E-national Agricultural Market (e-NAM) in India: A Review

Swapnil Gupta*
Prof. P. S. Badal**

ABSTRACT

Abstract Efficient markets offer efficient price discovery and level playing field for all the actors. The paper systematically reviews developments in Indian agricultural marketing and emphasizes on addressing the challenges in the implementation of e-NAM to achieve the goal of doubling farmer's income; hence the challenge of poverty reduction as envisaged in SDGs. The research captures various challenges in the implementation of e-NAM in terms of 3 I's (Infrastructure, Institution, and Information) and advocates for strengthening the back-end of the supply chain with public-private interventions; amendment in state APMC Acts to accommodate for e tendering operations and wide publicity of benefits of e-NAM among farmers

Keywords: APMC, Doubling framers income, e-NAM.

I. INTRODUCTION

Agricultural Marketing in India has evolved from being restricted to catering to local demand by having market yards within the range of farms to one which now aims to have interconnectivity between markets of other States to have value dispersion between farms and consumers. Emerging changes in agriculture marketing environment of the country i.e. electronic market, model act, warehousing, pledge loan, contract farming, etc. are ushering in opportunities for new formats of markets which are effective in responding to demand and supply. These changes will require investment in infrastructure, infusion of technology and building awareness and capacity building. According to a survey conducted by NABARD in 2016-17, about 48% of households in India are agricultural households, whose monthly income is Rs. 3140 from crop cultivation alone (NABARD 2018). On supply-side, India is a global leader in the production of pulses and milk, second in fruits and vegetables, tea, sugarcane, and cotton and third in cereals (GoI 2016b). This is quite a rosy picture. However, one in every five individuals in the country is poor and about 80% of the poor are rural poor (World Bank 2016), who primarily depend on agriculture for their livelihood. Agricultural growth is more pro-poor (Xavier et al. 2001; Christiensen et al. 2006; Douglas 2009; Cerventes & Dewbre 2010; Dewbre et al. 2011; Sharma & Kumar 2011; Grewal et al. 2012), hence it holds promises to eradicate rural poverty as envisaged in the sustainable development goals (SDGs).

Electronic National Agriculture Market (e-

* Research Scholar, Department of Agricultural Economics, Institute of Agricultural Sciences, BHU, Varanasi, Uttar Pradesh- 221005, E-mail: swapnilgupta.bhu@gmail.com

** Professor, Department of Agricultural Economics, Institute of Agricultural Sciences BHU, Varanasi, Uttar Pradesh -221005

NAM) is envisioned as a unified national electronic market bringing interconnectivity to markers across the country. The diffusion of E-NAM is through Organizations and intended through a change in policy. The diffusion will be faster if the desired policy changes are made in the organization followed by change management in organizations. Three organizational characteristics will affect the rate of diffusion of technology in markets desire for change (motivation and ability), innovation-system fit (compatibility) and assessment of implications (observability). e-NAM for agriculture marketing can be regarded as a technology which will bring a social change in markets. The social change in relationships and networks that work between buyer and seller as they exist in traditional markets will change as the technology enabled e-NAM is adopted in agricultural markets. Successful adoption /diffusion will depend on easing the adoption barriers that can be categorized as technological and organizational.

The paper attempts to categorize State on the basis of the level of adoption of e-NAM in APMC. The States who have taken lead in the integration of markets will now require having interconnectivity, assaying and capacity building. The challenges for the other States like Odisha, Assam, Jharkhand are the system of parallel acts and dysfunctional of APMC markets. The markets are devoid of any trading activity and the first step for integration with e-NAM for These states is to make APMC functional for trading. The paper offers suggestions for better integration

2. e-NATIONAL AGRICULTURE MARKET – TECHNOLOGY INNOVATION

Well-functioning agriculture marketing leads to price discovery, efficiency in supply chain and opportunity to scale up in the value chain. By linking markets, these marketing systems transmit right signals to farmers on new market opportunities and guide their production to meet preferences for quantity, quality, and varieties.

Electronic National Agriculture Market (e-NAM) is envisioned as a unified national electronic market bringing interconnectivity to markers across the country. e-NAM is a technology innovation in agricultural marketing. The diffusion and adoption of technology is an acyclic process. e-NAM needs to be diffused and adopted by States across the country. Diffusion takes place over time with innovations go through a slow. Gradual growth period followed by dramatic and rapid growth followed by a gradual stabilization. The diffusion of e-NAM is through Organizations and intended through the change in policy. The diffusion will be faster if the desired policy changes are made in the organization followed by change management in organizations. Three organizational characteristics will affect the rate of diffusion of technology in markets desire for change (motivation and ability), innovation-system fit (compatibility), and assessment of implications (observability). e-NAM for agriculture marketing can be regarded as a technology which will bring a social change in markets. The social change in relationships and networks that work between buyer and seller as they exist in traditional markets will change as the technology enabled e-NAM is adopted in agricultural markets.

2.1 e-NAM: Innovators and Early Adopters

The E-NAM portal launched by the Centre in April 2016 has 45.4 lakh farmers and 451 mandies registered on it. e-NAM aims for the integration of the marketing process and flow of goods is to be achieved by bringing interconnectivity of markets through information technology. Karnataka State has been the forerunner in market reforms and devising innovative practices to improve agriculture market and competitiveness (Chand 2016). The unified online agricultural market initiatives were launched in Karnataka in 2014. The success of UMP in Karnataka has acted as an innovator for the next stage of technology innovation in the public domain i.e. e-NAM. The early adopter of e-NAM is Himachal Pradesh, Telangana, Haryana, Uttar Pradesh, Andhra Pradesh, Madhya Pradesh, and Gujarat. Efficient markets require a good infrastructure, good governance, and innovation-oriented

institutions which aims to provide market information, establish grades and standards, manage risk and create better opportunity to enhance income and upgrade then existing markets National Markets. Agriculture marketing is administered by the States as per their agri-marketing regulations, under which,

The State is divided into several market areas, each of which is administered by a separate Agricultural Produce Marketing Committee (APMC) which imposes its own marketing regulation (including fees). This fragmentation of markets, even within the State, hinders the free flow of Agri commodities from one market area to another and multiple handling of agri-produce and multiple levels of mandi charge sends up escalating the prices for the consumers without commensurate benefit to the farmer. e-NAM addresses these challenges by creating a unified market through an online trading platform, both, at State and National level.

The vision and determination of Government of India and State level authorities (mostly State Agricultural Marketing Boards) in strengthening the agricultural marketing environment through the integration of markets through an electronic platform (e-NAM) can be one of the most appropriate moves and need of the hour.

Agriculture being state subject disparities in agriculture production, regulations and agriculture Marketing environment, growth rate, etc. is discernible amongst the States of the country which needs to be streamlined to have a pan India Connectivity of markets. This paper examines the issues and challenges faced by States in implementing the e-NAM. The paper also explores the possible solutions and way forward.

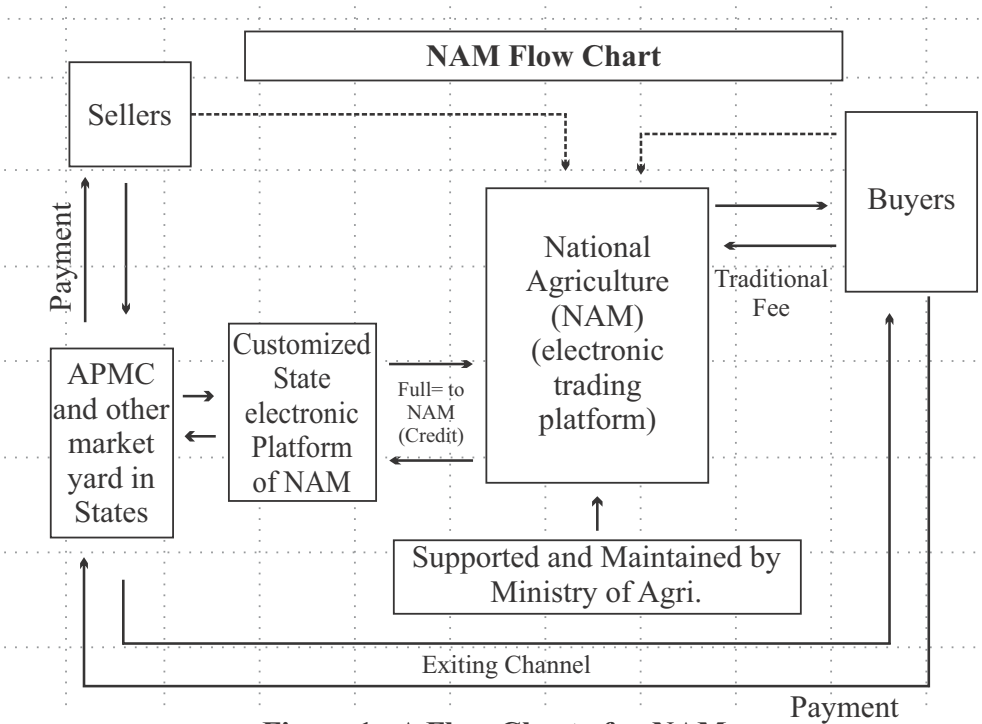

Figure 1: A Flow Chart of e- NAM

Issues in states with functional APMCs and Rural Markets

Some of the major states where APMC and Panchayat/Municipal markets co-exist without hampering the business of each other are Andhra Pradesh, Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Punjab, Rajasthan, Telangana, Uttar Pradesh, Uttrakhand, etc. In these states, there is a clear demarcation in the activities of APMCs and rural markets. Rural markets are engaged in

consumer-oriented retailing Activities while APMCs are a platform for wholesaling activities.

Progressive and Dormant (Lagging) States

Among the states under this category, progressive states are Himachal Pradesh, Telangana, Haryana, Uttar Pradesh, Andhra Pradesh, Madhya Pradesh, and Gujarat. In these states, more than 10 percent of total Wholesale market yards of the states have been notified for integration with e-NAM. In the case of Uttrakhand, only 5 out of 66 wholesale market yards have been proposed for integration. Similarly, in the case of Rajasthan, the percentage of yards proposed to be integrated with e-NAM is limited to 7 percent, followed by Maharashtra (5%).

Integration of Markets

Table 1: Situation of Integrated Markets in Different States of India.

States	Number of Proposed to be Integrated	Total number of Wholesale Yards	Percentage of Proposed Integration
Himachal Pradesh	19	56	34
Telangana	44	180	24
Haryana	54	281	19
Uttar Pradesh	100	623	16
Andhra Pradesh	22	188	12
Madhya Pradesh	58	545	11
Gujarat	40	400	10
Jharkhand	19	190	10
Uttarakhand	5	66	8
Chhattisgarh	14	187	7
Rajasthan	25	454	6
Maharashtra	45	902	5
Odisha	10	436	2

3. Major Constraints on Implementation of e-NAM

Harmonization of Grades Sand Standards

The success of e-NAM in improving competitiveness and integrating Pan India market will require as saying facilities in various markets to ascertain quality traits. (Chand 2016) Trading on the virtual platform will require a strong and well-established standardizing and grading system. Harmonization of quality standards of agricultural produce and provision for assaying (quality testing) infrastructure in every market to enable informed bidding by buyers will be required. Besides this disseminating and communicating the same with market participants need to be in place for harmonization of quality standards across the state, which in turn will result in an increased number of participants.

Integrating Value Chains

Technology can contribute to creating the system by synchronising value chain activities into layer-wise Process (Dey 2015). e-NAM is perceived as a marketing system that will facilitate the post-production supply chain of farm produce. It is required to work for the inclusion of farming communities and farm operations into other segments of the marketing chain like storage, logistics so that it will help capture a larger share of the final value realised. A wide correlation between value chains of the producer, market channels, retailer and consumer is required to be developed. Integration of a value chain system also includes secondary activities such as research, development, front-line demo, extension work, market information. (DAC2017). Cross

learning from dairy and food processing industry where value chain integration has helped in optimal value realization needs to be adopted by the progressive state where e-NAM is already operational.

Capacity building of market participants:

With the advent of E-Marketing in various states there emerges a requirement for capacity building of different stakeholders and Institutions of Agri value chain. e-NAM is a paradigm shift which will see new roles of Market Functionaries, traders, farmers, etc.

Participation of different market functionaries and farmers and service orientation of market officers is Imperative for the successful rollout of E-NAM. The initiative in Karnataka observed some unwillingness initial on from traders. These issues will require being handled through regular training of farmers and other stakeholders. The farmers rich in terms of human capital are more likely to participate in new emerging supply chains (WorldBank, 2006). This suggests the importance of the capacity building of farmers, traders, groups, co-operative, policymakers, etc.

NIAM has outlined a capacity building plan for various actors namely farmers, traders, APMC secretaries, Directors. At the apex level, the Director needs to understand the implementation of e-NAM and making required policy changes, providing provision for PPP model for E-marketing and creating synergy for customized services. APMC Secretaries and Chairman needs to build their capacity in operation and management of electronic market, change management, dispute redressal, consumer behavior, advisory, and market information to farmers, etc. E-NAM requires farmer linkages for selling produce. The Farmer Producer Organization (FPO) needs to be strengthened on Organizational skills, working in teams, Interpersonal communication, work allocations,

online payments and transaction, pledge finance, etc. Training will help farmers better manage their finances, achieve more sustainable production, improve their market performance, and stay innovative and competitive. Besides this, they need to understand changes in markets and preparing produce by grading and assaying for e-NAM. Traders and market agents need to be trained on the adoption of grades, assaying, bidding, online payments, sale procedure, produce handling, dispute settlement, etc.

Table 2. Capacity Building needs of Different Stakeholders of e-NAM

Stakeholders	Components Covered
Farmer	Understanding E-NAM, aggregations, market trends & other opportunities
Traders/ Other Agents	Dead options, dispute, payment facilitation, produce handling, etc
Mandi Secretaries	Operation and management of market, change management and Dispute redressal
Principal Secretaries/Director (Agri Marketing)	Importance of e-NAM, facilitation through reforms, PPP, etc

The synergy of network organization and market services

The success of e-NAM will depend on the delivery of services in an optimal way. There is a need for a synergy of network organization and market agencies like warehousing and collateral management agencies, financial

institutions, logistics providers training and extension organizations as markets are transforming towards on digital phase, diverse and discursive groups of clientele, public and private organization need to be integrated to provide customized services. These services include assaying and grading of the produce, price poling and information dissemination, warehousing and disposal and commodity-based structured financing (Dey 2016).

4. Pathways to Integrate Farmers to Market

Linking sellers and buyers to markets is a key factor that will bring better participation in the evolving markets and ensure better returns to both sellers and buyers. Owing to the fact that the sellers are smallholder producers and have constraints in access to markets the task of integrating smallholder producers to e-NAM is going to be a daunting one.

Linkages with Market

Understanding the inter-linkages in resources, production, risk, price and market and how they affect the capability smallholders to participate in new opportunities is critical to draw a path for integration of regulated markets with e-NAM. The Government of India's "Make in India Campaign" aimed at making India a manufacturing hub, is a significant step towards achieving employment intensive growth as it seeks "to create 100 million additional jobs by the year 2022 in the manufacturing sector‖. Generation of productive and gainful employment with decent working conditions on a sufficient scale to absorb the growing labour force was a critical element in the Eleventh Plan strategy for achieving inclusive growth (Gupta, 2018). Incentives and constraints to market integration are realized differently by farmer producers and change as a result of market development. As the increasing opportunities are becoming available to farmers as alternative markets such as e-NAM, the process of integration of buyers and sellers need to have a pathway. The leap in transforming the abandoned regulated markets of Odisha to Electronic National market is not only going to be a feat of technology but also a socio-cultural exercise. For bringing this transformation it needs to be recognized that not all farmers and buyers will respond to this transformation. The ability and willingness to participate in the emerging markets driven by information technology will depend on:

- Well-functioning markets to give them appropriate incentives

- Farmers have access to finance and information

- Efficient infrastructure to store and transport the produce at a reasonable rate If one component is missing the farmer producers will not be willing to participate to the same extent. Therefore, concentrating on these components to bring a holistic approach to market development is imperative to have better market integration.

Enabling market connectivity through market information

Market information encompasses reliable price, buyer contact, market channel, grades and standard specification, post-harvest handling advice and storage and transport recommendation. To achieve this pathway using Information technology not only to disseminate price but also to reduce transaction cost need to be in place. Investing in the communication infrastructure such as mobile phones network, internet linked rural kiosk which aid in strengthening market information, extension, and other services to farmers needs to be made.

Producer organization to offer a vital link to market

Technical and institutional innovations that reduce transaction cost have proven to be enablers especially the wider use of information technologies- mobile phone, the internet, and social networks for vertical coordination arrangements with farmers or producer organization. Producer organization including agricultural co-operatives plays an important role in supporting farmers to trade in the market

place and understand the trends in marketing. FPO and collective action can help to enhance farmers' competitiveness and increase their advantage in the emerging marketing system of e-NAM. Collaboration between FPO and Private sector built on their shared interest in achieving scale and market power will be critical in integrating Farmers to market

Market-Led Extension and capacity building

Market-led extension to transmit signals to farmers on new market opportunities will make physical markets relevant to buyers and sellers. Extension functionaries have a key role to play in engaging farmers with markets. SWOT analysis of the market, organizing commodity based farmer's interest groups and farm management capacity building, backward and forward linkage, Farmer's exposure to market intelligence and guidance for a quality decision about the market. Empowering farmers by linking them to e-NAM information, services, and linkages through Market Led Extension is a long-term solution.

Linking rural periodic markets by upgrading them as PRAM

As per there commendations of Report on Doubling farmers income, the Rural periodic markers need to be upgraded into a function that enables aggregation and transportation from village level to the wholesale market. It has been advised to build on the available infra-structure and experience of the RPMs to establish a large number of primary rural agricultural markets (PRAM) to provide the following two services:

I. Direct marketing between producers and consumers

II. Aggregation platforms for the small lots of farmers

In pursuing the establishment of PRAM, the capability to connect produce in suitable quantities with a market of choice will be developed. Further with farmers enabled with a choice of markets, the element of the market to market competition will follow. This approach is what will make the markets function and provide services that add value and better returns

Adopting Model Agriculture Produce Livestock Market Act (2017)

As per new Model Agricultural Produce and livestock marketing Act 2017, the new definition of the market area is now extended to the whole State/UT as one unified market area for the regulation of marketing of all or any of the kinds of agricultural produce. This will go in a long way in removing the entry barriers to markets and at the same time arrest the problem of fragmentation of markets within the State.

Warehouses and silos to be declared as market points

The new legislation also provides for declaring warehouses/silos/cold storages or another place as market sub yards. This will provide better market access to farmers. In order to declare a warehouse as a sub-market yard, warehouses which are fit to serve the purpose may be notified. Generally, warehouses accredited by WDRA may be selected to be notified as a sub-market yard as the accreditation norms of WDRA requires warehouses to follow scientific storage practices which ultimately results in the quality keeping of the produce. The concept has been shaping up in Karnataka through initiatives of Rashtriya e-Market Services Private Limited. A similar initiative has been seen in Punjab where silos have been notified as Mandis.

Good governance and innovations

Efficient markets require good governance and policy infrastructure, institutions and services that provide market information, establish grades and standards, manage risk and create better opportunity to enhance income and upgrade the existing markets and marketing system to integrate with National Markets. It will require innovative pathways to achieve the following

- High level of private participation in grading, warehousing and scientific movement of commodities.

- Coordination between various stake-holders for setting standards and monitoring their implementation
- It ensures a transparent and hassle-free payment process for the producers.
- It improves the regulatory process and enhances service orientation.
- It mandates stipulation and regulation of standards for agriculture commodities in an effective and efficient manner that increases farmer welfare.
- It upgrades the skill level of personnel operating in the agriculture market and creates economic opportunity for youth to participate in emerging formats

5. Towards a Fully Unified Market

E National Agriculture Market needs to be implemented in a phased manner to achieve a fully integrated market of the nation. The various components of the market that may be achieved over a different period of time are depicted in the table below.

Table 3. Various Component of the Market to be Achieved over a Different Period of Time

Phases/ Components	Phase I (0-2 years)	Phase II (3-6 years)	Phase III (7-12 years)
Enabling environments	Legal (single license, unified license, e-trade, and others)	Complete reforms	Facilitating role
Infrastructure	Hardware and software	Up-gradation of Mandies	Creation of physical delivery centers and collection center
Grades	Selected commodities	Comprehensive coverage	All commodities
Functions	e-price discovery	Bank settlement, NWR, and logistics	MIS, promotion, demand creation
Farmers participations	Individual/groups	Farmers groups/FPO	Producers company
Skill development	Mass awareness(extensive)	Specialized	As per global requirements
Institutions	Establishing a national level agencies Identification of Special Purpose Vehicle	Institute for functions like training, research, defining grades and international trade	
Promotion	NAM Portal	Product	Branding
Finance and insurance	Direct payment	Payment and credit	Complete risk coverage
Input and extension	Information dissemination	Advisory	Delivery of physical and technical inputs
Focus	Regional	National	Global
Agri Ecosystem	Post Harvest Management	Sanitary and phytosanitary	Zero carbon footprint

(Source: www.ccsniam.gov.in)

Some International examples

China launched a national e-commerce platform in 2015 to serve rural areas through supply and sales of agricultural products. Established All China Federation of Supply and Marketing Cooperatives, www.gxyj.com, aims to match supply and demand of daily consumer products, agricultural production materials and produce via online to offline cooperation. Users can trade online and use services ranging from online payment to logistics and quality certification. Shandong Shouguang Vegetable Trading Market Online (SSVTMO) is the nation's largest vegetable wholesale market in China. It is vertical e-marketplaces provide online access to vegetable. The national modernization market demonstration item supported by the National Development and the Reform Committee. The Market is jointly organized by Chinese Vegetable Circulation Association, Beijing Gold Net & Tech Information System Co., Ltd., and Shouguang Chenlong Investment Consulting Co., Ltd. The market organizes vegetable trading market online leading by senior experts of Chinese bulk commodity Electronic Commerce field, supported by the special administration team and using the network information technology. East African Community Common Market (EACCM) and Common Market for Eastern and Southern Africa (COMESA) are examples from Africa. The EACCM has five members and COSEMA has member countries from eastern and southern Africa. A single market provides a competitive environment and makes the existence of monopolies/cartel difficult. Consumers are benefited by getting the best quality product at a cheaper price and increased the choice of products. Also, the common regulatory regime and frameworks ensure that best practice within the regional framework is not only in place but adhered to. The closeness to a single market ensures that good procedures are instituted and practiced and thus creates a kind of seamless market mainly in those regions that are behind in their instituting good policies. The technology enabled markets can also be found in Ethiopia and Turkey. Similar, benefits are expected from the National Agriculture market in India.

Conclusion: Responsive, inclusive and technology-enabled markets are need of the hour as it will have a positive effect on livelihood, welfare, food security particularly for poor households and every step should be taken to achieve the adoption of e-NAM.

REFERENCES

- Chand, R (2012). Development Policies and Agricultural Markets- *Economic & Political Weekly,* 47(52),53-63.
- Dey, K (2016) National Agricultural Market Rationale, Roll-out and Ramifications. *–Economic and Political Weekly*,1(19),35-38.
- Dey, K (2015). Why Electronic Spot Market Is a Better Bet for Commodities?, *Business Line,* 4 February.
- Farhoomand, A.F., Tuunainen, V.K., Yee, L.W. (2000). Barriers to global electronic commerce: Across-country study of Hong Kong and Finland. *Journal of Organizational Computing and Electronic Commerce,* 10 (1), 23-48.
- Haque Enamul (2015). "Setting up national agriculture market, a clear warning for APMCs", *Business Lines* 2014
- Ministry of Agriculture (2003): Salient Features of the Model Act on Agricultural Marketing, Agricultural Produce Marketing Committee Model Act (2003), Marketing Infrastructure and Agricultural Marketing Reforms, Department of Agriculture and Cooperation, Ministry of Agriculture, Viewed on 12 August 2015, http: //agmark net. nic.in/amrscheme/mode-lact.htm.
- NIAM (2015). Unified Common Market: A Concept Note, National Institute of Agricultural Marketing. Viewed on 24 August 2015, http://www.ccsniam.gov.in/pdf-2015/BROCHURE-E%20market.pdf.
- NIAM (2017) Linking Farmers to Market ODISHA -Way Forward - Report submitted to OSAMB.

- Gupta, S (2018). Employment and Skill Development in India, *Annals of Multi-Disciplinary Research,* 8(III), 15-18.
- Yadav and Shalendra (2015). Make National Agri Market inclusive for small farmers. *Business Lines* 2015