Table 1.4.

Table 1.4: Status of e-NAM Mandis in Rajasthan till 31st March, 2019

Particulars	Units	Status
Mandis Integrated	Number	25
Lots Arrived/Gate entry	Number	1579000
Quantity Arrived	Lakh Metric tons (MT)	34.9
Lots Assayed	Number	501 899
Lots Traded	Number	611683
Quantity Traded	Lakh Metric tons (MT)	10.1
Traded Value	Crores	3464.94
e-Payments	Number	3650
Value of e -Payment	Lakhs	935
Farmers Participated in e -Payment	Number	2252
Traders Participated in e -Payment	Numbers	709
Farmers Registered	Number	1192742
Traders registered/Unified License	Number	11642
Commission Agents registered	Number	5120
Commodities being Traded	Number	55
FPO/FPC Registered	Number	60
FPO/FPC involved in Trade	Number	5
Quantity of commodity traded by FPOs/FPCs	Quintal	258
Value of commodity traded by FPOs/FPCs	Lakhs	8.2
Inter Mandi Transactions	Number	78 (460 Qtl, 10.62 Lakhs)
Inter State Transactions	Number	6 (31.1 Qtl, 1.43 Lakhs)

Source: <https://enam.gov.in>

Progress of eNAM in terms of lots arrival, assaying, e-payment, stakeholder's registration etc. is depicted in the table 1.5. It shows that arrival of lots, traded lots, assayed lots, e-payment and farmer's registration are continuously growing in the three consecutive years which is a positive signal towards acceptance of eNAM among stakeholders.

Table 1.5: Progress of eNAM in Rajasthan from 2016-17 to 2018-19

Item	Units	2016 -17	2017 -18	2018 -19
Lots arrived	No. in lakh	1.29	7.2	7.27
Arrived Qty	lakh MT	5.72	13.22	16
Traded Lots	No. in lakh	0.12	2.48	3.52
Assaying Lots	No. in lakh	0.01	2.08	2.93
Traded Qty	lakh MT	0.14	4.02	5.9
e-Payment	Number	-	1386	2264
e-Payment	lakhs	-	314.84	619.69
Farmer Registration	lakhs	0.8	4.81	6.32
Traders & CA Registration	Number	14,770	1,695	297

Source: <https://enam.gov.in>

1.6 Brief Review of Literature

The study on e-NAM by MANAGE (2018) conducted in Telangana suggested adoption of innovative ways to facilitate the process smoothly during the peak season by issuing of e-gate passes, utilization of bidding/tender hall, hand-held devices etc. The study also suggested use of standard practices during the bidding process for uniformity and convenience. The uniformity in the bidding process is suggested in the wake of different processes followed by different states. For eg. Karnataka follows closed tender system, while, Rajasthan follows open tender method. The study advocates about the uses of closed bidding to have a transparent approach for better price realization and thus increased income to the farmers. Moreover, the study also suggests the role of e-NAM in the integration of grading and assaying, weighment, amalgamation of logistics, banks and Negotiable Warehouse Receipt (NWR) for the benefit of farmer's leading to fair price discovery.

In a similar study on e-NAM by **Reddy (2018)**, undertaken in Karnataka examines experiences of e- markets with an objective to suggest improvements to e-NAM. Results of the study indicated that e-markets are inducing competition and minimizing the collusion among traders resulting in increased farmers price and market arrivals. It also facilitates competitive bidding and same day payments to farmers. However, it was found that, there was some resistance among the traders and commission agents as they felt that benefits of physical transactions are better than e-auction. In addition, there was a fear of accountability during the online transactions. The study compares the differences in market processes using a process stakeholder analysis framework for comparing traditional markets with e- markets of Karnataka. The study concluded that for the success of e-markets, interests of all the participants (including farmers, traders and commission agents) have to be taken into account for better results.

Yadav et. al. (2017), concluded that an efficient marketing system requires good governance, policy support, better infrastructure and services including market information, assaying, networking etc. Hence, it was suggested that the e-NAM platform can be further strengthened by encompassing these factors into the system.

Chand R. (2016), brought out various issues in the “Commentary on 'e-Platform for National Agriculture Market' portrays success of e-NAM including reforms undertaken for Agricultural Markets nationwide”. It reveals that the full benefits from e-NAM can only be realized when a single license for trading is valid across the state and then the whole nation so that farmers can get the advantage of the competitive environment and sell their produce anywhere in the country for price realization. Four important areas which were not part of e-NAM which can be included in e-NAM discussed in the commentary are: (a) Direct sale by farmers to buyers, processors, or, contract marketing without bringing the produce to the mandi and selling from farmers own field or farm (b) Establishment of private markets with treatment at par with APMC. (c) Removal of legal barriers to entry of organized and modern capital and investments into agricultural marketing. This will require

tweaking the Essential Commodities Act to draw distinction between genuine service providers and black marketers/hoarders; and (d) Rationalization of market fee, commission charges, cess and taxes and development charges to make farmers realize that e-NAM is really doing good for them.

Dey Kushankur (2016), in his study gave an insight on 'National Agriculture Market: Roll-out Rationale and Ramifications. It portrays the essentiality of improvisations needed in the National Agriculture Market by appointing diverse and discursive service providers for various domains. This insight, deals with benefits of a negotiated system in trading avenue and associated services in terms of price and quality information of traded commodities which may not accrue to small and marginal farmers. It also says that there should be greater harmonization between the quality standards of agricultural produce and infrastructure required for assaying the produce properly in every market which will enable the buyers about authenticity of agricultural produce. Further, a provision of soil testing laboratories can enable farmers access the soil testing facility that might impact input use efficiency, soil fertility and crop productivity. The SFAC has appointed Nagarjuna Fertilizers and Chemicals as a strategic partner which could also offer customised services to concerned APMCs and oversee the integration of those APMCs with the demutualised electronic spot trading portal.

According to Dey Kushankur (2015), in a study on how Public-Private Partnership (PPP) can embrace agri-value chain management, Agri-business value chain is essential from production to procurement and distribution to consumption to complement a diverse group of agents such as resource provider/supplier, transporter, producer, processor, distributor and markets.

FAO (2005), study on common agriculture market reveals that the agriculture market is dominated by rural based primary markets that meet local demand, secondary markets demand and wholesale and retail market demand. These markets are located generally far from most of the villages and hence, to reach these distant places is quite a tedious and

costly affair for the small and medium farmers. As a result, they find it economical to sell their produce to the intermediaries which fetches a lower prices to the farmers' produce. Intermediaries work out a margin for themselves and escalate the cost in the next phase and it is the farmer (being the first seller) who bears the brunt of the ultimate cost. On the other hand, the consumer is at the receiving end. Focusing on the performance of eNAM in Rajasthan in terms of operationalization and implementation, the following objectives were considered to evaluate the existing performance of eNAM so that gaps could be identified and communicated to the state eNAM officials for better and effective implementation of the scheme.

1.7 Objectives of the study

1. To examine the status of implementation of e-NAM in terms of technology adoption, operation and infrastructure creation in selected mandis.
2. To study the effect of e-NAM on price received by the farmers in the selected APMCs in Rajasthan.
3. To study the stakeholder perception about operation and implementation and benefits of e-NAM in selected mandis.
4. To prepare sensitization methods to create awareness among different stakeholders of e-NAM.
5. To suggest appropriate policy measures to overcome the problems faced by the stakeholders.

1.8 Importance of the Study

The study aims at identifying the qualitative needs and requirements of farmers, traders, mandi secretaries involved in the process and also to come out with the perceptions of the stakeholders in the functioning of e-NAM. The outcome of the study is expected to give a direction or advisory to policy makers, thinkers and the government in the implementation and operationalization of e-NAM in a better way. The study bridges the gap between what is provided and what is needed for operationalization and expansion of e-NAM in the state of Rajasthan as well as in the country.

1.9 Research Methodology

The study is based on primary as well as secondary data. Primary data is collected from the stakeholders involved in e-NAM mandi such as Farmers, Traders, Commission Agents and Mandi officials and requisite secondary data is collected from Rajasthan Agricultural Marketing Board, e-NAM website, information from strategic partner (Nagarjuna Fertilizers and Chemicals Limited.) and other published sources.

Research Design: Exploratory research design was used to understand the effectiveness and performance of the eNAM in the state of Rajasthan.

Sample Design: The study focuses on Performance of eNAM in Rajasthan, where 25 regulated markets have been covered under e-NAM. Seven markets were selected giving due representation to Super Class i.e. “SA”, A Class, B Class and C Class mandis. Views of officers of Rajasthan State Agricultural Marketing Board were obtained in the selection of markets in order to ascertain the constraints and merits of implementation of e-NAM. The selected markets also encompass the best performing market (Ramganj Mandi) and poor performing markets (Sri Madhopur). Figure 1.2 shows the location of selected Mandis in Rajasthan.

The outcome is based on the observations and information collected from the selected mandis. 136 Farmers & FPOs/FPCs and 111 Traders cum Commission Agents are the actual sample covered during the study. The detail of sampling procedure is given in table 1.6.

Research Instruments: Open and close ended questionnaire was used as a research tool to collect the required information to fulfill the objectives of the research study; In addition, focus group interview was also conducted for getting valuable insights of the stakeholders.

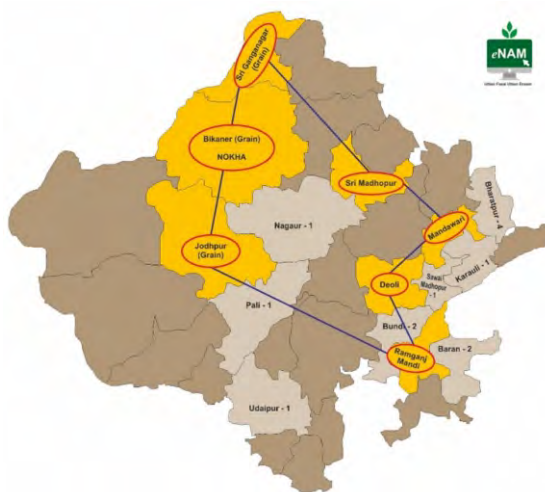


Fig. 1.2: Location of the Markets selected for the study

Table 1.6: Stakeholder sample of Selected Mandis

Sl.No.	KUMS	e-NAM lin kage	Market Class	Farmer& FPOs/FPCs	Trader cum Commission Agents
1.	Ramganj Mandi	Apr. 2016	SA	28	25
2.	Sri Ganganagar (Grain)	Feb. 2017	SA	20	15
3.	Jodhpur (Grain)	Feb. 2017	SA	15	17
4.	Deoli	Feb. 2017	B	23	15
5.	Mandawari	Feb. 2017	C	15	12
6.	Srimadhopur	Feb. 2017	SA	15	13
7.	Nokha	Feb. 2017	SA	20	14
Total				136	111

Analytical Tools and techniques

1. Garrett's ranking technique

To find out the most significant problem/factors, which influence the functioning of e-NAM, Garrett's ranking technique was used. As per this method, respondents have been asked to assign the rank for all

problems/factors and the outcomes of such ranking have been converted into score value with the help of the following formula:

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

Where,

R_{ij} = Rank given for the i^{th} variable by j^{th} respondents,

N_j = Number of variable ranked by j^{th} respondents.

With the help of Garrett's table, the percent position estimated is converted into scores. Then for each factor, the scores of each individual are added and then total value of scores and mean value of score is calculated. The factor having highest mean value is considered to be the most important factor.

2. **Nominal prices of the commodity:** Actual (observed) prices received by the farmer
3. **Real prices:** Nominal prices adjusted by the rate of inflation

$$\text{Real price of commodity} = \frac{\text{Nominal price of the commodity}}{\text{Whole sale price index of the commodity}} \times 100$$

1.10 Limitations of the Study

The study is confined to the state of Rajasthan and seven e-NAM mandis namely Ramganjmandi (Kota), Sri Ganganagar, Jodhpur, Nokha (Bikaner), Deoli (Tonk), Mandawari (Dausa) and Srimadhampur (Sikar) were selected for the study. The results are based on the personal observations and information gathered from stakeholders such as Traders, Commission Agents, Farmers and Mandi Secretaries involved in selected e-NAM mandis.

The very limitation of the study is the location specific & commodity specific analysis; its outcome to some extent may not help in suggesting uniform policy measures across the country. However, the findings of the study are expected to have practical utility with regard to Rajasthan state.

CHAPTER 2

Status of Implementation of eNAM

2.1 Profile of Selected Mandis

Selected Mandis were established under Rajasthan Agricultural Produce Market Act 1961. These markets are classified in four segments based on the annual income from mandi fee (in Rupees). Rajasthan Government has implemented e-NAM in 25 mandis of the state. The profile of the selected mandis in terms of year of establishment, class of mandi, notified area, notified commodities being traded, strength of different functionaries, warehouse facilities inside the mandis is presented in Table 2.1.

2.2 Implementation of e-NAM in Selected Mandis

In order to facilitate the requisite infrastructure for development of e-NAM mandis in the state, financial assistance of 75 lakhs per mandi is provided by the Central Government. 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 development of sorting/grading and packaging facility and remaining Rs. 5 lakhs is for compost unit development.

The profile of selected e-NAM mandis in terms of establishment, phase of implementation and present infrastructure available in the selected mandis is shown in Table 2.2.

Table: 2.1 Profile of selected Mandis

Sl. No.	Particulars	Krishi Upaj Mandi Samiti (KUMS)						
		Ramgarj Mandi	Jodhpur (Grain)	Nokha	Sri Madhopur	Sri Ganganagar (Grain)	Deoli	Mandawari
1	District	Kota	Jodhpur	Bikaner	Sikar	Sri Ganganagar	Tonk	Dosa
2	Year of Establishment	1964	1967	1967	1965	1964	1967	2009
3	Mandi Class	SA	SA	SA	SA	SA	B	C
4	Notified Area (No. of Gram Panchayat)	36	146	145			39	13
5	Notified Commodities	Dhania, Chana, Mustard, Soybean, Wheat, Urad, Maize, Jowar.	Cumin, Mustard, Moong whole, Guar Seeds, Fenugreek and Isabgol	Moth, Guar, Moong, Bajra, Til, Chana, Isabgol, Mustard, Cumin	Bajra, Groundnut, Mustard, Gram, Guar, Barley	Bajra, Moong, Chana, Wheat, Castor, Groundnut, Sesame, Mustard, Moth, Guar	Mustard, Maize, Wheat, Soybean, Lentil, Bajra, Jowar, Gram, Guar	Wheat, Bajra, Mustard, Sesame, Guar Seeds, Chana, Urad
6	Godowns (Number)	NA	1	1	NA	NA	1	1
7	Godowns (Capacity) in MT	NA	1000	250	NA	NA	500	1000
8	No. of Traders	585	1866	914	532	3138	307	95
9	No. of Commission Agents	291	729	276	305	709	16	80
10	Officers/Staff	11	13	7	14	26	8	5
11	Staff (Outsourced)	NA	13	4	20	19	NA	8

Source: Respective Krishi Upaj Mandi Samitis (KUMS)

Table:2.2 Status of Manpower and Infrastructure availability in selected eNAM Mandis

Sl. No.	Items	Units	Krishi Upaj Mandi Samiti						
			Ranganj Mandi	Jodhpur (Grain)	Nokha	Sri Madhopur	Sri Ganganagar (Grain)	Deoli	Mandawari
1	e-NAM Introduced	Date	14.04.16	15.02.17	14.02.17	14.02.17	27.02.17	15.02.17	14.02.17
2	Phase Wise Implementation of eNAM	Phase	Pilot	Second	Second	Second	Second	Second	Second
3	NAM Bidding Hall	Number	1	1	1	1	1	1	1
4	E-Gate entry Facility	Number	2	1	1	3	3	1	1
5	E-Gate entry at Display Shed	Number	1	1	1	1	1	1	1
6	Net Connection-eNAM Hall	Mbps	8	10	4	8	8	6	4
7	Net Connection Gate Entry Room	Mbps	8	10	4	8	8	6	4
8	Generator	Number	1	1	1	1	1	1	1
9	Electronic Weighing Machine/Bridge	Number	NA	NA	1	NA	NA	NA	NA
10	POS Machine	Number	NA	NA	NA	NA	NA	NA	NA
11	Data Entry Operator	Number	4	6	6	4	10	5	2
12	IT Staff	Numbers	NA	NA	NA	NA	NA	1	1
13	Mandi Analyst	Numbers	1	1	1	1	1	1	1
14	Grading Staff	Numbers	1	1	1	1	1	1	2

Source: Respective Krishi Upaj Mandi Samitis (KUMS)

The basic facilities in the selected mandis such as electronic bidding, display board, POS machine, weight machine, assaying labs are necessary for successful implementation of e-NAM. The selected mandis were found to have basic facilities integrated with e-NAM portal. However, there were missing links among the selected mandis with regard to integration of weighment and warehouses with eNAM portal. These missing links are limiting the online trade in the mandis. Table 2.3 shows the status of implemented e-NAM infrastructure in terms of electronic gate pass, bidding, display board etc.

Table 2.3: Status of implemented eNAM infrastructure in sample Mandis

Sl. No	Particulars	Krishi Upaj Mandi						
		Ranganj Mandi	Jodhpur (Grain)	Nokha	Sri Madhopur	Sri Ganganagar (Grain)	Deoli	Mandawari
1	Electronic Gate Passes	✓	✓	✓	✓	✓	✓	✓
2	Electronic Bidding	✓	✓	✓	✓	✓	✓	✓
3	Electronic Display	✓	✓	✓	✓	✓	✓	✓
4	Exit Pass Generated	✓	✓	✓	✓	✓	✓	✓
5	e-Agreement	✓	✓	✓	✓	✓	✓	✓
6	Generation of Sale Receipt	✓	✓	✓	✓	✓	✓	✓
7	Assaying Lab	✓	✓	✓	✓	✓	✓	✓
8	Announcing Highest bid price to farmer by SMS	✓	✓	✓	✓	✓	✓	✓
9	Integration of weighment with eNAM portal	×	×	×	×	×	×	×
10	Online Settlement	✓	✓	✓	✓	✓	✓	✓
11	Warehouse Integration	×	×	×	×	×	×	×

Source: Primary observation by research investigator & information collected from respective Krishi Upaj Mandi Samitis (KUMS)

2.3 Comparison between Recommended and Existing e-NAM structure

SFAC has prescribed requisite manpower and infrastructure for implementation of e-NAM. Hence, in order to ascertain whether the

selected mandis are having the infrastructure or not, a comparison was made and the results of the same are presented in the Table 2.4. It is revealed from the results presented in the table that most of the markets did not have requisite infrastructure except for computer and printer. However, all the markets except Mandawari had requisite internet speed required for online trading. Further, sufficient number of moisture meters and weighing scales were found in three and one market respectively. All the mandis had quality testing equipment and sampling equipment. Hence, it is suggested that gradually all the markets should have the requisite infrastructure as recommended by SFAC for proper functioning under e-NAM.

2.4 Stakeholders registered

e-NAM is a platform which is expected to provide a win-win solution to all the stakeholders involved in the supply chain of agricultural produce. In Rajasthan, every Market Committee has proactively registered farmers and FPOs/ FPCs with the basic details like name, village, mobile number, bank details, producer company details etc. and all the commission agents and traders of the selected Mandis have been linked to e-NAM. Rajasthan is the only state which has converted the licence of commission agents/traders into a unified licence. With the unified licence, traders/commission agents are able to perform inter-mandi trade with a single licence.

The bank-related information has been kept optional as some of the farmers and Farmer Producer Organisations have shown reluctance to share their bank details and participate.

The details of stakeholder registration is given in the table 2.5. It is revealed from the table that a maximum number of farmers were registered in the case of Sri Ganganagar Mandi followed by Ramganj, Jodhpur, Nokha, Deoli and Sri Madhopur. Only 16,563 farmers were registered under Mandawari Mandi. A similar trend was recorded for other market functionaries.

Table 2.4: SFAC recommended Existing Manpower and Infrastructure in sample mandis

	Description	Required Unit/ No.	Ramganj mandi	Jodhpur (Grain)	Nokha	Shrimadhopur	Sri Ganganagar (Grain)	Deoli	Mandawari
Entry gate	Computer	2	1	2	1	1	1	1	1
	Printer	2	1	2	1	1	1	1	1
	Handheld Device	2	1	1	1	1	1	1	1
	Computer Operator	2	1	4	1	1	2	1	1
	Internet	5-6 MBPS	8	10	5	8	6	6	4
Quality Testing Lab	Building for Lab	1	1	1	1	1	1	1	1
	Lab Equipment	-							
	a) Moisture Meter	2	2	3	1	1	1	2	1
	b) Weighing Scale	2	1	1	2	1	1	1	1
	c) Computer	1	1	1	1	1	1	2	1
	d) Printer	1	1	1	1	1	1	1	1
	e) Other ancillary equipment required for quality testing	As per the requirements	Oil testing machine, moisture meter, Electronic balance, Water Bath, Hot air oven etc.	Oil testing machine, moisture meter, Electronic balance, Water Bath, Hot air oven etc.	Oil testing machine, moisture meter, Electronic balance, Water Bath, Hot air oven etc.	Oil testing machine, moisture meter, Electronic balance, Water Bath, Hot air oven etc.	Oil testing machine, moisture meter, Electronic balance, Water Bath, Hot air oven etc.	Oil testing machine, moisture meter, Electronic balance, Water Bath, Hot air oven etc.	
	f) Sampling equipment	As per the requirements	Sieves, Parkhi, Grain sampler, scoop set, magnifying glass, petri dish, brush etc	Sieves, Parkhi, Grain sampler, scoop set, magnifying glass, petri dish, brush etc	Sieves, Parkhi, Grain sampler, scoop set, magnifying glass, petri dish, brush etc	Sieves, Parkhi, Grain sampler, scoop set, magnifying glass, petri dish, brush etc	Sieves, Parkhi, Grain sampler, scoop set, magnifying glass, petri dish, brush etc	Sieves, Parkhi, Grain sampler, scoop set, magnifying glass, petri dish, brush	Sieves, Parkhi, Grain sampler, scoop set, magnifying glass, petri dish, brush

	Description	Required Unit/ No.	Ramganj mandi	Jodhpur (Grain)	Nokha	Shrimadhapur	Sri Ganganagar (Grain)	Deoli	Mandawari
	g) Sampler	2	1	1	1	1	2	2	1
	h) Lab Analyst	2	2	1	1	2	2	2	2
	Internet	-	8	10	5	8	6	6	4
e-Auction	Auction Hall	1	1	1	1	1	1	1	1
	Projector / LCD screen	1	1	1	1	1	1	1	1
	Computer for Administrator	1	2	2	1	1	1	1	1
	Computer for Users	5	4	3	3	3	5	3	3
	Internet	5-6 MBPS	8	10	5	8	6	4	4
Weight Bridge	Manpower / Computer Operator	5	4	8	4	1	2	5	1
	Electronic Weighbridge	1	NA	NA	1	1	NA	NA	NA
	Weigh Scale	-	NA	1	1	1	NA	NA	NA
	Computer	2	1	2	1	1	1	1	1
Exit Gate	Printer	2	1	2	1	1	1	1	1
	Computer Operator	2	1	2	1	1	2	1	1
	Internet	5-6 MBPS	8	10	5	8	6	6	4
Power back up	Generator	1	1	1	1	1	1	1	1
	UPS	As needed	1	1	1	1	1	1	1

Source: Primary observation by research investigator & information collected from respective Krishi Upaj Mandi Samitis (KUMS)

Table 2.5: Stake holders' registration in selected Mandi, till 31st March, 2019

Sl. No	Krishi Upaj Mandi	Stake Holders			
		Farmers	FPOs	Traders	Commission Agents
1	Ramganj Mandi	62,636	7	555	291
2	Jodhpur (Grain)	48,586	3	132	115
3	Nokha	40,137	0	914	276
4	Sri Madhopur	36,903	1	320	317
5	Sri Ganganagar (Grain)	68,492	0	579	422
6	Deoli	33,935	5	62	16
7	Mandawari	16,563	4	91	83

Source: <https://enam.gov.in> & respective Krishi Upaj Mandi Samitis (KUMS)

2.5 Quantity & Volume of Commodity traded under e-NAM in Selected Mandis

So far, 3,47,385 MT of commodities worth Rs 1,017 crore have been traded through selected mandis till 31.03.2019. It is revealed from the results presented in the table 2.6 that the highest volume of trade and value was recorded in Jodhpur mandi closely followed by Sri Ganganagar mandi. In the case of Deoli and Mandawari mandi, the volume of trade and value was the least among selected markets.

Table 2.6: Performance of Commodity e-Trade in Selected e-NAM Mandis

Sl. No.	Krishi Upaj Mandi Samiti (KUMS)	Quantity (Lakh MT)	Value (Rs. Crore)
1	Ramganj Mandi	1.87	64.21
2	Jodhpur (Grain)	3.11	279.05
3	Nokha Mandi	4.55	182.33
4	Sri Madhopur	3.33	113.77
5	Sri Ganganagar (Grain)	7.32	267.63
6	Deoli Mandi	2.13	55.95
7	Mandawari	2.01	54.32

Source: <https://enam.gov.in>

Note: Trade duration from 04.04.2016 (Ramganj mandi) and 01.02.2017 (other Mandis) to 31.03.2019.

2.6 e-NAM Process Flow

1. Gate entry: The trade process flow starts from the gate entry. Once a farmer has entered into the market along with his/her commodity, an electronic gate entry slip is generated. An entry slip consists of lot code (as a sequence of Mandi code-year-month-date-lot of the day), Farmer's name, contact details of the farmer, Village, Commission Agent's name and Company, Commodity, number of bags, bag type, approximate quantity, vehicle number, market/sub market detail, lot type (primary or secondary sales) and government ID. In this process, registration is done for the first time mandi visitor. A sample of a gate entry slip is placed in **Annexure-1**.

2. Unloading of Commodity at Auction/Trading platform and Assaying: If farmers prefer a particular commission agent, allotment of the commission agent to the farmer is done at the gate entry as per his/her demand, otherwise, farmers can unload their produce in any of the trading platforms. The lot ID (gate entry slip) is displayed on the top of the lot in the trading platform. The Assaying Lab technician from the APMC will visit the lot and collect a minimum of 250 grams of the sample of the commodity for assaying. After drawing the sample, the assaying process is completed and the assaying report (**Annexure-2**) against the lot number is uploaded to e-NAM website for the next process. However, if the assaying machinery is not available (for some of the commodities like moth and spices) the quality of the commodity is assessed on the basis of a physical examination by traders/commission agents.

3. Generate e-bidding: Based on the assaying report, mandi officials generate the e-bidding and fix the maximum bidding time. Traders will be quoting their price electronically for their interested lot. The same will be displayed on the display board at APMC.

4. Bid Declaration: Once the bidding time is over, a message of the highest Bid price is sent to the farmer's registered mobile number or he can view lot number wise final price displayed on the e-display board at

APMC. If the farmer accepts the final price, the lot will be allotted to the trader for final purchase. If the farmer does not agree with the price, he/she may again go for e-auction.

5. Weighment of sold commodity: After successful completion of the auction process, the next process is Weighment of the commodity. Weighing of the commodity is done on the electronic weighing machine by the weigh men appointed by the mandi.

6. Generation of Sale Agreement: A primary bill is generated (**Annexure-3**) after weighment. The sale bill contains trader name and license number, farmers' detail, commission agent name and his license number, agreement number, commodity detail, packaging type and weight of the bag, commodity price, farmers' price, commission agent fee, mandi fee etc. (**Annexure-4**)

7. Payment to farmers & others: Once the sale bill is generated, the buyer sends the money through RTGS/NEFT/ cash deposit through bank challan. At present farmers are demanding immediate cash, hence, the buyer pays cash to the farmer directly.

8. Gate exit pass and gate exit: After successful payment to the farmer, the commodity is handed over to the trader and subsequently the mandi official generates the exit pass (**Annexure-5**) which contains gate exit number, exit type, vehicle number, APMC detail, trader, lot type, commodity type, lot code, bag type, number of bag and weight/ total number.

9. Generate e-Permit for Secondary Trade: After completing primary trade in primary market, if buyer is interested to resale the same commodity within the state in any eNAM mandi, e-Permit is prerequisite for exemption of mandi fees from the secondary market. It will be generated in primary mandi with consent of mandi secretary and same will be approved by mandi secretary from secondary mandi. buyer can check the status of his/her permit through online. Once e-permit process is completed, gate entry receipt has been generate in secondary mandi for secondary sale. (**Annexure-6**)



Fig 2.1: Trade Process flow in e-NAM Mandi

2.7 Percentage of Commodity traded within Mandi under e-NAM Platform in selected Mandis

Tables 2.7 a & b depict the percentage of commodities traded through e-NAM within the mandi in selected mandis. The respective percentages are calculated based on the arrival of commodities (which is provided by the seller during Gate-Entry) and traded commodity (up to creation of sale agreement). It also depicts that selected mandis are actively involved in online trading of notified commodities within the mandi through e-NAM and in most of the cases it is 100 percent or close to it.

2.8 Bidding Performance

Scientific method of Price discovery, transparency and competition is one of the objectives of e-NAM. This could not be achieved through the manual method of bidding operation. The trade efficiency of the mandi is assessed based on the lots managed by the markets even during peak season. The maximum number of lots arriving on e-NAM portal in a day varies from 4873 in Sri Madhopur mandi to 1247 lots in Mandawari market (table 2.8.).

2.9 Composition of average number of bids received per lot

Table 2.9 shows that the average number of bids per lot in selected e-NAM mandis is 4.30. This shows that competitive bidding and transparent price discovery prevailed in the markets selected for the study.

Table 2.7a: Percentage of Commodity Traded under e-NAM in sampled Mandi

Sl. No	Ramganj Mandi		Jodhpur (Grain)		Nokha	
	Commodity	Traded on e-NAM Platform (in %)	Commodity	Traded on e-NAM Platform (in %)	Commodity	Traded on e-NAM Platform (in %)
1	Chana (Bengal gram)-desi, Chana, Bengal gram-dollar, Maize, Paddy 6444, Soybeans, Wheat-bansi	100	Ajwain, Castor seed, Bajra, Bengal gram hybrid Bengal gram local Chana (Bengal gram) Chana gulabi Coriandar Coriander whole Cumin Custard apple Ground nut Ground nut g-2 Groundnut local Groundnut sb11 Guar seeds Isabgol Isbgol (psyllium husk) Coriander leaves Fenugreek (whole) Fenugreek (hari methi) Moth, Moong whole chamki Mustard Mustard white seeds Sesame seed Sounf Taramira Urad (black gram) Urad daal Wheat	100	Bajra, Barley (jau) Chana (Bengal gram) Cotton, raw Cumin Gingelly (sesame seed)-black Gingelly (sesame seed)-white White-gingelly Ground nut Guar seeds Isbgol (psyllium husk), Fenugreek (whole) Fenugreek (hari methi) Moth Moong whole (green gram) Mustard Mustard leaf Mustard seed Wheat	100
2	Chana (Bengal gram)	99.99	Moong whole	99.98		100
3	Coriander whole	90.10	Source: https://enam.gov.in Note: Percentage is calculated based on? the 1. Arrival Qty is approximate which is provided by seller during Gate-Entry of Mandi. 2. Traded Qty (Sale Agreement) is actual after Weighment .			
4	Ground nut	36.72				
5	Jowar	79.48				
6	Jowar-white	97.89				
7	Mustard	99.92				
8	Urad (black gram)	99.80				
9	Wheat	99.26				

Table 2.7b: Percentage of Commodity Traded under e-NAM

Sl. No	Sri Madhopur		Sri Ganganagar (Grain)		Deoli		Mandawari	
	Commodity	Traded on e-NAM Platform (in %)	Commodity	Traded on e-NAM Platform (in %)	Commodity	Traded on e-NAM Platform (in %)	Commodity	Traded on e-NAM Platform (in %)
1	Bajra-hybrid, Bajra-red, Chana, Bengal gram hybrid, Chana gulabi, Ground nut, Groundnut hybrid, Lobia, Fenugreek (hari methi), Green gram hybrid, Musk melon, Wheat	100	Arhar whole / tur (red gram), Tur/arhar, Bajra Castor seed, Bengal gram hybrid, Cotton, Ground nut, Maize nk 6240 Green gram, Sesame seed, Taramira.	100.00	Barley (jau) Castor seed Bengal gram local Chana (Bengal gram)-desi Lentil Masoor Green gram Mustard Sounf Taramira Urad daal Wheat	100	Bajra, Chana (Bengal gram), Guar seeds Mustard Sesame seed Urad (black gram) Wheat	100.00
2	Barley (jau)	99.87	Barley (jau)	99.98	Bajra,	95.20		
3	Guar seeds	99.98	Chana (Bengal gram)	99.63	Bengal gram hybrid	93.75		
4	Moong whole (green gram)	99.83	American-cotton	99.99	Chana (Bengal gram)	99.78		
6	Mustard	99.99	Guar seeds	99.97	Guar seeds	92.06		
7	Mustard white seeds	42.86	Moong whole (green gram)	99.89	Jowar	98.68		
8	Taramira	99.27	Mustard	99.83	Maize	93.78		
9			Wheat	99.92	Moong whole (green gram)	99.06		
10					Soyabeans	87.05		
11					Urad (black gram)	93.74		

Source: <https://enam.gov.in>

Note: Percentage is calculated based the

1. Arrival Qty is approximate which is provided by the Seller during Gate-Entry of Mandi.
2. Traded Qty (Sale Agreement) is actual after Weighment.

Table 2.8: Bidding performance under e-NAM in selected markets

Sl. No	Particulars	Maximum No. of Lots Arrived on eNAM in a Single Day	Highest Number of Bids for a Single lot
1	Ramganj Mandi	3337	18
2	Jodhpur (Grain)	4024	13
3	Nokha	2575	14
4	Sri Madhopur	4873	9
5	Sri Ganganagar (Grain)	4591	15
6	Deoli	4367	8
7	Mandawari	1247	16

Source: <https://enam.gov.in>

Table 2.9: Degree of composition as reflected by average number of bids received per lot

Sl. No	Particulars	No. of Lots traded (April'16 to March'19)	No. Bids	Avg. No. of Bids per lot	Max. no. of Bids per lots	Min No. of Bids per lot
1	Ramganj Mandi	38777	1478	4.5	13	1
2	Jodhpur (Grain)	41456	4332	4.6	9	1
3	Nokha	39437	18984	4.3	7	1
4	Sri Madhopur	38132	10589	3.8	5	1
5	Sri Ganganagar (Grain)	31015	236	4	14	1
6	Deoli	25160	1363	4.2	9	1
7	Mandawari	21314	2567	4.7	16	1
8	Average	33613	5649.86	4.30	10.43	1

2.10 Status of Inter-Mandi trade

At the initial stage of e-NAM implementation, trade was initiated within the mandi to understand the concept, create awareness and to build trust among stakeholders. After succeeding, inter mandi trade was started in the next phase and as a result 78 inter mandi transactions have been completed in various commodities till March 2019.

Table 2.10 shows the commodity wise Inter mandi trade in selected mandis. It is surprising that Class 'C' mandi i.e. Mandawari has also traded inter mandi in six commodities which shows the good participation of stakeholders on the e-NAM platform.

Table 2.10: Commodity wise Inter-Mandi trade

Trade in Numbers

Sl. No.	Commodity	Krishi Upaj Mandi							Total
		Ramganj Mandi	Jodhpur (Grain)	Nokha	Sri Madhopur	Sri Ganganagar (Grain)	Deoli	Mandawari	
1	Bajra	1	-	-	-	-	2	1	4
2	Chana	-	-	-	-	2	-	1	3
3	Guar seeds	-	3	2	1	-	-	-	6
4	Maize	2	-	-	-	-	-	-	2
5	Moong whole (green gram)	-	2	-	-	-	-	-	2
6	Mustard seed (sarson)	-	-	-	-	1	-	2	3
7	Sesamum (sesame, gingelly, til)	-	-	-	-	-	-	1	1
8	Wheat	4	-	-	-	-	-	1	5
Total		7	5	2	1	3	2	6	26

Source: <https://enam.gov.in>

2.11 Status of inter State trade

Inter State trade of agricultural produce through National Agriculture Market (e-NAM) platform is gathering momentum. The first Inter State transaction in tomatoes was carried out between a trader of Bareilly e-NAM mandi of Uttar Pradesh and a farmer of Haldwani e-NAM mandi of Uttarakhand in the month of January 2019. So far, 136 inter-State transactions in 14 commodities namely vegetables, pulses, cereals, oilseeds, spices etc. have been completed under inter-state trade through e-NAM platform. Rajasthan is leading with 11 interstate trades comprising of 6 States viz. Gujarat, Maharashtra, Madhya Pradesh, Andhra Pradesh, Haryana and Uttar Pradesh. Table 2.11 shows the details of Interstate trade in selected e-NAM markets of Rajasthan. It revealed that in the case of Ramganj mandi two instances of inter-State trade with Mandsaur e-NAM mandi (Madhya Pradesh) were recorded, Jodhpur e-NAM mandi has traded with Guntur e-NAM market (Andhra Pradesh), and Nokha mandi has a trade link with Akola e-NAM market (Maharashtra).

2.12 Effect of eNAM on price received by the farmers in APMCs in Rajasthan

A study conducted by NITI Aayog on the effect of online marketing by farmers using Unified Market Platform of ReMS in Karnataka shows immense profit to farmers. The outcome of the ReMS initiated by the government of Karnataka suggested that the prices of commodities covered under ReMS are higher and are increasing at a higher pace than the prices of commodities in the traditional market in the country. The increase in real price of selected agricultural commodities ranges from 1 to 43 percent, of which Copra witnessed the highest increase and that of Green Gram, the lowest (**Annexure-7**).

Hence, a similar attempt has been made in this section of the study, as there is no study available on the effect of eNAM on price received by the farmers in Rajasthan. Findings of the study indicated that effect of online marketing by farmers using e-NAM platform in Rajasthan shows a respectable benefit to the farmers. The e-NAM was initiated in Rajasthan on 14th April 2016 in Ramganj Mandi on a pilot basis, followed by Ramganj Mandi, other 24 A, B & C class mandis were introduced as e-NAM mandis. The effect of e-NAM on price received by the farmers is depicted in table 2.12. It shows price increase in 2018-19 over price during 2015-16 in real and nominal values. The increased price received by the farmers in different markets of Rajasthan is deflated by the whole sale price index of the concerned commodity to arrive increases in real terms. After introduction of eNAM, model price in mandis in Rajasthan witnessed increased price than the wholesale prices of the same commodity in the country. The increased percentage in real terms varies from 3 percent to 39 percent, the highest being in Bajra and lowest in Mustard, during the study period.

Table 2.11: Inter-state trade detail of sample mandi

Sl. No	Buyer Mandi	Seller Mandi	Commodity
1	Mandsaur (Madhya Pradesh)	Ramganj Mandi (Rajasthan)	Coriander
2	Nokha (Rajasthan)	Akola (Maharashtra)	Green Gram
3	Ramganj Mandi (Rajasthan)	Mandsaur (Madhya Pradesh)	Coriander
4	Jodhpur (Grain) (Rajasthan)	Guntur (Andhra Pradesh)	Dry Chilli

Source: <https://enam.gov.in>

Table 2.12: Effect of eNAM on price received by the farmers in APMCs in Rajasthan

Commodity	Price Received by the farmers Rs./Quintal		Increase in 2018-19 over 2015-16 in Percent	
	2015-16	2018-19	Nominal Value	Real
Wheat	1590	1835	15	11
Guar seeds	3559	4092	15	12
Isabgol	8500	9400	11	08
Jowar	1818	2547	40	32
Cotton	4733	5486	16	15
Moth	3210	4493	40	26
Bajra	1165	1816	56	39
Fenugreek	3430	4335	26	19
Maize	1200	1425	19	15
Ajwain	4745	6100	29	22
Bengal gram	3647	4908	35	21
Ground nut	3556	3820	07	05
Soybeans	2767	3625	31	11
Moong	4413	5316	20	15
Barley	1218	1405	15	10
Cumin	15031	16982	13	11
Mustard	3350	3658	05	03
Coriander	4134	5662	37	24

Source: RSAMB Rajasthan & eNAM website

Note: Real price is calculated after devaluation of Whole sale price index of the commodity

CHAPTER 3

Stake Holders Response on e-NAM Market

3.1 Background

The farming community belongs to the vulnerable section in the entire Agri-Value Chain, therefore, to strengthen this section, the Government has introduced several programmes and schemes including e-NAM. It is strengthening the existing APMC system in a transparent way and providing win-win situation to all the stakeholders.

This chapter comprises of the responses of stakeholders on e-NAM in terms of understanding of the concept, level of adoption, benefits drawn, challenges faced etc. In order to analyze the mindset of the stakeholders, a survey was conducted in selected e-NAM mandis of Rajasthan i.e., Ramganj Mandi, Nokha, Srimandapour, Sri Ganganagar (Grain), Jodhpur (grain), Deoli and Mandawari mandi. A total of 254 stakeholders including Farmers & FPOs/FPCs (136), trader cum commission agents (111) and mandi secretaries (07) were covered during the survey.

3.2 Awareness on e-NAM, process and benefits

Table 3.1 shows the awareness on e-NAM among the farmers and traders. As may be seen from the data, a majority of the farmers are not aware about eNAM which shows that there is a need to organize sensitization cum awareness programmes on the concept, process and its benefits. Further, it shows that the awareness of traders is better on e-NAM and its process.

3.3 Farmers Awareness based on the Age group

The table 3.2 depicts that out of 40% aware farmers, majority are youth i.e. with age group between 25-45 and comprising of 76% of the category. Similarly, in case of unaware farmers, out of 60%, three-fourth

belong to the age group 46 and above. This reveals that the youth comparatively have an edge in terms of sensitization, however, they are not fully aware about the process and benefits of e-NAM. This implies, that the demographic dividend has to be taken into consideration while spreading awareness.

Table 3.1: Awareness on e-NAM

Response	No. of Farmers	No. of Traders
Aware on e-NAM	55 (40.44%)	107 (96.40%)
Unaware on e-NAM	81 (59.56%)	04 (3.60%)
Total	136 (100%)	111 (100%)

Source: Primary data 2019.

Table 3.2: Age v/s Awareness on e-NAM among the farmers

Age	No. of Farmers Aware	No. of Farmers Unaware
25 to 35	27 (49.09 %)	8 (9.88%)
35 to 45	15 (27.27%)	12 (14.81%)
46 to 55	8 (14.55%)	14 (17.28%)
Above 55	5 (9.09%)	47 (58.02%)
Total	55 (100%)	81 (100%)

Source: Primary data 2019.

3.4 Education and Awareness on e-NAM among the farmers

A comparison was made between the aware and unaware farmers on e-NAM with respect to their education and it was found that the majority of farmers from both the categories were having only elementary education which is a hindrance in the understanding of e-NAM, its process and benefits. Table 3.3 shows the comparison between education and awareness on e-NAM among the farmers.

Table 3.3: Education v/s Awareness on e-NAM among the farmers

Qualification	No. of Farmers Aware	No. of Farmers Unaware
Primary	5 (9.9%)	31 (38.27%)
Higher Primary	8 (14.55%)	18 (22.22%)
Pre-University	13 (23.64%)	16 (19.75%)
Degree	18 (32.73%)	14 (17.28%)
Higher Education	11 (20 %)	2 (2.47%)
Total	55 (100%)	81 (100%)

Source: Primary data 2019.

3.5 Preference of Trader cum Commission agent

It was observed that majority of the commission agents are not willing to trade on e-NAM platform over the traditional system. Due to transparency and online transactions in the trade under e-NAM platform, traders are hesitant to adopt the online marketing system. However, participation of around 31% of traders is expected to encourage other traders to opt for e-NAM platform. (Table 3.4)

Table 3.4: Trader cum Commission Agent's Preference for e-NAM

Trading Platform preference	No. of Traders cum commission agents
e-NAM Platform	34 (30.63%)
Traditional System	77 (69.37%)
Total	111 (100%)

Source: Primary data 2019.

3.6 Preference of Trader cum Commission agent with respect to Age group

It is revealed from the table 3.5 that Traders of the age group of 35-45 years have given preference for trading on e-NAM, followed by the age group of 45 to 55. This clearly indicates that the demographic dividend will surely drive eNAM in India.

Table 3.5: Age v/s Preference on e-NAM among sample Trader Cum Commission Agents

Values in no. of respondents

Age	e-NAM platform	Traditional System	Total
25 to 35	5 (14.70%)	9 (11.69%)	14 (12.61%)
35 to 45	15 (44.12%)	42 (54.54%)	57 (57.35%)
45 to 55	10 (29.42%)	21 (27.28%)	31 (27.93%)
Above 55	4 (11.76%)	5 (6.49%)	9 (8.11%)
Total	34 (100 %)	77 (100%)	111 (100%)

Source: Primary data 2019.

3.7 Reasons for Selling commodities through specific Commission Agents or Traders

It was observed that the relationship between a farmer and a trader is very strong, driven by trust. During the research it was found that Immediate Cash Payment, Better Price of the produce, Credit facilities provided by traders, collection of small quantum of produce are a few major reasons of being particular towards a specific trader/commission agent. Farmers believed in “seeing is believing” and it is a widespread belief that through physical auction at the platform, they get a better price for their produce. It was also found that as farmers' day to day needs

are being satisfied by traders throughout the year, they are depending on traders or commission agents for availing easy credit facility. The results of the same are presented in the table 3.6. It is revealed from the table that major reasons for preferring a particular intermediary are immediate cash payment (75.74%), better price (59.56%), credit for production (51.47%) and small quantity of the produce (39%).

Table 3.6: Reasons for framer sell commodities to Specific traders or through Commission agents

Number of respondents:136

Reasons	No. of farmers	Percent
Immediate Cash Payment.	103	75.74
Better/Reasonable Price.	81	59.56
Credit For Production.	70	51.47
Small quantity of the Produce.	53	38.97
Provide Storage Facility.	42	30.88
Lack of information about market situation.	34	25.00
Agreement for sale of crops with intermediaries	22	16.18
Low market Cost.	17	12.50
Getting Transport Facility.	8	5.88

Source: Primary data 2019.

3.8 Status of Stakeholder's response with respect to trade under e-NAM Platform

Among the sample farmer respondents selected for the study, out of 40% aware farmers, majority of them (65.45%) were found to have gone through eNAM for trade of the commodity, while, in case of 96% of the traders who are well aware about eNAM, approximately 90% of intermediaries were found to have traded on e-NAM platform. Higher proportion of traders participating in trade on e-NAM platform is a good signal to expand it to other commodities and regions. (Table 3.7)

Table 3.7: Stakeholders trading response under eNAM Platform

Trade under eNAM Platform	No. of Farmers	No. of trader cum Commission Agents
Traded	36 (65.45%)	96 (89.72%)
Not Traded	19 (34.55%)	11 (10.28%)
Total	55 (100%)	107 (100%)

Source: Primary data 2019.

3.9 Satisfaction among Stakeholders after trade under e-NAM

Majority of stakeholders who have been through e-NAM platform (Table 3.8) for selling and purchasing are satisfied with trade on e-NAM platform. It shows that more than 80% of the farmers and more than 88% of traders/agents are happy with the eNAM platform, which ultimately fulfils the purpose of its existence and gradual acceptance among stakeholders over the traditional system.

Table 3.8: Satisfaction on e-NAM among traded Stakeholder under e-NAM

Response	No. of Farmers	No. of Traders cum Commission Agents
Satisfied	29 (80.56%)	85 (88.54%)
Not Satisfied	7 (19.44%)	11 (11.46%)
Total	36 (100%)	96 (100%)

Source: Primary data 2019.

3.10 Stakeholder's Response on Various parameters of Interest for trading commodities under e-NAM Platform

Various parameters which are generating interest among stakeholders were recorded during the survey and it was found that major areas of interest under e-NAM trade are time saving, convenience, transparent trade, assaying facility and better price realization among those who have traded through e-NAM. Table 3.9 shows various reasons and responses.

Table 3.9: Reasons for Interest in Trading the Commodity on e-NAM

(No. of Farmers: 36 & Traders cum Commission Agents: 96)

Reasons	No. of Farmers	No. of Traders cum Commission agents
Time saving	17 (47.2%)	24 (25%)
Convenience	15 (41.7%)	40 (41.67%)
Transparent in trade	14 (38.9%)	38 (39.58%)
Payment through bank	10 (27.8%)	29 (30.21%)
Better price	14 (38.9%)	20 (20.83%)
Quality assurance due to assaying	12 (33.3%)	27 (28.12%)

3.11 Constraints faced by Farmers in adoption of e-NAM

There are also various challenges being faced by stakeholders under e-NAM because of its initial phase. Six major constraints were identified through observation and focus group interview during the research and Garrett's Mean Score ranking method was used to analyze the responses. It was found that the major challenge is payment. Farmers want real time

cash payment, while under e-NAM payment is being transferred through online. In addition, Assaying is another big challenge. As all commodities are not being assayed properly, all parameters are not being accepted by traders so far under e-NAM. Another constraint is, understanding of the concept which needs rigorous sensitization among farmers. Table 3.10 shows the major constraints and its ranking.

Table 3.10: Constraints faced by Farmers in adoption of eNAM

Sl. No	Constraints	Garrett's Mean Score	Rank
F1	Assaying	62.01	2
F2	Payment	62.73	1
F3	Dispute Settlement	55.95	6
F4	Understanding of Concept	61.22	3
F5	Technology	58.85	5
F6	Commodities trade under the eNAM	59.22	4

Source: Primary data 2019 & computed by researcher.

3.12 Constraints faced by Trader cum Commission Agents in adoption of e-NAM

Similarly, various challenges were identified from traders/agents through focus group interview during the research with respect to adoption of e-NAM. It was found that technology secured first rank among all constraints which shows that technology adoption is directly proportionate to eNAM adoption, therefore, capacity building related to technology adoption needs to be worked out. In addition, assaying secured 2nd rank; the reason behind this is that parameters are not widely accepted among traders. Table 3.11 shows various constraints and their ranks based on Garrett's Mean Score Ranking.

Table 3.11: Constraints faced by Traders in adoption of eNAM

Sl. No	Constraints	Garrett's Mean Score	Rank
F1	Technology	68.93	1
F2	Commodities trade under eNAM	59.73	5
F3	Understanding of Concept	66.11	4
F4	Assaying	68.61	2
F5	Delay in Dispute settlement	56.60	6
F6	Payment	67.79	3

Source: Primary data 2019 & computed by researcher.

3.13 Constraints faced by Mandi in adoption of e-NAM

Table 3.12 reveals the ranking of various constraints faced by the Mandi. It shows that, same day cash realization against trade is a major hurdle among farmers followed by Assaying. The assaying parameters of commodities are not widely accepted among traders and create trouble during trade which directly impacts on farmer's response and overall functioning of e-NAM. Hence, widely accepted parameters need to be identified for better functioning of e-NAM. Similarly, low awareness among participants (specially farmers) is a big challenge before mandi officials. Though gram sabhas are being organized by mandis in various places, there is need for more participation for better sensitization. Table 3.12 shows the ranking of major constraints based on garrett's mean score ranking method.

Table 3.12: Constraints faced by mandi in adoption of e-NAM

Sl. No	Constraints	Garrett's Mean Score	Rank
F1	Assaying	76.57	2
F2	Time process	72.43	4
F3	Infrastructure	67.14	7
F4	Reluctant for the Adoption of eNAM stake holders	65.29	8
F5	Farmer Trust in CA/Traders	71.71	5
F6	Small lots of Farmers produce	69.43	6
F7	Inefficient dispute settlement team	40.71	9
F8	Inefficient technical system	36.29	10
F9	Farmers Require cash on same day	82.00	1
F10	Less Awareness	75.86	3

Source: Primary data 2019.

CHAPTER 4

Sensitisation Methods of e-NAM Stakeholders

4.1 Overview

Awareness about any new initiative assumes significance in view of the non-acceptance of e-NAM immediately. Hence, creation of awareness among the stakeholders on a large-scale determines the success of any new initiative.

Against this backdrop, an attempt has been made in the present study to ascertain the importance of sensitization about implementation of e-NAM effectively among the stakeholders including farmers, traders, commission agents, mandi officials, state marketing boards, logistics operators, quality assaying specialist, banks, warehouses etc.

Despite implementation of the flagship programme i.e. e-NAM, to percolate down the benefits, there is need for improving awareness on the same?. The central and state governments are allocating substantial funds for creating awareness of this programme, but the level of awareness and acceptance among the stakeholders is lesser than expected. The reasons for lack of awareness about the schemes are lack of scientific training modules, understanding ability of stakeholders, lack of technically qualified human resource, etc.

4.2 Importance of Sensitisation

Stakeholders play a crucial role in making eNAM successful. However, there is a lack of organisational link among different stakeholders in the value chain thus leading to inefficiencies in the functioning of e-NAM. In order to overcome this problem, there is a need for putting in place a proper mechanism to create awareness among different stakeholders across the value chain.

In this context, in order to make eNAM function more effective, the government/promoting agencies need to focus more on eNAM stakeholders including farmers, farmer producer organisations (FPOs/FPCs), traders, commission agents, mandi officials, state marketing boards, logistics operators, quality assaying specialists, bankers and warehouses. In the present study conducted by NIAM in selected eNAM mandis of Rajasthan, information was collected from the stakeholders and through personal observation by the research team. Out of the sampled respondents, 59.56 percent and 3.60 percent of farmers and traders cum commission agents respectively are completely unaware about the concept of eNAM (Table 3.1, Chapter 3). Mandi officials are also not aware of the eNAM concept, hence when they conduct awareness camps for stakeholders at APMC and gram shabhas, they failed to convey the information accurately. There is no standard method followed by them for sensitisation of the stakeholders. This is the main drawback for successful implementation of eNAM.

The methodology followed by the agencies for sensitisation of different stakeholders also plays a major role, because the method of creating awareness among farmers is different from the traders. For example, the benefits which farmers are getting through eNAM is different from benefits to the traders, and the level of understanding among the stakeholders is also different. Hence through this chapter, we have attempted to prepare sensitisation methods to create awareness on eNAM among stakeholders, to help reach more at the last mile.

Benefits of eNAM to different stakeholders:

- a. To Farmers & Farmer Producer Organisations:**
 - 1. Transparency in trade
 - 2. Assess the quality of the commodity
 - 3. Increase the unit pricing of the commodity
 - 4. More markets to sell produce
 - 5. Real time information on prices and trading in other mandis
 - 6. Proper price discovery mechanism
 - 7. Online banking system
 - 8. To build a healthy financial profile

- b. To Traders & Commission agents**
 - 1. Extended access to other mandis
 - 2. Access to real time information related to arrivals and trade in any market
 - 3. Information access on the quality of commodities
 - 4. Access to online banking and payments
 - 5. Single point levy of market fee
 - 6. Single trade license valid across all markets
 - 7. Expand the trade business
- c. APMCs & Marketing Board**
 - 1. System integration/ Automation of recording transactions
 - 2. Total/ full-fledged information on trade and farmers analyze price trends, arrivals and trading activities
 - 3. Automated record of financial information
 - 4. Assess the marketing information
 - 5. Easy to maintain the records

4.3 Methods of sensitisation of different stakeholders

A. Sensitisation of Farmers and Farmer Producer Organisations (FPOs/FPCs):

The most important stakeholder in eNAM is the farmer. Unfortunately, awareness level among the farmers is least among all the stakeholders because of the inherent problems like unscientific method of promotion, average education level of the farmers, lower acceptance level, dependence on the traders for credit, social and economic status of the farmers. Hence, an appropriate strategy is required for sensitizing farmers about e-NAM.

In India, 85 percent of the farmers are small and marginal. According to the “Theory of Diffusion of Innovation”, due to their socio-economic conditions, small and marginal farmers may be sceptical about new initiatives. Besides, lack of awareness about new technology, apprehensions about trade procedures, etc., are also some of the reasons for lack of awareness about e-NAM. Similarly, there are different stages of adoption of new technology among the farmers i.e. Awareness,

Interest, Desire, Conviction, Action & Satisfaction.

In the same way, we can adopt this six stage method to reach out the flagship programme eNAM to farmers:

Create awareness on eNAM: The main hitch of eNAM technology is, it has failed to touch rural India in an effective manner, despite the government investing a huge amount of money to reach out to the farmers. The Research Team of CCS NIAM decided to understand the farmer's mind set on present Agricultural Marketing schemes, especially, on adoption of new technology like eNAM. It was found that there is a need to understand the present rural ecosystem, with reference to current practices regarding the marketing of agricultural commodities in eNAM implemented mandis. Against this backdrop, NIAM made an attempt to study the attitude of the farmers at the time of selling their produce in APMCs, usage of eNAM technology, behaviour towards a different marketing system and technology. It was revealed that major constraints in popularising e-NAM were, cumbersome procedure of e-NAM trading, lack of awareness about price discovery, apprehensions about the online transfer of money, lack of information on procedures paid for assaying etc.

Adoption of any technology like eNAM or a new marketing method is a psychological process through which farmers take a journey from first hearing about it to its final adoption.

Different stages in the technology (eNAM)/New Marketing methods adoption process are:

1. **Awareness about the technology (eNAM):** Though farmers become aware of the concept of eNAM, they may not have access to all the information.
2. **Creating Interest:** If awareness is created appropriately among the farmers, they will be empowered to collect more information about e-NAM.

3. **Desire:** The information gathered is evaluated on various patterns (features, utility, price discovery mechanism, process time, convenience, quality assaying and assurance of marketing of the commodity and fair price etc.).
4. **Conviction:** The farmers try to sell their commodity through eNAM to gain first-hand experience willingly and it creates a strong feeling in them to adopt the technology.
5. **Action:** If farmers accept and adopt the eNAM technology, they are willing to trade through eNAM platform on a regular basis.
6. **Satisfaction:** If farmers are getting a better price with technology intervention, it will create satisfaction among them about the latest technology.

Now the question is how to create Awareness among the farmers on eNAM or what method should be followed:

- i. **Methods of sensitising the Farmers & Farmer Producer Organisations on eNAM**
 - a. **Mass media method:** Mass media includes, television, radio, print media and other audio visual aids. In India more than fifty percent of the population use television, so it is the best media to improve awareness on eNAM in rural areas, use customised messages (like benefits, price comparison and usability of eNAM etc.) and publish in local newspapers in the local language which may help reach out to a large number of farmers.
 - b. **Video films on eNAM:** Customised video films can be prepared showing the process flow, benefits of eNAM, interview of successful farmers who are selling through eNAM platform, price comparison statement etc. in the local language to motivate the farmers.
 - c. **Share Success Stories:** In farmers' meetings, success stories on

eNAM may be shared or successful farmers in the nearest hinterland of the Mandi invited to share their experiences or examples can be given about those who have benefited through eNAM,. It will motivate other farmers to participate on the e-NAM platform.

- d. **Demonstrate the price discovery mechanism:** Monetary gains are the prime factors to attract the farmers onto eNAM platform. In the traditional system, price discovery is a physical process where farmers witness the negotiation between the traders and commission agents. In this system, price discovery is by word of mouth and farmers can see the activities and hence are aware at what price his produce is sold. However, on eNAM platform there is an online price discovery mechanism where price is shown on a display board and at the end of the bidding process, a message is sent to the registered mobile number of the farmer and also the commission agents are not involved in this process of negotiation. So it is the trainer's responsibility to sensitize the farmers about the price discovery mechanism, how it works electronically and how farmers will be benefited through this.
- e. **Method demonstration and Result demonstration:** Method demonstration is to sensitize the farmers practically and for this, Mandi officials or any trainer who knows the concept of e-NAM can demonstrate the activities in the order of their functioning i.e. starting from gate entry and exit. Similarly, in result demonstration, interested farmers or members of farmer producer organisations may be invited with their sample produce and their produce sold on eNAM platform as a practical demonstration. Both the methods are more effective than other methods, and farmers will be more convinced by these methods.
- f. **Mobile Application:** Some of the reports articulated that, in India there are 377 million rural mobile users, which is more than the total subscribers in Brazil. About 200 million of the rural population are using mobile internet hence, a user friendly eNAM

application can be developed and market information conveyed on a daily basis in the form of messages in a customised manner.

- g. **Social media awareness:** A research study conducted by NIAM in 2018 revealed that 80 percent of farmers are using the mobile internet for the purpose of social media, like WhatsApp and Facebook. Farmers' groups can be created on WhatsApp so that members of the groups can share the information and acquire awareness on e-NAM. A separate Facebook page for e-NAM can be created for uploading daily information.
- h. **Organise District and Taluk Fairs:** Every year the government is conducting Krishi Mela through the agriculture department at the district level as well as taluk level, to create awareness on production of region specific agricultural commodities and to convey information on facilities/schemes of the agriculture department. Similarly it is suggested that the agricultural Marketing department may organise well planned district and taluk level market fairs, at the time of harvest of commodities, on e-NAM, or join hands with the agriculture department for the same.
- i. **Folk media:** It is one of the traditional methods to reach farmers. It will be more effective when linked with other extension activities such as fairs or rallies. Simple messages can be used for conveying important information in an informal way. For eg. puppet shows, drama and songs relating to e-NAM with the help of trained NGOs.
- j. **Farmer to farmer sensitisation:** This is one of the very important, effective and convincing methods of sensitising farmers. In any of the forums, a farmer who is already using e-NAM platform for selling his produce may be invited so that he can create awareness among the other farmers. This method of sensitization is more effective as the farmers are more influenced by fellow farmers.
- k. **Traders to farmers sensitisation:** In agricultural marketing traders

or commission agents play a major role. Traders provide credit facilities to farmers and maintain trust worthiness with farmers. Majority of the farmers trust traders' information and hence sensitisation of the farmers by the traders about e-NAM will be more effective.

1. **Visit to successful mandis:** To sensitize the farmers about e-NAM, exposure visit may be organised for farmers to a successful mandi and the concept and benefits of e-NAM explained. Practical exposure is more effective and motivating than theoretical explanation. Hence to explain the concept of e-NAM, exposure visit may be organised to e-NAM mandi.
- m. **Group Meetings:** It is one of the low cost methods of sensitisation. In this through farmer's groups, farmers can discuss problems, develop plans, plan extension events, and explore new ideas to reach out the market. Use of audio-visual aids like e-NAM flash cards, e-NAM posters can help to make it more effective.
- n. **Leveraging Extension Officers and ATMA for creating awareness about e-NAM:** In India there are 1,19,048 extension workers working in agriculture and allied departments. These extension workers are focusing more on production aspects than marketing aspects. Hence, training institutes like NIAM may impart training to these extension workers and ATMA officials and their services can be used to promote and sensitise the farmers on e-NAM.

ii. **Creation of Awareness among farmers about e-NAM**

e-NAM is an online marketing system, where there are a number of steps involved in the process, right from the gate entry to gate exit of agricultural commodities in APMCs. The system is not only helpful for the farmers, it is also useful for traders and other stakeholders; utility of e-NAM software differs from stakeholder to stakeholder.

There are two aspects in e-NAM, one is hardware and another one is software aspect. At the time of sensitisation of Stakeholders there is no

need to explain about both aspects to all the stakeholders; based on the nature of the stakeholder the process should be explained.

At the time of the sensitisation of the farmers, the following e-NAM process may be explained:

- a. Difference between the traditional system of selling and online selling
- b. Benefits of online marketing
- c. e-NAM Process flow
- d. How to register on e-NAM platform and its importance.
- e. Importance of gate entry and lot number generation
- f. Benefits of Assaying and its method
- g. How the price is fixed on e-NAM platform (Bidding Process).
- h. Importance and benefit of online transfer of money.
- i. Explain the option of re-bidding and storage of commodity
- j. Price comparison between online and traditional market and major problems of price discovery in traditional market.
- k. How to use the e-NAM mobile application.
- l. Any incentives provided by the Government to the farmers who are selling through e-NAM platform may be explained.
- m. Explain time to time changes in the e-NAM system

iii. Where & when to organise awareness programmes for farmers

The place and time are important factors for motivation of stakeholders on e-NAM. There is a lack of proper planning about time and place for capacity building programmes. This phenomenon was observed by NIAM team in the research study on e-NAM mandi. When the Mandi Samiti organises the awareness programme, the programme may be fixed at the bidding time of a commodity so that both farmers and traders are not available at that point of time. If Mandi Samiti or any other promoting agencies plan awareness programmes appropriately at the right place and time, they can be more successful. The programme may be organised in the following manner:

1. At Mandi Samiti after completion of the bidding process
2. Farmers and traders may be called separately for the training.
3. Village level meeting may be organised in the evening

The awareness programme may be organised in KVKs through extension/ATMA workers during the off session or before sowing and harvest season.

- iv. **Frequency of Sensitisation:** Farmers' awareness programmes can be conducted once in a month at the village level/ KVKs and every fifteenth day during the off season. It may be conducted at the time of commodity arrival session/harvesting session at the mandi, so that the programme will reach a large number of farmers. On the other hand, daily price and arrival messages about the commodity as well as e-NAM promotional messages can be send to farmers on their mobile in the local language.
- v. **Who can sensitise the farmers:** when organise the training programme for farmers
 1. First preference may be given to progressive farmers/farmer leader/farmers who are selling their commodity through e-NAM platform, and these people may be trained by the marketing department.
 2. Trained Local traders who are purchasing through e-NAM platform.
 3. Trained extension workers/ATMA officials.
 4. Trained nearest KVK Scientists.
 5. Mandi officials who are trained on e-NAM.

4.4 Sensitisation Methods for Traders & Commission Agents

In the current agricultural marketing system commission agents and traders are the most important market functionaries. Commission agents act as middlemen for marketing of agro produce of the farmers, and are also a source of credit and other inputs for meeting farm needs. Similarly, traders are also dependent on the commission agents for purchase of the agricultural commodity.

The role of commission agents in e-NAM system as compared to the traditional marketing system is lesser and they only collect the information on commodity arrivals and prices of mandi online. Likewise, traders can only see the commodity in a specific mandi and based on the assaying parameter, can purchase the commodity online, make the payment and do the settlement of the transaction also online.

- i. **Some of the Sensitisation methods for Traders and Commission agents**
 - a. **Organise Training for Traders and Commission Agents in the Mandi:** It is one of the low cost methods of sensitising traders and commission agents. Under this method the licenced traders and commission agents may be invited to the mandi and sensitized. eNAM team experts may explain operational methods and benefits of e-NAM. Training may be organised after completion of the bidding process during normal days, and participatory group approach method may be used in this training for solving major problems and understanding the requirements.
 - b. **Demonstration of trading activity:** A trained mandi samiti official or extension worker of the mandi may show the e-NAM flow from the gate entry to the gate exit through a practical demonstration and can explain about processing, assaying, bidding method, payment methods etc. On the other hand, interested traders may be invited and the buying methods of sample commodity/produce of farmers

demonstrated practically in the e-NAM market. Both methods can be effective in convincing traders and commission agents about the platform. It is the most effective method.

- c. **Trader to trader sensitisation:** This is an effective and convincing method of sensitizing traders and commission agents. Under this method training is organised by the mandi for traders and commission agents. Explanation is given on e-NAM. This motivates other traders to use the online platform.
 - d. **Exposure visit to successful mandi:** Exposure visit to a successful mandi with better infrastructure can be organized to attract the traders and commission agents onto e-NAM platform. Explaining the concept of e-NAM with practical exposure is more effective and motivating than a theoretical explanation
 - e. **Video films on e-NAM:** A customised video film may be prepared covering the process flow, benefits of e-NAM, interview of successful traders who are selling through e-NAM platform, price comparison statement etc. in the local language to motivate the farmers.
 - f. **Explain successful stories:** Success stories on e-NAM may be shared at the traders meeting or successful traders may be called from the nearest area of the mandi or examples of those traders can be given who have benefited through e-NAM. This will motivate the other traders to adopt e-NAM market.
- ii. **Areas on which to sensitise Traders and Commission agents on e-NAM**
- a. Process flow of commodity
 - b. Registration and login methods
 - c. Assaying method and Reading of assaying parameter
 - d. Online trading
 - e. Payments options and methods
 - f. Option of re-bidding and storage of commodity

- g. Benefit of trade expansion
- h. Inter-state and inter mandi trading method
- i. Transportation and warehouse integration
- j. Updating of features in e-NAM portal

iii. Frequency of sensitisation:

Buyer awareness programme may be conducted once in a month at the mandi, so that the programme will reach a large number of buyers. On the other hand, messages on daily prices and arrivals on e-NAM mandi as well as promotional messages can be send to the buyer's mobile in the local language.

iv. Who can sensitise Traders and Commission agents:

When organising the training programme for traders and commission agents, the following may be called

- a. Trained local traders who are purchasing through e-NAM platform.
- b. Trained extension workers/ATMA officials.
- c. Trained nearest KVK Scientists.
- d. Mandi officials who are trained on e-NAM.
- e. NFCL officials may give training on operation of e-NAM portal

4.5 Methods for Sensitising Mandi Officials

At present mandi officials are playing facilitation and administration functions within the mandi and also implementing the government programme as per the rules given by the government. For successful implementation of e-NAM in the mandi, mandi officials should understand the concept accurately, so that they can sensitise and promote e-NAM among the stakeholders effectively, hence educating the mandi official is very much needed.

i. **Sensitisation Methods of Mandi officials:**

- a. **Training Programme on e-NAM:** Organise state level training programmes on e-NAM for mandi officials, and educate them on the concept of NAM, its provisions under the Act, mandi management, management of assaying laboratory, management of online technology, promotion method of e-NAM and management of farmers and traders etc. In this training programme other than the lecture method, participatory group discussions and real time problems with case studies can also be used.
- b. **Demonstration method:** Apart from imparting the training, explaining the concept practically is very important. Hence the e-NAM implementation team may organise demonstration and explain the operational method of e-NAM practically.
- c. **Organise a field visit to a successful e-NAM mandi:** The nature of each agricultural marketing samiti in India is different in terms of operation and infrastructure, hence exposure visits can be organised for mandi officials to successful e-NAM mandis within the state and outside the state. This will help mandi officials understand the concept effectively and learn the best practices from other mandis and help them in implementing in their market.
- d. **State level monthly meeting:** Another important method of sensitisation on e-NAM is to organise state level monthly meeting of mandi officials. During this meeting focus may be on explaining recent updates in e-NAM operations, discuss its implementation and resolve the problems of mandi officials in implementation of e-NAM.

ii. **Areas to sensitise the mandi officials on e-NAM**

Being a facilitator, a mandi official should be sensitised on the complete operational procedures of e-NAM from the gate entry to gate exit, technical knowledge on both hardware and software, management of assaying laboratory, dispute redressal mechanism in online trading, with special training on method of sensitising the stakeholders etc.

iii. Frequency of sensitisation

Training programme for mandi officials can be organised once a year and they can be educated on management of the mandi and operational method of e-NAM etc. Apart from that, monthly meetings may be organised at state level, operation of e-NAM updated and opinion from the mandi officials obtained, so that they can understand and update the process properly. On the other hand, messages regarding software updates can be sent to mandi officials on their mobile in the local language.

iv. Who can sensitise mandi officials

When organising the training programme for mandi officials

- a. Resource persons from the e-NAM implementation team.
- b. NFCL official may give training on operational methods of e-NAM both technically and strategically.
- c. Officials from DMI, Mandi Board and Department of Agricultural Marketing
- d. Resource persons from national level institutes like NIAM, MANAGE etc.,

4.6 Organise training programme for Warehouse officials, Bankers and logistic Service Providers

Apart from the buyers and seller, service providers are also important for successful execution of e-NAM. A special training programme may be conducted for warehouse (WDRA accredited public and private) officials and bankers, to educate them on operations of e-NAM and importance of warehouse integration under e-NAM platform, pledge finance and issuing of negotiable warehouse receipt, provisions under the Act for storage of agricultural commodity and convince them about integration with e-NAM portal.

Logistics is the biggest challenge in inter-state and inter-mandi transaction under e-NAM platform, hence, it is important to organise meetings/training programmes for logistic operators in each district, negotiate rates with them and register the service providers on e-NAM platform. This will ensure that traders get easy access to the local service providers and can transport their commodities.

Findings & Policy Suggestions

Rajasthan is one of the leading states in terms of implementation, operationalization and development of infrastructure in selected eNAM markets. However, there is still need for better management and operationalization of eNAM on various aspects. This chapter is an attempt to suggest some suitable policy measures for further improvement and implementation of the scheme. The chapter shows major findings of the study based on the input received during the research.

5.1 Major findings of the study:

Based on the Primary & Secondary Data:

1. Awareness on eNAM among the stakeholders:

- Out of sampled respondents in selected eNAM mandis, 59.56 percent of farmers and 3.60 percent of traders are unaware of eNAM (table 3.1) which shows that in case of farmers there is an urgent need to organize sensitization cum awareness programmes for better understanding of eNAM among them.
- When farmers' awareness is correlated with his/her age, it is found that youngsters in the age group of 25 to 35 years are aware about eNAM (49.09 percent) and on the other hand, farmers of more than 55 years of age (58.02 percent) are unaware of eNAM (table 3.2), which shows that mass sensitization is required to improve awareness among the majority of the farmers on eNAM.
- Similarly, in a comparison between Education and Awareness among the farmers group, it was found that degree holder farmers (32.73 percent) are well aware than merely primary/secondary educated farmers (table 3.3), which shows the impact of higher education on awareness.

- In case of trader cum commission agent's preference on eNAM, it was found that youth (35 to 45 age group) are ahead with around 44 percent share. (table 3.5)
 - Among the 40% aware farmers, majority of them (65.45%) were found to have gone through eNAM for trade of their commodity. Similarly, among 96% of the traders who are well aware of eNAM, around 90% have traded on e-NAM platform. Higher proportion of traders participating in trade on e-NAM platform is a good signal to expand it to other commodities and regions (table 3.7).
2. **Farmers' Dependence on particular Traders/Commission Agents in the mandi:** In all the seven selected mandis, it was found that farmers depend on particular traders or commission agents. The reason is the immediate cash requirement which is provided by agents. The study reveals that approximately 76% of the farmers require immediate cash payment followed by getting a reasonable price and credit facility for the next commodity cycle. In case of trade through eNAM, these three aspects have to be addressed effectively so that the vicious cycle of debt trap and dependence on intermediaries can be eliminated.
 3. **Preference of traditional system by traders cum commission agents:** It was found that approx. 69% of the traders cum commission agents prefer the traditional method of marketing in selected markets (table 3.4). This indicates that due to their vested interest in the old system they want to remain in the same and are reluctant to adopt eNAM system.
 4. **Satisfaction with eNAM after trade among the stakeholders:** It was found that majority of the stakeholders who have gone through eNAM trading are satisfied with the procedure. Around 81 percent of farmers and 89 percent of traders cum commission agents are satisfied after trading through eNAM which reveals that the process of eNAM is simple and easy to adopt. However, the real challenge is how to shift stakeholders to eNAM.

5. **Online Payment:** It was found that online payment is one of the major problems among all the stakeholders. A farmer wants immediate cash payment to fulfil his household requirements and as of now, eNAM settlement requires at least T+2 (Trade plus Two) Days. However, traders are in a position to give them immediate cash, provided they go through the traditional route.
6. **Assaying Parameters:** It was revealed that there is a huge gap between the parameters specified by the Directorate of Marketing and Inspection (DMI) and actual parameters accepted by traders in mandis which is reflected in the assaying machines.
7. **Assaying Machine:** It was observed that assaying machines are designed for a few parameters, while the market requires more parameters to build trust among stakeholders for selling and buying. Furthermore, there are no calibrated certified machines available in the mandis which can provide standard results on which trust can be build.
8. **Inadequate Infrastructure facilities:** The basic facilities in the selected mandis such as electronic bidding, display board, POS machine, weighing machine, assaying labs are necessary for successful implementation of e-NAM. It is observed that all the selected mandis are lacking in terms of recommended infrastructure. There were missing links among the selected mandis with regard to integration of weighment and warehouses with eNAM portal. These missing links are limiting the online trade in the mandis.
9. **Availability of Warehouse & its Integration with eNAM in APMCs:** Storage is very much required for trade of agricultural commodities. Out of seven selected mandis, only four mandis namely Jodhpur (Grain), Nokha, Deoli and Mandawari have operating warehouses (table 2.1) however, which were not integrated with e-NAM portal so far.

10. **Inadequate skilled Human Resource:** For effective functioning of eNAM, skilled human resource is a prerequisite. Hence, there is a provision of Mandi Analyst in each eNAM Mandi as recommended by SFAC. As per the provision of SFAC, it is the responsibility of the strategic partner to arrange a skilled analyst on its own cost for one year and subsequently the responsibility lies with respective state governments. In this context, it was found that in a few selected mandis namely Ramganj Mandi, Sri Madapur and Deoli Mandi (table:2.2) there is no Mandi Analyst, which is somehow creating a hindrance in process implementation.
11. **SFAC recommended Manpower and Infrastructure requirement for development of model eNAM mandi:** During the research it was identified that there is a huge gap between SFAC recommendations on manpower and infrastructure requirement for development of eNAM and actual implementation in selected mandis. (table 2.4). This gap leads to inefficiency in the overall process and system.
12. **Progress of Registration of stakeholder in selected mandis:** In case of registration of stakeholders in mandis, it was found that registration of all the stakeholders including farmers, farmer producer organisations, traders and commission agents is satisfactory. Furthermore, Rajasthan is the only state where all the traders and commission agents have got a unified licence.
13. **Inter-State & Inter-Mandi Trade:** In Rajasthan, Inter State and Inter mandi trade of agricultural produce is gathering pace. Till 31st March, 06 Inter-State and 83 Inter-Mandi trade were successfully completed in Rajasthan. Three mandis namely Ramganj mandi, Nokha and Jodhpur (grain) have gone through inter State trade (Table:2.11) and in case of Inter-Mandi, all selected mandis have participated. Among them the performance of Mandwari ("C" Class mandi) in terms of number of trade is highest with 06 Inter-Mandi trade. (table 2.10)

Observations

1. **Ineffective Sensitisation:** For effective implementation of any scheme, Sensitization plays a crucial role. In case of selected mandis, it was found that there are no proper methods being followed by implementation agencies for sensitising the stakeholders. Therefore, there is an urgent need to have a proper mechanism for sensitization and awareness creation among stakeholders.
2. **Lack of technical knowledge among stakeholders:** It was observed that most of the farmers and some traders lack technical knowledge on eNAM portal and its activities with respect to trade. Majority of them depend on traders and commission agents which is affecting the very objective to create a disconnect with traders and commission agents in terms of selling of their produce.
3. **Propaganda of Misleading information about eNAM:** It was observed that traders are misleading farmers about the scheme and they put undue pressure on farmers by spreading rumours about the online payment. Farmers are linking payment with their availed credit, BPL cards, income tax etc. which ultimately leads to negative behaviour among farmers.
4. **Mandi official's knowledge on eNAM:** It was observed that few mandi officials have inadequate technical information on eNAM and they failed to deliver proper training among stakeholders. Hence, the need of the hour is to create and deliver a sensitization mechanism for mandi officials too.
5. **Electronic weighing bridge:** As per the SFAC guidelines, Electronic weighing bridge is a prerequisite for effective implementation of eNAM. It was found that only two mandis out of 7 selected mandis were fulfilling this requirement.
6. **Inadequate Infrastructure at eNAM mandis:** Better infrastructure leads to better implementation, however, it was observed that all the

selected mandis were lacking in terms of basic infrastructure facilities such as inadequate computers, poor internet facility, limited assaying machines, farmer's information centre etc.

7. **Unscientific method of promotion of eNAM:** It was observed that promotional campaigns were frequently organized by the Mandi on its premises and in the villages as “Gramsabha”. However, the methods are unscientific and complex. Hence, there is a need to prepare scientific promotional campaigns for effective promotion of the scheme.
8. **Provision of Incentive:** It was found that the Govt of Rajasthan came up with a very unique idea to promote eNAM among women farmers with a scheme viz. Saavitree Baee Phule Mahila Krishak Sashaktikaran Yojana (Savitri Bai Phule Women's Farmer Empowerment Scheme). Rajasthan is the only state, which is promoting eNAM though financial benefit to women farmers engaged in eNAM trade. The benefit of the scheme is to provide an incentive of Rupees 1000/- for trade value of Rs. 1 lakh and above and Rs 500/- for trade value of Rs.50000/-under eNAM platform.
9. **Amendment of APMC Act and model eNAM Mandis:** Rajasthan government issued an order on 5th October 2018 for converting all existing trade licences of buyers to a unified licence and allowing them to trade agricultural commodities through the online system.

**Status of Reforms APMC ACT for Establishment of
eNAM Mandi in Rajasthan**

Provision under APLM Act	Amendment status
Establishment of private wholesale market yards	✓
Warehouse Integration with eNAM platform	✗
Single point levy of market fee	✓
Issue of unified single trading license for Purchase within State	✓ (only for e-trade)
Issue of unified single trading license for Purchase Between State	✗
Direct Marketing	✓

5.2 Policy Suggestion for way forward

1. **Sensitization of the stakeholders:** Sensitization of the farming community with respect to eNAM, its process, its benefits and economic importance etc. will be given priority. The campaign must be designed in a systematic and scientific way for better impact in the minds of stakeholders including Mandi officials. To ensure proper sensitization various methods discussed in chapter 4 may be useful.
2. **Assaying:** As the entire agricultural trade is dependent on the quality of the produce for determination of price, Assaying has a significant role in the overall process of eNAM. It gives an idea to both the parties involved in the trade on what to buy, what not to buy, how much to buy etc. The traditional trade practises were also dependent on the quality of produce i.e. Assaying which built trust among both the parties. Few suggestions regarding effective assaying process are as follows-
 - a. Commodity specific certified assaying machinery may be introduced in eNAM mandis so that results of the commodity may not vary.
 - b. There may be a provision for uploading real time pictures of commodities along with assaying parameters. This can solve colour related problems.
 - c. Skilled human resource must be recruited in Assaying laboratories of eNAM mandis.
 - d. Assaying parameters should be strengthened and explored by conducting in-depth research on a variety of the commodities, by developing region specific parameters and in consultation with buyers.
3. **Third party assaying:** During the peak season, when markets are flooded with commodities, assaying become a major challenge in

the mandis that too with unskilled and limited man power. Therefore, to overcome this challenge, it is suggested to create a space for a third party assayer or assaying laboratory under Public Private Partnership model within the mandi.

Charges for assaying: Commodity wise rate for assaying may be fixed by the state government and the cost of assaying may be met by the mandi. It can avoid unnecessary cost on machines and human resources and will lead to effective implementation.

4. **Cash payment:** As immediate cash requirement was recorded as one of the major issues during the research, to overcome the problem, it is suggested to make the provision of paying a part of the traded value as immediate cash to the farmer through the commission agent. He may collect the part payment from the trader later.
5. **Link Kisan Credit Card (KCC) with eNAM portal:** Majority of the farmers are bypassing eNAM because of its delayed payment settlement i.e. T+2 days (Trade + 2 Days). It is a well known fact that in India, 4,56,88,100 Kisan Credit Card holder farmers exist. These cards can be linked to the eNAM portal. As and when a farmer sells his commodity through eNAM, a certain percentage of the traded value may automatically be credited to his KCC card and he can withdraw money /cash beyond his KCC limit from the nearby Bank/ATM. In such a case, during settlement, KCC will be credited first and the remaining amount will be settled to the farmers' bank account.
6. **Mandatory trade provisions for major commodities in eNAM:** There should be provision of mandatory trade for a few major commodities of the region.
7. **Introduction of Diploma course on Assaying:** In view of the significance of assaying in the process of eNAM and other platforms such as warehouses etc. and looking at the unskilled

manpower in all the mandis, there is a felt need for skilled and trained personnel. Therefore, a One-year Diploma Course on Grading, Standardisation and assaying of agricultural commodities may be introduced by DMI in regional centres. The Diploma holders can have an opportunity to work as mandi analysts or to work with warehouses.

8. **Bid wise information to the farmers to build confidence:** In the traditional platform, commodity auction is open and thus a farmer knows each bid quoted by a trader. However, on a virtual platform like eNAM there is no open auction and a farmer does not get bid to bid information of their commodity. As farmers are familiar with bid to bid information, such information may pop up as sms on their mobile or in the mobile app. It will ultimately create trustworthiness among farmers and build their confidence.
9. **Provide the information on Nation-wide Logistic Service Providers:** To facilitate inter-state and inter-mandi trade, there is a requirement of better logistic linkage. To strengthen logistic service network, it is suggested to prepare a National level directory of logistic service providers to facilitate the movement of produce for effective trade.
10. **Integration of WDRA accredited warehouses into eNAM Platform:** As storage and warehousing plays a crucial role in agricultural trade, it is suggested to link WDRA accredited public and private warehouses with eNAM portal so that it will help in Inter-mandi and Inter-state transaction. In addition, it will minimise post-harvest losses up to a certain extent.
11. **Linking FPOs to eNAM:** FPOs are getting a unique space in major agricultural reforms and legislations in recent days. They may be considered as a trader cum commission agent and incentivised through special provisions such as nominal fee, cash rewards, recognition and rewards etc. In addition, exclusive trainings should be planned for FPOs so that they can sell their produce through

eNAM.

12. **Linkage with Organised retail sector:** Organized retail sector may be approached and linked to eNAM. It is suggested to host meetings with organized retail sector and encourage them to participate in eNAM for purchase of agricultural commodities.
13. **SOP for Utilisation of Infrastructure fund:** The Central government provides an initial fund of Rs. 30 lakhs for creation of basic infrastructure in each eNAM mandi. However, the mandis failed to utilise the amount for creation of basic infrastructure. Therefore, for effective utilization of fund, SOP can be worked out to avoid wastage in the establishment of basic infrastructure in the eNAM mandis.
14. **Extension of women farmer Empowerment schemes:** Government of Rajasthan had introduced Savitri Bai Phule Women Farmer Empowerment Scheme to encourage women farmers. In this scheme, while trading through eNAM, an incentive of Rupees 1000/- is being provided for trade value of Rs. 1 lakh & above and incentive of Rs 500/- is being provided for trade value of Rs.50000/-
15. **Encourage the Commission Agents and Traders through Incentives in initial stage:** The Commission agent plays a key role in the trade system. Therefore, at the initial stage to adopt and understand the concept, there will be a provision of incentive for buyers as well as sellers to encourage them.
16. **Conversion of Nomenclature of Commission Agent:** Commission agent is creating value in the supply chain of the agricultural commodity, therefore, it is a known fact that his/her presence is indispensable in the entire supply chain. In case of eNAM, commission agents are not merely working on commission rather they are facilitating trade from one location to other location. Hence, it is suggested to change the nomenclature of commission

agent as Facilitator.

17. **Amendment of APMC Act:** In order to implement eNAM and liberalization of agricultural market system of the state, it is suggested to amend the existing APMC Act of the state.
18. **Require to set up a council to speed up APLM Act:** In consultation with Agricultural Marketing Boards of all the states, an Agricultural Marketing Council may be established for better implementation of all the policies and schemes including eNAM.
19. **Constitutional Amendment:** There is an urgent need to list Agricultural Marketing under the seventh schedule of the constitution (concurrent list) so that the trade beyond the boundaries will be strengthened.
20. **Extend the appointment period of mandi analyst:** Mandi analyst, a key player in the assaying of commodities is to be appointed immediately in all mandis.
21. **Provision of monthly review meeting with mandi officials:** Marketing board may organise monthly review meetings with mandi officials where all officials can have brainstorming sessions on various issues and challenges while operationalizing and implementing eNAM and suggest remedies for improvement.
22. **Capacity building of Logistics operator and Warehouse Officials:** As logistic operators and warehouse operators are playing a vital role in the trade, hence, there is a need to create awareness on eNAM among them. One day Workshops or training programmes may be organized in eNAM Mandis or warehouses.
23. **Capacity building of Extension workers, officials of ATMA, SAMETIs and KVKs:** In India, 1,19,048 extension workers, 700 KVKs, 700 ATMA officials, and 35 SAMETIs are working towards agricultural production. However, the need of the hour is agricultural marketing, hence, it is suggested to train these officials

on Agricultural Marketing and eNAM so that their services may be used to sensitise the farmers and traders on various Agri Marketing issues including eNAM.

24. **Declare selected Mandis as a model eNAM mandi to educate stakeholders:** Few Mandis in a particular region may be declared as Model eNAM mandis and used for educating all the stakeholders including farmers, FPOs, traders and commission agents through various capacity building programmes.
25. **Simultaneous Auction:** At present, online auction is not uniform across all 585 mandis. Therefore, auction should take place simultaneously in all the APMC markets and warehouses, cold storages and private markets to create uniformity and inclusiveness.
26. **Dispute Redressal Mechanism:** To protect the interests of all the stakeholders, a Dispute redressal mechanism has to be worked out at Mandi level. The Dispute redressal mechanism should be made for diversified nature of problems such as dispute over quality and quantity of commodity, payment related issues etc.
27. **Categorization of markets:** Based on performance (value of trade) and infrastructure development, the existing markets may be ranked and categorized.
28. **Establishment of eNAM call centre:** To solve day to day problems related to eNAM (both software and hardware) and to make them understand about eNAM, its benefits, its uses etc., it is suggested to start a toll free helpline number at the state level to directly interact with stakeholders and address their queries.
29. **Good Governance:** Good governance practices such as high level of participation from officials of Mandi Board, Agriculture Marketing department, Mandi officials, coordination between stakeholders, transparent and hassle free payment, skill up-gradation and youth participation are required for better outcome.

5.3 Conclusion

The e-NAM Portal helps in providing a single window service in all aspects like commodity arrivals & prices, buy & sell trade offers, provision to respond to trade offers etc. While material flow (agriculture produce) continue to happen through mandis (markets). An online market reduces costs of transaction and helps in overcoming information asymmetry. It also helps in scientific price discovery through increased participation of traders across the country. A Unified Agriculture Market has its positive impacts on Institution and physical environment, balanced development across the states, competitiveness, farmer's participation, better price, price transparency, reduction in number of intermediaries and creation of new markets.

The status of implementation of eNAM in selected mandis of Rajasthan was found significantly helpful for online trading within the mandi and integrating the intra mandi and interstate trade process. The evolution of the development of eNAM in Rajasthan is providing a better platform for the stakeholders for effective online trading, within the mandi, inter-mandi & inter-state trading. It has been found that better price discovery through online trading since the inception of eNAM platform in the state has been achieved. It has now been capture cent percent arrivals of commodity in the market, increasing the stakeholder's registrations, growing average number of bidding per lot which indicates increasing competition among the buyers and helps to get better price discovery for commodities in the mandi. Scientific way of assaying also providing effective information to the stakeholders to fix the price for their produce. However, it has been found that markets are facing pretty challenges in implementation of eNAM in the market such as edification of online system and process among the stakeholders, assaying machinery, basic infrastructure, online payment etc., and also need to understand the other facets of the market environment and socio-economic attachment among the farmers, commission agents and traders to take eNAM process in a rational way.

In view of above challenges, there is requirement to develop a scientific method of sensitization to popularize the eNAM in the state as well as in the country, hence an attempt is made to create a scientific method of promotion of eNAM for benefit of stakeholders in this study.

In addition, the development of technology & infrastructure like, commodity specific uniform assaying machine & laboratory, skilled human resources to operate the technology, integration of warehousing and weighment facility in to online portal and other logistic services is an essential part for successful implementation of eNAM in the state.

Furthermore, there would be an obligation of amendment of APMC Act in the state, fully automation of marketing system, standard operating procedure (SOP) for the utilization funds for creating necessary condition in the market, good governance, proper dispute settlement mechanism, administration stability in the mandi etc., for integration of eNAM in the mandi.

To overcome the challenges faced by the farmers and other stakeholders in entire agri-value chain, eNAM has to provide proper solution through holistic development in the marketing system includes, reforms in the state APMC Act, education of the stakeholders, development of necessary infrastructure facilities in the market, institutional support & good governance to address the dispute during the online trade. As farmer is one of the important stake holder in eNAM platform, there is a need to provide proper non-monetary incentive to farmers in terms of creation of awareness along with monetary incentives to brand flagship programme called eNAM.

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- <https://eaindustry.nic.in/home.asp>
- <http://www.agricoop.nic.in/>

Annexures

Annexure 1



NATIONAL AGRICULTURE MARKET
RAMGANJ MANDI



GATE ENTRY RECEIPT

LOT Code :

27-20190304-1

Gate Entry Pass No : 2019030271290000147

Purpose : Auction/E-Tender

Date : 04/03/2019 10:17:29

Farmer : Dasrath

Mobile No :

Village : Kalakot

Commision Agent : Ramchandra Dhaked

Company : Mahendra Kumar Mangilal

Commodity : Mustard

Bags : **60.00**

Bag Type : 50 KG BAG

Appx. Quantity : **30.00 Qui**

Vehicle No : AF

Market/SubMarket : **Gridge**

Lot Type : Primary Sale

Govt Id :



Created By RJ660M00003

Annexure 2



NATIONAL AGRICULTURE MARKET RAMGANJ MANDI



SAMPLE ASSAYING RESULT BETWEEN PERIOD 05/03/2019 AND 05/03/2019

Assaying No	2019030271090000030		Assaying Date	05/03/2019 14.12.52	
LOT Code	27-20190305-81		Sample No	1	
Commission Agent	Rajesh Kumar - Subhas Brother		Lab		
Commodity	Mustard		Farmer	Balu Singh	
Sample Collected	300.00 GM				
Sr.No	Assaying Parameter	Results	Grade1	Grade2	Grade3
1	Moisture (% By Wt)	7.52	0.1-6.0	6.1-7.0	7.1-7.5
2	Foreign Matter (% By Wt)	0.13	0-0.20	0.21-0.70	0.71-1.0
3	Dead And Immature Seeds (% By Wt)	0.18	0-0.50	0.51-0.80	0.81-1.0
4	Damaged And Discoloured Seeds (% By Wt)	0.26	0-0.50	0.51-0.80	0.81-1.0
5	Other Edible Seeds (% By Wt)	0.01	0-0.10	0.11-0.15	0.16-0.20
6	Oil Content (% By Wt)	38.22	42.0-100	38.0-41.9	36.0-37.9
7	Uniformity	More Uniform	More Uniform	Slightly Less Uniform	Less Uniform
8	Luster	Medium	Normal	Medium	Poor

Authorized Signature

Annexure 3



NATIONAL AGRICULTURE MARKET RAMGANJ MANDI



SALE AGREEMENT BETWEEN PERIOD 08/03/2019 AND 08/03/2019

Agreement No	2019030271160000083	Agreement Date	08/03/2019 14:01:59
Trade Type	eTrade	Trader Name	Mahaveer Prasad - Ambika Trading Company Krishan Colony
Commission Agent	Manoj Kumar - Kachrumal Prabhulal	Trader License No	200204027019198
		Seller Name	Prahalad Kumar
Commission Agent License No	200204027019764	Seller Address	Khod
Lot Type	Primary Sale		

Commodity	LOT Code	Bag Type	No of Bags	Rate	Weight	Total Amount (Rs.)
Chana (bengal Gram)	27-20190308-39	50 KG BAG	8	3560.00	4.00 Qui	14240.00

Commodity Price		Rs. 14240.00	
Component & Per (%)		Amt After Deduction	
HAMALI UPTO 50 KG	Rs 6.62 /Bag	(-)	52.96
Component Total (Inclusive)		Rs. 52.96	

Commodity Price		Rs. 14240.00			
Component & Per (%)		Base Amt	TDS		Amt After Deduction
			%	Amt	
MARKET FEE	1.60 %	(+)	227.84	0.00	227.84
COMMISSION IMPOSE	2.25 %	(+)	320.40	0.00	320.40
Component Total (Exclusive)		0.00		Rs. 548.24	

Net Amount Payable to Seller: Rs. 14187.04

Total Amount Payable by Trader: Rs. 14789.00
(Rs. Forteen Thousand Seven Hundred Eighty Nine Only.)

E&OE-Errors and omissions excepted

Online Payment Discount on APMC Fees: 0%

Disclaimer:-

As per state level incentives programme towards encouraging traders participating in online payments (Debit, net banking) this SA is eligible to avail the incentive. Incentive will be available and intilisted only at the time on online payment process. For more information contact mandi.

Annexure 4



NATIONAL AGRICULTURE MARKET RAMGANJ MANDI



SALE BILL BETWEEN PERIOD 08/03/2019 AND 08/03/2019

Sale BillNo.	NAM0271903000002	Sale BillDate	08/03/2019 17.33.39	
Agreement No	2019030271160000083	Agreement Date	08/03/2019 14.01.59	
Trade Type	eTrade	Trader Name	Mahaveer Prasad - Ambika Trading Company Krishan Colony	
Commision Agent	Manoj Kumar - Kachrunal Prabhutal	Trader Mob.No.	9829039617	
Commision Agent License No	200204027019764	Trader License No	200204027019198	
Lot Type	Primary Sale	Seller Name	Prahalad Kumar Khod	

Commodity	LOT Code	Bag Type	No of Bags	Rate	Weight	Total Amount
Chana (bengal Gram)	27-20190308-39	50 KG BAG	8	3560.00	4.00 Qui	14240.00

Commodity Price		14240.00
Component & Per (%)		Amt After Deduction
HAMALI UPTO 50 KG	Rs 6.62 /Bag (-)	52.96
Component Total (Inclusive)		52.96

Commodity Price			14240.00		
Component & Per(%)		Base Amt	TDS Deducted		Amt After Deduction
			%	Amt	
MARKET FEE	1.60 %	(+)	227.84	0.00	227.84
COMMISSION IMPOSE	2.25 %	(+)	320.40	0.00	320.40
Component Total (Exclusive)			0.00	548.24	

Net Amount Payable to Seller : 14187.04

Total Amount Payable by Trader: 14789.00

Seller Signature

CA Signature

Trader Signature

Annexure 5



NATIONAL AGRICULTURE MARKET RAMGANJ MANDI



EXIT GATE RECEIPT

Gate Exit No.:	2019030271140000007	Gate Exit Date:	08/03/2019 17.44.38
Exit Type:	Post Trade Exit	APMC Gate No.:	INGATE
Vehical No.:	AF	Trader:	MAHAVEER PRASAD (AMBIKA TRADING COMPANY)
		Lot Type :	Primary Sale

Sr.No	Commodity	LOT Code	Bag Type	No of Bags/Nos.	Weight/Total Nos.
I	CHANA (BENGAL GRAM)	27-20190308-39	50 KG BAG	8.00	4.00 Qui

Annexure 6



NATIONAL AGRICULTURE MARKET JODHPUR GRAIN



E-PERMIT RECEIPT

Permit Number:	PRN3221908000002	Permit Date:	28/08/2019 16:06:08
Permit Type:	Intermandi		
Trader Name:	Gautam Chand Jain	Trader LicenseNo:	0
Commodity:	Cuminin	Status:	Approved
ePermit Mandi:	Sumerpur		

Requested Qty	Approved Qty	Bag Type	No. of Bags
5.50	5.50	55 KG BAG	10.00

Reason of Carrying Outside

Validity of Permit 04/09/2019 16:09:24

I hereby declare that I have made all payments against the agricultural products I bought and also paid the APMC Fee on the total amount.

Place :-

Date with time :-

Signature of Seller

Signature of Mandi Officer

Annexure 7

Table 3.2: Effect of online trading and UMP system on prices received by farmers in mandis in Karnataka

Commodity	Prices received by farmers Rs./quintal		Increase in 2015-16 over 2013-14 %	
	2013-14	2015-16	Nominal	Real@
Tur	3939	7672	95	16
Green gram	5308	7318	38	1
Black gram	3817	7976	109	12
Bajra	1261	1419	13	11
Copra	5189	9325	80	43
Turmeric	5937	7931	34	13
Jowar	1492	1774	19	6
Maize	1257	1356	8	6
Groundnut	3398	4346	28	14
Bengal gram	3057	4541	49	15
Weighted increase			39	13

@ Real price computed after deflating with WPI of the commodity.

Weights were taken as share of commodity in total value of all the 10 commodities at national level, year 2013-14.

Source: Personal communication with MD & CEO of ReMS.

Glimps of Research Study



Preliminary meeting with mandi secretary, Jodhpur (Grain) Mandi



Research team collect information on eNAM process at
Mandawari Mandi



Research team collect the data from farmer at Nokha Mandi



Research team collect the data from the traders cum commission agents at Deoli mandi



Research Team Collect the data from Mandi Secretary, Deoli.



Research Team at Mandawari Mandi



Research team attended stakeholder's sensitization programme
at Nokha Mandi



Assaying Laboratory at Mandawari Mandi



Warehouse facility at Mandawari Mandi available for the farmers



Weighbridge facility at Nokha Mandi



e-Auction platform at Mandawari



Maize lot on display for the trade along with assaying details



Handhold device used to integrate weighing machine through Bluetooth & Wifi



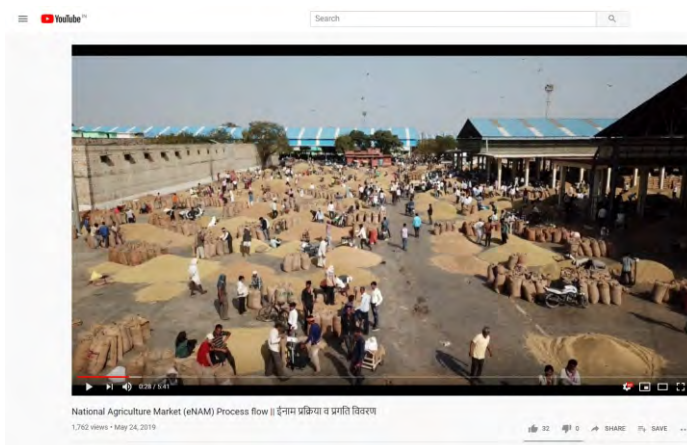
Farmers watch the price for their commodity at e-auction hall in Ram Ganj Mandi



**Research Team meet Dr. S S Acharya, Former Chairman,
CACP, Govt. of India**

About Sensitization Videos of eNAM

During the Research 2 videos namely National Agriculture Market Process Flow and Stakeholders Response on National Agriculture Market was also created by research team and the same was acknowledged by Ministry of Agriculture and Farmers' Welfare, Govt. of India and placed in the eNAM official website. The links are as below-



- 1) Process Mapping- National Agriculture Market Process Flow
<https://enam.gov.in/web/elearning/id/58>



- 2) Feedback – Stakeholders Response on National Agriculture Market
<https://enam.gov.in/web/elearning/id/59>

About Researchers

Mr. Sathyendra Kumar A D has joined CCS National Institute of Agricultural Marketing (CCS NIAM) on 11th August 2017, as an Assistant Professor. His field of specialization is agribusiness management. He has teaching experience of four years in the domain of agribusiness management. He has completed his study from University of Mysore. He has published research papers and presented papers at various state and national level conferences/seminars. He is also actively involved in the conduct of training and research activities in the field of Agricultural Marketing at CCS NIAM

Dr. Satish Chandra Pant, Asstt. Professor, PGDM ABM, CCS National Institute of Agricultural Marketing, Jaipur has 5 years of Post-Doctoral experience in teaching, research, training and consultancy in the field of Agricultural Marketing, Agribusiness, Marketing and other allied domain. He has completed his PhD from G B Pant University of Agriculture & Technology, Pantnagar. He has attended several conferences, seminar workshops and presented papers. He has more than 10 publications in books and journals. He has invited as a guest faculty/speaker by various state and central institutions.

Mr. Ravi Kumar Chandra, deputed as eNAM State Coordinator by Nagarjuna Fertilizers & Chemicals Limited (Strategic Partner to eNAM) for the state of Rajasthan since inception of the project (April 2016), has completed his B.Tech&MBA in IT stream. He has 8+ years of experience and has an extensive experience in the domain of project management and execution. He actively looks into the overall implementation of the project, awareness campaigns, trainings, promotions and project operations. He has been invited as a guest faculty/speaker and also recognized & honored by various state/central institutions and dignitaries.



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ISBN - 13: 978-81-943252-2-2

