

Marketing of Fruits and Vegetables in India: A Study Covering the Ahmedabad, Chennai and Kolkata Markets

Vasant P. Gandhi
N. V. Namboodiri

Abstract

There has been concern in recent years regarding the efficiency of marketing of fruits and vegetables, and that this is leading to high and fluctuating consumer prices and only a small share of the consumer rupee reaching the farmers. Marketing of horticultural crops is complex especially because of perishability, seasonality and bulkiness. The study seeks to examine different aspects of their marketing, focusing particularly, on the wholesale markets for fruits and vegetables which have been established to overcome deficiencies and improve the marketing efficiency. Results indicate that in Ahmedabad the direct contact between commission agents and farmers is very low. For vegetables this is 50 percent and for fruits only 31 percent. Further, in the system of transaction, secret bidding and simple transaction dominate and open auction is relatively rare. In KFWVM, Chennai, the wholesalers act as commission agents and receive consignments directly from producing centers through agents or producers. By and large the system of transaction remains traditional and open auction is rarely seen. This is one major reason for poor efficiency. However, in the small AUS market in Chennai, the farmers sell directly to consumers. The share of farmers in the consumer rupee in Ahmedabad was 41.1 to 69.3 percent for vegetables and 25.5 to 53.2 percent for fruits. In Chennai KFWVM, the farmers' share was 40.4 to 61.4 percent for vegetables and, 40.7 to 67.6 percent for fruits. In the small AUS market in Chennai, where the farmers sell directly to the consumers, the share of farmers was as high as 85 to 95.4 percent for vegetables. This indicates that if there are few or no middlemen, the farmers' share could be much higher. In the Kolkata market the share of farmers ranged from 45.9 to 60.94 percent for vegetables and 55.8 to 82.3 percent for fruits. Thus, the shares are frequently very low, but somewhat better in Chennai, lower in Kolkata and even lower in Ahmedabad. The margin as a percentage of farmer-consumer price difference (an efficiency measure) shows that in Ahmedabad, the margins are very high and range from 69 to 94 percent. In Chennai they range from 15 to 69 percent, and in Kolkata they range from 46 to 73 percent. The high percentage of margin to farmer-consumer price difference is indicative of large inefficiencies and relatively poor marketing efficiency. There is great need to improve the marketing of fruits and vegetables. One important measure would be to bring more markets under regulation and supervision of a well-represented market committee. Another measure would be the promotion and perhaps enforcement of open auctions in the markets. Yet another measure could be efforts to bring more buyers and sellers into the markets, bringing them closer to perfect markets. The direct participation of farmers should be increased. Market infrastructure should be improved through storage (go-down) facilities, cold storages, loading and weighing facilities. Improvement in the road network, and cold-chain facilities are also of substantial importance. Greater transparency of the operations through supervision and systems can also help substantially. The market integration and efficiency can also be improved by making up-to-date market information available to all participants through various means, including a good market information systems, internet and good telecommunications facilities at the markets.

Marketing of Fruits and Vegetables in India: A Study Covering the Ahmedabad, Chennai and Kolkata Markets¹

Vasant P. Gandhi
N. V. Namboodiri

1. Introduction

The efficiency of marketing for fruits and vegetables in India has been of significant concern in the recent years. Poor efficiency in the marketing channels and inadequate marketing infrastructure are believed to be the cause of not only high and fluctuating consumer prices, but also to little of the consumer rupee reaching the farmer (see Kaul 1997, Ashturker and Deole 1985). Indian farmers typically depend heavily on middlemen particularly in fruits and vegetable marketing. The producers and the consumers often get a poor deal and the middlemen control the market, but do not add much value. There is also massive wastage, deterioration in quality as well as frequent mismatch between demand and supply both spatially and over time (Subbanarasiah 1991, Singh M et.al. 1985). In the light of these concerns, studies were taken-up at Ahmedabad (by CMA, IIM, Ahmedabad), Chennai (by Agro-Economic Research Centre, University of Madras, Chennai), Kolkata (by Agro-Economic Research Centre, Visva-Bharati, Santiniketan), and Delhi (by Agro-Economic Research Centre, University of Delhi, Delhi) wholesale markets, under the coordination of CMA, IIM, Ahmedabad. The studies sought to examine various aspects of the marketing of fruits and vegetables in the wholesale markets with a view to improve the marketing efficiency. (The study on the Delhi market was not yet complete.) This paper consolidates the results from Ahmedabad, Chennai, and Kolkata markets.

Fruits and vegetables typically constitute an essential part of the daily diet in India and they are in great demand round the year from most sections of the population. The commercial value of fruits and vegetables in terms of direct consumption, processing as well as trade has

¹ The authors wish to acknowledge with thanks the contributions from the studies done by A. Pushpavalli and M. Lakshminarayanan of the Agro Economic Research Centre, University of Madras, Chennai, and Kazi MB Rahim and Debashis Sarkar of Agro-Economic Research Centre, Visva-Bharti, Shantiniketan. Assistance provided by Suresh Sharma and C.J. Varughese at Ahmedabad is acknowledged with thanks.

risen substantially in recent years. Their economic importance has also increased and high labour intensity in the production of most fruits and vegetables production also makes them important from the employment angle as well (Sharma 1991). Increase in area allocation under horticultural crops has often been suggested as a measure for agricultural diversification, increased employment and income (Malik, 1998).

In light of these issues, this study seeks to examine the market environment for fruits and vegetables in three major cities in the country viz., Ahmedabad, Chennai and Kolkata. It examines various aspects of fruits and vegetable marketing such as market infrastructure, marketing practices, marketing costs etc. in the wholesale markets in the selected cities. The study also made an attempt to identify the prevailing value chain from the Farmer → Pre-harvest contractor → Commission Agent → Wholesaler → Retailer → Consumer in terms of costs, prices and their shares in the selected markets.

1.1 Methodology

The present study is based on information collected from: the market officials of the selected fruits and vegetable markets, commission agents/wholesalers, retailers and farmers in and around the selected cities. The market officials were interviewed/consulted for gathering the information on the overall activities of these markets, marketing infrastructure and other related information. Data were collected from the wholesalers/commission agent, retailers and farmers through structured questionnaires.

The sample in this study for the Ahmedabad market comprised of commission agents, retailers and farmers; for Chennai market the sample comprised of wholesalers, retailers and farmers and for Kolkata market the sample include wholesalers, intermediaries and farmers. Details of the sample are given in Table 1.1

Three regulated markets namely CJ Patel Market (CJP), Sardar Patel Market (SP) and the Naroda Fruit Market were studied from the Ahmedabad city. Number of sample respondents in the CJ Patel market includes 30 commission agents, 28 retailers and 26 farmers. These respondents were dealing with only potato and onion. In Sardar Patel market yard we have interviewed 30 commission agents, 30 retailers and 21 farmers deal with a wide range of vegetables. The Naroda wholesale market deals with only fruits and the sample respondents include 16 commission agents, 18 retailers and 12 farmers. The number of commission agents

interviewed in this study accounts for 19 percent, 26 percent and 13.3 percent of the total commission agents operating in these three markets respectively – CJP, SP and Naroda. On an average day about 100 farmers and 300 traders (retailers) take part in onion and potato trade at the Sardar Patel Market, 60 to 70 farmers and 300 retailers take part in vegetable trade in the CJ Patel Market. In the Naroda Fruit Market the average number of farmers and traders take part in the marketing of fruits is respectively about 8 to 10 and 300.

The vegetables which were selected in the Ahmedabad markets for the sample survey were potato, onion, tomato, cabbage, cauliflower, brinjal, green-pea and lady's finger and the selected fruits were mango, apple, sapota, banana, sweet orange, pineapple and pomegranate. The selection of these commodities was based on their importance in terms of their volume of

Table 1.1: Details of Samples Selected for the Study from Ahmedabad, Chennai and Kolkata Markets

Market	Farmer	Wholesaler/ Commission Agent	Other Intermediary	Retailer	Total
Ahmedabad					
CJ Patel Market	26	30		28	84
Sardar Patel Market	21	30		30	81
Naroda Fruit Market	12	16		18	46
Total	59	76		76	211
Chennai¹					
Koyambedu Wholesale Market(KFVWM)		63		37	100
Ambattur Uzhavar Sandhai(AUS)	20				20
Total	20	63		37	120
Kolkata					
S.S.Hogg Market		4	2	4	10
Posta Market		4	2	4	10
Mechua Fal Patty		4	2	4	10
Total		12	6	12	30

¹ Out of the 63 wholesales-cum-commission agents, 32 deals with vegetables and the rest fruits. Similarly out of 37 retailers, 18 deals with vegetables and the rest 19 deals with fruits. All the 20 farmers deal with vegetables only.

sale in the Ahmedabad wholesale markets. From Chennai two wholesale markets were selected for the detailed study. The vegetables selected from these markets were brinjal, lady's finger, onion, potato, cabbage, cauliflower and tomato, and the fruits selected were mango, apple, sapota, banana, sweet orange (sathukudi) pineapple and pomegranate. There are no regulated markets in Kolkata City. The markets there are controlled by the local municipal marketing authorities. There are 20 wholesale markets in the Kolkata City controlled by the Kolkata Municipal Corporation. Among them six markets deal exclusively with fruits and vegetables. Three markets out of these six have been selected for the present study. The vegetables selected for study in the Kolkata markets were potato, brinjal, lady's finger (okra), cabbage, cauliflower, and tomato, and the fruits selected were mango, pineapple and banana.

2. Overview of Fruit and Vegetable Economy of India

This section gives a brief account of fruits and vegetables economy of India. This is examined in terms of the production and productivity of major fruits and vegetables at the national level as well as in various states. This is followed by a brief account of the present marketing practices that are followed in various parts of the country.

2.1 Fruits and Vegetables Production in India

India now ranks first in the world in the combined production of fruits and vegetables. Out of 370 million tons of fruit production in the world, India accounts for 30 million tons. Of the 450 million tons of vegetables produced in the world, India produces as much as 59 million tons and so India's share in the world's vegetable market is 17 per cent. The horticultural crops in the country presently covers 13.6 million hectares of land, i.e. 7 per cent of the gross cropped area and contributes 18-20 per cent of the gross value of India's agricultural output. India is the largest producer of mango and banana in the world and has fifth position in the production of pineapple and sixth in the production of orange, tenth in the production of apple (Table 2.1). Among major vegetables, India occupies the first position in cauliflower and brinjal production, second in onion, third in cabbage, and sixth in potato in the world.

The diverse soil and climatic conditions in the country makes it possible to cultivate a wide variety of fruits and vegetables in various parts of the country. The total area, production

and yield per hectare and the share of area under fruits in gross cultivated area in different states are shown in Table 2.2. The importance varies substantially from state to state.

Table 2.1: Production of Major Fruits and Vegetables:
India's Position in the World, 1996

Sr. No.	Fruits/ Vegetables	Production (000 MT)		India's Share	India's Rank
		India	World		
Fruits					
1	Mango	10000	19215	52.0	1
2	Banana	15073	55787	27.0	1
3	Apple	1200	53672	2.2	10
4	Pineapple	820	11757	7.0	5
5	Papaya	490	5867	8.4	4
6	Orange	2000	59558	3.4	6
7	Grapes	1083	5004	21.6	8
8	Lime	1700	9104	18.7	1
Vegetables					
1	Tomato	4800	84873	5.7	6
2	Onion	4058	36544	11.1	2
3	Brinjal	8026	11981	67.0	1
4	Potato	17942	294834	6.1	6
5	Green Peas	270	5214	5.2	5
6	Cabbage	3300	46656	7.1	3
7	Cauliflower	4800	12725	37.7	1
8	Garlic	350	10401	3.4	3

Source: Horticultural Statistics, 1999, Department of Horticulture, Chennai and <http://www.Postharvestindia.com/indhrvst/fruits.htm>

In Himachal Pradesh and in the North Eastern states fruits account for a significant share in their gross cultivated area. They are traditionally dominant in fruit cultivation due to favourable agro-climatic conditions.

The yield per hectare of fruits varied from 0.4 MT in Himachal Pradesh to 25.6 MT in Tamil Nadu with a national average of 12 MT. Large variation observed in the yield levels in different states could be mainly attributed to the prevailing soil and climatic conditions besides the varieties of fruits grown.

Table 2.2 : Area, Production and Yield of Fruits in various States in India, 1999-2000

	State	Area (000 ha)	Production (000 MT)	Yield (MT/ha)	Area under Fruits as percent of Gross Cultivated Area
1	Himachal Pradesh	196.6	87.5	0.4	20.23
2	Arunachal Pradesh	44.1	93.1	2.1	17.64
3	Jammu and Kashmir	133.0	1021.0	7.7	12.28
4	Manipur	24.6	118.1	4.8	11.88
5	Mizoram	13.0	40.7	3.1	11.50
6	Meghalaya	26.9	223.3	8.3	10.72
7	Nagaland	19.4	232.3	12.0	7.46
8	Goa	12.3	99.0	8.0	7.28
9	Tripura	30.4	372.1	12.2	6.67
10	Kerala	187.8	1184.5	6.3	6.33
11	Sikkim	5.9	8.6	1.5	4.15
12	Andhra Pradesh	449.2	5175.4	11.5	3.70
13	Tamil Nadu	232.0	5939.6	25.6	3.54
14	Bihar	309.3	3870.7	12.5	3.09
15	Kanataka	315.0	5456.1	17.3	2.69
16	Assam	106.1	1247.1	11.8	2.66
17	Maharashtra	539.8	8688.5	16.1	2.48
18	Orissa	204.9	1202.9	5.9	2.37
19	Gujarat	176.2	2376.0	13.5	1.66
20	West Bengal	130.2	1816.1	13.9	1.41
21	Uttar Pradesh	315.1	3210.5	10.2	1.19
22	Haryana	28.6	212.0	7.4	0.47
23	Punjab	30.1	418.6	13.9	0.37
24	Madhya Pradesh	67.4	1536.1	22.8	0.26
25	Rajasthan	20.0	339.3	17.0	0.09
	All India	3796.8	45496.0	12.0	1.99

Source: Horticultural Statistics, 1999, Department of Horticulture, Chennai and
[http://www. Postharvestindia.com/indhrvst/fruits.htm](http://www.Postharvestindia.com/indhrvst/fruits.htm)

The vegetable cultivation in the country today spread over 7 million hectares which accounts for about 3.14 percent of the gross cultivated area in the country. In West Bengal, Orissa, Bihar as well as the north eastern states vegetables accounted for over 5 percent of the gross cultivated area while in other states it varied from 0.4 percent in Rajasthan to 4.5 percent

in Goa. The yield per hectare of vegetable varied from around 4.5 MT in Mizoram to 27.1 MT in Tamil Nadu with a national average of 15.2 MT (Table 2.3).

Total area, production and yield of fruits and vegetables in the three states, where the selected three cities belong, are shown in Table 2.4. In both Gujarat and West Bengal area under vegetables were more than that of area under fruits and in West Bengal area under vegetables was almost 8 times that of area under fruits. These three states together account for over 14 percent of the total area and 22 percent of total production of fruits in the country. The share of these states is over 25 percent in area and 28 percent in production of vegetables in the country. The yields of fruits and vegetables in these states were above the national average except for vegetables in Gujarat. While fruits accounted for 1.7 percent of the gross cultivated area in Gujarat and 1.4 percent in West Bengal, this was 3.54 percent in Tamil Nadu. While vegetables accounted for 12.2 percent of the Gross cultivated area in West Bengal, this was 3.2 percent in Tamil Nadu and 1.9 percent in Gujarat.

2.2 Fruit and Vegetable Marketing

Marketing of horticultural crops is quite complex and risky due to the perishable nature of the produce, seasonal production and bulkiness. The spectrum of prices from producer to consumer, which is an outcome of demand and supply of transactions between various intermediaries at different levels in the marketing system, is also unique for fruits and vegetables. Moreover, the marketing arrangements at different stages also play an important role in price levels at various stages viz. from farm gate to the ultimate user. These features make the marketing system of fruits and vegetables to differ from other agricultural commodities, particularly in providing time, form and space utilities. While the market infrastructure is better developed for foodgrains, fruits and vegetables markets are not that well developed and markets are congested and unhygienic (Sharan, 1998). The markets in many of the major cities in some states are not covered by market legislation and continue to function under civic body as well as private ownership.

Table 2.3 : Area, Production and Yield of Vegetables in various States, 1999-2000

	State	Area (000 ha)	Production (000 MT)	Yield (MT/ha)	Area under Vegetables as percent of Gross Cultivated Area
1	West Bengal	1122.3	17413.8	15.5	12.19
2	Meghalaya	29.2	252.9	8.7	11.63
3	Orissa	788.1	9096.0	11.5	9.12
4	Nagaland	20.9	235.7	11.3	8.04
5	Mizoram	8.3	56.3	6.8	7.35
6	Sikkim	9.6	43.0	4.5	6.76
7	Arunachal Pradesh	16.9	80.9	4.8	6.76
8	Assam	255.9	3089.4	12.1	6.41
9	Bihar	626.0	9548.8	15.3	6.25
10	Kerala	159.7	2857.1	17.9	5.38
11	Goa	7.6	70.0	9.2	4.50
12	Manipur	9.0	60.8	6.8	4.35
13	Himachal Pradesh	40.6	660.9	16.3	4.18
14	Tripura	18.4	232.8	12.7	4.04
15	Jammu and Kashmir	41.4	584.3	14.1	3.82
16	Tamil Nadu	209.1	5660.3	27.1	3.19
17	Karnataka	361.6	6796.9	18.8	3.09
18	Uttar Pradesh	688.9	13842.4	20.1	2.60
19	Haryana	135.0	2094.5	15.5	2.20
20	Andhra Pradesh	230.1	2839.1	12.3	1.90
21	Gujarat	201.0	2647.0	13.2	1.89
22	Maharashtra	385.3	4828.6	12.5	1.77
23	Punjab	135.4	2285.0	16.9	1.68
24	Madhya Pradesh	258.7	3632.0	14.0	0.99
25	Rajasthan	98.7	472.6	4.8	0.44
	All India	5993.0	90830.7	15.2	3.14

Source: Horticultural Statistics, 1999, Department of Horticulture, Chennai and [http://www. Postharvestindia.com/indhrvst/fruits.htm](http://www.Postharvestindia.com/indhrvst/fruits.htm)

Table 2.4 : Area, Production and Yield of Fruits and Vegetables in Selected States during 1999-2000

Item	Area 000ha, Production 000 MT and Yield MT/ha				Percentage to All India		
	Gujarat	Tamil Nadu	West Bengal	All India	Gujarat	Tamil Nadu	West Bengal
Fruits							
Area	176.2	232.0	130.2	3797	4.64	6.11	3.43
Production	2376.0	5939.6	1816.1	45496	5.22	13.06	3.99
Yield	13.5	25.6	13.9	12.0	112.50	213.33	115.83
Vegetables							
Area	201.0	209.1	1122.3	5993	3.35	3.49	18.73
Production	2647.0	5660.3	17413.8	90831	2.91	6.23	19.17
Yield	13.2	27.1	15.5	15.2	86.84	178.29	101.97

Source: Horticultural Statistics, 1999, Department of Horticulture, Chennai and <http://www.Postharvestindia.com/indhrvst/fruits.htm>

Some studies have shown that producers' share in consumers' rupee is comparatively lower for perishable crops (Saikia, 1985, Singh M, 1985). This could be due to a variety of factors such as number of intermediaries, cost of various market functions rendered by intermediaries, spread of location of the producers and consumers. Further the degree of perishability, variety and quality, and various market imperfections, market infrastructure etc also influence the marketing costs and price levels. Producers' share was found to be relatively high in areas where better infrastructure facilities for marketing were made available. Some studies have cited examples of an improvement in producers' share over a period of time due to improvement in market infrastructure, such as cold storage facilities. On the other hand the low share of consumers' rupee for potato growers in different parts of the country may be due to high margins of intermediaries. Producers' share was also often varies during peak and lean seasons (Subbanarasaiah, 1991). Substantial variation in producers' share in consumers' rupee for fruits and vegetables was also observed even in the same location itself (Garg and Misra, 1976).

In many locations for fresh fruits and vegetables regulated markets are the first destination. Growers send their produce daily to these markets for sale and traders and retailers

buy them for the consumers. Fruits and vegetables arrive from far off places follow different marketing systems. It was also found that the regulated markets benefited farmers in proportion to the effectiveness with which market committees supervise the trading of fruits and vegetable marketing. These findings advocate effective implementation of regulatory measures, improved market infrastructure, and dissemination of market information that could not only improve the marketing of fruits and vegetables but also the share of producers' in consumers' rupee.

Agricultural marketing continued to be plagued by many market imperfections such as inadequate infrastructure, lack of scientific grading system, defective weightment and so on. The basic objective of regulating the marketing of agricultural products was to bring both producer and buyer/trader closer and to the same level of advantage. This would help reduce middlemen and associated costs and margins. Moreover regulated markets are the platform for both producers and buyers to represent their grievances and discuss matters of mutual interest. Market legislation in India covers almost all agricultural commodities. Since regulation of markets is a state subject, the regulatory measures adopted by various states differ though marginally. There are as many as 4000 regulated markets in the country dealing with fruits and vegetables trade. While the market regulation has been successful in some areas to certain extent, it has not often achieved the objectives to the desired level. A large number of wholesale markets, are yet to be brought under the purview of market legislation.

Regulating markets are only the first step to improve the marketing efficiency. Past studies on regulated markets in various parts of the country brought out various inadequacies in the system in terms of their functioning, infrastructure, price realized by farmers and so on. Grading, providing price information at different markets etc. have been neglected by few regulated markets. Few other problems identified are lack of standardised price quotations, disparities in rate of market fees. In some cases it was found that the traders and not the farmers obtained the benefit of the regulated markets. In few regulated markets there were very few traders and hence enough healthy competition was not there and eventually low prices were realised by the farmers. Even in more competitive regulated markets, the market were often not stable. In a study on fruits and vegetable wholesale market in Ahmedabad, the most striking aspect observed was congestion and crowding during business hours. Though the

produce remained only for a few hours in the market significant mechanical damage and contamination can occur in the course of loading, unloading and handling (Sharan, 1998). All these evidences suggest that there is large scope for improving various aspects of fruits and vegetables marketing in the country.

3. Market Infrastructure, Marketing Practices and Patterns

This section examines various aspects of the present marketing practices, market infrastructure and other related aspects of the selected fruits and vegetable markets. While there are several regulated wholesale markets for fruits and vegetables in the Ahmedabad City, no such regulated wholesale markets were reported for fruits and vegetable marketing in Chennai and Kolkata cities. Thus, the sample covered in this study includes both regulated and non-regulated markets.

3.1 Introduction to the selected Markets

Before the establishment of regulated markets in Ahmedabad, wholesale trade in fruits and vegetables was largely controlled by a few traders. Unfair and exploitative practices were common at that time and the market efficiency was very low. Since the establishment of Market Committee in 1948 under the Market Regulation Act, a governing body consisting of representatives of licensed commission agents, farmers, traders, co-operatives and the government have gradually taken control of supervising the fruits and vegetables wholesale trade. This Committee is known as the Agricultural Produce Marketing Committee (APMC) and it controls and administers the regulated markets. Members of this Committee include farmers, traders, cooperative marketing societies, cooperative/commercial banks, officials of local bodies and the government. As of today there are three wholesale market yards in Ahmedabad City for fruits and vegetables administered by the APMC. This study covers all these three markets viz., the Sardar Patel market, outside Jamalpur Gate, Paldi; the Chimanbhai Jivabhai Patel Market Yard at Vasna Octroi Naka; and the Naroda fruit market, Naroda. These wholesale market yards began functioning from 1980, 1996 and 1998 respectively.

In Chennai, there is no regulated wholesale market for fruits and vegetables. Two wholesale markets were selected for the study. They were Koyambedu Fruits and Vegetable Wholesale Market (KFVWM), which is situated at the outskirts of the city, and Ambattur Farmer's Market (AUS) popularly known as Ambattur Ezhawar Sandhai. The Chennai

Metropolitan Development Authority promoted the KFWWM in 1996. The AUS is relatively new and small market and was established only in the year 2000.

In Kolkata too there is no regulated wholesale markets for the sale of fruits and vegetables. There are six wholesale markets in Kolkata City where only vegetables and fruits are handled, and three markets out of them were selected for the study. They are S.S.Hogg Market for vegetables, Posta Market for potato and onion, and Mechua Fal Patty Market for fruits. Besides these wholesale markets, three retails markets namely Ashu Babur Bazar, AB-AC Market and Ananth Nath Deb Bazar were also selected for the study.

3.2 Management of the Selected Markets

The Agricultural Produce Marketing Committee, which controls the Ahmedabad market, consists of 17 members: 8 agriculturists, 4 traders, 2 Government nominees, and 2 members belonging to the cooperative societies and one from the elected local administration. The term of office of the market committee is 4 years and term of the chairman is 2 years. There are also a number of sub-committees for licensing, budget, sanitary, canteen, seasonal agricultural produce, disputes and so on. The representation of farmers, traders and various other related organisations in the APMC enables all participants to represent their grievances, make suggestions to improve the functioning of regulated markets.

In Chennai the Market Management Committee headed by the Chief Administrative Officer of the Chennai Metropolitan Development Authority (CMDA) controls the KFWWM. The members of the Committee include the Commissioner of Chennai Corporation, the Chief Planner, Director of Agricultural Marketing, MLA of the constituency where the market is located, and three wholesale traders from the market. The committee is selected for a 3-year term. At present the staff of CMDA are deputed to the Committee and their salary is being paid by the CMDA. There are three types of staffs working in the Management Committee, namely technical, non-technical and ministerial. Apart from these there are driver, typists etc. working on daily wage basis. The Amabattur Farmer's market (AUS) is under the control of the Secretary, Kancheepuram Market Committee. The number of persons working at the market yard includes one agricultural officer, one assistant, a sweeper and 3 security staff on shift basis.

In West Bengal there is a three-tier marketing structure with primary, secondary and terminal markets. Most of the markets are integrated complexes with grading, packaging and

storage facilities. Single commodity markets are non-existent. As mentioned above, in the Kolkata City there are no regulated markets for the sale of fruits and vegetables and all these markets are controlled by the Municipal Corporation and the Government of West Bengal. No other details about the management of these markets are available.

The year of establishment, plot size and the number of licensed traders operating in the three market yards in Ahmedabad and the two market yards in Chennai are given in Table 3.1. Total registered commission agents, who predominate the licensed traders, in Ahmedabad markets are respectively 159, 115 and 120. The presence of co-operative societies was only 3 and 2 respectively in the Sardar Patel and CJ Patel market yards and in the Naroda fruit market there was no representative of cooperative societies. The CJ Patel Market is the largest in plot size amongst the three, but has fewer numbers of licensed traders and staff. This is mainly because they deal with only two commodities namely potato and onion. The number of commission agents who have registered (or renewed their licenses) during the 1999-2000 were respectively 162, 117 and 120 in the SP, CJP and Naroda fruit markets.

Table 3.1: Year of Establishment, Size of Market Yard and Licensed Traders in the selected Markets

Market	Year of Establishment	Plot size (Sq. Yds)	Number of licensed traders			Office Staff
			Commission Agent	Co-op. Soc.	Others	
Ahmedabad						
Sardar Patel Market	1980	16000	159	3		33
C J Patel Market	1996	50000	115	2	3	10
Naroda Fruits Market	1998	22577	120			9
Chennai						
Koyambedu Market	1996	77 acres				
Ambattur Market	2000	0.86 acres				

Note: The above information is not available for the Kolkata markets

3.3 Market Infrastructure

Various infrastructure facilities available in the selected market yards can be briefly discussed as follows. In CJ Patel market yard there are 120 stalls each measuring 40x20 feet

and 19 shops measuring 20x10 feet each. These stalls are meant for the wholesale trade in potato and onion, and the 19 shops are meant for the sale of agricultural inputs such as seeds, fertilizers and other related agricultural inputs. This market yard is well connected with internal roads: 70 feet wide roads for trade traffic and 30 feet road for private traffic. The market yard is also equipped with a private telephone exchange. There are 3 big gates in the market yard and two of them are for entry and one for exit purposes. The administrative block which houses offices for the stall holders, toilet facilities for general public and stall visitors and canteen facilities. This market is by far the most modern amongst the three market yards for fruits and vegetable trade in Ahmedabad city, and also has a variety of other features, such as conference hall, garden, fountain, kiosk systems, VIP guest-house and internet facility. But what are lacking in this market yard are cold storage and general go-down facilities. Though general go-down facility is not reported as very important by the market functionaries (officials), cold storage facility is indicated as very important, and perhaps would be an excellent addition to the infrastructure of the market. The facilities such as internal roads, streetlight, water supply and sanitary facilities etc are reported as very important by the functionaries. Among the other facilities that are available and considered important by the market officials are rest house for farmers, watchmen, first-aid facilities, banking services and telephone facilities.

The Sardar Patel market is the oldest of the three markets, and is also the main office of the APMC. It has 94 stalls each measuring 42.5x12 feet meant for the commission agents. There are 55 ring stalls functioning in a common shed having an area of 16000 square feet and is used for general commission agent. In addition, there are 32 stalls used for the sale of agricultural inputs and other household items. There are five gates, two each for entry and exit and one for emergency purposes. There are wide roads connecting the market yard from the north and south Gujarat. This market also does not have any cold storage facility or a general go-down, but has almost all other facilities available at the CJP Market.

Naroda Fruits Market is well connected with wide road to the Ahmedabad City and Delhi–Mumbai Road (NH No.8). There are 60 stalls for Commission Agents and 27 stalls for semi-wholesalers and retailers. All the stalls are under private ownership and the APMC has only the administrative control on trading activities. Very few farmers from Gujarat or from other states bring their produce in this market. Fruits generally come here from various parts

of the country through the local traders and commission agents. This market does not have any other facilities except a market office, and internal roads. This market yard has been under private ownership, and only recently the APMC took over.

There are 2344 shops in the Chennai KFWWM, out of this 456 deal with fruits, 1468 stalls with vegetables, 300 stalls with flowers and the rest are lying idle. Merchants own these shops and some are rented out to small traders. Apart from the stalls there are internal roads, service shops and restaurants. The traders operating in these stalls have to obtain license from the committee by paying a prescribed fee of Rs.150 per year and a renewal license fee of Rs.75 per year for three years. Besides maintenance fee of Re.1 per square feet per month is also collected from the traders. There are six vegetable go-downs and one cold storage. There is a bus stand for transportation of commodities, pay and use sanitary facilities, night shelters for workers. The telephone booth in the market has telex, fax and STD facilities, and a fire station outside the market yard. There is a cooperative bank branch as well as a branch of nationalized commercial bank besides a post office.

In the AUS market there are 100 shops each measuring 10' x 8' and the producer-farmers are allotted these shops on first come serve basis. No market fee is levied on them. The market is under the control of Kancheepuram Market Committee. The salient features of this market are: it is situated on the Chennai-Thirupathy highway, it is equipped with telephone facilities, there are stalls run by self-help groups, canteen facilities and facilities for waste disposals which is converted into bio-fertilizers. Weighing machines are provided to the farmers free of cost, and there are electricity and water facilities. There is no license or market fee or entry fee. No such details are available for the Kolkata markets. Study of the market infrastructure in the selected fruits and vegetable markets indicates that the Ahmedabad regulated markets are well equipped but handicapped with the non-availability of general godown and cold storage facilities.

3.4 Market Charges

The prevailing rates of commission, market fees etc. in Ahmedabad markets are given in Table 3.2. The rate of commission, currently at 6 per cent of the value of produce, and the market fee, that is at the rate of 0.5 per cent, are charged from the purchaser. While the

commission amount goes to the trader, the market fee accrues to the APMC. The only exception is that if the seller is from outside the state of Gujarat, the market fee is to be paid by the seller. Apart from these, the APMC also collects funds through other charges, such as weighman charges, carting charges, “marfat” and recording charges. The weighman charges vary depending on the kind of vegetable or fruit in question. The carting charges also vary depending on the station from where the carting is being made. For Chennai and Kolkata, these cost details are not available.

3.5 Sources and Uses of Funds

Table 3.3 shows the sources and uses of funds of APMC. The total annual earnings from the three markets to APMC amount to Rs. 272 lakh during the triennium ending 1999-2000. In the earnings of APMC from the three markets, the largest contribution was from the Sardar Patel Market (46 percent) followed by the CJP Market (38 percent) and lastly the Naroda Fruit Market (16 percent). Among its various sources of income, the market fee dominates at 74 percent in CJP Market, 93 percent in SP Market and 97 percent in Naroda Fruit Market. Income from stall fee was at 20 percent from the CJP Market and 7.5 percent from the SP Market (7.5 percent). Other sources of income, which are of insignificant, are in the form of entry fee, parking fee and canteen fee.

Among these three markets in Ahmedabad, the highest expenditure was reported by the CJP Market, followed by the SP Market, and then the Naroda Fruit Market. The expenditure pattern in the CJP Market showed that the largest share in total expenditure (50.3 per cent) is on electricity followed by 27.7 per cent on salary. In the case of the SP Market, the salary constitutes 47.4 per cent of the expenditure, followed by 35.1 per cent for electricity. In the case of Naroda Fruits Market, 56.6 per cent of the total expenditure goes towards salary, followed by 15.4 per cent for rent. Cleaning expenses are also high in the Naroda Fruit Market, and amount to 13.7 per cent. The total expenditure of APMC in three markets together amounts to Rs. 36.2 lakhs. Thus the sources and uses of funds by the APMC indicated that the excess of income over expenditure is very substantial and therefore excellent viability of the markets.

Table 3.2: Rate of Commission/Market Charges at the APMC, Ahmedabad

Particulars	Rate (Rs.)	Unit	Recoverable from
Commission Charge	6.00	Rs. 100	Purchaser
Market Fee	0.50	Rs. 100	Purchaser
Weighman Charges (Unloading & Tolai)			
Green & Leafy Vegetable	1.00	Upto 30 Kg.	Purchaser
	2.00	31 Kg to 60 Kg	Purchaser
	2.50	61 kg & above	Purchaser
Tomato / Fruits	1.00	One box	Purchaser
Potato / Onions	1.75	Small bag	Purchaser
	2.50	Big bag	Purchaser
From B.G. Station to Market Yard	1.00	Big bag	Purchaser
	0.80	Small bag	Purchaser
From M.G. Station to Market Yard	1.20	Big bag	Purchaser
	1.00	Small bag	Purchaser
Marfat			
Goods Train	0.05	One bag	Purchaser
Passenger Train	0.10	One bag	Purchaser
Recording Charges	0.01	One bag	Purchaser

Source: Same as in Table 3.1

The sources of funds of the KFWWM consist of entry fee, registration fee, license fee, maintenance fee from the shops, collection from toilets, and rent received from the godowns. The major heads under which funds are being utilized are electrical and civil maintenance, cleaning, and advertisement. Other details are not available for Chennai and Kolkata markets.

3.6 Market Arrival/Sale of Fruits and Vegetables

A brief account of the sale/market arrival of vegetables and their average prices during 1949/50 to 1998/99 in the Ahmedabad wholesale markets is given in Table 3.4. The sale/arrival of vegetables in the Ahmedabad market yards have increased from a low of 52 thousand tonnes in 1949/50 to nearly 700 thousand tonnes by late nineties. The average nominal prices also show a many fold increase viz., from Rs.25 per quintal to Rs.552 per quintal. While the growth in market arrival/sale was very modest in the 1960s and 1970s, high growth in market arrival/sale was observed during 1980s and 1990s.

Table 3.3 : Sources and Uses of Funds of the Marketing Committee
in APMC, Ahmedabad Markets

Sources of Funds	Average for 1997-98 to 1999-2000	Percent age	Uses of Funds	Average for 1997-98 to 1999-2000	Percent age
CJ Patel Market					
1. License Fee	27,483.33	0.32	1. Salary	529,705.52	27.74
2. Market Fee	6,398,959.79	73.62	2. Electric Exp.	961,084.67	50.33
3. Stall Fee	1,750,003.52	20.13	3. Municipal Tax	190,459.00	9.97
4. Rent for open space	72,630.83	0.84	4. Maintenance Exp.	130,536.73	6.84
5. Vehicle Entry Fee	420,036.00	4.83	5. Cleaning Exp.	64,483.00	3.38
6. Canteen Fee	35,000.00	0.40	6. Land Revenue	50,162.00	2.63
Total Income	8,692,446.81	100.00	Total Expenses	1,909,710.26	100.00
Sardar Patel Market					
1. License Fee	32,950.00	0.27	1. Salary	755,404.13	47.41
2. Market Fee	11,529,139.85	93.29	2. Electric Exp.	558,664.58	35.06
3. Stall Fee	930,603.33	7.53	3. Municipal Tax	53,805.50	3.38
4. Cleaning Fee	44,200.00	0.36	4. Maintenance Exp.	135,171.82	8.48
5. Vehicle Entry Fee	659,208.33	5.33	5. Cleaning Exp.	86,396.00	5.42
6. Sources of Funds	Average	Percent age	6. Land Revenue	6,099.00	0.38
7. Parking Fee	69,625.25	0.56	Total Expenses	1,593,508.04	100.00
8. Canteen Fee	31,000.00	0.25			
9. Electric Charge	143,084.95	1.16			
Total Income	12,358,575.15	100.00			
Naroda Fruits Market:					
1. License Fee	24,066.67	0.39	1. Rent	135,000.00	15.37
2. Market Fee	5,998,142.03	96.58	2. Salary	496,795.53	56.55
3. Vehicle Entry Fee	175,151.83	2.82	3. Electric Exp.	44,036.50	5.01
4. Parking Fee	14,000.00	0.23	4. Maintenance Exp.	82,687.54	9.41
5. Canteen Fee	6,000.00	0.10	5. Cleaning Exp.	119,991.40	13.66
6. Total Income	6,210,693.86	100	Total Expenses	878,511.64	100.00

Table 3.5 and Figure 3.1 show the market arrival of major vegetables in the Ahmedabad regulated market yards during 1999-2000. The APMC records the market arrival of 35 commodities. Among them Potato holds the top position in terms of sale/market arrival followed by onion and tomato. Their market arrival during 1999-2000 was respectively 207, 124 and 65 thousand tonnes. Among other major vegetables whose sale/market arrival that are recorded by APMC are cabbage, cauliflower, green-chillies, brinjal, ginger, green-pea and lady's finger.

Table 3.6 and figure 3.1 and 3.2 gives the data on sale/market arrival of fruits in the Naroda regulated market yard where 24 different types of fruits are recorded. In terms of

quantity handled, the top most positions are occupied by mango (55.5 thousand tonnes), apple (45.1 thousand tonnes) followed by green-coconut, sweet orange, pineapple, sapota and pomegranate. Although banana is one of the major fruits consumed in the Ahmedabad city area, but only a small quantity is traded through the regulated market yard and hence it ranks only 13th among the 24 fruits of which sale/arrival have been recorded. These details are not available for the Chennai and Kolkata markets.

Table 3.4: Market Arrival & Average Price of all Vegetables in APMC, Ahmedabad Markets, 1949-50 to 1998-99

Year	Arrivals (Quintals)	Average rate (Rs./Qtl.)	Three year Moving Average Arrival (Quintal)	Three Year Moving Average Price
1949-50	521,242	25.00		
1950-51	541,424	25.00		
1951-52	563,140	28.50	541,935.33	26.17
1952-53	635,600	25.00	580,054.67	26.17
1953-54	654,790	21.00	617,843.33	24.83
1954-55	647,377	21.50	645,922.33	22.50
1955-56	647,899	23.00	650,022.00	21.83
1956-57	775,739	23.50	690,338.33	22.67
1957-58	804,809	24.00	742,815.67	23.50
1958-59	823,623	27.00	801,390.33	24.83
1959-60	890,106	28.00	839,512.67	26.33
1960-61	878,072	29.50	863,933.67	28.17
1961-62	937,546	31.62	901,908.00	29.71
1962-63	1,064,766	30.50	960,128.00	30.54
1963-64	1,067,500	37.25	1,023,270.67	33.12
1964-65	1,171,600	39.41	1,101,288.67	35.72
1965-66	1,358,133	42.50	1,199,077.67	39.72
1966-67	1,272,451	50.50	1,267,394.67	44.14
1967-68	1,367,884	43.60	1,332,822.67	45.53
1968-69	1,360,520	45.05	1,333,618.33	46.38
1969-70	1,385,937	55.00	1,371,447.00	47.88
1970-71	1,474,587	50.90	1,407,014.67	50.32
1971-72	1,705,790	60.00	1,522,104.67	55.30
1972-73	1,900,555	60.00	1,693,644.00	56.97
1973-74	1,905,429	70.00	1,837,258.00	63.33
1974-75	1,900,921	78.00	1,902,301.67	69.33
1975-76	1,801,757	74.00	1,869,369.00	74.00

Table 3.4 contd...				
Year	Arrivals (Quintals)	Average rate (Rs./Qtl.)	Three year Moving Average Arrival (Quintal)	Three Year Moving Average Price
1976-77	2,011,521	80.00	1,904,733.00	77.33
1977-78	2,037,051	82.00	1,950,109.67	78.67
1978-79	2,089,817	82.00	2,046,129.67	81.33
1979-80	2,472,125	90.00	2,199,664.33	84.67
1980-81	2,682,612	106.80	2,414,851.33	92.93
1981-82	3,103,382	110.00	2,752,706.33	102.27
1982-83	3,243,282	136.85	3,009,758.67	117.88
1983-84	3,503,603	128.87	3,283,422.33	125.24
1984-85	3,137,856	135.00	3,294,913.67	133.57
1985-86	3,755,183	145.45	3,465,547.33	136.44
1986-87	3,862,307	175.00	3,585,115.33	151.82
1987-88	4,164,865	185.00	3,927,451.67	168.48
1988-89	4,268,098	178.00	4,098,423.33	179.33
1989-90	4,859,523	190.00	4,430,828.67	184.33
1990-91	4,626,135	248.00	4,584,585.33	205.33
1991-92	4,554,706	260.00	4,680,121.33	232.67
1992-93	4,295,387	284.00	4,492,076.00	264.00
1993-94	4,962,670	315.00	4,604,254.33	286.33
1994-95	5,129,892	351.00	4,795,983.00	316.67
1995-96	5,289,806	421.00	5,127,456.00	362.33
1996-97	6,884,126	359.00	5,767,941.33	377.00
1997-98	6,638,799	527.00	6,270,910.33	435.67
1998-99	6,109,258	552.00	6,544,061.00	479.33

Source: Based on data obtained from APMC

Table 3.5: Arrival of different Vegetables in CJP and SP Market Yards
of Ahmedabad (1999-2000)

(Quintals)

Vegetables	Quantity	Rank
1. Potato	2,069,080	1
2. Onion	1,236,773	2
3. Tomato	648,675	3
4. Cabbage	307,023	4
5. Cauliflower	200,823	6
6. Brinjal	170,620	7
7. Green pea	132,089	9
8. Lady's fingers	102,842	10
9. Green Chillies	260,062	5
10. Ginger	145,572	8
11. Giloda	91,944	11
12. Gavar	78,300	12
13. Cucumber	73,605	13
14. Gourd	70,488	14
15. Karela	51,700	15
16. Choli	48,560	16
17. Valor	43,034	17
18. Lemon	37,537	18
19. Bulbous – root	37,248	19
20. Green Onion	30,820	20
21. Sweet potato	30,045	21
22. Tuber	25,324	22
23. Galka	16,715	23
24. Turiya	15,692	24
25. Parvar	10,788	25
26. Saragavo	10,618	26
27. Garlic (Green)	8,348	27
28. Tinsa	6,921	28
29. Fanasi	6,589	29
30. Yam	5,402	30
31. Pumpkin	5,158	31
32. Garlic (Dry)	3,795	32
33. Papdi	3,313	33
34. Mogari	3,285	34
35. Green tomato	1,272	35

Source: Based on data obtained from APMC

Table 3.6: Arrival of different Fruits in the Naroda Market Yard
in Ahmedabad (1999-2000)

(Quintals)

Fruits	Quantity	Rank
1. Mango	555,381	1
2. Apple	451,169	2
3. Chiku	136,177	6
4. Banana	11,872	13
5. Mosambi	175,729	4
6. Pine-apple	151,231	5
7. Pomegranate	132,742	7
8. Green coconut	255,366	3
9. Grape	64,600	8
10. Pear (Naspati)	49,178	9
11. Berry (Bor)	31,268	10
12. Papaya	22,641	11
13. Orange	17,682	12
14. Water-melon	9,345	14
15. Rasbary Pluns	6,183	15
16. Alu Bukhara	5,150	16
17. Custard-apple	4,471	17
18. Guava	1,610	18
19. Babugosa	1,363	19
20. Cherry	886	20
21. Malberry	450	21
22. Strawberry	158	22
23. Fig	51	23
24. Musk-melon	22	24

Source: Based on data obtained from APMC

Figure 3.1: Arrival of Selected Vegetables in Ahmedbad APMC Markets (1999-2000)

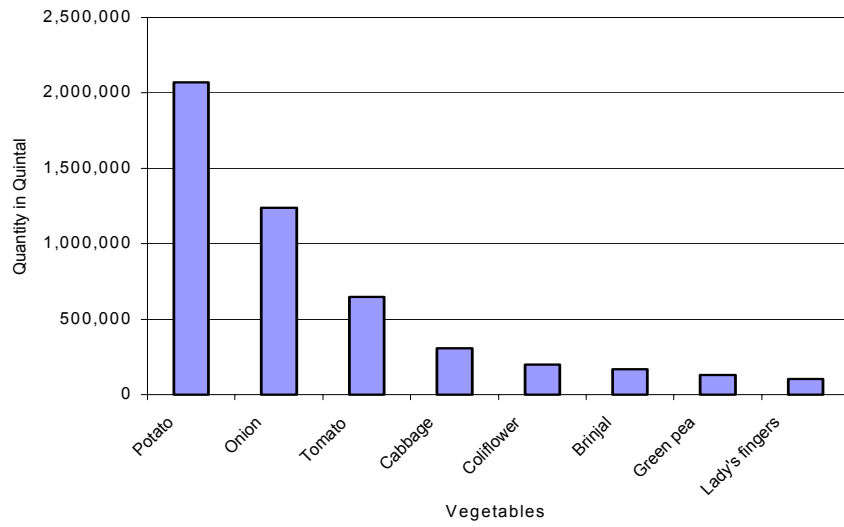
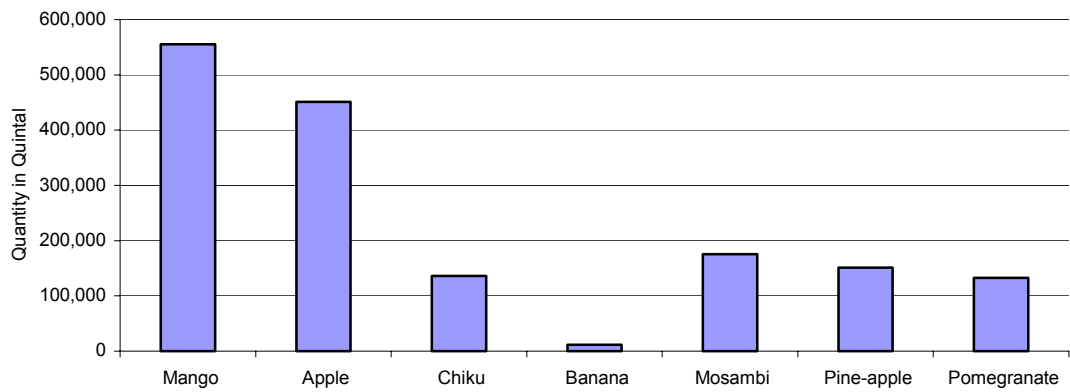


Figure 3.2: Arrival of Selected Fruits in APMC Markets (1999-2000)



3.7 Monthly Sales Pattern of Selected Fruits and Vegetables

This section examines the monthly sales/arrival pattern of selected vegetables and fruits in the selected markets. Fruits and vegetables sales are highly seasonal and this is accompanied with large fluctuation in their prices. The seasonality in the arrival/sale of the selected fruits and vegetables were examined with the help of monthly seasonal index. This index is arrived by expressing monthly sale/arrival of a given month to annual average sale/arrival per month expressed in percentage terms.

The monthly sales pattern of selected vegetables in the Ahmedabad city markets are given in Tables 3.7 to 3.13 and Figures 3.3 and 3.4. Monthly sales/arrival pattern expressed in terms of monthly seasonal indices for potato and onion showed less variation over months except for potato while December and March showed a slightly higher volume of transaction compared to other months with monthly indices of 141.1 and 127.3. For onion, sale/arrival during the months of March and April were the peak months with the seasonal indices of 135 and 140.3 whereas August showed the least with 57. For tomato, while September, December and January are the peak months and July is the lean months with least amount of sales. But the sales of cauliflower and green-pea were largely confined to three to four months. Therefore, based on the monthly seasonal indices, variation in monthly sale/arrival, the selected vegetables could be grouped into three categories, viz. low, medium and high seasonality. While potato, onion, tomato and brinjal fall in the low seasonality category, cabbage and lady's finger fall in the medium seasonality category, and cauliflower and green-pea in high seasonality category.

The monthly sales pattern of selected fruits in the Naroda Fruit Markets are given in tables 3.14 to 3.17 and figures 3.5 and 3.6. Among the selected fruits, mango shows extreme seasonality with 46 per cent of the annual sale during the month of May and 25 percent (monthly index of 308.5) during June. No sale is recorded from September to January. Similarly apple also show considerable seasonality, but lesser than mango. July to October is the peak months with a share of over 65 percent of the annual sales. High volume of sale in the case of banana was observed during August, September, and October but only a small share of total banana sold in the city is routed through the regulated market. The sale of sapota is fairly spread-out over all months except September, October and July. Similar is the case of Mosambi. While April to August are the lean months for the sale of pineapple, for pomegranate

Table 3.7 : Average Monthly Sale/Arrival of Onion and Potato
in Ahmedabad CJP Market

(Quantity in Quintals)

Month	Onion			Potato		
	Sale/ Arrival	Seasonal Index	Percent Share	Sale/ Arrival	Seasonal Index	Percent Share
October	100576	96.6	8.1	134107	82.2	6.9
November	96962	93.1	7.8	163886	100.5	8.4
December	120406	115.7	9.6	207655	127.3	10.6
January	109747	105.4	8.8	186317	114.3	9.5
February	90874	87.3	7.3	149521	91.7	7.6
March	140568	135.0	11.3	230097	141.1	11.8
April	146068	140.3	11.7	157114	96.4	8.0
May	118962	114.3	9.5	170957	104.8	8.7
June	95463	91.7	7.6	147511	90.5	7.5
July	85073	81.7	6.8	150669	92.4	7.7
August	59301	57.0	4.7	126544	77.6	6.5
September	85324	82.0	6.8	132327	81.2	6.8
Average	104110	100	100	163059	100	100

Table 3.8: Average Monthly Sale/Arrival of Tomato and Cabbage
in Ahmedabad SP Market

(Quantity in Quintals)

Month	Tomato			Cabbage		
	Sale/ Arrival	Seasonal Index	Percent Share	Sale/ Arrival	Seasonal Index	Percent Share
October	53016	92.2	7.7	31100	113.5	9.5
November	45841	79.7	6.6	31018	113.2	9.4
December	73332	127.5	10.6	33068	120.7	10.1
January	62150	108.1	9.0	39767	145.1	12.1
February	51144	88.9	7.4	30183	110.1	9.2
March	60247	104.7	8.7	28941	105.6	8.8
April	57466	99.9	8.3	27764	101.3	8.4
May	51703	89.9	7.5	22646	82.6	6.9
June	49243	85.6	7.1	15013	54.8	4.6
July	38911	67.7	5.6	15478	56.5	4.7
August	67743	117.8	9.8	19597	71.5	6.0
September	79411	138.1	11.5	34286	125.1	10.4
Average	57517	100.0	100	27405	100.0	100

Table 3.9 : Average Monthly Sale/Arrival of Cauliflower and Brinjal
in Ahmedabad SP Market

(Quantity in Quintals)

Month	Cauliflower			Brinjal		
	Sale/ Arrival	Seasonal Index	Percent Share	Sale/ Arrival	Seasonal Index	Percent Share
October	15921	88.7	7.4	15285	105.0	8.8
November	23085	128.6	10.7	17272	118.7	9.9
December	26724	148.9	12.4	22419	154.0	12.8
January	31687	176.5	14.7	20992	144.2	12.0
February	28719	160.0	13.3	13537	93.0	7.8
March	31541	175.7	14.6	15937	109.5	9.1
April	26697	148.7	12.4	12561	86.3	7.2
May	8576	47.8	4.0	10138	69.6	5.8
June	1501	8.4	0.7	10039	69.0	5.7
July	2771	15.4	1.3	12083	83.0	6.9
August	7696	42.9	3.6	11600	79.7	6.6
September	10521	58.6	4.9	12809	88.0	7.3
Average	17953	100.0	100	14556	100.0	100.0

Table 3.10 : Average Monthly Sale/Arrival of Green Pea and Lady's Finger
in Ahmedabad SP Market

(Quantity in Quintals)

Month	Green Pea			Lady's Finger		
	Sale/ Arrival	Seasonal Index	Percent Share	Sale/ Arrival	Seasonal Index	Percent Share
October	555	4.6	0.4	11847	134.7	11.2
November	5062	42.2	3.5	9202	104.6	8.7
December	24562	204.9	17.1	5636	64.1	5.3
January	30231	252.3	21.0	2060	23.4	2.0
February	33798	282.0	23.5	2743	31.2	2.6
March	29764	248.4	20.7	8665	98.5	8.2
April	14050	117.2	9.8	11850	134.7	11.2
May	2891	24.1	2.0	12320	140.0	11.7
June	1595	13.3	1.1	10624	120.8	10.1
July	407	3.4	0.3	8355	95.0	7.9
August	593	5.0	0.4	9887	112.4	9.4
September	306	2.6	0.2	12385	140.8	11.7
Average	11984	100.0	100	8798	100	100

Table 3.11 : Average Monthly Sale/Arrival of Cauliflower and Brinjal
in Ahmedabad SP Market

(Quantity in Quintals)

Month	Cauliflower			Brinjal		
	Sale/ Arrival	Seasonal Index	Percent Share	Sale/ Arrival	Seasonal Index	Percent Share
October	15921	88.7	7.4	15285	105.0	8.8
November	23085	128.6	10.7	17272	118.7	9.9
December	26724	148.9	12.4	22419	154.0	12.8
January	31687	176.5	14.7	20992	144.2	12.0
February	28719	160.0	13.3	13537	93.0	7.8
March	31541	175.7	14.6	15937	109.5	9.1
April	26697	148.7	12.4	12561	86.3	7.2
May	8576	47.8	4.0	10138	69.6	5.8
June	1501	8.4	0.7	10039	69.0	5.7
July	2771	15.4	1.3	12083	83.0	6.9
August	7696	42.9	3.6	11600	79.7	6.6
September	10521	58.6	4.9	12809	88.0	7.3
Average	17953	100.0	100	14556	100.0	100.0

Table 3.12 : Average Monthly Sale/Arrival of Green Pea and Lady's Finger
in Ahmedabad SP Market

(Quantity in Quintals)

Month	Green Pea			Lady's Finger		
	Sale/ Arrival	Seasonal Index	Percent Share	Sale/ Arrival	Seasonal Index	Percent Share
October	555	4.6	0.4	11847	134.7	11.2
November	5062	42.2	3.5	9202	104.6	8.7
December	24562	204.9	17.1	5636	64.1	5.3
January	30231	252.3	21.0	2060	23.4	2.0
February	33798	282.0	23.5	2743	31.2	2.6
March	29764	248.4	20.7	8665	98.5	8.2
April	14050	117.2	9.8	11850	134.7	11.2
May	2891	24.1	2.0	12320	140.0	11.7
June	1595	13.3	1.1	10624	120.8	10.1
July	407	3.4	0.3	8355	95.0	7.9
August	593	5.0	0.4	9887	112.4	9.4
September	306	2.6	0.2	12385	140.8	11.7
Average	11984	100.0	100	8798	100	100

Table 3.13 : Average Monthly Sale/Arrival of Green Pea and Lady's Finger
in Ahmedabad SP Market

(Quantity in Quintals)

Month	Green Pea			Lady's Finger		
	Sale/ Arrival	Seasonal Index	Percent Share	Sale/ Arrival	Seasonal Index	Percent Share
October	555	4.6	0.4	11847	134.7	11.2
November	5062	42.2	3.5	9202	104.6	8.7
December	24562	204.9	17.1	5636	64.1	5.3
January	30231	252.3	21.0	2060	23.4	2.0
February	33798	282.0	23.5	2743	31.2	2.6
March	29764	248.4	20.7	8665	98.5	8.2
April	14050	117.2	9.8	11850	134.7	11.2
May	2891	24.1	2.0	12320	140.0	11.7
June	1595	13.3	1.1	10624	120.8	10.1
July	407	3.4	0.3	8355	95.0	7.9
August	593	5.0	0.4	9887	112.4	9.4
September	306	2.6	0.2	12385	140.8	11.7
Average	11984	100.0	100	8798	100	100

Table 3.14 : Average Monthly Sale/Arrival of Mango and Apple
in Ahmedabad Naroda Fruit Market

(Quantity in Quintals)

Month	Mango			Apple		
	Sale/ Arrival	Seasonal Index	Percent Share	Sale/ Arrival	Seasonal Index	Percent Share
October	0	0.0	-	36841	130.2	10.8
November	0	0.0	-	41113	145.3	12.1
December	6	0.0	0.0	30764	108.7	9.1
January	73	0.2	0.0	12143	42.9	3.6
February	1036	2.8	0.2	10080	35.6	3.0
March	4877	13.3	1.1	3812	13.5	1.1
April	45180	123.1	10.3	2324	8.2	0.7
May	203245	553.7	46.1	9527	33.7	2.8
June	113222	308.5	25.7	11381	40.2	3.4
July	64393	175.4	14.6	39549	139.7	11.6
August	8421	22.9	1.9	87964	310.8	25.9
September	0	0.0	-	54100	191.2	15.9
Average	36704	100.0	100	28300	100.0	100

Table 3.15 : Average Monthly Sale/Arrival of Sapota and Banana
in Ahmedabad Naroda Fruit Market

(Quantity in Quintals)

Month	Sapota			Banana		
	Sale/ Arrival	Seasonal Index	Percent Share	Sale/ Arrival	Seasonal Index	Percent Share
October	2450	28.8	2.4	1307	137.8	11.5
November	6934	81.5	6.8	405	42.7	3.6
December	20439	240.3	20.0	198	20.9	1.7
January	12805	150.5	12.5	121	12.8	1.1
February	8822	103.7	8.6	355	37.4	3.1
March	8907	104.7	8.7	761	80.3	6.7
April	5646	66.4	5.5	105	11.0	0.9
May	10420	122.5	10.2	526	55.4	4.6
June	8560	100.6	8.4	1116	117.7	9.8
July	4457	52.4	4.4	1018	107.3	8.9
August	8331	97.9	8.2	3282	346.0	28.8
September	4313	50.7	4.2	2188	230.7	19.2
Average	8507	100.0	100	948	100.0	100

Table 3.16 : Average Monthly Sale/Arrival of Sweet Orange and Pineapple
in Ahmedabad Naroda Fruit Market

(Quantity in Quintals)

Month	Sweet Orange			Pineapple		
	Sale/ Arrival	Seasonal Index	Percent Share	Sale/ Arrival	Seasonal Index	Percent Share
October	8051	97.6	8.1	7595	103.8	8.6
November	5212	63.2	5.3	11056	151.1	12.6
December	4684	56.8	4.7	10318	141.0	11.7
January	12232	148.3	12.4	8749	119.5	10.0
February	6261	75.9	6.3	18398	251.4	20.9
March	4401	53.3	4.4	9816	134.1	11.2
April	7086	85.9	7.2	3543	48.4	4.0
May	9525	115.5	9.6	1904	26.0	2.2
June	5238	63.5	5.3	2351	32.1	2.7
July	8296	100.6	8.4	2290	31.3	2.6
August	13155	159.5	13.3	5068	69.2	5.8
September	14860	180.1	15.0	6738	92.1	7.7
Average	8250	100.0	100	7319	100.0	100

Table 3.17 : Average Monthly Sale/Arrival of Pomegranate
in Ahmedabad Naroda Fruit Market

(Quantity in Quintals)

Month	Pomegranate		
	Sale/Arrival	Seasonal Index	Percent Share
October	20073	201.4	16.8
November	23097	231.7	19.3
December	10362	104.0	8.7
January	7803	78.3	6.5
February	6934	69.6	5.8
March	3071	30.8	2.6
April	2066	20.7	1.7
May	5208	52.3	4.4
June	3924	39.4	3.3
July	10006	100.4	8.4
August	15516	155.7	13.0
September	11542	115.8	9.7
Average	9967	100.0	100

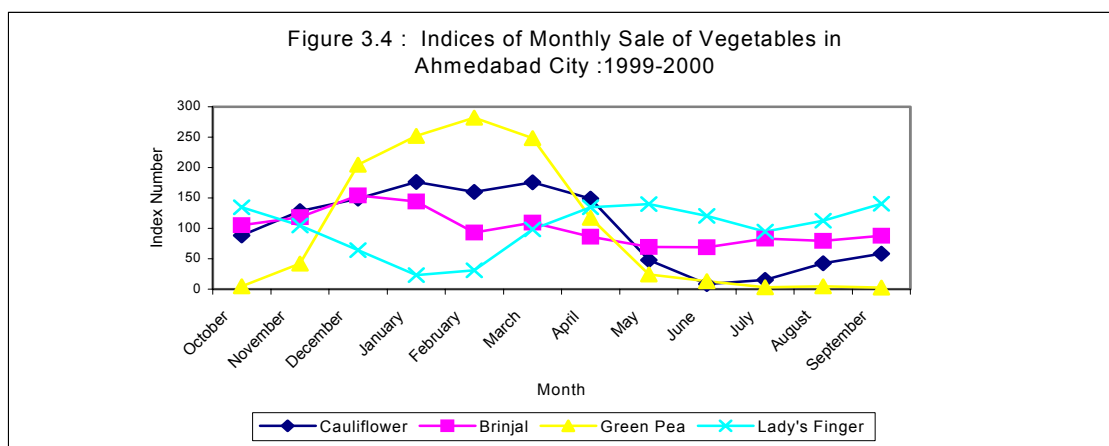


Figure 3.3: Indices of Monthly Sale of Vegetables in Ahmedabad City 1999-2000

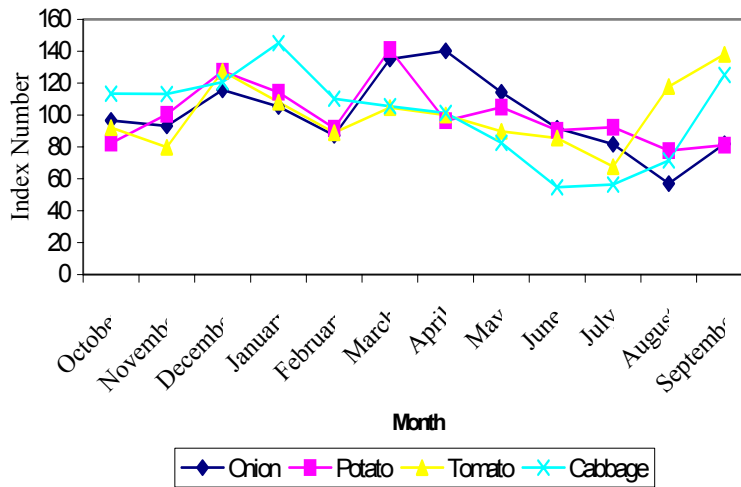
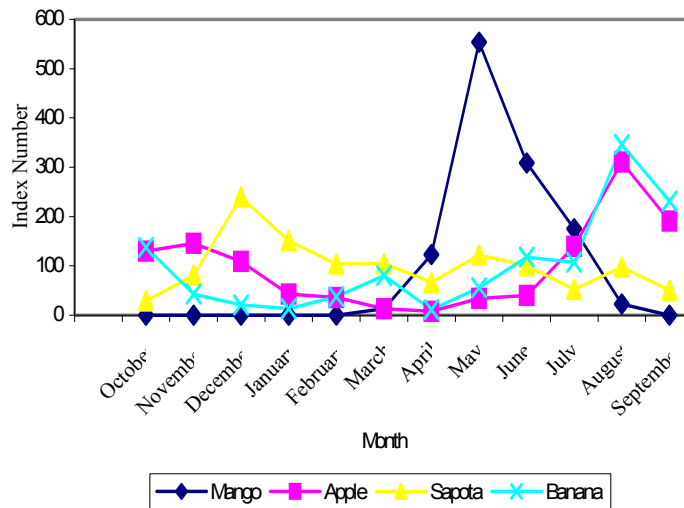
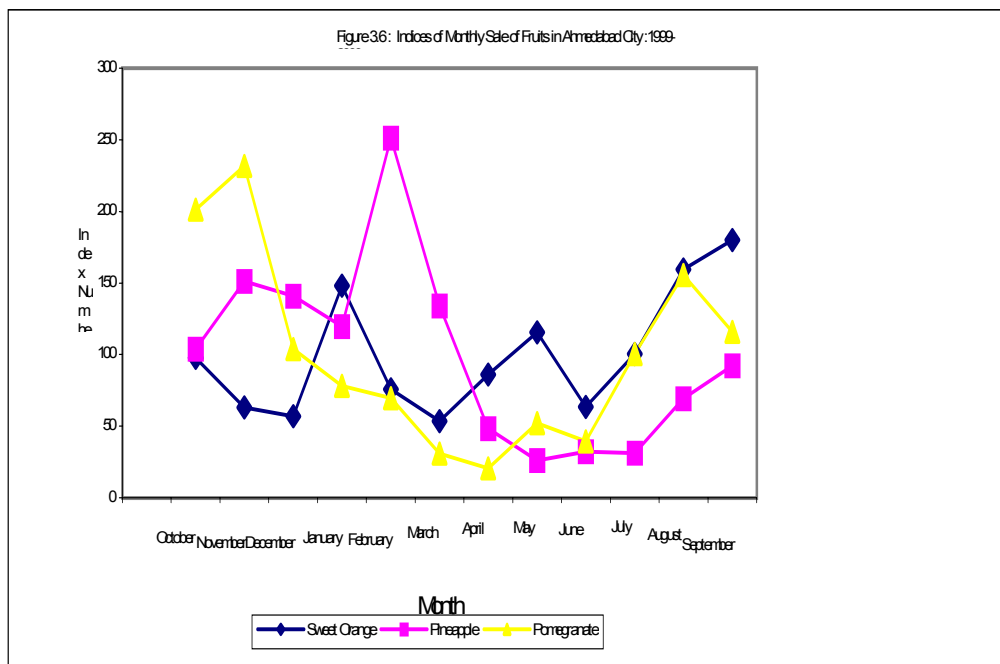


Figure 3.5: Indices of Monthly Sale of Fruits in Ahmedabad City :1999-2000





it was March to June. On the whole the variation in monthly sale of selected fruits were relatively high as compared to the selected vegetables in the Ahmedabad regulated markets.

In Chennai, the sale of vegetables such as brinjal and lady's finger was evenly spread over rest of the period except December to March (Tables 3.18 to 3.20 and Figures 3.7 and 3.8). For potato and onion, it is during May, June and to certain extent July when the sales are relatively high as shown by the monthly seasonal indices (in the range of 129.5 to 202.2). Vegetables such as cabbage and cauliflower have also show more or less the same pattern. In general, therefore, in the Chennai markets, May to July shows higher sales and the sale is almost evenly distributed for the rest of the year.

Compared to Ahmedabad and Chennai, the monthly sales pattern in the Kolkata wholesale market shows high seasonal variation except in the case of brinjal which shows a relatively even spread of sales over the months. In fruits, the other markets the monthly sales pattern is very much similar to that observed in Ahmedabad regulated markets.

Table 3.18 : Average Monthly Sale/Arrival of Brinjal and Lady's Finger
In Chennai AUS Market

(Quantity in Kgs.)

Month	Brinjal			Lady's Finger		
	Sale/ Arrival	Seasonal Index	Percent Share	Sale/ Arrival	Seasonal Index	Percent Share
January	8724	44.6	3.7	6791	42.6	3.9
February	10263	52.5	4.4	8843	55.5	5.0
March	10596	54.2	4.5	13117	82.3	7.5
April	18730	95.8	8.0	14321	89.8	8.2
May	32739	167.5	14.0	23093	144.9	13.2
June	35809	183.2	15.3	18859	118.3	10.8
July	25995	133.0	11.1	15726	98.7	9.0
August	22369	114.5	9.5	18443	115.7	10.5
September	17806	91.1	7.6	19742	123.9	11.3
October	16587	84.9	7.1	16663	104.5	9.5
November	20878	106.8	8.9	19737	123.8	11.3
December	14036	71.8	6.0	11930	74.8	6.8
Average	19544	100	100	15940	100.0	100

Table 3.19 : Average Monthly Sale/Arrival of Potato and Onion
in Chennai AUS Market

(Quantity in Kgs.)

Month	Potato			Onion		
	Sale/ Arrival	Seasonal Index	Percent Share	Sale/ Arrival	Seasonal Index	Percent Share
January	2639	67.7	5.6	4370	50.9	4.6
February	2767	70.9	5.9	4002	46.6	4.2
March	2298	58.9	4.9	4612	53.7	4.9
April	3869	99.2	8.3	8074	94.0	8.5
May	7480	191.8	16.0	17368	202.2	18.4
June	6390	163.8	13.7	14810	172.4	15.7
July	5052	129.5	10.8	12555	146.1	13.3
August	3688	94.6	7.9	9829	114.4	10.4
September	3030	77.7	6.5	5382	62.6	5.7
October	3739	95.9	8.0	7427	86.4	7.9
November	3209	82.3	6.9	6074	70.7	6.4
December	2642	67.7	5.6	4547	52.9	4.8
Average	3900	100.0	100	8591	100.0	100

Table 3.20 : Average Monthly Sale/Arrival of Cabbage and Tomato
In Chennai AUS Market

(Quantity in Kgs.)

Month	Cabbage			Tomato		
	Sale/ Arrival	Seasonal Index	Percent Share	Sale/ Arrival	Seasonal Index	Percent Share
January	2477	75.5	6.3	3707	63.5	5.3
February	2436	74.2	6.2	1963	33.6	2.8
March	2732	83.2	6.9	4024	68.9	5.7
April	3723	113.4	9.5	6337	108.5	9.0
May	5462	166.4	13.9	12105	207.2	17.3
June	4126	125.7	10.5	8565	146.6	12.2
July	4037	123.0	10.2	7720	132.2	11.0
August	3146	95.8	8.0	5765	98.7	8.2
September	2426	73.9	6.2	6120	104.8	8.7
October	3186	97.1	8.1	5093	87.2	7.3
November	2912	88.7	7.4	4409	75.5	6.3
December	2731	83.2	6.9	4283	73.3	6.1
Average	3283	100.0	100	5841	100.0	100

Table 3.21 : Average Monthly Arrival of Potato and Tomato in Kolkata Market

(Quantity in MT)

Month	Potato			Tomato		
	Sale/ Arrival	Seasonal Index	Percent Share	Sale/ Arrival	Seasonal Index	Percent Share
January	10333	99.5	8.3	6118	140.4	12.8
February	11982	115.4	9.6	6038	138.6	12.6
March	11655	112.2	9.4	5432	124.7	11.3
April	8975	86.4	7.2	6022	138.2	12.6
May	8975	86.4	7.2	6022	138.2	12.6
June	10248	98.7	8.2	1612	37.0	3.4
July	10371	99.9	8.3	3447	79.1	7.2
August	10089	97.1	8.1	3153	72.4	6.6
September	9446	91.0	7.6	3795	87.1	7.9
October	9006	86.7	7.2	2762	63.4	5.8
November	10007	96.4	8.0	3522	80.8	7.3
December	13544	130.4	10.9	5296	121.6	11.1
Average	10386	100	100	4357	100.0	9.1

Table 3.24 : Average Monthly Arrival of Lady's Finger and Brinjal in Kolkata Market

(Quantity in MT)

Month	Lady's Finger			Brinjal		
	Sale/ Arrival	Seasonal Index	Percent Share	Sale/ Arrival	Seasonal Index	Percent Share
January	0	0.0	0.0	6929	265.1	24.1
February	0	0.0	0.0	5383	206.0	18.7
March	1273	185.1	15.4	2833	108.4	9.9
April	1225	178.1	14.8	2167	82.9	7.5
May	1364	198.4	16.5	1918	73.4	6.7
June	977	142.1	11.8	1107	42.4	3.9
July	1249	181.6	15.1	1263	48.3	4.4
August	1129	164.2	13.7	1777	68.0	6.2
September	752	109.4	9.1	2030	77.7	7.1
October	283	41.2	3.4	1784	68.3	6.2
November	0	0.0	0.0	1560	59.7	5.4
December	0	0.0	0.0	3315	126.8	11.5
Average	688	100.0	8.3	2614	100.0	9.1

Table 3.25 : Average Monthly Arrival of Cabbage and Cauliflower in Kolkata Market

(Quantity in MT)

Month	Cabbage			Cauliflower		
	Sale/ Arrival	Seasonal Index	Percent Share	Sale/ Arrival	Seasonal Index	Percent Share
January	7565	273.7	22.8	5830	280.7	23.4
February	5756	208.3	17.4	5031	242.2	20.2
March	1179	42.7	3.6	1296	62.4	5.2
April	292	10.6	0.9	374	18.0	1.5
May	289	10.5	0.9	0	0.0	0.0
June	840	30.4	2.5	0	0.0	0.0
July	2179	78.8	6.6	617	29.7	2.5
August	2646	95.7	8.0	486	23.4	2.0
September	2583	93.5	7.8	504	24.3	2.0
October	1561	56.5	4.7	1881	90.6	7.5
November	2137	77.3	6.4	2737	131.8	11.0
December	6139	222.1	18.5	6166	296.9	24.7
Average	2764	100.0	8.3	2077	100.0	8.3

Table 3.26 : Average Monthly Arrival of Banana and Mango in Kolkata Market

(Quantity in MT)

Month	Banana			Mango		
	Sale/Arrival	Seasonal Index	Percent Share	Sale/Arrival	Seasonal Index	Percent Share
January	7034	134.3	11.2	0	0.0	0.0
February	6342	121.1	10.1	0	0.0	0.0
March	4581	87.5	7.3	0	0.0	0.0
April	4655	88.9	7.4	0	0.0	0.0
May	4890	93.3	7.8	7888	396.0	33.0
June	4686	89.5	7.5	5129	257.5	21.5
July	4712	90.0	7.5	10885	546.5	45.5
August	5042	96.3	8.0	0	0.0	0.0
September	4367	83.4	6.9	0	0.0	0.0
October	5206	99.4	8.3	0	0.0	0.0
November	6215	118.6	9.9	0	0.0	0.0
December	5131	97.9	8.2	0	0.0	0.0
Average	5238	100.0	8.3	1992	100.0	8.3

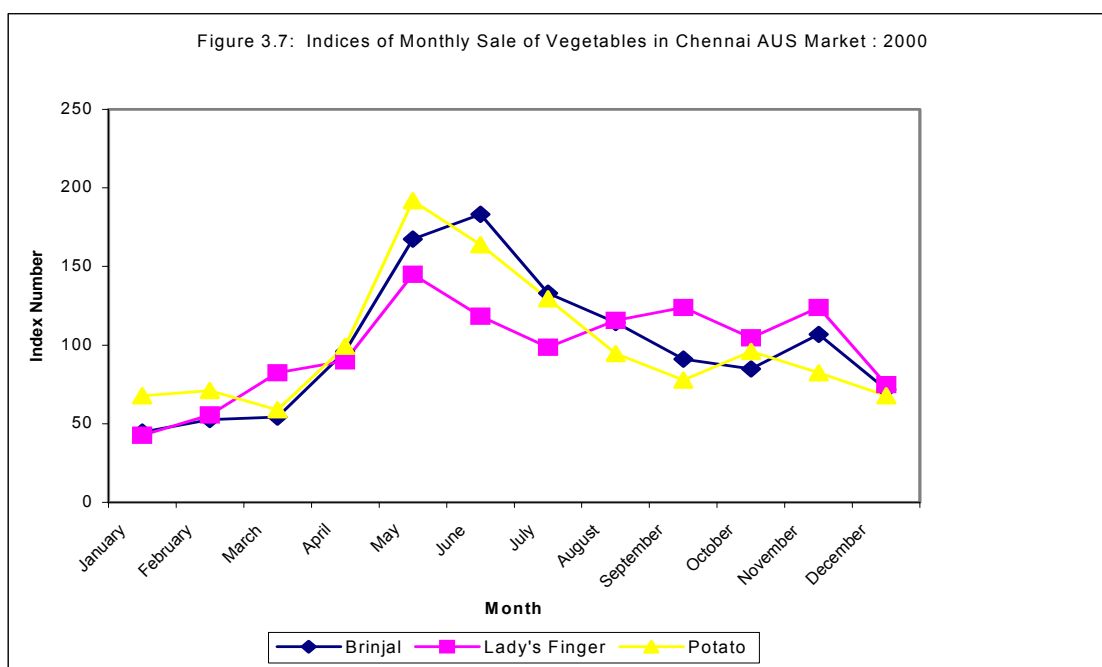


Figure 3.8: Indices of Monthly Sale of Vegetables in Chennai AUS Market : 2000

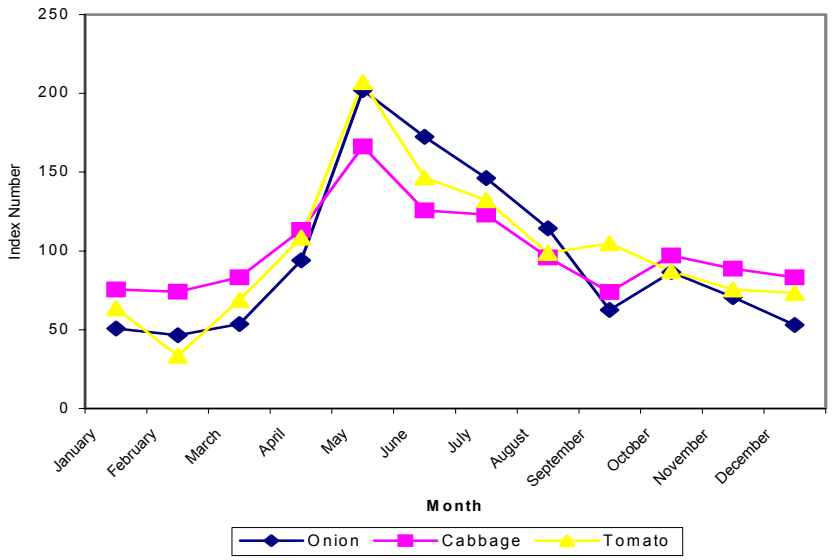
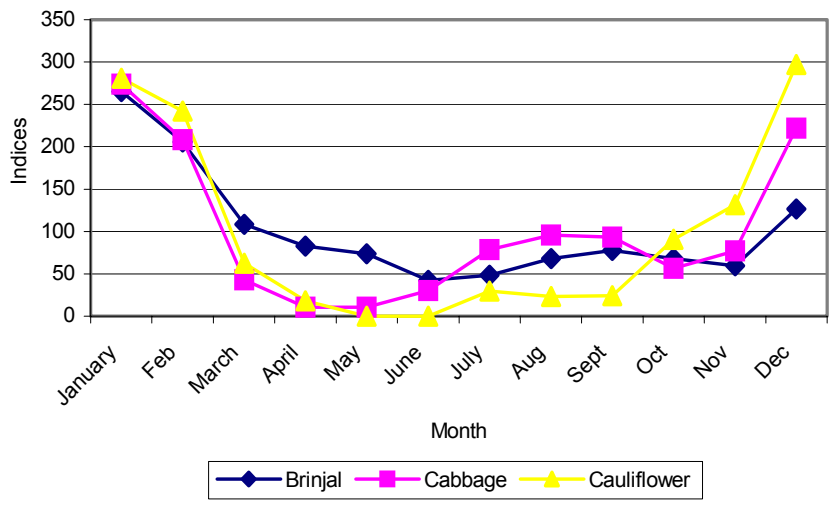
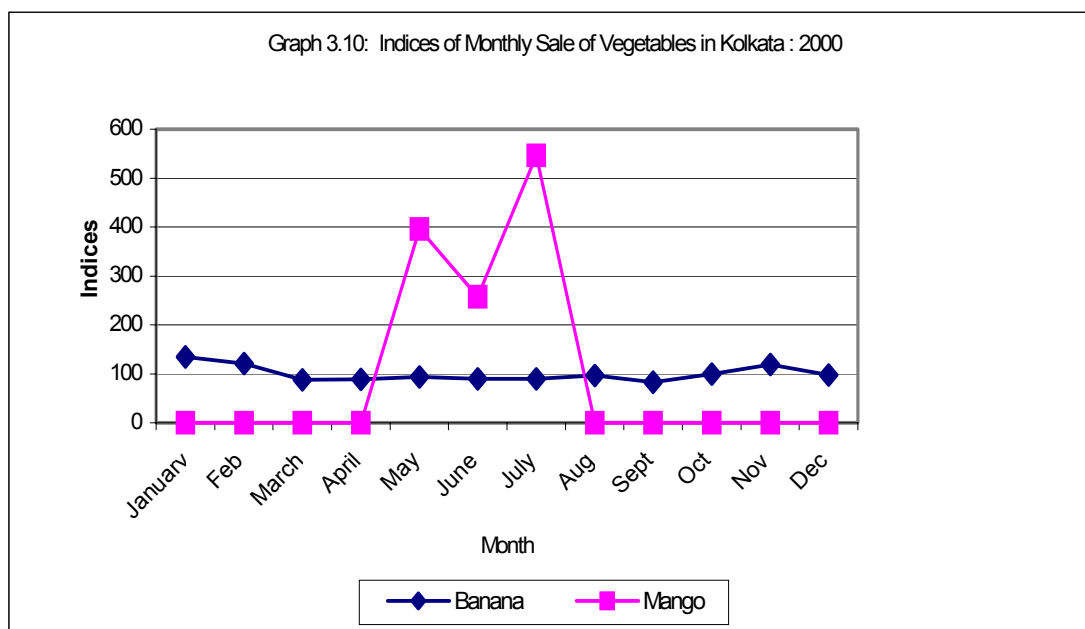


Fig 3.9: Monthly Sale Index of Vegetables in Kolkata Markets:2000





4. Survey Findings: Marketing Practices, Costs, Shares and Margins

This section examines different features of the selected fruits and vegetable markets, and the existing marketing practices followed by the selected sample respondents, marketing costs at various marketing channels, prices of various commodities marketed, and the share farmers, marketing agencies and the consumers based on the sample survey conducted in the fruit and vegetable wholesale markets in Ahmedabad, Chennai and Kolkata cities.

4.1 Profile of Sample Respondents

The profile of the sample respondents viz., the commission agents, farmers and retailers was examined in terms of their education, and experience in current profession in the Ahmedabad wholesale market. The level of education of the sample respondents indicate that all the commission agents in the sample surveyed from the three markets have some formal education and a significant number of them had college education (Table 4.1). Among the sample farmer respondents, only a very few of them were without any formal education, about half of them were with schooling up to the secondary level. However, more than one-fourth of the retailer respondents were without any formal education. Thus in the Ahmedabad wholesale markets, the level of education was highest among the commission agents followed by the farmer respondents and lastly the retailers.

Among the farmer respondents in the Chennai wholesale markets only 5 per cent of them have education beyond primary level and as high as about 35 per cent of them were illiterate (Table 4.2). The levels of education of over 50 per cent of the sample wholesalers cum commission agents as well as retailers were over higher secondary. The difference between the educational level of those in the vegetable and fruit trade was not significant, nor the difference in the educational level of wholesaler cum commission agent and the retailers. The Kolkata survey did not cover this aspect of the sample respondents.

The duration of experience in their respective profession of the sample respondents from the Ahmedabad wholesale markets shown in Table 4.3 indicates that over 75 percent of the commission agents had more than 10 years experience in their present profession. Similarly about 52 percent of the sample farmers and 58 percent of the retailers also had more than 10 years experience in their respective professions. Only 8 percent of commission agents, 24 percent of the farmers and 9 percent of the retailers had below 5 years experience in their respective profession. Thus majority of the sample respondents in the Ahmedabad wholesale markets had fairly long experience in their present profession.

Table 4.1: Level of Education of the Sample Respondents in Ahmedabad Markets

(Percentage)

Number of Years	CJP Market			SP Market			Naroda Fruit Market			Total		
	CA	Farmer	Retailer	CA	Farmer	Retailer	CA	Farmer	Retailer	CA	Farmer	Retailer
No Formal Education	0.0	3.8	32.1	0.0	9.5	30.0	0.0	16.7	16.7	0.0	8.5	27.6
Up to 7	0.0	30.8	32.1	20.0	28.6	23.3	25.0	16.7	38.9	13.2	27.1	30.3
8 to 12	43.3	53.8	28.6	56.7	52.4	46.7	25.0	50.0	44.4	44.7	52.5	39.5
13 to 15	46.7	11.5	7.1	23.3	4.8	0.0	50.0	16.7	0.0	38.2	10.2	2.6
16 and above	10.0	0.0	0.0	0.0	4.8	0.0	0.0	0.0	0.0	3.9	1.7	0.0
Total Sample	30	26	28	30	21	30	16	12	18	76	59	76

Table 4.2 : Educational Level of Respondents, Chennai Markets

(Percentage)

Type of Respondents	Illiterate	Primary	Secondary	Higher Secondary	Above Higher Secondary	Total
Farmer						
Vegetables	35.0	60.0	5.0	0.0	0.0	100
Fruits	0.0	0.0	0.0	0.0	0.0	0.0
Total	35.0	60.0	5.0	0.0	0.0	100
Wholesaler cum Commission Agent						
Vegetables	0.0	12.5	37.5	31.3	18.8	100
Fruits	0.0	19.4	25.8	38.7	16.1	100
Total	0.0	15.9	31.7	34.9	17.5	100
Retailer						
Vegetables	0.0	33.3	38.9	27.8	0.0	100
Fruits	0.0	31.6	31.6	31.6	5.3	100
Total	0.0	32.4	35.1	29.7	2.7	100
Overall						
Vegetables	10.0	31.4	28.6	21.4	10.0	100
Fruits	0.0	24.0	28.0	36.0	16.0	100
Total	5.8	28.3	28.3	27.5	10.0	100

In the Chennai markets the sample respondents were in their respective profession for 5 to 20 years and in case of few wholesalers and retailers, they were in the marketing of fruits and vegetables for more than 20 years (Table 4.4). Thus the sample respondents surveyed for this study from both Ahmedabad and Chennai have fairly long experience in the marketing of fruits and vegetables.

4.2 Marketing Practice

The marketing practices followed by various regulated markets are not uniform across the country. The pattern of sale and purchase of fruits and vegetables in the Ahmedabad market is shown in Table 4.5 and figure 4.1. It reveals that for vegetables, 50 per cent of the commission agents made direct purchase from farmers, whereas about 33 per cent of them purchased from traders, and 17 per cent from cold storage points. But for fruits, only 31 per cent of the purchases by the commission agents were made directly from farmers, 56 per cent from traders, and 13 per cent from other agents. Therefore, the commission agents had more direct contact with the farmers in case of vegetables as compared to fruits in the selected markets. But even for vegetables direct contact with farmers by the commission agents/traders

are not very high. The sales pattern revealed that by and large the commission agents sell to the retailers and the retailers directly sell to the consumers except retailer to retailer in isolated cases.

Table 4.3: Experience of the Sample Respondents in their Current Profession in the Ahmedabad Markets

Number of Years	CJP Market			SP Market			Naroda Fruit Market			Total		
	CA	Farmer	Retailer	CA	Farmer	Retailer	CA	Farmer	Retailer	CA	Farmer	Retailer
Upto 5	16.7	42.3	21.4	0.0	14.3	3.3	6.3	0.0	0.0	7.9	23.7	9.2
6 to 10	10.0	15.4	50.0	13.3	14.3	23.3	31.3	8.3	16.7	15.8	13.6	31.6
11 to 15	23.3	3.8	17.9	16.7	19.0	23.3	31.3	83.3	27.8	22.4	25.4	22.4
16 to 20	23.3	3.8	3.6	26.7	19.0	23.3	18.8	8.3	16.7	23.7	10.2	14.5
Above 20	26.7	34.6	7.1	43.3	33.3	26.7	12.5	0.0	38.9	30.3	27.1	22.4
Total Sample	30	26	28	30	21	30	16	12	18	76	59	76

Table 4.4 : Experience of Sample Respondents in their Respective Profession in Chennai Market

(Percentage)

Type of respondent	Less than 5 Years	5 to 10 Years	10 to 20 Years	20 to 30 Years	Total
Farmer					
Vegetables	50.0	40.0	20.0	0.0	100
Fruits					
Total	50.0	40.0	20.0	0.0	100
Wholesaler cum Commission Agent					
Vegetables	3.1	28.1	40.6	28.1	100
Fruits	6.5	41.9	16.1	35.5	100
Total	4.8	34.9	28.6	31.7	100
Retailer					
Vegetables	11.1	27.8	33.3	27.8	100
Fruits	5.3	42.1	36.8	15.8	100
Total	8.1	35.1	35.1	21.6	100
Overall					
Vegetables	18.6	31.4	32.9	20.0	100
Fruits	6.0	42.0	24.0	28.0	100
Total	13.3	35.8	29.2	23.3	100

Table 4.5: From Whom Purchased or to Whom Sold: Ahmedabad Markets

Particulars	Vegetables	Fruits	Fruits & Veg.	Vegetables	Fruits	Fruits & Veg.
	Number of Responses			Percentage Distribution		
From whom Commission Agent Purchased						
Farmer	43	5	48	50.0	31.3	47.1
Trader	28	9	37	32.6	56.3	36.3
Commission Agent	0	2	2	0.0	12.5	2.0
Cold Storage	15	0	15	17.4	0.0	14.7
Total	86	16	102	100.0	100.0	100.0
From whom Retailer Purchased						
Commission Agent	122	47	169	100.0	100.0	100.0
To whom Commission Agent Sold						
Trader	82	16	98	98.8	100.0	99.0
Commission Agent	1	0	1	1.2	0.0	1.0
Total	83	16	99	100.0	100.0	100.0
To whom Farmer Sold						
Commission Agent	58	12	70	100.0	100.0	100.0
To Whom Retailer Sold						
Retailer	8	0	8	6.7	0.0	4.8
Consumer	112	46	158	93.3	100.0	95.2
Total	120	46	166	100.0	100.0	100.0

The system of sale followed by the farmer producers, commission agents and traders etc. has a bearing on the price realized by each client. This aspect has been examined for the Ahmedabad and Chennai markets

The system of sale followed by the commission agents for the selected commodities in the Ahmedabad markets is given in Table 4.6 and figure 4.1. It shows that in the CJP Market, which deals with the marketing of potato and onion, open auction accounts for about 20 to 30 per cent of the market transactions, and 40 per cent of the transactions take place through secret bidding, and the rest 30 to 40 per cent through simple transaction. The open auction system is widely considered to be superior to other systems, its share was rather low. In other words, the open auction system is yet to become popular among the commission agents in the Ahmedabad CJP market. The system of sale followed by the commission agents for various vegetables in the SP market in Ahmedabad also showed the predominance of simple transaction among commission agents. For example for cauliflower, brinjal, green pea and bhindi the simple transaction accounted for about two-thirds and secret bidding accounted for over one-fourth.

So the share of open auction was very meagre at below 10 per cent. More or less same practice was followed by the commission agents for the sale of fruits at the Naroda fruit market.

Table 4.7 and figure 4.2 briefly shows the system of sale adopted by the producer farmers in the Ahmedabad markets for the selected vegetables and fruits. Simple transaction dominated the sale of potato and onion followed by secret bidding and open auction. However in the SP Market open auction system was not followed at all. For vegetables such as cabbage, cauliflower, brinjal and lady's finger, about half the transaction is through secret bidding, and another half through simple transaction. In the Naroda Fruit Market the producer farmers simple transaction followed by secret bidding and open auction was rarely in practice.

Table 4.8 gives the system followed by the retailers for their purchases in the three Ahmedabad markets. For onion and potato 82 percent of the purchases was through simple transaction and the rest 18 per cent through secret bidding. The share of simple transaction in the SP market and the Naroda fruit market were respectively 50 percent and 64 percent and the rest was through simple transaction.. Even though all these markets are well equipped with basic infrastructure, administrative support etc., the system of open bidding/auction considered to be superior to other forms of sale/purchases is yet to become popular.

In the Chennai AUS market the producer farmer or the grower of vegetables directly sell to the consumers while in the KFWWM wholesalers and commission agents and retailers engaged in the marketing of fruits and vegetables. In the KFWWM vegetables arriving from the producing centres are consigned to the wholesaler/commission agents. Similarly all the fruits are consigned to the traders. In this market all the wholesalers act as commission agents. The traders arrange to unload the consignments and display them in their premises and begins the sale to retailers from various parts of the city. The price of a particular day is largely influenced by the arrival during that day. All the arrivals are being sold on the same day. Simple transaction is reported by the traders who sells to the retailer who in turn make payment to the commission agent/wholesaler who ultimately makes payment to the producer farmer. The unit price quotations vary from fruit to fruit. For example, mango, sweet orange, and pineapple are quoted in numbers, banana in bunches, sapota in bags of 75 Kg, pomegranate in boxes containing 12 numbers, apple in boxes of 22 Kg.

Figure 4.1: System of Sale Reported by Commission Agents in Ahmedabad APMC Markets

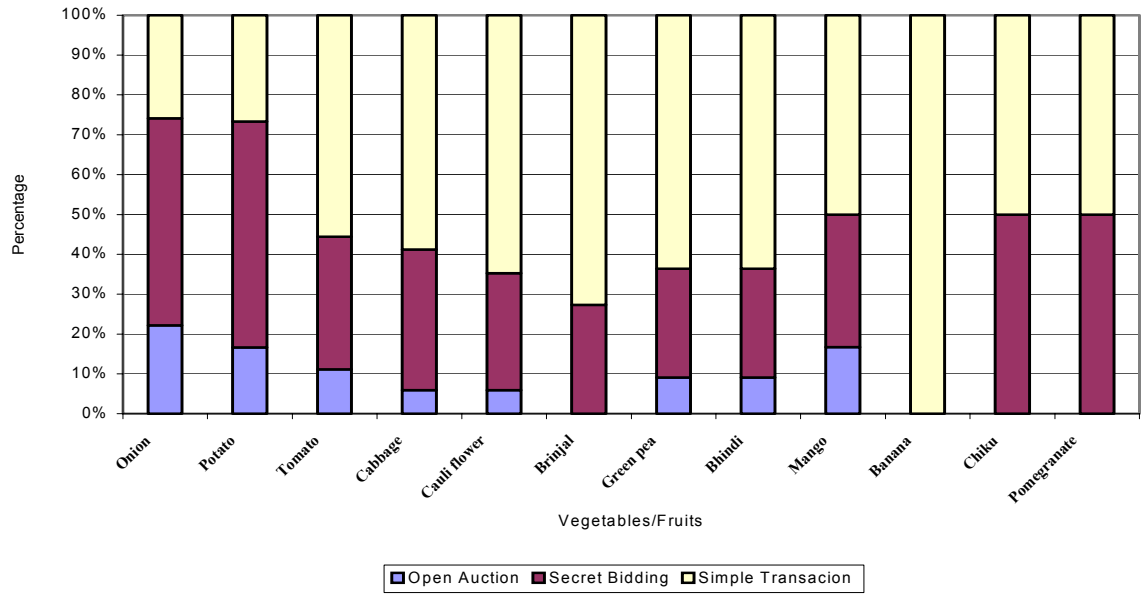


Figure 4.2 System of Sale Reported by Farmers in the Ahmedabad APMC Markets: Selected

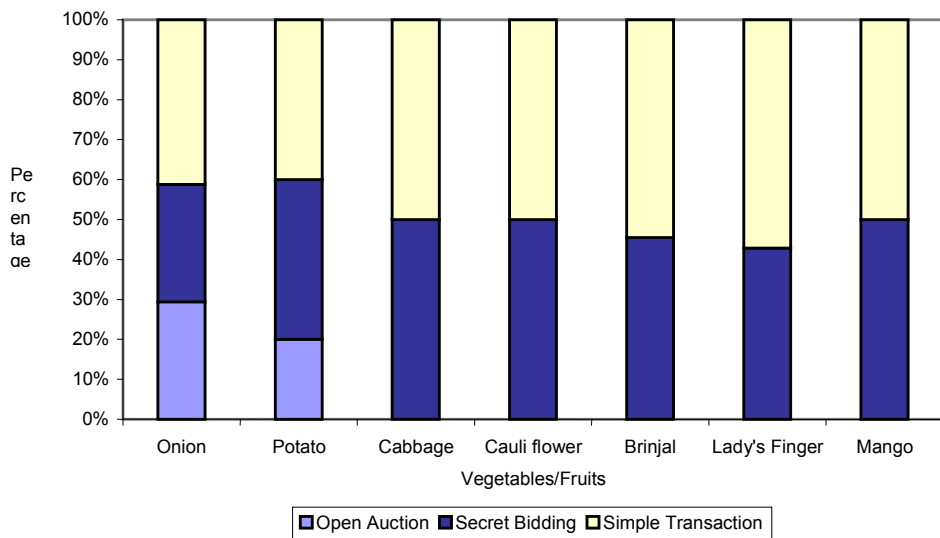


Table 4.6: System of Sale Reported by Commission Agents in Ahmedabad Markets

Commodities	Number of Respondents			Percentage Distribution		
	Open Auction	Secret Bidding	Simple Transaction	Open Auction	Secret Bidding	Simple Transaction
CJP Market						
Onion	6	14	7	22.2	51.9	25.9
Potato	5	17	8	16.7	56.7	26.7
Above Vegetables	11	31	15	19.3	54.4	26.3
SP Market						
Tomato	1	3	5	11.1	33.3	55.6
Cabbage	1	6	10	5.9	35.3	58.8
Cauli flower	1	5	11	5.9	29.4	64.7
Brinjal	0	3	8	0.0	27.3	72.7
Green pea	1	3	7	9.1	27.3	63.6
Bhindi	1	3	7	9.1	27.3	63.6
Above Vegetables	5	23	48	6.6	30.3	63.2
Naroda Fruit Market						
Mango	2	4	6	16.7	33.3	50.0
Banana	0	0	2	0.0	0.0	100.0
Sapota	0	4	4	0.0	50.0	50.0
Pomegranate	0	2	2	0.0	50.0	50.0
Above Fruits	2	10	14	7.7	38.5	53.8
All Fruits and Vegetables	18	64	77	11.3	40.3	48.4

Table 4.7: System of Sale Reported by Farmers in the Ahmedabad Markets

Commodities	Number of Respondents			Percentage Distribution		
	Open Auction	Secret Bidding	Simple Transaction	Open Auction	Secret Bidding	Simple Transaction
CJP Market						
Onion	10	10	14	29.4	29.4	41.2
Potato	1	2	2	20.0	40.0	40.0
Above Vegetables	11	12	16	28.2	30.8	41.0
SP Market						
Cabbage	0	9	9	0.0	50.0	50.0
Cauli flower	0	9	9	0.0	50.0	50.0
Brinjal	0	5	6	0.0	45.5	54.5
Bhindi	0	3	4	0.0	42.9	57.1
Above Vegetables	0	26	28	0.0	48.1	51.9
Naroda Fruit Market						
Mango	0	6	6	0.0	50.0	50.0
Above Fruits	0	6	6	0.0	50.0	50.0
All Fruits and Vegetables	11	44	50	10.5	41.9	47.6

Table 4.8: System of Purchase Reported by Retailer in the Ahmedabad Markets

Commodities	Number of Respondents		Percentage Distribution	
	Secret Bidding	Simple Transaction	Secret Bidding	Simple Transaction
CJP Market				
Onion	2	13	13.3	86.7
Potato	5	19	20.8	79.2
Above Vegetables	7	32	17.9	82.1
SP Market				
Tomato	13	13	50.0	50.0
Cabbage	21	22	48.8	51.2
Cauli flower	9	9	50.0	50.0
Brinjal	18	18	50.0	50.0
Green pea	5	5	50.0	50.0
Bhindi	19	21	47.5	52.5
Above Vegetables	85	88	49.1	50.9
Naroda Fruit Market				
Mango	1	18	5.3	94.7
Apple	0	6	0.0	100.0
Banana	0	5	0.0	100.0
Mosambi	0	7	0.0	100.0
Sapota	0	3	0.0	100.0
Pine-apple	0	5	0.0	100.0
Pomegranate	0	3	0.0	100.0
Above Fruits	1	47	2.1	97.9
All Fruits and Vegetables	93	167	35.8	64.2

The vegetable growers in the nearby area of AUS brings their produce to the AUS market and most of these farmers have only smaller quantity to be offered for sale. The major attraction of this market is that there is no license fee in the market. In the KFWM fruits and vegetables have been brought from far off places mainly through commission agents. The growers of only nearby areas participate to any significant extent in this market. The wholesalers cum commission agents have contact with the producers either directly or through agents and arrange for the delivery of fruits and vegetables. Some of the wholesalers and commission agents acts as pre-harvest contractors and lend money to the growers. The retailers purchase from the wholesaler/commission agent and sell to consumers in the markets itself or at their shops. This information was not available for the Kolkata market.

4.3 Cost of Marketing

Various costs that are incurred in the marketing of vegetables and fruits are transport, loading/ unloading, market fee and commission. Table 4.9 provides the breakup of various items of costs in the total marketing costs of the selected vegetables and fruits. These cost shares are based on the current prices recorded in the survey.

Large variations were observed in the cost shares of different commodities in the Ahmedabad markets. For example, for commodities that are brought from outside Gujarat, the share of farmers' cost in total cost was the highest. It varied from 69 percent for sweet orange to as high as 86 percent for mango. This is mainly due to high cost of transport borne by the producer farmer located at far off places from these markets. For locally produced commodities (i.e., from within the state) also transport cost dominated. Its share varied from 31 percent for potato to 75 per cent for sapota. The variation in the share of other costs such as commission, loading/unloading, market fee etc. for different commodities were not high because there were standard norms for charging such costs.

Retailers' share in total marketing cost for vegetables was dominated by commission followed by transport. Retailers do not have to pay any commission to the wholesalers for commodities marketed from outside Gujarat as it is being charged from the producer farmers. Looking at the cost structure of various vegetables and fruits in the Ahmedabad markets the share of commission in total marketing costs was very significant. This implies that the cost incurred in the regulated market was high.

The percentage share of various marketing costs shared by the farmers, wholesaler/ commission agent and the retailers of the KFWWM market for the selected vegetables and fruits are given in table 4.10. The marketing cost incurred by the farmers in total cost was relatively high as compared to commission agents and retailers. The share of farmers in total marketing cost ranged from 15.7 percent for cauliflower to 29.53 percent for tomato. On the other hand for fruits the share of farmers in total cost ranged from 30.1 percent for pomegranate to 74.0 percent for apple. These cost were on account of transport, loading and unloading, and commission. The relative share of farmers' cost were more for commodities such as cabbage, cauliflower, brinjal, lady's finger, and apple. For the rest commission was the major cost item incurred by the farmer producers. The commission agents/wholesalers incurred

three types of costs, viz., market entry fee, transport and handling charges. For all commodities the share of cost on account of transport was the highest among other costs. The share of market entry fee in total marketing cost varied from 0.05 percent for apple to 8.6 percent for pomegranate. The cost incurred by the retailers were under the heads transport, loading and unloading. This accounted for 1.33 percent for apple to 59.78 percent for lady's finger.

Thus, the share of various items of costs in total cost, the cost structure in different markets varied substantially for the selected fruits and vegetables. While the share of market fee and handling charges in the form of loading and unloading were minor. The cost of transport and commission dominated the total marketing cost irrespective of commodities and markets.

4.4 Analysis of Price Spread and Farmers' Share

The relative share marketing costs, marketing margin and the farmers' price in consumer rupee for the selected fruits and vegetables in Ahmedabad city are depicted in Table 4.11 and Figure 3.3. The percentage share of marketing cost in consumer rupee ranged from 1.5.5 percent for cauliflower to 18.28 percent for onion. For fruits it ranged from 5.03 percent for apple to 17.86 percent for mango. Among the selected vegetables are fruits, those with comparatively high share of marketing cost in consumer rupee were cabbage, mango, banana and sapota. The marketing costs of fruits were comparatively high and that could be mainly due to their transport cost as they have been brought to these markets from far off locations.

While the marketing margin, expressed as percent of consumer price, for the selected vegetables ranged from 22.17 percent (green pea) to 50.25 percent (tomato), and for fruits it ranged from 33.14 percent for sapota to 69.43 percent for apple. For none of the commodities studied here the marketing margin was lower than one-third of the consumer rupee.

The share of farmers in consumer rupee for vegetables was in the range of 41.11 percent for onion to 69.32 percent for green pea. For most of the commodities studies here the share of farmers hovered around 35 to 45 per cent. The above analysis on farmers' share in consumer rupee in the Ahmedabad markets indicated that the share of farmer in consumer rupee is generally quite low but somewhat higher for vegetables than fruits. Moreover, low share of farmers in consumer rupee was more due to high marketing margin rather than marketing cost.

Table 4.9 : Share of Various Marketing Costs in Ahmedabad Market (Percentage)

Commodity	Cost of Producer Farmers					Cost of Retailers				Total Cost
	Trans- port	Market Fee	Comm ission	Loading/ Unloading	Farmer's Total Cost	Trans- port	Comm ission	Loading/ unloading	Retailer's Total Cost	
Potato (G)	27.38	3.61	0.00	0.00	30.98	21.59	43.29	4.13	69.02	100
Onion (OG)	54.87	1.51	18.09	3.63	78.10	21.90	0.00	0.00	21.90	100
Tomato (OG)	32.46	2.95	35.38	2.46	73.25	26.75	0.00	0.00	26.75	100
Cabbage (G)	36.38	2.67	0.00	0.00	39.04	23.46	32.00	5.50	60.96	100
Cabbage (OG)	47.81	2.19	26.17	4.52	80.70	19.30	0.00	0.00	19.30	100
Cauli flower (G)	31.39	2.67	0.00	0.00	34.06	29.08	32.03	4.82	65.94	100
Cauli flower (OG)	35.33	2.25	33.91	4.06	75.54	24.46	0.00	0.00	24.46	100
Brinjal (G)	31.65	2.50	0.00	0.00	34.15	29.29	30.03	6.53	65.85	100
Green pea (OG)	22.19	4.50	54.04	2.80	83.52	16.48	0.00	0.00	16.48	100
Lady's finger(G)	27.11	3.86	0.00	0.00	30.97	18.79	46.35	3.89	69.03	100
Mango(OG)	49.65	1.46	29.17	5.86	86.14	13.86	0.00	0.00	13.86	100
Apple(OG)	28.41	2.68	53.63	4.26	88.98	11.02	0.00	0.00	11.02	100
Sapota(G)	26.37	2.08	41.70	4.97	75.13	24.87	0.00	0.00	24.87	100
Banana(G)	31.19	1.53	30.58	6.12	69.42	30.58	0.00	0.00	30.58	100
Sweet Orange(OG)	23.20	1.68	33.62	11.32	69.82	30.18	0.00	0.00	30.18	100
Pine-apple(OG)	24.74	2.03	40.57	4.95	72.29	27.71	0.00	0.00	27.71	100
Pomagrante(OG)	40.26	1.90	38.10	3.95	84.21	15.79	0.00	0.00	15.79	100

G - Produced in Gujarat

OG - Produced Outside Gujarat

Table 4.10: Share of Various Marketing Cost in Chennai KFVWM Market (Percentage)

Commodity	Market charge paid by Farmers			Charges paid by WS/CA				Charge paid by retailer	Total Cost
	Trans+ Load/ unload	Comm ission	Total	Market Entry	Trans- port	Handling Charge	Total	Trans+ Load/ unload	
Potato	3.86	13.81	17.67	3.41	51.77	14.85	70.03	12.30	100
Onion	2.89	13.73	16.62	3.28	49.83	14.29	67.39	15.98	100
Tomato	11.06	18.48	29.53	2.20	27.53	7.71	37.44	33.03	100
Cabbage	10.72	6.70	17.42	4.48	39.42	26.87	70.77	11.81	100
Cauliflower	9.70	6.02	15.73	2.40	33.53	12.95	48.87	35.40	100
Brinjal	11.40	11.12	22.52	0.67	27.75	7.12	35.54	41.95	100
Lady's finger	10.17	9.77	19.94	0.44	13.30	6.54	20.28	59.78	100
Mango	15.26	41.79	57.05	0.41	23.09	5.72	29.22	13.73	100
Apple	55.75	18.27	74.03	0.05	24.09	0.50	24.64	1.33	100
Sapota	5.97	24.74	30.71	5.01	31.54	18.72	55.27	14.02	100
Banana	10.68	20.58	31.26	6.03	39.83	10.38	56.24	12.50	100
Mosambi	18.09	36.17	54.26	1.05	15.77	6.31	23.13	22.61	100
Pine-apple	7.12	33.89	41.01	0.72	35.91	4.60	41.22	17.77	100
Pomagrante	8.61	21.52	30.13	8.61	50.22	6.74	65.57	4.30	100

The share of marketing cost as percent of consumer rupee for vegetables in the Chennai KFVWM market varied from 17.30 percent for tomato to 49.3 percent for cauliflower and for fruits it varied from 15.80 percent for sweet orange to 37.49 percent for apple. Unlike Ahmedabad markets, the share of marketing costs for vegetables were comparatively high in this market than fruits.

The marketing margin was in the range of 9.73 percent for potato in one extreme to 48.28 for brinjal on the other. But for fruits it varied from 9.63 percent for banana to 35.63 percent for sweet orange. As compared to Ahmedabad, the share of marketing margin consumer rupee was lower for a number of commodities in the Chennai KFVWM market. While for vegetables the farmers' share in consumer rupee ranged between 40.42 percent to 61.39 percent, for fruits it was 40.75 percent to 67.6 percent. This is almost in the same pattern observed in the Ahmedabad markets.

In the AUS market the picture is quite different. Since the producer farmers sell directly to the consumers, the share of farmers in consumer rupee was high at 85 to 95.43 percent for vegetables. Since there were no middlemen involved, the only cost item was transport and loading/ unloading. Although this is only a small local market, the merits of bringing the farmer closer to the consumer in the marketing chain could substantially improve raise the share of the farmer. Perhaps such arrangements would benefit the consumer as well.

In the Kolkata market the marketing cost as percent of consumer rupee was around 14 percent for vegetables and fruits except for banana it was below 8 percent. This is lower compared to both Ahmedabad and Chennai markets. The marketing margin for vegetables fluctuated between 29.24 percent for cauliflower to 39.3 percent for potato. For vegetables the share of farmers in consumer rupee was in the range of 45.93 percent for potato to 60.94 percent for tomato. While the farmers received as high as 82.29 percent of the consumer price for banana, for mango their share was only 55.75 percent.

4.5 Marketing Efficiency Indicators

The marketing efficiency was examined in terms of the price difference (consumer price less price received by producer farmer), marketing cost, and margin (price difference less

marketing cost) for fruits and vegetables in the three cities. Variation in price difference and margin in absolute terms for the same commodity in different markets could be partly attributed to the varieties chosen for the study. Therefore, the marketing cost and margin have been expressed as percentage to the price difference. The efficiency indicators thus obtained showed that while in Ahmedabad markets the marketing cost for vegetables varied between 14 to 31 percent, this was as high as 33 to 85 percent in Chennai (KFVWM) and 27 to 34 in Kolkata markets. The margin as a percentage of farmer-consumer price difference show that the margins are very high in many cases but vary across the locations. In Ahmedabad, the margins are very high and range from 69 percent onions to 94 percent for apples. In Chennai they are relatively lower and range from 15 percent in cauliflower to 69 percent for mosambi. In Kolkata they are also very high and range from 46 percent for pineapple to 73 percent for lady's finger. The high percentage of margin to price difference is indicative of possible large trade profits (or inefficiencies), and poor marketing efficiency in fruits and vegetable.

Table 4.11 : Share of Marketing Costs, Marketing Margin and Farmers' Share in Consumer Rupee in Selected Cities (Percent)

Commodity	Ahmedabad			Chennai(KFVWM)			Chennai(AUS)		Kolkata		
	Marke-ting Cost	Marke-ting Margin	Farm-er's Share	Marke-ting Cost	Marke-ting Margin	Farm-er's Share	Marke-ting Costs	Farm-ers' Share	Marke-ting Cost	Marke-ting Margin	Farm-er's Share
Potato	8.44	32.93	58.63	28.89	9.73	61.39	15.00	85.00	14.77	39.3	45.93
Onion	18.28	40.61	41.11	25.42	20.62	53.96	8.00	92.00	na	na	Na
Tomato	8.03	50.25	41.72	17.30	34.52	48.18	12.00	88.00	13.14	25.92	60.94
Cabbage	11.05	43.20	45.75	42.90	16.68	40.42	4.57	95.43	13.57	30.7	55.73
Cauliflower	5.50	37.00	68.50	49.30	8.95	41.75			14.87	29.24	55.89
Brinjal	9.09	48.05	42.86	29.66	22.06	48.28	6.20	93.80	14.41	35.51	50.08
Green pea	8.51	22.17	69.32	na	na	na	na	na	na	na	Na
Lady's finger	7.53	36.33	56.14	27.04	34.32	38.65	6.20	93.80	13.15	35.4	51.45
Mango	17.86	38.91	43.23	18.73	13.67	67.60	Na	na	14.3	29.97	55.73
Apple	5.03	69.43	25.54	37.49	21.76	40.75	Na	na	na	na	Na
Sapota	13.63	33.14	53.23	27.83	11.87	60.30	Na	na	na	na	na
Banana	14.53	45.56	39.91	32.92	9.63	57.45	Na	na	7.75	9.96	82.29
Sweet Orange	11.01	54.50	34.48	15.80	35.63	48.57	Na	na	na	na	Na
Pine-apple	11.20	46.11	42.68	19.86	20.99	59.15	Na	na	14.83	12.68	72.49
Pomaganrate	11.69	48.47	39.84	23.23	33.77	43.00	Na	na	na	na	na

Figure 4.3 : Marketing Cost, Marketing Margin and Farmer's Price in Ahmedabad APMC Markets

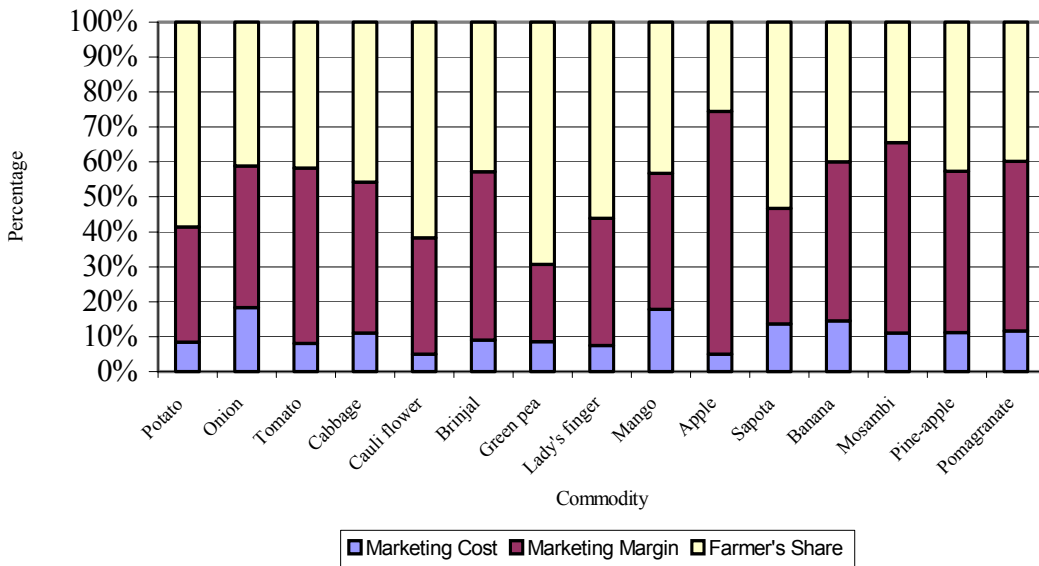
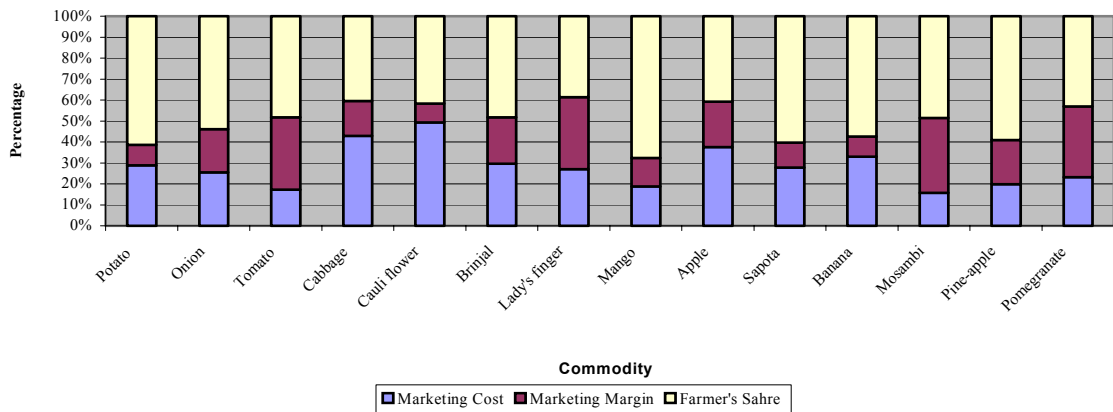


Fig 4.4 : Marketing Cost, Marketing Margin and Farmer's Share in Chennai KFVWM Market



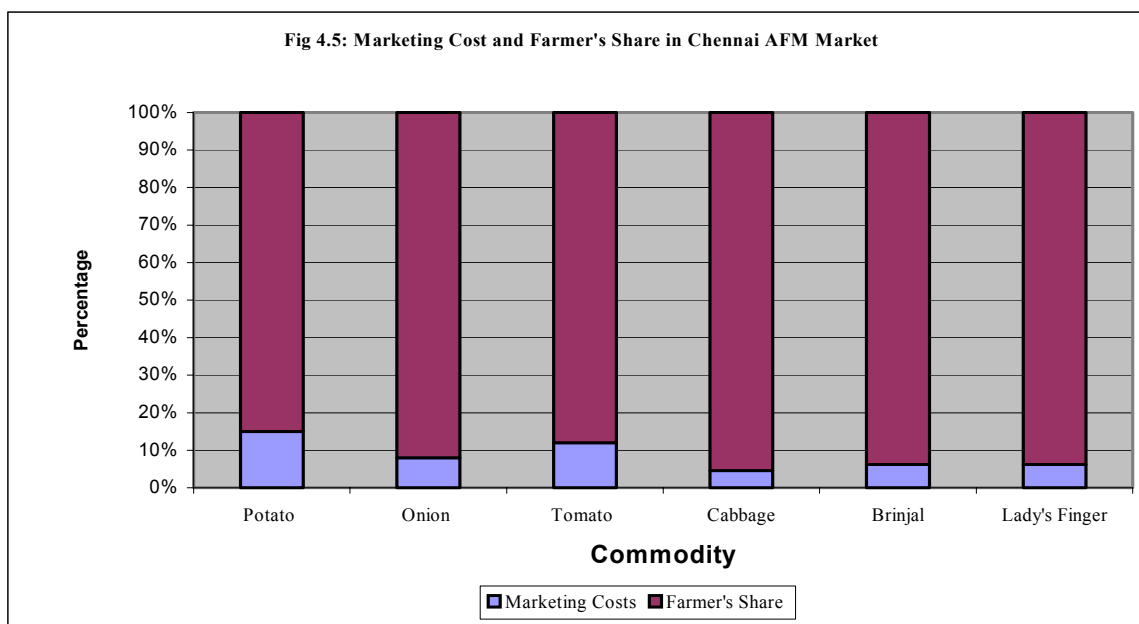


Table 4.12 : Market Efficiency Indicators

Commodity	Ahmedabad				Chennai(KFVWM)				Chennai (AUS) *				Kolkata	
	FCPD	MC	MC/FCPD	M/FCPD	FCPD	MC	MC/FCPD	M/FCPD	FCPD	MC	MC/FCPD	M/FCPD	MC/FCPD	M/FCPD
Potato	370.41	75.61	20.41	79.59	246.82	184.65	74.81	25.19	120.00				27.32	72.68
Onion	310.31	96.34	31.05	68.95	315.70	174.32	55.22	44.78	40.00					
Tomato	1181.36	162.82	13.78	86.22	362.77	121.12	33.39	66.61	120.00				33.64	66.36
Cabbage	494.71	100.76	20.37	79.63	232.61	167.49	72.00	28.00	32.00				30.65	69.35
Cauli flower	789.57	137.73	17.44	82.56	233.01	197.20	84.63	15.37					33.71	66.29
Brinjal	595.46	94.76	15.91	84.09	461.14	264.43	57.34	42.66	62.00				28.87	71.13
Green pea	858.92	238.27	27.74	72.26										
Lady's finger	837.78	143.85	17.17	82.83	589.33	259.72	44.07	55.93	62.00				27.09	72.91
Mango	813.14	255.80	31.46	68.54	5670.27	3278.11	57.81	42.19					32.30	67.70
Apple	5211.89	352.04	6.75	93.25	645.22	408.28	63.28	36.73						
Sapota	689.81	201.01	29.14	70.86	345.35	242.09	70.10	29.90						
Banana	676.00	163.50	24.19	75.81	3692.67	2857.13	77.37	22.63					43.76	56.24
Mosambi	52.56	8.84	16.81	83.19	1800.00	552.90	30.72	69.28						
Pine-apple	103.40	20.21	19.55	80.45	4340.15	2109.84	48.61	51.39					53.91	46.09
Pomgranate	1303.47	253.35	19.44	80.56	8550.00	3485.00	40.76	59.24						

FCPD Farmer-Consumer Price Difference Rs/Unit
MC Marketing Cost Rs/Unit
MC/FCPD Marketing Cost over Price Difference (%)
M/FCPD Margin over Price Difference (%)
where Margin = FCPD minus MC

* In this market the farmers sell directly to the consumers

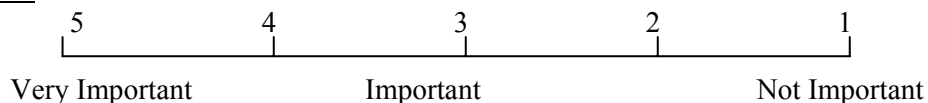
4.6 Analysis of Factors Influencing the Prices of Fruits and Vegetables

Table 4.13 provides the average ratings on the importance of different factors determining the price in the Ahmedabad wholesale markets. In the CJP Market, which deals with potatoes and onion, the factors that stand out as being of great importance are national demand, national supply and number of buyers and sellers. Market yard facilities are also indicated as importance. In the SP Market, the factors that stand out to be of great importance are local demand and supply as well as national demand and supply. The number of buyers and sellers are also indicated to be of considerable importance. In the case of Naroda Fruit Market, local demand and national supply stand out as most important. Number of buyers and sellers are also of great importance. In the opinion of commission agents, market yard facilities are also extremely important in determining the price. Note that this market has relatively poor facilities. This information was not available for the Chennai and Kolkata markets.

Table 4.13 : Analysis if Factors Determining Price: Weighted Average Rating of Farmers, Commission Agents and Retailers in Ahmedabad Wholesale Markets

	C J Patel Market			Sardar Patel Market			Naroda Fruits Market		
	C A	Farmer	Retailer	C A	Farmer	Retailer	C A	Farmer	Retailer
1. Local Demand	3.37	3.32	2.96	3.67	4.67	4.45	4.00	4.00	4.89
2. National Demand	4.67	4.32	4.56	3.93	4.19	3.79	3.50	3.83	3.50
3. International Demand	1.83	3.18	2.33	2.75	1.86	1.78			1.20
4. Local Supply	3.30	3.36	3.32	3.73	4.05	4.07	3.56	4.00	3.72
5. National Supply	4.33	3.96	3.33	4.03	3.95	3.96	4.20	4.08	3.61
6. International Supply	1.10	1.00			1.55	2.00		3.00	1.67
7. Number of Buyers	3.59	3.33	3.40	4.03	4.57	3.38	4.63	4.00	3.56
8. Number of Sellers	3.48	3.33	3.44	4.20	3.62	3.39	4.63	4.00	3.56
9. Market Yard Facilities	3.25	1.18	2.11	2.72	1.29	1.38	5.00	1.92	1.13
10. Communication Facility	3.86	2.67	2.33	2.67	1.71	1.00	2.38	3.00	3.17
11. Method of Sale	3.57	3.43	3.00	2.71	3.76	4.44	2.00	3.00	4.67
12. Transport Infrastructure	2.79	3.13	2.78	2.43	2.29	3.06	2.44	3.00	3.22
13. Government Policies	3.48	3.50	3.55	2.89	1.24	1.00	1.00		1.00
14. Season	2.07	2.50	2.40	3.70	4.52	4.03	4.63	4.25	3.50
15. Variety/Type	3.77	3.71	3.38	3.80	3.57	3.81	4.63	5.00	3.33
16. Processing Facilities	1.13	1.22	1.00		1.67				1.00
17. Cold Storage facilities	1.85	1.22			1.50	1.60			1.00
18. Weather Conditions	1.93	2.09	1.87	3.40	2.81	3.10	4.25	4.25	2.78

Rating Scale:



5. Summary and Conclusions

Fruits and vegetables constitute an important part of daily diet and are now in great demand round the year. India now ranks first in the world in the combined production of fruits and vegetables. At present the horticultural crops in the country covers 13.6 million hectares of land, i.e. 7 per cent of the gross cropped area and contributes to about 18-20 per cent of the gross value of agricultural output. India's share in World fruit production is very significant, the largest producer of mango and banana in the world and fifth position in the production of pineapple and sixth in the production of orange, tenth in the production of apple. Similarly India's presence in the production of vegetables is also very significant. Among the production of major vegetables, India occupies the first position in cauliflower, second in onion, third in cabbage, and sixth in potato in the world. The diverse soil and climatic conditions in the country gives great promise to cultivate a wide variety of fruits and vegetables .

Traditionally Indian farmers depend heavily on middlemen particularly in the marketing of fruits and vegetables. There has been great concern in recent years about the efficiency of fruits and vegetable marketing. It is feared that low efficiency in the marketing channels accompanied with poor marketing infrastructure would not only lead to high and fluctuating consumer prices, but also only a small fraction of the consumer rupee reaching the producer farmer. It may also leads to deterioration in quality, frequent mismatch between demand and supply both spatially and over time resulting to highly fluctuating prices. In the light of these concerns studies were undertaken at the wholesale market level for fruits and vegetables in Ahmedabad, Chennai , Kolkata and Delhi cities. This study consolidates the major findings of the studies that are conducted at Ahmedabad, Chennai and Kolkota. These studies mainly address issues such as present marketing practices of fruits and vegetables, the seasonal phenomenon in terms of their market arrival/sale, the physical market infrastructure at the selected markets, existing major marketing channel and lastly the price spread in fruits and vegetable marketing and the share of producers in consumer rupee.

5.1 Methodology

The study covered two wholesale vegetable market yards from Ahmedabad city viz., the Sardar Patel Market (SP Market), Chimanbhai Jivabhai Patel Market (CJP Market), and one fruit market namely the Naroda fruit market. From the Chennai City, two wholesale markets

namely Koyambedu Fruits and Vegetable Wholesale Market (KFVWM), and Ambattur Farmer's Market (AUS) also known as Ambattur Ezhawar Sandhai were selected. From the Kolkata city markets that were selected for this study are S.S.Hogg market, Posta market and Mechua Fal Patty. While the market officials and records were consulted for collecting relevant data on the functioning of the markets, physical infrastructure etc of the markets., structured questionnaires were used to collect the information from the market intermediaries such as wholesalers/ commission agent, retailers and the producer farmers. The sample respondents from the Ahmedabad markets comprise of 76 commission agents, 76 retailers and 59; from the Chennai markets 63 commission agents/ wholesalers, 37 retailers and 20 farmers, and 18 commission agents/ wholesalers and 12 retailers from the Kolkata wholesale markets.

The selection of different vegetables and fruits from these markets were based on their importance in terms of volume of sale in the respective markets. The vegetables selected for the study from the Ahmedabad market were potato, onion, tomato, cabbage, cauliflower, brinjal, green-pea and lady's finger and the fruits were mango, apple, sapota, banana, sweet orange, pineapple and pomegranate. From the Chennai markets vegetables such as brinjal, lady's finger, onion, potato, cabbage, cauliflower and tomato and fruits such as mango, apple, sapota, banana, sweet orange, pineapple and pomegranate were selected for the study. From the Kolkata markets vegetables namely potato, brinjal, lady's finger, cabbage, cauliflower, and tomato and fruits such as mango, pineapple and banana have been selected.

The administrative set-up of the selected markets do differ. While the markets selected from Ahmedabad were regulated, the other markets were not. Agricultural Produce Marketing Committee (APMC) controls and administers the selected regulated markets in Ahmedabad. The market management committee headed by the chief administrative officer of the Chennai Metropolitan Development Authority (CMDA) and the Kancheepuram market committee respectively controls the KFVWM and the AUS markets in Chennai. As mentioned above, in the Kolkata City there are no regulated markets for the sale of fruits and vegetables and all the markets are controlled by the Municipal Corporation and the Government of West Bengal.

5.2 Market Infrastructure

Various infrastructure facilities available in the Ahmedabad CJP market include stalls for vegetable and fruits sale, shops meant for the sale of agricultural inputs, internal roads,

private telephone exchange, offices for the stall-holders, sanitary facilities for general public and stall visitors, canteen facilities, conference hall, garden, fountain, kiosk systems, VIP guest-house and internet facilities. The Sardar Patel market at Ahmedabad has stalls, ring stalls, a common shed for general commission agent, stalls used for the sale of agricultural inputs, and other household items, sanitary and communication facilities. Naroda Fruits Market is also equipped with stalls for Commission Agents and semi-wholesalers and retailers and all these stalls are under private ownership and the APMC only has the administrative control on trading activities. This market does not have any other facilities except market office, stalls and internal roads. The salient features of the KFWWM market which is situated on the Chennai-Thirupathy highway, are stalls equipped with telephone facilities, stalls run by self-help groups, vehicle parking facility, canteen facilities and facilities for waste disposals. Services of weighing machines have been provided to the farmer sellers free of cost. In AUS market, the facilities provided include weighing machines and price display boards.

5.3 Market Charges

Various components of marketing costs that are incurred in the selected markets include market fee, commission, transport, loading and unloading charges. The rate of commission in the Ahmedabad markets was 6 per cent of the value of produce, and the market fee at the rate of 0.5 per cent and both are charged from the purchaser. While the commission amount goes to the trader/commission agent, the market fee accrues to the APMC. The only exception is that of the seller is from outside the state of Gujarat, the market fee is to be paid by the seller. The association of traders in fruits and vegetables determines the market charges in the KFWWM. The present the rate of commission charged in this market is 6 percent for vegetables and 10 percent for fruits.

5.4 Market Arrival/ Sale of Fruits and Vegetables

The APMC records the market arrival of 35 commodities. In terms of market arrival, potato holds the top position followed by onion, tomato, green chilies, brinjal, ginger, green-pea and lady's finger respectively in terms of their volume. In Naroda regulated market the arrival of 24 different fruits are recorded and in terms of their volume of arrival, they are in the order of mango, apple, sweet orange, pineapple, sapota and pomegranate. The seasonality in the market arrival of selected vegetables showed extreme seasonality except for potato and

onion. The monthly sales pattern of selected fruits in the Naroda Fruit Market also showed extreme seasonality in case of mango and apple. On the whole the variation in monthly sale of selected fruits were relatively high as compared to that of vegetables in the Ahmedabad regulated markets. In the Chennai markets for all the selected vegetables high sales were invariably recorded during May to July. Compared to Ahmedabad and Chennai, the monthly sales pattern in the Kolkata wholesale market was highly skewed except for brinjal.

5.5 Profile of Market Participants

The profiles of the sample respondents from the selected markets have been examined in terms of their education, and their experience in the current profession. The level of education of the sample respondents in the Ahmedabad markets indicate that all the commission agents in the sample surveyed are not only with some formal education but a significant number of them also have college education. Though few of the sample farmer respondents were without any formal education, about half of the farmer respondents are atleast with schooling up to the secondary level. However for more than one-fourth of the retailer respondents were without any formal education. Among the farmer respondents only 5 per cent of the sample farmers have education beyond primary level in the Chennai Markets and the level of education of over 50 per cent of the sample wholesalers cum commission agents as well as retailers in the selected markets were over higher secondary. The difference between the educational level of those in the vegetable and fruit trade was not significant, nor the difference in the educational level of wholesaler cum commission agent and the retailers. The experience of sample respondents in their respective profession indicated that over 75 percent of the commission agents had more that 10 years experience in their profession, 52 percent of the sample farmers and 58 percent of the retailers had more than 10 years experience in their respective professions in the Ahmedabad market. In Chennai market only 8 percent of the commission agents, 24 percent of the farmers and 9 percent of the retailers had experience below 5 years in their respective professions. Thus, majority of the sample respondents are with some formal education and vast experience in their respective profession.

5.6 Marketing Practices

The pattern of purchase and sale of vegetables and fruits in the Ahmedabad markets reveals that about 50 per cent of the commission agents make direct purchase from farmers,

whereas about 33 per cent from traders, and the rest made the purchases from cold storage points. But for fruits, the commission agents made only 31 per cent of the purchases directly from farmers and 56 per cent are from traders, and 13 per cent are from commission agents. Therefore, direct contact between commission agents and farmers was comparatively higher in case of vegetables than fruits in the Ahmedabad markets. By and large the commission agents sell to the retailers and the retailers sell directly to the consumers except retailer to retailer in isolated cases.

The system of sale followed by the commission agents in the Ahmedabad markets shows that in the CJP Market open auction accounts for hardly one-fifth of the total market transactions. Secret bidding and simple transaction were more popular in this market accounts for 40 per cent each. In the Naroda fruit market also one-half of the marketing take place through secret bidding and the rest by means of open marketing system and the system of sale through open auction was virtually absent. Thus, open auction system is not yet a common and established practice in the Ahmedabad wholesale markets for fruits and vegetables. This is despite of open auction system being considered to be superior to other systems. In the Chennai AUS market the producers directly sell vegetables to the consumers and in the KFWWM open system of marketing dominated.

5.7 Cost of Marketing

Major costs that are involved in the marketing of vegetables and fruits in the selected markets are transport, loading/unloading, market fee and the commission charged by the middlemen. The share of farmers in total marketing cost of vegetables varied from 15.7 percent for cauliflower to 29.53 percent for tomato. The share of farmers in average total marketing cost for fruits ranged from 30.1 percent for pomegranate to 74.0 percent for apple. The reported costs of farmers were on account of transport, loading and unloading, and commission. For commodities such as cabbage, cauliflower, brinjal, lady's finger, and apple the share of farmers in total cost was comparatively higher. For other commodities commission was the major among various costs.

The commission agent/ wholesaler incurred three types of costs, viz., market entry fee, transport and handling charges. For all commodities cost on transport was invariably high as compared to other costs. In the Chennai market, the relative share of marketing cost of the farmers in total cost was more than that incurred by commission agents as well as the retailers.

The cost incurred by the farmers varied from 15.7 percent for cauliflower to 29.5 percent for tomato and for fruits it varied from 30.1 percent for pomegranate to 74 percent for apple. Thus the share of various components in total cost exhibited significant variation for both fruits and vegetables in different markets studied here.

5.8 Analysis of Prices Spread and Farmers' Share

The share of marketing cost in consumer price were in the range from 5.5 percent for potato to 18.3 percent for onion in the Ahmedabad wholesale markets. But for the selected fruits it varied from 5.1 percent for apple to 17.9 percent for mango. The marketing costs of fruits (in terms of percentage to consumer price) appeared to be at a higher level than vegetables. While the marketing margin, expressed as a percentage of consumer price, for vegetables were in the range of 22.2 percent (green pea) to 50.3 percent (tomato) and for fruits it varied from 33.1 percent for sapota to 69.4 percent for apple. Finally, the share of farmers in consumer rupee for vegetables ranged from only 41.1 percent for onion to as high as 69.3 percent for green pea, and for the selected fruits this share varied from only 25.5 percent for apple to 53.2 percent for sapota. Thus, the analysis of farmers' share in consumer rupee in the Ahmedabad regulated wholesale markets indicates that the share is quite low in general but somewhat better for vegetables than for fruits.

In the Chennai KFWWM market the share of marketing cost in total cost for vegetables varied from 17.3 percent for tomato to 49.3 percent for cauliflower, and for fruits it varied from 15.8 percent for sweet orange to 37.5 percent for apple. The marketing margin was in the range of 9.7 percent for potato and 48.3 for brinjal. But for fruits it varied from 9.6 percent for banana to 35.6 percent for sweet orange. While for vegetables the farmers' share ranged between 40.4 percent to 61.4 percent, for fruits it was 40.75 percent to 67.6 percent. These patterns are very much similar compared to Ahmedabad markets. But in the AUS market since the producer farmers sell directly to the consumers, the share of farmers in consumer rupee was as high as 85 to 95.43 percent for vegetables. This is only a very small market with limited volume. Yet, it shows that marketing arrangements which bring the farmer closer to the consumer in the marketing chain has the potential to raise the share of the farmers substantially, and perhaps the consumer would also be benefited with better quality and prices.

In the Kolkata market the marketing cost was around 14 percent for the vegetables and fruits studied except for banana it was roughly 8 percent. The marketing margin for vegetables fluctuated between 29.2 percent for cauliflower to 39.3 percent for potato. The share of farmers were in the range of 45.9 percent for potato to 60.9 percent for tomato. While the farmers received as high as 82.3 percent of the consumer price for banana, their share was only 55.7 percent in mango.

The marketing efficiency was examined in terms of the price difference (consumer price less price received by farmer), marketing cost, and margin (price difference less marketing cost). The marketing cost, and margin were expressed as percentage of the price difference. These efficiency indicators showed that while in Ahmedabad markets the marketing cost for vegetables varied between 14 to 31 percent, this was 33 to 85 percent in Chennai (KFVWM) and 27 to 34 in Kolkata markets. The margin as a percentage of farmer-consumer price difference shows that the margins are very high in many cases but vary across the locations. In Ahmedabad, the margins are very high and range from 69 percent onions to 94 percent for apples. In Chennai they are relatively lower and range from 15 percent in cauliflower to 69 percent for mosambi. In Kolkata they are also very high and range from 46 percent for pineapple to 73 percent for lady's finger. The high percentage of margin to price difference is indicative of possible large trade profits (or inefficiencies), and relatively poor marketing efficiency in fruits and vegetable.

5.9 Analysis of Factors Influencing the Prices of Fruits and Vegetables

The average ratings on the importance of different factors determining the price were examined through survey of respondents in the markets for the Ahmedabad wholesale markets. In the CJP Market, which deals with potato and onion, the factors that stand out as being of great importance are national demand, national supply and number of buyers and sellers. Market yard facilities are also indicated to be of importance. In the SP Market, which deals with other vegetables, the factors that stand out to be of great importance are local demand and supply followed by national demand and supply. The number of buyers and sellers are also indicated to be of considerable importance. In the case of Naroda Fruit Market, local demand and national supply stand out as most important. In the opinion of commission agents, market

yard facilities are also extremely important in determining the price. These aspects were not studied for the Chennai and Kolkata markets as they were not covered in those studies.

5.10 Recommendations

Several measures are recommended for improving the marketing of fruits and vegetables in the country. The following major recommendations emerge from the studies reported here on improving the marketing efficiency of fruits and vegetables. First, it is important to bring more markets under regulation and put them under the supervision of a well-represented market committee. Second it is important to promote, and perhaps even enforce through rules or laws, the practice of open auction in the markets. Third, it is important to bring more numbers of buyers and sellers to the wholesale markets so as to encourage healthy competition close to perfect market conditions and better price realisation to the producer farmers. How direct participation of farmers significantly improve their share is clearly evident from Chennai's AUS market.

Besides above measures, improvements in market infrastructure such as storage (go-down) facilities, cold storage, better loading and weighing facilities, proper stalls, better road links etc. would also be helpful in improving the marketing efficiency. Improvement in cold-chain facilities, marketing of fruits and vegetables are obviously important and do not need any special mention. Efforts to improve the transparency in the market operations through better supervision by the market committee would be another important factor in improving the marketing efficiency. Finally there is substantial scope for improving the marketing efficiency by improving the market information system by making available latest and extensive market information to all market participants through the use of internet facilities and other means of communication.

Bibliography

1. Agro Economic Research Centre, Chennai, Marketing of Fruits and Vegetables in and Around Chennai, University of Madras, 2002-03 (Research Study No.130)
2. Arya, Anita Agricultural Marketing in Gujarat, Concept Publishing Co. Ltd., New Delhi, 1993.
3. Ashturker B.M and C.D. Deole, Producers' Share in Consumers Rupee: A Case Study of Fruit marketing in Marathwada, *Indian Journal of Agricultural Economics*, 40,3, 1985.
4. Bhatt, B.D. et al. An Analysis of Arrivals and Prices of Important Vegetable Crops in Ahmedabad Regulated Market in Gujarat State, *Indian Journal of Agricultural Marketing*, 1(1), June 1988.
5. Charan, A.S., SP Seetharaman and SL Bapna, Agricultural Marketing System in Gujarat: A Perspective, Gujarat Economic Conference, 1983.
6. Dave, V.J., Economics of Export Oriented Horticultural Crops in Chiku (Sapota) in Gujarat, Agro-Economic Research Centre, Vallabh Vidyanagar, Gujarat, 1998.
7. Dattatreyyulu, M., Export Potential of Fruits, Vegetables and Flowers from India, National Bank for Agriculture and Rural Development, Mumbai, 1997.
8. Dhar, M.K., BA Baig, Price Structure of Kashmir Apples, *Indian Journal of Agricultural Economics*, 40, 3, 1985.
9. Doshi, R.R (ed.) Agricultural Marketing in India: The Future Course, Department of Economics, Shivaji University, Kolhapur, 1998
10. Gandhi Vasant P and N V Namboodiri, Marketing of Fruits and Vegetables in India: A Study of the Wholesale Markets in Ahmedabad Area, Centre for Management in Agriculture, Indian Institute of Management, Ahmedabad, 2002
11. Garg J S, and J P Misra, Costs and Margins in the Marketing of Vegetables in Kanpur, *Agricultural Marketing*, 8,2, 1976
12. Jha, U.M., Economics of Export Oriented Horticultural Crop(Litchi) Bihar, Agro-Economic Research Centre, Bihar, 1997
13. Joshi, U.R. Regulated Markets in Gujarat, Vallabh Vidyanagar, SP University, 1971.
14. Kaul, G.L, Horticulture in India: Production, Marketing and Processing, *Indian Journal of Agricultural Economics*, 52,3, 1997
15. Kazi MB Rahim and Debashis Sarkar, Fruits and vegetables Mandis Located in Urban and Semi-urban Areas of West Bengal with focus on Kolkata Market: Their Problems and Suggestions, Agro-Economic Research Centre, Visva-Bharati, Santiniketan, 2002
16. Krishnaswamy L, et al., A Study of Price Spread of Wheat in Rajasthan, *Agricultural Situation in India*, 23,4, 1968
17. Kumar P and Mruthyunjaya, Demand for Fruits and Vegetables, *Agricultural Economics Research Review*, 8,2, 1995

18. Murthy, Narasimha. Regulated Markets in a Rural Economy, Ajanta Publishing Co., Delhi, 1988.
19. Naik Dibakar, Marketing Costs and Margins under Different Marketing Channels of Potato Trade in Cuttack District of Orissa, *Indian Journal of Agricultural Economics*, 40,3, 1985.
20. Prasad Sivarama, A., Agricultural Marketing in India, Mittal Publishing Co., New Delhi, 1985.
21. Rajagopal, Marketing of Fruits and Vegetables in Cooperative Sector, Institute of Rural Management, Anand, 1995
22. Rao A N., Higher Employment and Income Potential of Horticultural Crops, *Indian Journal of Agricultural Economics*, 52, 3, 1997
23. Rahim, Kazi MB, Debashis Sarkar, Economics of Export Oriented Horticultural Crops in Sikkim, Agro-Economic Research Centre, Visva-Bharati, Santiniketan, 1998.
24. Saikia, TN, Price Structure of Pineapple: A Study in Meghalaya, *Indian Journal of Agricultural Economics*, 40,3, 1985.
25. Sharan, Girja, et al. An Operational Study of the CJ Patel Vegetable and Fruit Market of Ahmedabad, CMA, IIMA, 1998.
26. Sharma, Keshav. Marketing Management of Horticulture Produce, Deep & Deep, New Delhi, 1991.
27. Singh, Balwinder, Price Structure and Price Spread in Potato in Punjab, *Indian Journal of Agricultural Economics*, 40,3,1985.
28. Singh, Maheshkumar, et al, Price Spread of Vegetables Marketing, *Indian Journal of Agricultural Economics*, 40,3,1985.
29. Subbanarasaiah, N. Marketing of Horticultural Crops in India, Anmol Publishing Co., Delhi, 1991.
30. Thakur, D.S., et al. Efficiency and Weakness of Regulated Markets”, *Indian Journal of Agricultural Economics*, 2:1, 1988.
31. Tilekar,S.N., An Analysis of Net Prices received by Alphonso Mango Growers of Ratnagiri District, *Indian Journal of Agricultural Economics*, 40,3,1985