Electronic National Agricultural Market (e-NAM): A Review of Performance and Prospects in Haryana

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Preface

The present study has been undertaken for the Ministry of Agriculture& Famers Welfare. The study attempts to evaluate the status, performance and prospects of Electronic National Agricultural Market (e-NAM) in Haryana. The study used secondary data, supplemented by in-depth primary survey in Haryana to understand the various problems and constraints at the ground level related to e-NAM and stakeholders' perspective.

Our first and foremost thanks are to the Ministry of Agriculture & Farmers Welfare for supporting this study. Our sincere thanks also go to the coordinating institute, the Institute of Economic Growth, for providing us the study design, methodology and the questionnaire template. We would like to thank Shri P.C. Bodh and other officials of the Directorate of Economics & Statistics for their cooperation and support. Last but not the least, we would like to place on record our appreciation of our colleagues in the Agricultural Economics Research Centre, University of Delhi for their support.

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Chapter 1

Introduction

The Electronic National Agricultural Market (e-NAM) system was introduced in July 2015 and was made operational by appointing the Small Farmers' Agribusiness Consortium (SFAC) as the leading implementing agency to operate and maintain the e-NAM platform. SFAC is a registered society of Department of Agriculture, Cooperation & Farmers' Welfare (DAC&FW) under MoA&FW. SFAC is involved in development, operation and maintenance of the e-NAM platform with technical support from the Strategic Partner viz. M/s Nagarjuna Fertilizer and Chemicals Limited, initially, for three years from 2015-16 to 2017-18. The Cabinet Committee on Economic Affairs approved a Central Sector Scheme for Promotion of e-NAM through Agri-Tech Infrastructure Fund (ATIF). The government has allocated Rs. 200 crore to the ATIF.

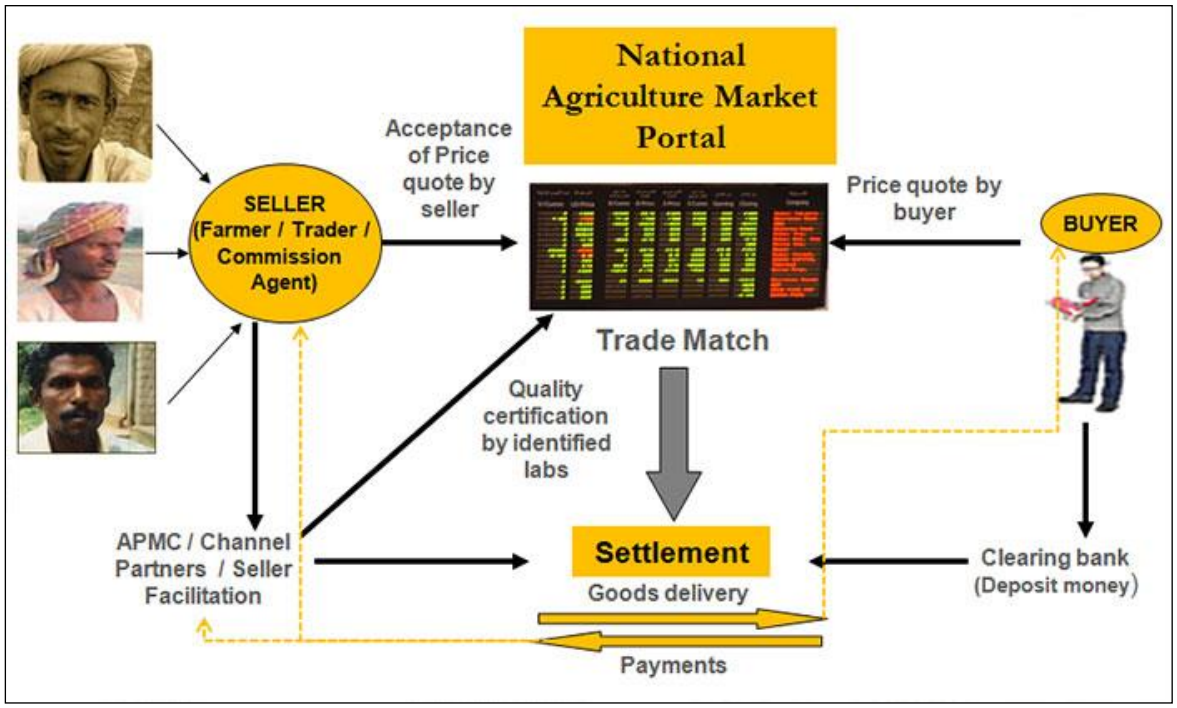
The e-NAM system was first launched in India in 14April 2016 with an initial coverage of 21 mandis across 8 states and allowing trading in 24 commodities on pilot basis (*Press Information Bureau, 2016*). Since then the number of mandis integrated with e-NAM has increased to 470 by October 2017 *(http://www.enam.gov.in)* and at present 479 mandis across fourteen states and in one union territory are covered by 21February 2018 *(The Economic Times, 2018)* with a target of linking 585 mandis by March 2018.

The broader objectives as proposed by MoA&FW for e-NAM include – (i) Transparent sale transactions and price discovery, (ii) Liberal licensing of traders / buyers and commission agents by state authorities, (iii) Harmonisation of quality standards of agricultural produce and provision for assaying, (iv) Single point levy of market fees, (v) Provision of scientific techniques such as soil testing laboratories, etc. The system is defined as a platform to create a national network of physical mandis which can be accessed online by different stakeholders. There are concerns of some stakeholders that the APMC mandis may become unviable if e-NAM is promoted, However, these apprehensions appear misplaced at this stage as local traders can also participate in bidding along with access to markets in other states. The farmers will have increased choices to sell their produce. But there are many existing loopholes in physical and online setup of current marketing

system and also technological issues. The system, once operational fully and effectively, is expected to lower intermediation costs and wastage by reducing market fragmentation and thereby, lower price for the final consumer.

Basically there are three main stakeholders in the e-NAM system – farmers, traders and buyers/processers/ exporters. The registration and operational guidelines for stakeholders, training manuals, guidelines for using e-NAM mobile application for different stakeholders and action Plan for development of Model Mandis under e-NAM are available online. Details about tradable parameters of quality (superior, very good, good etc.) of the commodities includes moisture, foreign matter, other edible grains, damaged grains, weevil led grains, immature and Shrivelled grains, uniformity, lustre etc.; physical appearance (colour, shape and size), defects and tolerance limits. The e-NAM system is implemented with a long term vision of providing higher returns to farmers for their produce, reduce the transaction cost to buyers, stabilize market prices, encourage integrated value chains of commodities and motivate scientific techniques for storage and logistics.

Figure 1.1: A working model of e-NAM



Source: http://sfacindia.com

Brief review of literature

Primary agricultural markets in the country governed by APMC Acts. The present functioning of the markets under APMC Acts is generally responsible for the segmentation of agricultural markets in the country leading to inefficiencies in price discovery. Chatterjee and Kapur (2016) studied the spatial variations in wholesale prices of the principal commodities across APMC mandis in India and within the states. They used Shapley-Shorrocks decomposition and analyzed the relative contributions of different factors in explaining this price variation. They found that the large overall variation in prices among mandis is because of time invariant location specific factors (37%) and due to time and location varying factors (39%). The farmers sell their produce at up to 5% lower prices in geographically isolated mandis which enjoy market power because they face little competition. APMC Acts improved agricultural markets in several respects but over time, the balance of power in transactions has moved back in favour of middlemen and traders.The special interest groups of commission agents, traders and other middle-men is a serious problem to contend with.Political influence of trading class impacted market reform initiatives of the state governments (Chand, 2012). It also helped them obstruct the entry of new players, stifling competitive functioning of markets (Acharya 2004). Aggarwal, Jain and Narayanan (2017), based on their qualitative survey across various mandis in the Karnataka, highlighted the importance of institutional reforms and establishing a legal framework, developing incentive structure for stakeholders, and providing market infrastructure such as physical and financial payments infrastructure.

The model APMC Act did not have provisions to create a national market or even state level common market. e-NAM is an improvement in that respect and should directly help in improving the competitiveness and efficiency in agricultural markets. e-NAM should also help in the elimination of traders' cartels and price manipulation by local trading groups, and in reducing price spread between producers and consumers. e-NAM is expected to promote market-driven diversification in crop pattern and reduce dependence of farmers on MSP and public procurement in Punjab and Haryana states (Chand, 2016).

New initiatives in APMC reforms are limited in ambition and are unlikely to serve the farmers' interests, if these are not expanding the farmers' set of choices to obtain better prices. Treating the entire country as a single market, inclusion of fruits and vegetables in the purview of

mandatory trading in APMC market yards and / or attract private investment in alternate marketing facilities and dilution of Essential Commodities Act (ECA) along with pushing APMC reforms can improve e-NAM initiatives (Pravesh Sharma, 2017).

Report of Inter-Ministerial Task Force on Agricultural Marketing Reforms (2002) highlighted the focus areas to develop and strengthen agricultural marketing in the country. The report highlighted that the State Agricultural Produce Marketing Regulations Act (APMC Act) and the Essential Commodities Act (EC Act) are the two important legislations that need to be amended to remove restrictive provisions coming in the way of an efficient and competitive marketing system. It emphasized the amendment of APMC Act by the state governments to focus on the promotion of agricultural markets' in private and cooperative sector, encourage direct marketing by farmers, contract farming and rationalization of market fees. The report also suggested reforms of the Control Orders under the EC Act, which are largely responsible for the control of production, supply, storage and movement of, and trade and commerce in a large number of agricultural commodities in the country.

The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) report on Transforming Agricultural Marketing in India (Raju et.al., 2016) recommend participation of buyers across all markets, auction on the electronic platform, reliable assaying and quality testing infrastructure, electronic settlement of sales, promoting inter and intra-state transportation of commodities, promoting warehouse-based trading system, encouraging participation of private players along with farmer producer organizations (FPOs) and improving physical infrastructure in market related to logistics, supply chain and storage.

The experience of Karnataka shows success in agricultural marketing by an independent agency, Rashtriya electronic Market Scheme (ReMS), with unification of activities, generating sufficient revenues and creating positive momentum. E-marketing helped farmers in Karnataka in terms of increased number of bids per lot, increased competition among traders and reduced scope for collusion. There is increased transparency and reduced delay in payment but still required to increase awareness about the e-market processes and benefits to farmers, improvement in broadband connectivity and placing the skilled manpower for marketing operations. Although most of the farmers are in favor of the e-markets, a few traders and also commission agents are expressing their concern about the utility of the system (Reddy, 2016).Other problems are the

absence of involvement of all the stakeholders and relying solely on technical solutions, which may not yield the desired results (*Vyasan R, 2016*).

e-NAM can utilize a management information system for managing information flow, product flow, and payment flow in an electronic market which can be improved by using technology to synchronize value chain activities. e-NAM can reduce pricing anomaly at the wholesale and primary rural markets, make farmers financially literate, support spot markets and futures markets, reduce price variations, facilitate a single license to traders and can bring procurement activities to order by reflecting local demand and supply conditions (Dey, 2016). However, to operationalize e-NAM amending the state APMC Acts is necessary in order to make a provision for electronic auction, allow a single license across the state and single point levy of market fees. Promoting scientific sorting, grading facilities and quality testing machines, improving internet connectivity and enhancing technical expertise at the state agricultural departments are some of the other necessary prerequisites for effective implementation of e-NAM (*Rajalakshmi Nirmal, 2017*).

Objectives

The present study aims to study the functioning of few of these e-NAMs in the Haryana.

The specific objectives of the study are to

1) study the extent of operation, adoption and functioning of e-NAM in few of the major markets
2) Analyze the improvements due to e-NAMs in price discovery, quantity traded and marketing cost, among other things
3) Assess the functioning of the assaying laboratories at the e-NAMs and acceptability of quality parameters to various stakeholders
4) Analyze the infrastructure facilities at the e-NAMs for cleaning, sorting, grading and weighing of commodities
5) Assess the overall impact on the ease of doing business

Methodology

The methodology includes the primary as well as secondary data analysis. The primary survey was conducted in mandis across three districts of Haryana by the Agricultural Economics Research Centres (AERC), Delhi. The secondary data on prices and market arrivals from AGMARKNET has been used to comparative analysis of the market trends before and after the introduction of e-NAM. The AGMARKNET data is collected from various mandis in the country by the MoA&FW, GoI.

Organization of the Study

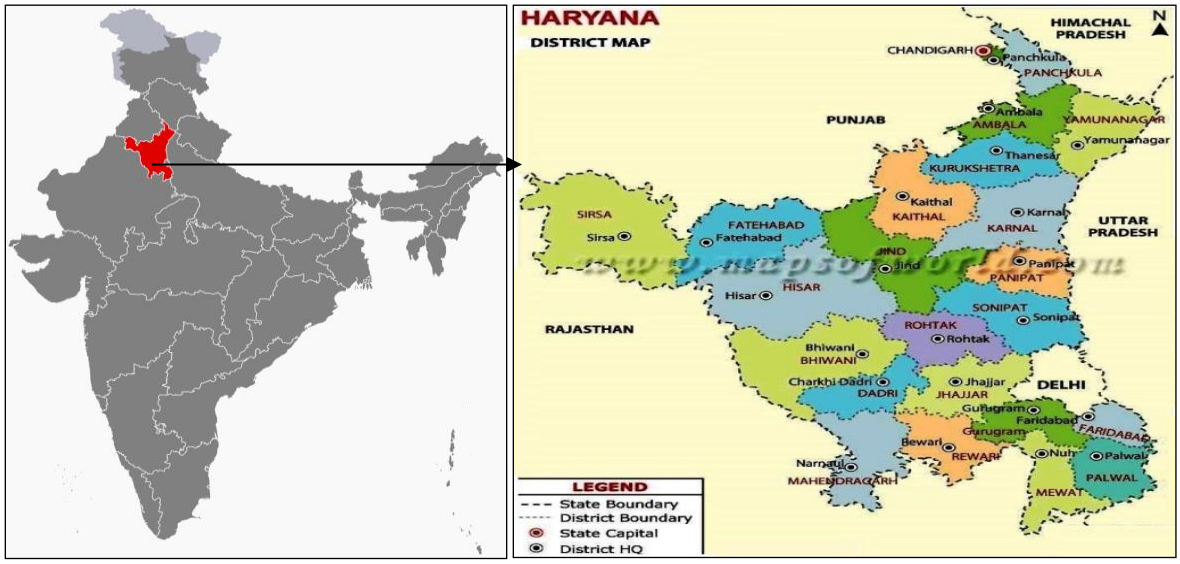
The report is organized as follows. After a brief introduction in Chapter 1, Chapter 2 provides an introduction to functioning of e-NAM in Haryana state. Chapter 3 outlines the results of the secondary data analysis of market arrivals and prices in major e-NAM markets in the state. Chapters 4 to 6 are devoted to the analysis of the primary data from the field. Chapter 4 outlines a brief sketch of the demographic profile of the study regions. Chapter 5 makes a comparative analysis of the sale before and after the implementation of e-NAM. Chapter 6 analyzes the perceptions and feedback received from various stakeholders, such as farmers and traders, about e-NAM. Chapter 7 provides brief summary and conclusions.

Chapter 2

e-NAM in Haryana

The Haryana state has been carved out of the former state of East Punjab on 1 November 1966. The state is situated in North India with less than 1.4% (44,212 km^2) of India's land area. Haryana has 6 administrative divisions, 22 districts and 72 sub-divisions. Haryana is traditionally an agrarian society and producer of many of the agricultural crops. Wheat and Rice are majorly grown crops.

Figure 2.1: Haryana – State and district map



The e-NAM system was implemented in Haryana with its initial launch in April 2016 in 8 states across country. As of October 2017, 54 mandis are connected through e-NAM in Haryana. The Haryana State Agricultural Marketing Board (HSAMB) has been assigned the task of connecting the mandis under e-NAM platform (*Economic Survey of Haryana, 2016-17).* This board was set up on 1st August, 1969 for exercising superintendence and control over the Market Committees in the State. Out of 54 mandis, 37 have been connected in 1st phase of e-NAM and the rest in the next phases.

Status of regulated markets in Haryana

As of 2015-16, there are a total 108 regulated markets are reported across 21 districts of Haryana which further constitutes nearly 173 sub-yards (Table 2.1). On an average about 64 villages are served per each regulated market in Haryana. Karnal district has 10 regulated markets which is highest by any district and Rewari has the least number, that is, 2 regulated markets. Rewari has the highest number of villages per regulated market (201 villages/ regulated market), as there are only 2 regulated markets in the district. Rewari is followed by Sonipat (111) and Nuh (110) districts. Hisar district has most number of sub-yards (21) followed by Sirsa and Kaithal. The least number of sub-yards are in Palwal district (only 1).

Table 2.1: District-wise number of regulated Markets and sub-yards

District	Number of Markets		Number of sub-yards		Average number of villages served per regulated Market		Average area served per regulated Market (Sq. Kms.)	
	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16
Ambala	7	7	8	8	67	67	225	225
Panchkula	3	3	3	3	73	73	299	299
Yamunanagar	7	7	9	9	91	91	253	253
Kurukshetra	7	7	11	11	59	59	219	219
Kaithal	7	7	17	17	38	38	331	331
Karnal	10	10	7	7	43	43	252	252
Panipat	5	5	4	4	37	37	254	254
Sonipat	3	3	8	8	111	111	707	707
Rohtak	3	3	4	4	48	48	582	582
Jhajjar	3	3	2	2	87	87	611	611
Faridabad	2	3	3	2	74	74	370	370
Palwal	4	4	1	1	70	70	340	340
Gurugram	4	4	4	4	61	61	314	314
Nuh	4	4	3	3	110	110	377	377
Rewari	2	2	5	5	201	201	797	797
Mahendragarh	4	4	9	9	92	92	475	475
Bhiwani	7	7	9	9	63	63	683	683
Jind	6	6	13	13	51	51	450	450
Hisar	6	6	21	21	45	45	664	664
Fatehabad	7	7	14	14	35	35	363	363
Sirsa	6	6	19	19	55	55	713	713
Total	107	108	174	173	64	64	413	413

Source: Haryana State Agricultural Marketing Board, Statistical Abstract of Haryana – 2015-16

As per the GoI, as on October 31, 2018, 470 Mandis across 14 States are reported to have been integrated under e-NAM, out of which 54 are in the Haryana state. The list of these markets is reported in Table 2.2.

Table2.2: List of e-NAMs in Haryana

S.No.	Mandi	S.No.	Mandi	S.No.	Mandi
1	Adampur	19	Hodal	37	Panipat
2	Ambala	20	Indri	38	Pehowa
3	Asandh	21	Ismailabad	39	Pillukhera
4	Barwala hisar	22	Jakhal	40	Pundri
5	Bhiwani	23	Jhajjar	41	Rania
6	Ch dadri	24	Jind	42	Ratia
7	Cheeka	25	Jullana	43	Rewari
8	Chhachhrauli	26	Kaithal	44	Rohtak
9	Dabwali	27	Kalanwali	45	Safidon
10	Dhand	28	Kalayat	46	Samalkha
11	Ellenabad	29	Karnal	47	Shahbad
12	Faridabad	30	Ladwa	48	Sirsa
13	Fatehabad	31	Madlauda	49	Siwani
14	Ganaur	32	Mullana	50	Sonipat
15	Gharaunda	33	Narnaund	51	Taraori
16	Gohana	34	Narwana	52	Thanesar
17	Gurgaon	35	Nissing	53	Tohana
18	Hansi	36	Palwal	54	Uchana

Source:http://www.enam.gov.in/NAM/home/implemented_progress.html#

Methodology of primary survey

Multi stage sampling has been used for the primary survey. In the first stage three districts from the list of nine suggested by the coordinating agency, Institute of Economic Growth, Delhi, have been selected (given in Table 2.3). The selection of these districts is based on their underlying diversity in cropping pattern. At the second stage, mandis have been selected from each of the selected districts. As already mentioned, as of the date of initiation of this study, e-NAM was implemented in 54 markets of Haryana. Out of this 5% of the markets have been chosen for the primary survey. These markets are Samalkha in Panipat district, Ganaur in Sonipat district, Sirsa and Ellenabad in Sirsa district. In the third stage, the farmers and traders/commission agents are randomly selected from the list of farmers and registered traders/commission agents.

The AERC Delhi research team visited the selected mandis in each of the three districts i.e. (i) Panipat, (ii) Sonipat and (iii) Sirsa. A sample of 50 farmers and 10 registered traders/Commission agents have been interviewed at the mandi/markets. A structured questionnaire provided has been used for survey and data collection. The survey has been conducted during the period from 15 December to 15 February 2018.

The data collected is mainly dependant on the time of field survey, crop season and the major market arrivals. The data relating to the major commodities traded during the survey period in these markets from among the grains and fruits & vegetables has been collected. Sonipat is among the major districts in terms of coverage of many of the agricultural commodities and in terms of location. Panipat is the largest district in terms of arrival of main vegetables – potato, onion, tomato and cucumber. Sirsa is a major district for fruits and commercial crops such as apple, mango, barley, cotton and guar. Sirsa is also located at the junction of the three states – Haryana, Punjab and Rajasthan.

Table 2.3: Sample list of mandis selected in Haryana for e-NAM study

S. No.	District	Mandi
1	Sirsa	Sirsa
2	Kaithal	Kaithal
3	Karnal	Karnal
4	Fatehabad	Fatehabad
5	Sonipat	Sonipat
6	Ambala	Ambala City
7	Panipat	Panipat
8	Sirsa	Ellenabad (and Sirsa)
9	Jind	Pillukhera

Source: Research proposal for e-NAM study

Basic indicators in the selected markets

Among the selected districts, Panipat is densely populated as of 2011 census data and the population growth during 2011 over last decade 2001 is reported highest in this district, followed by Sonipat and Sirsa (Table 2.4). All the three selected districts have about 34%-39% working population and the literacy rate is nearly above 69%. The average land holding is highest in Sirsa followed by Sonipat and Panipat (Table 2.5).The average land holding of farmers in Haryana is nearly 2.2 Hectare.

Table 2.4: Basic indicators in the selected Markets

Indicators	Panipat	Sonipat	Sirsa	Haryana
Population growth rate (2011 over 2001)	24.6	13.4	16.0	19.9
Density of Population per Sq. Km. (2011)	951.0	683.0	303.0	573.0
Female per 1,000 Male (2011)	864.0	856.0	897.0	879.0
Working Force (as % to population)	34.2	36.1	38.8	35.2
Literacy rate (2011)	75.9	79.1	68.8	75.6

Source: Statistical Abstract of Haryana – 2015-16

Table 2.5: Land holding across farmers' category in selected districts

Size group (in Hectare)	Panipat	Sonipat	Sirsa	Haryana
Marginal (Below 1.0)	0.6	0.5	0.7	0.6
Small (1.0 - 1.99)	1.4	1.4	1.5	1.5
Semi Medium (2.0 - 3.99)	2.7	2.9	3.0	2.9
Medium (4.0 - 9.99)	5.9	6.1	6.3	5.9
Large (10 and above)	15.5	19.7	14.8	15.8
All Groups	2.1	2.1	2.8	2.2

Source: Input survey (*http://inputsurvey.dacnet.nic.in)*

Chapter 3

e-NAM in Haryana: A secondary data analysis

Introduction

Different markets in Haryana implemented the e-NAM at different points of time. The e-NAM was implemented in April, 2016 in three of these markets initially and extended to other markets over the time. A list of these markets with date of implementation of e-NAM is presented in Table 3.1.

Markets and commodity coverage

The nine major markets selected for secondary data analysis which includes - Karnal, Ellenabad, Sirsa, Ambala, Sonipat, Kaithal, Panipat, Fatehabad and Pilukhera. During the last three year period, from April 2015-16 to October 2017-18, the arrival of more than 80 major agricultural commodities was reported across major markets in Haryana, mainly covering the above reported markets. Wheat and paddy are the two major crops which constitute nearly 90% share in total arrivals among the reported agricultural commodities over all the major markets during the period of analysis.

The arrival and price patterns across the major agricultural markets in Haryana are analysed for major agricultural commodities. The data on arrival and prices of major agricultural commodities are available with Department of Marketing, MoA&FW, GoI. The total yearly arrival of different agricultural commodities is calculated for three years i.e. 2015-16, 2016-17 and 2017-18. The list of commodities is prepared based on the share in total arrival across all the major markets for each year and overall (2015-16 to 2017-18). Then the commodities contributing an aggregate of 98.5 % of total arrivals in two out of three years and overall are selected for further analysis.

Based on the above criterion a list of 15 commodities is selected to analyse the arrival and price patterns across all the major nine markets in Haryana. The list of selected markets and number of commodities selected in each market are reported in Table 3.1.

Table 3.1: Major agricultural Markets selected based on arrival and date of implementation of e-NAM

S. No.	District	Market	Date of implementation of e-NAM	No. of commodities selected
1	Karnal	New Grain Market (main), Karnal	April 14, 2016	10
2	Sirsa	Ellenabad	April 14, 2016	12
3	Sirsa	Sirsa	April 14, 2016	13
4	Ambala	Ambala City	June 1, 2016	11
5	Sonipat	Sonipat	August 7, 2016	8
6	Kaithal	Kaithal	August 14, 2016	7
7	Panipat	Panipat	September 5, 2016	8
8	Fatehabad	Fatehabad	December 16, 2016	14
9	Jind	Pillukhera	March 31, 2017	4

Source: Author's computations from secondary reports and data. Note: this follows for all the Tables and Figures in this chapter.

Once the commodities are selected in a market, the share of each commodity in total arrivals in the market is calculated to understand the arrival patterns of selected commodities. Table 3.2 explains the commodity share in each market. The table indicates that for most of the markets wheat and paddy are among the commodities with highest share in market arrivals. Panipat and Sonipat are major markets in terms of arrival of vegetables such as – potato, tomato and onions. Markets in Sirsa district i.e. Ellenabad and Sirsa are also the major markets for cotton along with wheat and paddy.

Table 3.2: Share of selected commodities in terms of arrival percentage in each Market

District	Market	Commodities
Ambala	Ambala City	Paddy, (52.3%), Wheat, (41.6%), Potato, (2.1%), Onion, (1.4%), Bottle gourd, (1.3%), Tomato, (0.4%), Apple, (0.3%), Mango, (0.2%), Banana, (0.1%), Cucumber, (0.1%), Mustard, (0.1%)
Fatehabad	Fatehabad	Wheat, (62.6%), Paddy, (24.7%), Cotton, (2.7%), Banana, (2.6%), Potato, (2.2%), Tomato, (1%), Bottle gourd, (0.9%), Onion, (0.7%), Apple, (0.6%), Mustard, (0.6%), Cucumber, (0.5%), Mango, (0.4%), Guar, (0.3%), Barley, (0.2%)
Jind	Pillukhera	Wheat, (62%), Paddy, (38%), Cotton, (0.1%), Mustard, (0.1%)
Kaithal	Kaithal	Paddy, (66.9%), Wheat, (27.7%), Potato, (2.1%), Onion, (1.1%), Banana, (1%), Tomato, (0.8%), Mango, (0.3%)
Karnal	New Grain Market(main), Karnal	Wheat, (70%), Potato, (11.4%), Onion, (5.4%), Banana, (3.5%), Tomato, (2.8%), Apple, (2.4%), Bottle gourd, (2%), Mango, (1.3%), Cucumber, (1.2%), Paddy, (0.1%)
Panipat	Panipat	Wheat, (39.3%), Paddy, (34.9%), Potato, (13.3%), Onion, (4.8%), Banana, (2.6%), Tomato, (2.4%), Cucumber, (1.4%), Apple, (1.3%)
Sirsa	Sirsa	Wheat, (43.8%), Paddy, (31%), Cotton, (11.3%), Barley, (3.2%), Guar Seed, (2.8%), Mustard, (2.4%), Potato, (1.7%), Banana, (1.3%), Onion, (1%), Tomato, (0.5%), Apple, (0.4%), Mango, (0.4%), Cucumber, (0.3%)
Sirsa	Ellenabad	Wheat, (66.9%), Cotton, (11.1%), Paddy, (10.7%), Guar, (5.3%), Mustard, (2.3%), Barley, (1.8%), Apple, (0.7%), Potato, (0.6%), Tomato, (0.3%), Banana, (0.2%), Onion, (0.2%), Mango, (0.1%)
Sonipat	Sonipat	Potato, (37%), Tomato, (20.6%), Onion, (12.9%), Banana, (9.9%), Mango, (5.8%), Cucumber, (5.1%), Apple, (4.7%), Bottle gourd, (4%)

Arrival patterns in Markets

The arrivals of each of selected commodities are reported in Figure 3.1to Figure 3.14. Few of the commodities are seasonal but the arrival of some of them is throughout the year. The period of analysis of secondary data is about 30 months from April 2015-16 to October 2017-18.

For paddy – Pilukhera, Ambala city and Kaithal are the major markets (Figure 3.1). The availability of paddy is mainly concentrated during the period September to January, every year. Pilukhera is the largest market for wheat in terms of arrival during the study period, followed by Fatehabad, Sirsa and Ambala city (Figure 3.2). The period of arrival is concentrated from March to June. Sirsa is major market for onion, followed by Karnal, Fatehabad and Sonipat (Figure 3.3). Although the availability is throughout the year, the summer months from March to August are the peak months in terms of arrivals. Potato is also available across the year and the major markets are Panipat, Sirsa, Karnal and Sonipat (Figure 3.4). Similarly for Tomato the major markets are Panipat, Sonipat, Sirsa and Fatehabad (Figure 3.5). Arrival of fruits – apple is concentrated during the season July to December every year across all the major markets but the highest arrival is reported in Ellenabad, Panipat, Sirsa and Fatehabad (Figure 3.6). Similarly the availability of Mango in major markets in Haryana is concentrated to period April to September with highest arrivals in Sirsa, followed by Karnal, Fatehabad and Sonipat (Figure 3.7). Unlike other two fruits, Banana is available in most of the months for arrival in market and Sirsa and Fatehabad are the major markets, which are followed by Panipat and Karnal (Figure 3.8).

Sirsa and Ellenabad are the major markets for Cotton and Gaur (and Gaur Seed), (Figure 3.9 and Figure 3.10). The arrival is concentrated to these few markets but also includes Fatehabad and Pilukhera (for Cotton) with a small share in terms of total arrival. Usually the majority of arrival comes during September to March period. Mustard comes to market during March to June in Sirsa, Ellenabad and Fatehabad (Figure 3.11). Panipat, Fatehabad and Sirsa are the major markets for cucumber and arrival is reported throughout the year with winter months as lean period (Figure 3.12). Bottle gourd arrives majorly in Fatehabad, Karnal and Sonipat (Figure 3.13). A jump in arrival reported during June to October period. The arrival of Barley is limited to Sirsa district in Sirsa and Ellenabad markets and that is to March to June period (Figure 3.14).

Figure 3.1: Arrival in major Markets - Paddy

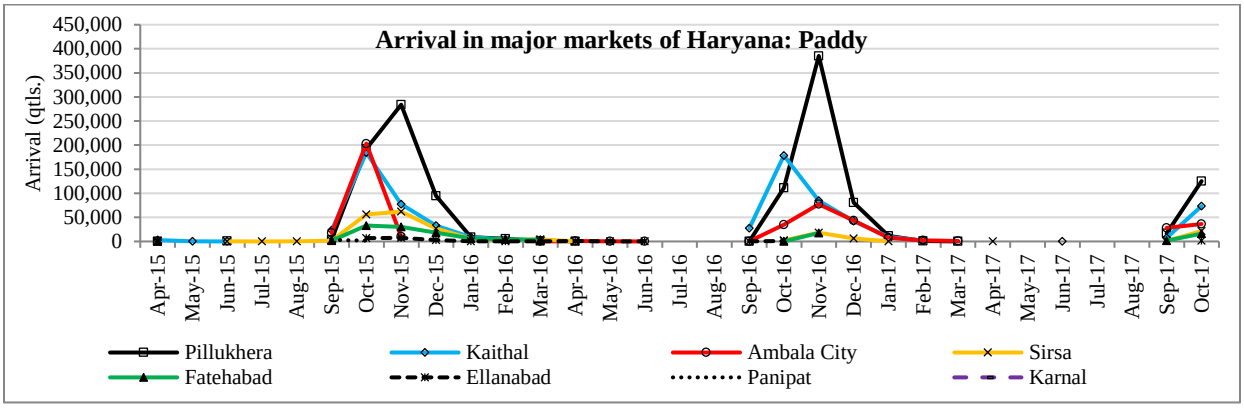


Figure 3.2: Arrival in major Markets - Wheat

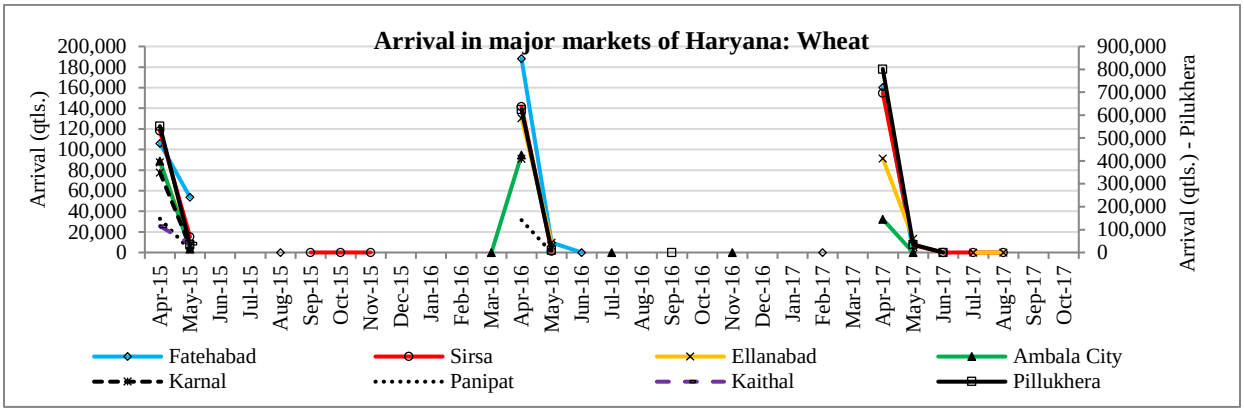


Figure 3.3: Arrival in major Markets - Onion

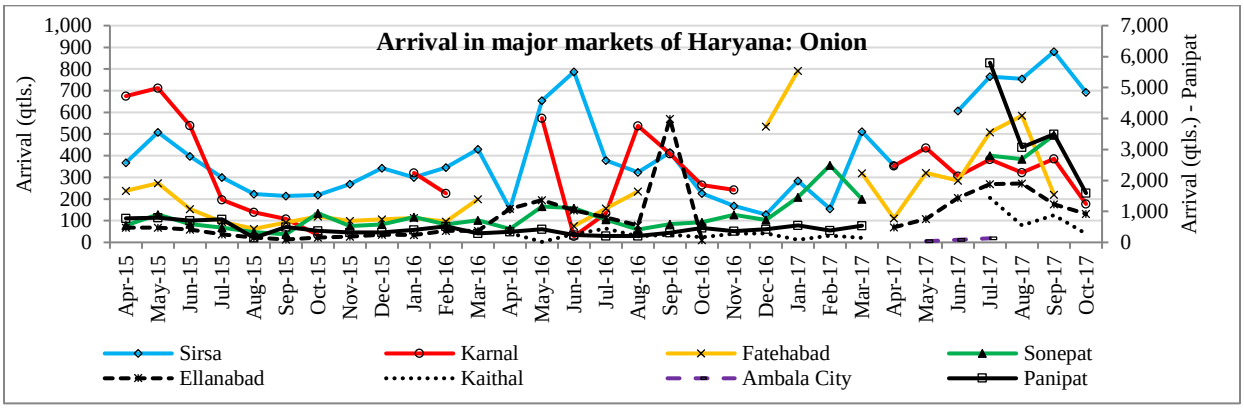


Figure 3.4: Arrival in major Markets - Potato

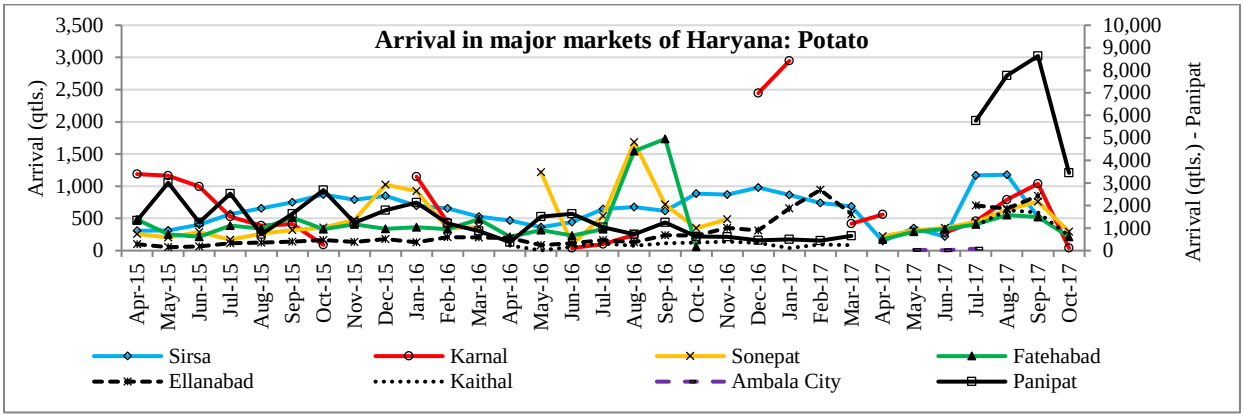


Figure 3.5: Arrival in major Markets - Tomato

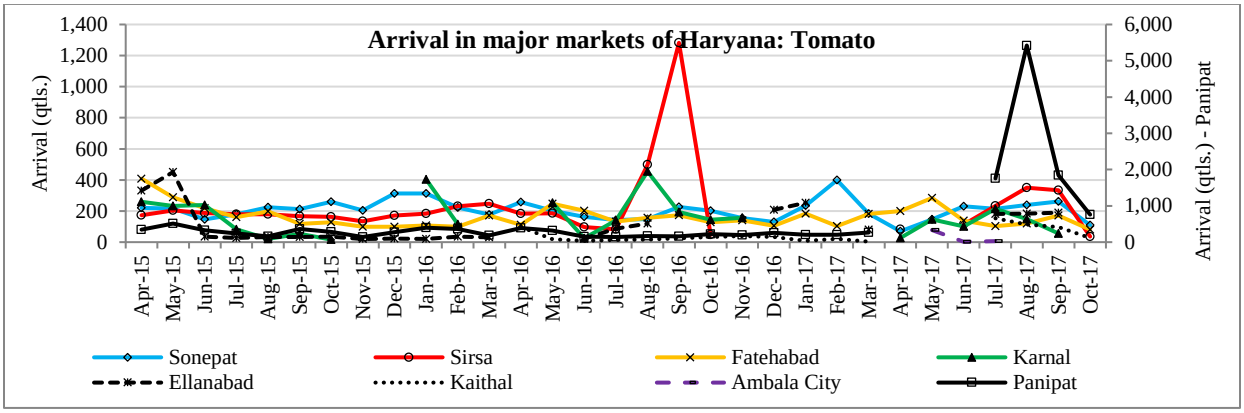


Figure 3.6: Arrival in major Markets - Apple

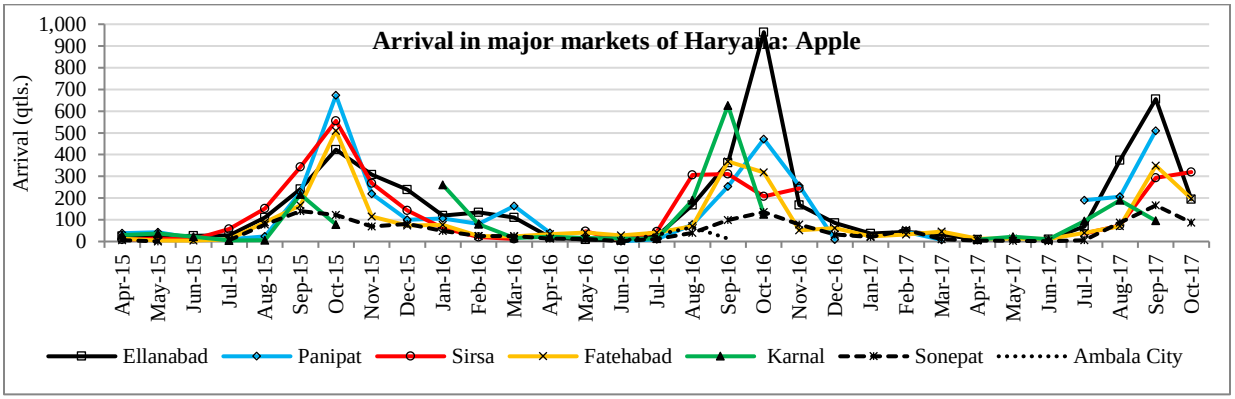


Figure 3.7: Arrival in major Markets - Mango

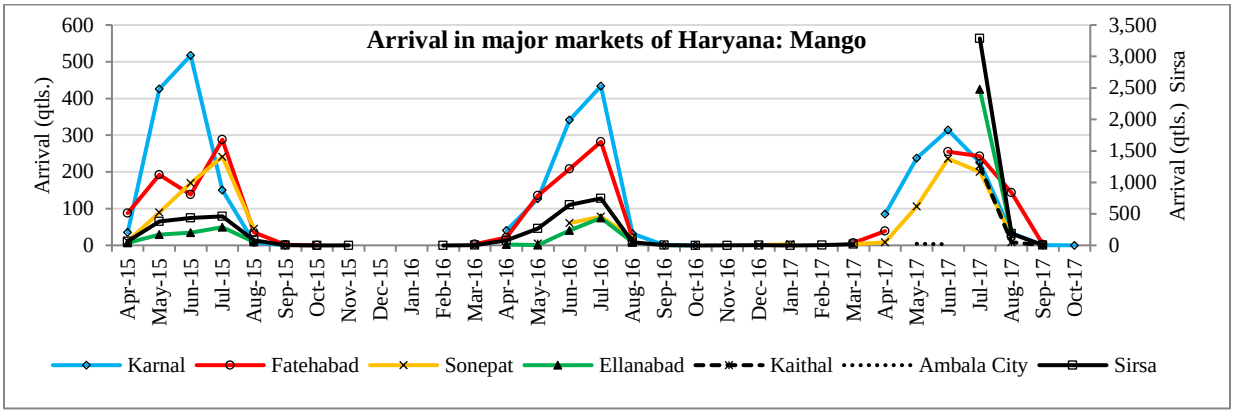


Figure 3.8: Arrival in major Markets - Banana

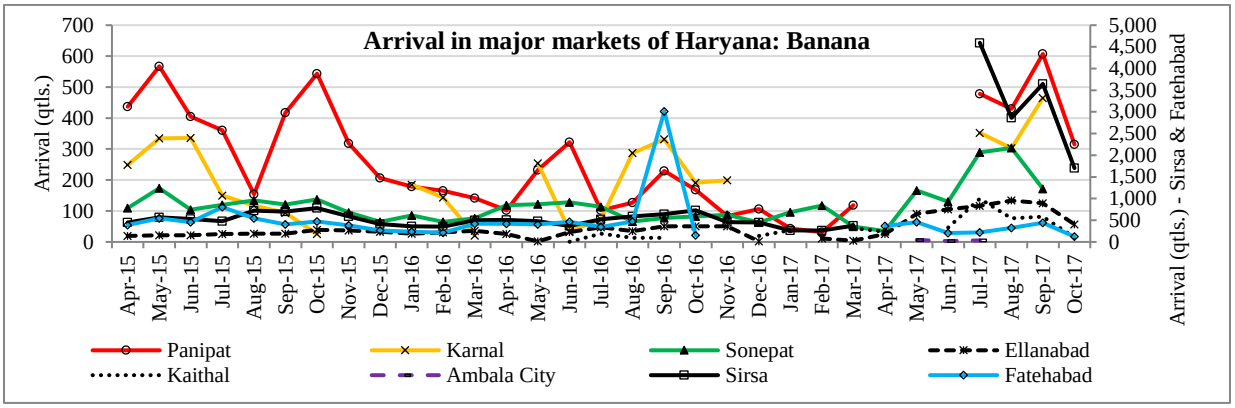


Figure 3.9: Arrival in major Markets - Cotton

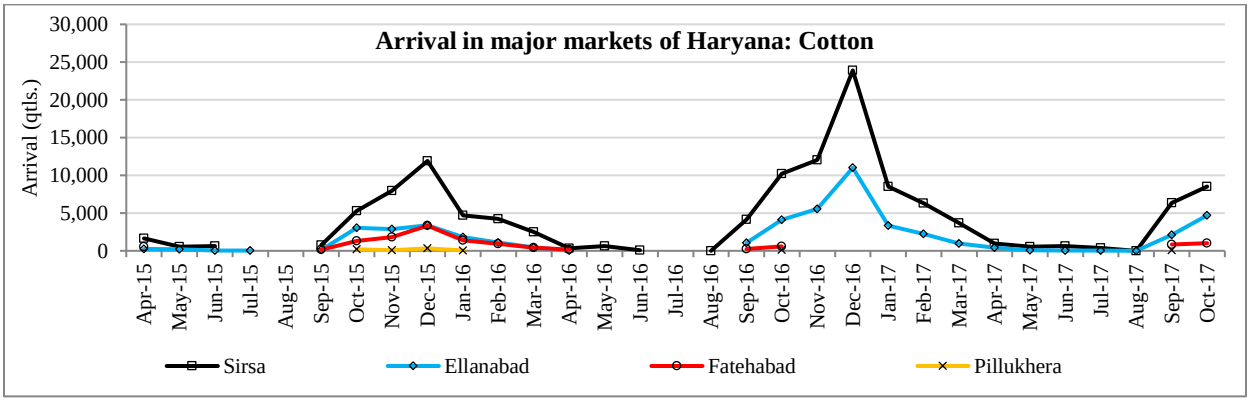


Figure 3.10: Arrival in major Markets – Gaur and Gaur seed

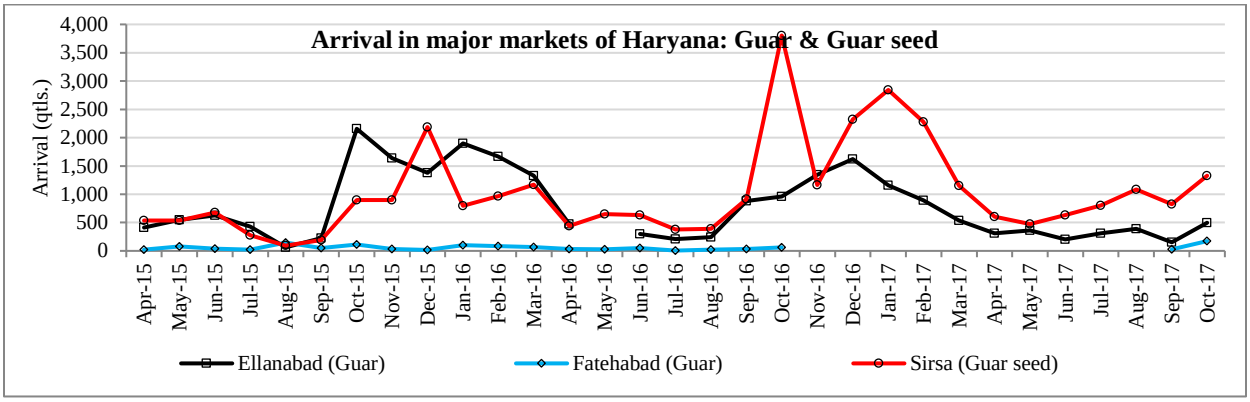


Figure 3.11: Arrival in major Markets - Mustard

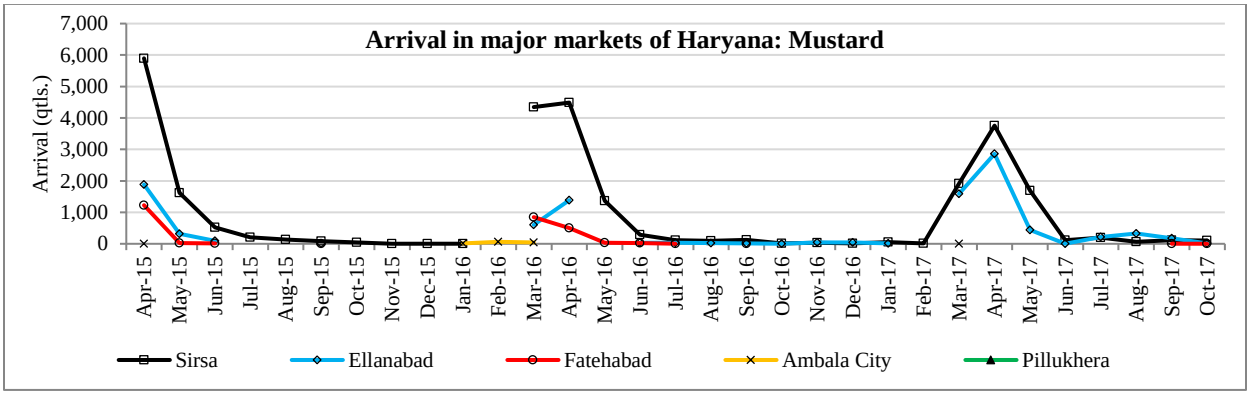


Figure 3.12: Arrival in major Markets - Cucumber

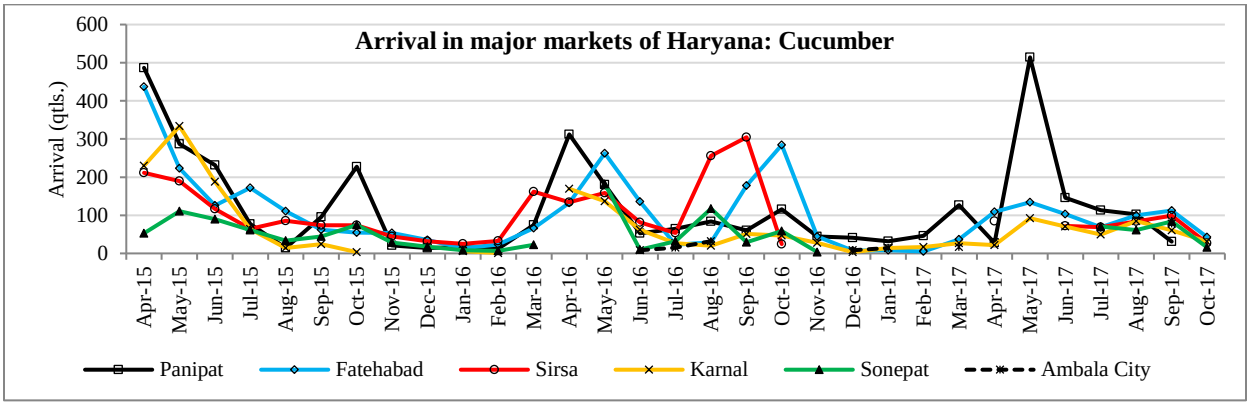


Figure 3.13: Arrival in major Markets – Bottle gourd

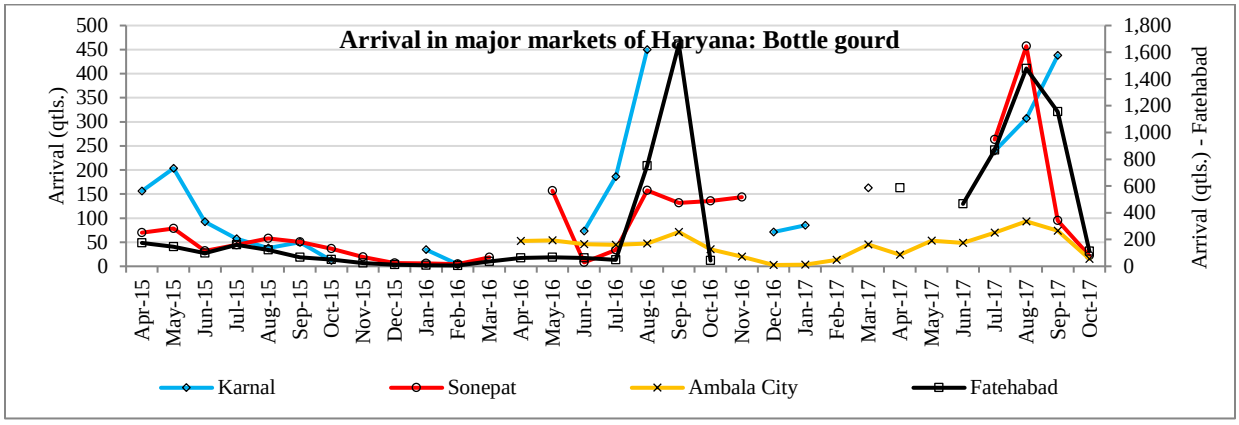
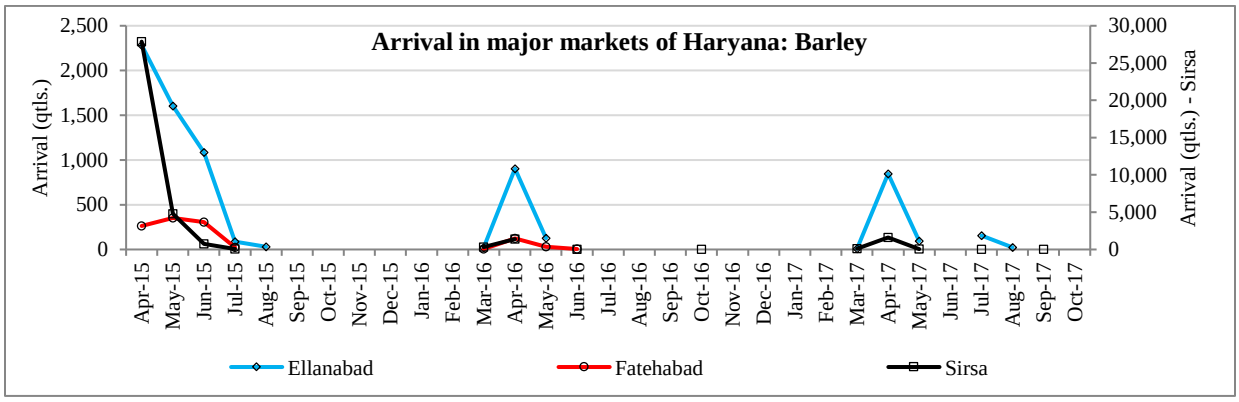


Figure 3.14: Arrival in major Markets - Barley



Arrival patterns in Markets – pre and post e-NAM

The arrival patterns of the selected major agricultural crops are analysed for both the periods, pre and post the mandis are integrated under e-NAM. Since many of the fruit and vegetable crops and other food crops are seasonal in nature and hence the arrival data is not available for all the months. Keeping this in consideration, the average arrival of commodity is preferred in the analysis (instead of total arrival) to ensure meaningful comparisons of crops and markets. The data frequency is monthly and period of analysis is from April 2015-16 to October 2017-18.

Average arrival in Markets

Four out of nine markets considered in the study reported an increase in average market arrival post e-NAM, varying from 9% - 40% (Table 3.3). Rest of five markets have reported a decline in average arrival in range of -19% to -48%. Pilukhera reported highest average arrival during both, pre and post e-NAM periods.

Ambala

The average arrival in Ambala market is reported highest for Paddy and Wheat, followed by Bottle gourd, Tomato, Cucumber and Apple (Table 3.4). Most of the commodities are not comparable because of missing data pre-NAM in Ambala. For the three commodities, for which data is available, there is decline in market arrival by over 80% for wheat and Mustard, and by nearly 20% for Bottle gourd.

Fatehabad

The highest arrival is reported for grains – Paddy and Wheat during both the period, pre and post e-NAM (Table 3.5). It is followed by vegetable crops – Bottle gourd, Onion, Potato and Tomato. Cotton and Banana also major crops in terms of average market arrival. There is increase in average arrival for vegetables – Bottle gourd and Onion, and for Guar post e-NAM. For almost all the other crops arrived in Fatehabad, there is decline in average arrival post e-NAM. Paddy and Wheat reported decline by 9%-26% in average arrival.

Pilukhera

Only few of the selected commodities arrived in market in Pilukhera during the analysis period (Table 3.6). Pilukhera is major market in terms of arrival of grains – Wheat and Paddy which showed a marginal increase in average arrival by nearly 14% and 2%, respectively. Cotton, arrived in small quantity witnessed a decline by nearly 50% in average arrival post e-NAM.

Kaithal

Kaithal is a major market for Paddy (Table 3.7). The average arrival of all the selected commodities (paddy, fruits and vegetables) has increased in the market post e-NAM. Although, there is no arrival is reported for Wheat post e-NAM. The percentage increase in average arrival is 41% for

Paddy. Among the vegetables, the increase is reported highest for Potato (250%) and about 60%-70% for Tomato and Onions.

Karnal

Wheat is the major arriving commodity in Karnal and its average arrival increased by about 120% post e-NAM (Table 3.8). Vegetable and fruits are the other commodities arriving in this mandi. Vegetables have not reported any significant increase in average arrival except Bottle gourd. Among fruits, Apple and Banana arrival increased by nearly 50% post e-NAM.

Panipat

The arrival data for Wheat and Paddy is not available post e-NAM (Table 3.9). The vegetable crops – Potato, Onion and Tomato have major share in market arrival and also reported a sharp increase in average arrival post e-NAM by above 80%, highest being for tomato and Onion (above 260%). The arrival of Banana and cucumber is stagnating post e-NAM.

Ellenabad

Ellenabad is major market in term of diversity in crop arrival. Although Wheat and Paddy have large share in arrival but there is significant average arrival of Guar, Cotton, Barley and Mustard in Ellenabad (Table 3.10). The market reported a decline in average arrivals for important crops such as – Wheat (15%), Paddy (75%), Guar (42%), Barley (64%) and Mustard (27%). Opposite to this, there is an increase in average arrivals for vegetables, fruits and Cotton post e-NAM. Onion and Potato reported increase by above 200% and Cotton by 100% and Mango by 225%.

Sirsa

Sirsa is again a major market in terms of crop diversity like Ellenabad. Cotton, Banana, Barley and Guar seed are other major crops in terms of arrival share after Wheat and Paddy (Table 3.11). Although, Wheat reported increase in arrival by above 60% post e-NAM but other major crops – Paddy, Barley and Mustard reported decline in average arrival by 58%, 94% and 35%, respectively. Average arrival of almost all the vegetable and fruit crops is increased post e-NAM in Sirsa.

Sonipat

The arrival pattern in Sonipat is concentrated to only fruit and vegetable crops (Table 3.12). Potato, Onion, Tomato, Bottle gourd and Banana are major crops. Almost all the crops reported increase in average arrival post integrated with e-NAM except Mango and Tomato that is too by marginal amount, about 9%-23%.

Table 3.3: Overall average arrival in Markets - pre and post e-NAM

Market	Average arrival		Change in average arrival	
	Pre e-NAM	Post e-NAM	Post e-NAM over pre e-NAM	
			Absolute	Percentage
Ambala	29,918	15,591	-14,328	-48
Fatehabad	26,215	18,088	-8,127	-31
Pilukhera	100,146	139,830	39,684	40
Kaithal	21,749	30,644	8,895	41
Karnal	8,286	6,100	-2,185	-26
Panipat	7,043	4,598	-2,445	-35
Ellenabad	12,736	16,798	4,062	32
Sirsa	34,454	28,028	-6,427	-19
Sonipat	1,020	1,115	95	9

Table 3.4: Average arrival -pre and post e-NAM in Ambala

commodity	Average arrival		Change in average arrival	
	Pre e-NAM	Post e-NAM	Post e-NAM over pre e-NAM	
			Absolute	Percentage
Apple		24	24	
Banana		5	5	
Bottle gourd	53	42	-12	-22
Cucumber		25	25	
Mango		4	4	
Mustard	29	3	-26	-90
Onion		12	12	
Paddy		23,141	23,141	
Potato		16	16	
Tomato		28	28	
Wheat	46,776	8,091	-38,685	-83

Table 3.5: Average arrival -pre and post e-NAM in Fatehabad

commodity	Average arrival		Change in average arrival	
	Pre e-NAM	Post e-NAM	Post e-NAM over pre e-NAM	
			Absolute	Percentage
Apple	103	78	-25	-24
Banana	548	305	-243	-44
Barley	139		-139	
Bottle gourd	190	778	588	310
Cotton	991	919	-72	-7
Cucumber	123	66	-57	-46
Guar	53	99	47	88
Mango	109	115	6	6
Mustard	267	3	-264	-99
Onion	141	408	267	190
Paddy	11,633	8,648	-2,985	-26
Potato	468	357	-111	-24
Tomato	169	152	-17	-10
Wheat	59,658	54,236	-5,422	-9

Table 3.6: Average arrival -pre and post e-NAM in Pillukhera

commodity	Average arrival		Change in average arrival	
	Pre e-NAM	Post e-NAM	Post e-NAM over pre e-NAM	
			Absolute	Percentage
Cotton	155	80	-75	-48
Mustard				
Paddy	69,462	70,864	1,402	2
Wheat	24,4373	279,000	34,627	14

Table 3.7: Average arrival -pre and post e-NAM in Kaithal

commodity	Average arrival		Change in average arrival	
	Pre e-NAM	Post e-NAM	Post e-NAM over pre e-NAM	
			Absolute	Percentage
Banana	13	51	37	285
Mango	5	75	70	1,409
Onion	35	60	24	69
Paddy	33,477	47,169	13,692	41
Potato	65	232	166	254
Tomato	31	51	19	62
Wheat	17,129		-17,129	

Table 3.8: Average arrival -pre and post e-NAM in Karnal

commodity	Average arrival		Change in average arrival	
	Pre e-NAM	Post e-NAM	Post e-NAM over pre e-NAM	
			Absolute	Percentage
Apple	75	110	35	47
Banana	165	249	84	51
Bottle gourd	72	224	152	211
Cucumber	96	53	-43	-44
Mango	190	134	-56	-30
Onion	328	325	-2	-1
Paddy				
Potato	706	780	74	11
Tomato	158	159	1	0.4
Wheat	41,827	91,113	49,286	118

Table 3.9: Average arrival -pre and post e-NAM in Panipat

commodity	Average arrival		Change in average arrival	
	Pre e-NAM	Post e-NAM	Post e-NAM over pre e-NAM	
			Absolute	Percentage
Apple	114	216	102	89
Banana	281	237	-44	-16
Cucumber	132	108	-25	-19
Onion	430	1543	1,114	259
Paddy	1,507		-1,507	
Potato	1,510	2741	1,231	82
Tomato	280	1026	746	267
Wheat	16,780		-16,780	

Table 3.10: Average arrival -pre and post e-NAM in Ellenabad

commodity	Average arrival		Change in average arrival	
	Pre e-NAM	Post e-NAM	Post e-NAM over pre e-NAM	
			Absolute	Percentage
Apple	149	179	31	21
Banana	29	53	25	87
Barley	852	309	-543	-64
Cotton	1,202	2,376	1,174	98
Guar	1,031	602	-429	-42
Mango	26	84	58	225
Mustard	578	424	-154	-27
Onion	41	179	138	338
Paddy	2,611	643	-1,968	-75
Potato	134	413	279	207
Tomato	90	147	58	64
Wheat	47,762	40,772	-6,990	-15

Table 3.11: Average arrival -pre and post e-NAM in Sirsa

commodity	Average arrival		Change in average arrival	
	Pre e-NAM	Post e-NAM	Post e-NAM over pre e-NAM	
			Absolute	Percentage
Apple	137	172	34	25
Banana	538	1152	614	114
Barley	6,756	400	-6,356	-94
Cotton	4,019	4,844	825	21
Cucumber	93	111	19	20
Guar Seed	769	1,195	427	55
Mango	142	352	210	148
Mustard	1,170	766	-404	-35
Onion	326	458	131	40
Paddy	14,558	6,145	-8,413	-58
Potato	616	657	41	7
Tomato	185	271	86	47
Wheat	26,620	43,584	16,965	64

Table 3.12: Average arrival -pre and post e-NAM in Sonipat

commodity	Average arrival		Change in average arrival	
	Pre e-NAM	Post e-NAM	Post e-NAM over pre e-NAM	
			Absolute	Percentage
Apple	43	55	12	28
Banana	110	124	13	12
Bottle gourd	42	176	134	323
Cucumber	52	55	3	6
Mango	87	67	-20	-23
Onion	96	228	133	139
Potato	456	570	113	25
Tomato	216	196	-19	-9

Price patterns pre and post e-NAM

Ambala

The prices are not comparable in Ambala because of missing data pre the date of integration as e-NAM for most of the commodities (Table 3.13).In the post e-NAM period, prices of commodities vary across the varieties. Usually fruit crops have higher market price compared to other commodities. For apple, there is significant price difference between the varieties which is not that much different for three varieties of Tomato. Among crops, Mango has the highest market price and Potato reported the least price per quintal.

Fatehabad

There is not any uniform pattern in prices of commodities pre and post e-NAM (Table 3.14). The prices of some of the commodities increased by above 30% post e-NAM i.e. Tomato, Paddy, Mango, Bottle gourd and Cucumber. On the other side, prices of Apple and Potato declined by 40% and of Mustard, declined by 10%. Banana, Cotton, Guar and Onion does not reflect much change in prices during two periods.

Pilukhera

The prices of only three commodities are available during the analysis period (Table 3.15). There is not much change in market prices of grains but prices of Cotton have declined by 40% post e-NAM in Pilukhera market in Jind.

Kaithal

There are four varieties of Paddy are available for price comparison in Kaithal (Table 3.16). Variety – 'Basumathi' reported the highest prices (Rs. 2972 per quintal) within Paddy and least for 'other' variety (Rs. 1799 per quintal) post e-NAM. Overall, for all the varieties of Paddy there is increase in average price per quintal by 13% to 34% post e-NAM. Wheat prices have increased by nearly 10% during this period in Kaithal.

Karnal

There is no inter-variety prices are available for comparison but most of the crops reported stable price increase post e-NAM (Table 3.17). For Potato the average prices per quintal increase by 57% post e-NAM but for Mango and Onion they declined by 40% to 50%.

Panipat

In general the average prices per quintal remained stable across commodities in Panipat ranging from 9% to 36% on higher side and from -14% to -45% on lower side during pre and post e-NAM periods (Table 3.18).

Ellenabad

Ellenabad also reported a stable price pattern for most of the commodities pre and post e-NAM except some variation in vegetable prices– Potato (62%) and Onion (-58%)- (Table 3.19). Across the varieties there is some variation in prices of Cotton for American (Rs. 5229 per quintal) and Desi (Rs. 4593 per quintal) varieties but for Paddy and Wheat the prices across varieties are not much different and reported increase up-to 25% post e-NAM.

Sirsa

In Sirsa the average prices of 'D.B.' variety of Paddy increased by 40% in post e-NAM period (Table 3.20). For most of the other crops there is increase in prices from 2% to 33% post e-NAM. Onion prices in Sirsa declined by 50% post e-NAM.

Sonipat

On the extreme side the average prices of Apple 'Delicious' and Mango 'Dusheri' have increased up-to 46% and the average prices of Onion 'Other' and Tomato 'Other' are declined up-to -43% (Table 3.21). For all the other crops and their varieties the average prices during two periods are in positive side in range of 3% to 27%.

Table 3.13: Price patterns pre and post e-NAM: Ambala

commodity	variety	Average prices		Change in average prices	
		Pre e-NAM	Post e-NAM	Post e-NAM over pre e-NAM	
				Absolute	Percentage
Apple	Apple		7,724		
Apple	Other		2,233		
Banana	Other		2,083		
Bottle gourd	Bottle Gourd		1,239		
Cucumber	Cucumber		1,341		
Mango	Chausa		4,045		
Mustard	Other	3,424			
Onion	Nasik		1,308		
Onion	Onion		1,082		
Paddy	Other	1,724			
Potato	Other		746		
Tomato	Deshi		1,634		
Tomato	Hybrid		1,997		
Tomato	Local		2,650		
Wheat	Other	1,488			

Table 3.14: Price patterns pre and post e-NAM: Fatehabad

commodity	variety	Average prices		Change in average prices	
		Pre e-NAM	Post e-NAM	Post e-NAM over pre e-NAM	
				Absolute	Percentage
Apple	Other	5,854	3,635	-2,219	-38
Banana	Other	1,414	1,374	-40	-3
Barley	Other	1,403			
Bottle gourd	Other	808	1,108	300	37
Cotton	Other	4,632	4,719	87	2
Cucumber	Other	1,328	1,711	383	29
Guar	Other	3,302	3,308	6	0
Mango	Other	6,698	9,193	2,495	37
Mustard	Other	3,713	3,346	-367	-10
Onion	Other	1,572	1,695	123	8
Paddy	Other	1,949	2,570	621	32
Potato	Other	717	416	-301	-42
Tomato	Other	1,580	3,006	1,426	90
Wheat	Other	1,481			

Table 3.15: Price patterns pre and post e-NAM: Pillukhera

commodity	variety	Average prices		Change in average prices	
		Pre e-NAM	Post e-NAM	Post e-NAM over pre e-NAM	
				Absolute	Percentage
Cotton	Other	3,931	2,365	-1,566	-40
Mustard	Yellow Black)	3,051			
Paddy	Basumathi	2,301	2,568	267	12
Paddy	D.B.	1,948			
Paddy	Other	1,450			
Paddy	Sarvati	1,291			
Wheat	Other	1,500	1,592	92	6

Table 3.16: Price patterns pre and post e-NAM: Kaithal

commodity	variety	Average prices		Change in average prices	
		Pre e-NAM	Post e-NAM	Post e-NAM over pre e-NAM	
				Absolute	Percentage
Paddy	1121	1,891	2,464	573	30
Paddy	Basumathi	2,250	2,972	722	32
Paddy	D.B.	1,798	2,408	610	34
Paddy	Other	1,596	1,799	203	13
Potato	(Red Nainital)		388		
Tomato	Deshi		3,247		
Wheat	Other	1,488	1,625	137	9

Table 3.17: Price patterns pre and post e-NAM: Karnal

commodity	variety	Average prices		Change in average prices	
		Pre e-NAM	Post e-NAM	Post e-NAM over pre e-NAM	
				Absolute	Percentage
Apple	Other	9,407	9,779	372	4
Banana	Other	1,818	2,041	222	12
Bottle gourd	Other	779	874	95	12
Cucumber	Other	1,316	1,521	205	16
Mango	Other	4,278	2,491	-1,788	-42
Onion	Other	2,105	1,080	-1,025	-49
Paddy	Other		2,200		
Potato	Other	708	1,110	401	57
Tomato	Other	1,604	1,667	63	4
Wheat	Other	1,450			

Table 3.18: Price patterns pre and post e-NAM: Panipat

commodity	variety	Average prices		Change in average prices	
		Pre e-NAM	Post e-NAM	Post e-NAM over pre e-NAM	
				Absolute	Percentage
Apple	Other	6,184	8,408	2,224	36
Banana	Other	950	949	-1	0
Cucumber	Other	1,310	1,515	204	16
Onion	Other	1,784	983	-801	-45
Paddy	1121		2,625		
Paddy	Basmati 1509	1,791	2,282	491	27
Potato	Other	776	670	-106	-14
Tomato	Other	2,026	1,724	-302	-15
Wheat	Other	1,488	1,625	138	9

Table 3.19: Price patterns pre and post e-NAM: Ellenabad

commodity	variety	Average prices		Change in average prices	
		Pre e-NAM	Post e-NAM	Post e-NAM over pre e-NAM	
				Absolute	Percentage
Apple	Apple	5,406	5,899	493	9
Banana	Other	1,550	1,802	252	16
Barley	Local	1,056	1,398	343	32
Barley	Other		1,311		
Cotton	American	4,443	5,229	786	18
Cotton	Desi	4,407	4,593	186	4
Guar	Gwar	3,597	3,274	-323	-9
Mango	Other	3,163	3,272	109	3
Mustard	Mustard	3,625	3,692	66	2
Onion	Onion	1,824	760	-1,064	-58
Paddy	1121		2,041		
Paddy	Basumathi	1,853	2,235	382	21
Paddy	D.B.	1,879	2,312	433	23
Paddy	Other		2,122		
Potato	Potato	433	700	267	62
Tomato	Tomato	1,601	1,517	-84	-5
Wheat	Local	1,450	1,585	135	9
Wheat	Other		1,550		

Table 3.20: Price patterns pre and post e-NAM: Sirsa

commodity	variety	Average prices		Change in average prices	
		Pre e-NAM	Post e-NAM	Post e-NAM over pre e-NAM	
				Absolute	Percentage
Apple	Other	6,333	7,965	1,631	26
Banana	Other	1,152	1,442	290	25
Barley	Other	1,061	1,413	352	33
Cotton	American	4,526	5,300	774	17
Cotton	Desi	4,483	4,833	350	8
Cotton	Other	7,600	6,000	-1,600	-21
Cucumber	Other	1,381	1,402	21	2
Guar Seed	Other	3,313	3,314	2	0
Mango	Other	8,120	6,809	-1,311	-16
Mustard	Other	3,882	3,689	-192	-5
Onion	Other	2,025	1,021	-1,005	-50
Paddy	1121		2,563		
Paddy	Basmati 1509		2,233		
Paddy	D.B.	1,759	2,455	697	40
Paddy	Other	1,579	1,646	67	4
Paddy	Paddy fine	1,450	1,536	86	6
Potato	Other	492	588	96	19
Tomato	Other	1,607	1,720	113	7
Wheat	Other	1,427	1,623	197	14

Table 3.21: Price patterns pre and post e-NAM: Sonipat

commodity	variety	Average prices		Change in average prices	
		Pre e-NAM	Post e-NAM	Post e-NAM over pre e-NAM	
				Absolute	Percentage
Apple	Delicious	4,370	6,375	2,005	46
Apple	Golden	4,500			
Apple	Other	4,269	5,100	830	19
Banana	Other	2,578	2,660	82	3
Bottle gourd	Other	1,019	1,114	95	9
Cucumber	Other	1,380	1,517	138	10
Mango	Chausa	2,900	3,000	100	3
Mango	Dusheri	2,418	3,500	1,082	45
Mango	Other	3,683	3,881	198	5
Onion	Other	1,878	1,095	-783	-42
Potato	Other	718	909	191	27
Tomato	Deshi	1,854			
Tomato	Hybrid	1,663	2,119	455	27
Tomato	Other	2,917	1,677	-1,240	-43

Price volatility patterns pre and post e-NAM

The major initiative by the government to implement e-NAM across the markets in different state can have impact on prices of agricultural commodities. Since it is an effort with a focus to implement the e-NAM system in a time bound manner, it can impact the commodity prices in terms of sudden variations in prices due to changing scenarios of market arrivals. The price

volatility in a way is expected across markets in setting up the electronic transaction system for sale and payments because the process is directly impacting the long existing sale-purchase mechanism followed by various stakeholders.

This section first attempts to analyse the price volatility across agricultural commodities within the markets and then, secondly, compares the price volatility patterns of different markets for each of the selected commodities.

The price volatility is calculated as the standard deviation of the growth rates of market prices for the specified periods – pre and post e-NAM for each of the commodity which the markets. Next, the median price volatility is calculated for the specific market as the median value of price volatility of all the commodities considered within the market. Next, the price volatility is categorised as 'High (H)' or 'Low (L)' based on –if price volatility of commodity within market is higher or lower than the median volatility in market. Finally, the price volatility categories for each of the commodities are compared across the markets.

Median volatility in major Markets

At the market level, the median price volatility, measured across all the selected commodities, is observed high in Sonipat, Ambala and Panipat post e-NAM (Table 3.22). Karnal also reported high price volatility but it came down to the lower level post e-NAM. Sirsa, Pilukhera and Kaithal reported very low volatility in market prices.

Table 3.22: Price volatility (median) in major markets – across all the selected commodities

Markets	Median price volatility in the Markets - across all commodities		
	Overall period	Pre e-NAM	Post e-NAM
Ambala	0.2206	0.0034	0.2726
Fatehabad	0.2001	0.2072	0.1277
Pillukhera	0.0438	0.0376	0.0449
Kaithal	0.0975	0.0767	0.1520
Karnal	0.3427	0.3978	0.1488
Panipat	0.2006	0.2525	0.2444
Ellenabad	0.1087	0.1431	0.1056
Sirsa	0.0822	0.0894	0.0673
Sonipat	0.2966	0.2649	0.3706

Commodity-wise price volatility comparable across major Markets

Apple

Price volatility has decreased in Fathehabad and Karnal markets from "High' to 'Low' category post the implementation of e-NAM (Table 3.23). It has not changed in 4 out of 8 markets, of which two markets in Sirsa district (Ellenabad and Sirsa) reported 'High' price variations and Panipat and Sonipat reported 'Low price volatility 'Other' variety of Apple.

Banana

Only the Sirsa market reported the 'High' price volatility among all the markets post implementation of e-NAM (Table 3.24). Although the volatility has also increased in Sonipat but it is not significant with respect to the overall price volatility in Sonipat across all the selected commodities. Rest of the markets very low price volatility may be reflected due to availability of Banana in markets throughout the year.

Barley

Barley is another grain which does not reflect much price variations and the volatility in fact, decreased over the time in post e-NAM period in Fatehabad and Sirsa (Table 3.25).

Bottle gourd

Being a seasonal crop, the price volatility is expected for the vegetables like Bottle gourd (Table 3.26). Although, the variations have decreased in Fatehabad and Karnal markets but the overall categorisation of volatility in all the four markets in 'High' range.

Cotton

Cotton reflected 'Low' price volatility for all the three reported verities and across all the four markets indicating the stability in cotton prices (Table 3.27).

Cucumber

Two of the markets i.e. Sonipat and Fatehabad indicated decline in price volatility over time but it increased in Karnal (Table 3.28). Panipat and Sirsa reported 'High' price volatility and it remained unchanged over time.

Guar and Guar seed

Guar and Guar seed, both reported 'Low' price volatility in all the three markets and it retained at low level post implementation of e-NAM (Table 3.29).

Mango

All the major markets for Mango reported 'High' price volatility except the Sonipat but that has too witnessed comparatively higher variations in prices in absolute terms (Table 3.30). Ellenabad and Sirsa reported increase in volatility over time but it decreased significantly post e-NAM in Fatehabad market.

Mustard

Mustard has reported low price volatility during both, pre and post e-NAM periods across all markets. Ambala witnessed the highest variations in pre e-NAM period (Table 3.31).

Onion

Although, many of the markets for vegetable - Onion reported 'High' price volatility pre and post implementation of e-NAM but it has decreased in absolute terms in all the markets in post e-NAM phase except in Fatehabad (Table 3.32).Panipat and Sonipat shifted to 'Low' volatility category but the other markets remained in the same category over time.

Paddy

The stable grain – Paddy reported low price volatility in absolute terms and it has decreased in post e-NAM period except Sirsa and Kaithal (Table 3.33). There is not any difference in volatility patterns across the reported varieties but the 'Basumathi' and 'Other' varieties witnessed slightly higher variations in prices compared to other three varieties.

Potato

Vegetable crop - Potato has witnessed comparative higher volatility in all the markets in absolute units (Table 3.34). It has declined over time in Fathehabad and Karnal but increased in Panipat and Sonipat. The prices remained stable in both the markets of Sirsa district.

Tomato

Volatility in Tomato prices has increased over time in all the markets for all the varieties (Table 3.35). Infect, tomato is the most volatile among all the commodities considered in the analysis. The markets in Sirsa district along with Fatehabad and Sonipat reported the highest volatility in absolute terms. The selected markets either remained in the 'High' volatility category or shifted from 'Low' to 'High' volatility category from pre to post e-NAM phases over time. The perishable nature of vegetable reflected in terms of price volatility across market.

Wheat

Opposite the case of Tomato, wheat is the most stable grain across all the markets under study (Table 3.36).Almost all the comparable markets over pre and post e-NAM phases did not reflect much of the variation in prices.

Table 3.23: Price volatility patterns in major Markets - Apple

Variety	Markets	Price volatility		Price volatility - Category	
		Pre e-NAM	Post e-NAM	Pre e-NAM	Post e-NAM
Apple	Ambala		0.2138		L
Apple	Ellenabad	0.3726	0.2719	H	H
Delicious	Sonipat	0.0563		L	
Other	Fatehabad	0.3509	0.1244	H	L
Other	Karnal	0.4892	0.1488	H	L
Other	Panipat	0.1687	0.0651	L	L
Other	Sirsa	0.2478	0.2436	H	H
Other	Sonipat	0.1904	0.2110	L	L

Table 3.24: Price volatility patterns in major Markets - Banana

Variety	Market	Price volatility		Price volatility- Category	
		Pre e-NAM	Post e-NAM	Pre e-NAM	Post e-NAM
Other	Ambala		0.1105		L
Other	Ellenabad	0.1150	0.1056	L	L
Other	Fatehabad	0.0289	0.0418	L	L
Other	Karnal	0.0425	0.0958	L	L
Other	Panipat	0.0000	0.0054	L	L
Other	Sirsa	0.0404	0.1128	L	H
Other	Sonipat	0.0589	0.1633	L	L

Table 3.25: Price volatility patterns in major Markets - Barley

Variety	Market	Price volatility		Price volatility - Category	
		Pre e-NAM	Post e-NAM	Pre e-NAM	Post e-NAM
Local	Ellenabad				
Other	Fatehabad	0.2028		L	
Other	Sirsa	0.0983	0.0474	H	L

Table 3.26: Price volatility patterns in major Markets – Bottle gourd

Variety	Market	Price volatility		Price volatility- Category	
		Pre e-NAM	Post e-NAM	Pre e-NAM	Post e-NAM
Bottle Gourd	Ambala		0.4994		H
Other	Fatehabad	0.5140	0.2270	H	H
Other	Karnal	0.6048	0.3179	H	H
Other	Sonipat	0.4190	0.4862	H	H

Table 3.27: Price volatility patterns in major Markets – Cotton

Variety	Market	Price volatility		Price volatility - Category	
		Pre e-NAM	Post e-NAM	Pre e-NAM	Post e-NAM
American	Ellenabad	0.0366	0.0405	L	L
American	Sirsa	0.0431	0.0422	L	L
Desi	Ellenabad	0.0346	0.0783	L	L
Desi	Sirsa	0.0431	0.0673	L	L
Other	Fatehabad	0.0321		L	
Other	Pillukhera	0.0559		H	

Table 3.28: Price volatility patterns in major Markets – Cucumber

Variety	Market	Price volatility		Price volatility - Category	
		Pre e-NAM	Post e-NAM	Pre e-NAM	Post e-NAM
Cucumber	Ambala		0.2726		L
Other	Fatehabad	0.3534	0.0822	H	L
Other	Karnal	0.2297	0.3254	L	H
Other	Panipat	0.4216	0.3538	H	H
Other	Sirsa	0.3844	0.3625	H	H
Other	Sonipat	0.4708	0.3706	H	L

Table 3.29: Price volatility patterns in major Markets – Guar and Guar seed

Variety	Market	Price volatility		Price volatility - Category	
		Pre e-NAM	Post e-NAM	Pre e-NAM	Post e-NAM
Gwar	Ellenabad	0.0672	0.0724	L	L
Other	Fatehabad	0.0852		L	
Other	Sirsa	0.0407	0.0655	L	L

Table 3.30: Price volatility patterns in major Markets – Mango

Variety	Market	Price volatility		Price volatility - Category	
		Pre e-NAM	Post e-NAM	Pre e-NAM	Post e-NAM
Chausa	Ambala		0.3794		H
Chausa	Sonipat	0.2296		L	
Other	Ellenabad	0.2808	0.3913	H	H
Other	Fatehabad	0.6163	0.1311	H	H
Other	Karnal	0.6753		H	
Other	Sirsa	0.4491	0.5323	H	H
Other	Sonipat	0.2649	0.2682	L	L

Table 3.31: Price volatility patterns in major Markets – Mustard

Variety	Market	Price volatility		Price volatility - Category	
		Pre e-NAM	Post e-NAM	Pre e-NAM	Post e-NAM
Mustard	Ellenabad	0.0833	0.0390	L	L
Other	Ambala	0.1134		H	
Other	Fatehabad	0.0698		L	
Other	Sirsa	0.0650	0.0424	L	L

Table 3.32: Price volatility patterns in major Markets – Onion

Variety	Market	Price volatility		Price volatility- Category	
		Pre e-NAM	Post e-NAM	Pre e-NAM	Post e-NAM
Onion	Ambala		0.3347		H
Onion	Ellenabad	0.3182	0.2126	H	H
Other	Fatehabad	0.2815	0.5051	H	H
Other	Karnal	0.3266	0.1001	L	L
Other	Panipat	0.3161	0.2011	H	L
Other	Sirsa	0.3401	0.2832	H	H
Other	Sonipat	0.2812	0.1857	H	L

Table 3.33: Price volatility patterns in major Markets – Paddy

Variety	Market	Price volatility		Price volatility - Category	
		Pre e-NAM	Post e-NAM	Pre e-NAM	Post e-NAM
1121	Kaithal	0.0282	0.0226	L	L
1121	Panipat				
1121	Sirsa		0.0493		L
Basmati 1509	Panipat				
Basmati 1509	Sirsa		0.0176		L
Basumathi	Ellenabad	0.0520	0.0191	L	L
Basumathi	Kaithal	0.1741	0.1550	H	H
Basumathi	Pillukhera	0.1468		H	
D.B.	Ellenabad	0.1713	0.0539	H	L
D.B.	Kaithal	0.0767	0.0607	L	L
D.B.	Pillukhera	0.0194		L	
D.B.	Sirsa	0.0806	0.0909	L	H
Other	Ambala	0.0034		L	
Other	Ellenabad		0.1571		H
Other	Fatehabad	0.1107		L	
Other	Kaithal	0.1141	0.1520	H	L
Other	Sirsa		0.0216		L

Table 3.34: Price volatility patterns in major Markets – Potato

Variety	Market	Price volatility		Price volatility - Category	
		Pre e-NAM	Post e-NAM	Pre e-NAM	Post e-NAM
Other	Ambala		0.2274		L
Other	Fatehabad	0.2116	0.0624	H	L
Other	Karnal	0.4690	0.1269	H	L
Other	Panipat	0.2525	0.2876	L	H
Other	Sirsa	0.2705	0.2455	H	H
Other	Sonipat	0.2371	0.4050	L	H
Potato	Ellenabad	0.2309	0.2588	H	H

Table 3.35: Price volatility patterns in major Markets – Tomato

Variety	Market	Price volatility		Price volatility - Category	
		Pre e-NAM	Post e-NAM	Pre e-NAM	Post e-NAM
Deshi	Ambala		0.5561		H
Deshi	Kaithal		0.2834		H
Deshi	Sonipat	0.4564		H	
Hybrid	Ambala		0.2071		L
Hybrid	Sonipat	0.5705	0.5862	H	H
Other	Fatehabad	0.4632	0.6519	H	H
Other	Karnal	0.2483	0.4232	L	H
Other	Panipat	0.3397	0.4797	H	H
Other	Sirsa	0.3269	0.6217	H	H
Other	Sonipat		0.4769		H
Tomato	Ellenabad	0.3120	0.8213	H	H

Table 3.36: Price volatility patterns in major Markets – Wheat

Variety	Market	Price volatility		Price volatility - Category	
		Pre e-NAM	Post e-NAM	Pre e-NAM	Post e-NAM
Local	Ellenabad				
Other	Ambala	0.0000		L	
Other	Fatehabad	0.0000		L	
Other	Kaithal	0.0000		L	
Other	Panipat	0.0000		L	
Other	Pillukhera	0.0000	0.0449	L	L
Other	Sirsa	0.0387	0.0250	L	L

Chapter 4

Demographic Profile of the Study Region

General overview of the study region

In the primary survey a sample of 50 farmers and 10 traders are interviewed in each of the three selected districts. The details about the demographic profile, crop sale/ purchases and about the perceptions of stakeholders are discussed. They are asked about their level of education and details about farm holdings. There are some incidences where some of the respondent did not answer a particular question. The stakeholders' responses are as follows.

Education profile

The education details of farmers and traders in study districts are discussed in table 4.1 and table 4.2. The categories are as illiterate – 'not educated at all', Primary – 'class 1 to 4', Secondary – 'class 5 to 7', High school – 'class 8 to 10', Higher – 'above class 10'.

Farmers - Overall 142 responses are received from farmers out of a list of 150 farmers in three districts (Table 4.1). Nearly above 60% farmers have the education level of high school or above. Adding the farmers have secondary education the share increases to 80% or above. There are some illiterate farmers, highest share of which is in Panipat.

Traders - The proportion of high school or above educated traders is 80% (Table 4.2). The disaggregated percentage of these two classes of education is 90%, 80% and 70% in Panipat, Sirsa and Sonipat. There are no traders in illiterate and secondary education category in any of the study districts.

Table 4.1: Education profile of the farmers

District	No. of Respondents					
	Illiterate	Primary	Secondary	High School	Higher	Overall
Sonipat	0	5	10	19	13	47
Panipat	6	5	6	22	10	49
Sirsa	1	6	14	18	7	46
Overall	7	16	30	59	30	142
District	% Distribution					
	Illiterate	Primary	Secondary	High School	Higher	Overall
Sonipat	0	11	21	40	28	100
Panipat	12	10	12	45	20	100
Sirsa	2	13	30	39	15	100
Overall	5	11	21	42	21	100

Source: Author's computations from primary (field survey) data. Note: this follows for all the Tables in the chapter.

Table 4.2: Education profile of the traders

District	No. of Respondents					
	Illiterate	Primary	Secondary	High School	Higher	Overall
Sonipat			3	3	4	10
Panipat			1	3	6	10
Sirsa			2	2	6	10
Overall			6	8	16	30
District	% Distribution					
	Illiterate	Primary	Secondary	High School	Higher	Overall
Sonipat			30	30	40	100
Panipat			10	30	60	100
Sirsa			20	20	60	100
Overall			20	27	53	100

Farm holding details

From the surveyed farmers, overall, about 16% of them belong to 'Large farmers' category (Table 4.3). In rest of the three farm classes the proportion is nearly similar. This distribution is widely varied across the districts. The highest proportion of large farmers is in Sirsa (40%) and this proportion becomes 80% if two largest farm categories are added. But the proportion of these two categories (medium and large) is just one-fourth in Sonipat and Panipat. Above 50% sampled farmers in Sonipat are marginal and in Panipat, they are small farmers.

Table 4.3: Farm holding details of the farmers

District	Farmer category				
	Marginal	Small	Medium	Large	Overall
Sonipat	26	12	8	4	50
Panipat	11	26	13		50
Sirsa	3	7	20	20	50
Overall	40	45	41	24	150
District	% distribution				
	Marginal	Small	Medium	Large	Overall
Sonipat	52	24	16	8	100
Panipat	22	52	26	0	100
Sirsa	6	14	40	40	100
Overall	27	30	27	16	100

Operated area

Total operated area is highest in Sirsa among the sampled districts (Table 4.4). The other two districts have operated area equal and that is less than the half of that in Sirsa. The same is reflecting in terms of average operated area. All of the three districts have almost 100% area under irrigation.

Table 4.4: Operated and irrigated area - farmers

District	Operated and irrigated area			
	Operated area - Total	Operated area - Average	Irrigated area - Total	Irrigated area - %
Sonipat	221	4.4	221	100.0
Panipat	223	4.5	223	100.0
Sirsa	525	10.5	517	98.4
Overall	969	6.5	960	99.1

Chapter 5

A comparative analysis of sale pre and post e-NAM

This chapter analyses the sale and purchase of crops pre and post the implementation of e-NAM. This comparative analysis is carried out across different marketing channels, districts and crops

Crop sale– Farmers

Paddy and Wheat are the preferred crops for sale by farmers in almost all the three districts. Farmers in Sirsa also prefer to sell cotton (Table 5.1). Although, only paddy and wheat are sold by farmers in Sonipat and Panipat, farmers in Sirsa sold more than eight different crops. Paddy is the most preferred crop by farmers as all the farmers in Sonipat and Panipat and 70% of farmers in Sirsa sold paddy post e-NAM period. Cotton is another preferred crop by farmers in Sirsa district. Nearly 50% of cotton sale post-e NAM is from Sirsa district (Table 5.2).

Table 5.1: Crops sold pre e-NAM: Farmers

crops	No. of Respondents				% Distribution			
	Sonipat	Panipat	Sirsa	Overall	Sonipat	Panipat	Sirsa	Overall
Paddy	48	49	26	123	39	40	21	100
Wheat	47	48	40	135	35	36	30	100
Bajra			2	2			100	100
Gram			1	1			100	100
Cotton			15	15			100	100
Others			10	10			100	100
All crops	95	97	94	286	33	34	33	100

Source: Author's computations from primary (field survey) data. Note: this follows for all the Tables in the chapter.

Table 5.2: Crops sold post e-NAM: Farmers

crops	No. of Respondent				% Distribution			
	Sonipat	Panipat	Sirsa	Overall	Sonipat	Panipat	Sirsa	Overall
Paddy	50	50	35	135	37	37	26	100
Wheat	2	2	4	8	25	25	50	100
Bajra			2	2			100	100
Gram			2	2			100	100
Urad			3	3			100	100
Groundnut			1	1			100	100
Cotton			41	41			100	100
Others			10	10			100	100
All crops	52	52	98	202	26	26	49	100

Crop purchase/ sale patterns – Traders

Traders in Sonipat and Panipat also prefer the stable grains such as Paddy and Wheat for trading i.e. purchase or sale. The sampled traders in Sirsa also prefer bajra, urad and other crops such as guar along with the wheat. Overall, the percentage trading is equal across the three districts (Table 5.3). Paddy is the preferred crop post e-NAM period too. 26 out of 36 transactions related to paddy (Table 5.4). All the traders in Sonipat and Panipat traded only paddy in the post e-NAM period. Traders in Sirsa also prefer Cotton. About 44% of transactions are from Sirsa district and rest from other two districts.

Table 5.3: Crop purchased/sold pre e-NAM: Traders

crops	No. of Respondent				% Distribution			
	Sonipat	Panipat	Sirsa	Overall	Sonipat	Panipat	Sirsa	Overall
Paddy	10	10	1	21	48	48	5	100
Wheat	7	10	7	24	29	42	29	100
Bajra			2	2			100	100
Gram			1	1			100	100
Urad			2	2			100	100
Cotton			1	1			100	100
Others			6	6			100	100
All crops	17	20	20	57	30	35	35	100

Table 5.4: Crop purchased/sold post e-NAM: Traders

crops	No. of Respondent				% Distribution			
	Sonipat	Panipat	Sirsa	Overall	Sonipat	Panipat	Sirsa	Overall
Paddy	10	10	6	26	38	38	23	100
Cotton			8	8	0	0	100	100
Others			2	2	0	0	100	100
All crops	10	10	16	36	28	28	44	100

Details of Crop Marketed

Farmers–farmers sold only paddy and wheat in Sonipat and Panipat in pre e-NAM period (Table 5.5). From the overall production in the range of 2700 to 3700 quintals, nearly 200 quintals of paddy and above 500 quintals of wheat is retained for self-consumption and for sale later. This pattern is also seen in Sirsa. Most preferred medium of crop sale pre e-NAM period is the 'commission agent'. Farmers also preferred to sell in village market in small proportion in case of paddy and wheat. In Sonipat, farmers also sold the grains through 'other' medium at higher prices compared to other channels i.e. commission agents and village sale. The marketing cost is fixed for farmers at 2.5% for all the crops. There is no marketing cost involved in sale through village

markets. The highest price is received for gram and cotton for which farmers are receiving prices above Rs. 4200per quintal. For paddy, price per quintal received by farmers is ranging from Rs. 2350 to Rs. 2600 and for wheat it is Rs. 1630 to Rs. 1750 when they sold through commission agents.

Almost all the sampled farmers preferred e-NAM platform to sell crops post e-NAM period in the sample districts (Table 5.6).In terms of volume of sale paddy is the largest crop followed by cotton and wheat in the sample region. Although wheat price (per quintal) remained in the same range as it was in the pre e-NAM phase, farmers are receiving higher price for paddy post e-NAM. These are now in range of Rs. 3177 to Rs. 3242 per quintal. Similarly, the farmers are receiving increased prices for bajra and cotton in post e-NAM phase.

Table 5.5: Details of crop sold pre e-NAM: Farmers

District	Crops	Production	Self-consumption	Sold through village Market			Sold through commission agents			Sold through other sources		
				Quantity	Price	Market cost	Quantity	Price	Market. cost	Quantity	Price	Market. cost
Sonipat	Paddy	2,711	206	24	1,650	0	2,333	2,362	59	148	2,600	65
	Wheat	3,900	567				2,993	1,632	41	340	2,225	56
Panipat	Paddy	3,034	242				2,792	2,598	65			
	Wheat	3,780	507	50	1,635	0	3,223	1,634	41			
Sirsa	Paddy	4,486	221				4,265	2,539	63			
	Wheat	6,944	580	100	1,620	0	6,264	1,752	44			
	Bajra	65	10				55	1,358	34			
	Gram	10					10	4,350	109			
	Cotton	1,447	177				1,270	4,247	106			
	Others	921	93				828	3,566	89			

Note: Quantity (Production and consumption)in quintals, Prices and costs in Rs. per quintal

Table 5.6: Details of crop sold post e-NAM: Farmers

District	Crops	Production	Self-consumption	Sold through e-NAM			Sold through village Market		
				Quantity	Price	Marketing cost	Quantity	Price	Marketing cost
Sonipat	Paddy	2,969	929	2,010	3,226	81	30	3,200	0
	Wheat	82	12	30	1,650	41	40	1,350	0
Panipat	Paddy	3,295	488	2,807	3,242	81			
	Wheat	97	27	70	1,638	41			
Sirsa	Paddy	5,643	348	5,295	3,177	79			
	Wheat	1,795	105	1,690	1,625	41			
	Bajra	250	10	240	3,825	96			
	Gram	64	2	62	3,778	94			
	Urad	76	1	75	2,237	56			
	Groundnut	70	50	20	2,895	72			
	Cotton	2,660	185	2,475	5,076	127			
	Others	973	70	903	3,896	97			

Traders –Paddy and Wheat are the two major crops traded in Sonipat and Panipat by traders during pre e-NAM period (Table 5.7). The average purchase price is higher for Paddy in Sonipat (Rs. 2885 per quintal) as compared to that in Panipat (Rs. 2445 per quintal). For Wheat the purchased price is in the same range (about Rs. 1630 per quintal) in all three sample districts. The highest purchase price is observed for gram followed by 'other' commodities which includes mustard and guar. In terms of volume, wheat is the preferred crop for purchase/sale by traders, followed by paddy in the pre e-NAM period. Trading is mostly preferred through 'other' commission agents and through 'other' traders. The commission on sale/purchase is fixed at 4% of the price, which acts as the marketing cost for traders. The price in both the marketing channels is nearly the same for all crops, except bajra.

Paddy and cotton are the two preferred crops for trading in the post e-NAM period (Table 5.8) in terms of volume. However, cotton received the highest price (Rs. 5244 per quintal) and paddy prices are in the range of Rs. 3150 to Rs. 3350 per quintal.

Table 5.7: Details of crop purchased/sold pre e-NAM: Traders

District	Crops	Purchased quantity	Purchase price	Sold through other commission agents			Sold through other traders		
				Quantity	Price	Marketing cost	Quantity	Price	Marketing cost
Sonipat	Paddy	4,285	2,885	3,760	2,964	119	525	2,700	108
	Wheat	5,510	1,632	5,200	1,625	65	310	1,650	66
Panipat	Paddy	5,500	2,445	2,250	2,440	98	3,250	2,600	104
	Wheat	8,850	1,638	2,450	1,650	66	6,400	1,625	65
Sirsa	Wheat	6,350	1,625	500	1,625	65	5,850	1,625	65
	Bajra	2,060	2,163	60	1,475	59	2,000	2,850	114
	Gram	100	4,195				100	4,195	168
	Urad	155	2,225				155	2,225	89
	Cotton	450	1,625	450	1,625	65			
	Others	2,490	3,615	200	3,800	152	2,290	3,538	142

Table 5.8: Details of crop purchased/sold post e-NAM: Traders

District	Crops	Purchased quantity	Purchase price	Sold through e-NAM		
				Quantity	Price	Marketing cost
Sonipat	Paddy	3,431	2,940	3,431	3,202	128
Panipat	Paddy	2,220	3,305	2,220	3,350	134
Sirsa	Paddy	1,460	3,145	1,460	3,145	126
	Cotton	1,941	5,244	1,941	5,244	210
	Others	14	4,203	14	4,203	169

Chapter 6

Perceptions of Stakeholders for e-NAM

Various stakeholders have been interviewed to elicit their perceptions on e-NAM mainly relating to (their) reasons for adopting e-NAM, infrastructural facilities at mandis, main features of e-NAM, problems faced and their suggestions to improve e-NAM. The responses of farmers and traders are discussed in this chapter.

Purpose of using e-NAM

The stakeholders were asked about the main use they made of e-NAM. The extent of participation is categorised based on their activity level such as – using e-NAM for only price checking, for sale or for the online payment. The crop specific (multiple) responses of 150 farmers and 30 traders are presented here.

Farmers–Overall 202 responses are received from farmers. Nearly three-fourths of farmers are using e-NAM for all the three purposes i.e. price checking, sale and online payment (Table 6.1). About 18% are using for price checking& sale; and only 5% are using-NAM solely for price checking. This proportion remains nearly same across the three selected markets. The Paddy farmers in Sirsa showed comparatively less interest in making online payments.

Traders–From the overall 36 responses of the selected traders, nearly 72% used e-NAM for all the three purposes i.e. price checking, sale and online payment (Table 6.2). Nearly 20% used for price checking &sale. The rest, about 8%, used e-NAM solely for price checking.

Table 6.1: Purpose to use e-NAM: Farmers

District	Crops	No. of respondents					% distribution				
		Only checking prices	Price checking and sale	Price checking, sale and online payment	Any other	Total responses	Only checking prices	Price checking and sale	Price checking, sale and online payment	Any other	Total responses
Sonipat	Paddy	2	6	37	5	50	4	12	74	10	100
	Wheat	1		1		2	50		50		100
	All crops	3	6	38	5	52	6	12	73	10	100
Panipat	Paddy	4	7	38	1	50	8	14	76	2	100
	Wheat			2		2			100		100
	All crops	4	7	40	1	52	8	13	77	2	100
Sirsa	Paddy	2	13	20		35	6	37	57		100
	Wheat		1	3		4		25	75		100
	Bajra			2		2			100		100
	Gram			2		2			100		100
	Urad			3		3			100		100
	Groundnut			1		1			100		100
	Cotton	2	6	33		41	5	15	80		100
	Others		3	7		10		30	70		100
	All crops	4	23	71		98	4	23	72		100
Overall	All crops	11	36	149	6	202	5	18	74	3	100

Source: Author's computations from primary (field survey) data. Note: this follows for all the Tables in the chapter.

Table 6.2: Purpose of using e-NAM: Traders

District	Crops	No. of respondents					% distribution				
		Only checking prices	Price checking and sale	Price checking, sale and online payment	Any other	Total responses	Only checking prices	Price checking and sale	Price checking, sale and online payment	Any other	Total responses
Sonipat	Paddy		4	6		10	0	40	60	0	100
Panipat	Paddy	1	1	8		10	10	10	80	0	100
Sirsa	Paddy			6		6	0	0	100	0	100
	Cotton	1	2	5		8	13	25	63	0	100
	Others	1		1		2	50	0	50	0	100
	All crops	2	2	12	0	16	13	13	75	0	100
Overall	Overall	3	7	26	0	36	8	19	72	0	100

Checking Prices on the e-NAM

In this section we assess the ease of checking prices using e-NAM. About 50% of the farmers reported that checking prices is either 'very easy' or 'easy' (Table 6.3). Almost none of the farmers indicated that it is 'very difficult' to check prices. The district-wise respondents who reported either 'very easy' or 'easy' is 50% in Sonipat, 75% in Panipat and about 40% in Sirsa.

Response of traders is slightly different from that of farmers (Table 6.4). One-fourth of the traders reported 'very difficult' and the cumulative percentage of respondents who reported 'not so easy', 'difficult' or 'very difficult' is nearly 80%. None of the traders responded as 'very easy'.

District-wise, the combined responses for ‘difficult’ and ‘very difficult’ are nearly 30%, 50% and 44% in Sonipat, Panipat and in Sirsa, respectively.

Table 6.3: Checking prices on e-NAM: Farmers

District	Crops	No. of respondents						% distribution					
		Very easy	Easy	Not so easy	Difficult	Very difficult	Total responses	Very easy	Easy	Not so easy	Difficult	Very difficult	Total responses
Sonipat	Paddy	2	22	18	8		50	4	44	36	16	0	100
	Wheat		1		1		2	0	50	0	50	0	100
	All crops	2	23	18	9	0	52	4	44	35	17	0	100
Panipat	Paddy	7	30	6	7		50	14	60	12	14	0	100
	Wheat		2				2	0	100	0	0	0	100
	All crops	7	32	6	7	0	52	13	62	12	13	0	100
Sirsa	Paddy		15	10	9	1	35	0	43	29	26	3	100
	Wheat			2	2		4	0	0	50	50	0	100
	Bajra				2		2	0	0	0	100	0	100
	Gram		1	1			2	0	50	50	0	0	100
	Urad				3		3	0	0	0	100	0	100
	Groundnut		1				1	0	100	0	0	0	100
	Cotton		17	10	14		41	0	41	24	34	0	100
	Others		4	3	3		10	0	40	30	30	0	100
	All crops	0	38	26	33	1	98	0	39	27	34	1	100
Overall	All crops	9	93	50	49	1	202	4	46	25	24	0	100

Table 6.4: Checking prices on e-NAM: Traders

District	Crops	No. of respondents						% distribution					
		Very easy	Easy	Not so easy	Difficult	Very difficult	Total responses	Very easy	Easy	Not so easy	Difficult	Very difficult	Total responses
Sonipat	Paddy		2	5	2	1	10	0	20	50	20	10	100
Panipat	Paddy		4	1	1	4	10	0	40	10	10	40	100
Sirsa	Paddy		1		3	2	6	0	17	0	50	33	100
	Cotton		1	5		2	8	0	13	63	0	25	100
	Others			2			2	0	0	100	0	0	100
	All crops	0	2	7	3	4	16	0	13	44	19	25	100
Overall	All crops	0	8	13	6	9	36	0	22	36	17	25	100

Sale on e-NAM

More than 60% of the farmers in the three sample districts indicated that it is either ‘not so easy’, ‘difficult’ or ‘very difficult’ to sell on e-NAM (Table 6.5). The corresponding district-wise percentages are 57%, 73% and 55% in Sonipat, Panipat and in Sirsa, respectively. About 80% of the traders reported that it is either ‘not so easy’, ‘difficult’ or ‘very difficult’ to sell through e-NAM (Table 6.6).The corresponding district-wise percentages are 70%, 89% and 79% in Sonipat, Panipat and Sirsa districts, respectively.

Table 6.5: Sale on e-NAM: Farmers

District	Crops	No. of respondents						% distribution					
		Very easy	Easy	Not so easy	Difficult	Very difficult	Total responses	Very easy	Easy	Not so easy	Difficult	Very difficult	Total responses
Sonipat	Paddy	3	18	19	8		48	6	38	40	17	0	100
	Wheat			1			1	0	0	100	0	0	100
	All crops	3	18	20	8	0	49	6	37	41	16	0	100
Panipat	Paddy	2	11	27	6		46	4	24	59	13	0	100
	Wheat			2			2	0	0	100	0	0	100
	All crops	2	11	29	6	0	48	4	23	60	13	0	100
Sirsa	Paddy	1	12	11	9		33	3	36	33	27	0	100
	Wheat			2	2		4	0	0	50	50	0	100
	Bajra				2		2	0	0	0	100	0	100
	Gram		2				2	0	100	0	0	0	100
	Urad			1	2		3	0	0	33	67	0	100
	Groundnut	1					1	100	0	0	0	0	100
	Cotton	2	18	4	14	1	39	5	46	10	36	3	100
	Others	1	5	3	1		10	10	50	30	10	0	100
	All crops	5	37	21	30	1	94	5	39	22	32	1	100
Overall	All crops	10	66	70	44	1	191	5	35	37	23	1	100

Table 6.6: Sale on e-NAM: Traders

District	Crops	No. of respondents						% distribution					
		Very easy	Easy	Not so easy	Difficult	Very difficult	Total responses	Very easy	Easy	Not so easy	Difficult	Very difficult	Total responses
Sonipat	Paddy		3	5	2		10	0	30	50	20	0	100
Panipat	Paddy		1	2	1	5	9	0	11	22	11	56	100
Sirsa	Paddy			1	3	2	6	0	0	17	50	33	100
	Cotton		2	4		1	7	0	29	57	0	14	100
	Others		1				1	0	100	0	0	0	100
	All crops	0	3	5	3	3	14	0	21	36	21	21	100
Overall	All crops	0	7	12	6	8	33	0	21	36	18	24	100

Payment on e-NAM

About 50% of the farmers reported that it is ‘not so easy’ to make payment on e-NAM (Table 6.7). Interestingly, very few reported that it is ‘difficult’ or ‘very difficult’. Farmers in Panipat find it easy to make payment compared to other two districts. However, the situation is different with traders. About 95% of the traders indicated that it is either ‘not so easy’, ‘difficult’ or ‘very difficult’ to make payments on e-NAM (Table 6.8). None of the traders replied that the payment process is easy except one trader in Panipat.

Table 6.7: Payment on e-NAM: Farmers

District	Crops	No. of respondents						% distribution					
		Very easy	Easy	Not so easy	Difficult	Very difficult	Total responses	Very easy	Easy	Not so easy	Difficult	Very difficult	Total responses
Sonipat	Paddy	3	19	16	4		42	7	45	38	10	0	100
	Wheat	1					1	100	0	0	0	0	100
	All crops	4	19	16	4	0	43	9	44	37	9	0	100
Panipat	Paddy		27	12			39	0	69	31	0	0	100
	Wheat		2				2	0	100	0	0	0	100
	All crops	0	29	12	0	0	41	0	71	29	0	0	100
Sirsa	Paddy		8	12			20	0	40	60	0	0	100
	Wheat			3			3	0	0	100	0	0	100
	Bajra			2			2	0	0	100	0	0	100
	Gram		1	1			2	0	50	50	0	0	100
	Urad			3			3	0	0	100	0	0	100
	Groundnut		1				1	0	100	0	0	0	100
	Cotton	2	9	21		1	33	6	27	64	0	3	100
	Others	1	2	4			7	14	29	57	0	0	100
	All crops	3	21	46	0	1	71	4	30	65	0	1	100
Overall	All crops	7	69	74	4	1	155	5	45	47	2	1	100

Table 6.8: Payment on e-NAM: Traders

District	Crops	No. of respondents						% distribution					
		Very easy	Easy	Not so easy	Difficult	Very difficult	Total responses	Very easy	Easy	Not so easy	Difficult	Very difficult	Total responses
Sonipat	Paddy			4	2		6	0	0	67	33	0	100
Panipat	Paddy		1	2		5	8	0	13	25	0	63	100
Sirsa	Paddy			1	1	4	6	0	0	17	17	67	100
	Cotton			3	1	1	5	0	0	60	20	20	100
	Others			1			1	0	0	100	0	0	100
	All crops	0	0	5	2	5	12	0	0	42	17	42	100
Overall	All crops	0	1	11	4	10	26	0	4	42	15	38	100

Days taken to receive online payments

About 90% farmers reported that the payment is received within 10 days of sale. Almost all the farmers received payment within 10 days in Panipat. More than half of respondents reported that they received payment within 5 days (Table 6.9). On the other hand, nearly 30% of traders indicated that it took more than 20 days to receive payment and this percentage increases to 45% for traders who received payment only after 10 days (Table 6.10). None of them received payment within 2 days.

Table 6.9: Days taken to receive online payments: Farmers

District	Crops	No. of respondents						% distribution					
		Within 2 days	3-5 days	5-10 days	10-20 days	More than 20 days	Total responses	Within 2 days	3-5 days	5-10 days	10-20 days	More than 20 days	Total responses
Sonipat	Paddy	9	15	12	6		42	21	36	29	14	0	100
	Wheat	1					1	100	0	0	0	0	100
	All crops	10	15	12	6	0	43	23	35	28	14	0	100
Panipat	Paddy	23	8	7	1		39	59	21	18	3	0	100
	Wheat	2					2	100	0	0	0	0	100
	All crops	25	8	7	1	0	41	61	20	17	2	0	100
Sirsa	Paddy	6	4	9	1		20	30	20	45	5	0	100
	Wheat		2	1			3	0	67	33	0	0	100
	Bajra			1	1		2	0	0	50	50	0	100
	Gram		2				2	0	100	0	0	0	100
	Urad		1		2		3	0	33	0	67	0	100
	Groundnut		1				1	0	100	0	0	0	100
	Cotton	4	9	15	5		33	12	27	45	15	0	100
	Others		2	4	1		7	0	29	57	14	0	100
	All crops	10	21	30	10	0	71	14	30	42	14	0	100
Overall	All crops	45	44	49	17	0	155	29	28	32	11	0	100

Table 6.10: Days taken to receive online payments: Traders

District	Crops	No. of respondents						% distribution					
		Within 2 days	3-5 days	5-10 days	10-20 days	More than 20 days	Total responses	Within 2 days	3-5 days	5-10 days	10-20 days	More than 20 days	Total responses
Sonipat	Paddy		2	4			6	0	33	67	0	0	100
Panipat	Paddy		3	1	2	2	8	0	38	13	25	25	100
Sirsa	Paddy			1		5	6	0	0	17	0	83	100
	Cotton			3	1	1	5	0	0	60	20	20	100
	Others				1		1	0	0	0	100	0	100
	All crops	0	0	4	2	6	12	0	0	33	17	50	100
Overall	All crops	0	5	9	4	8	26	0	19	35	15	31	100

Infrastructure at mandi

Stakeholders have been quizzed about the infrastructure facilities available at mandi such as cleaning, weighing, sorting, drying, grading, assaying, bid management, e-auction, grain storage, soil testing and cold storage. The responses are broadly as follows

Farmers–About 95% of farmers (across the three districts) expressed satisfaction with the cleaning and weighing facilities at the mandi (Table 6.11 and Table 6.12). About 75% reported availability of assaying, bid management and e-auction facilities at the mandis. However, less than one-third have reported availability of sorting, drying, grading and grain storage facilities. The soil testing and cold storage facilities are not reported to be available at any of the sample mandis. The district-wise percentages are also largely in line with the overall pattern.

Traders–All the respondents reported that weighing facility is available at the mandis but only 73% are satisfied with the cleaning facility (Table 6.13 and Table 6.14). About 73% are not satisfied with the sorting, drying and grading facilities. The traders' view is mostly divided on assaying, bid management, e-auction and grain storage facilities.

Testing of quality parameters and report generation

Farmers – Nearly 70% farmers are happy with the transparency in the testing process (Table 6.15). However, this percentage varies from 80% in Sonipat to less than 50% in Panipat. Nearly 70% reported to have received the report in Sonipat but in other two districts this percentage falls below 40%.

Traders–In Sirsa and Ellenabad, all the traders supported transparency in testing but 80% of the traders in Samalkha mandi of Panipat doubted the transparency process (Table 6.16). Overall, above 85% traders have not received the testing report.

Quality of infrastructure at the mandis

Farmers–75% of the farmers (who responded positive for query on availability of weighing facility) rated the weighing facility as 'good' (Table 6.17 and Table 6.18). The responses about other facilities are as follows - cleaning (good, 61%), sorting and grading (satisfactory, 40%-50%), assaying, bid management and e-auction (good, 50%-60%).

Traders–41% of the traders rated the cleaning facilities as 'good'. As for other facilities the responses are as follows - grading (50%) and weighing (73%), sorting ('very good', 71%),grading, assaying, bid management, e-auction and grain storage ('very good', 40%-65%) and drying ('satisfactory', 67%), (Table 6.19 and Table 6.20).

Rating the specific parameters

Farmers and traders are then asked to rate the stringency of assaying parameters including moisture in the grains, proportion of foreign matter and other edible grains, proportion of damaged,

weevilled, immature and shrivelled grains, uniformity and lustre of grains, oil content and the colour of extracted oil. The scale varies from ‘very stringent’ to ‘alright’ to ‘very liberal’.

Most of the farmers (varying from 30% to 45%) rated majority of the quality checks for parameters as ‘alright’. The choice patterns are mostly similar across the districts (Table 6.21 and Table 6.22). Most of the traders (varying from 32% to 54%) also rated majority of the quality checks as ‘alright’ (Table 6.23 and Table 6.24).34% have rated moisture content checks as ‘stringent’ and 38% rated quality checks for lustre as ‘very liberal’. Some variation is noticed across districts, especially in Ganaur mandi in Sonipat where 80% rated the checks for ‘proportion of foreign matter in grains’ to be stringent.

Table 6.11: Infrastructure at mandi – Farmers

Availability of infrastructure at Mandi													
No. of responses													
District	Market	Response	Cleaning	Sorting	Drying	Grading	Weighing	Assaying	Bid management	E-auction	Grain storage	Soil testing	Cold storage
Sonipat	Ganaur	Available	48	7	9	8	50	43	41	34	18		
		Not available	2	42	40	41		6	9	12	29	50	50
		All responses	50	49	49	49	50	49	50	46	47	50	50
Panipat	Samalkha	Available	46	14	11	14	50	22	37	29	17		
		Not available	4	36	39	36		27	13	21	33	50	50
		All responses	50	50	50	50	50	49	50	50	50	50	50
Sirsa	*Ellenabad & Sirsa*	Available	48	25	3	21	50	46	48	46	21	0	0
		Not available	2	25	46	28	0	4	2	4	29	50	50
		All responses	50	50	49	49	50	50	50	50	50	50	50
All Districts	All markets	Available	142	46	23	43	150	111	126	109	56	0	0
		Not available	8	103	125	105	0	37	24	37	91	150	150
		All responses	150	149	148	148	150	148	150	146	147	150	150

Table 6.12: Infrastructure at mandi (Percentage) – Farmers

% distribution													
District	APMC	Response	Cleaning	Sorting	Drying	Grading	Weighing	Assaying	Bid management	E-auction	Grain storage	Soil testing	Cold storage
Sonipat	Ganaur	Available	96	14	18	16	100	88	82	74	38	0	0
		Not available	4	86	82	84	0	12	18	26	62	100	100
		All responses	100	100	100	100	100	100	100	100	100	100	100
Panipat	Samalkha	Available	92	28	22	28	100	45	74	58	34	0	0
		Not available	8	72	78	72	0	55	26	42	66	100	100
		All responses	100	100	100	100	100	100	100	100	100	100	100
Sirsa	*Ellenabad & Sirsa*	Available	96	50	6	43	100	92	96	92	42	0	0
		Not available	4	50	94	57	0	8	4	8	58	100	100
		All responses	100	100	100	100	100	100	100	100	100	100	100
All Districts	All markets	Available	95	31	16	29	100	75	84	75	38	0	0
		Not available	5	69	84	71	0	25	16	25	62	100	100
		All responses	100	100	100	100	100	100	100	100	100	100	100

Table 6.13: Infrastructure at mandi – Traders

Availability of infrastructure at Mandi												
No. of responses												
District	Response	Cleaning	Sorting	Drying	Grading	Weighing	Assaying	Bid management	E-auction	Grain storage	Soil testing	Cold storage
Sonipat - Ganaur	Available	5	2	4	3	10	8	5	6	3		
	Not available	5	8	6	7		2	5	4	7	10	10
	All responses	10	10	10	10	10	10	10	10	10	10	10
Panipat - Samalkha	Available	7		2		10		3	5	1		
	Not available	3	10	8	10		10	7	5	9	10	10
	All responses	10	10	10	10	10	10	10	10	10	10	10
Sirsa - Total	Available	10	5	0	5	10	6	10	9	7	0	0
	Not available	0	5	10	5	0	4	0	1	3	10	10
	All responses	10	10	10	10	10	10	10	10	10	10	10
All Districts	Available	22	7	6	8	30	14	18	20	11	0	0
	Not available	8	23	24	22	0	16	12	10	19	30	30
	All responses	30	30	30	30	30	30	30	30	30	30	30

Table 6.14: Infrastructure at mandi (Percentage) – Traders

Availability of infrastructure at Mandi - % distribution												
District	Response	Cleaning	Sorting	Drying	Grading	Weighing	Assaying	Bid management	E-auction	Grain storage	Soil testing	Cold storage
Sonipat - Ganaur	Available	50	20	40	30	100	80	50	60	30	0	0
	Not available	50	80	60	70	0	20	50	40	70	100	100
	All responses	100	100	100	100	100	100	100	100	100	100	100
Panipat - Samalkha	Available	70	0	20	0	100	0	30	50	10	0	0
	Not available	30	100	80	100	0	100	70	50	90	100	100
	All responses	100	100	100	100	100	100	100	100	100	100	100
Sirsa - Total	Available	100	50	0	50	100	60	100	90	70	0	0
	Not available	0	50	100	50	0	40	0	10	30	100	100
	All responses	100	100	100	100	100	100	100	100	100	100	100
All Districts	Available	73	23	20	27	100	47	60	67	37	0	0
	Not available	27	77	80	73	0	53	40	33	63	100	100
	All responses	100	100	100	100	100	100	100	100	100	100	100

Table 6.15: Testing of quality parameters and report generation – Farmers

Testing of quality parameters and report generation							
District	Market	Testing	Response	% distribution	Report	Response	% distribution
Sonipat	Ganaur	Transparent	33	80	Received	28	68
		Not transparent	8	20	Not received	13	32
		All responses	41	100	All responses	41	100
Panipat	Samalkha	Transparent	10	43	Received	9	39
		Not transparent	13	57	Not received	14	61
		All responses	23	100	All responses	23	100
Sirsa	Ellenabad & Sirsa	Transparent	34	71	Received	17	35
		Not transparent	14	29	Not received	31	65
		All responses	48	100	All responses	48	100
All Districts	All Market	Transparent	77	69	Received	54	48
		Not transparent	35	31	Not received	58	52
		All responses	112	100	All responses	112	100

Table 6.16: Testing of quality parameters and report generation – Traders

Testing of quality parameters and report generation							
District	Market	Testing	Response	% distribution	Report	Response	% distribution
Sonipat	Ganaur	Transparent	4	40	Received	1	10
		Not transparent	6	60	Not received	9	90
		All responses	10	100	All responses	10	100
Panipat	Samalkha	Transparent	2	20	Received	3	30
		Not transparent	8	80	Not received	7	70
		All responses	10	100	All responses	10	100
Sirsa	Ellenabad & Sirsa	Transparent	9	100	Received	0	0
		Not transparent	0	0	Not received	9	100
		All responses	9	100	All responses	9	100
All Districts	All Markets	Transparent	15	52	Received	4	14
		Not transparent	14	48	Not received	25	86
		All responses	29	100	All responses	29	100

Table 6.17: Quality of infrastructure at mandi – Farmers

Quality of available infrastructure at Mandi													
No. of responses													
District	Market	Response	Cleaning	Sorting	Drying	Grading	Weighing	Assaying	Bid management	E-auction	Grain storage	Soil testing	Cold storage
Sonipat	Ganaur	Very good	13	2		1	9	7	7	4	5		
		Good	23		3	4	34	26	26	11	3		
		Satisfactory	2	1	4	1	2	3	3	13	4		
		Poor	1	2	1	2	3	2	3	2	3		
		Very poor	9	2	1		2	5	2	4	3		
		All responses	48	7	9	8	50	43	41	34	18		
Panipat	Samalkha	Very good	6	4	2	4	3		1	1	4		
		Good	31	3	2	4	43	19	27	25	2		
		Satisfactory	6	6	4	2	2	3	6	2	6		
		Poor	3	1	3	3	1		3		4		
		Very poor				1	1			1	1		
		All responses	46	14	11	14	50	22	37	29	17		
Sirsa	Ellenabad & Sirsa	Very good	5	4	0	1	4	4	4	5	0		
		Good	32	3	0	4	36	18	30	18	10		
		Satisfactory	10	17	0	14	7	19	10	19	7		
		Poor	0	1	1	1	2	3	3	1	0		
		Very poor	1	0	2	1	1	2	1	3	4		
		All responses	48	25	3	21	50	46	48	46	21		
All Districts	All Market	Very good	24	10	2	6	16	11	12	10	9		
		Good	86	6	5	12	113	63	83	54	15		
		Satisfactory	18	24	8	17	11	25	19	34	17		
		Poor	4	4	5	6	6	5	9	3	7		
		Very poor	10	2	3	2	4	7	3	8	8		
		All responses	142	46	23	43	150	111	126	109	56		

Table 6.18: Quality of infrastructure at mandi (Percentage) – Farmers

Quality of available infrastructure at Mandi - % distribution													
District	APMC	Response	Cleaning	Sorting	Drying	Grading	Weighing	Assaying	Bid management	E-auction	Grain storage	Soil testing	Cold storage
Sonipat	Ganaur	Very good	27	29	0	13	18	16	17	12	28		
		Good	48	0	33	50	68	60	63	32	17		
		Satisfactory	4	14	44	13	4	7	7	38	22		
		Poor	2	29	11	25	6	5	7	6	17		
		Very poor	19	29	11	0	4	12	5	12	17		
		All responses	100	100	100	100	100	100	100	100	100		
Panipat	Samalkha	Very good	13	29	18	29	6	0	3	3	24		
		Good	67	21	18	29	86	86	73	86	12		
		Satisfactory	13	43	36	14	4	14	16	7	35		
		Poor	7	7	27	21	2	0	8	0	24		
		Very poor	0	0	0	7	2	0	0	3	6		
		All responses	100	100	100	100	100	100	100	100	100		
Sirsa	Ellenabad & Sirsa	Very good	10	16	0	5	8	9	8	11	0		
		Good	67	12	0	19	72	39	63	39	48		
		Satisfactory	21	68	0	67	14	41	21	41	33		
		Poor	0	4	33	5	4	7	6	2	0		
		Very poor	2	0	67	5	2	4	2	7	19		
		All responses	100	100	100	100	100	100	100	100	100		
All Districts	All Market	Very good	17	22	9	14	11	10	10	9	16		
		Good	61	13	22	28	75	57	66	50	27		
		Satisfactory	13	52	35	40	7	23	15	31	30		
		Poor	3	9	22	14	4	5	7	3	13		
		Very poor	7	4	13	5	3	6	2	7	14		
		All responses	100	100	100	100	100	100	100	100	100		

Table 6.19: Quality of infrastructure at mandi – Traders

Quality of available infrastructure at Mandi													
No. of responses													
District	Market	Response	Cleaning	Sorting	Drying	Grading	Weighing	Assaying	Bid management	E-auction	Grain storage	Soil testing	Cold storage
Sonipat	Ganaur	Very good	2				1	3	2	1	2		
		Good				3	9	1		1	1		
		Satisfactory			4			3	2	1			
		Poor		2				1		1			
		Very poor	3						1	2			
		All responses	5	2	4	3	10	8	5	6	3		
Panipat	Samalkha	Very good					1			1			
		Good	4		1		8		3	3	1		
		Satisfactory	3										
		Poor								1			
		Very poor			1		1						
		All responses	7		2		10		3	5	1		
Sirsa	Ellenabad & Sirsa	Very good	5	5		4	5	5	7	6	5		
		Good	5			1	5	1	3				
		Satisfactory											
		Poor								1	1		
		Very poor								2	1		
		All responses	10	5		5	10	6	10	9	7		
All Districts	All Markets	Very good	7	5		4	7	8	9	8	7		
		Good	9		1	4	22	2	6	4	2		
		Satisfactory	3		4			3	2	1			
		Poor		2				1		3	1		
		Very poor	3		1		1		1	4	1		
		All responses	22	7	6	8	30	14	18	20	11		

Table 6.20: Quality of infrastructure at mandi (Percentage) – Traders

% distribution													
District	Market	Response	Cleaning	Sorting	Drying	Grading	Weighing	Assaying	Bid management	E-auction	Grain storage	Soil testing	Cold storage
Sonipat	Ganaur	Very good	40				10	38	40	17	67		
		Good				100	90	13		17	33		
		Satisfactory			100			38	40	17			
		Poor		100				13		17			
		Very poor	60						20	33			
		All responses	100	100	100	100	100	100	100	100	100		
Panipat	Samalkha	Very good					10			20			
		Good	57		50		80		100	60	100		
		Satisfactory	43										
		Poor								20			
		Very poor			50		10						
		All responses	100		100		100		100	100	100		
Sirsa	Ellenabad & Sirsa	Very good	50	100		80	50	83	70	67	71		
		Good	50			20	50	17	30				
		Satisfactory											
		Poor								11	14		
		Very poor								22	14		
		All responses	100	100		100	100	100	100	100	100		
All Districts	All Markets	Very good	32	71		50	23	57	50	40	64		
		Good	41		17	50	73	14	33	20	18		
		Satisfactory	14		67			21	11	5			
		Poor		29				7		15	9		
		Very poor	14		17		3		6	20	9		
		All responses	100	100	100	100	100	100	100	100	100		

Table 6.21: Rating the specific parameters – Farmers

Rating the specific parameters													
No. of responses													
District	Market	Response	Testing of quality parameters	Moisture	Foreign matter	Other edible grains	Damaged grains	Weevilled grains	Immature and Shrivelled grains	Uniformity	Lustre	Oil content	Colour of Extracted oil
Sonipat	Ganaur	Very stringent	10	5	1	2	2	5	2	3		1	2
		Stringent	17	9	10	13	9	6	8	6	9	5	8
		Alright	9	16	14	7	20	10	12	10	12	6	12
		Liberal	3	1	16	6	9	18	4	8	3	9	6
		Very liberal	2	10		13	1	2	15	14	17	20	13
		All responses	41	41	41	41	41	41	41	41	41	41	41
Panipat	Samalkha	Very stringent	1	2	1	5	2	1	2	1	3	4	2
		Stringent	6	15	6	5	9	14	5	12	6	11	14
		Alright	9	5	11	7	7	4	11	4	8	6	5
		Liberal	7		5	5	4	2	3	6	3	2	1
		Very liberal		1		1	1	2	2		3		1
		All responses	23	23	23	23	23	23	23	23	23	23	23
Sirsa	Ellenabad & Sirsa	Very stringent	3	4		2		2	3	1	3	2	1
		Stringent		11	12	8	9	6	8	7	8	6	7
		Alright	32	21	19	26	20	19	14	20	20	16	21
		Liberal	12	9	14	4	17	16	15	12	9	11	7
		Very liberal	1	3	3	8	1	5	8	8	8	13	12
		All responses	48	48	48	48	47	48	48	48	48	48	48
All Districts	All Market	Very stringent	14	11	2	9	4	8	7	5	6	7	5
		Stringent	23	35	28	26	27	26	21	25	23	22	29
		Alright	50	42	44	40	47	33	37	34	40	28	38
		Liberal	22	10	35	15	30	36	22	26	15	22	14
		Very liberal	3	14	3	22	3	9	25	22	28	33	26
		All responses	112	112	112	112	111	112	112	112	112	112	112

Table 6.22: Rating the specific parameters (Percentage) – Farmers

Rating the specific parameters- % distribution													
District	APMC	Response	Testing of quality parameters	Moisture	Foreign matter	Other edible grains	Damaged grains	Weevilled grains	Immature and Shrivelled grains	Uniformity	Lustre	Oil content	Colour of Extracted oil
Sonipat	Ganaur	Very stringent	24	12	2	5	5	12	5	7		2	5
		Stringent	41	22	24	32	22	15	20	15	22	12	20
		Alright	22	39	34	17	49	24	29	24	29	15	29
		Liberal	7	2	39	15	22	44	10	20	7	22	15
		Very liberal	5	24		32	2	5	37	34	41	49	32
		All responses	100	100	100	100	100	100	100	100	100	100	100
Panipat	Samalkha	Very stringent	4	9	4	22	9	4	9	4	13	17	9
		Stringent	26	65	26	22	39	61	22	52	26	48	61
		Alright	39	22	48	30	30	17	48	17	35	26	22
		Liberal	30		22	22	17	9	13	26	13	9	4
		Very liberal		4		4	4	9	9		13		4
		All responses	100	100	100	100	100	100	100	100	100	100	100
Sirsa	Ellenabad & Sirsa	Very stringent	6	8		4		4	6	2	6	4	2
		Stringent		23	25	17	19	13	17	15	17	13	15
		Alright	67	44	40	54	43	40	29	42	42	33	44
		Liberal	25	19	29	8	36	33	31	25	19	23	15
		Very liberal	2	6	6	17	2	10	17	17	17	27	25
		All responses	100	100	100	100	100	100	100	100	100	100	100
All Districts	All Market	Very stringent	13	10	2	8	4	7	6	4	5	6	4
		Stringent	21	31	25	23	24	23	19	22	21	20	26
		Alright	45	38	39	36	42	29	33	30	36	25	34
		Liberal	20	9	31	13	27	32	20	23	13	20	13
		Very liberal	3	13	3	20	3	8	22	20	25	29	23
		All responses	100	100	100	100	100	100	100	100	100	100	100

Table 6.23: Rating the specific parameters– Traders

Rating the specific parameters													
No. of responses													
District	Market	Response	Testing of quality parameters	Moisture	Foreign matter	Other edible grains	Damaged grains	Weevilled grains	Immature and Shrivelled grains	Uniformity	Lusture	Oil content	Colour of Extracted oil
Sonipat	Ganaur	Very stringent	2	5			1	1		2		1	
		Stringent	2	5	8	3		1	1	2	1	1	4
		Alright	3			5	3	4	3	2	1	4	2
		Liberal					4	2	4		3	1	2
		Very liberal	3		2	1	1	2	1	4	5	2	2
		All responses	10	10	10	9	9	10	9	10	10	9	10
Panipat	Samalkha	Very stringent	1	2	1	1	1			1			1
		Stringent		3	1	1	3	4	2	3	2	4	2
		Alright	5	4	5	4	5	4	4	1	2	2	3
		Liberal	2	1	3	3	1	1	4	3	2	3	3
		Very liberal	1			1				1	4	1	1
		All responses	9	10	10	10	10	9	10	9	10	10	10
Sirsa	Ellenabad & Sirsa	Very stringent	2	3					2				
		Stringent			3	1		2	0	3			1
		Alright	7	2	1	6	3	1	4	3	4	5	5
		Liberal		4	2		4	4	2	3	3	3	2
		Very liberal			3	2	2	2	1		2	1	1
		All responses	9	9	9	9	9	9	9	9	9	9	9
All Districts	All Markets	Very stringent	5	10	1	1	2	1	2	3		1	1
		Stringent	2	8	12	5	3	7	3	8	3	5	7
		Alright	15	6	6	15	11	9	11	6	7	11	10
		Liberal	2	5	5	3	9	7	10	6	8	7	7
		Very liberal	4		5	4	3	4	2	5	11	4	4
		All responses	28	29	29	28	28	28	28	28	29	28	29

Table 6.24: Rating the specific parameters (Percentage) – Traders

% distribution													
District	Market	Response	Testing of quality parameters	Moisture	Foreign matter	Other edible grains	Damaged grains	Weevilled grains	Immature and Shrivelled grains	Uniformity	Lusture	Oil content	Colour of Extracted oil
Sonipat	Ganaur	Very stringent	20	50			11	10		20		11	
		Stringent	20	50	80	33		10	11	20	10	11	40
		Alright	30			56	33	40	33	20	10	44	20
		Liberal					44	20	44		30	11	20
		Very liberal	30		20	11	11	20	11	40	50	22	20
		All responses	100	100	100	100	100	100	100	100	100	100	100
Panipat	Samalkha	Very stringent	11	20	10	10	10			11			10
		Stringent		30	10	10	30	44	20	33	20	40	20
		Alright	56	40	50	40	50	44	40	11	20	20	30
		Liberal	22	10	30	30	10	11	40	33	20	30	30
		Very liberal	11			10				11	40	10	10
		All responses	100	100	100	100	100	100	100	100	100	100	100
Sirsa	Ellenabad & Sirsa	Very stringent	22	33					22				
		Stringent			33	11	0	22		33			11
		Alright	78	22	11	67	33	11	44	33	44	56	56
		Liberal		44	22		44	44	22	33	33	33	22
		Very liberal			33	22	22	22	11		22	11	11
		All responses	100	100	100	100	100	100	100	100	100	100	100
All Districts	All Markets	Very stringent	18	34	3	4	7	4	7	11		4	3
		Stringent	7	28	41	18	11	25	11	29	10	18	24
		Alright	54	21	21	54	39	32	39	21	24	39	34
		Liberal	7	17	17	11	32	25	36	21	28	25	24
		Very liberal	14		17	14	11	14	7	18	38	14	14
		All responses	100	100	100	100	100	100	100	100	100	100	100

Major problems faced at the e-NAM

The farmers and traders were asked to rate the problems they faced at the mandi related to e-NAM such as physical and technical support, power supply, connectivity, pricing, road infrastructure, testing of quality parameters, working environment etc.

84% of the farmers listed the major problems as lack of guidance or help desk followed by poor net connectivity, power failures and inadequate number of computers (60% to 66%); lower price than pre e-NAM; poor road network; difficulty in online payments; complicated sale process and inadequate cleaning and sorting facilities (50% to 57%) - Table 6.25 and Table 6.26.

All the traders (100%) highlighted lack of guidance or help desk as a major problem. This is followed by poor net connectivity and inadequate number of computers (73%); poor road network for transportation, difficulty in getting licenses is several states, difficulty in online payments, higher cost than pre e-NAM, complicated sale process, inadequate cleaning facilities, corruption of officials and delay in online payment (59% to 67%) - Table 6.27 and Table 6.28.

Severity of the problems

Farmers were asked to rate the severity of the problems. Although many problems have been listed as major by farmers, many of them have been rated as ‘low’ in terms of its severity. Cleaning, sorting and grading facilities appear as the most severe by the farmers. Lower price than pre e-NAM, delay in online payment, no trained manpower to help and poor net connectivity are the other highlighted problems in terms of severity (Table 6.29 and Table 6.30).

Traders have rated most of the problems as ‘high’ and ‘severe’. Higher mandi fees than before, problems with functioning of the electronic system, complicated sale process, higher cost than pre e-NAM, difficulty in online payments, poor net connectivity, absence of refrigeration facilities, collusion among traders, absence of trained manpower to help, difficulty in getting licenses in different states have been rated as ‘high’ and ‘severe’(Table 6.31 and Table 6.32).

Table 6.25: Problems faced at the e-NAM– Farmers

Problems faced at the e-NAM												
District	Sonipat			Panipat			Sirsa			All Districts		
Market	Ganaur			Samalkha			Ellenabad & Sirsa			All Markets		
Problems	Yes	No	Total	Yes	No	Total	Yes	No	Total	Yes	No	Total
No guidance or help desk	41	8	49	39	11	50	45	5	50	125	24	149
Higher mandi fees than before	11	39	50	14	36	50	18	32	50	43	107	150
Electronic system does not work/works occasionally	18	32	50	6	42	48	31	19	50	55	93	148
Discovering prices is cumbersome	24	23	47	13	36	49	16	33	49	53	92	145
Sale process is complicated than before	31	19	50	36	14	50	12	38	50	79	71	150
Lower price than pre e-NAM	29	21	50	43	7	50	13	37	50	85	65	150
Higher cost than pre e-NAM	33	16	49	10	40	50	16	34	50	59	90	149
Online payment process is difficult	30	20	50	36	14	50	14	33	47	80	67	147
Delay in online payment	25	25	50	37	13	50	21	25	46	83	63	146
Poor net connectivity	35	14	49	41	9	50	14	36	50	90	59	149
Not enough computers	32	17	49	43	7	50	23	27	50	98	51	149
Frequent power failures	30	20	50	43	7	50	23	27	50	96	54	150
No trained manpower to help with e-NAM	18	30	48	35	15	50	19	31	50	72	76	148
Poor road network for transportation	18	30	48	41	9	50	25	25	50	84	64	148
Cleaning facilities are not adequate	21	28	49	38	12	50	19	30	49	78	70	148
Sorting facilities are not adequate	21	29	50	37	13	50	18	32	50	76	74	150
Grading facilities are not adequate	15	34	49	30	20	50	19	31	50	64	85	149
Weighing facilities are not adequate	18	29	47	15	35	50	15	35	50	48	99	147
Quality parameters are stringent	25	25	50	13	37	50	18	32	50	56	94	150
No soil testing laboratory	34	16	50	15	35	50	23	27	50	72	78	150
No refrigeration facilities	25	25	50	11	39	50	22	28	50	58	92	150
Labour problem for loading / unloading	29	20	49	15	34	49	20	30	50	64	84	148
Collusion among traders/trade malpractices	34	16	50	9	41	50	15	35	50	58	92	150
Market is far away	30	20	50	13	37	50	9	41	50	52	98	150

Table 6.26: Problems faced at the e-NAM (Percentage) – Farmers

Problems faced at the e-NAM - % distribution												
District	Sonipat			Panipat			Sirsa			All Districts		
APMC	Ganaur			Samalkha			Ellenabad & Sirsa			All APMC		
Problems	Yes	No	Total	Yes	No	Total	Yes	No	Total	Yes	No	Total
No guidance or help desk	84	16	100	78	22	100	90	10	100	84	16	100
Higher mandi fees than before	22	78	100	28	72	100	36	64	100	29	71	100
Electronic system does not work/works occas.	36	64	100	13	88	100	62	38	100	37	63	100
Discovering prices is cumbersome	51	49	100	27	73	100	33	67	100	37	63	100
Sale process is complicated than before	62	38	100	72	28	100	24	76	100	53	47	100
Lower price than pre e-NAM	58	42	100	86	14	100	26	74	100	57	43	100
Higher cost than pre e-NAM	67	33	100	20	80	100	32	68	100	40	60	100
Online payment process is difficult	60	40	100	72	28	100	30	70	100	54	46	100
Delay in online payment	50	50	100	74	26	100	46	54	100	57	43	100
Poor net connectivity	71	29	100	82	18	100	28	72	100	60	40	100
Not enough computers	65	35	100	86	14	100	46	54	100	66	34	100
Frequent power failures	60	40	100	86	14	100	46	54	100	64	36	100
No trained manpower to help with e-NAM	38	63	100	70	30	100	38	62	100	49	51	100
Poor road network for transportation	38	63	100	82	18	100	50	50	100	57	43	100
Cleaning facilities are not adequate	43	57	100	76	24	100	39	61	100	53	47	100
Sorting facilities are not adequate	42	58	100	74	26	100	36	64	100	51	49	100
Grading facilities are not adequate	31	69	100	60	40	100	38	62	100	43	57	100
Weighing facilities are not adequate	38	62	100	30	70	100	30	70	100	33	67	100
Quality parameters are stringent	50	50	100	26	74	100	36	64	100	37	63	100
No soil testing laboratory	68	32	100	30	70	100	46	54	100	48	52	100
No refrigeration facilities	50	50	100	22	78	100	44	56	100	39	61	100
Labour problem for loading / unloading	59	41	100	31	69	100	40	60	100	43	57	100
Collusion among traders/trade malpractices	68	32	100	18	82	100	30	70	100	39	61	100
Market is far away	60	40	100	26	74	100	18	82	100	35	65	100

Table 6.27: Problems faced at the e-NAM – Traders

Problems faced at the e-NAM												
District	Sonipat			Panipat			Sirsa			All Districts		
Market	Ganaur			Samalkha			Ellenabad & Sirsa			All Markets		
Problems	Yes	No	Total	Yes	No	Total	Yes	No	Total	Yes	No	Total
No guidance or help desk	10		10	10		10	10	0	10	30	0	30
Higher mandi fees than before	1	9	10	2	8	10	1	9	10	4	26	30
Electronic system does not work/works occasional.	9	1	10	3	7	10	4	6	10	16	14	30
Discovering prices is cumbersome	7	3	10	3	7	10	3	7	10	13	17	30
Sale process is complicated than before	8	2	10	4	6	10	6	4	10	18	12	30
Lower price than pre e-NAM	7	3	10	4	6	10	5	5	10	16	14	30
Higher cost than pre e-NAM	6	4	10	7	3	10	6	4	10	19	11	30
Online payment process is difficult	7	2	9	5	4	9	6	4	10	18	10	28
Delay in online payment	6	1	7	4	6	10	6	4	10	16	11	27
Having to pay Market fee at different mandis	6	4	10	3	7	10	3	7	10	12	18	30
Difficulty in getting single license	8	2	10	2	8	10	2	8	10	12	18	30
Corruption of officials	8	2	10	3	7	10	7	3	10	18	12	30
Getting licenses is several states is difficult	7	3	10	6	4	10	7	3	10	20	10	30
Poor net connectivity	9	1	10	8	2	10	5	5	10	22	8	30
Not enough computers	7	3	10	7	3	10	8	2	10	22	8	30
Frequent power failures	7	3	10	6	4	10	5	5	10	18	12	30
No trained manpower to help with e-NAM	6	4	10	4	6	10	6	4	10	16	14	30
Poor road network for transportation	8	2	10	6	4	10	7	3	10	21	9	30
Cleaning facilities are not adequate	7	3	10	5	5	10	6	4	10	18	12	30
Sorting facilities are not adequate	7	3	10	4	6	10	3	7	10	14	16	30
Grading facilities are not adequate	8	2	10	2	8	10	3	7	10	13	17	30
Weighing facilities are not adequate	7	3	10	2	8	10	3	7	10	12	18	30
Quality parameters are stringent	6	4	10	5	5	10	3	7	10	14	16	30
Absence of refrigeration facilities	1	9	10	5	5	10	6	4	10	12	18	30
Labour problem for loading / unloading	4	6	10	3	7	10	5	5	10	12	18	30
Collusion among traders/trade malpractices	2	8	10	6	4	10	1	9	10	9	21	30

Table 6.28: Problems faced at the e-NAM (Percentage) – Traders

Problems faced at the e-NAM - % distribution												
District	Sonipat			Panipat			Sirsa			All Districts		
Market	Ganaur			Samalkha			Ellenabad & Sirsa			All Market		
Problems	Yes	No	Total	Yes	No	Total	Yes	No	Total	Yes	No	Total
No guidance or help desk	100	0	100	100	0	100	100	0	100	100	0	100
Higher mandi fees than before	10	90	100	20	80	100	10	90	100	13	87	100
Electronic system does not work/works occasion.	90	10	100	30	70	100	40	60	100	53	47	100
Discovering prices is cumbersome	70	30	100	30	70	100	30	70	100	43	57	100
Sale process is complicated than before	80	20	100	40	60	100	60	40	100	60	40	100
Lower price than pre e-NAM	70	30	100	40	60	100	50	50	100	53	47	100
Higher cost than pre e-NAM	60	40	100	70	30	100	60	40	100	63	37	100
Online payment process is difficult	78	22	100	56	44	100	60	40	100	64	36	100
Delay in online payment	86	14	100	40	60	100	60	40	100	59	41	100
Having to pay Market fee at different mandis	60	40	100	30	70	100	30	70	100	40	60	100
Difficulty in getting single license	80	20	100	20	80	100	20	80	100	40	60	100
Corruption of officials	80	20	100	30	70	100	70	30	100	60	40	100
Getting licenses is several states is difficult	70	30	100	60	40	100	70	30	100	67	33	100
Poor net connectivity	90	10	100	80	20	100	50	50	100	73	27	100
Not enough computers	70	30	100	70	30	100	80	20	100	73	27	100
Frequent power failures	70	30	100	60	40	100	50	50	100	60	40	100
No trained manpower to help with eNAM	60	40	100	40	60	100	60	40	100	53	47	100
Poor road network for transportation	80	20	100	60	40	100	70	30	100	70	30	100
Cleaning facilities are not adequate	70	30	100	50	50	100	60	40	100	60	40	100
Sorting facilities are not adequate	70	30	100	40	60	100	30	70	100	47	53	100
Grading facilities are not adequate	80	20	100	20	80	100	30	70	100	43	57	100
Weighing facilities are not adequate	70	30	100	20	80	100	30	70	100	40	60	100
Quality parameters are stringent	60	40	100	50	50	100	30	70	100	47	53	100
Absence of refrigeration facilities	10	90	100	50	50	100	60	40	100	40	60	100
Labour problem for loading / unloading	40	60	100	30	70	100	50	50	100	40	60	100
Collusion among traders/trade malpractices	20	80	100	60	40	100	10	90	100	30	70	100

Table 6.29: Severity of the problems faced at the e-NAM – Farmers

Severity of the problems faced at the e-NAM																				
District	Sonipat					Panipat					Sirsa					All Districts				
Market	Ganaur					Samalkha					Ellenabad & Sirsa					All Markets				
Problems	Low	Medium	High	Severe	Total	Low	Medium	High	Severe	Total	Low	Medium	High	Severe	Total	Low	Medium	High	Severe	Total
No guidance or help desk	13	17	9	2	41	31	6	2		39	23	4	11	7	45	67	27	22	9	125
Higher mandi fees than before	10	1			11	8	4	2		14	17	1			18	35	6	2		43
Electronic system does not work	12		5	1	18	3	1	1	1	6	19	2	10		31	34	3	16	2	55
Discovering prices is cumbersome	18	2		4	24	8	4	1		13	4	4	7	1	16	30	10	8	5	53
Sale process is complicated	12	6	10	3	31	30	3	2	1	36	5	6	1		12	47	15	13	4	79
Lower price than pre e-NAM	7	4	13	5	29	11	29	1	2	43	6	2	5		13	24	35	19	7	85
Higher cost than pre e-NAM	12	8	8	5	33	5	1	3	1	10	7	5	4		16	24	14	15	6	59
Online payment process is difficult	11	3	7	9	30	31	1	1	3	36	8	2	4		14	50	6	12	12	80
Delay in online payment	5	5	8	7	25	7	27	3		37	13	5		3	21	25	37	11	10	83
Poor net connectivity	14	4	10	7	35	9	26	5	1	41	3	2	3	6	14	26	32	18	14	90
Not enough computers	5	8	13	6	32	8	29	6		43	12	2	6	3	23	25	39	25	9	98
Frequent power failures	5	8	7	10	30	7	21	14	1	43	11	4	5	3	23	23	33	26	14	96
No trained manpower to help	8	6	2	2	18	4	28	3		35	7	5	3	4	19	19	39	8	6	72
Poor road network	11	3	2	2	18	10	14	12	5	41	15	4	2	4	25	36	21	16	11	84
Cleaning facilities are not adequate	12	5	2	2	21	6	4	1	27	38	10	5	3	1	19	28	14	6	30	78
Sorting facilities are not adequate	10	6	4	1	21	5	4	2	26	37	10	4	2	2	18	25	14	8	29	76
Grading facilities are not adequate	7	4	3	1	15	5	2	1	22	30	11	3	2	3	19	23	9	6	26	64
Weighing facilities are not adequate	11	2	2	3	18	10	1	1	3	15	11	1	2	1	15	32	4	5	7	48
Quality parameters are stringent	13	4	5	3	25	9	3		1	13	12	3	1	2	18	34	10	6	6	56
No soil testing laboratory	17	4	2	11	34	9	1	5		15	13	2	5	3	23	39	7	12	14	72
No refrigeration facilities	6	1	8	10	25	5	1	4	1	11	11	1	5	5	22	22	3	17	16	58
Labour problem for loading	13	1	3	12	29	9	2	3	1	15	9	5	4	2	20	31	8	10	15	64
Collusion among traders	12	3	4	15	34	4	3	2		9	11		3	1	15	27	6	9	16	58
Market is far away	11	4	2	13	30	11		1	1	13	4	4	1		9	26	8	4	14	52

Table 6.30: Severity of the problems faced at the e-NAM (Percentage) – Farmers

Severity of the problems faced at the e-NAM - % distribution																				
District	Sonipat					Panipat					Sirsa					All Districts				
Market	Ganaur					Samalkha					Ellenabad & Sirsa					All Markets				
Problems	Low	Medium	High	Severe	Total	Low	Medium	High	Severe	Total	Low	Medium	High	Severe	Total	Low	Medium	High	Severe	Total
No guidance or help desk	32	41	22	5	100	79	15	5		100	51	9	24	16	100	54	22	18	7	100
Higher mandi fees than before	91	9			100	57	29	14		100	94	6			100	81	14	5		100
Electronic system does not work	67		28	6	100	50	17	17	17	100	61	6	32		100	62	5	29	4	100
Discovering prices is cumbersome	75	8		17	100	62	31	8		100	25	25	44	6	100	57	19	15	9	100
Sale process is complicated	39	19	32	10	100	83	8	6	3	100	42	50	8		100	59	19	16	5	100
Lower price than pre e-NAM	24	14	45	17	100	26	67	2	5	100	46	15	38		100	28	41	22	8	100
Higher cost than pre e-NAM	36	24	24	15	100	50	10	30	10	100	44	31	25		100	41	24	25	10	100
Online payment process is difficult	37	10	23	30	100	86	3	3	8	100	57	14	29		100	63	8	15	15	100
Delay in online payment	20	20	32	28	100	19	73	8		100	62	24	0	14	100	30	45	13	12	100
Poor net connectivity	40	11	29	20	100	22	63	12	2	100	21	14	21	43	100	29	36	20	16	100
Not enough computers	16	25	41	19	100	19	67	14		100	52	9	26	13	100	26	40	26	9	100
Frequent power failures	17	27	23	33	100	16	49	33	2	100	48	17	22	13	100	24	34	27	15	100
No trained manpower to help	44	33	11	11	100	11	80	9	0	100	37	26	16	21	100	26	54	11	8	100
Poor road network	61	17	11	11	100	24	34	29	12	100	60	16	8	16	100	43	25	19	13	100
Cleaning facilities are not adequate	57	24	10	10	100	16	11	3	71	100	53	26	16	5	100	36	18	8	38	100
Sorting facilities are not adequate	48	29	19	5	100	14	11	5	70	100	56	22	11	11	100	33	18	11	38	100
Grading facilities are not adequate	47	27	20	7	100	17	7	3	73	100	58	16	11	16	100	36	14	9	41	100
Weighing facilities are not adequate	61	11	11	17	100	67	7	7	20	100	73	7	13	7	100	67	8	10	15	100
Quality parameters are stringent	52	16	20	12	100	69	23		8	100	67	17	6	11	100	61	18	11	11	100
No soil testing laboratory	50	12	6	32	100	60	7	33		100	57	9	22	13	100	54	10	17	19	100
No refrigeration facilities	24	4	32	40	100	45	9	36	9	100	50	5	23	23	100	38	5	29	28	100
Labour problem for loading	45	3	10	41	100	60	13	20	7	100	45	25	20	10	100	48	13	16	23	100
Collusion among traders	35	9	12	44	100	44	33	22		100	73		20	7	100	47	10	16	28	100
Market is far away	37	13	7	43	100	85		8	8	100	44	44	11		100	50	15	8	27	100

Table 6.31: Severity of the problems faced at the e-NAM – Traders

Severity of the problems faced at the e-NAM																				
District	Sonipat					Panipat					Sirsa					All Districts				
Market	Ganaur					Samalkha					Ellenabad & Sirsa					All Markets				
Problems	Low	Medium	High	Severe	Total	Low	Medium	High	Severe	Total	Low	Medium	High	Severe	Total	Low	Medium	High	Severe	Total
No guidance or help desk	9	1			10	7	1	2		10	8	1		1	10	24	3	2	1	30
Higher mandi fees than before				1	1	1		1		2				1	1	1		1	2	4
Electronic system does not work		1	8		9	1	1	1		3		1	3		4	1	3	12		16
Discovering prices is cumbersome		4	2	1	7		1	1	1	3			1	2	3		5	4	4	13
Sale process is complicated	2		3	3	8		1	2	1	4			4	2	6	2	1	9	6	18
Lower price than pre e-NAM		1	2	4	7		2	2		4		2	1	2	5		5	5	6	16
Higher cost than pre e-NAM	1	1		4	6		3		4	7		4	1	1	6	1	8	1	9	19
Online payment process is difficult		1	1	5	7	2		1	2	5			4	2	6	2	1	6	9	18
Delay in online payment	2	1	2	1	6			1	3	4		1	4	1	6	2	2	7	5	16
To pay Market fee at diff. mandis	1	2	2	1	6	1		1	1	3		2	1		3	2	4	4	2	12
Difficulty in getting single license	2	2	3	1	8		1		1	2		1		1	2	2	4	3	3	12
Corruption of officials	1	3	3	1	8		1	1	1	3		2	3	2	7	1	6	7	4	18
Getting licenses in states is difficult	1		4	2	7	1	2	2	1	6		3	3	1	7	2	5	9	4	20
Poor net connectivity	1	1	3	4	9	1	3		4	8			1	4	5	2	4	4	12	22
Not enough computers		1	5	1	7	1	1	1	4	7	1	1	4	2	8	2	3	10	7	22
Frequent power failures		5	2		7	2		2	2	6		1	3	1	5	2	6	7	3	18
No trained manpower to help		2	4		6		1	2	1	4		1	2	3	6		4	8	4	16
Poor road network for transportation	2	3	2	1	8		1	3	2	6	1	2	4		7	3	6	9	3	21
Cleaning facilities are not adequate		1	3	3	7		1	2	2	5	1	1	3	1	6	1	3	8	6	18
Sorting facilities are not adequate	1	2	2	2	7	1		1	2	4	1		1	1	3	3	2	4	5	14
Grading facilities are not adequate		2	4	2	8	1		1		2	1		1	1	3	2	2	6	3	13
Weighing facilities are not adequate	1	1	5		7	1	1			2		2		1	3	2	4	5	1	12
Quality parameters are stringent	3		2	1	6	1		2	2	5			2	1	3	4		6	4	14
Absence of refrigeration facilities		1			1		1		4	5		1	2	3	6		3	2	7	12
Labour problem for loading	2		2		4			1	2	3		1	2	2	5	2	1	5	4	12
Collusion among traders		1		1	2		3		3	6		1			1		5		4	9

Table 6.32: Severity of the problems faced at the e-NAM (Percentage) – Traders

Severity of the problems faced at the e-NAM - % distribution																				
District	Sonipat					Panipat					Sirsa					All Districts				
Market	Ganaur					Samalkha					Ellenabad & Sirsa					All Markets				
Problems	Low	Medium	High	Severe	Total	Low	Medium	High	Severe	Total	Low	Medium	High	Severe	Total	Low	Medium	High	Severe	Total
No guidance or help desk	90	10			100	70	10	20		100	80	10		10	100	80	10	7	3	100
Higher mandi fees than before				100	100	50		50		100				100	100	25		25	50	100
Electronic system does not work		11	89		100	33	33	33		100		25	75		100	6	19	75		100
Discovering prices is cumbersome		57	29	14	100		33	33	33	100			33	67	100		38	31	31	100
Sale process is complicated	25		38	38	100		25	50	25	100			67	33	100	11	6	50	33	100
Lower price than pre e-NAM		14	29	57	100		50	50		100		40	20	40	100		31	31	38	100
Higher cost than pre e-NAM	17	17		67	100		43		57	100		67	17	17	100	5	42	5	47	100
Online payment process is difficult		14	14	71	100	40		20	40	100			67	33	100	11	6	33	50	100
Delay in online payment	33	17	33	17	100			25	75	100		17	67	17	100	13	13	44	31	100
To pay Market fee at diff. mandis	17	33	33	17	100	33		33	33	100		67	33		100	17	33	33	17	100
Difficulty in getting single license	25	25	38	13	100		50		50	100		50		50	100	17	33	25	25	100
Corruption of officials	13	38	38	13	100		33	33	33	100		29	43	29	100	6	33	39	22	100
Getting licenses in states is difficult	14		57	29	100	17	33	33	17	100		43	43	14	100	10	25	45	20	100
Poor net connectivity	11	11	33	44	100	13	38		50	100			20	80	100	9	18	18	55	100
Not enough computers		14	71	14	100	14	14	14	57	100	13	13	50	25	100	9	14	45	32	100
Frequent power failures		71	29		100	33		33	33	100		20	60	20	100	11	33	39	17	100
No trained manpower to help		33	67		100		25	50	25	100		17	33	50	100		25	50	25	100
Poor road network for transportation	25	38	25	13	100		17	50	33	100	14	29	57		100	14	29	43	14	100
Cleaning facilities are not adequate		14	43	43	100		20	40	40	100	17	17	50	17	100	6	17	44	33	100
Sorting facilities are not adequate	14	29	29	29	100	25		25	50	100	33		33	33	100	21	14	29	36	100
Grading facilities are not adequate		25	50	25	100	50		50		100	33		33	33	100	15	15	46	23	100
Weighing facilities are not adequate	14	14	71		100	50	50			100		67		33	100	17	33	42	8	100
Quality parameters are stringent	50		33	17	100	20		40	40	100		0	67	33	100	29		43	29	100
Absence of refrigeration facilities		100			100		20	0	80	100		17	33	50	100		25	17	58	100
Labour problem for	50		50		100			33	67	100		20	40	40	100	17	8	42	33	100
Collusion among traders		50		50	100		50		50	100		100			100		56		44	100

Advantages of e-NAM

The farmers and traders were asked to list the advantages of e-NAM over the existing traditional marketing system. The responses are discussed below.

Farmers found e-NAM to be a better choice and listed the advantages of e-NAM as higher price realization (68%), more convenient online payment (60%), better facilities for knowing quality of product (55%), less complicated sale process (54%) and as a transparent procedure (53%), (Table 6.33).However, farmers did not find any advantage of e-NAM as regards lower cost of marketing and / or higher traded volume over the traditional marketing system.

Most of the traders across different mandis did not find e-NAM as a very advantageous option (Table 6.34).Traders in Panipat and Sirsa markets found e-NAM as a good option to give higher price realization but on other criteria they did not favour e-NAM. Traders in Panipat listed transparent procedures as one of the advantages of e-NAM.

Farmers were further asked to rate the usefulness of the positive features of e-NAM. Most of the farmers rated the positive features of e-NAM as either ‘very useful’ or ‘useful’ (Table 6.35). The features that received a positive rating were - higher price realization, transparent procedures, higher traded volume, sale process is less complicated and additional facilities like soil testing. The farmers in Panipat rated the less complicated sale process as ‘very useful’ while farmers in Sirsa found lower cost of marketing and soil testing facility to be useful.

However, the assessment of traders is somewhat different from that of farmers. Most of the traders expressed reservations about e-NAM and did not find e-NAM to be much useful in terms of its stated advantages. However, some of its features such as convenient online payment system, higher traded volume and lower marketing costs were rated positively by the traders (Table 6.36).

Table 6.33: Advantages of the e-NAM – Farmers

Advantages of the e-NAM												
District	Sonipat			Panipat			Sirsa			All Districts		
Market	Ganaur			Samalkha			Ellenabad & Sirsa			All Markets		
Advantages	Yes	No	Total	Yes	No	Total	Yes	No	Total	Yes	No	Total
Higher price realization	21	29	50	43	7	50	38	12	50	102	48	150
Lower cost of Marketing	16	34	50	14	36	50	9	41	50	39	111	150
Higher traded volume	14	36	50	13	37	50	6	44	50	33	117	150
Transparent procedures	26	24	50	40	10	50	14	36	50	80	70	150
Sale process is less complicated	25	25	50	40	10	50	16	34	50	81	69	150
Online payment is more convenient	32	18	50	37	13	50	21	29	50	90	60	150
Better facilities for knowing quality of product	28	22	50	41	9	50	13	37	50	82	68	150
Additional facilities like soil testing	15	35	50	13	37	50	18	32	50	46	104	150
Satisfaction of being part of the national market	15	35	50	16	34	50	18	32	50	49	101	150
Advantages of the e-NAM - % distribution												
District	Sonipat			Panipat			Sirsa			All Districts		
Market	Ganaur			Samalkha			Ellenabad & Sirsa			All Markets		
Advantages	Yes	No	Total	Yes	No	Total	Yes	No	Total	Yes	No	Total
Higher price realizations	42	58	100	86	14	100	76	24	100	68	32	100
Lower cost of Marketing	32	68	100	28	72	100	18	82	100	26	74	100
Higher traded volume	28	72	100	26	74	100	12	88	100	22	78	100
Transparent procedures	52	48	100	80	20	100	28	72	100	53	47	100
Sale process is less complicated	50	50	100	80	20	100	32	68	100	54	46	100
Online payment is more convenient	64	36	100	74	26	100	42	58	100	60	40	100
Better facilities for knowing quality of product	56	44	100	82	18	100	26	74	100	55	45	100
Additional facilities like soil testing	30	70	100	26	74	100	36	64	100	31	69	100
Satisfaction of being part of the national Market	30	70	100	32	68	100	36	64	100	33	67	100

Table 6.34: Advantages of the e-NAM – Traders

Advantages of the e-NAM												
District	Sonipat			Panipat			Sirsa			All Districts		
Market	Ganaur			Samalkha			Ellenabad & Sirsa			All Markets		
Advantages	Yes	No	Total	Yes	No	Total	Yes	No	Total	Yes	No	Total
Higher price realization	5	5	10	6	4	10	6	4	10	17	13	30
Lower cost of Marketing	1	9	10	3	7	10	1	9	10	5	25	30
Higher traded volume	5	5	10	4	6	10	3	7	10	12	18	30
Transparent procedures	1	9	10	7	3	10		10	10	8	22	30
Sale process is less complicated	4	6	10	5	5	10	3	7	10	12	18	30
Online payment is more convenient		10	10	3	7	10	2	8	10	5	25	30
Better facilities for knowing quality of product	5	5	10	5	5	10	2	8	10	12	18	30
Satisfaction of being part of the national Market	3	7	10	5	5	10	4	6	10	12	18	30
Advantages of the e-NAM - % distribution												
District	Sonipat			Panipat			Sirsa			All Districts		
Market	Ganaur			Samalkha			Ellenabad & Sirsa			All Markets		
Advantages	Yes	No	Total	Yes	No	Total	Yes	No	Total	Yes	No	Total
Higher price realization	50	50	100	60	40	100	60	40	100	57	43	100
Lower cost of Marketing	10	90	100	30	70	100	10	90	100	17	83	100
Higher traded volume	50	50	100	40	60	100	30	70	100	40	60	100
Transparent procedures	10	90	100	70	30	100		100	100	27	73	100
Sale process is less complicated	40	60	100	50	50	100	30	70	100	40	60	100
Online payment is more convenient		100	100	30	70	100	20	80	100	17	83	100
Better facilities for knowing quality of product	50	50	100	50	50	100	20	80	100	40	60	100
Satisfaction of being part of the national Market	30	70	100	50	50	100	40	60	100	40	60	100

Table 6.35: Usefulness of the advantages of the e-NAM – Farmers

Usefulness of the advantages of the e-NAM																
District	Sonipat				Panipat				Sirsa				All Districts			
Market	Ganaur				Samalkha				Ellenabad & Sirsa				All Markets			
Advantages	Not useful	Useful	Very useful	Total	Not useful	Useful	Very useful	Total	Not useful	Useful	Very useful	Total	Not useful	Useful	Very useful	Total
Higher price realization	5	9	7	21	3	38	2	43	8	23	7	38	16	70	16	102
Lower cost of Marketing	5	6	5	16	2	5	7	14	1	7	1	9	8	18	13	39
Higher traded volume	1	7	6	14		5	8	13		3	3	6	1	15	17	33
Transparent procedures	5	13	8	26		32	8	40	1	3	10	14	6	48	26	80
Sale process is less complicated	8	12	5	25	3	9	28	40	1	6	9	16	12	27	42	81
Online payment is more convenient	8	11	13	32		30	7	37	3	5	13	21	11	46	33	90
Better facilities for knowing quality of product	11	9	8	28	25	7	9	41	1	7	5	13	37	23	22	82
Additional facilities like soil testing	4	7	4	15	2	6	5	13		12	6	18	6	25	15	46
Satisfaction of being part of the national Market	7	5	3	15	1	10	5	16	4	7	7	18	12	22	15	49
Usefulness of the advantages of the e-NAM - % distribution																
District	Sonipat				Panipat				Sirsa				All Districts			
Market	Ganaur				Samalkha				Ellenabad & Sirsa				All Markets			
Advantages	Not useful	Useful	Very useful	Total	Not useful	Useful	Very useful	Total	Not useful	Useful	Very useful	Total	Not useful	Useful	Very useful	Total
Higher price realization	24	43	33	100	7	88	5	100	21	61	18	100	16	69	16	100
Lower cost of Marketing	31	38	31	100	14	36	50	100	11	78	11	100	21	46	33	100
Higher traded volume	7	50	43	100		38	62	100		50	50	100	3	45	52	100
Transparent procedures	19	50	31	100		80	20	100	7	21	71	100	8	60	33	100
Sale process is less complicated	32	48	20	100	8	23	70	100	6	38	56	100	15	33	52	100
Online payment is more convenient	25	34	41	100		81	19	100	14	24	62	100	12	51	37	100
Better facilities for knowing quality of product	39	32	29	100	61	17	22	100	8	54	38	100	45	28	27	100
Additional facilities like soil testing	27	47	27	100	15	46	38	100		67	33	100	13	54	33	100
Satisfaction of being part of the national Market	47	33	20	100	6	63	31	100	22	39	39	100	24	45	31	100

Table 6.36: Usefulness of the advantages of the e-NAM – Traders

Usefulness of the advantages of the e-NAM																
District	Sonipat				Panipat				Sirsa				All Districts			
Market	Ganaur				Samalkha				Ellenabad & Sirsa				All Markets			
Advantages	Not useful	Useful	Very useful	Total	Not useful	Useful	Very useful	Total	Not useful	Useful	Very useful	Total	Not useful	Useful	Very useful	Total
Higher price realization	2		3	5	2	2	2	6	6			6	10	2	5	17
Lower cost of Marketing		1		1	1	1	1	3		1		1	1	3	1	5
Higher traded volume	2	1	2	5		1	3	4			3	3	2	2	8	12
Transparent procedures		1		1	1	3	3	7					1	4	3	8
Sale process is less complicated	1	3		4		2	3	5	1		2	3	2	5	5	12
Online payment is more convenient							3	3			2	2			5	5
Better facilities for knowing quality of product	2	2	1	5	2	2	1	5	1	1		2	5	5	2	12
Satisfaction of being part of the national Market	1	1	1	3	1	2	2	5		2	2	4	2	5	5	12
Usefulness of the advantages of the e-NAM - % distribution																
District	Sonipat				Panipat				Sirsa				All Districts			
Market	Ganaur				Samalkha				Ellenabad & Sirsa				All Markets			
Advantages	Not useful	Useful	Very useful	Total	Not useful	Useful	Very useful	Total	Not useful	Useful	Very useful	Total	Not useful	Useful	Very useful	Total
Higher price realization	40		60	100	33	33	33	100	100			100	59	12	29	100
Lower cost of Marketing		100		100	33	33	33	100		100		100	20	60	20	100
Higher traded volume	40	20	40	100		25	75	100			100	100	17	17	67	100
Transparent procedures		100		100	14	43	43	100					13	50	38	100
Sale process is less complicated	25	75		100		40	60	100	33		67	100	17	42	42	100
Online payment is more convenient							100	100			100	100			100	100
Better facilities for knowing quality of product	40	40	20	100	40	40	20	100	50	50		100	42	42	17	100
Satisfaction of being part of the national Market	33	33	33	100	20	40	40	100		50	50	100	17	42	42	100

Additional Features of e-NAM

Nearly 70% of farmers have reported use of the e-NAM mobile application at some point in time (Table 6.37). This proportion is almost similar in all the mandis in three study districts. Nearly 80% of the farmers who used the e-NAM mobile application also received the SMS after the online payment[1]. Overall, more than 65% of farmers have reported use of e-NAM application 'once in 3 days' (Table 6.39). This share increases to nearly 80% for use 'once in a week'. Nearly half of the farmers replied that the application is 'not so easy to use' and only about 25% found it to be either 'very easy' or 'easy' to use. Similarly, half of the total respondents rated the e-NAM as 'satisfactory' and about one-fourth rated it as 'good'. 80% of the farmers expressed the view that e-NAM is either 'better' or 'much better' than the manual mandis.

All the traders have used the e-NAM mobile application at some point of time (Table 6.38). This is similar in all the mandis in the three selected districts. Only 43% of the traders received the SMS after online payment. About two-thirds of the traders in Sonipat and Panipat replied that they did not receive SMS. The traders' responses are varied across districts in terms of frequency of using e-NAM mobile application (Table 6.40). Half of the traders used the application once in 3 days. Rest of the 40% of traders used the application from4 days to one month. All the traders in Sonipat used the mobile application often, once in 3 days, but in other two districts, 70% or more traders did not use the e-NAM mobile application very often. Nearly 70% of the traders found the application to be either 'not so easy', 'difficult' or 'very difficult' to use. Just 14% of traders rated e-NAM as 'good' or 'very good'. Two-thirds of traders responded that e-NAM is either worse than the manual mandis or there is no change post implementation of e-NAM.

[1]These 80% includes only those farmers who have used online payment post sale through e-NAM.

Table 6.37: Features of the e-NAM – Farmers

Features of the e-NAM						
District	Market	Features	Used e-NAM mobile application		Get SMS after online payment	
			Response	% distribution	Response	% distribution
Sonipat	Ganaur	Yes	35	70	16	73
		No	15	30	6	27
		Total	50	100	22	100
Panipat	Samalkha	Yes	36	72	24	92
		No	14	28	2	8
		Total	50	100	26	100
Sirsa	Ellenabad & Sirsa	Yes	35	70	23	70
		No	15	30	10	30
		Total	50	100	33	100
All Districts	All Markets	Yes	106	71	63	78
		No	44	29	18	22
		Total	150	100	81	100

Table 6.38: Features of the e-NAM – Traders

Features of the e-NAM						
District	Market	Features	used e-NAM mobile application		Get SMS after online payment	
			Response	% distribution	Response	% distribution
Sonipat	Ganaur	Yes	10	100	3	30
		No			7	70
		Total	10	100	10	100
Panipat	Samalkha	Yes	10	100	3	30
		No			7	70
		Total	10	100	10	100
Sirsa	Ellenabad & Sirsa	Yes	10	100	7	70
		No			3	30
		Total	10	100	10	100
All Districts	All Markets	Yes	30	100	13	43
		No			17	57
		Total	30	100	30	100

Table 6.39: Other features of the e-NAM – Farmers

Other features of the e-NAM													
District	Market	How often use the App	Response	% distribution	Is the App convenient to use	Response	% distribution	rate the e-NAM overall	Response	% distribution	Better than manual mandi before	Response	% distribution
Sonipat	Ganaur	Once a day	21	62	Very easy	7	28	Very poor	14	29	Worse	2	4
		Once in 3 days	8	24	Easy	6	24	Poor	13	27	No change	19	38
		Once in a week	2	6	Not so easy	8	32	Satisfactory	16	33	Better	23	46
		Once in a month	1	3	Difficult	4	16	Good	3	6	Much better	6	12
		other	2	6	Very difficult			Very good	3	6			
		Total	34	100	Total	25	100	Total	49	100	Total	50	100
Panipat	Samalkha	Once a day	1	3	Very easy	3	12	Very poor			Worse	1	2
		Once in 3 days	27	75	Easy	5	15	Poor	1	2	No change	3	6
		Once in a week	3	8	Not so easy	26	76	Satisfactory	37	74	Better	42	84
		Once in a month	2	6	Difficult			Good	12	24	Much better	4	8
		other	3	8	Very difficult			Very good					
		Total	36	100	Total	34	100	Total	50	100	Total	50	100
Sirsa	Ellenabad & Sirsa	Once a day	3	9	Very easy			Very poor	2	4	Worse	1	2
		Once in 3 days	9	26	Easy	3	11	Poor	4	8	No change	5	10
		Once in a week	13	37	Not so easy	13	46	Satisfactory	20	42	Better	31	62
		Once in a month	2	6	Difficult	7	25	Good	21	44	Much better	13	26
		other	8	23	Very difficult	5	18	Very good	1	2			
		Total	35	100	Total	28	100	Total	48	100	Total	50	100
All Districts	All Markets	Once a day	25	24	Very easy	10	11	Very poor	16	11	Worse	4	3
		Once in 3 days	44	42	Easy	14	16	Poor	18	12	No change	27	18
		Once in a week	18	17	Not so easy	47	54	Satisfactory	73	50	Better	96	64
		Once in a month	5	5	Difficult	11	13	Good	36	24	Much better	23	15
		other	13	12	Very difficult	5	6	Very good	4	3			0
		Total	105	100	Total	87	100	Total	147	100	Total	150	100

Table 6.40: Other features of the e-NAM – Traders

Other features of the e-NAM													
District	Market	How often use the App	Response	% distribution	Is the App convenient to use	Response	% distribution	rate the e-NAM overall	Response	% distribution	Better than manual mandi before	Response	% distribution
Sonipat	Ganaur	Once a day	2	20	Very easy	2	20	Very poor	3	30	Worse	2	20
		Once in 3 days	8	80	Easy	6	60	Poor	4	40	No change	5	50
		Once in a week			Not so easy	1	10	Satisfactory	3	30	Better	3	30
		Once in a month			Difficult	1	10	Good			Much better		
		other			Very difficult			Very good					
		Total	10	100	Total	10	100	Total	10	100	Total	10	100
Panipat	Samalkha	Once a day	1	10	Very easy			Very poor			Worse		
		Once in 3 days	2	20	Easy			Poor	2	20	No change	3	30
		Once in a week	2	20	Not so easy	5	50	Satisfactory	4	40	Better	4	40
		Once in a month	1	10	Difficult	1	10	Good	2	20	Much better	3	30
		other	4	40	Very difficult	4	40	Very good	2	20			
		Total	10	100	Total	10	100	Total	10	100	Total	10	100
Sirsa	Ellenabad & Sirsa	Once a day	1	10	Very easy			Very poor	5	50	Worse	7	70
		Once in 3 days	1	10	Easy	1	10	Poor	3	30	No change	3	30
		Once in a week	5	50	Not so easy	5	50	Satisfactory	2	20	Better		
		Once in a month	3	30	Difficult	4	40	Good			Much better		
		other			Very difficult			Very good					
		Total	10	100	Total	10	100	Total	10	100	Total	10	100
All Districts	All Markets	Once a day	4	13	Very easy	2	7	Very poor	8	27	Worse	9	30
		Once in 3 days	11	37	Easy	7	23	Poor	9	30	No change	11	37
		Once in a week	7	23	Not so easy	11	37	Satisfactory	9	30	Better	7	23
		Once in a month	4	13	Difficult	6	20	Good	2	7	Much better	3	10
		other	4	13	Very difficult	4	13	Very good	2	7			
		Total	30	100	Total	30	100	Total	30	100	Total	30	100

Suggestions to improve e-NAM

Farmers suggested some improvements for e-NAM as very important. The important suggestions rated by farmers as 'very important' to improve e-NAM are improving the sale process through e-NAM (83%), creating and improving sorting and grading infrastructure (70%), Providing facilities for manual sale also (67%), creating and improving refrigeration facilities (60%), (Table 6.41).Farmers in Sirsa also suggested reducing delay in online transactions (80%) and ensuring single license for the entire country (72%).

The improvements rated as 'very important' by the traders include creating or improving sorting and grading infrastructure (77%), reducing delay in online transactions (77%), creating or improving refrigeration facilities (73%) and improving sale process through e-NAM (67%) - (Table 6.42).

Table 6.41: Suggestions to improve e-NAM – Farmers

Suggestions to improve e-NAM												
District	Sonipat			Panipat			Sirsa			All Districts		
Market	Ganaur			Samalkha			Ellenabad & Sirsa			All Markets		
Suggestions	Important	Very important	Total	Important	Very important	Total	Important	Very important	Total	Important	Very important	Total
Providing guidance / help at the mandi	26	24	50	42	8	50	33	17	50	101	49	150
Improving sale process through e-NAM	13	37	50	9	41	50	4	46	50	26	124	150
Reducing delay in online transactions	16	34	50	37	13	50	10	40	50	63	87	150
Creating/improving sorting & grading infrastructure	20	30	50	9	41	50	17	33	50	46	104	150
Creating/ Improving weighing facilities	22	28	50	34	16	50	21	29	50	77	73	150
Creating / Improving refrigeration facilities	26	24	50	12	38	50	20	30	50	58	92	150
Providing facilities for manual sale also	15	35	50	15	35	50	20	30	50	50	100	150
Ensuring Single license for the entire country	16	34	50	36	14	50	14	36	50	66	84	150
% distribution												
District	Sonipat			Panipat			Sirsa			All Districts		
Market	Ganaur			Samalkha			Ellenabad & Sirsa			All Markets		
Suggestions	Important	Very important	Total	Important	Very important	Total	Important	Very important	Total	Important	Very important	Total
Providing guidance / help at the mandi	52	48	100	84	16	100	66	34	100	67	33	100
Improving sale process through e-NAM	26	74	100	18	82	100	8	92	100	17	83	100
Reducing delay in online transactions	32	68	100	74	26	100	20	80	100	42	58	100
Creating/improving sorting & grading infrastructure	40	60	100	18	82	100	34	66	100	31	69	100
Creating/ Improving weighing facilities	44	56	100	68	32	100	42	58	100	51	49	100
Creating / Improving refrigeration facilities	52	48	100	24	76	100	40	60	100	39	61	100
Providing facilities for manual sale also	30	70	100	30	70	100	40	60	100	33	67	100
Ensuring Single license for the entire country	32	68	100	72	28	100	28	72	100	44	56	100

Table 6.42: Suggestions to improve e-NAM – Traders

Suggestions to improve e-NAM												
District	Sonipat			Panipat			Sirsa			All Districts		
Market	Ganaur			Samalkha			Ellenabad & Sirsa			All Markets		
Suggestions	Important	Very important	Total	Important	Very important	Total	Important	Very important	Total	Important	Very important	Total
Providing guidance / help at the mandi	7	3	10	7	3	10	9	1	10	23	7	30
Improving sale process through e-NAM	4	6	10	2	8	10	4	6	10	10	20	30
Reducing delay in online transactions	3	7	10	1	9	10	3	7	10	7	23	30
Creating/improving sorting & grading infrastructure	2	8	10	4	6	10	1	9	10	7	23	30
Creating/ Improving weighing facilities	4	6	10	6	4	10	2	8	10	12	18	30
Creating / Improving refrigeration facilities	1	9	10	5	5	10	2	8	10	8	22	30
Providing facilities for manual sale also	7	3	10	6	4	10	3	7	10	16	14	30
Ensuring Single license for the entire country	7	3	10	3	7	10	8	2	10	18	12	30
% distribution												
District	Sonipat			Panipat			Sirsa			All Districts		
Market	Ganaur			Samalkha			Ellenabad & Sirsa			All Markets		
Suggestions	Important	Very important	Total	Important	Very important	Total	Important	Very important	Total	Important	Very important	Total
Providing guidance / help at the mandi	70	30	100	70	30	100	90	10	100	77	23	100
Improving sale process through e-NAM	40	60	100	20	80	100	40	60	100	33	67	100
Reducing delay in online transactions	30	70	100	10	90	100	30	70	100	23	77	100
Creating/improving sorting & grading infrastructure	20	80	100	40	60	100	10	90	100	23	77	100
Creating/ Improving weighing facilities	40	60	100	60	40	100	20	80	100	40	60	100
Creating / Improving refrigeration facilities	10	90	100	50	50	100	20	80	100	27	73	100
Providing facilities for manual sale also	70	30	100	60	40	100	30	70	100	53	47	100
Ensuring Single license for the entire country	70	30	100	30	70	100	80	20	100	60	40	100

Chapter 7

Summary and conclusions

This chapter summarises the major findings from the primary as well as secondary data analysis.

Findings from secondary data analysis

The nine major markets selected for the secondary data analysis are Karnal, Ellenabad, Sirsa, Ambala, Sonipat, Kaithal, Panipat, Fatehabad and Pilukhera. The major markets, based on the arrival patterns of different commodities during 2015-16 to 2017-18, are listed in Table 7.1.

Major Markets on the basis of Market arrivals

Table 7.1: Major Markets on the basis of Market arrivals

S.No	Commodity	Major Markets
1	Paddy	Pilukhera, Ambala city and Kaithal
2	Wheat	Pilukhera, Fatehabad, Sirsa and Ambala city
3	Onion	Sirsa, Karnal, Fatehabad and Sonipat
4	Potato	Panipat, Sirsa, Karnal and Sonipat.
5	Tomato	Panipat, Sonipat, Sirsa and Fatehabad.
6	Apple	Ellenabad, Panipat, Sirsa and Fatehabad
7	Mango	Sirsa, Karnal, Fatehabad and Sonipat.
8	Banana	Sirsa and Fatehabad
9	Cotton, Guar and Guar Seed	Sirsa and Ellenabad
10	Mustard	Sirsa, Ellenabad and Fatehabad
11	Cucumber	Panipat, Fatehabad and Sirsa
12	Bottle gourd	Fatehabad, Karnal and Sonipat
13	Barley	Sirsa and Ellenabad

Source: Author's computations from primary (field survey) data. Note: a detailed list is also provided in Appendix I

Table 7.2 shows that six markets out of nine - Fatehabad, Pilukhera, Kaithal, Karnal, Sonipat (except Mango and Tomato) and Panipat (for vegetables) - have reported an increase in market arrival after the implementation of e-NAM. Sirsa (except Wheat) and Ellenabad reported decline in average arrivals for important crops. Onion has registered an increase in market arrival but a decline in prices in five out of nine markets after e-NAM. Arrivals of Bottle gourd increased in three markets.

Price patterns:

Kaithal registered increase in prices of all the varieties of Paddy and Wheat by 10%-34%. In other mandis such as Karnal, Ellenabad, Sirsa and Panipat, most of the crops reported stable price increase after e-NAM. Sonipat reported increase in average prices of some of fruits up-to 46% but prices of some of vegetables have declined. However, no such uniform price patterns have been witnessed in Fatehabad across the commodities. In Pilukhera the market prices of cotton declined by 40% post e-NAM (Table 7.2).

Table 7.2: The change in arrival and prices in post e-NAM period

District	Post e-NAM period			
	Arrivals		Prices	
	Increased	Decreased	Increased	Decreased
Ambala		Mustard, Wheat		
Fatehabad	Bottle gourd, Onion	Banana, Cucumber	Tomato, Bottle gourd	Potato, Apple
Pilukhera	Wheat	Cotton	Paddy	Cotton
Kaithal	Mango, Banana, Potato, Onion, Tomato		Paddy (D.B., Basumathi, 1121)	
Karnal	Bottle gourd, Wheat, Banana, Apple	Cucumber, Mango	Potato, Cucumber, Bottle gourd	Onion, Mango
Panipat	Onion, Tomato, Potato, Apple	Cucumber, Banana	Apple, Basmati 1509, Cucumber	Onion, Potato, Tomato
Ellenabad	Onion, Potato, Mango, Cotton, Banana	Paddy, Barley, Guar	Potato, Barley, Paddy (D.B., Basumathi)	Onion, Guar
Sirsa	Mango, Banana, Wheat, Guar Seed	Paddy, Barley, Mustard	Paddy (D.B.), Barley, Apple, Banana	Onion, Cotton, Mango
Sonipat	Bottle gourd, Onion	Mango	Apple (Delicious), Mango (Dusheri), Potato, Tomato (hybrid)	Onion, Tomato (other)

Price volatility:

Price volatility has been observed to be high in Sonipat, Ambala and Panipat after the implementation of e-NAM (Table 7.3). Karnal also reported high price volatility but it came down post e-NAM. Sirsa, Pilukhera and Kaithal reported very low volatility in market prices. Most of the markets reported very low price volatility for Banana, due to its availability throughout the year.

Onion, Potato, tomato and Mango reported higher price volatility in general, which also increased over time during the post e-NAM period in many markets. On the other hand Paddy, Wheat, Mustard, Barley, Bottle gourd, Cotton, Guar and Guar seed reported low price volatility in general.

Volatility also decreased for Apple in Fathehabad and Karnal markets during the post e-NAM period.

Table 7.3: Price volatility in major Markets

Commodities	Price volatility during post e-NAM		
	Increased (L to H)	Decreased (H to L)	No change (L or H)
Apple		Fatehabad, Karnal	Ellenabad (H), Sirsa (H), Panipat (L), Sonipat (L)
Banana	Sirsa		Ellenabad (L), Fatehabad (L), Karnal (L), Panipat (L), Sonipat (L)
Barley		Sirsa	
Bottle gourd			Fatehabad, Karnal, Sonipat
Cotton			Ellenabad (L), Sirsa (L)
Cucumber	Karnal	Fatehabad, Sonipat	Panipat (H), Sirsa (H)
Guar			Ellenabad (L), Sirsa (L)
Mango			Ellenabad (H), Fatehabad (H), Sirsa (H), Sonipat (L)
Mustard			Ellenabad (L), Sirsa (L)
Onion		Panipat, Sonipat	Ellenabad (H), Fatehabad (H), Sirsa (H), Karnal (L)
Paddy	Sirsa (D.B.)	Ellenabad (D.B.), Kaithal (other)	Kaithal (1121, L), Ellenabad (Basumathi, L), Kaithal (Basumathi, H),Kaithal (D.B., L)
Potato	Panipat, Sonipat	Fatehabad, Karnal	Ellenabad (H), Sirsa (H)
Tomato	Karnal (other)		Sonipat (hybrid, H), Fatehabad (other, H), Panipat (other, H), Sirsa (other, H),Ellenabad (tomato, H)
Wheat			Pillukhera (L), Sirsa (L)

Findings from primary data analysis

Comparative analysis of sale pre and post e-NAM:

Most preferred medium of crop sale by farmers during pre NAM period is commission agents. Almost all the sampled farmers preferred e-NAM platform to sell the crops in post e-NAM period. Although the price per quintal for Wheat remained in the same range as they were pre e-NAM phase, farmers are receiving higher prices for Paddy during post e-NAM. In terms of volume of sale, paddy is the largest crop followed by Cotton and Wheat in the sampled region. Paddy and Wheat are the two major crops traded in Sonipat and Panipat by sampled traders during pre e-NAM period. In terms of volume, Wheat is the preferred crop for by traders followed by Paddy in the pre e-NAM period. The trading is preferred through 'other' commission agents and through 'other' traders. Cotton traders receive the highest price (Rs. 5244 per quintal) and for paddy the prices are Rs. 3150 to Rs. 3350 per quintal in post e-NAM period.

Farmers and traders perception:

Purpose of using e-NAM:

Nearly three-fourths of the farmers and 72% of the traders are using e-NAM for all the three purposes i.e. price checking, sale and online payment. Nearly a quarter of the traders reported that it is very difficult to check prices on e-NAM and this share increases to nearly 80% who felt using e-NAM is either not so easy, difficult or very difficult. However, it is interesting to note that about 50% of the farmers have replied that checking prices is either very easy or easy. This discrepancy in the perceptions of farmers and traders is perhaps indicative of the traders' general perception against the e-NAM. As for sale through e-NAM, about 60% of the farmers and 80% of the traders have responded that it is either not so easy, difficult or very difficult. About making payments on e-NAM, nearly 95% of the traders felt that it is either not so easy, difficult or very difficult. Nearly 90% of farmers and 55% of traders reported that the payment was received within 10 days of sale.

Infrastructure at mandi:

Over three-fourths of the farmers and traders are satisfied with the cleaning and weighing facilities at the mandi. Less than one-third of farmers and traders are satisfied with sorting, drying and grading facilities. The soil testing and cold storage facilities are not available in any of the mandis visited. Most of the farmers and traders are happy with the transparency in the testing process except traders in Panipat. Most of the farmers and traders reported satisfaction with the quality checks for specific parameters. The choice patterns were mostly similar across districts.

Problems faced in using e-NAM:

No guidance or help desk, poor net connectivity, lack of adequate number of computers, difficult online payment process, unfamiliar sale process and inadequate cleaning and sorting facilities are some of the major problems reported by the farmers and the traders. Farmers also faced problems with power failure and lower price than pre e-NAM period. Traders faced problems with higher costs than pre e-NAM, corruption of officials and delay in online payments.

Advantages of e-NAM:

Most of the traders across different mandis did not find e-NAM as better choice in terms of its overall advantages. However, farmers and traders expressed the view that e-NAM is better in terms of higher price realization. Farmers also found e-NAM better in terms of convenience in online payment, better facilities for knowing quality of product, sale process being less complicated and transparent.

Farmers seem to be in favour of e-NAM but the traders are not satisfied with the new marketing procedures. Nearly 70% of sampled farmers and all the sampled traders have used the e-NAM mobile application at some point of time but 80% of the farmers who used the e-NAM mobile application and just 43% of traders received the SMS after the online payment. Nearly 65% of farmers and 50% of traders used e-NAM application once in 3 days. Nearly 70% of the farmers and traders found the application is either not so easy, difficult or very difficult to use. Nearly 80% of farmers felt that e-NAM is either better or much better than the manual mandis but on the other hand two-thirds of the traders responded that e-NAM is either worse than the manual mandis or there is no change in post e-NAM period.

Suggestions to improve e-NAM:

Improving sale process through e-NAM, creating or improving sorting and grading infrastructure, creating or improving refrigeration facilities and reducing delay in online transactions are some of the common suggestions provided by farmers and traders to improve e-NAM.

Policy Implications:

1) Provision of better infrastructural facilities to the farmers and traders at mandi – such as soil testing, refrigeration and storage facilities, creating and improving sorting and grading infrastructure.

2) Addressing the problem areas identified by farmers and traders such as - lack of guidance or help desk, poor net connectivity, power failures and inadequate number of computers, lower price than pre e-NAM, poor road network, difficulty in online payments, inadequate cleaning and sorting facilities, corruption of officials and delay in online payment.

3) The is need to develop price alerts and price monitoring system, especially for seasonal crops such as vegetables and fruits, for which volatility remained either high or increased in majority of the markets.

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Appendix I

Appendix Table A 3.1: Commodity list and share of markets in terms of arrival percentage

Commodity	Markets
Apple	Sirsa, (22%), Panipat, (17%), Ellenabad, (16%), Fatehabad, (15%), New Grain Market(main), Karnal, (15%), Ambala City, (8%), Sonipat, (8%)
Banana	Sirsa, (26%), Kaithal, (24%), Fatehabad, (23%), Panipat, (12%), New Grain Market(main), Karnal, (8%), Sonipat, (6%), Ellenabad, (1%), Ambala City, (1%)
Barley (Jau)	Sirsa, (80%), Ellenabad, (17%), Fatehabad, (2%)
Bottle gourd	Ambala City, (41%), Fatehabad, (32%), New Grain Market (main), Karnal, (17%), Sonipat, (9%)
Cotton	Sirsa, (67%), Ellenabad, (26%), Fatehabad, (7%), Pillukhera, (0%)
Cucumber (Kheera)	Panipat, (29%), Sirsa, (23%), Fatehabad, (21%), Sonipat, (12%), New Grain Market(main), Karnal, (11%), Ambala City, (4%)
Guar	Ellenabad, (95%), Fatehabad, (5%)
Guar Seed(Cluster Beans Seed)	Sirsa, (100%)
Mango	Sirsa, (29%), Kaithal, (25%), Fatehabad, (14%), Sonipat, (13%), New Grain Market(main), Karnal, (11%), Ambala City, (6%), Ellenabad, (2%)
Mustard	Sirsa, (68%), Ellenabad, (25%), Fatehabad, (7%), Ambala City, (0%), Pillukhera, (0%)
Onion	Kaithal, (24%), Panipat, (21%), Sirsa, (19%), New Grain Market(main), Karnal, (11%), Ambala City, (11%), Sonipat, (7%), Fatehabad, (6%), Ellenabad, (2%)
Paddy(Dhan)	Pillukhera, (43%), Kaithal, (28%), Sirsa, (12%), Ambala City, (8%), Fatehabad, (4%), Panipat, (3%), Ellenabad, (2%), New Grain Market(main), Karnal, (0%)
Potato	Panipat, (27%), Kaithal, (20%), Sirsa, (15%), New Grain Market(main), Karnal, (11%), Sonipat, (9%), Fatehabad, (9%), Ambala City, (7%), Ellenabad, (2%)
Tomato	Kaithal, (25%), Sonipat, (16%), Panipat, (15%), Sirsa, (15%), Fatehabad, (12%), New Grain Market(main), Karnal, (8%), Ambala City, (5%), Ellenabad, (4%)
Wheat	Pillukhera, (53%), Sirsa, (13%), Kaithal, (9%), Fatehabad, (8%), Ellenabad, (8%), Ambala City, (5%), Panipat, (3%), New Grain Market(main), Karnal, (2%)

Appendix II

e-NAM in Haryana: General findings and field insights

(*As observed by the team of field investigators during survey*)

- Auction and bidding process should be digitalized and to be made online in all the mandis.
- J- Form for farmers (landlords) issued by the commission agents after bidding and the billing process should be computerized.
- Requirement of technical assistance for e-NAM process at the mandi.
- Digital or unique identity of farmers should be used at the mandi to avoid duplicity.
- Re-bidding system should also be established.
- Payments should reach to farmers on time.
- Farmers usually are not much aware about e-NAM online selling process and also don't feel the flexibility to sell the produce anywhere across the country. They also expect clarity about various transportation costs.
- During harvesting time (peak season) bulk of farmers arrive at mandi at the same time causing server problems at mandis.
- As per the information received from the mandis surveyed, the average arrival shave increased by 2 lakh quintals per season post implementing the e-NAM.

District 1: Sonipat (Sonipat, Gohana and Ganuar)

- There is less interaction of farmers with the e-NAM staff, beside they are connected to the commission agents directly for bidding process usually through their own efforts.
- Assaying process is not including all the parameters and procedures. Assaying should be made easy.
- There is requirement of efficient scientific tools at mandis to reduce the time consumption.
- Rejection of a particular bid due to wrong verification or due to similar problems is not possible during the bidding process. Once approved, it is not possible to change the gate pass credentials for any modification. Also, once the sale bill is issued, it can't be modified at the market committee level for further corrections or improvements.

- The issues related to settlement of bank transfer charges during online payment are also witnessed during initial phase of e-NAM process.
- Lack of digital weighing machines and other such related machines at mandis and their connecting procedures with the e-NAM software, especially in Ganaur mandi.

District 2: Panipat (Panipat main and Samalkha)

- Commission agents with links to market committee staff get preference during bidding and auction processes, compared to other commission agents, by adopting malpractices for selling and purchase of agricultural products.
- Commission agents do not want to get listed with e-NAM and also want to avoid the online payment for paying the market fees imposed by the Marketing committee.
- Tax evasion practices are generally undertaken by the commission agents by showing the reduced volume of agricultural products purchased. This practice is witnessed despite the efforts of government by reducing the tax rate for commission agents (for the farmers) from 9 per cent to 4 percent (2.5 percent).
- The delay in timely pick-up (within 72 hours) of the purchased varieties of paddy (PR & IR-8) by the government agencies impose un-necessary loss on the commission agents in the form of reduced weight of varieties (due to heavy dryness in the environment). This impacts profit margin of the commission agents and they in turn, transfer this loss to the farmers by offering lesser price than warranted. The mandis in the Gharaunda in Haryana and nearby mandis in Punjab possess good procurement arrangements for the IR-8 and PR types of paddy.
- Both the mandis in Panipat do not have proper infrastructure such as boundary walls. This causes improper practices such as sale of the unaccounted produce in the open market (quantity hidden from fair channel of sale).
- Markets do not have a proper gate entry system with electronically measured weighing machines, especially in Panipat Mandi.
- Commission agents informed that few marketing committee members usually indulge in rent-seeking activities based on volume of sale with the support from politically influential and powerful local leaders. They also impede measures such as installing cameras and

construction of boundary walls. A cartel of market committee members and commission agents is a natural outcome of this process, which discourages new entrants (commission agents, millers, farmers etc.) from entering the market.

- Re-showing the once served *pakka bill* by the commission agents at the gate as gate pass (which is received from the miller for a particular date) to practices black marketing/hoarding/hiding the original volume of product.

District 3: Sirsa (Sirsa and Ellenabad)

- The farm size is large and the crops usually brought to the mandis are: paddy, wheat, guar seeds, cotton, millets and pulses (Tur and Urad).
- The agricultural markets in Sirsa and Ellenabad are declared as model markets for implementing the e-NAM system. Both the markets have online weighing bridge system.

Problems faced by the commission agents:

- Problem of picking up the lot sold online by the miller is also highlighted as an important issue.
- Defaulter bidders were found to follow faulty practices to bid up the market prices, which destabilizes the market.
- Procurement and storage of new market arrival is a common problem faced by bulk of the commission agents as the location of Sirsa and Ellenabad markets is a tri-junction for states of Punjab, Rajasthan and Haryana. Storage problems are also faced by the farmers.

Problems faced by the farmers:

- No Timely online payments to the farmers from commission agents for the product. Farmers are also threatened by the commission agents about agitating if the government enforces online payments.
- Small farmers were forced to adopt the traditional (or off-line) sale. Large farmers became commission agents over time in Ellenabad. By this practice, they also became traders and usually force small farmers to avoid the e-NAM system.

- Farmers and commission agents have been following the traditional marketing system for many decades pre e-NAM. Also, commission agents help farmers financially with loans for agriculture and other personal needs such as for marriages, education etc. Commission agents may not support farmers if they opt for online marketing and these long-standing connections may be affected by e-NAM. Also farmers are wary of getting financial support from banks without proper collateral. So they are usually bound to the traditional system of commission agents.

Comments on the draft report

F. No. 4-4/2017-AER-ES

Speed Post

Government of India
Ministry of Agriculture and Farmers Welfare
Department of Agriculture, Cooperation and Farmers Welfare
Directorate of Economics & Statistics
(AER Division)

449, Krishi Bhawan,
New Delhi-110 001
Dated: 19th April, 2018

Subject: Comments /suggestions on draft report of study titled, 'e-NAM: A review of performance and prospects in Haryana'.

As per the Final Work-plan of 2017-18, the coordinated study is being carried out by IEG, Delhi. The draft study report covered all the stated objectives and it is in order, except presentational improvements required in the following indicated areas:

1) Formatting can be improved further in following ways, such as, heading of the table can be center-aligned, the figures used can be comma separated in all tables and graphs, case of letters used in may places can be corrected, tables can be center-aligned, among others.
2) A quick round of editing can further increase the readability of the report by ways of correct grammar in certain places, due spacing, explanatory notes at bottom, punctuation, and by following standard formatting. A sheet is attached with specific observations under above two headings.

The final report may be submitted at the earliest.

(P.C. Bodh)
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Annexure

Table: Formatting and Editing changes proposed from draft study report

S.No.	Page No.	Para no. , Line no.	Observations
			Formatting
1			Heading of table can be centre-aligned
2			Numbers used should be comma-separated in all graphs and tables, with appropriate decimals.
3	21		Table 3.3 and 3.4, Case of 'market' should be capital as in 'Market'.
4	54		Tables can be aligned to centre of the page
5			Paragraphs should follow standard formatting methods of formatting, e.g. beginning a paragraph without indentation, and having indent at places where subject changes.
			Editing
1	3	1,3	Motivating can be replaced with promoting
2	3	2,5	Generates to be changed to generating
3	4	2,1	NAM to be replaced with e-NAM
4	4	4,2	Highlights to highlighted
5	4	4,6	It emphasis to It emphasised
6	9	3,1	'Mandisare' to 'Mandis are'

Action taken on the comments

General comments on 1) formatting and 2) editing

1) i. Tables and their heading have been centre-aligned, as suggested
   ii. Numbers used in Tables and Figures have been comma separated
   iii. Case of the letters have been corrected at suitable places
2) Corrections related to grammar, spacing, explanatory notes, punctuation and standard formatting have been incorporated at suitable places.

Formatting and Editing related changes proposed from draft study report

1. Heading of tables have been centre-aligned in the report
2. Numbers used in Tables and Figures have been comma separated
3. In Table 3.3, Table 3.4 and in other tables along with heading, the word ‘market’ have been replaced with ‘Market’
4. Table and their heading in page no. 54 (now page no. 55), have been centre-aligned
5. Formatting of paragraphs - indentation has been corrected as suggested
6. Editing related comments at different paragraphs in page no’s. 3, 4 and 9 have been corrected

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