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Agricultural marketing reforms and e-national agricultural market (e-NAM) in India: a review

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Abstract Efficient markets offer efficient price discovery and level playing field for all the actors. This paper systematically reviews developments in Indian agricultural marketing and emphasizes on addressing the challenges in implementation of e-NAM to achieve the goal of doubling farmer's income; hence the challenge of poverty reduction as envisaged in SDGs. The study 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 Act, e-NAM, Poverty, Farmer's income

JEL classification Q1, Q13, Q18

1 Introduction

India is predominantly an agrarian economy, with agricultural sector engaging about half of the workforce (GoI 2016a). According to a survey conducted by NABARD in 2016-17, about 48% households in India are agricultural households, whose monthly income is Rs. 3140 from crop cultivation alone (NABARD 2018). On supply-side, India is global leader in 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; Christensen et al. 2006; Douglas 2009; Cervantes & 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).

Indian agriculture has become increasingly market-oriented and commercialized. In the early 1950s, about 30-35% of food grains output was marketed, which has increased to more than 70% in recent years (Sharma & Wardhan 2015). At the same time, there are huge post-harvest losses, 10-25% for perishables like milk, meat, fish and eggs. The estimated losses in fruits and vegetables are even higher, 30-40%. These adversely affect the Indian economy (Hegazy 2013). Another estimate by CIPHET indicates an annual loss of Rs. 92,651 crores (Jha et al. 2015).

The loss is almost three times as high as the budget for the agriculture sector in 2016-17 (Molony 2016). Although, India occupies second position in global food production after China, but at the same time stood on 100th position out of 119 countries in global hunger index (IFPRI 2017). These stark facts raise serious questions on food distribution system, more specifically on the functioning and efficiency of agricultural markets and distribution systems. Some of the studies contested the role of regulation in agricultural marketing in the economic development

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in last decade (Pal et al. 1993; GoI 2001; Gujral et al. 2011; Minten et al. 2012). However, Purohit et al. (2017) has found positive effect of market regulations on agricultural growth, technology adoption, area expansion, fertilizer use and irrigated area.

In this paper, we have attempted to systematically review the important marketing reforms in the country and different studies on the benefits and challenges of e-tendering/e-auctioning in agriculture and suggest solutions to strengthen e-NAM for spreading its anticipated benefits in inclusive manner and efficiently. The structure of remaining part of the article is as follows: Section 2 discusses about the data source and methodology. Section 3 reviews different regulatory mechanisms adopted for the agricultural market in India. Section 4 explains the Karnataka model of agricultural market reforms. Section 5 discusses various aspects related to implementation of e-NAM, followed by way forward discussed in Section 6 and finally conclusion in Section 7.

2 Methodology

The study is primarily based on qualitative systematic review of literature on agricultural marketing developments in India and how these developments are significant to address the challenges of poverty reduction. Literature has been compiled from various Government reports; scientific journals; online published articles; newspapers and websites of different organizations and institutions working on agricultural marketing. The compiled literature has been sorted out based on two criteria keeping the objectives in consideration. These are:

- i) Literature should deal with the marketing reforms and policies, and
- ii) Literature should consider e-auctioning/e-tendering of agricultural produce

The skimmed literatures were carefully reviewed further to draw a logical conclusion about the development of agricultural markets; deficiencies in implementation of reforms in agricultural marketing and the strategies to further strengthen the spirit of reforms particularly in context of e-NAM. Thereafter, from thorough analysis of the reviewed literature, suitable measures for successful implementation of e-NAM have been suggested.

3 Agricultural market regulations

According to Paty & Gummagolmath (2015), agricultural market regulation in India has come a very long way since its humble beginning in 1886 when the British rulers set up first regulated market at Karanjia under the then Hyderabad residency order. The Berar Cotton and Grain Market Law of 1897 was the first legislation on market regulation for agricultural commodities. However, the legislation was highly biased towards the commercialization of cotton in India to ensure the stable supply of cotton as a raw material to the textile mills at Manchester at below world price (Rajagopal 1993). By its genuine intent, the aforesaid marketing legislation was purely regressive in the sense that the farmer's economic aspirations and development of marketing infrastructure was neglected in it. Therefore, this marketing board was an inefficient marketing arrangement (Knight 1954; Lele 1971; Bhattacharya 1992). The then Bombay Government was first to enact the Cotton Market Act in 1927. This was the first law in the country that attempted to regulate market with a view to evolve fair marketing practices. Thereafter, Agricultural Produce Marketing (Commission) Act was enacted in 1938 by the Ministry of Food and Agriculture, Government of India and subsequently the state level agricultural market regulations were enacted. But the spread of regulated markets were highly biased towards the cotton growing states and not much progress was made until independence of the country in 1947. Till the mid-1960s, market regulations were primarily meant to facilitate smooth functioning of markets and to keep a check on activities that were considered inimical to producers and/or consumers. Subsequently, the country opted for a set of direct and indirect interventions in agricultural markets and prices, initially targeted at procurement and distribution of wheat and paddy. This gradually expanded to cover several other crops/products and aspects of domestic trade in agriculture.

The literature on regulation of agricultural markets and the actual regulatory policies put forward two ideologies of agricultural marketing among the policymakers. The first reflects that the agricultural markets in India are ill-functioning and thus requires state intervention to stabilize prices. Contrast to it, the second ideology reflects that these markets are so competitive that new kind of institutions are required to meet emerging challenges. Not only are these two

approaches to regulation in constant tension, one may be subordinated to the other, and both to yet other interventions (Harriss 1984). With the onset of liberalization, the latter conception has become increasingly ascendant, with market intervention now seen as the main impediment to development, shifting the debate from the older question about the type of intervention to be adopted to one about a simple binary of “more” vs “less” intervention, with the latter as the ultimate goal (Bernstein 2010, chapter 5)

Moreover, most of the states enacted Agricultural Produce Markets Regulation Acts (APMRA) during the sixties and seventies and put these in operation. All primary wholesale assembling markets were brought under the ambit of these Acts. Well-laid out market yards and sub-yards were constructed and for each market area, an Agricultural Produce Market Committee (APMC) was constituted to frame the rules and enforce them. Thus, the organized agricultural marketing came into existence through regulated markets. The APMRA brought radical changes and significant improvement in almost all aspects of marketing of farm produce (Acharya 2004) and covered 7,161 markets, which includes more than 98% of the identified wholesale markets in the country (Acharya 2006 cited in Shalendra 2013). The policy emphasis in the 1960s and 1970s on government intervention to resolve market failures gave way in the 1980s to market-oriented liberalization to ‘get prices right’ and more recently, to a focus on ‘getting institutions right’ (Barrett & Emelly 2005). However, many gains brought by APMRA to improve competitiveness of agricultural markets got diffused over time and market infrastructure did not keep pace with volume of market arrivals. The facilities provided in markets remained not only inadequate, but also deteriorated in many cases. The regulations had lost the relevance with change in economy and agriculture in terms of production and diversification (NIAM 2015). Excessive intermediation worked to the disadvantage of producers and consumers and favored only middlemen (Chand 2016).

Trade liberalization as a consequence of economic reforms of 1991 and need to adjust to WTO (1995) agreements has serious repercussions on Indian agriculture. The economic reforms have divulged Indian agricultural markets to the cut throat international competition which necessitated domestic

trade liberalization to improve domestic competitiveness. Subtle changes in non-agricultural sector due to the economic reforms at the same time sheared the necessity of reforms in agricultural trade too. Thereafter, series of trade restrictions have been eased for smooth conduct of trade in agricultural commodities all across the country. But, these were not agricultural marketing reforms in true sense in that the farm-level transactions were not part of any of them.

Consequently, Government of India (GoI) initiated several measures to improve the agricultural marketing system. It appointed inter-ministerial task force on agricultural marketing reforms under the chairmanship of Shankerlal Guru to look into the challenges of agricultural marketing and to suggest the measures to ease out the bottlenecks of marketing of agricultural commodities in the country was one of them. The Expert Committee in its report (in 2002) noticed that the regulated markets have helped in mitigating market handicaps of producers/sellers at wholesale assembling level but the monopolistic practices and modalities of regulated markets have prevented the development of free and competitive trade in agricultural markets. The Committee recommended various reforms in State Agricultural Produce Marketing Regulation Act and the Essential Commodities Act to root out the restrictive provisions coming in the way of efficient and competitive trade. After deliberate discussion on these recommendations, a Standing Committee of state ministers was constituted for the purpose under the chairmanship of Hukmddev Narayan Yadav, the then Union Minister of State for Agriculture, on 29 January 2003. Thereafter, Model Law on Agricultural Marketing was framed with consultation of states under the chairmanship of K.M. Sahni.

The Model Agricultural Marketing (Development and Regulation) Act (2003) was circulated among states to implement and to incentivize states to amend their APMC Acts on the lines of the Model Act. Some investment subsidy on market infrastructure development projects was also provided under central assistance. These economic incentives were thought of providing thrust to adjust to the provisions of model law (Chand 2016). However, after a decade, there existed variation in adoption of the contents and coverage of reforms under the APMC Acts/Rules across the states (Subramanian 2014). Contrary to these, Sharma (2017) reported that, entry of private players

in agricultural marketing benefitted farmers by increasing competition.

The status of implementation of model law was slow and uneven due to reluctance on part of state governments to amend their respective APMC legislations. APMC Acts were passed by the states during our socialist past (Patnaik 2014) restrict the choice of farmers to sell their produce in terms of place as well as person by creating regulated barriers. Some states have created entry barriers for private players to establish the markets by prescribing either prohibitive license fees for setting up such markets, or the minimum distance between private markets and APMC markets. The transaction of trade at private market was less than 10%. The Model Act prohibits commissions in any transaction of agricultural produce from the farmers; however in practice, these range from 1 to 2.5% for food grains and 4 to 8% for fruits and vegetables. There are also wide variations in market fees, from 0.5 to 2.0% of the sales. The market fee and commissions add 15-20 % to the farm gate price. In addition, there are 5-6 intermediaries between the primary producer and the consumer. The total mark up in the chain adds 60-75 % (Patnaik 2011). These result into higher transaction costs and lower price realization by farmers.

It is evident that these legal provisions have created a fragmented and monopolistic agricultural market with high entry barriers. The basic objectives for setting up a network of physical markets, namely, ensuring reasonable gain to the farmers by creating an environment of fair play of supply and demand forces, regulating market practices and achieving transparency in transactions, have not been achieved. In some cases, new conditions have been attached to reforms which defeated the very purpose of the reforms. Later, some of the legislative reforms prior to Model Act were undo by central government rules like licensing requirements, stock limits and movement restrictions in respect of purchase, sale, supply, distribution or storage for sale of agricultural commodities, which were removed in 2002. Subsequently, the changes in rules of game have given opportunities to unorganized market functionaries like commission agents and traders to organize themselves forcing the changes in process guidelines ultimately favored themselves.

Year 2007 witnessed circulation of model APMC rules across the states for implementation but there was wide

variation in adoption of content and coverage of reforms. Later, Ministry of Agriculture, Government of India set up an Empowered Committee of State Ministers in-charge of Agricultural Marketing on 2nd March, 2010 to persuade various states to implement the reforms in agriculture marketing through adoption of Model APMC Act. The Model Act suggests reforms necessary to provide a barrier free national market for the benefit of farmers and consumers. It also suggests measures to effectively disseminate market information and to promote grading, standardization, packaging, and quality certification of agricultural produce. The Committee in its report (in 2011) recommended for i) coherence of state APMC Acts and rules in line with Model Act and rule; ii) provision of multiple and competitive marketing channels to farmers; iii) integration of mandies with electronic spot exchange; iv) private investment in agricultural markets; v) infrastructure project status for agricultural markets; vi) waiving off of marketing fee on perishables like fruits and vegetables; vii) promotion of direct marketing as well as contract farming, etc.

4 Karnataka model for agricultural marketing

The state of Karnataka is pioneer in adopting these amendments and innovated its tendering process to bring transparency, competitiveness and efficiency in the regulated markets. The Karnataka state with the assistance of National Commodity and Derivative Spot Exchange (NCDEX) has replaced its manual tender system by electronic tender system for price bidding in selected regulated markets in the state. The plan aimed at vertical as well as horizontal integration of all regulated agricultural markets (APMCs) with supporting infrastructure for seamless flow of produce, finance and information across different stakeholders in the trading environment.

The model was actualized through a joint venture of state government and NCDEX i.e. Rashtriya e-Market Services (ReMS) Private Limited Company. ReMS provides the package of services which include auction as well as post-auction facilities (weighing, invoicing, market fee collection, accounting); assaying facilities; warehouse-based sale of produce; commodity funding and price dissemination (Sinha & Kumar 2010). The e-tender system was first introduced in 2006-07 on pilot basis for paddy in the Mysore regulated market, which was further extended to 11 commodities in 2010

(Chengappa et al. 2012). However, the unified online agricultural market initiative was launched in Karnataka on 22 February 2014. A total of 105 markets spread across 27 districts have been brought under the Unified Market Platform (UMP) as of March 2016 (Chand 2016).

This initiative provides a unique identification number to every lot brought by the farmers to the APMC market. The farmer can use the option of using either common platform or the platform of commission agent to auction his produce. The lots ready for auction are assayed for their quality and the information about quality and quantity is put on the portal of ReMS. The registered buyers or traders on ReMS who are interested in purchase of produce are required to get the unified market license. Any prospective buyer can bid for the produce online from anywhere using her/his credentials with ReMS. A trader can revise the bid upward any number of times before closure of the bidding time. After closure of auction period, the bids are flashed on television screens put up in the mandies and on the portal of ReMS. Thereafter, the producer/seller is required to give his acceptance for the bid. A seller has the autonomy to reject the bid, in which case a second round of bidding takes place on the same day and in the same way. A bidder is required to keep a pre-bid margin of 5% of value of the lot marked for sale with ReMS before opening of the tender. ReMS charges 0.2% of the value of the transacted produce for providing various online services. The important feature of the model is that the participation in UMP is not restricted to Karnataka. Traders from other states and bulk institutional buyers (Cargill, ITC, Reliance, Metro Cash & Carry) are also registered with ReMS. The UMP received overwhelming response from farmers in the state and it shows impressive results in a short period. Auction and sale of farm produce is not restricted to traders within the market. Thus, the possibility of tacit understanding to suppress prices received by farmers or cartelization has been eliminated.

5 E-NAM: replication and extension of Karnataka model

The befitting achievements of Karnataka model received countrywide attention and allured some other states to imitate it. Andhra Pradesh, Gujarat, Maharashtra and Telangana were among the early

adopters. With the overwhelming response of farmers to the new marketing method in Karnataka, the Union Government took initiative to encourage other states to replicate similar model for trade in agriculture. The Cabinet Committee on Economic Affairs approved the central sector scheme for promotion on the national agriculture market through Agritech Infrastructure Fund with a budget allocation of Rs. 200 crores on July 1st, 2015. The scheme aimed at setting up of a common e- platform in 585 selected wholesale regulated markets across the country. It envisages expanding Karnataka's UMP model at the national level in a bid to cover the entire country. The Prime Minister of India has given a real push to the effort by launching the electronic trading platform for National Agriculture Market (e-NAM) on April 14, 2016.

Haque & Jairath (2014) have argued for institutional innovation in agricultural marketing by way of redefining the roles of different stakeholders, use of information technologies, dismantling the trade-off and expanding the approach of APMCs to make it economically viable to the farmers. A common market for agricultural produce is an attempt in the aforesaid direction. A common market means a market within which there are no institutional or legal barriers to the free circulation of products, so that the producer or the traders can sell them with the same freedom across the state borders as they can within their own states (Roy et al. 2017). National Agriculture Market (NAM) is a similar pan-India electronic trading platform which networks the existing APMCs to create a unified national market for agricultural commodities. In reality, the common agricultural market like NAM can benefit different stakeholders engaged in value chain of agricultural commodities. The farmers can have benefits of wider choice of buyers for their produce which would positively influence their net income; consumers can also have more alternative for same product with varying prices and qualities; bulk buyers and exporters can reduce their intermediation cost by directly participating in trade without being physically present in the market and direct interface of bulk buyers with the sellers without any intermediation. Therefore, the efficiency of agricultural marketing system is expected to be increased with the NAM platform.

Technically, NAM envisages spatial market integration, reduction in transaction costs and has direct implications on price signals and price discovery,

farmer's income and market liberalization as well. Spatial integration of APMCs and uniformity in price (excluding of transportation cost) across the markets will reduce the scope of arbitration by the traders which will create win-win situation for both the farmers and consumers.

5.1 Status of implementation of e-NAM

March 23rd, 2018 has witnessed the targeted 585 regulated agricultural markets in 16 States and 2 Union Territories on the electronic platform of e-NAM. Jammu & Kashmir, Bihar, Sikkim, Assam, Tripura, Meghalaya, Nagaland, Arunachal Pradesh, Manipur, Mizoram, Goa, Kerala and Karnataka didn't join this pan-India agri-marketing platform due to different reasons. Karnataka follows its own agricultural marketing model (ReMS).

In a study, NITI Ayog (Chand & Singh 2016) has highlighted the preparedness of states on three pre-requisites for e-NAM viz. single point levy in the market, single trading license and provision of e-trading by the legal means i.e. either by provision of these in their acts or by notifying these. The results indicated that Andhra Pradesh, Goa, Gujarat, Haryana, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan and Tamil Nadu have completely adopted these; Chhattisgarh, Jharkhand, Mizoram, Punjab and Chandigarh have partially adopted, and rest states have not adopted these. However, states and union territories, for example Bihar, Kerala, Andaman and Nicobar, Dadra and Nagar Haveli, Daman and Diu and Lakshadweep do not have APMC Act while Sikkim, Arunachal Pradesh and Mizoram have non-functional APMCs.

Copious attempts have been made to study e-NAM as well as e-tendering of agricultural commodities, its mode of operation and its benefits to various stakeholders in the marketing of agricultural produce (Dey 2015; Chand 2016; Dey 2016; Sharma 2017; Mustaqquim 2017; NIAM; Nirmal 2017; Mishra & Mishra 2017; Roy et al. 2017; Narayanmoorthi & Palli, 2018) but at the same time some of studies have also shed light on hiccups in implementation of e-NAM across the country (Chengappa et al. 2012; Sharma 2016; Agarwal et al. 2017; NIAM 2017; Roy et al. 2017). Table 1 summarizes the above-mentioned studies in brief on their perception on e-NAM.

5.2 Challenges in implementation of e-NAM

The major bottlenecks in the implementation of e-NAM can be clubbed under 3 I's (i.e. Infrastructure, Institution and Information). Infrastructural impediments includes poor back-end infrastructure like poor quality of rural road, inadequate scientific storage and warehousing, limited number of cold storage, lacking refrigerated vans, low market density, assaying and grading facilities in some markets only, limited capacity of these equipments to deal with high volume of agricultural commodities in the peak season, different standards for agricultural commodities, fragmented APMCs, lack of synergy between marketing organizations and service providers, involvement of traders in the marketing of agricultural produce, poor internet connection, inadequate number of computers, servers and kiosks in the market, interrupted power supply etc. Institutional impediments can be further subdivided into two- a) legal and b) human resource impediments. Lack of orientation of states to adopt to and amend their APMC Acts for making provision for single point levy in the market; single trading license & e-trading and delay in notification of same are the major legal hiccups in the implementation of e-NAM. On the other hand, inadequate skilled manpower in the APMCs, limited number of trained traders to trade in the electronic platform and low literacy level of farmers are among the important human resource bottlenecks. Informational impediments includes low awareness of the farmers about the e-NAM, limited knowledge of e-tendering process, lack of awareness about the benefits of e-NAM and farmers apprehension about the less price for their produce if their produce found to be of sub-standard quality on assaying. In a study (Agarwal 2016) by Indira Gandhi Institute for Developmental Research, it was reported that the farmers felt penalties for poor quality will be lower when visual inspection is used. Despite the initial hiccups, there are way-outs to deal with such problems.

6 Way forward

Institutions and infrastructure are two basic pre-requisites for successful implementation of any government programme/scheme. Both are like the railway track which remains separate but always required in pair. The states/union territories where APMC acts are non-functional or partially adopted,

Table 1. Summary of studies on e-auctioning/e-tendering/e-NAM

S. No.	Attributes which e-auctioning/ e-tendering/ e-NAM will advocate	Author(s)
1.	Increased marketing efficiency	Chengappa et al. 2012
2.	Increased competitiveness	Chengappa et al. 2012; NIAM 2015; Mustaqquim 2107; Mishra & Mishra 2017; Pavithra et al. 2018
3.	Improved transparency in marketing system	Chengappa et al. 2012; NIAM 2015; Mustaqquim 2107; Nirmal 2017; Pavithra et al. 2018
4.	Increased financial literacy of farmers	Dey 2015
5.	Reduced transaction cost	Dey 2015; SFAC 2015; Mustaqquim 2017
6.	Increased market integration	NIAM 2015; SFAC 2015; Mustaqquim 2017; Krishna 2017
7.	Increased net returns to farmers	NIAM 2015; Mustaqquim 2017; Roy et al. 2017
8.	Infrastructural, social and technological improvisation of markets	NIAM; Dey 2016; Nirmal 2017
9.	Reduced wastage and final consumers price	SFAC 2015
10.	Reduced market imperfection	Chand 2016
11.	Increased market driven diversification	Chand 2016
12.	Reduced dependency of farmers on MSP and public procurement	Chand 2016
13.	Real time and broad-based price dissemination	Dey 2016; Chand 2016
14.	Single licensing	Dey 2016; Chand 2016
15.	Single point levy	Dey 2016; Chand 2016
16.	Reduced market intermediaries	Sharma 2016
17.	IT based/digital upgrading of markets	Sharma 2016
18.	Reduced monopoly of traders	Mishra & Mishra 2017
19.	Increased trade expansion	Roy et al. 2017
20.	Reduced transaction time and increased market revenue	Pavithra et al. 2018

should gear up its administrative machinery for suitable amendments in their respective APMC Act to make provision for e-NAM for benefiting their farmers. States which do not have APMC act are required to adopt it immediately as APMCs might ensure at least minimum support price to farmers. To address the problem of inadequate skilled human resources for operation of electronic trading, skilled manpower can be hired from the agricultural/engineering colleges situated locally on part-time basis, like as internship roles. Faster and accurate assaying of large number of lots during harvest season is one of the major challenges in implementation of e-NAM in full throttle. The concerned research organizations should be entrusted to develop such technologies and startups may be given full support working in this specific area. The problem of higher cost of running the assaying laboratories can

be minimized by automation of the process and scaling up the volume of trade on e-platform. Public and private entities should be attracted to invest in market infrastructure and market development process, so that the benefits could be distributed among the investors on share basis after keeping aside some part for market development.

Although, APMC Act 2003 has provision of private markets and involvement of private players in the development of agricultural market, only limited number of private players got attracted so far. The research study should be conducted to know the exact reasons for the same. Back-end infrastructure for frictionless functioning of e-NAM is a must. The modern technologies like IT, IOT, Blockchain, etc. can play vital role in providing level playing field for all-

size farmers, thus in developing smart micro-mandies near to the farmers (Kumar et al. 2018). Therefore, more efforts should be given to strengthen the scientific storage and warehousing facilities, development of rural roads and logistic network for transportation of agricultural produce. Quality certification plays an important role in online trading, thus the assaying and certification infrastructure in the enrolled mandies must be upgraded. Standard practices/protocols if any, for proper synergy between marketing organizations and service providers should be strictly adhered to. To increase the volume of trade on electronic trading platform and increase farmers participation in e-NAM, more awareness programs are needed. Attempts must be made to document and disseminate at least one success story of local farmer benefitted via trading on e-NAM. It will create trust among the farmers and will add to speedy spread of information about the benefits of e-NAM. To develop the skills of traders to adjust to new system, mandatory hands on training must be given to them free of cost in the districts. To increase the participation of small and marginal farmers with small marketable surplus on e-trading platform, farmer's cooperatives/farmers companies/FPOs should be given the license to trade on e-NAM if they are adequate in their portfolio to manage the task.

7 Conclusions

Fragmented agricultural markets make a perfect case for a unified platform like National Agricultural Market (NAM). Although facing initial hiccups for successful implementation and lesser density of e-NAM across the existing wholesale regulated markets, there is tremendous scope for its further expansion and modernization. The common agricultural platform integrated with modern technologies will be an important catalyst to ensure best price to the producers for their produce and will also ensure the variety of quality products to the consumers. The expansion in the volume of trade in e-NAM platform will follow the strengthened back-end infrastructure for complete value chain of produce. Therefore, efforts must also be channelized towards development and upgradation of scientific warehouses, cold storage, refrigerated vans for perishables, awareness and training to the participants in the marketing process, high speed internet connectivity to the markets and among different components of the market. The benefits of e-

NAM would be visible once it is implemented fully in the true sense as it has been conceptualized.

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