

e-NAM: A BEGINNING IN THE RIGHT DIRECTION

A CASE STUDY OF TELANGANA

 NATIONAL AGRICULTURE MARKET
NIZAMABAD
INGATE RECEIPT

LOT Code:
30-20180704-10

Gate Entry Pass No: 2018070301290000119

- Purpose: Auction/E-Tender
- Date: 04/07/2018 10:08:39
- Farmer: Subba Rayudu
- Mobile No: 9849123456
- Village: 123456

Commission Agent: D Radha Kishan

Company: D Hanumanth Rao & Company
Commodity: Turmeric Bulb

Bag: 70.00
Bag Type: 60 KG BAG

Appx. Quantity: 42.00
5477



National Institute of Agricultural Extension Management (MANAGE)
Hyderabad

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A CASE STUDY OF TELANGANA



National Institute of Agricultural Extension Management (MANAGE)

(An Organization of Ministry of Agriculture & Farmers Welfare, Government of India)

Rajendranagar, Hyderabad

MANAGE

The National Institute of Agricultural Extension Management (MANAGE), established in 1987, is an autonomous organization under the Department of Agriculture, Cooperation and Farmers Welfare, Ministry of Agriculture & Farmers Welfare, Government of India (GoI). The mandate of MANAGE is to assist Government of India and State Governments/UTs to help improve delivery mechanisms in agriculture and allied sectors through need-based changes in policies and programs, and also by way of improving the knowledge, skills and attitude of extension personnel. The Institute focus is on Training, Education, Research, Consultancy and information & documentation, apart from implementing some Central Sector Schemes

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National Institute of Agricultural Extension Management (MANAGE)

Rejendranagar, Hyderabad-500030, Telangana, India

Tel: 040-24594500

www.manage.gov.in

Preface

It goes without saying that the agricultural marketing system in the country is fraught with a number of challenges such as fragmented supply chains, dominance of non-value adding middlemen, paucity of right information at the right time and absence of economies of scale, etc. A number of trade and entry barriers further stifle the system. The need of the hour is to introduce a common market for agricultural produce in the country. Information Communication Technology (ICT) has the potential to address many of the limitations faced by the sector to help set up a common market for agricultural produce, thereby ensuring a better price-discovery mechanism for the farmers.

The ICT based scheme of National Agricultural Market (e-NAM) of the Government of India is a timely step toward evolving a common market for agricultural produce in India. The intervention of e-NAM aims at bringing about transparency, competition and efficiency in the operations of wholesale markets. The integration of physical markets envisaged under e-NAM can be a game-changer to unlock the potential of the agricultural sector.

The concept of e-NAM is much in tune with the pace of development of other sectors of the economy for evolving a common market in India. The reforms in tax regime for example, with the introduction of GST is a step towards “One Nation One Market”.

Now that 585 markets have already been covered under e-NAM and there are teething troubles being faced at the ground level to implement it in the envisaged direction, MANAGE felt the need for studying the system in major three markets of Telangana namely, Nizamabad, Suryapet and Mahabubnagar. MANAGE team has studied the functioning of the system in these three major markets, interacted with different stakeholders such as farmers, traders and Mandi officials, etc. The study has identified the issues for successful implementation of e-NAM and arrived at the steps to be taken for making it a success in future.

The report has been prepared by the MANAGE Centre for Supply Chain Management and Marketing in Agricultural Extension. I expect the study to be useful for policy makers, planners and researchers, etc.



V Usha Rani, IAS
Director General
MANAGE, Hyderabad

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Abbreviations

APLM Act	Agricultural Produce and Livestock Marketing (Promotion & Facilitation) Act, 2017
APMC	Agriculture Produce Market Committee
CA	Commission Agents
CWC	Central Warehousing Corporation
ECA	Essential Commodities Act
e-NAM/eNAM	Electronic National Agricultural Market
FAO	Food and Agriculture Organization
G&A	Grading and Assessing
GoI	Government of India
ICT	Information and Communications Technology
MSP	Minimum Support Price
NCML	National Collateral Management Services Ltd
NFCL	Nagarjuna Fertilizers & Chemicals Ltd
NWR	Negotiable Warehouse Receipts
PACS	Primary Agricultural Cooperative Societies
POS	Point of Sale
RBP	Rythu Bandhu Pathakam
RTGS	Real-time Gross Settlement Systems
SMS	Short Message Service (Mobile Messaging)
SWC	State Warehousing Corporation
UTs	Union Territories

Executive Summary

A common market for agricultural produce in India is an idea whose time has come. This is, however, fraught with many challenges like fragmented supply chains, long chain of middlemen, high transaction costs, limited availability of infrastructure, poor market information system and absence of economies of scale, etc. An ICT-based common market for agricultural produce has the potential to address many of the limitations faced by the sector, thereby ensuring a better price-discovery mechanism for the farmers.

Accordingly, the Ministry of Agriculture and Farmers Welfare (GoI) introduced a Central Sector Scheme for promotion of National Agricultural Market (NAM). The national market for agricultural produce envisaged to be run on an electronic platform is called the electronic National Agricultural Marketing (e-NAM). The concept was launched on a pilot basis in India on 14th April 2016. It has, at present, successfully covered 585 markets from 18 states/UTs. The national market facilitating barrier-free, inter-state trade would help in realizing favourable prices for both the farmers and consumers as the entire supply chain would be reasonably streamlined.

In order to analyse the different aspects of the implementation of the Scheme based on the lessons learnt from its execution in Telangana State, a study has been carried out by MANAGE covering three leading markets of the state, namely Nizamabad, Mahabubnagar and Suryapet.

Telangana has been a front-ranking state in the implementation of e-NAM. The traditional Mandi process have to be recognised and digitised for enabling seamless functioning of inter-Mandi trade on e-NAM platform. The adoption of e-NAM in the sample Mandis was found to be considerably helpful in digitising and integrating most of the intra-Mandi processes. The progress of the achievements so far gives hopes for the greater and efficient e-NAM platform facilitating inter-Mandi transactions. It has now been able to capture 100 percent arrivals in the markets along with price discovery on electronic platform (e-tendering) leading to better prices for farmers. The increase in average number of bids per lots after introduction of e-NAM suggests competitive price discovery in markets. E-tendering has also brought about efficiencies in the form of shortening of trade cycle hours in the Mandi and the Mandi is also in a position to handle large number of lots in a day. The Mandis, however, find it quite challenging to integrate

services like grading and assaying, online payments, weighment of the produce, etc. and may need to focus simultaneously on different aspects of the market and socio-economic bonding amongst farmers, traders and commission agents, to take the process to its logical conclusion.

There is a need to develop appropriate technologies and comprehensive strategy to integrate services like banking, grading and assaying, warehouses and weighment to help evolve a true national market for agricultural produce. There would be requirement to define role, responsibilities and norms for participation of different service providers for logistic management, etc. There is also the need for putting in place a mechanism to take care of inter-Mandi disputes. The present software has also to go beyond tapping trade transaction to make the market completely automated from individual market level to unification of markets to enable inter-Mandi trade to happen. The software has to offer complete solution covering both internal and external management.

e-NAM has the potential to overcome the challenges faced by the system, if it is, over time, able to move beyond application of technology by having a holistic development of the marketing system covering reforms, addressing concerns of stakeholders, grading and assaying facilities, integration of banking, warehousing and logistics and, institutional support to address any dispute arising in the entire supply chain. A proper policy will also be required to offer solution and incentives to different stakeholders, mainly farmers, in terms of knowledge and size to make the concept truly inclusive.

Background

Focus on enhancement of the income of farmers calls for a multi-pronged strategy covering production, value addition and access to market ensuring competitive and transparent prices. Marketing being of prime importance, assured market for agriculture produce is a pre-condition for ensuring access to inputs and remunerative output prices (Joshi, 2015). The agricultural marketing system has, no doubt, witnessed empowerment of farmers over the years, but has failed to offer remunerative prices as the markets are fragmented, inefficient and dominated by low scale and multiple middlemen (Chand, 2016). An ICT-based common market for agricultural produce has the potential to address many of the limitations faced by the sector, thereby ensuring a better price-discovery mechanism for the farmers.

In order to overcome the limitations of the marketing system in India and to evolve a common market for agricultural produce for better prices discovery, the Ministry of Agriculture and Farmers Welfare (GoI) introduced a Central Sector Scheme for promotion of National Agricultural Market (NAM) through AgriTecch Infrastructure Fund with a budget allocation of Rs 200 crore on 1st July 2015.

The national market for agricultural produce envisaged to run on electronic platform is called the electronic National Agricultural Marketing (e-NAM). The national market facilitating barrier-free inter-state trade would help in realising favourable prices for both the farmers and consumers as the entire supply chain would be reasonably streamlined (GoI, 2006).

The concept of National Agricultural Market, which was launched on a pilot basis in India on 14th April 2016 in 21 selected markets from 8 states covering 22 commodities has successfully expanded to 585 markets across 16 states and 2 UTs. The concept has registered impressive success in terms of number of markets integrated on a common platform. However, the impact of the initiative of e-NAM, in the light of its objectives, is yet to be analysed. The objectives of e-NAM as envisaged in the scheme include competitive and transparent price discovery, information availability, online settlement of payment, grade-based inter-state trade, infrastructure creation and integration of services like banking and storage.

With this background, a study has been carried out by MANAGE to analyse the different aspects of the implementation of the Scheme based on the lessons learnt

from its implementation in Telangana State, a leading state in terms of number of markets covered. Nizamabad market from the state has already been awarded the best e-NAM market during 2017, for effective implementation of the Scheme.

Objective

The study mainly aims at assessing the status of the implementation of e-NAM in terms of operations and infrastructure creation and, benefits as perceived by different stakeholders. The study also aims to record the limitations faced in the implementation of different aspects of the concept underlying the scheme and to suggest measures based on the findings to make e-NAM inclusive and farmer-friendly.

Methodology

The findings of the study are mainly based on the qualitative information collected through interaction with relevant stakeholders at the selected markets in the State of Telangana. A total of 44 APMC markets have so far been covered under e-NAM in the state. Out of these, three markets were selected in consultation with the officials of the Department of Agricultural Marketing, Government of Telangana based on their location, usefulness and effectiveness in the implementation of e-NAM. The findings of the study are based only on the observations made in the selected three markets namely Nizamabad, Suryapet and Mahabubnagar. An interaction with about 40 stakeholders was carried out during the visits to these markets in addition to the discussion with APMC staff and officials (Table 1 and Figure 1).

Table 1. Details of markets covered under the study

Sr. No	Market	e-NAM Linkage	Distinction	Farmers	Traders	CAs
1	Nizamabad	14.04.16	Tendering from Open Auction	5	4	5
2	Suryapet	01.07.16	Comprehensive Coverage	4	6	8
3	Mahabubnagar	09.09.16	Weight Integration	2	4	2

The information from different stakeholders covering farmers, traders, commission agents, market staff and officials was collected using a semi-structured questionnaire. The qualitative information obtained through observations from field visits to the sample markets across the state has also been utilized. The secondary information made available by the selected markets have also been used.



Figure 1. Location of Districts Represented in the Study

Presentation of Report

The report comprises eight sections. The second section, followed by background, provides an assessment on the ability of e-NAM in achieving a common market operating at national level. Section III speaks about the profile and trade procedure followed broadly in the selected markets after their integration with e-NAM Portal. Section IV deals with the observations made during the visits to the selected markets on different activities carried out under e-NAM. Section V speaks about the response of different stakeholders on the implementation of the scheme and their perceived benefits and challenges. An attempt has been made in Section VI to compile major learnings from the implementation of the scheme in Telangana and some suggestions for improved acceptance of the initiative by different stakeholders are presented in Section VII. Last Section (VIII) suggests a way forward for achieving national market for agricultural produce. An executive summary has been placed in the beginning of the report.

Realizing Common Market through e-NAM

E-NAM being an enabler of a common market for agricultural produce in India, a brief description of the importance of a common market will put the discussion in the right perspective.

It is a fact that the agricultural economy of India has moved from an era of shortage and scarcities to that of self-sufficiency and surplus. The need of the hour is to further unlock the potential of the sector for enhancing its contributions to the overall growth of the economy in terms of income, employment and output. There is a need to remove different restrictions on the movement and storage of agricultural produce. The trade barriers and entry barriers have to be done away with to move towards perfect competition in the sector. Thus, there is a need for trade liberalisation in agriculture to help evolve a common market operating across states.

As restrictions on domestic trade are relaxed, prices stabilise across states and there are welfare gains to producers, consumers and the wholesale traders at the national level (Jha and Srivivasan, xxxx). The removal of inter-state barriers would impact the realisation of better prices by the Indian farmers as supply chains between the producers and consumer would be reasonably streamlined (FAO, 2005).

In order to create an enabling environment for e-NAM, requisite reforms in agricultural marketing have accordingly been suggested by the Government through a Model APMC Act in 2003 and recently through the Model APLM Act, 2017. The Act suggests various provisions required to facilitate inter-Mandi trade like single license, single point levy and electronic trade. Only 14 states/UTs have incorporated all the three provisions in their respective AMPC Acts. In addition, there are seven states either having no APMC Act or repealed their acts (DMI, 2018). However, there are aspects going beyond legal reforms for a common market operating across different states, like political, economic, technological and development of requisite infrastructure. The evolution of a national market call for a comprehensive policy addressing different dimensions of a common market.

Box 1. An Indian Single Market

A study by FAO on moving towards ‘An Indian Single Market’ suggests that major problems faced in internal trade are diversity of controls exercised by multiple authorities at different levels, restrictions of inter-state and inter-district movement of goods, lack of uniformity in standards laid down by different authorities and agencies and in taxes. The higher costs involved in terms of time and resources lead to inefficiencies in the trading operations and breaking up the vast India Market into a large number of smaller regional markets. The causes of the above problems have been grouped broadly into four categories i.e. (i) Restrictions imposed by different Acts (ii) Fiscal aspects (iii) Transport and (iv) Agriculture trade related issues. The Essential Commodities Act (ECA) is a Central legislation to control the storage, movement and trade in a large number of commodities. Many of the provisions under these control orders are now outdated. The Government keeps on revising the list of commodities considered under the ECA. It would be better if the ECA, 1955, was put under suspended animation for the present and revived by Government notification if any emergency situation develops, for a limited time for a specific commodity in a specified area.

Fiscal reforms are important in facilitating the growth of efficient trade. The GST is an attempt in the same direction. A tax on agricultural products decreases the price received by farmers and increases the price paid by consumers. As farm incomes lag behind average Indian incomes and the poorest sectors of non-farm society spend the highest proportion of the income on food, indirect taxes applied to food products are doubly regressive. Furthermore, removing internal indirect taxes on agricultural products would tend to make Indian agricultural products more competitive on export markets.

Commercial vehicles moving across borders face a multiplicity of checks from different authorities relating to road tax, license fee, payment of excise/VAT, Essential Commodities Act, forest conservation, pollution control, security etc. The inefficiencies prevailing in the sector can be understood from the fact that the cost of transporting of commodities within India on many occasions are more than international transport (Ramesh Chand, 2002)

Sourced from National Commission for Farmers (Report 3) and FAO (2005)

It goes without saying that a common market for agricultural produce in India is stymied by a number of inter-state restrictions in terms of stock limit defined under EC Act, absence of common trade language, single license and single-point levy of market fee. The reforms measures, as suggested by the Ministry, have not been adopted by all the states. These inter-state trade barriers lead to higher transaction costs and qualitative and quantitative losses.

The FAO report for National Commission for Farmers also finds inter-state trade to be complex, being affected by restrictions imposed by different Acts, fiscal aspects, transport and agriculture trade (regulations) related issues (see Box 1). The evaluation of a free trade area has to deal with issues like heterogeneity in the rules of origin, non-tariff barriers, trade facilitation, technical regulations, infrastructural shortfalls, financing, standards and conformity with assessment procedures (EPRC, 2011).

Implementation of e-NAM in Sample Markets

Profile of Markets

The profile of the selected markets in terms of year of establishment, major commodities being traded and strength of different functionaries is presented in Table 2. These markets are very old with sufficient market functionaries to handle volumes arriving in the market. These markets have come forward to implement e-NAM proactively. The staff and officials of all the markets were found to be enthusiastic to adopt the changes and mould their functioning as per the needs of e-NAM. The case of e-NAM was well supported by other stakeholders as well like traders, commission agents and various market functionaries.

Table 2. The profile of sample markets

Sr No.	Items	Unit	Suryapet Market	Mahabubnagar Market	Nizamabad Market
1	Established	Date	21.02.40	16.04.65	29.01.38
2	e-NAM Introduced		01.07.16	09.09.16	14.04.16
3	Notified Area (Mandals)	No.	05	05	06
4	Major commodities	Name	Paddy, Pulses, Groundnut, Caster and Maize	Paddy, Groundnut, Maize, Caster and Ragi	Paddy, Maize, Turmeric, Soybean, Onion, Pulses and Oilseeds
5	Market Functionaries	No.	873	326	710
6	Godowns (Number)	No.	02	05	06
7	Godowns (Capacity)	MTs	12400	5300	26000
8	Officers/ staff	No.	17	07	36
9	Staff (outsourced)	No.	17	15	17

Infrastructure created for e-NAM Implementation

The markets considered under the study have developed sufficient infrastructure to support the implementation of e-NAM in the market. Under the Scheme of e-NAM there is support of Rs 75.00 lakhs available for development of different infrastructure including ICT based infrastructure and facilities for grading and assaying.

The status of arrangements made for implementation of e-NAM in the market is provided in the Table 3.

Table 3. Status of arrangements made for the implementation of e-NAM in selected wholesale markets

Sr No.	Items	Unit	Suryapet Market	Mahabubnagar Market	Nizamabad Market
1	NAM Bidding Hall (systems)	No.	15	20	22
2	e-Gate entry facilities	No.	01	02	02
3	e-Gate entries at display shed	No.	10	14	13
4	Net Connection - e-NAM Hall	Mbps	50	10	10
5	Net Connection – Gate Entry Room	Mbps	04	10	6
6	Generator	No.	01	01	02
7	Electronic weighing machine	No.	100	60	165
8	POS Machine	No.	50	35	100
9	Data Entry Operator	No.	02	02	10
10	IT Staff	No.	10	--	03
11	Grading Staff	No.	03	03	05

The table suggests that implementation of e-NAM in the market has encouraged creation of sufficient ICT facilities. The e-NAM seems to be helping modernization of the Mandies with application of electronic and communication means like internet and wifi facilities. Application of e-NAM, at present, is confined only to a few marketing functions. There is need for all the activities of Mandi including fee collection to be computerised in a holistic manner for the efficient functioning of the markets. In the long run, e-NAM is required to be developed as a comprehensive platform covering complete range of functions related not only to trade but also to functions performed by different users like traders, commission agents and Mandi. This should be in alignment with the activities like stock management, fee collection, details of payment, etc.

The market committees have developed bidding halls with sufficient computers to be used by different buyers for placing their bids. This is found to be sufficient to accommodate participation of about 55-65 active buyers. Unlike the other two markets, Nizamabad has been successful in motivating the trades to use their own computer facilities and not fully rely on facilities created by Mandi. This is a step in the right direction to enable the trader to do their business on e-platform as envisaged in e-NAM. Appropriate provisions have also been made for internet connectivity and regular power supply in the markets.

Value traded on e-NAM Platform

The status of trade performed through e-NAM portal in terms of volume and value is being presented in Table 4. The table suggests substantial amount of trade, in terms of value, being performed on the platform. Nearly 1800 crore worth of trade has taken place in the selected markets since the introduction of e-NAM.

Table 4. Status of trade performed on e-NAM in selected markets

Sr No.	Market	Duration	Volume (LMT)	Value (Rs Crore)
1	Suryapet	31.08.16 – 12.09.17	1.58	435.42
2	Mahabubnagar	09. 09.16 – 14.06.18	0.62	139.68
3	Nizamabad	01.04.16 – 31.03.18	3.01	1214.00

Beneficiaries Registered

The market committees have successfully registered almost all the active traders and commission agents on the e-NAM platform. The market committees have also proactively registered the farmers with their basic details like name, village, mobile number, etc. The bank-related information have initially been kept optional as some of the farmers have shown reluctance to share their bank details and participate in online payment of their sale proceeds. A total of 177385 farmers have so far been registered along with 621 traders and 341 commission agents (Table 5).

Table 5. Details of different stakeholders registered on e-NAM

Sr. No.	Items	Suryapet Market	Mahabubnagar Market	Nizamabad Market	Total
1	Farmers	68262	50796	58327	177385
2	Traders	118	80	423	621
3	Commission Agents	125	76	113	314

Status of Implementation of the Scheme

The market committees have successfully implemented various conditions of e-NAM like issuing gate passes, electronic bidding and after sale arrangements like e-agreements, generation of sale receipts and generation of exit passes (Table 6). Grading and assaying facility was outsourced for some time to NCML, which could not be continued due to limited response from buyers. Some of the basic processes of transactions in Mandies such as

weighment, warehouses activities and banking are yet to be integrated to the e-NAM system. This demands steps in terms of both its software and hardware aspects.

Bank has not been integrated, as there is high demand for cash payment on the part of farmers and commission agents still play a role in settling the payment to the farmers in place of traders as suggested under e-NAM. This can be overcome as has been done in other states like Rajasthan. In Rajasthan provision has been made in e-NAM system to enable a commission agent to make payment on behalf of a traders. Commission agents, after all, can not be weeded out immediately from the system, as they have a role to play. Farmers have also expressed their reservation in accepting online payment, as discussed in details elsewhere in the study.

Table 6. Status of implementation of e-NAM in selected markets

Sr No.	Marketing Functions	Suryapet Market	Mahabubnagar Market	Nizamabad Market
1	Electronic Gate Passes	√	√	√
2	Electronic Bidding	√	√	√
3	Announcing Winner (Display Board)	√	X	√
4	Exit Pass Generated	√	√	√
5	e-agreement	√	√	√
6	Generation of Sale Receipt	√	√	√
7	Grading and Assaying	X	X	X
8	Announcing Winner (SMS)	X	√	X
9	Acceptance of Price by Farmer	√	√	√
10	Integration of weighment with e-NAM	√	√	√
11	Online settlement	X	X	X
12	Market Information dissemination	X	X	X
13	Inter-state trade on e-NAM portal	X	X	X
14	Integration of Warehouses	X	X	X

**Grading and assaying facility was pilot tested under PPP mode for a limited period of time while weight integration is on pilot basis*

There is need for real-time dissemination of information with the use of appropriate tool. Information empowers the farmers by improving their bargaining capacity, and hence the same needs to be delivered in a farmers-friendly manner. Though portal like agmarknet.gov.in has been able to capture requisite information, focus has to be given on dissemination of the same amongst farmers by covering the

last mile linkage through technology of mobile telephony and tickers at important sites.

Thus, it is seen that the selected markets have successfully implemented some of the elements of e-NAM. However, in order to have the desired impact of e-NAM on the sector, what is required is a holistic approach for its implementation by digitising and integrating all the components of Mandi transaction, such as weighment, grading and assaying, payment to farmers through banks, etc.

Direct Sale Platform

In addition to the implementation of the scheme for overall trade, the Direct Sale System was also introduced in the Nizamabad Market on the same e-NAM Platform. The initiative was introduced to ensure better price discovery for the farmers by linking them directly with the buyers without the involvement of any commission agent. The status of trade performed on the direct sale platform is provided in Table 7. This is an appropriate step to encourage direct linkage of farmers with traders to help farmers realise a better price.

Table 7. Status of direct sale system in Nizamabad

Sr No	Item	Status (No.)
1	No of farmers registered (No.)	2620
2	No of buyers registered (No.)	46
3	Total commodities (No.)	04
4	Quantity traded (MTs)	1645
5	Business Volume (Rs Crore)	7.90

Schedule of the Day

The introduction of concept has helped in shortening the trade cycle through efficient performance of different functions. In the traditional manual system, the trade cycle on an average day of trade would continue till very late in the evening, extending even up to mid-night during peak days of arrival. The online system facilitates expeditious completion of trade cycle by defining the timeline for different operations like gate entry, e-bidding, weighing, issue of sale-related documents and payments, making it possible to complete everything by evening.

Trade Processes followed in e-NAM Market

The process flow at the sample markets after their integration with the e-NAM platform is depicted in the Figure 2. After a farmer arrives at the market with his agri-produce, an electronic gate pass is generated at the market entry gate with a unique lot number to facilitate rest of the trade process. A gate pass contains information like name and address of the farmer and details about the commodity along with its approximate weight. Commission agents are allotted as per the preference of the farmer, as most of the farmers have prior relations with them. In case they are visiting for the first time, they are provided with the list of commission agents active in the market to choose one from the list. The commodities, upon their arrival in the Mandi, are unloaded in the sheds for the purpose of display. The lot ID Slip (lot number/ Gate Pass Slip) is displayed on the heap. The sample is collected at this stage for grading and assaying and assessment report is provided against the lot number on e-platform to facilitate the traders in taking trade decision.

Since the grading facility which was operation for some time is not functioning, the quality of the produce is assessed on the basis of physical examination by traders or their representatives. These heaps are visited by the licensed traders/purchasers for physical assessment of the quality and quantity of each heap before quoting prices through online bidding. The trades quote their bids electronically for the lot they are interested in. Since the facility is internet-based, the quotation by the registered traders may be made from anywhere by accessing their accounts using internet within the time prescribed for e-bidding by the Committee for that particular commodity. However, now the traders are placing their bids using the facilities created by the Committee for the purpose except for the Nizamabad market. In Nizamabad market, traders are placing quotes through their own arrangements. In this way, the rates quoted by different traders for different commodities are collected. At the prescribed time, the system brings out the successful quotations i.e. highest prices quoted for different lots of commodities will appear on the monitor. The information about successful bids can be accessed from anywhere with the help of internet by the registered user. However, same is also being disseminated by the APMC using different means like printouts and display board.

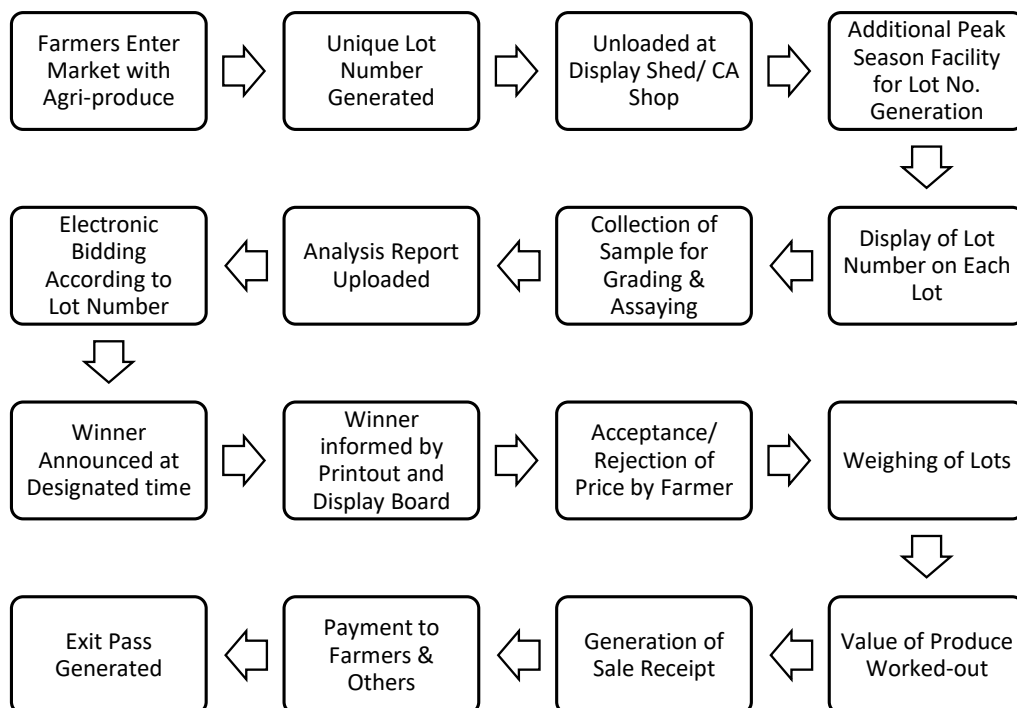


Figure 2 Flowchart depicting the process flow in the e-NAM market

The consent of the farmers is obtained for the quoted price with the help of concerned commission agent. A window of about 30 minutes is provided to farmers to obtain their consent on the rates offered by the purchasers, using concerned commission agent. If a farmer doesn't accept the quoted price of his produce, the same lot will be placed for next day bidding. The affirmative reply of the farmer leads to recoding of actual weight of the commodity. On getting the final weight, a primary sale bill is generated. The value of produce on the basis of price and weight is worked out and payment is made to the respective stakeholders like price to the farmers, fee to the APMC and charges to different functionaries. This completes the transaction at APMC with generation of exit passes.

Market Functions under e-NAM Framework (observations from field)

The section deals with the status of each trade-related function being performed in the market as per the framework defined under National Agricultural Market (e-NAM). The performance of each function is based on the discussion with different stakeholders and observations made during the visits to the selected markets.

Electronic Gate Entry

Electronic entry of commodities arriving in the market is an important activity to enable the execution of rest of the trade-related functions in the market. The electronic gate passes are issued to all the lots arriving in the market. In peak season, it is found difficult to record all the entries at gate due to arrival of large volumes. Also, gate passes are issued only during a given window in morning hours (for example, it is 8.00 – 10.30 am at Suryapet wholesale market) but commodities keep arriving continuously from mid-night onwards during peak season. In order to avoid chaos outside market, the entry of farmers into the market is made flexible. However, additional facilities have been created by markets to ensure electronic recording of every lot entering the market during peak season. An additional computer cabin is established at each of the ten display sheds in the case of Suryapet Market. The farmers can get their arrivals entered on the e-NAM platform through these Kiosks available in each shed and obtain the electronic lot number. The facilities created for bidding is used for the purpose in Nizamabad market. The level of trade is not uniform for agricultural commodities for its seasonal nature. Innovative approach is required to optimally utilise the infrastructure created to adjust to the peak season load.

Electronic Bidding Process

Competitive, transparent and scientific discovery of prices is an important objective behind introduction of regulations in marketing of Agri-produce. This could be achieved to a limited extent in regulation regime due to manual operations of bidding process and formulation of cartel among buyers. This system also suffered for its limitation to efficiently manage large number of lots during days of peak arrivals mainly in terms of time. NAM envisages enhanced degree of competition and transparency by shifting manual tendering process to electronic platform at

intra-market level and by encouraging participation from other markets for inter-Mandi trade.

The tender process for all the lots in case of each commodity in all the three sample markets is being performed electronically utilizing e-NAM portal. Around 40-60 active buyers participate, on an average, in the online bidding process every day.

The method of price discovery followed in the Nizamabad market before introduction of e-NAM was open auction. The market shifted to closed tender process considering its convenience in operation on e-NAM Platform (Box 2). The market has successfully shifted to the new system on e-NAM platform.

The trade, though confined to local market, has been able to bring in efficiency in terms of time as revealed by the number of lots managed by the markets even during peak days of arrivals. The maximum number of lots handled on e-NAM portal in a day varies from 1164 lots in Suryapet market to 11200 lots in Nizamabad market (Table 8). The timely completion of trade cycle, generally by 5.30/6.00 pm, also suggest the time efficiency in completion of different processes. The average number of bids per lots (worked out on sample dates) also suggest competitive and transparent discovery of prices though trade at present is confined to local Mandi only. Each lot in selected markets on sample date have received an average of 6.55 bids (Table 9).

Table 8. A snapshot of bidding performance in selected markets

Sr No	Particulars	Maximum Lot Arrived on e-NAM in a Single Day	Highest Number of Bids for a single lot
1	Suryapet	1164	18
2	Mahabubnagar	1294	14
3	Nizamabad	11200	18

Table 9. Degree of competition as reflected by average number of bids received per lot

Sr No	Market	Date	No of Lots	No of Bids	Average No. of Bids per Lot	Max No. of Bids per Lot	Min No. of Bids per Lot
1	Suryapet	30.05.18	0201	00772	3.84	8	1
2	Mahabubnagar	27.02.18	1240	10260	8.27	12	3
3	Nizamabad	02.05.18	1634	09094	5.57	18	3
4	<i>Average</i>	--	<i>1025</i>	<i>6709</i>	<i>6.55</i>	<i>18</i>	<i>1</i>

Declaring the Bid Winners

After the completion of bidding time, the winning list is published by the system automatically. Same can be accessed online by different stakeholders (mainly commission agents and traders) by logging into their accounts. However, the Mandi Committees also share the same using different means like display board, SMS, printouts, etc. Printouts are provided mainly to commission agents to facilitate rest of the trade related functions. Though the price is discovered electronically, the mechanism followed to share the information on successful bids is mainly manual as different stakeholders are not accessing it online except traders in Nizamabad market.

Grading and Assaying

In the overall framework of e-NAM, grading & assaying (G&A) should be integrated with other market operations on real time basis. The component of grading and assaying was implemented in different markets on pilot basis for six months by outsourcing the component to NCML. NCML is authorised by the state Government as a service provider to draw samples, analyse them and upload the assessment report on the e-NAM system for use by different stakeholders. Under the arrangement, a lab was established by each market committee and providing technical support was the responsibility of the NCML. The samples for analysis were collected from display shed after unloading of the commodity.

The results after assessment are uploaded onto the portal against the unique lot ID Number for taking up the inter-market transaction and facilitate local buyers to complete their transaction. The specifications used for reference are as defined under e-NAM. There is no specific mechanism defined to address the dispute arising out of grading and assaying. The sad laboratory, at present, is not functional

Box 2. Open Auction Vs Sealed Tender – An Illustration

Another important aspect of shifting to e-NAM is the uniformity in different operations. One such operation is the mechanism followed for scientific discovery of prices. The method generally used under the regulation for price discovery in different markets is either sealed/closed bid/tender or open auction method. Close or sealed bid seems to be a better choice from e-NAM viewpoint. Same is illustrated with the help of an example.

Illustration

The details of sealed bid placed by three traders for a particular lot of Paddy (RNR) in Suryapet Market on 30th May 2018 are as provided below.

Sr No	Traders	Date	Time	Bid Rs/Qt
1	Trader 1	30.05.2018	10.06.08	1706
2	Trader 2	30.05.2018	10.04.05	1588
3	Trader 3	30.05.2018	10.12.28	1601

The interest in this particular lot of Paddy was expressed only by three buyers. The range i.e. difference between minimum and maximum is Rs 118. The traders in this case just have to place their bids once through electronic tender system. While in case of Open Auction, if price is being increased by three traders by Rs 5 every next bid, which is quite a conservative assessment as prices in agricultural market will often move even by one rupee or even 50 paise, each trader will have to bid at an average eight time and will have to be vigilant throughout the window available for bidding.

A total of 3338 lots of different type of Paddy arrived in the Suryapet Market on 30th May 2018 (the day considered above). Assuming that a particular trader is interested to buy only ten percent of these lots i.e. 334 lots only, he will have to make only 334 entries in the e-tendering system while his counterpart buying through Open Auction will have to make 2672 (334 x 8) entries taking place over a range of time and will have to be vigilant all through the process. Keeping a track of these many lots will be a cumbersome task. This will also need huge infrastructure as system will be kept engaged for more time in comparison to sealed tender. There is need to adopt a single system after considering other aspects as well like better price realization in each system and ability of the market to shift to a new means of price discovery. The Nizamabad market has successfully shifted from Open Auction to e-tendering for smooth implementation of e-NAM. In addition to convenience, closed-tender may help in better realisation of prices as well. Many studies, though for other commodities, mainly timber, have also found sealed bid to be generating higher revenue. Both the methods ensure transparent and competitive prices but some studies have suggested better revenue generation in sealed bid (Athey et al, 2014, Johnson, 1979, Schuster and Niccolucci, 1993, Schuster et al 1997 and Koh, 2007) over open auction (Yuen, 2012). The difference in revenue realization in two methods will also depend on other attributes like actual number of bidders, size of bids, level of knowledge, etc. The difference may be minimum with fixed number of participants (Cheng, 2006), which actually is a case in agriculture at present.

due to poor response of users. Traders still prefer to assess quality of the produce on the basis of physical examination (Table 10).

Table 10. Information of Grading and Assaying facility

Item	Status
Laboratory	Yes
Arrangement	PPP
Lab Technicians (Outsourced)	03 (average)
Sample Collection	From display platform
Lab Accreditation	No
Trade Parameters	Agmark Specification
Dispute Mechanism	Not specific to this activity
Equipment	Basic equipment like moisture meters, cleaners, balance, etc. are available
Assaying report used by traders	Generally not
Sampling procedure	Not properly defined

Weighment

The concept of e-NAM foresees integration of weighment with the market operations. Such an integrated system will facilitate the decision making of buyers by providing information on quality and quantity of the produce even before placing the bid for a particular lot. However, in most of the markets, weighment is done after auction. Same is the practice followed in sample markets. The markets have sufficient digital weight machines and staff to manage the post-bidding weighing process (Table 11).

Table 11. Status of weighing facilities in selected markets

Sr No	Items	Suryapet Market	Mahabubnagar Market	Nizamabad Market
1	Licensed Weighmen	56	27	72
2	POS Machine	50	35	100
3	Weight with Bluetooth	100	60	165
4	Weighting (pre/post bidding)	Post-Bidding	Post-Bidding	Post-Bidding
5	Weighing integrated with e-NAM	Yes	Yes	Yes
6	Integration being practiced	Pilot	Lean Season	Pilot

The state is making efforts to completely integrate the weighting procedure with the e-NAM Portal and accordingly is in the process of procuring sufficient equipment

like Bluetooth enabled weights to integrate the weighting with the electronic e-NAM portal. The weighment has successfully been integrated in Mahabubnagar market and is used successfully during lean period.

One of the important components for the complete intra-Mandi automation is integration of weighment. The e-NAM platform already has the provision to integrate weigh-bridge but integrating the weighment of small lots is still a challenge. It is highly relevant in an environment where majority of the producers are smallholders coming to the market with small lots. Software has been developed by NCFL to integrate the electronic weight machines with the e-NAM portal. The proposed process for integration of the weighment with e-NAM portal is as depicted in Figure 3.

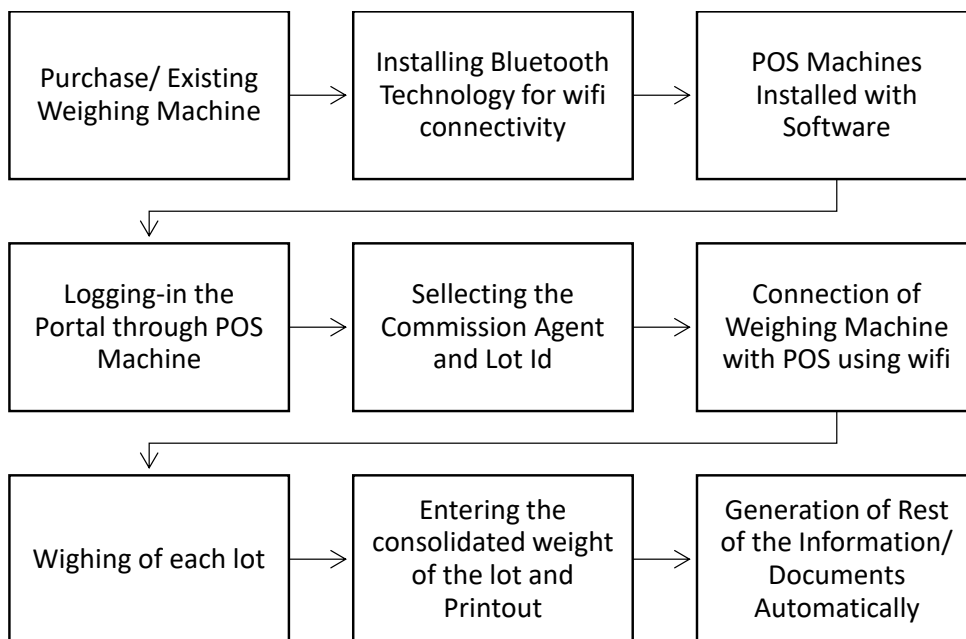


Figure 3. Flow chart for integration of weighing with e-NAM

The fully functional system of weighing integration is going to benefit all the stakeholders, farmers the most. In manual system, the recording of weight is not perfect, leading to loss of 40-60 grams of produce weight every single time, while in integrated system, absolute measurement of weight is recorded. However, in a situation dominated by smallholders visiting a market with large number of small lots, the integration of weighing is challenging.

Some of the challenges as observed during the field visits are listed below:

- During days of peak arrivals, the technology and system does not seem to be adequate and may need improvement so that all the lots can be covered efficiently.
- The POS device being used at present is quite bulky with clumsy key board and seems to be poorly supporting the implementation during peak days of arrival.
- Electronic weights available in the markets need to be installed with Bluetooth technology which costs something in the range of Rs 10000. Often Commission Agents are not willing to bear the expenditure which, they feel, is unproductive for them.
- The weighing, though integrated, is still done after the bidding process is over. The pre-bid integration which will help the traders better in trade-related decisions is still available only when weighing is through Weigh Bridges.
- This system runs on internet and wifi. The APMC campus needs to be made available with continuous and reliable services of wifi and internet, so as to make the weight recording procedure efficient and smooth.
- The limited level of literacy and understanding of the licensed weighmen make it difficult for them to understand and use the technology efficiently. It is limiting Mandi ability to achieve higher degree of operational efficiency due to dependence of these weighmen on the Mandi staff for smooth execution of weighing.

Warehousing

An ideal market operating as per the framework of e-NAM will have vertical integration of operations and horizontal integration of functions like warehousing. A warehouse under the present arrangement can obtain license from the APMC to operate as a sub-market yard. No warehouse has so far applied for the same in the selected Mandies covered under the study.

However, the market committees are having their own warehouses being used mainly for MSP operations by PACS or Civil Supplies Department (Table 12). Warehousing facilities created by APMCs are not integrated with the Mandi trade operations. The arrivals at present get traded the same day. In exceptional cases where commodity is not sold out the same day, farmers leave the same at the

commission agents' shops, rather availing warehouse facility available at the Mandi as the same is not integrated with the marketing system. The warehouses available at the markets are also not being used to offer finance against receipt to the farmers except Nizamabad market, where financial services against stored goods are provided to the farmers under RBP Scheme.

Table 12. Storage capacity available in different selected markets

Sr No	Warehouse	Suryapet Market	Mahabubnagar Market	Nizamabad Market
		Capacity (MT)		
1	PACs/other public Agencies	1200	1000	20400
2	Storage dedicated for farmers	600	2500*	5600
3	Vacant	5600	--	--
4	Other uses	5000	4300	--
5	Total	12400	7800	26000

**Under construction*

Payment

Prompt payment is one of the major objectives of a regulated market. The time frame has been defined in the APMR Act for making payment to farmers, though it is difficult to monitor in a system dominated by cash payment of the proceeds. The provision of online payment has been introduced in e-NAM but is not in practice in the sample markets. Commission Agents prefer cash payment on account of convenience, delay in payment in case of cash crunch and adjustment of previous payments, if any, made to farmers. Commission agents are making large payments only using RTGS facilities outside the e-NAM platform. The Mandi officials are making efforts to facilitate all the payments online directly to the accounts of farmers and market functionaries (Table 13).

Table 13. Status of electronic payment on e-NAM Platform

Sr No	Payment Particulars	Status
1	Provision for e-payment on e-NAM Platform	Yes
2	e-Payment in practice on e-NAM platform	No
3	No. of e-Payment Made	Nil
4	RTGS Service (Outside e-NAM platform)	Yes

Note: Only 2641 payments have been made in Nizamabad on e-NAM Direct Platform

Farmers have also shown their preference for payment to be made in cash for various reasons. Some of the reasons as suggested by farmers are listed below:

- Produce not always brought by farmers but by aggregators due to small surpluses; also produce is often aggregated by the farmers as well
- There are prior financial commitments of farmers with commission agents, as farmers avail loan from them
- Non-availability of banks in the villages making it difficult for farmers to withdraw cash
- Multiple small transactions leading to inconvenience to commission agents in making payments
- Mobiles, not registered, leading to problems in verification of payment made in the Mandi
- There is cash withdrawal limit in bank branches in rural areas (may be unofficial operational limit only) leading for requirements of numerous transactions to withdraw sufficient cash, as most of the rural payments are made in cash

Financing

The markets so far have not been able to integrate bank and warehouses with the trade as envisaged under e-NAM. This limits the implementation of concept like financing against commodities stored in warehouses. The Market committees have their own warehouses constructed with reasonable capacity but are being used for MSP operations. No other warehouse operating under CWC/SWC/Private management has approached the market committee for obtaining license to operate as market sub-yard. Nizamabad market, though, is using its capacity to provide financial support under RBP Scheme.

Unification

The market committees have successfully implemented some basic elements of e-NAM, but it is a far cry from the condition to enable inter-Mandi transactions. The Mandi staff opine that inter-Mandi trade is going to be quite challenging as it requires not only all the functions within the Mandi to be digitised and integrated but also similar kinds of preparations in other markets i.e. the overall integrated marketing system. Winning trust of participating traders is again going to be challenging in an environment where trade runs on trust, physical examination

of commodity and credit payments. Harmonization of the legislations (along with other factors) across the states is also sine qua non for the unification of the marketing system (Table 14).

Table 14. Status of provisions required for Unification of markets

Sr.No	Marketing Functions	Status	Remark
1	Single licensing	√	--
2	Grading and Assaying	√	Discontinued
3	Acceptance of grading and assaying through e-NAM	X	Not able to facilitate trade decisions as suggested by traders
4	Logistic Arrangements	X	No inter-Mandi trade
5	Market Fee Collection (online)	X	--
6	Bank integration for online payments	√	Payment not happening due to operational issues and reluctance of farmers
7	Warehouse integration	√	No warehouse issued license so far
8	Inter-Mandi transaction	X	--
9	Information (Price and Arrivals)	√	By integrating with agmarkent.gov.in May need a better dissemination system with last mile connectivity
10	Credit	X	NWR provide a means to avail credit. Rythu Bandhu Pathakam Scheme being implemented in Nizamabad (TS)

There is need for developing national level standards and specification to be followed by all the states. Quality standards, specification for labelling and presentation of products need to be aligned with the defined system for national trade and with world standards for global trade. Similar efforts have been made by various participating countries in Common Market Organisation under European Union (Jasna, et. al., 2009). The unification is justified by a need to ensure equal conditions of competition in the Community (Kulawik Jacek, 2015).

Stakeholders' Response

The concept of e-NAM has been introduced not only to make the marketing system efficient but also to facilitate ease of doing business for different stakeholders. Accordingly, the perception of different stakeholders in the sample e-NAM markets has also been recorded.

All the stakeholders including traders, commission agents and farmers have expressed their satisfaction about the initiative. The biggest advantage was observed in terms of saving of time to perform the complete cycle of trade inside market. Earlier, the complete cycle of trade from farmers' entry to dispatch used to take more than 12 hours and even used to go upto mid-night on a day of heavy arrivals. However, after the introduction of e-NAM, on an average, the cycle gets completed by 5.30 pm. The respondents were not able to speak clearly about the impact of NAM on parameters like arrivals and lowering of transaction costs. Some of the farmers felt better price realisation in the new system. The traders also observed fewer mistakes in the declaration of bids in the new system (Table 15). The grading and assaying facility was made available by the Mandi through NCML for about six months but was not effectively used by traders due to their reliance and trust on the age-old practice of physical examination. They also felt the information provided through assessment report was not fully useful for them, and they trust personal physical evaluation as most of the trade is taking place locally and no inter-Mandi trade is taking place. The traders not only expressed their convenience with their old practice of physically examining the agri-commodity but also expressed their limitation on the reliability of the assessment report.

Table 15. Response of different stakeholders on e-NAM initiative

Sr No	Items	APMC	Traders	Commission Agents	Farmers
1	Time Saving	√	√	√	√
2	Convenience	√	√	√	√
3	Transparent	√	√	√	√
4	Better Price	--	--	--	√
5	Bank Payment	X	X	X	X
6	Grading & Assaying	√	X	X	X

The market committee also feel that formal grading and assaying is quite challenging to integrate with the system as it is multi-faceted and time consuming. The arrangements made in the Mandi during pilot testing for grading and assessing were not sufficient even to cover 10 percent of the lots arriving on an average day. The market committees also found it highly challenging to integrate bank for online payments for the reluctance of both commission agents and farmers. It needs a comprehensive strategy including incentive for users and bringing banks on board to make them understand the complete requirements of the Mandi trade.

The market committee staff gave some suggestions for further improvement of the software of e-NAM. The market committee staff is of the opinion that e-NAM is a step in the right direction but will need lot more to be done to make the system more efficient and vibrant. The present software under e-NAM provides for operations related to Mandi-trade though there are so many operations beyond trade by stakeholders like Mandi, traders and commission agents which needs to be covered to enhance its acceptability. The software has also to go beyond tapping trade transaction to make the market completely automated from individual market level to unification of markets to enable inter-Mandi trade to happen. The software has to offer complete solution covering both internal and external management.

Broadly, all the stakeholders expressed the new e-NAM based system to be better than the previous system in terms of convenience, time saving, transparency and price realisation. However, the operation of system is sometimes hindered by non-availability of uninterrupted internet, infrastructure and sufficient staff.

The traders, while hailing the system to be time-efficient, expressed the need for some more reports to be generated by the software to meet their needs. There is a need to make the software interactive over fields of information, so that all possible kinds of reports can be generated as per the requirements of different users.

Highlights of the Implementation of e-NAM in Telangana

The concept was introduced in the state in the first phase during 2016. Though it has to go a long way before implementing the same in a holistic framework, there are still quite some learnings that can be used to speed up the overall implementation of the scheme at national level. The learnings are based on the observations made only in the selected markets -

- ***Electronic Gate Entry*** – All the sample markets have been able to capture 100 percent arrivals electronically. The electronic gate pass with unique ID as per the provisions of e-NAM are issued to all the lots arriving in the selected markets
- ***Innovative Approach*** – Application of any ICT based interventions is naturally challenging in a subject like agricultural marketing. There may be a need for deviations from the model of implementation envisaged centrally to cater to the local needs with requisite situation-specific innovations and customized implementation of the concept. Telangana state has come up with many innovative ideas to implement the e-NAM effectively. For example, developing a computer kiosk in the display sheds that can be used for tasks like issue of gate pass to farmers during peak arrivals and placing quotes by traders. Use of facilities available in the auction hall for issue of gate passes during days of peak arrivals before the start of e-tendering process is also a situation specific solution.
- ***100 Percent Electronic Tender*** – The prices of all the lots arriving in the markets are discovered through electronic tender processes defined in e-NAM framework
- ***Doing away with the need for tender hall*** – One of the important aims of introducing e-NAM is to make the transaction process user-friendly. The Nizamabad market has reached a level where all the traders are placing their quotes through their own facilities and not relying on the infrastructure created by the Mandi
- ***Shifting to Electronic Tendering*** – It is always difficult to convince users for any change, mainly traders. The Nizamabad market was following open auction method to discover price before the implementation of the e-NAM.

Thanks to the efforts of the Mandis, the market shifted from auction to close tender (e-tender) successfully, a requirement for easy implementation of e-NAM

- ***Direct Purchase Centre*** – The Nizamabad market has established a Direct Purchase Centre under e-NAM platform to facilitate direct linkage of farmers with traders ensuring better price realization for farmers
- ***Shareholders Optimism*** – All the stakeholders including Mandi staff and traders were observed to be positive about the change being introduced through e-NAM. This could be a reason for the success achieved so far in sample markets
- ***Public Private Partnership*** – The introduction of e-NAM facilitates integration of some activities of marketing, on which market committee may not have expertise like grading and assaying under arrangements like PPP. Grading was introduced in the sample markets in partnership with a private player. A lab was established by the APMC, and technical manpower was provided by private partner under the arrangement, though, it is non-functional due to its irrelevance at the present stage. Public Private Partnership, however, is a possible instrument to slice through many of the Gordian knots in e-NAM.
- ***Integration of weighment*** – The integration of weighment is challenging as large number of small lots are arriving in the markets. The limited level of understanding of licensed weighmen of technology makes it further complex. In spite of these challenges, weighing has been integrated with e-NAM portal and is being successfully implemented in Mahabubnagar market during lean arrival season. Implementing it in peak period is still a challenge.
- ***Hope Triggers*** – Though e-NAM in the sample markets is limited to intra-Mandi transactions only, the little achievements it has made so far, give hopes for the greater and efficient e-NAM platform facilitating inter-Mandi transactions. For example it has now been able to capture 100 percent arrivals along with price being discovered completely on electronic platform (e-tendering) leading to a better price discovery. The increase in average number of bids per lots suggests that markets are competitive. E-tendering has also brought about efficiencies in the form of shortening of trade cycle hours in the Mandi and the Mandi is also in a position to handle large number of lots in a day (Table 16).

Table 16. Influence of e-NAM

Sr No	Areas	Influence	Basis
1	Arrivals	<ul style="list-style-type: none"> • 100 Gate Passes to capture arrivals 	<ul style="list-style-type: none"> • Mandi
2	Price Discovery	<ul style="list-style-type: none"> • 100 percent e-tendering 	<ul style="list-style-type: none"> • Mandi
3	Competition	<ul style="list-style-type: none"> • Improved 	<ul style="list-style-type: none"> • Transparent e-trending process • Average number of bids received per lot on sample day
4	Mandi Efficiency	<ul style="list-style-type: none"> • Ability to handle large number of lots 	<ul style="list-style-type: none"> • Maximum number of lots handled in a single day
5	Time Efficiency	<ul style="list-style-type: none"> • Ability to complete trade cycle quickly 	<ul style="list-style-type: none"> • Trade cycle getting completed by evening • Suggested by all stakeholders
6	Weighing	<ul style="list-style-type: none"> • Weighing integration 	<ul style="list-style-type: none"> • Challenging but being pilot tested

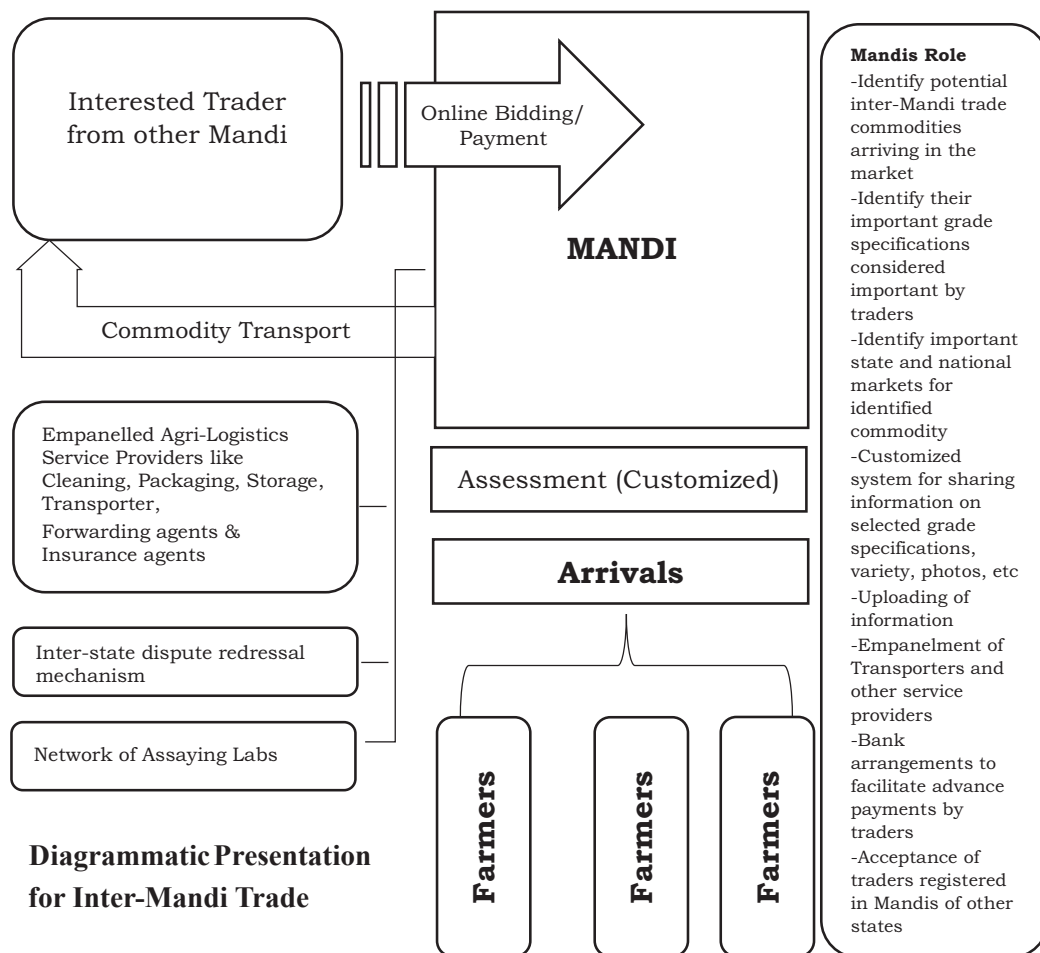
Diagrammatic presentation for desirable inter-Mandi trade Linkages in e-NAM

The study reveals that operations within the sample Mandis have, by and large, been successfully shifted to electronic platform as defined under e-NAM. However, effecting inter-Mandi trade is still a challenge. The linkages envisaged in the e-NAM model for enabling inter-Mandi trade have been delineated in the following paragraph alongwith a diagrammatic presentation.

The role of physical markets is very crucial for successful implementation of e-NAM. These markets should be operated by technically qualified professionals. The markets should have access to IT infrastructure such as computers and wifi with uninterrupted internet connectivity. If the aim of the market is to get good price realization by the farmers, they must enrol good number of traders from across the country online. Every market can project their important arrivals, e.g. commercial crops like turmeric in Nizamabad market, by uploading the photographs of such commodities along with the broad quality parameters. In order to facilitate proper matching between demand and supply, the suppliers should have knowledge about the demand of the commodity at the other end of a channel. Market studies of the commodities being traded in a market will go a long way towards realizing this objective. The market can also facilitate in transportation and other logistic services by empanelling good service agencies. Traders can obtain online quotes from the empanelled service agencies for availing different services at best possible prices.

e-NAM should provide a platform for farmers to quote their expected prices. This will not only help in smooth conduct of trade but also help farmers realize remunerative prices covering their costs. A comprehensive online payment system addressing concerns of different stakeholders, mainly farmers, is the need of the hour to encourage online payment. Thus, e-NAM will facilitate ease of doing business in the sector and help the farmers fully harness the benefit of technology to their advantage and make the market competitive enough for better price discovery. In the long-run, demand at various places will be integrated to help evolve a common market for agricultural produce in India.

A diagrammatic presentation for inter-Mandi trade is depicted in the Figure below:



The revised role of Mandis under e-NAM framework will be as discussed below:

- Important Commodities – The Mandis may have to identify important commodities arriving in the Mandis with potential for inter-state trade, especially commercial crops. Possibilities of essential commodities can also be explored, if they are not in shortage in a state.
- Market Centres - Identify important state and national markets for identified commodity. Enrollment of traders can be done online. Some filters like Aadhaar, experience, license issued by other markets, bank details, etc can be used for the purpose of establishing the credential of traders
- Important grade specifications – It may be difficult to provide a comprehensive assessment of the quality of a commodity over various parameters, which may also not be required considering the fact that trade generally takes place on the basis of a few important parameters. It is, therefore, important to identify 1-2 leading specifications considered important by traders while dealing in a particular commodity like variety, broad quality parameters, etc. Mandi may develop competence for assessment of the commodity over these identified specifications on its own or through third party assessment
- Customized system for sharing information covering selected specifications of a commodity, variety, photos, harvesting time, village, type of packaging, etc
- Empanelment of service providers such as forwarding agents, insurances agents and transporters along with information on rates being offered, packaging material used and other specifications
- Uploading the information of the commodity on the portal along with its photographs to facilitate inter-Mandi trade
- Bank arrangements to facilitate advance payment by the traders for online transactions
- Provision for farmers to express their expectation of minimum price. Though the prices would be determined by the demand and supply forces, the provision for minimum price by farmers will help in smooth completion of transaction and realization of prices by the sellers as per their expectation.

Simplification of the process of inter-Mandi trade by focusing on important grade specifications of commodities in selected markets may help in putting in place a responsive e-NAM platform with seamless inter-Mandi trade.

Suggestions

This section presents some suggestions based on the learnings from its implementation in Telangana. Telangana is already following some innovative ways to implement the scheme in different markets discussed in previous sections. This section attempts to present some suggestions to further facilitate the implementation of the concept.

- ***Electronic Gate Entries of Arrivals*** – Agri-commodities are seasonal and have huge arrivals during harvest season. Capturing all the arrivals may be difficult at the entry gate during peak days of arrivals. The APMCs need to adopt innovative means like providing additional facilities in the display sheds to farmers for issuing e-gate passes to them. The infrastructure created for facilitating e-bids (bidding/tender hall) may be used for issuing gate passes, if appropriate printers are attached to the same. Hand-held devices may also come handy considering the requirement to make limited entries per farmer mainly in case of already registered users.
- ***Electronic Bidding Process*** – Different price discovery mechanisms are used by different states/Mandies like closed-tendering in Karnataka and open-auction in Rajasthan. For the purpose of uniformity and convenience, there is need to adopt any one method. Closed tender method seems to be better from the view point of operation and revenue realization (see Box-2). Nizamabad market has already done the same successfully.
- ***Declaring the bid winners*** – The information on successful bidders is still provided in traditional manner in the form of printouts. Though means like SMS and display boards are also being used but users, mainly commission agents, expect markets to provide the printouts for taking care of the process required to be performed after bidding to complete the transaction. As e-NAM is being run on electronic platform and the stakeholders are registered (100 percent in case of active traders and commission agents) on the platform, use of methods like SMS, display, etc need to be promoted to encourage efficient use of resources and faster dissemination of information. The Nizamabad market at present, has done away with the requirement to provide any information individually to the traders. They access the same on their own.

- ***Grading and Assaying*** – Integration of grading and assaying is vital for e-NAM to truly evolve as a common national market and it needs to be addressed at different levels. There is a need to develop requisite infrastructure and make available sufficient technology to handle the load of peak season. Education of buyers is also important to help them trade on the basis of assessment provided on e-NAM portal. Development of harmonized grades on the basis of trade-accepted parameters like moisture content, foreign material, grain colour, oil content, fibre content, size, aroma, etc will also be required as traders prefer to assess the commodity as per their own understanding. Institutional arrangements are equally important to address the issues related to disputes and agencies to accredit the process. In order to encourage inter-Mandi trade, there may be a need to offer integrated solutions covering agencies to manage off-market operations, logistics and bank to guarantee the payments. Legislation and tax-structure will also have a role to play which varies from state to state. For inter-Mandi trade, there is need to develop a holistic system going beyond grading and assaying facilities which will cover aspects like institutions, logistics, physical barriers at borders and trade accepted grade and standards.
- ***Integration of Weighment with e-NAM*** – Education and training of licensed weighmen is going to play an important role in success of weight integration. Possibility of running the application through tablets (tabs) may also be explored, as it will have a better speed of processing with large key pad than the device presently used. Operation on tab is similar to mobile and may have better acceptability for its compatibility with the user. A software and its implementation procedure may be developed at the central level with its application uniformly across all the states leading to saving of time and resources and, bringing uniformity across different states.
- ***Warehouse*** – Warehousing integration will have limited scope in the absence of amalgamation of market trade with rest of the functions like logistics, bank, NWR, etc. This may be tested on pilot basis in selected trade-important commodities with properly defined and accepted grades and specifications. The declaration of warehouses as market sub-yard needs to be made a priority. Commission agents and traders may be encouraged to visit such warehouses, maybe on designated days for inspection and bidding for the produce stored in such warehouses.

- **Financing** – Integration of services like marketing, banking and warehousing will improve financing against stored agricultural commodities. In the present scenario, it may take some time for everything to fall in place. Also, warehouses may not see small farmers as attractive business proposition. In such a scenario, APMC itself can dedicate a part of its own warehouse capacity exclusively reserved for farmers and extend financing support. The financial burden of extending funding may be linked to some welfare scheme/fund of the APMC/ Department. In case of default, market committee can easily liquidate the commodity. The absence of availability of grading and assaying facilities can be managed through variations in the proportion of value being extended as credit. It will also assure ease of operation for farmers as the facility is available within the market. This may also help in winning the confidence of warehouses and bank gradually. Bank will feel confident to have an agency (APMC) with expertise in marketing to liquidate the commodity in case of default. This has been done successfully by Nizamabad market under RBP Scheme.

Way Forward

The intervention of e-NAM is, no doubt, a timely step for evolving a common market for agricultural produce much in tandem with reforms in other sectors of the economy with accent on “one nation one market”. The instrument of e-NAM has the potential to be a game-changer for leveraging ICT platform for integration of marketing functions with horizontal activities like warehousing, banking, grading and assaying, logistic and market information for evolving a common market for agricultural produce in India.

In so far as internal computerization is a pre-requisite for the success of e-NAM, the achievements of the selected markets in Telangana are quite praiseworthy. The changes these markets have undergone in their internal processes are worth appreciating, through initially it was a formidable challenge before the Mandi staff. The computerisation of entry gates and other processes leading to expeditious completion of trade cycle and price discovery mechanism on electronic platform have brought about considerable efficiencies in the internal process of Mandi management. However, it is a far cry from the targeted seamless inter-Mandi trade on electronic platform, the ultimate objective of e-NAM. In spite of attempting different strategies, the Mandies find it quite challenging to integrate services like grading and assaying, online payments, weighment of produce, etc. and may need to simultaneously focus on different aspects of the market and socio-economic bonding between farmers, traders and commission agents. The inter-Mandi trade calls for focus on different aspects covering following-

- i) Reforms in the APMC Act for single license, single point levy of fees and online trade
- ii) A need-based grading and assaying system
- iii) Integration of weighment, warehousing, banking and logistics in the computerized system of e-NAM, and
- iv) A dispute redressal mechanism for resolving possible inter-state disputes on e-NAM platform

e-NAM may prove to be a major step in achieving a common market for agricultural produce operating at national level but will have a limited impact in the absence of a comprehensive strategy covering issues related to restrictions imposed by different acts, fiscal aspects, integrated logistics services and different barriers

faced during the physical movement of commodity along with socio-economic relations between farmers, traders and commission agents.

There is a need to develop appropriate technologies and comprehensive strategy to integrate services like banking, grading and assaying, warehouses and weighing to help evolve a true national market for agricultural produce. There would be requirement to define role, responsibilities and norms for participation of different service providers and development of mechanism to take care of any possible inter-Mandi disputes. The present software has also to go beyond tapping trade transaction to make the market completely automated from individual market level to unification of markets to enable inter-Mandi trade to happen. The software has to offer complete solution covering both internal and external management.

e-NAM has the potential to overcome the challenges faced by the system, if it is, over time, able to move beyond application of information technology by having a holistic development of the marketing system covering reforms, addressing concerns of stakeholders, grading and assaying facilities, integration of banking, warehousing and logistics and, institutional support to address any possible dispute arising in the entire supply chain. A proper policy also needs to be put in place to offer solution and incentives to different stakeholders, to make the concept truly inclusive. e-NAM has the potential to catalyse the overall development of the sector, if it is pursued as a means and not as an end in itself and is made to evolve accordingly.

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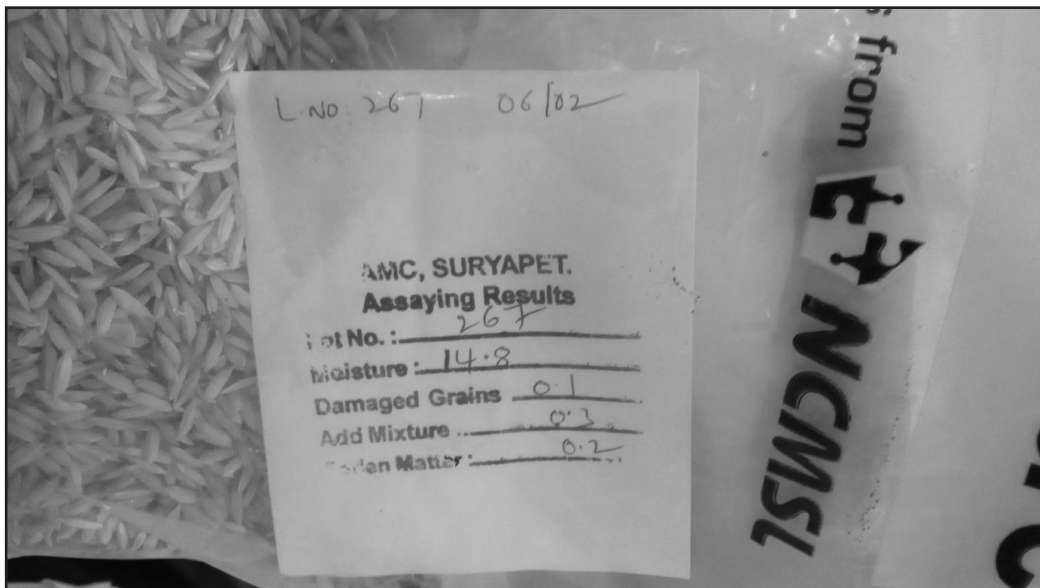
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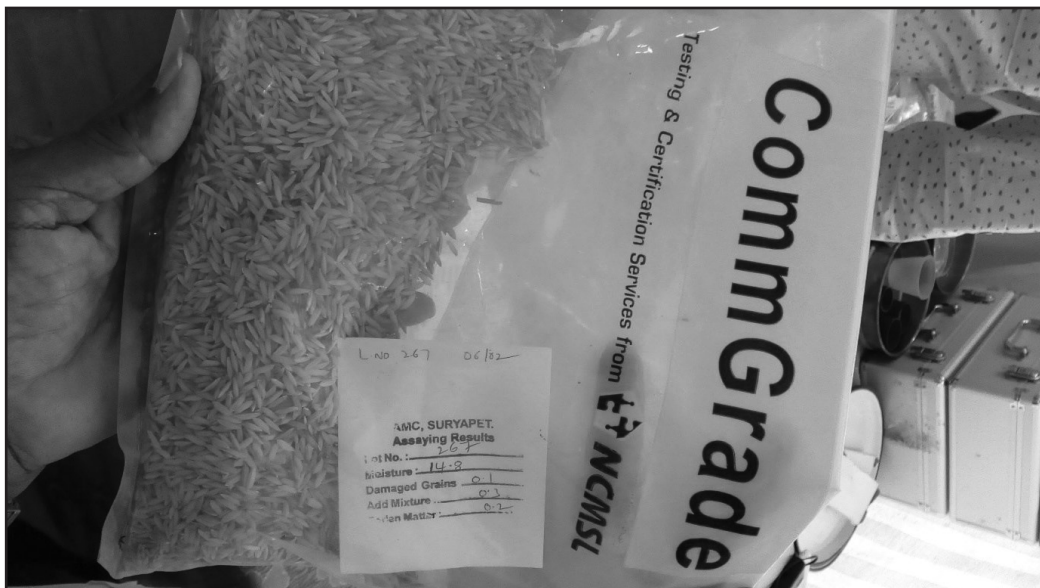
Source of map of the Telangana State

https://www.google.co.in/imgres?imgurl=https%3A%2F%2Fd-mapscom%2Fm%2Fasia%2FIndia%2Ftelangana%2Ftelangana48.gif&imgrefurl=https%3A%2F%2Fd-maps.com%2Fcarte.php%3Fnum_

Photographs



Sample of Paddy at Suryapet Market



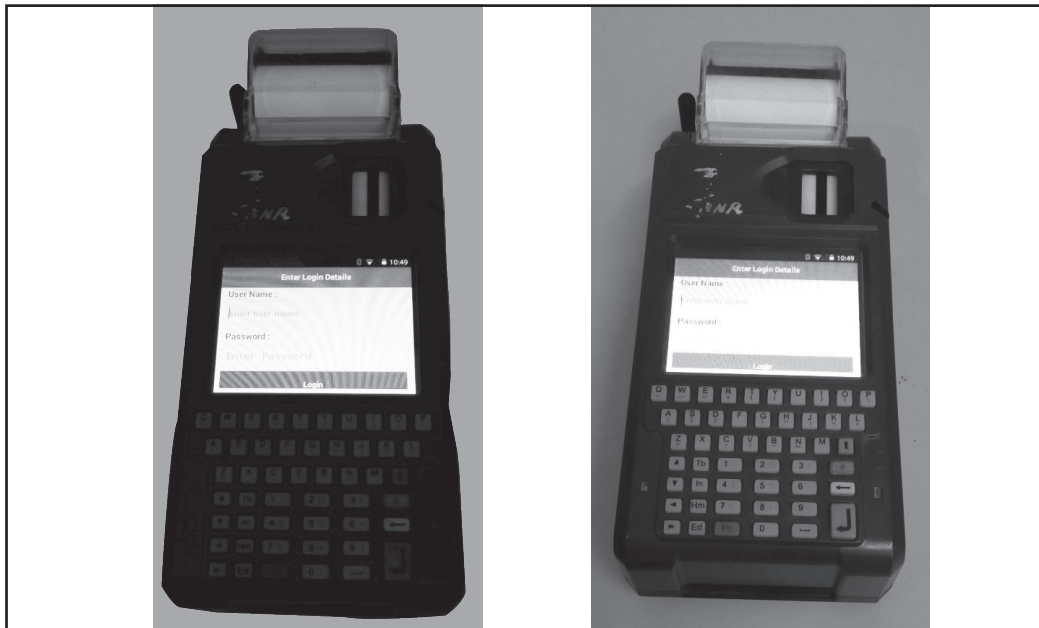
Sample of Paddy at Suryapet Market



Equipment in Grading and Assessing Lab established in collaboration with a private player



Traders placing their quotes in online e-trending process using facilities created by Mandies



Handhold device used to integrate weighing machines using Bluetooth and wifi



Lots of Groundnut and Turmeric on display for trade alongwith their Gate Pass issued on eNAM carrying the unique Id



Direct Purchase Centre established under eNAM at Nizamabad



Warehouse facility at Nizamabad available to the farmers



National Institute of Agricultural Extension Management (MANAGE)

(An Organisation of Ministry of Agriculture & Farmers Welfare, Govt. of India)

Rajendranagar, Hyderabad – 500 030, Telangana, India

Tel: +91-40-24016702-706, Fax: +91-40-24015388, Website: www.manage.gov.in