AN ANALYSIS OF CONSUMER PREFERENCE FOR PROCESSED FRUIT AND VEGETABLE PRODUCTS IN JAIPUR CITY, RAJASTHAN

RADHA MOHAN JANGIR

MBA-814

DEPARTMENT OF AGRICULTURAL MARKETING, CO-OPERATION AND BUSINESS MANAGEMENT
UNIVERSITY OF AGRICULTURAL SCIENCES, GKVK, BENGALURU-560 065

2010

AN ANALYSIS OF CONSUMER PREFERENCE FOR PROCESSED FRUIT AND VEGETABLE PRODUCTS IN JAIPUR CITY, RAJASTHAN

RADHA MOHAN JANGIR

MBA-814

Project Report submitted to the

University of Agricultural Sciences, Bengaluru

in partial fulfillment of the requirements

for the degree of

Master of Business Administration

in

Agri Business Management

BENGALURU **JULY, 2010**

Affectionately
Dedicated to
Beloved Parents, Wife,
Guide, Brothers and
My Dear Friends

DEPARTMENT OF AGRICULTURAL MARKETING, CO-OPERATION AND BUSINESS MANAGEMENT UNIVERSITY OF AGRICULTURAL SCIENCES G. K. V. K., BENGALURU- 560 065

CERTIFICATE

This is to certify that the Project Report entitled, **"AN ANALYSIS OF CONSUMER PREFERENCE FOR PROCESSED FRUIT AND VEGETABLE PRODUCTS IN JAIPUR CITY, RAJASTHAN"** submitted by **Mr. RADHA MOHAN JANGIR, MBA 814** in partial fulfillment of the requirement for the degree of **Master of Business Administration (MBA) in AGRI BUSINESS MANAGEMENT** to the University of Agricultural Sciences, Bengaluru, is a record of bonafide research work done by him during the period of his study in this University under my guidance and supervision and the Project Report has not previously formed the basis for the award of any degree, diploma, associateship, fellowship or other similar titles.

Bengaluru
July, 2010

DR. M. S. JAYARAM
(MAJOR ADVISOR)

APPROVED BY:

Chairman: ______________________
(DR. M. S. JAYARAM)

Members: **1.** ______________________
(G.N NAGARAJA)

2. ______________________
(M.R. GIRISH)

3. ______________________
(H. S. SURENDRA)

4. ______________________
(MANJUNATH V. S.)

ACKNOWLEDGEMENT

It is my pleasure to glance back and recall the path one traveled during the days of hard work and perseverance. This thesis is the result of two years of work whereby I have been accompanied, supported and guided by many people. It is my heart's turn to express my deepest sense of gratitude to all of those who directly and indirectly helped me in this endeavor.

At the very outset, my reverences towards "Almighty GOD" would definitely deserve the most special mention, for his eternal love, unseizing help, guidance, kindness and blessing which guarded me in completing the present task.

*I fell inadequacy of words to express my profound indebtedness and deep sense of gratitude to my esteemed chairman **Dr. M. S. Jayaram**, Professor, Department of Agricultural Marketing, Co-operation & Business Management, University of Agricultural Sciences, GKVK, BENGALURU, for his esteemed stewardship, enabling guidance, cherishable counseling and personal affection for which I am greatly indebted to him. It was really a great pleasure and privilege for me to be associated with him during my MBA (ABM) Degree Programme.*

*I would like to thank the members of my advisory committee **Dr. G.N. Nagaraja**, Professor and Head, Department of Agricultural Marketing, Co-operation & Business Management, University of Agricultural Sciences, GKVK, BENGALURU, **Dr. M.R. Girish,** Assistant Professor, Department of Agricultural Marketing, Co-operation & Business Management, University of Agricultural Sciences, GKVK, BENGALURU, **Mr. H.S. Surendra,** Associate Professor, Department of Agricultural statistics, University of Agricultural Sciences, GKVK, BENGALURU, and **Mr. Manjunath V. S.,** Assistant Professor, Nitte Meenakshi Institute of Technology, Bengaluru Who provided all kind of support to me in completion of post-graduate study.*

*I greatly acknowledge the cooperation and help extended by my teachers **Dr. P.K. Mandanna, Dr. B.M. Ramachandra Reddy, Dr. B.M. Shashidhara Mr. T. N. Venkatareddy, Mr. P.V. Ramegowda, Dr. C.P. Gracy,** and **Dr. M.S. Ganapathy,** Department of Agricultural Marketing, Co-operation & Business Management, University of Agricultural Sciences, GKVK, BENGALURU for their valuable suggestions and support during the course of investigation.*

*I am Very thankful to **Dr. H. Chandrashekar**, Professor, PPMC, University of Agricultural Sciences, GKVK, Bengaluru for helping me in carrying out analysis and clearing all doubts during the analysis.*

*The love, affection and patience of my family have been instrumental for me. Mere words cannot express my profound indebtness to my beloved mother **Smt. Dulari** and my noble father **Shri Nathu lal** for filling my life with laughter and happiness beyond measure.*

*The support and care I received from my family is beyond words to express. I thank my brothers **Shyam Sunder**, **Pawan**, **Manoj**, **Mayank**, my wife **Renuka**, my nephew **Harsh, Yash** and niece **Aakansha**.*

*I acknowledge gratefully to my seniors **Mahesh, Manas**, **Govind, vinay, Chidananda and Ganesh** for helping me while carrying out study and clearing all doubts during the study.*

*Friendship is the most important ingredient in the recipe of life and it adds more flavour when that is from different states with different language and culture. I am fortunate to have a myriad of friends here. I am thankful to my beloved friends **Sampad, Keshar, Rahaman, Surjeet, Kundan, Pawan, Saurabh, Abhijeet, Pooncha** and many others for their lovely friendship, love, help and care and for making the two year study very much enjoyable and memorable.*

*I am equally thankful and grateful to juniors **Simranjeet, Badrinarayan, Krishna, Mahesh, Mukesh, Gopal, Vijay and Atul** for their constant encouragement, moral support kind cooperation and help throughout my study period.*

I also acknowledge each and every chunk of help, guidance and suggestion from all my fellow friends, teachers and well-wishers that contributed for the success of my work.

……. Omission of any names in this brief acknowledgement does not mean lack of gratitude.

BENGALURU
July 2010 **(Radha Mohan Jangir)**

An Analysis of Consumer Preference for Processed Fruit and Vegetable Products in Jaipur City, Rajasthan

Radha Mohan Jangir

ABSTRACT

Many agricultural commodities are to be processed before reaching to the final consumer. Therefore, processing is important for increasing shelf life as well as for value addition. Further, the processed products can be offered to consumers as per their preferences. Processing creates employment opportunities too. The changing lifestyles, rising middle class population and easy availability of processed fruits and vegetables have led to increased consumer preference for processed products.

Among the available brands of processed fruit and vegetable products, some are more popular. In the pickle category Priya, Jam & jelly and sauce & ketchup category Kissan, Chips category Lays, squash & syrup category Heinz and Fruit juice & pulp category Frooti are very popular brands among respondents. The aggregate average expenditure per month on processed fruit and vegetable products per household was Rs. 439.67. The average expenditure on processed fruit and vegetable indicates an increasing tendency as the income level goes up which shows the luxury goods status of these processed goods. This indicates that there is a positive relationship between income and expenditure on processed fruit and vegetable products. The consumers expressed high preference to the quality of the product, followed by its price, taste, keeping quality, ready to eat form, neighbours use it, easy availability and also the preference of the family members while selecting a particular brand. The major Constraints in the marketing of processed fruit and vegetable products are transportation, different taste preference of different people of different regions, few well-known brands of processed fruit and vegetable products, consumer preference for more homemade processed products, long supply chain, and competition from fresh fruits and vegetables etc.

Dr. M. S. Jayaram
Chairman

Signature of the student

ರಾಜಾಸ್ಥಾನದ ಜೈಪುರ ನಗರದಲ್ಲಿನ, ಸಂಸ್ಕರಿತ ಹಣ್ಣು ಮತ್ತು ತರಕಾರಿಗಳ ಗ್ರಾಹಕರ ಆಯ್ಕೆಯ ಒಂದು ಅವಲೋಕನ

ರಾಧ ಮೋಹನ್ ಜಂಗೀರ್

ಪ್ರಭಂದ ಸಾರಾಂಶ

ಬಹಳಷ್ಟು ಕೃಷಿ ಉತ್ಪನ್ನಗಳು ಬಳಕೆದಾರನನ್ನು ತಲುಪುವ ಮುನ್ನ ಸಂಸ್ಕರಣೆಗೆ ಒಳಗಾಗಬೇಕಾಗುತ್ತದೆ. ಆದ್ದರಿಂದ, ಸಂಸ್ಕರಣೆಯು, ಉತ್ಪನ್ನದ ಜೀವಿತಾವಧಿ ಮತ್ತು ಮೌಲ್ಯವೃದ್ಧಿ ದೂಡುವಲ್ಲಿ ಪ್ರಮುಖ ಪಾತ್ರವಹಿಸುತ್ತದೆ. ಅಲ್ಲದೆ, ಸಂಸ್ಕರಣೆಯು ಗ್ರಾಹಕರ ಅಗತ್ಯಗಳಿಗೆ ತಕ್ಕ ಉತ್ಪನ್ನ ನೀಡುವುದರೊಂದಿಗೆ, ಉದ್ಯೋಗ ಸೃಷ್ಟಿಯನ್ನೂ ಮಾಡುತ್ತದೆ. ಬದಲಾಗುತ್ತಿರುವ ಜೀವನಶೈಲಿ, ಏರುತ್ತಿರುವ ಮಧ್ಯಮವರ್ಗದ ಜನಸಂಖ್ಯೆ ಮತ್ತು ಸಂಸ್ಕರಿತ ಹಣ್ಣು ತರಕಾರಿಗಳ ಸುಲಭ ಲಭ್ಯತೆಯು ಇದರ ಏರುತ್ತಿರುವ ಗ್ರಾಹಕ ಆಯ್ಕೆಗೆ ಪ್ರಮುಖ ಕಾರಣಗಳಾಗಿವೆ.

ಲಭ್ಯವಿರುವ ಸಂಸ್ಕರಿತ ಬ್ರ್ಯಾಂಡಗಳಲ್ಲಿ ಕೆಲವು ಹೆಚ್ಚು ಜನಪ್ರಿಯವಾಗಿವೆ. ಉಪ್ಪಿನಕಾಯಿ ಗುಂಪಿನಲ್ಲಿ, ಪ್ರಿಯ, ಜಾಮ್ ಜೆಲ್ಲಿ ಮತ್ತು ಸಾಸ್ ಕೆಚಪ್ ಗುಂಪುಗಳಲ್ಲಿ ಕಿಸಾನ್, ಚಿಪ್ಸ್‌ನಲ್ಲಿ ಲೇಸ್, ಸ್ಕ್ವಾಷ್ ಮತ್ತು ಸಿರಪ್ ಗುಂಪಿನಲ್ಲಿ ಹೀನ್ಝ್ ಮತ್ತು ಜ್ಯೂಸ್, ಪಲ್ಪ್ ಗುಂಪಿನಲ್ಲಿ ಫ್ರೂಟಿ ಬ್ರಾಂಡಗಳು ಜನಪ್ರಿಯವಾಗಿವೆ. ಕುಟುಂಬದ ಸರಾಸರಿ ಸಂಸ್ಕರಿತ ಹಣ್ಣು ಮತ್ತು ತರಕಾರಿಯ ಮೇಲಿನ ಖರ್ಚು ೪೫೯.೬೭ ಆಗಿದ್ದು, ಇದು ಕೌಟುಂಬಿಕ ಆದಾಯದೊಂದಿಗೆ ಏರುಮುಖ ಪ್ರವೃತ್ತಿ ತೋರುತ್ತಿದೆ. ಇದು ಈ ಸಂಸ್ಕರಿತ ಹಣ್ಣು ತರಕಾರಿ ಉತ್ಪನ್ನಗಳ ಭೋಗವಸ್ತು ಸ್ಥಿತಿಯನ್ನು ಸೂಚಿಸುತ್ತದೆ. ಗ್ರಾಹಕರು, ಈ ಸಂಸ್ಕರಿತ ಉತ್ಪನ್ನಗಳಲ್ಲಿ ಗುಣಮಟ್ಟ, ಬೆಲೆ, ರುಚಿ, ಜೀವಿತಾವಧಿ, ನೇರವಾಗಿ ತಿನ್ನಲು ಯೋಗ್ಯತೆ, ಅಕ್ಕಪಕ್ಕದವರ ಬಳಸುವಿಕೆ, ಲಭ್ಯತೆ, ಕುಟುಂಬದ ಆಯ್ಕೆ ಇವೇ ಮೊದಲಾದವುಗಳನ್ನು ಬ್ರಾಂಡ್ ಆಯ್ಕೆಯಲ್ಲಿ ಪರಿಗಣಿಸುವುದಾಗಿ ಸೂಚಿಸಿವೆ. ಸಂಸ್ಕರಿತ ಉತ್ಪನ್ನದ ಮಾರಾಟದಲ್ಲಿ ಕಂಡುಬಂದ ತೊಡಕುಗಳೆಂದರೆ ಸಾಗಣೆ, ವಿಭಿನ್ನ ಸ್ಥಳಗಳಲ್ಲಿ ವಿಭಿನ್ನ ರಿಚಿಗಳ ಆಯ್ಕೆ, ಕೆಲವೇ ಗೊತ್ತಿರುವ ಬ್ರಾಂಡಗಳ ಜನಪ್ರಿಯತೆ, ಗ್ರಾಹಕರ ಆಯ್ಕೆ, ದೊಡ್ಡದಾದ ಸರಬರಾಜು ಮಾರ್ಗ, ಮನೆಯಲ್ಲಿ ತಯಾರಿಸಿದ ಸಂಸ್ಕರಿತ ಪದಾರ್ಥಗಳ ಆಯ್ಕೆ ಮತ್ತು ತಾಜಾ ಹಣ್ಣು ಮತ್ತು ತರಕಾರಿಗಳಿಂದ ಸ್ಪರ್ಧೆ, ಎಂದು ಈ ಅಧ್ಯಯನದಿಂದ ತಿಳಿದುಬಂದಿದೆ.

ವಿದ್ಯಾರ್ಥಿಯ ಸಹಿ

ಡಾ. ಎಂ. ಎಸ್. ಜಯರಾಂ
ಪ್ರಧಾನ ಸಲಹೆಗಾರರು

CONTENTS

CHAPTER	TITLE	PAGE No.
I	INTRODUCTION	1-16
II	REVIEW OF LITERATURE	17-26
III	METHODOLOGY	27-33
IV	RESULTS	34-55
V	DISCUSSION	56-63
VI	SUMMARY AND POLICY IMPLICATION	64-70
VII	REFERENCES	71-75

LIST OF TABLES

Table No.	Title	Page No.
1.1	Food Processing Units in Organized Sector (numbers)	3
1.2	List of various processed fruit products	5
1.3	Exporting countries of processed fruits and vegetables	7
1.4	Export of processed Fruit and Vegetable products	7
4.1	General information of selected samples in Jaipur	35
4.2	List of various brands of Processed Fruit and Vegetable Products	37
4.3	Income group wise socio-economic features	39
4.4	Duration wise consumption pattern of various fruit and vegetable products	41
4.5	Quantity wise consumption pattern of Processed Fruit and Vegetable Products	47
4.6	Expenditure pattern of Processed Fruit and Vegetable Products	47
4.7	Factors influencing consumer preference for processed fruit and vegetable products	51

LIST OF FIGURES

Figure No.	Title	Page No.
1.	Structure of the Indian Food Processing Industry	3
2.	Jaipur city map	28
3.	Duration wise consumption pattern of pickle	42
4.	Duration wise consumption pattern of jam & jelly	42
5.	Duration wise consumption pattern of sauce & ketchup	43
6.	Duration wise consumption pattern of chips	43
7.	Duration wise consumption pattern of squash & syrup	44
8.	Duration wise consumption pattern of fruit juice/pulp	44
9.	Average monthly consumption pattern of various processed fruit and Vegetable products by low income group	48
10.	Average monthly consumption pattern of various processed fruit and Vegetable products by middle income group	48
11.	Average monthly consumption pattern of various processed fruit and Vegetable products by high income group	49
12.	Average monthly consumption pattern of various processed fruit and Vegetable products by combined income groups	49
13.	Factors influencing consumer preference for processed fruit and vegetable products	52

INTRODUCTION

CHAPTER I

INTRODUCTION

India is one of the key food producers in the world, with the second largest arable land area. It is the largest producer of milk, pulses, sugarcane and tea in the world and the second largest producer of wheat, rice, fruits and vegetables. India's food processing industry is one of the largest industries in the country - it is ranked fifth in terms of production, consumption, export and expected growth. The Indian food industry is estimated to be worth over US$ 200 billion and is expected to grow to US$ 310 billion by 2015. India is one of the world's major food producers but accounts for only 1.7 per cent (valued at US$ 7.5 billion) of world trade in this sector – this share is slated to increase to 3 per cent (US$ 20 billion) by 2015. The Indian food processing industry is estimated at US$ 70 billion. (*Source: Ministry of Food Processing Industries, Annual Report 2007-08)*

Food processing is the set of methods and techniques used to transform raw ingredients into food or to transform food into other forms for consumption by humans or animals either at home or by the food processing industry. Food processing typically takes clean, harvested crops or slaughtered and butchered animal products and uses these to produce attractive, marketable and often long shelf life food products. Similar process is used to produce animal feed. Food processing adds value to the agricultural produce starting at the post-harvest level. It includes even primary processing like grading, sorting, cutting, seeding, shelling, packaging etc.

Present Status and Future Prospects of Indian Food Processing Industries

Food processing is a large sector that covers activities such as agriculture, horticulture, plantation, animal husbandry and fisheries. It also includes other industries that use agriculture inputs for manufacturing of edible products. The Ministry of Food Processing, Government of India indicates the following segments within the Food Processing industry

- Fruits & Vegetables processing
- Dairy processing
- Grain processing
- Meat & poultry processing
- Fisheries and
- Consumer foods including packaged foods, beverages and packaged drinking water.

Sectors Products

- Fruits & Vegetables: Beverages, Juices, Concentrates, Pulps, Slices, Frozen & Dehydrated products, Potato Wafers/Chips, etc
- Dairy: Whole Milk Powder, Skimmed milk powder, Condensed milk, Ice cream, Butter and Ghee, Cheese
- Grains & Cereals: Flour, Bakeries, Starch Glucose, Cornflakes, Malted Foods, Vermicelli, Beer and Malt extracts, Grain based Alcohol
- Fisheries: Frozen & Canned products mainly in fresh form
- Meat & Poultry: Frozen and packed - mainly in fresh form, Egg Powder
- Consumer Foods: Snack food, Namkeens, Biscuits, Ready to eat food, Alcoholic and Non-alcoholic beverages

The success of a food processing industry depends on the regular and adequate supply of the raw materials for processing at a reasonable price. In this regard the food processing industries can go for a backward integration with the producer who supplies the raw materials.

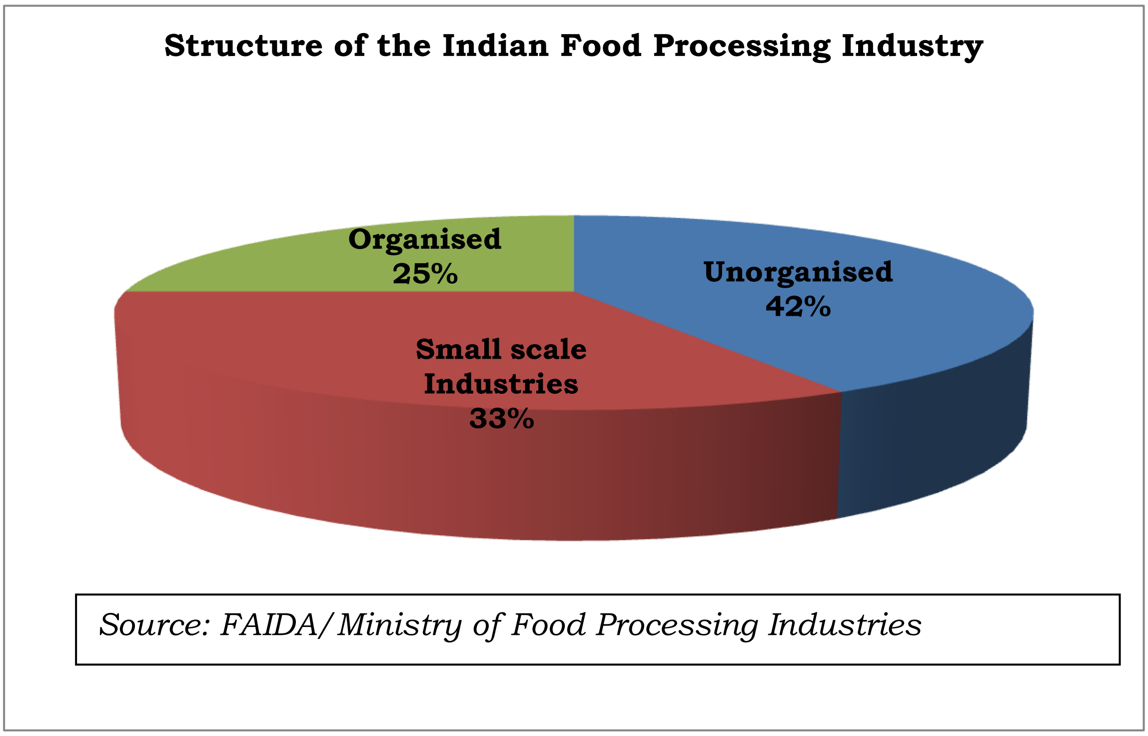

Fig 1 Structure of the Indian Food Processing Industry

Table 1.1 Food Processing Units in Organized Sector (In No's)

Flour mills	516
Fish processing units	568 (+482 cold storage units)
Fruit & vegetable processing units	5293
Meat processing units	171
Sweetened & aerated water units	656
Milk products units	266
Sugar mills	429
Solvent extract units	725
Rice mills	139208
Modernised rice mills	35088

Source: Ministry of Food Processing Industries, Annual Report 2007-08

Fruits & Vegetables processing industry

India produces the widest range of fruits and vegetables in the world. It is the second largest vegetable and third largest fruit producer accounting for 8.4 per cent of the world's food and vegetable production. The share of organised sector in fruit processing is estimated to be nearly 48 per cent. Fruit production in India registered a growth of 3.9 per cent during the period 2000-05 whereas the fruit processing sector grew several times faster at 20 per cent over the same period. The total area and production of fruits in India in the year 2008-09 are 6.10 million hectares and 68.46 million tonnes respectively. The total area and production of vegetables in India in the year 2008-09 are 7.98 million hectares and 129.07 million tonnes respectively. However, less than 2 per cent of the total vegetables produced in the country are commercially processed, as compared to nearly 70 per cent in Brazil and 65 per cent in USA. About 20 per cent of processed fruits and vegetables are exported.

The fruits and vegetable processing industry is rather fragmented. A large number of units are in household and small-scale sector, having low capacities of up to 250 tonnes per annum. From the year 2000 onwards the industry has seen a significant growth in ready-to-serve beverages, pulps and fruit juices, dehydrated and frozen fruits and vegetable products, pickles, processed mushrooms and curried vegetables, and units engaged in these segments are export oriented.

The major products processed out of fruits and vegetables include beverages, juices, concentrates, pulps, slices, frozen and dehydrated products, wine potato wafers or chips etc.

Table 1.2 List of various processed fruit products

S.N.	Fruits	Processed Fruit Products
1.	**Apple**	Apple without skin, cooked, canned apples, dehydrated apples, frozen apples, canned apple juice, apple juice, apple sauce.
2.	**Banana**	Banana Powder, Banana Flour, Banana Puree, Banana Chips, Banana Jam and Banana Jelly, Banana vinegar, Sweet coat banana.
3.	**Grape**	Jam, Juice, Syrup, Squash, Wine and Raisins.
4.	**Guava**	Pectin, Jam, Jelly, Pickle, Powder, Puree, Peru khand, Beverages, Ethanol Production, Wine and Animal Feed preparation.
5.	**Lichi**	Lichi crush, juice, squash, pickles, canned and dried fruits.
6.	**Mango**	Juice, squash, nectar, jam, pulp, puree, pickles, canned slices, mango leather (papad), starch from mango kernel.
7.	**Papaya**	Papain, Jam, Marmalade, Tutti-frutti (candy), Pickle, Wafers (Papad), Chocolate, Canned papaya, Fridge dried papaya.
8.	**Pineapple**	Canned Pineapple Juice, Pineapple Squash, Pineapple beverage, Canning Syrup from Pineapple Waste Juice, Preparation of Vinegar from Pineapple Wastes, Pineapple Proteases (Bromeliad), Pineapple Fibre.
9.	**Pomegranate**	Pomegranate Juice, Jelly, Syrup, Squash, Nectar, Anar rub, Anar crush, Dried pomegranate (Anar Dana), Powder, Pomegranate wine.
10.	**Sapota**	Chikku Juice, Squash, Syrup, Jam, Toffee, Candy, Dried Fruit Scrap and Powder, Milk Shake, Ice cream
11.	**Watermelon**	Juice.

EXPORT

The Indian food processing industry is primarily export oriented. India's geographical situation gives it the unique advantage of connectivity to Europe, the Middle East, Japan, Singapore, Thailand, Malaysia and Korea. One such example indicating India's location advantage is the value of trade in agriculture and processed food between India and Gulf region.

Major products exported include fruit pulps, pickles, chutneys, canned foods, concentrated pulps and juices and vegetables. Mango and mango based products alone constitute 50 per cent of the exports. Many non-traditional vegetables mainly processed & gherkins and others like asparagus, celery, bell pepper, sweet corn, green and lime beans and organically grown vegetables are also being increasingly exported.

India's exports of processed food was Rs. 8975 Crores in 2007-08, which includes the share of products like Mango Pulp (Rs. 509.69 Crores), Dried and Preserved Vegetable (Rs. 429.94 Crores), Pickles and Chutneys (Rs. 250.62 Crores), Other Processed Fruit and Vegetable (Rs. 712.20 Crores), Pulses (Rs. 549.01 Crores), Groundnuts (Rs. 1054.08 Crores), Guargum (Rs. 1125.75 Crores), Jaggery & Confectionary (Rs. 2810.68 Crores), Cocoa Products (Rs. 42.26 Crores), Cereal Preparations (Rs. 677.35 Crores), Alcoholic and Non-Alcoholic Beverages (Rs. 338.56 Crores) and Miscellaneous Preparations (Rs. 474.47 Crores).

Table 1.3 Exporting countries of processed fruits and vegetables

Processed fruits and vegetables:	
Dried & Preserved Vegetables	Sri Lanka, USA, UAE, Germany, France, Netherland
Mango Pulp	UAE, Saudi Arab, Kuwait, Netherlands, UK, USA,
Pickle & Chutney	UK, USA, UAE, Germany, Canada, Netherlands, Saudi
Other Processed Fruits & Vegetables	USA, Netherlands, UK, UAE, Indonesia, Philippines

Table 1.4 Export of processed Fruit and Vegetable products in 2008

Processed Fruits & Vegetables	Quantity (In MTs)	Value (Rs. in crore)
Dried & Preserved Vegetables	530192.23	429.94
Mango Pulp	188367.28	509.69
Pickle & Chutney	130007.8	250.62
Other Processed F &V	206488.17	712.2
Total for Processed F & V	1055055.49	1902.45
Total of processed Food	2268703.77	8975

Source-APEDA, 2008

Retail in Food Processing

The size of the Indian urban food market is estimated at Rs 350,000 crore. The domestic market for processed food is huge and fast growing. The retail boom will create a huge demand for the food-processing sector in the coming years. Little wonder that 2007 has been designated the Year of Food Technology.

The key drivers for increased demand in value-added processed food products are:

a) Growth in consumer class;
b) Change in lifestyle characterized by expanding urban population, increased number of nuclear and dual-income families;
c) Change in attitudes and tastes with increasing modernization and to a lesser extent westernization of tastes, particularly, of the youth;
d) Low penetration rates; and
e) Ability to offset seasonal supply-and-demand effects in fresh products.

India's Potential Untapped-Food Industry

India is the world's second largest producer of food next to China, and has the potential of being the biggest with the food and agricultural sector. The processing food segment accounts for 29.4 billion, in a total estimated food market of about USD 91.7 billion. The food processing industry is one of the largest industries in India. It currently ranks fifth in terms of production, consumption, export and growth prospects. The Confederation of Indian Industry (CII) has estimated that the food-processing sector has the potential of attracting USD 33 billion of investment in 10 years and generates employment of 9 million people. The Government has formulated and implemented several Plan Schemes to provide financial assistance for setting up and modernizing food processing units, creation of infrastructure, support for research and development and human resource development in addition to other promotional measures to encourage the growth of the processed food sector.

Constraints & Drivers of Growth

Constraints are any factors which define the area of the project, and usually fall within product, processing, marketing, finance, company and environment. The main marketing constraints are related with the channels, distribution, prices, promotion, advertising, competitors, market size and product mix. Changing lifestyles, food habits, organized food retail and urbanization are the key factors for processed foods in India, these are post-liberalization trends and they give boost to the sector. There has been a notable change in consumption pattern in India. Unlike earlier, now the share and growth rates for fruits, vegetables, meats and dairy have gone higher compared to cereals and pulses. Such a shift implies the need to diversify the food production base to match the changing consumption preferences. Also in developed countries it has been observed that there has been a shift from carbohydrate staple to animal sources and sugar. Going by this pattern, in future, there will be demand for prepared meals, snack foods and convenience foods and further on the demand would shift towards functional, organic and diet foods.

Some of the key constraints identified by the food processing industry include:

- Poor infrastructure in terms of cold storage, warehousing, etc
- Inadequate quality control and testing infrastructure
- Inefficient supply chain and involvement of middlemen
- High transportation and inventory carrying cost
- Affordability, cultural and regional preference of fresh food
- High taxation and
- High packaging cost

SWOT Analysis of Food–Processing Industry

Strengths

- Abundant availability of raw material
- Priority sector status for agro-processing given by the central Government
- Vast network of manufacturing facilities all over the country
- Vast domestic market

Weaknesses

- Inadequate availability of sufficient/good infrastructural facilities
- Lack of adequate quality control and testing methods as per international standards
- Inefficient supply chain due to a large number of intermediaries
- High requirement of working capital.
- Inadequately developed linkages between R&D labs and industry.
- Seasonality of raw material

Opportunities

- Large crop and material base offering a vast potential for agro processing activities
- Setting of SEZ/AEZ and food parks for providing added incentive to develop green field projects
- Rising income levels and changing consumption patterns
- Favourable demographic profile and changing lifestyles
- Integration of development in contemporary technologies such as electronics, material science, bio-technology etc. offer vast scope for rapid improvement and progress
- Opening of global markets

Threats

- Affordability and cultural preferences of fresh food
- High inventory carrying cost
- High taxation and High packaging cost

Indian and Foreign Trade

Investments

The food-processing sector needs investment of about USD 28-35 billion to meet the changing food demands in India, according to industry estimates. The outlay for the food-processing segment has been increased from USD 19.5m in '04-05 to USD 41.4 million in the next year, more than twice the earlier amount. Foreign Direct Investment (FDI) in the country's food sector is poised to hit the USD 3-billion mark. In the last one year alone, FDI approvals in food processing have doubled. Add to this the USD 55 million that has been invested in sugar and cooking oil companies, and you can see how the changing diet of upwardly mobile India along with the new mega food parks are becoming dishy to overseas investors. Foreign direct investment in food already beats the money being pumped into the far-more-glamorous hotels and tourism industry.

According to latest industry ministry data, the cumulative FDI inflow in food processing reached USD 2,804 million in March '06. In '05-06, the sector received approvals worth USD 41million. This figure is almost double the USD 22 million approved in '04-05.

Between 1991 to November 2006 the total inflow of foreign direct investment in the food-processing sector accounts Rs 52.7 bn (US$ 1.2 bn). The highest investment towards the food-processing sector in a single year was recorded in 2001-02 amounting to Rs 10 bn. During the last five years, FDI witnessed an inflow of over Rs 24 bn of foreign investment. During the last five years Maharashtra received the highest share of FDI in food processing. The dairy and consumer industries received FDI worth Rs 2.7 bn each as foreign investment. Countries of European Union such as Netherlands, Germany, Italy and France contribute nearly 30 per cent of FDI in food-processing sector.

Investments Required in the Food Processing Sector

India requires an investment of US$ 28 billion to bring the level of processing to 10-12 per cent by 2012. The following areas of investment have been identified by the Ministry of Food Processing:

- Mega food parks
- Agri-infrastructure and supply chain integration
- Logistics and cold chain infrastructure
- Fruit and vegetable products
- Animal products, meat and dairy
- Fisheries and sea food
- Cereals, consumer foods and ready-to-eat foods
- Wine and beer
- Machinery and packaging

Indian food processing industry has seen significant growth and changes over the past few years, driven by changing trends in markets, consumer segments and regulations. These trends, such as changing demographics, growing population and rapid urbanisation are expected to continue in the future and therefore, will shape the demand for value added products and thus for food processing industry in India. The Government of India's focus towards food processing industry as a priority sector is expected to ensure policies to support investment in this sector and thus attract more FDI.

Some of the sectors which are relatively more attractive include fruits and vegetables, meat, poultry and fisheries, dairy products, snack foods and ready-to-make items.

India, having access to vast pool of natural resources and growing technical knowledge base, has strong comparative advantages over other nations in this industry. Also, the Government has provided various incentives such as capital subsidies and tax exemptions for boosting investments in these segments. However despite the various aspects making these sectors attractive certain success factors are crucial in reaping their potential. These include, scale and supply chain efficiency, brand competitiveness and effective marketing, deploying superior technology, product innovation and pricing.

The Government also encourages many participative models such as terminal markets and contract farming arrangements to benefit the various stakeholders. Many private players participating in these arrangements have been successful. Also, the various states realising the importance of this industry from an employment as well as revenue generation perspectives have been extremely forthcoming in bolstering growth in this industry. Some of the states that have taken an extra mile by providing various fiscal as well as non-fiscal initiatives include Andhra Pradesh, Punjab, Madhya Pradesh, Uttar Pradesh and Karnataka. These states while having favourable factor conditions in terms of abundance of raw materials and labour, have also designed specific food processing policies to encourage private sector participation and foreign investments. Many foreign MNC's such as Nestle, Perfetti Van Melle and Indo Nissin Products have been successful by leveraging the India-advantage. Learning from the experiences of these successful MNC's and in light of the above assessment, the food processing sector in India is clearly an attractive sector for investment and offers significant growth potential to companies so investing. A well-integrated supply chain and a successful marketing strategy with investments in the most attractive segments and states are key to competitiveness to success in this sector.

Major Food Processing Companies in India

Major MNCs

Nestle, Pepsi,Coke, Kelloggs, Conagra, Unilever, Perfetti, Glaxo Smithkline, Heninz, Wyeth, Ajinomoto, Nissin met, Walmart

Major Indian Companies

ITC, Dabur, Britannia, Parle, Amul, Haldiram, Godrej, Venky's

With the advent of the multinational companies in the Indian market the competition in food processing industry has increased. These multinational companies are facing tough competition from strong Indian brands. Such competition has obviously increased innovations. It has also facilitated a sustained growth of the sector and improved global competitiveness. The emerging new growth phase of the sector is just in its initial stages with the potential for India to emerge as a leading food supplier to the world.

Special Features of the Investigation

Many agricultural commodities are to be processed to the consumable form before reaching the final consumer. Therefore, processing in agriculture is as important as its production. Processing not only increase the self-life as well as value will be added to the products. Further, the processed products can be offered to the consumer as per his preference. Processing creates employment opportunities too.

Fresh fruits and vegetables are available only in a season. But if they are processed into different products, they are available to the consumers whole the year. Further processing helps to clean glut situation in the market and enable the farmers to markets their fruits and vegetables for a remunerative prices. Therefore, it is very important for the processing industry/enterprises to know the preference of the consumers for processed products. Accordingly the fruits and vegetables can be processed and made available to the consumers.

The specific objectives of the study are:

1. To identify the different brands of processed fruit and vegetable products available in the selected retail outlets,

2. To study the consumption pattern of processed fruit and vegetable products by consumers,

3. To examine the factors influencing consumer's preference towards processed fruit and vegetable products,

4. To document the constraints in the marketing of processed fruit and vegetable products.

Scope of the study

- Many agricultural commodities are to be processed before reaching to the final consumer. Therefore, processing is important for increasing shelf life as well as for value addition.

- Further, the processed products can be offered to consumers as per their preferences. Processing creates employment opportunities too.

- The changing lifestyles, rising middle class population and easy availability of processed fruits and vegetables have led to increased consumer preference for processed products.

- The expansion of organized retailing has brought about the reach of national and regional brands to urban consumers.

Limitation of study

This study was based on primary data collected from sample consumers by survey method. As many of the consumers furnished the required information from their memory and experience, the collected data would be subjected to recall basis. The study area was limited to Jaipur city, Rajasthan and the findings may not be applicable to other markets, as vast difference exists among the consumers with regard to demographic and psychographic characteristics. Also the study is limited only with respect of Processed fruit and vegetable products, it doesn't include the other segments of processed food products, such as dairy industry, Grain processing, Meat & poultry processing, Fisheries and Consumer foods including packaged foods, beverages and packaged drinking water. Hence, the findings of the study may be considered appropriate for the situations similar to study area and extra care should be taken while generalizing the results.

Presentation of the project report

The project report is presented in six chapters.

Chapter-I:-Introduction. In this chapter, the nature and importance of the study and also the specific objectives of the study have been indicated.

Chapter-II:-Review of literature: It presents a comprehensive review of the relevant research work done on related topics by different economists/ Authors.

Chapter-III:-Methodology: It outlines the feature of the study area, sampling design followed, collection of relevant data and analytical tools used in the study.

Chapter-IV:-Results: It is devoted to present the main findings of the study through tables and graphs.

Chapter-V:-Discussion: It presents the interpretation of the results of the study

Chapter-VI:-Summary, conclusion and Policy implication: This chapter provides summary, conclusion and suggest the policy implication from the findings.

REVIEW OF LITERATURE

CHAPTER II

REVIEW OF LITERATURE

In this chapter, research work done in the past regarding Consumption pattern of consumers, Factors influencing consumer preference, Constraints in marketing have been reviewed and presented under the following sub-headings.

2.1 Consumption pattern

2.2 Factors influencing consumer preference

2.3 Constraints in marketing

2.1 Consumption pattern

Dhuna and Mukesh (1984) conducted a study to determine the prevailing pattern of consumption of soft drinks. A sample of 150 respondents was surveyed regarding their consumption habits. Analysis revealed that 54 per cent of consumption was in summer and 46 per cent of the consumption was during other seasons put together. It was found that about 26 of the respondents were regular consumers and the rest consumed soft drinks occasionally.

Balaji (1985) studied fish consumption behaviour of 526 consumers in Vishakapatnam city. The study revealed that 77.00 per cent of respondents consumed fish for dinner and 22.00 per cent for lunch. About 30.00 per cent of the respondents did not consume fish on festival days, as those days were considered auspicious, while the rest had no notations and consumed fish, irrespective of festivals.

Puri and Sangera (1989) highlighted the consumption pattern of processed products in Chandigarh. Jam was found to be most popular among all classes of income. Orange squash consumption was maximum in high and middle income families. Pineapple juice consumption increased with a rise in the income.

Srinivasan (2000) revealed that, consumer with higher educational level was found to consume more processed products. The quantities of processed fruit and vegetable products were consumed more in high income group. The tolerance limit of price increase identified was less than 5 per cent, any price change above this limit, would result in discontinuance of the use of the processed product. Consumers preferred processed products because of convenience of ready-to-eat form.

Kamenidou (2002) presented the findings on the purchasing and consumption behaviour of Greek households towards three processed peach products: canned peaches in syrup, juice and peach jam. The results revealed that 47.50 per cent of the households purchased canned peaches in syrup, 67.40 per cent purchased peach juice and 42.60 per cent purchased peach jam. Reasons for such purchase were satisfactory taste and qualities and household's perception that they were healthy products. The results also indicated that the consumption quantities were considered low, while households usually purchased the same brand name, meaning that there was a tendency for brand loyalty.

Gorny (2004) viewed that fresh-cut (minimally processed) fruit and vegetable sales have grown to approximately $12 billion per year in the North American foodservice and retail market and account for nearly 15 per cent of all produce sales. Fresh-cut products offer produce growers/shippers an opportunity to increase sales by adding value to raw agricultural commodities and offering consumers ready-to-eat produce that is convenient, nutritious and good tasting. The largest portion of U.S. fresh-cut produce sales at retail are fresh-cut salads, with sales of $2.4 billion. Retail fresh-cut fruit products are the fastest growing fresh-cut produce category and it is anticipated that this segment will continue to experience significant growth in the near future. Fresh-cut fruit products have a number of food quality and safety challenges which need to be addressed before this category will come to rival retail fresh-cut salad and vegetable sales. Materials sourcing issues, increased mechanization, optimizing handling practices such as optimizing MAP systems and reducing food safety risks by development of effective preventative and intervention strategies for fresh-cut products, all warrant further investigation.

Kubendran and Vanniarajan (2005) studied that, the change in consumption pattern was due to changes in food habits. If income and urbanization increase among consumers, the percentage of income spent on consumption increased. The urban consumers preferred mostly branded products compared to rural consumers. The most significant factors influencing buying decisions were accessibility, quality, regular supply, door delivery and the mode of payment.

G. S. Afridi et al. (2008) studied wheat consumption pattern in Muzaffarabad, Azad Jammu and Kashmir (AJK) and found that non-producers of wheat consume less wheat in rural areas as well as in urban areas as compared to wheat producers. Furthermore non-producers rural wheat consumer consume less amount as compared to urban one but consume more than its urban counterpart if he is wheat producer in rural areas. These figures also depict that wheat producers consume about 16.77 kg more wheat per capita per annum than wheat non-producer consumer. The per capita wheat consumption for sampled respondents was lower as compared to Pakistan (108 kg/capita/annum)

2.2 Factors influencing the consumer preference

Kumar *et al.* (1987) examined the factors influencing the buying decision making of 200 respondents for various food products. Country of origin and brand of the products was cross tabulated against age, gender and income. Results revealed that the two considered factors were independent of age, education and income. The brand image seemed to be more important than the origin of the product, since the consumers were attracted to the brands.

Rees (1992), in his study revealed that factors influencing the consumer's choice of food were flavour, texture, appearance, advertising, a reduction in traditional cooking, fragmentation of family means and an increase in 'snacking'.*etc*. Demographic and household role changes and the introduction of microwave ovens had produced changes in eating habits. Vigorous sale of chilled and other prepared foods was related to the large numbers of working wives and single people, who require value convenience. Consumers were responding to messages about safety and healthy eating. They were concerned about the way in which food was produced and want safe, 'natural', high quality food at an appropriate price.

Shaw (1993) studied the consumption pattern of processed food in Delhi. Results showed that easy availability, taste and easy to store qualities of the processed products were more popular. Major factors which influenced buying decisions of consumers were brand name, government certification and price of the product. He noticed that processed food products were boon to busy housewife as it made cooking simple and saved time.

Singh *et al*. (1995) considered factors namely quality, availability, convenient pack size, flavour, colour, freshness and mode of payment to study the preference for a particular source of milk namely, rural milk vendors, privately owned city dairies and dairy factories. 70 per cent of the respondents preferred milk supplied by city dairies. The least preferred was that sold by dairy factories.

Gerhardy and Ness (1995) employed conjoint analysis to know the consumer preference for eggs in United Kingdom. A sample of 160 respondents was interviewed in five locations. The average relative importance given for production method was 30.4, price and origin were 25.6 and 25.06 per cent respectively. Freshness indicators (egg laid date, packed date etc.) received an importance of 18.9 per cent.

Huang and Fuj (1995) used conjoint analysis to assess Taiwanese consumer's preferences for Chinese Sausages. The survey was aimed at identifying consumers' decision making and choice behaviour. Taste and brand had highest influence on consumer's overall judgment of the product.

Wandel (1995) used multivariate analysis to study factors influencing the consumption of vegetables and fruits among Norwegian consumers. The factors, which determined consumption, were sex, age, income and household structure. Further it was reported that health conscious consumers used more fruits and vegetables, whereas those who and a preference for quickly prepared food tended to have a low consumption of vegetables.

Sharma and Poonam (1997) applied conjoint analysis to examine the quality attributes that affect consumer's preference for cut flower. It was found that colour was the most important quality attribute for rose followed by variety, price and floral arrangement. He also observed that as consumer's income increased their expenditure on cut flowers also increased.

Sharma (1997) explained the factors determining consumer's acceptance and preference for food in general. Many factors combine and interact to make buying a complex process. Price was identified as an important factor; however it had some limitations on the consumer's choice. Factors like sensory attributes regional preference, age, sex, interest, motivation, discrimination and income also influenced food consumption.

Amitha (1998) studied the factors influencing the consumption of selected dairy products in Bangalore city. The results of the study revealed that, income and price significantly influenced the consumption of table butter. Price had a negative impact and income a positive impact on consumption

Magnusson *et al.* (2001) reported demographic differences with respect to Swedish consumers' attitudes towards organic foods (milk, meat, potatoes, and bread), purchase frequency, purchase criteria, perceived availability, and beliefs about organic foods. The majority of consumers, and particularly women and young respondents (18-25 years) reported positive attitudes, but purchase frequency was low. A total of 13 per cent stated that they regularly bought organic milk. Corresponding figures for organic meat, potatoes, and bread were 13, 16, and 8 per cent respectively. The most important purchase criterion was good taste, and the least important was organically produced. Approximately half of the respondents were satisfied with the availability of the organic foods. The organic foods were perceived to be more expensive and healthier than conventionally produced alternatives. A major obstacle to the purchase of organic foods was reported to be premium prices.

Cicia and Giudice (2002) studied the preferences of an important category of consumers of organic products (regular consumers of organic food or RCOF) allowing for preference heterogeneity. A survey instrument was developed to elicit preferences for important qualitative and quantitative attributes of extra virgin olive oil. Each respondent made eight choices to rank-order nine product profiles in terms of their individual preference. Product attributes included price, origin of production, type of certification and visual appearance. Results displayed significant preference heterogeneity for origin of production and price. It was also found that price played an important role as quality proxy, while visual appearance was not significant in preference modeling and the type of certification programme had a fixed effect.

Nagaraja (2004) opined that, buying behaviour is very much influenced by experience of their own and of neighbour consumers and his family. Above all, the quality of the product and its easy availability were the primary and the vital determinants of his buying behaviour. Consumers were influenced by touch and feel aspect of any promotional activity.

Shivkumar (2004) showed that the consumer, irrespective of income groups, was mainly influenced by the opinions of their family members to purchase. Consumers were also influenced by the dealers' recommendation, followed by advertisement.

Narang (2006) opined that, a buyer does not stick to one brand in case of food purchasing. They should be able recall different brand names when they go for purchase. Repititive advertising can be used to promote brand recall. The product should be associated with style and trend, so that it appeals to the youth and the brand name should be developed as a fashion statement. Promotional schemes such as discounts and free offers with purchase were suggested to increase rates.

Vincent (2006) elicited that quality was an important factor that draws consumer towards branded products. Branded products were accepted as good quality products. People do not mind paying extra for branded products, as they get value for money. Media is a key constituent in promoting and influencing brand. A child's insistence affects family's buying behaviour. Children are highly aware and conscious of branded items. Although unbranded products sometimes give same satisfaction as branded products, customers would still prefer to purchase a branded product.

Banumathy and Hemamena (2008) in their study revealed that the companies manufacturing soft drinks must manufacture high quality soft drinks in order to compete with soft drinks of multinational companies. They suggested demand promotion by effective advertising, improving quality by keeping a check on the taste and price. Study also revealed that there was no association between age, education, occupation and choice of brands but there was association between monthly income and brand preference and also there was close relationship between price and satisfaction level.

2.3 Constraints in marketing

Saxena (1992) in his study observed that the rural markets and marketing system in Rajasthan are rudimentary and diversified in nature. The rural markets in Rajasthan are operating in the form of periodic markets. In order to overcome the constraints faced by these markets, the author suggests planned development of these markets in various regions of the state.

Vedini and Gracy (1995) studied the major problems in the production and marketing of jasmine in Mysore district. The major problems in the production of jasmine are inadequacy of financial resources, lack of technical know-how, non-availability of labour and incidence of pest and diseases. High commission charges, inadequate transport facilities and high cost of transportation were the major problems in marketing.

Brahmaprakash and Sushila Srivastava (1996) in their study on economic constraints in pulse marketing mentioned low marketable surplus and large price–spread are the main problems in marketing of pulses. Most of the farmers grow pulses of their own domestic requirement on limited area. This result in low marketable surplus and the farmers sell the produce at the village level only to the village traders who offer lower price for the produce. The data collected on price–spread at Kanpur revealed that the producer’s share in the consumer’s rupee remained as low as 60.69 and 50.78 paisa in pigeon pea and chickpea respectively. The constraints can be eradicated by appropriate transfer of technology for cultivation of pulses under dry farming of limited irrigation agriculture, expansion of crop insurance schemes to cover pulse crops and improving the market efficiency so that producers could get their due share in the prices paid by the ultimate consumer.

Kandarpa kumar barmon (1997) identified some constraints in increasing pulse production in five villages of Assam namely, pathika, tengabari, biswannath dagaon, silamri and gualtolli. For this purpose he interviewed sixty pulse growers. the major problems identified were lack of irrigation facilities (only 13.2%of total pulse area is under irrigation), non–availability of suitable fertilizers, use of primitive techniques and non-adoption of modern technology, absence of credit and marketing facilities, preference to farmers to grow rice for their subsistence, yield losses due to insects, pests, diseases, flood and poor extension services.

Pagire and Jadhav (1998) studied the problems in marketing of grapes in Maharashtra and concluded that, there was high cost of packing material, high cost of transportation and non-availability of pre-cooling and cold storage facilities, etc. The number of grape growers who reported the above problems constituted 88 per cent. Nearly 50 per cent of the grape growers faced the problem of non-availability of skilled labour. About 78 per cent of the respondents opined that there was undue delay in payment by the commission agents and about 93 per cent grape growers reported that the rate of commission charges was also too high and the commission agents resorted to unauthorized deductions from the payments.

Deka Hem Chandra (1999) in his study identified the bottlenecks in the rural market and problems faced by the farmers in marketing of agricultural products in the regulated markets of Assam. Lack of infrastructure facilities like auction platform, godown, buying and selling complex, parking and loading space have still been standing as the most important barriers in the implementation of market regulations in Assam. Moreover the whole amount of marketable surplus of major crops is transacted through the traditional markets operating within the boundaries of regulated market yards and nothing is left for sale in the regulated markets.

Gajanana and Subramanyam (1999) studied the constraints in production and marketing of anthuriums in Karnataka. The non-availability of the required quantity and quality of planting materials, high cost of seedlings, incidence of pest and diseases were the major constraints in the production of flowers. With regard to marketing, absence of organized market was the major problem followed by high cost of transportation, exploitation by the traders.

Khairoowala and Siddiqui (2001) observed that, lot of hustle and bustle in the haats, lack of awareness about new products among villagers were the major problems in rural markets. They suggested some measures for marketers for improvement of the haats such as initially the marketers should hire some stall/ place in haats to create awareness about their product among visitors and with some incentives or scheme. They should offer high price branded products in big haats and cheap and reasonable quality products in smaller haats and concluded that haats have lots of potential which need to be exploited and can come out to be answer to all marketing problems in rural India.

Gildemacher et al. (2009) through a diagnosis of the potato systems in the three countries on the basis of surveys and stakeholder workshops, seed potato quality management, bacterial wilt control, late blight control and soil fertility management were identified as key technical intervention topics. For effective problem solving in these areas, the functioning of the potato innovation system requires improvement to better deliver the functions of potato marketing as well as knowledge development and information exchange.

METHODOLOGY

CHAPTER III

METHODOLOGY

The present study was undertaken to know the various available brands of processed fruit and vegetable products, to study the consumption pattern of processed fruit and vegetable products, to examine the factors influencing consumer's preference and to document the constraints in the marketing of processed fruit and vegetable products. For this purpose the following areas are covered

3.1 Selection and description of the study area

3.2 Sampling procedure

3.3 Collection of data

3.4 Analytical tools and techniques employed

3.1.1 Selection of the study area

Jaipur, the capital city of Rajasthan was selected purposively for the study, as it is one of the fastest growing metropolitan city and is highly cosmopolitan in nature with people of different religions, castes, occupations, cultures, languages and food habits residing here. In Jaipur, for the study purpose five areas selected which represents north, south, east, west and central of Jaipur. In north Jaipur, datas are collected from Murlipura, Vidhyadhar nagar and Shastri nagar areas and in south Jaipur, Mansarovar and Malviya nagar areas was chosen for study purpose. Adarsh nagar and Raja park areas are selected for data collection in East Jaipur and Jhotwara area is selected for data collection in west Jaipur. Chandpole and Sindhi Camp areas are chosen for data collection in Central part of Jaipur city.

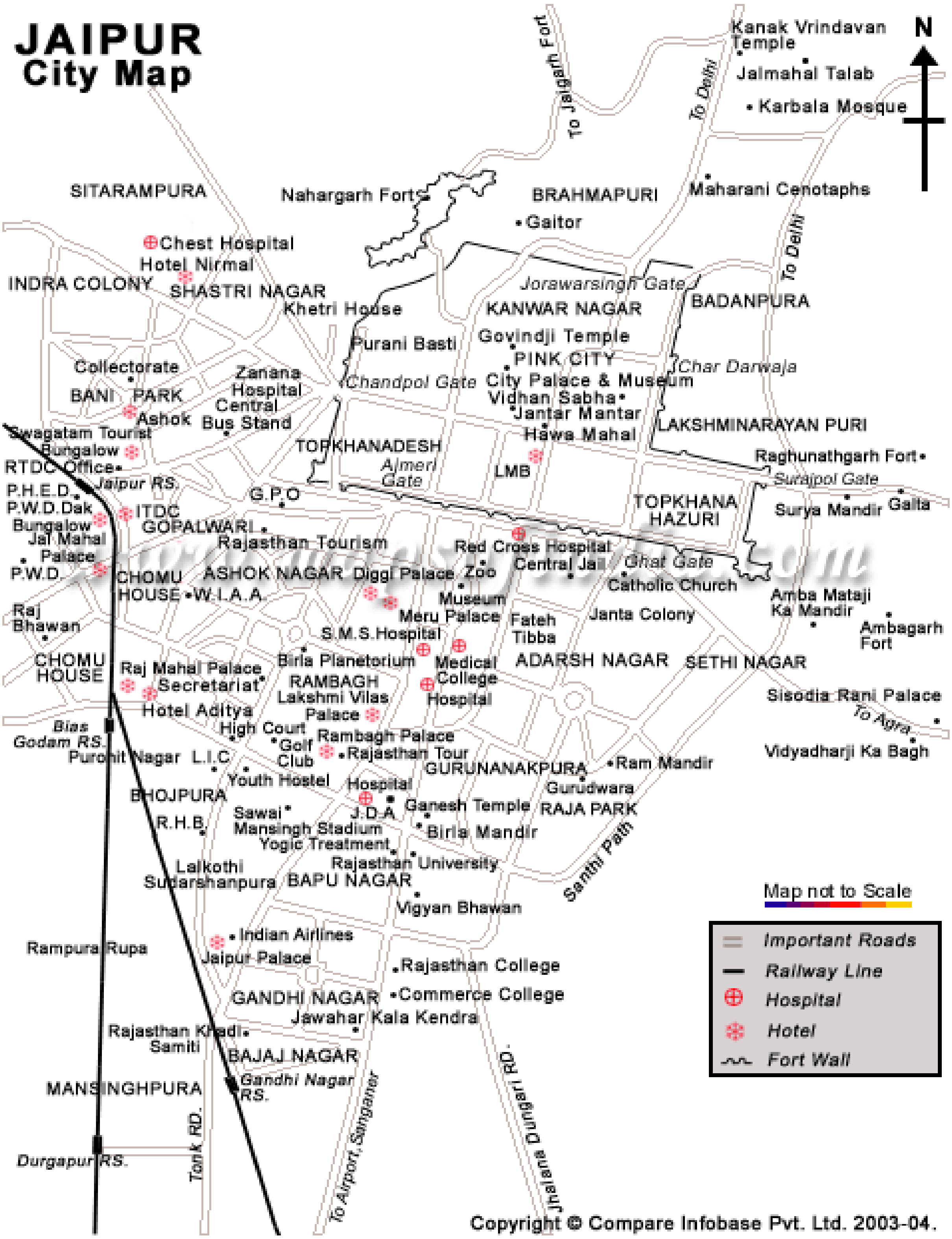

Fig 2 Jaipur city map

3.1.2 Description of study area

Jaipur, also popularly known as the *Pink City*, is the capital and largest city of the Indian state of Rajasthan. During the British rule in India, Jaipur was the capital of the princely state of Jaipur. Founded on 18 November 1727 by Maharaja Sawai Jai Singh II, the ruler of Amber, the city today has a population of more than 3.5 million.

Jaipur is the first planned city of India, located in the semi-desert lands of Rajasthan. The city which once had been the capital of the royalty now is the capital city of Rajasthan. The very structure of Jaipur resembles the taste of the Rajputs and the Royal families. At present, Jaipur is a major business center with all requisites of a metropolitan city. Jaipur is a popular tourist destination in Rajasthan and India.

Under the terms of geography, Jaipur extends from latitude 26.92 degrees in the north to longitude 75.82 degrees in the east. The city covers an area of 200.4 sq kms and lies at an altitude of 431 m above sea level. Talking about the geographical location of Jaipur, India, the city is situated in the northern part of India. Jaipur is located in a very dry and sandy area.

3.2 Sampling procedure

Data regarding the consumer preference for processed fruits and vegetables was collected using pre tested structured questionnaire. A convenient sampling method was adopted to select the respondents. The sampling was done in different localities of jaipur city to get a diversification in the sample mainly based on region, per capita income and social class. Data was collected from various age groups, income groups and from both the sexes. A total of 120 consumer respondents and 20 retailers were interviewed.

3.3 Collection of data

Primary data regarding socio-economic characteristics like household size, age, income, education, expenditure on food, purchase behaviour and reasons for purchase of processed fruits and vegetables were collected by personally interviewing the respondents using a structured questionnaire which was pre-tested and redefined. The respondents were contacted individually and the objectives of the study were clearly explained to them to ensure their cooperation and accuracy in their responses. Even though none of the households maintained any record regarding the expenses and purchases they recalled it from memory.

3.3.1 Period of study

The reference year of the study was 2009-10 and the collection of data was carried out during the period May 2010.

3.4 Analytical tools and techniques employed

Detailed descriptions of the analytical tools employed in the study are given below.

3.4.1 Measures of central tendency

Simple conventional method of Measures of central tendency was used in order to study the consumer's socio economic characters, expenses on food and fruits and vegetables, duration wise consumption pattern of processed fruits and vegetables and quantity wise consumption pattern of processed fruits and vegetables.

3.4.2 Tabular Analysis

Percentage analysis was used to study the socio economic characteristics like age, education, occupation, family size, food habit (vegetarian or non-vegetarian), consumer preference for processed fruit and vegetable products, various brands of processed fruit and vegetable products and the amount spend on these when compared to other fruits and vegetables which they buy.

3.4.3 Garrett's Ranking Technique

Garrett's ranking technique was adopted for the studying brand preferences and factors influencing for preference of a particular brand.

In the first stage: ranking given by 100 respondents for each factor was analyzed. E.g.: Rank given to 10 different factors were analyzed through the rank given to these factors by each respondent. Respondents have to give 1 to 10 ranks to these factors.

Respondent No.	**Factors**									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	8	5	1	2	9	10	6	7	4	3
2	3	2	7	5	10	8	6	4	1	9
3	3	6	9	8	7	10	5	2	1	4

In the second stage: Thus assigned ranks by the individual respondents were counted into percent position value by using the formula.

Per cent position = 100 $(R_{ij} – 0.5)/N_j$.

Where, R_{ij} stands for rank given for the i^{th} factor by the j^{th} individual.

N_j stands for number of factors ranked by jth individual.

The per cent position value for the same assigned ranks by the respondents as follows.

Respondent No.	Factors									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	75	45	5	15	85	95	55	65	35	25
2	25	15	65	45	95	75	55	35	5	85
3	25	55	85	75	65	95	45	15	5	35

In the third stage: For each per cent position scores were obtained with reference to Garrett's tables and each per cent position value was converted into scores by reference to Garrett's Table.

Eg: Garrett's table scores for the per cent position values as follows

Respondent No.	Factors									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	37	52	82	70	30	18	47	42	57	63
2	63	70	42	52	18	37	47	57	82	30
3	63	47	30	37	42	18	52	70	82	57

In the fourth stage: Summation of these scores for each factor was worked out for the number of respondents who ranked for each factor

Respondent No.	Factors									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	37	52	82	70	30	18	47	42	57	63
2	63	70	42	52	18	37	47	57	82	30
3	63	47	30	37	42	18	52	70	82	57
∑	163	169	154	159	90	73	146	169	221	150

In the fifth stage: Mean scores were calculated by dividing the total score by the number of respondents.

Respondent No.	**Factors**									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	37	52	82	70	30	18	47	42	57	63
2	63	70	42	52	18	37	47	57	82	30
3	63	47	30	37	42	18	52	70	82	57
∑	163	169	154	159	90	73	146	169	221	150
Mean	54.33	56.33	51.33	53.00	30.00	24.33	48.67	56.33	73.67	50.00

In the last stage: Overall ranking was obtained by assigning ranks 1, 2, 3 …. *etc*. in the descending order of the mean score.

Respondent No.	**Factors**									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	37	52	82	70	30	18	47	42	57	63
2	63	70	42	52	18	37	47	57	82	30
3	63	47	30	37	42	18	52	70	82	57
∑	163	169	154	159	90	73	146	169	221	150
Mean	54.33	56.33	51.33	53.00	30.00	24.33	48.67	56.33	73.67	50.00
Ranks	III	II	V	IV	VIII	IX	VII	II	I	VI

RESULTS

CHAPTER IV

RESULTS

The results of the study are presented under the following headings.

4.1 Socio-economics characteristics of the selected samples
4.2 Identification of various brands of processed fruit and vegetable products
4.3 Consumption pattern of processed fruit and vegetable products
4.4 Factors influencing consumer preference
4.5 Constraints in the marketing of processed fruit and vegetable products

4.1 Socio-economic characteristics of the selected samples

Table 4.1 presents the Socio-economic characteristics of the selected samples in Jaipur city. It could be seen from the table that the maximum number of respondents *i.e.*, 35.83 per cent of them belonged to the age group of 25-34 years. The second maximum number of respondents *i.e.,* 26.67 per cent belonged to age group of 35 to 44 years and 17.5 per cent of them were below the age of 25 years. Around 15.83 per cent of the respondents were between the age of 45 to 54 years. Very few per cent of the respondents were above 54 years (4.17%).

Among the total respondents 77.50 per cent of them were male and remaining 22.50 per cent of them were female.

Maximum numbers of the selected respondents were schooled up to Higher Secondary (HSC) or Senior Secondary (SSC) (38.33%), 27.50 per cent of them were of graduate or diploma holder, 15.00 per cent of the respondents were of school up to 8th level and 13.33 per

Table 4.1 Socio-economic characteristics of selected samples in Jaipur

(N = 120)

General information	Categories	No. of respondents	Percentage
Age	Below 25 years	21	17.50
	25-34 years	43	35.83
	35-44 years	32	26.67
	45-54 years	19	15.83
	Above 54 years	5	4.17
Sex	Male	93	77.50
	Female	27	22.50
Education	Illiterate	7	5.83
	School up to 8th class	18	15.00
	School up to Higher Secondary (HSC)/Senior Secondary (SSC)	46	38.33
	Graduate / Diploma	33	27.50
	Post graduate / Doctorate	16	13.33
Family size (members)	Small (Up to 4)	49	40.83
	Medium (5-7)	53	44.17
	Large (8 and above)	18	15.00
Food habit	Vegetarian	94	78.33
	Non - vegetarian	26	21.67
Monthly income (Rs)	Low income group (< Rs. 8215)	39	32.50
	Middle income group (Rs. 8215–12642)	53	44.17
	High income group (> Rs. 12642)	28	23.33
Occupation	Student	20	16.67
	House wife	18	15.00
	Business	37	30.83
	Government employee	24	20.00
	Private	21	17.50

cent of them were of postgraduate or doctorate. It was also observed from the table that 5.83 per cent of the respondents were illiterates.

Maximum number of respondents (44.17%) belonged to the medium family size of 5-7 members. This was followed by family size of less than 5 members (40.83%) *i.e.*, small family and 15.00 per cent of them belonged to large family (more than 7 members).

Among the selected samples 78.33 per cent of them were vegetarians and remaining 21.67 per cent were non-vegetarians.

Most of the respondents (32.50%) belonged to low income group (<Rs. 8215/month), 44.17 per cent of them belonged to middle income group (Rs. 8215 – 12,642/month) and remaining 23.33 per cent of them were belonged to high income group (> Rs. 12642/month).

With regards to classification of occupation, maximum numbers of the respondents were engaged in business activities (30.83%). 16.67 per cent of them were students, 20 per cent of them were government employees, 17.5 per cent of them were working under private sectors and 15 per cent were housewives.

4.2 Identification of various brands of processed fruit and vegetable products

There are lots of national, local and store (Private label) brands of processed fruit and vegetable products available in the retail outlets in Jaipur city.

The major available brands of pickles in the selected retail outlet in Jaipur city are Ruchi, Priya, Mothers recipe, Hommade and Nilon. Apart from these national brands, lots of local brands and store brands are also there. The available local brands of pickles in Jaipur city are suraj, ghar ka aachar, swadist etc. Store brands available in

Table 4.2 List of various brands of Processed Fruit and Vegetable Products

Sl. No.	Processed Fruit and Vegetable Products	Brands
1.	Pickles	Ruchi
		Priya
		Mothers recipe
		Hommade
		Nilon
2.	Jam and Jelly	Kissan
		Sil
		Mala
		Dana
		Druk
		HPMC
3.	Sauces	Maggi
		Kissan
		Heinz
		Sil
		Capsico
		Nestle
4.	Ketchup	Kissan
		Heinz
5.	Chips	Lays
		Uncle chips
		Bingo
		Haldiram chips
		Lehar
		Lip chips
6.	Squash and syrup	Kissan
		Mala
		Heinz
		Hamdard
		Numbuzz
7.	Fruit Juice/Pulp	Maaza
		Frooti
		Slice
		Appy
		Real Fresh
		Tropicana

organized retail outlet National Handloom are national lemon pickle, national mango pickle etc.

In case of jam and jelly, the main brands that are available in the retail outlets are Kissan, Sil, Mala, Dana, Druk and HPMC (Himachal Pradesh Marketing Co-operative)'s jam.

The main brand of sauces available in the retail outlets in Jaipur were Maggi, Kissan, Heinz, Sil, Capsico, Nestle etc. Kissan and Heinz are the main brands of Ketchup available in Jaipur city.

The major available brands of Chips in the selected retail outlet in Jaipur city are Lays, Uncle chips, Bingo, Haldiram chips, Lehar, Lip chips.

In case of squash and syrup, the main available brands in Jaipur city are Kissan, Mala, Heinz, Hamdard, Numbuzz etc.

The main brand of fruit juice and pulp available in the retail outlets in Jaipur were Maaza, Frooti, Slice, Appy, Real Fresh, Tropicana etc. (Table no 4.2)

4.3 Consumption pattern of processed fruit and vegetable products

To know the consumption pattern, it is necessary to study socio-economic characteristics of the consumers, as these are the important variables, which decide the consumption pattern of food products in the family. Generally it is believed that, as the income, age and education of the consumers increase, the expenditure on consumption of food products also increases. Hence, the consumers' socio-economic characteristics were studied and income group wise socio-economic features are presented here under.

Table 4.3 Income group wise socio-economic features

Sl. No.	Socio-economic variables	Low Income Group	Middle Income Group	High Income Group	Overall average
1.	Average education (years of schooling)	9.89	11.41	13.21	11.34
2.	Average family size (number)	4.61	5.09	4.89	4.80
3.	Average monthly income (Rs.)	5432.44	9876.55	13789.43	9345.22
4.	Average monthly expenditure (Rs.)	3216.23	5476.72	8732.14	5500.03

The income-wise socio-economic profiles of the respondents are furnished in Table 4.3. It could be seen that average education of respondents of low, middle, and high-income group were 9.89, 11.41 and 13.21 years of schooling respectively. The pooled average education of respondent's was 11.34.

The average household sizes of respondents of low, middle and high-income group were 4.61, 5.09 and 4.89 respectively. The average family size for the pooled sample was 4.80. The average per month family income of respondents of low, middle and high income group were Rs. 5432.44, Rs. 9876.55 and 13789.43 respectively. The overall per month average family income was Rs. 9345.22. The averages per month family expenditure of respondents of low, middle and high income group were Rs. 3216.23, Rs. 5476.72 and Rs. 8732.14 respectively. The overall per month average family expenditure of respondents was Rs. 5500.03.

In this section results of duration wise consumption pattern, quantity wise consumption pattern and expenditure pattern of processed fruit and vegetable products are presented.

4.3.1 Duration wise Consumption pattern

It was observed from the Table 4.4 that majority of the respondents consumed pickles twice in a week (40.84%) followed by once in a week (29.16%), once in two days (12.50%), once in fifteen days (10%) and daily (7.5%). All the respondents consumed pickles.

More number of respondents consumed jam and jelly once in a week (28.33%) followed by once in fifteen days (27.50%), twice in a week (19.16%), once in two days (12.50%), once in a month (6.67%) and daily (3.33%). Around 2.5 per cent respondents were not consuming jam and jelly.

Table 4.4: Duration wise consumption pattern of various processed fruit and vegetable products

Duration wise consumption pattern	Processed fruit and vegetable products category					
	Pickles	Jam and Jelly	Sauces and Ketchup	Chips	Squash and syrup	Fruit Juice and Pulp
Daily	9 (7.50)	4 (3.33)	3 (2.50)	10 (8.33)	3 (2.50)	16 (13.33)
Once in 2 days	15 (12.50)	15 (12.50)	16 (13.33)	14 (11.67)	5 (4.17)	22 (18.33)
Twice in a week	49 (40.84)	23 (19.17)	35 (29.17)	33 (27.50)	11 (9.17)	27 (22.50)
Once in week	35 (29.16)	34 (28.33)	42 (35.00)	27 (22.50)	23 (19.17)	35 (29.16)
Once in fifteen days	12 (10.00)	33 (27.50)	17 (14.17)	19 (15.83)	18 (15.00)	14 (11.67)
Once in a month	-	8 (6.67)	3 (2.50)	17 (14..17)	9 (7.50)	6 (5.00)
Don't use	-	3 (2.50)	4 (3.33)	-	52 (43.33)	-
Total	120 (100.00)	120 (100.00)	120 (100.00)	120 (100.00)	120 (100.00)	120 (100.00)

(Figure in parenthesis denote the percentage to total)

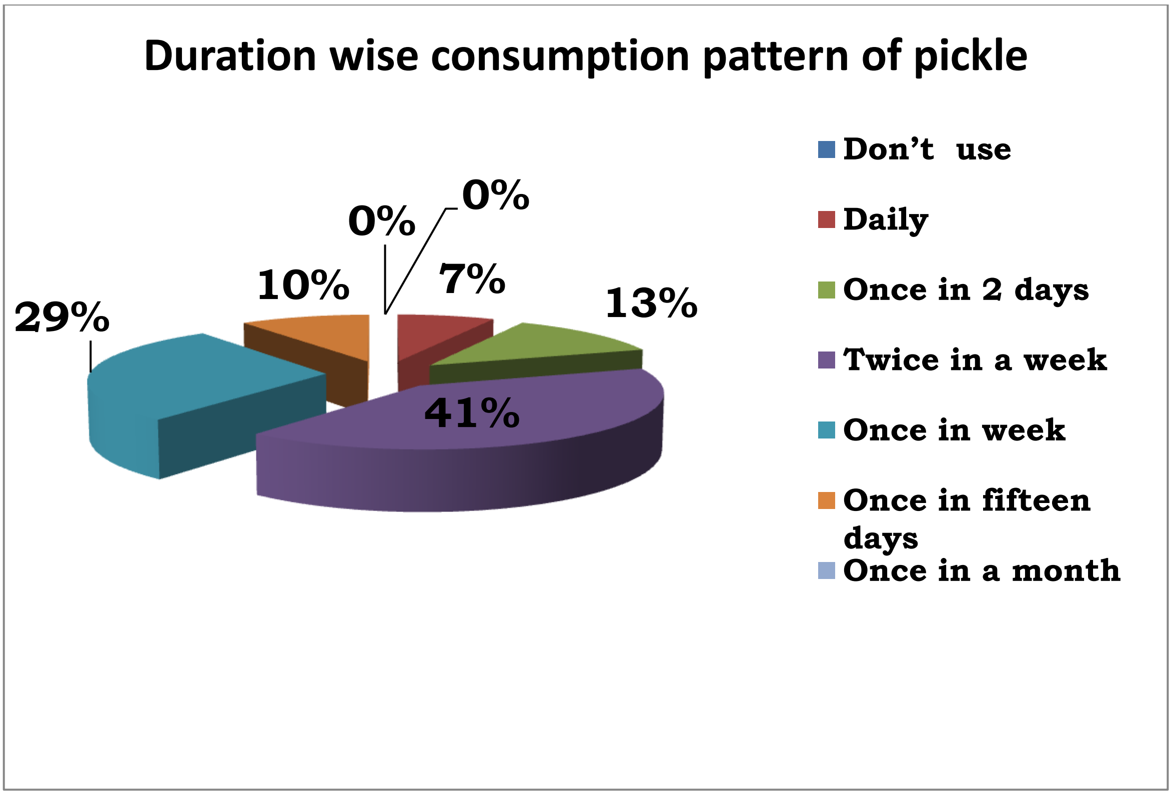

FIG 4.1: Duration wise consumption pattern of pickle

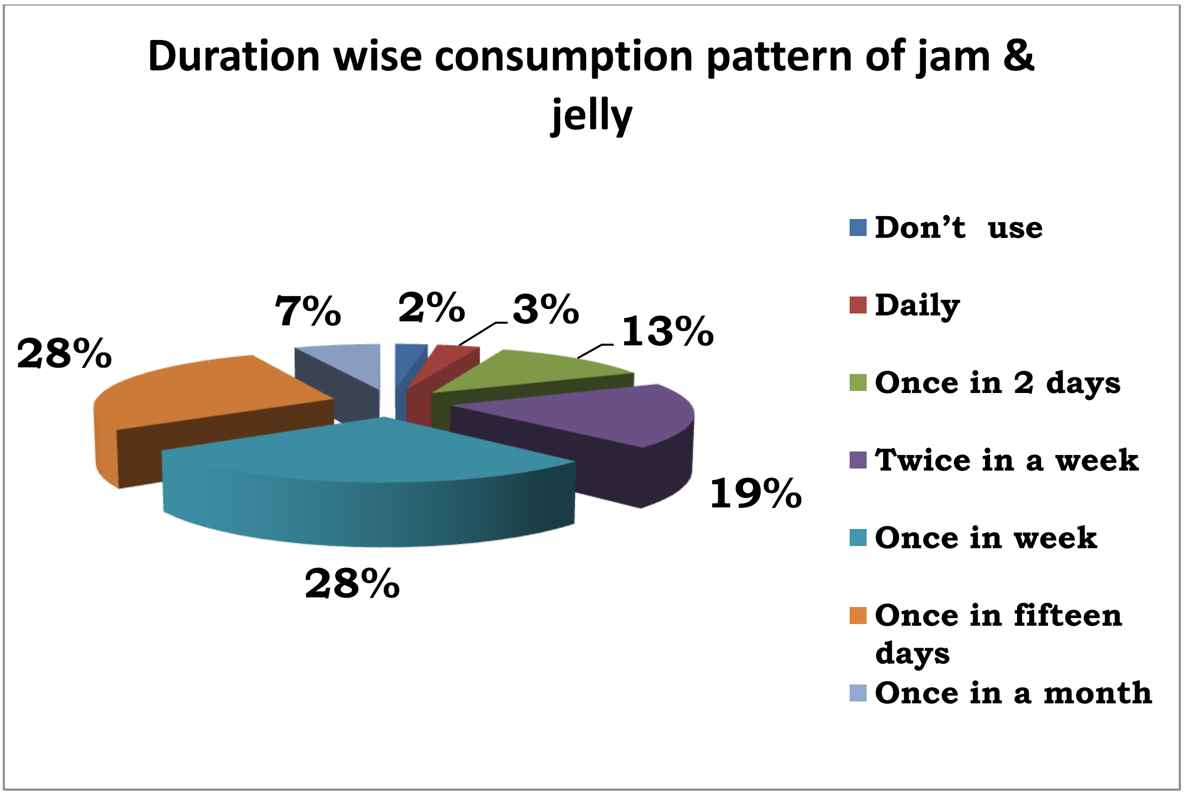

FIG 4.2: Duration wise consumption pattern of jam & jelly

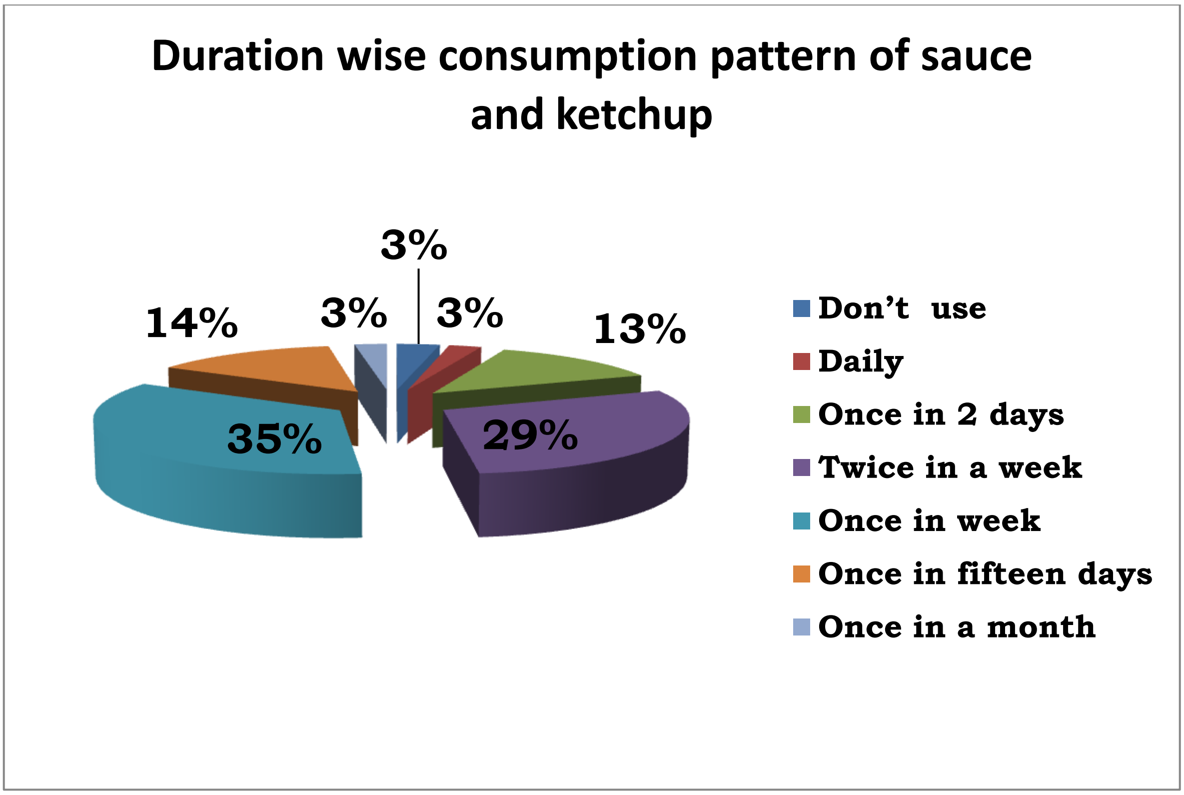

FIG 4.3:Duration wise consumption pattern of sauce and ketchup

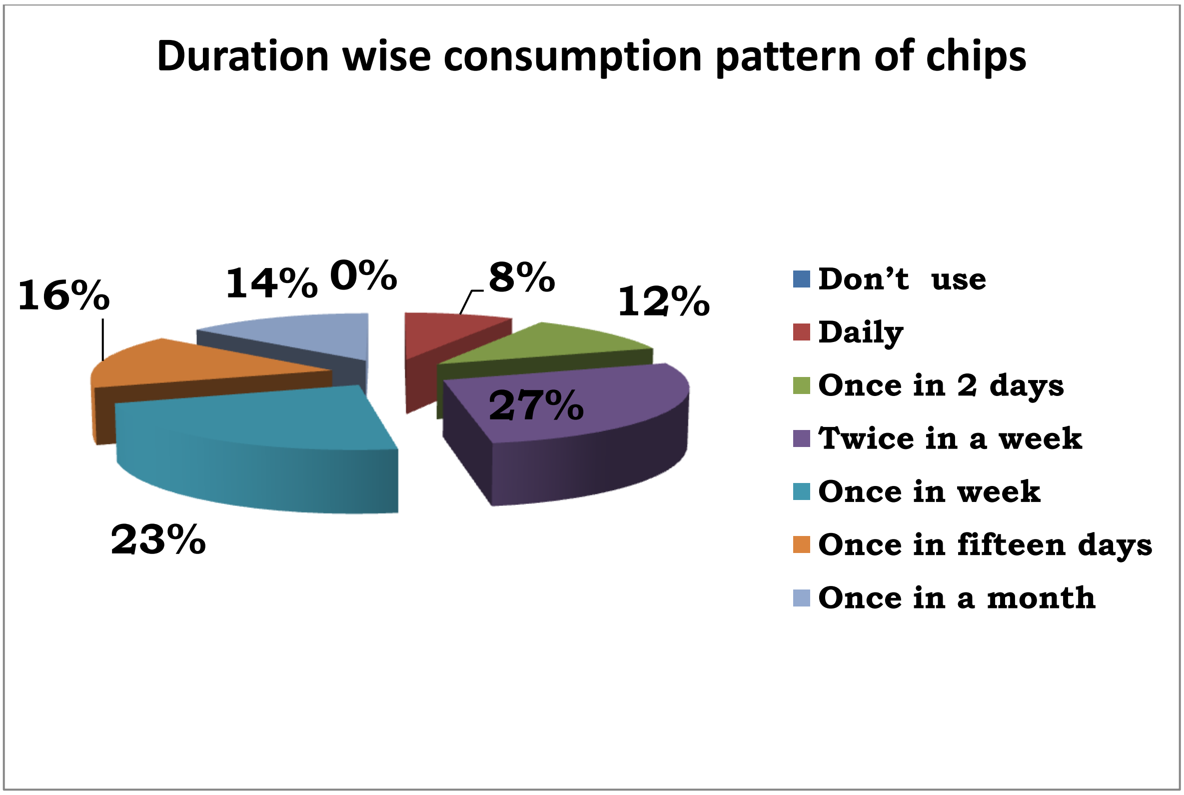

FIG 4.4: Duration wise consumption pattern of chips

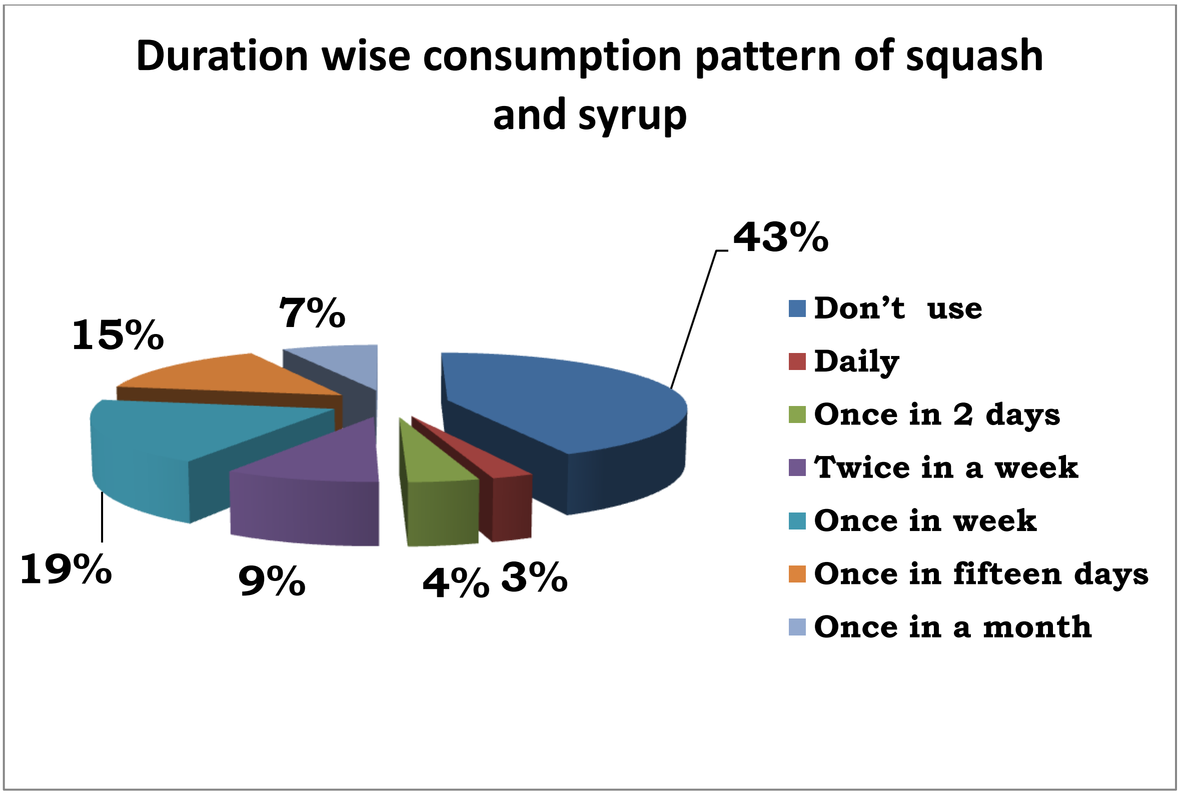

FIG 4.5: Duration wise consumption pattern of squash and syrup

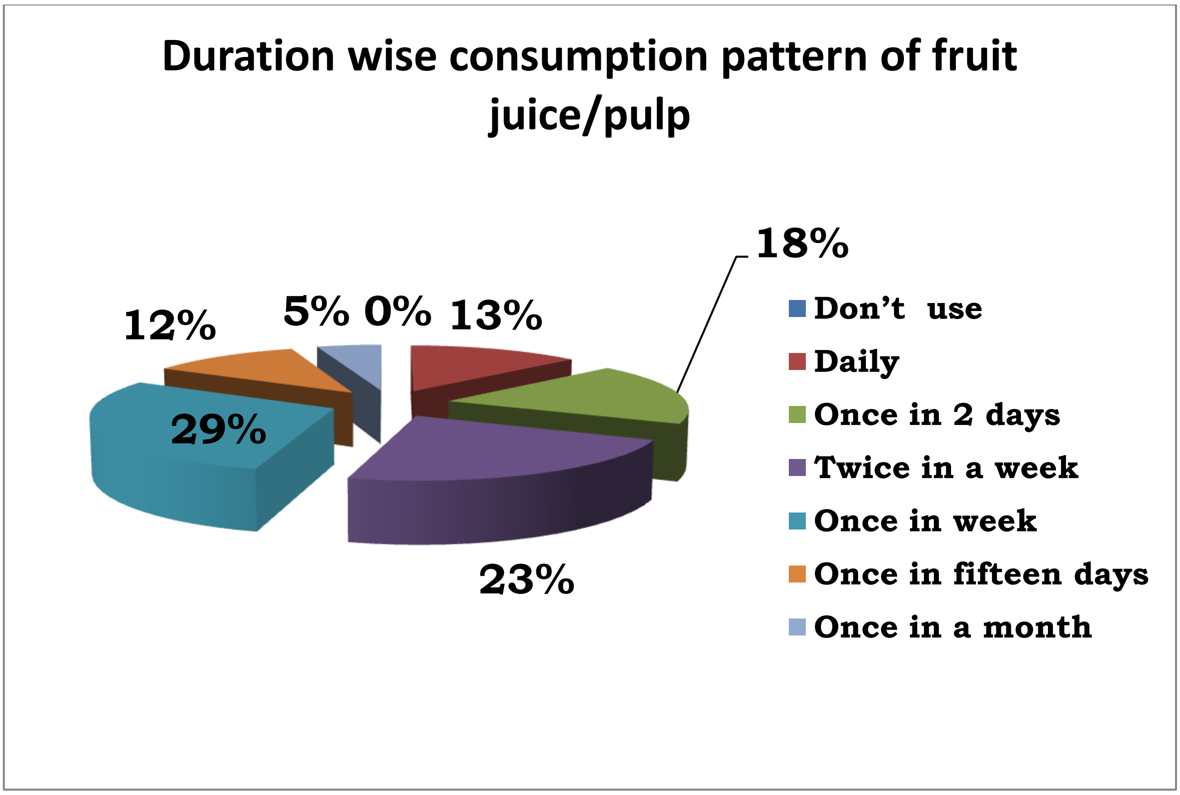

FIG 4.6: Duration wise consumption pattern of fruit juice/pulp

In case of Sauce and Ketchup, it was consumed maximum numbers of respondents by once in a week (35%) followed by twice in a week (29.17%), once in fifteen days (14.17%), once in two days (13.33%), once in a month (2.5%) and daily (2.5%). Around 3.33 per cent respondents were not consuming jam and jelly.

In case of chips, majority of the respondent consumed twice in a week (27.5%) followed by once in a week (22.5%), once in fifteen days (15.83%), once in a month (14.17%), once in two days (11.67%), daily (8.33%) and all the respondents consumed chips.

Majority of the respondents did not consume squash and syrup (43.33%). Rest of the respondents who consumed squash and syrup, maximum were consuming once in a week (19.17%) followed by once in fifteen days (15%), twice in a week (9.17), once in a month (7.5%), once in two days (4.17%) and daily (2.5%).

More numbers of respondents consumed fruit juice and pulp once in a week (29.17%), followed by twice in a week (22.5%), once in two days (18.33%), daily (13.33%), once in fifteen days (11.67%) and once in a month (5%).

4.3.2 Quantity wise consumption pattern of processed fruit and vegetable products

The average quantity of various processed fruit and vegetable products consumed per household per month are given in Table 4.5. It could be observed from the table that on an average, jam was consumed more by the sample house hold at the rate of 0.675 kg per house hold per month followed by sauce and ketchup 0.574 kg, chips 0.526 kg and pickles 0.433 kg. On an average, fruit juice and pulp was consumed to the extent of

1.352 litre per household per month. The amount of squash and syrup was consumed on an average 0.278 litre per household per month.

Low income group of consumers purchased on an average of 0.292 kg of pickles, 0.364 kg of jam and jelly, 0.333 kg of sauce and ketchup and 0.323 kg of chips per month per house hold. On an average, this group consumed 0.751 litre of fruit juice and pulp and 0.108 litre of squash and syrup per month per household.

Middle income group consumers purchased on an average of 0.434 kg of pickles, 0.623 kg of jam and jelly, 0.574 kg of sauce and ketchup and 0.566 kg of chips per month per house hold. This group consumed on an average of 1.285 litre of fruit juice and pulp and 0.323 litre of squash and syrup per month per household.

High income group consumers purchased on an average of 0.625 kg of pickles, 1.205 kg of jam and jelly, 0.911 kg of sauce and ketchup, 0.731 kg of chips and 0.429 litre of squash and syrup per month per house hold. This group consumed on an average of 2.314 litre of fruit juice per month per household.

4.3.3 Expenditure pattern on processed fruit and vegetables

Income wise, average household expenditure on processed fruit and vegetable products is presented in Table 4.6. It could be seen from the table that the household's monthly expenditure increased with increase in monthly income. The average monthly expenditure on processed fruit and vegetable products was found to be highest in case of high income group (Rs.766.68), followed

Table 4.5 Quantity wise consumption pattern of Processed Fruit and Vegetable Products

Income group	Average quantity purchased by the consumer per month					
	Pickles (Kg)	Jam and Jelly (Kg)	Sauce and Ketchup (Kg)	Chips (Kg)	Squash and Syrup (litre)	Fruit Juice/Pulp (litre)
Low	0.292	0.364	0.333	0.323	0.108	0.751
Middle	0.434	0.623	0.574	0.566	0.323	1.285
High	0.625	1.205	0.911	0.731	0.429	2.314
Combined	0.433	0.675	0.574	0.526	0.278	1.352

Table 4.6 Expenditure pattern of Processed Fruit and Vegetable Products

(Per month)

Income group	Number of household	Percentage of number of household	Average expenditure on processed fruit and vegetable products (Rs.)	Percentage to total expenditure
Low	39	32.50	206.69	6.44
Middle	53	44.17	438.34	8.01
High	28	23.33	766.68	8.78
Average	--	--	439.67	7.99

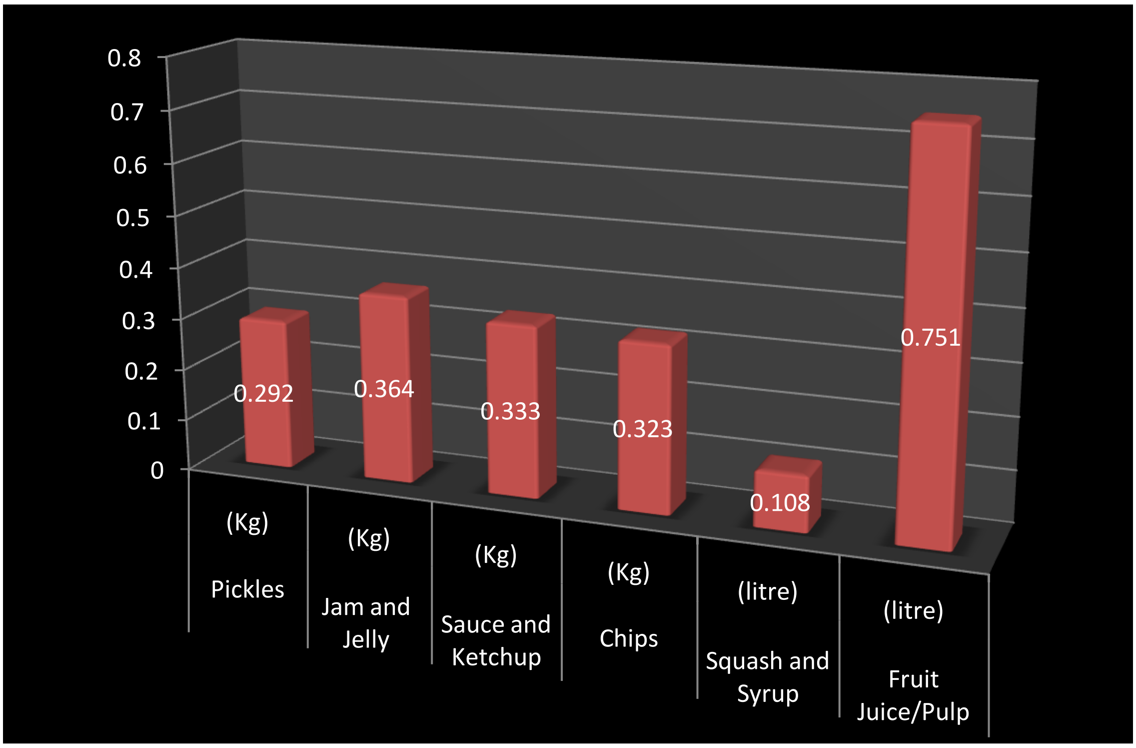

Fig 4.7: Average monthly consumption pattern of various processed fruit and Vegetable products by low income group

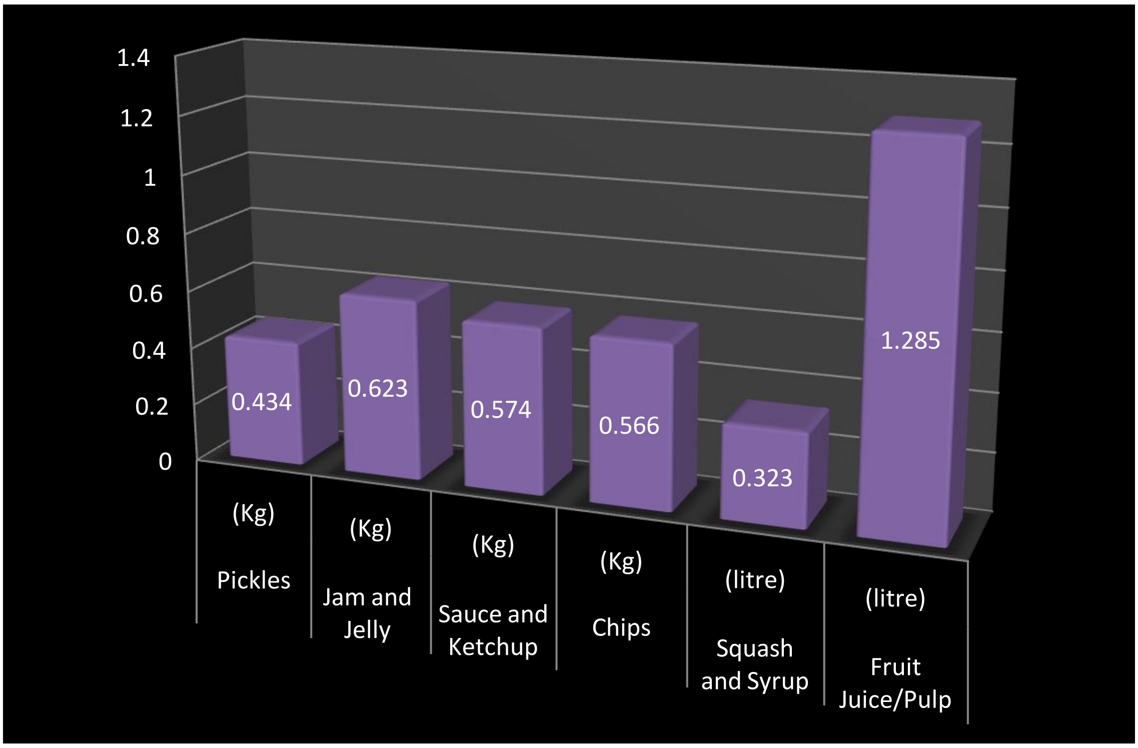

Fig 4.8: Average monthly consumption pattern of various processed fruit and Vegetable products by middle income group

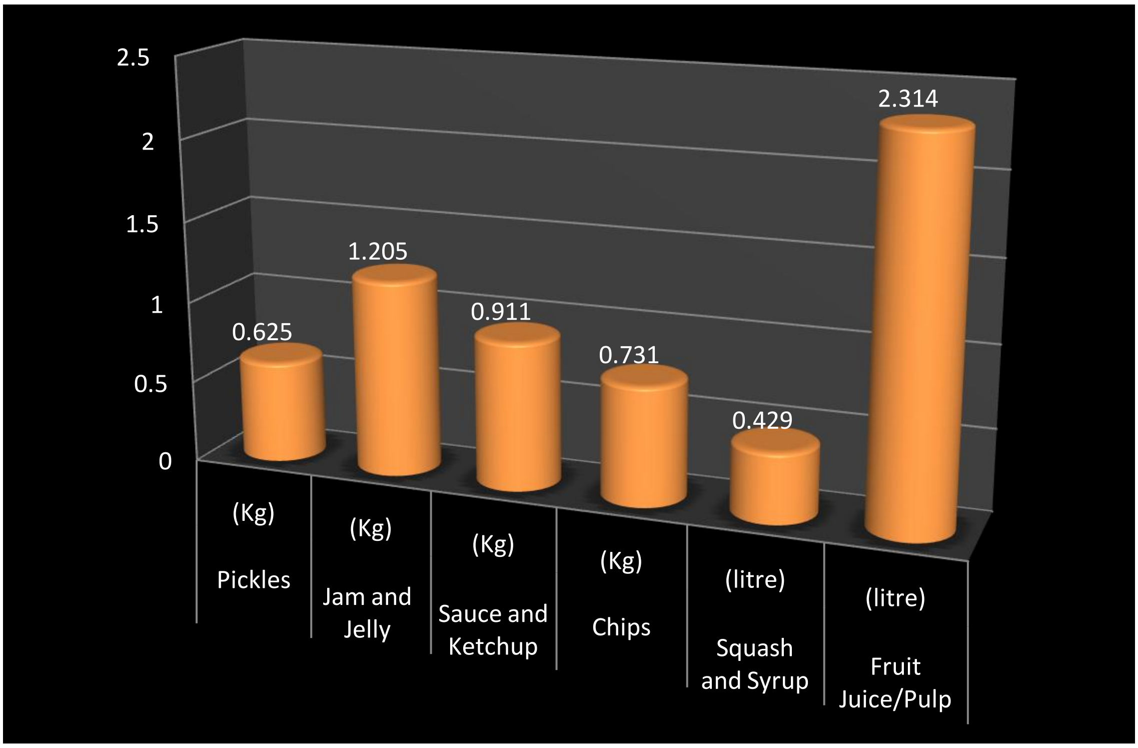

Fig 4.9: Average monthly consumption pattern of various processed fruit and Vegetable products by high income group

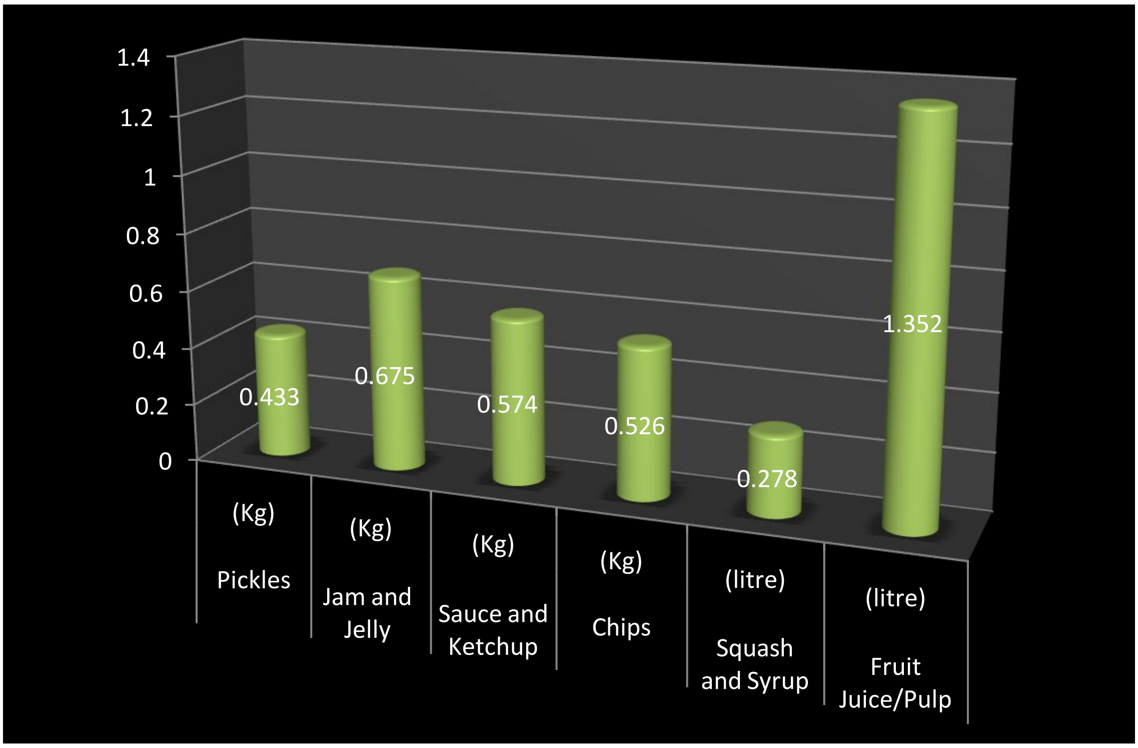

Fig 4.10: Average monthly consumption pattern of various processed fruit and Vegetable products by combined income groups

by middle income group (Rs. 438.34) and low income group (Rs.206.69). On an average Jaipur consumers spend Rs. 439.67 per month on processed fruit and vegetable products which was around 7.99 per cent of their monthly consumption expenditure.

Considering proportion of expenditure on processed fruit and vegetable to the total expenditure, the high income group spent a major share of 8.78 per cent followed by middle income group 8.01 per cent and low income group 6.44 per cent

4.4 Factors influencing consumer preference for processed fruit and vegetable products

In order to study the factors influencing consumer preference for processed fruit and vegetable products, a total of 120 respondents were randomly selected from all the five zones of Jaipur city that is from north, east, west, south and central parts of Jaipur city.

The factors influencing the purchase of processed fruit and vegetable products were examined using Garette's ranking technique method. The consumers were asked to rank the following reasons for preference towards a processed fruit and vegetable products.

1. Low price
2. High quality
3. Better taste
4. Easily available
5. Good keeping quality
6. Family Preference
7. Neighbours use it
8. Ready to eat

Table 4.7 Factors influencing consumer preference for processed fruit and vegetable products.

Sl. No.	Attributes	Garrett score	Mean score	Rank
1.	High Quality	8523	71.03	I
2.	Low price	8286	69.05	II
3.	Better Taste	7694	64.12	III
4.	Good keeping quality	6987	58.23	IV
5.	Ready to eat	6606	55.05	V
6.	Neighbours use it	6362	53.02	VI
7.	Easily availability	5815	48.46	VII
8.	Family Preference	5165	43.04	VIII

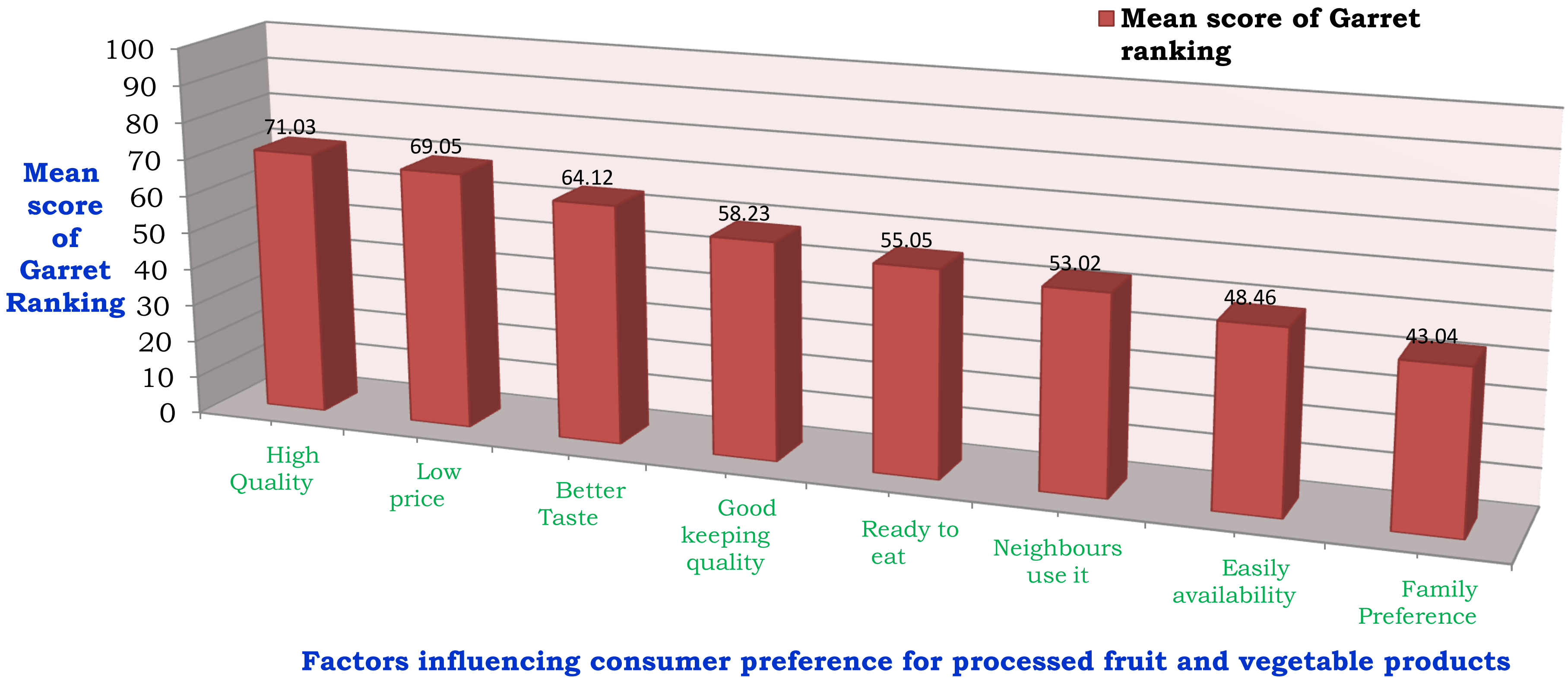

Fig 4.7: Factors influencing consumer preference for processed fruit and vegetable products

The results are provided in the Table 4.7 based on Garette's ranking technique method. From the table it could be observed that the consumers expressed high preference to quality which got first rank with mean value of 71.03, followed by second rank was given to low price with mean value of 69.05, third rank was given to better taste with mean value of 64.12, fourth rank for good keeping quality with mean score of 58.23**,** fifth rank for ready to eat with mean score of 55.05, sixth rank for neighbours use it with mean score of 53.02**,** seventh rank for easily availability with mean score of 48.46 and respondents gave last rank (eight rank) to family Preference with mean score of 43.04**.**

Jaipur consumers give more preference to high quality in choosing processed fruit and vegetable products among the above mention factors, followed by low price, better taste, good keeping quality, ready to eat, neighbours use it, easily availability and family Preference. High quality, low price and better taste are the main three criteria that jaipurites keeps in mind before choosing processed fruit and vegetable products.

4.5 Constraints in the marketing of processed fruit and vegetable products

Interviews with retailers indicate that one of the main constraints of marketing in the low income sector of the population is price. However, price increases have meant that demand has fallen. This indicates that the demand is relatively price elastic. The next main marketing constraint is supply. Some of the other Constraints in the marketing of processed fruit and vegetable products are as below.

1. High transportation and inventory carrying cost
2. Inefficient supply chain and involvement of middlemen
3. Affordability, cultural and regional preference of fresh food

4. There are few well-known brands of processed fruit and vegetable products
5. Consumer prefer more homemade processed products rather than to purchase from market
6. Competition from fresh fruits and vegetables which are more acceptable substitutes
7. High taxation
8. High packaging cost
9. Low margin as compared to the other commodities

These are the main constraints that leads to the less preference of the processed fruit and vegetable products as compare to the fresh fruits and vegetables.

4.5.1 Major Problems in processed fruit and vegetable Supply Chain

1. Lack of consistent supply, stocks and availability is one of the major problems facing processed fruit and vegetable supply chains.

2. The market share of processed fruit and vegetable is only a few per cent of the total food market, thus it represents an unattractive niche in the conventional food chain.

3. To get the small segment of processed fruit and vegetable products to meet the needs of the small segment of customers challenges the performance of the processed fruit and vegetable supply chain.

4. There is no balance between demand and supply.

5. Lack of proper co-ordination among the actors of the supply chain.

6. The quality of processed fruit and vegetable products decreases the flexibility of the processed fruit and vegetable supply chain due to the required conversion period, of yield fluctuations, relatively high price of processed fruit and vegetable raw material, as well as restrictions and requirements set by the regulation concerning processed fruits and vegetables.

7. Lack of promotions to generate consumer awareness for processed fruit and vegetable products.

DISCUSSION

CHAPTER V
DISCUSSION

The results presented in the previous chapter are discussed in this chapter under the following heads.

5.1 Socio-economic profile of the respondents.

5.2 Identification of various brands of processed fruit and vegetable products.

5.3 Consumption pattern of processed fruit and vegetable products.

5.4 Factors influencing consumer preference for processed fruit and vegetable products.

5.5 Constraints in the marketing of processed fruit and vegetable products.

5.1 Socio-economic profile of the respondents

Socio-economic characteristics of the consumers influence the lifestyle and consumption pattern. It was studied and analyzed to understand the affect of socio-economic characteristics on purchasing behaviour and consumption pattern of processed fruit and vegetable products.

From the Table 4.1, it was evident that the age of the majority of the respondents was between 25-34 years and most of them were male. The higher percentages of the respondents have studied up to HSC (Higher Secondary) or SSC (Senior Secondary). After studied up to HSC or SSC, majority of them indulged in their traditional business, that's why majority of the respondents were studied up to HSC or SSC and were Businessman.

In the present study majority of the respondents belonged to nuclear families with medium family size (5-7 members) and most of them were vegetarians. With the concern of food habit, the majority of the citizens of Rajasthan were vegetarian and very few percentages of people in Rajasthan prefer non-vegetarian food. Due to the cultural and custom, majorities were vegetarian. This is also one of the reason by which people prefer processed fruit and vegetable products.

Maximum percentage of the respondents belonged to middle income group (Rs.8215 to 12642) and majority of them were businessman. Most of the respondent studied up to HSC or SSC and after that indulged in business, hence the education level were low in Jaipur city and majority of them belongs to middle income group.

5.2 Identification of various brands of processed fruit and vegetable products

There are lots of national, local and store (Private label) brands of processed fruit and vegetable products available in the retail outlets in Jaipur city. National brands are more preferred, liked and purchased by the consumers. But among the available brands of processed fruit and vegetable products, some are more popular. In the pickle category Priya, Jam & jelly and sauce & ketchup category Kissan, Chips category Lays, squash & syrup category Heinz and Fruit juice & pulp category Frooti are very popular brands among respondents.

5.3 Consumption pattern of processed fruit and vegetable products

To know the consumption pattern, it is necessary to study socio-economic characteristics of the consumers, as these are the important variables, which decide the consumption pattern of food products in the family. Generally, it is believed that, as the income, age and education of the consumers increase, the expenditure on consumption of food products also increases. Hence, the consumers' income wise socio-economic characteristics were studied and discussed here under.

5.3.1 Income wise socio-economic features of respondents

The socio-economic profiles of the respondents are furnished in table 4.2. It could be seen that average educations of respondents of low, middle, and high-income groups were 9.89, 11.41 and 13.21 years of schooling. The pooled average education of respondent's was 11.34. As the income of the respondent increases its average education level also increases. It is quite obvious that low income group of people don't much emphasize on education and after a certain level of education they get into earning stream.

The average household sizes of respondents of low, middle and high-income group were 4.61, 5.09 and 4.89 respectively. The average family size for the pooled sample was 4.80. The average household size is more in middle income group. Low income group of people had minimum average household size. This may be because of that they don't have sufficient income to successfully bring up more number of children and high income group had more education level, hence they are well aware about family planning.

The average per month family income of respondents of low, middle and high income group were Rs. 5432.44, Rs. 9876.55 and 13789.43 respectively. The overall per month average family income was Rs. 9345.22. The averages per month family expenditure of respondents of low, middle and high income group were Rs. 3216.23, Rs. 5476.72 and Rs. 8732.14 respectively. The overall per month average family expenditure of respondents was Rs. 5500.03. Income has positive effect on consumption expenditure on processed fruit and vegetable products. This is fallen in line with findings of Srinivasan and Elangovan (2000) reported that the income co-efficient was 0.91 for processed fruit and vegetable products in Pondicherry.

In this section consumption pattern with respect to duration and quantity wise and expenditure pattern of processed fruit and vegetable products are discussed here under.

5.3.2 Duration wise Consumption pattern

It was evident from the Table 4.4 that all the respondents consumed processed fruit and vegetable products but their duration of consuming various processed fruit and vegetable products differ. Some products were consumed generally, some occasionally, some rarely. Some respondents consumed some processed products daily and some respondents did not consume some processed products at all. In case of pickles and chips, they were generally consumed by most number of respondents twice in a week. But in case of jam & jelly, sauce & ketchup, and fruit juice & pulp were consumed by most number of respondents once in a week. But majority of respondents did not consume squash and syrup and from the remaining sample who consumes squash and syrup majority of them consume once in a week.

5.3.3 Quantity wise consumption pattern of processed fruit and vegetable products

It is evident from the Table 4.5 the average consumption among all income groups, fruit juice stood first with 1.352 litres per household per month and jam products 0.675 kg. Squash and syrup are least consumed among the selected processed fruit and vegetable products with 0.278 litre per household per month. Considering products other than squash and syrup, average amount of pickles was less consumed with 0.433 kg per household per month.

5.3.4 Expenditure pattern on processed fruit and vegetable products

The average expenditure on processed fruits and vegetables indicates an increasing trend as the income level goes up (Table 4.6) which shows the luxury good status of these processed goods. The average monthly expenditure of average high income group household on these food articles was Rs. 766.68 while the low income group households spent on an average of Rs. 206.69 on these goods. This is fallen in line with study conducted by Goswamy (1994) where the high income group spent more on processed food products than lower income groups.

The aggregate average expenditure on processed fruits and vegetables per month per household was Rs. 439.67. This will indicate that consumer spend very less amount of their income on processed fruit and vegetable products. This may be because of that the share of their income is more on other expenditure.

5.4 Factors influencing consumer preference for processed fruit and vegetable products.

An examination of reasons for preference for processed fruit and vegetable products (Table 4.7) reveals that consumers give highest importance to high quality products as revealed with mean score of 71.03, followed by low price with mean value of 69.05, better taste 64.12, good keeping quality 58.23, ready to eat 55.05, neighbours use 53.02, easily availability 48.46 and family Preference with mean score of 43.04.

Jaipur consumers indicated highest importance to high quality of the products, but Elangovan (2000) reported that price was the most important factor expressed by Pondicherry consumers for the preference various processed fruit and vegetable products.

5.5 Constraints in the marketing of processed fruit and vegetable products.

The constraints in the marketing of processed fruit and vegetable products make the product less available to consumer and degrade the quality of the products as per marketing channel and supply chain. The some of the marketing constraints are discussed here under.

1. Transportation**:** Transportation plays an important role in marketing of processed fruit and vegetable products. Price, availability and supply of the processed fruit and vegetable products indirectly depend upon the transportation. The main constrains related to the transportation are availability of transport vehicles, transportation cost, available and proper transportation network (Road, Railways, Water, Air) etc.

2. Different taste preference of different people of different regions. This is also somehow constraints in the marketing of processed fruit and vegetable products. Such as people of Rajasthan like more spicy and oily pickles than any other part of the country.

3. Consumer prefer more homemade processed products rather than to purchase from market. Most of the consumers prefer homemade processed products; this might be because they like the taste of homemade products and think that it is more hygiene. Apart from this homemade processed products are more cost effective.

4. Long supply chain incurred more cost, more time to reach to final consumers and more wastage.

5. Competition from fresh fruits and vegetables which are more acceptable substitutes.

6. Low margins: Prices of basic commodities that are essential for food processing such as sugar, salt etc. have increased sharply resulting in highly priced processed products. Consumers are now prioritising on essential basic foodstuffs and cutting down on luxuries such as fruit jam.

7. Prevailing packaging system lacks requisite quality and shelf life.

These above discussed constraints in the marketing of processed fruit and vegetable products make the product less available to consumers. The main constraints was consumer more preferred fresh fruits and vegetables than processed. After all these constraints processed fruits and vegetables are preferred and used by all the people.

Major Problems in processed fruit and vegetable Supply Chain

Supply chain is the root of marketing channels. There should be proper co-ordination among the actors of the supply chain. This will result into an efficient supply chain. The Problems that are incurred during the Supply Chain are discussed here under.

1. Lack of consistent supply, stocks and availability of products is one of the major problems facing the processed fruit and vegetable supply chains.

2. The market share of processed fruits and vegetables is only a few per cent of the total food market, thus it represents an unattractive niche in the conventional food chain.

3. There is no balance between demand and supply. At the time of harvesting of produce supply is more but other time there

is less supply of produce in the market. In the forward steps of supply chain i.e. at the consumers end the demand of pickles, fruit juice & pulp is more in summer season but other time its less.

4. Lack of proper co-ordination among the actors of the supply chain.

5. The quality of processed fruit and vegetable products decreases the flexibility of the processed fruit and vegetable supply chain due to the required conversion period, of yield fluctuations, relatively high price of processed fruit and vegetable raw material, as well as restrictions and requirements set by the regulation concerning processed fruits and vegetables.

Proper balance between demand and supply, flexibility of the processed fruit and vegetable supply chain, consistent supply of the products and proper co-ordination among the actors of the supply chain makes an efficient supply chain.

SUMMARY AND POLICY IMPLICATION

CHAPTER VI

SUMMARY AND POLICY IMPLICATION

India is the world's second largest producer of food next to China and has the potential of being biggest industry with food and agricultural sector. Food accounts for the largest share of consumer spending. The processed food industry in India is now gaining momentum with a number of multinationals, corporate entities and government agencies entering in to the market. The market for processed food products is also expanding due to the sociological and economics changes that are taking place among Indian consumers.

A study on consumer preference for processed fruit and vegetable products was conducted to know the various available brands of processed fruit and vegetable products in Jaipur city, consumption pattern of consumer with regards to the processed fruit and vegetable products and the factors that influence the consumer's preference for processed fruit and vegetable products. Various marketing constraints in the marketing of processed fruit and vegetable products are also studied.

The objectives of the study were,

1. To identify the different brands of processed fruit and vegetable products available in the selected retail outlets,
2. To study the consumption pattern of processed fruit and vegetable products by consumers,
3. To examine the factors influencing consumer's preference towards processed fruit and vegetable products,
4. To document the constraints in the marketing of processed fruit and vegetable products.

Sampling framework and database:

The study was under taken in Jaipur city of Rajasthan state. In Jaipur, for the study purpose five areas selected which represents northern, southern, eastern, western and central part of Jaipur. In north Jaipur, data are collected from Murlipura, Vidhyadhar nagar and Shastri nagar areas and in south Jaipur, Mansarovar and Malviya nagar areas was chosen for study purpose. Adarsh nagar and Raja park areas are selected for data collection in East Jaipur and Jhotwara area is selected for data collection in west Jaipur. Chandpole and Sindhi Camp areas are chosen for data collection in Central part of Jaipur city.

The sampling was done in different localities of jaipur city to get a diversification in the sample mainly based on region, per capita income and social class. Data was collected from various age groups, income groups and from both the sexes. A total of 120 consumer respondents and 20 retailers were interviewed. The sample was post stratified into three income groups viz Low income group, middle income group and high income group income group and the data collected were analyzed accordingly keeping in view of objectives of the study.

Analytical tools used:

Cross tabulation method is used for listing of different brands of processed fruit and vegetable products. Conventional measures of central tendency and measures of dispersion were used to classify entire respondents into three groups viz. Low income group, middle income group and high income group. To study the consumption pattern of processed fruit and vegetable products conventional measures of central tendency, measures of dispersion and cross tabulation methods were used. Garrett ranking test was performed to examine the factors influencing consumer’s preference towards processed fruit and vegetable products and to rank these factors as per there weightage.

The salient findings of the study are summarized here under

1. The average size of the sample household was five persons. The average education of the head of the household was up to senior secondary (SSC) level. The average income per household per month was about Rs 9345 and expenditure was about Rs. 5500.

2. The sample had maximum of middle income group households who accounted for 44.17 per cent followed by low income group 32.5 per cent and high income group 23.33 per cent.

3. Among the available brands of processed fruit and vegetable products, some are more popular. In the pickle category Priya, Jam & jelly and sauce & ketchup category Kissan, Chips category Lays, squash & syrup category Heinz and Fruit juice & pulp category Frooti are very popular brands among respondents.

4. The study revealed that as the household income of the household increased, more number of households purchased processed fruit and vegetable products.

5. In case of pickles and chips, they were consumed by most number of respondents by twice in a week. But in case of jam and jelly, sauce and ketchup and fruit juice and pulp, they were consumed by most number of respondents by once in a week.

6. But majority of respondents did not consume squash and syrup and from the remaining who consume squash and syrup majority consumed once in a week.

7. Quantity wise, the average consumption among all income groups, fruit juice stood first with 1.352 litres per household per month and jam products 0.675 kg.

8. squash and syrup are least consumed among the selected processed fruit and vegetable product with 0.278 litres per household per month.

9. Considering products other than squash and syrup, average amount of pickles was less consumed with 0.433 kg per household per month.

10. The aggregate average expenditure per month on processed fruit and vegetable products per household was Rs. 439.67. The average expenditure on processed fruit and vegetable indicates an increasing tendency as the income level goes up which shows the luxury goods status of these processed goods.

11. The average monthly expenditure of high income group household on these food articles was Rs. 766.68, while the low income group households spent on an average of Rs. 206.69 on these goods. This indicates that there is a positive relationship between income and expenditure on processed fruit and vegetable products.

12. The percentage of expenditure on processed fruit and vegetable products to the total expenditure for high income group was 8.78 per cent, middle income group 8.01 per cent and low income group 6.44 per cent. Average percentage expenditure on processed fruit and vegetable product to the total expenditure for all income groups together was 7.99 per cent.

13. The consumers expressed high preference to the quality of the product, followed by its price, taste, keeping quality, ready to eat, Neighbours use it, easily availability and family preference while selecting a particular brand.

14. The consumer distinguished fresh fruit and vegetable as entirely different from processed ones. It was also found that the consumers preferred fresh fruit and vegetables over processed fruit and vegetables.

15. The major Constraints in the marketing of processed fruit and vegetable products are transportation, different taste preference of different people of different regions, few well-known brands of processed fruit and vegetable products, consumer preference for more homemade processed products, long supply chain, and competition from fresh fruits and vegetables etc.

16. Lack of consistent supply, stocks and availability is one of the major problems facing processed fruit and vegetable supply chains.

Policy implications

The study suggests the demand for processed fruit and vegetables products is likely to increase in the coming years and the production of processed fruits and vegetables should be increased to cope up with increased demand on farm front, the increase in processing will result in reduction of seasonal glut of fruits and vegetables and protection of fruits and vegetables from spoilage.

Further, the benefit of "value added" could be shared by the farmers in the form of increased price. In addition, due to the increase in processing, more gainful employment could be generated. The findings of the study may have the following implications both policy purposes and further research.

1. Irrespective of income groups, the processed fruit and vegetable products were consumed by most of the respondents. However there was variation in the quantity demanded of various processed products. Particularly the small income groups cannot afford to purchase all items due to higher prices. This situation calls for research and development activities, which can reduce cost of the production of processed products, which in turn will reduce the price.

2. Further it was found that with the increase in educational level, the consumption of processed fruit and vegetable products increases. Since the government at center and at state level are going to give major thrust for education during the 9th and 10th five-year plans, the demand for processed fruit and vegetable products is likely to increase. This suggests that more area should be brought under fruit and vegetable production, which can supply raw material to processing industry. Apart from this fruit villages and 'vegetable villages' also could be encouraged.

3. From marketing point of view, the products should be developed keeping in view the tastes of the various categories of consumers, and it should also be affordable to all income groups. So a variety of products with different tastes, which give a variety to the consumer to select according to his taste and purchasing power, should be marketed. The products should be packed in various volumes after conducting proper market survey to find out the number of people preferring various sized packets for their use. The promotional programs should also cover hygienic value and nutritive value of the products. The products should be produced and positioned according to the consumers need.

4. Further detailed studies relating to each product, with regard to production, supply and demand, feasibility of establishing processing units and ways and means to promote the processing industry need to be carried at national level. Apart from this, the export potential of processed fruit and vegetable products also should be studied, as this is identified as a major area for exports by the government.

5. There are also considerable losses during transit of processed fruit and vegetable products. Processing centres in the producing areas will help to reduce transportation costs and transit losses, consequently making the processed products cheaper.

6. Despite vast domestic market size, the present level of processed food marketability is very low but by doing massive awareness and educational campaigns this market could grow higher enough to consume substantial part of any quantum of processed foods.

REFERENCES

CHAPTER VII

REFERENCES

AMITHA, K., 1998, A study of household consumption pattern of selected dairy products in Bangalore city. *M.Sc. (Agri.) Thesis*, University of Agricultural Sciences, Bangalore.

BALAJI, V., 1985, Fish consumption : A case of fish consumption behaviour in Vishakapatnam. *Indian journal of marketing*, **14** (2): 15-18.

BANUMATHY, S. and HEMAMENA, M., 2008, Analysis of brand preference of soft drinks in the global environment. *Indian journal of marketing*, **36** (6): 12-16.

BRAHMAPRAKASH AND SUSHILA SRIVASTAVA (1996) Analysis of trends in market arrivals and prices of pigeonpea in Uttar-Pradesh. *Indian journal of pulse research*, **9(**1): 104-106.

CICIA, G. AND GIUDICE, T.D., 2002, Consumers' perception of quality in organic food - A random utility model under preference heterogeneity and choice correlation from rank-orderings. *British Food Journal*, **104**(3/4/5):200-213.

DEKA HEM CHANDRA, 1999, A study on regulatory markets in Assam. *Finance India,* **8**(4): 1264-1267.

DHUNA AND MUKESH, 1984, an analysis of consumer behaviour. *Indian journal of Agricultural marketing*, 14(7): 26-28

GAJANANA, T.M AND SUBRAYAMANYAM, K. V., 1999, Constraints in production and marketing of anthuriums in Karnataka. *Journal* of *Agricultural Marketing,* **32**(1): 15-18.

GERHARDY, H. AND NESS, M. R., 1995, Consumer preferences for eggs using conjoint analysis. *World Poultry Science Journal*, **5**(12): 203-214.

Ghulam Sadiq Afridi , Mazher Abbas and Ijaz Ashraf , 2008, Wheat Consumption Pattern in Muzaffarabad, Azad Jammu and Kashmir (AJK), *Journal of Agricultural Research., 2008,* ***46****(2)*

GILDEMACHER , P. R., KAGUONGO,W., ORTIZ, O., TESFAYE, A., WOLDEGIORGIS, G., WAGOIRE, W. W., KAKUHENZIRE, R., KINYAE, P. M., NYONGESA, M, STRUIK, P. C., LEEUWIS, C., 2009, Improving potato production in Kenya, Uganda and Ethiopia, *International Potato Center*, Nairobi, Kenya, *Potato-Research*, **52**(2): 173-205.

GORNY, J. C., 2004, Leveraging Innovative Fresh-Cut Technologies for Competitive Advantages. *ISHS Acta Horticulturae*, **687**(2): 42-51

Goswamy, S., Kundan, R. K., 1994, The Consumption Pattern of Processed Food-A study in West Bengal, *Indian Journal of Marketing,* **36** (6): 12-16.

HUANG C.J. AND FUJ, 1995, Conjoint analysis of consumer preference and evaluation of processed meat. *Journal of International Food and Agricultural Business Marketing,* **7**:35 - 53.

KAMENIDOU, L., ZIMITRA-KALOGIANNI, L., ZOTOS, Y. AND MATTAS, K., 2002, Household purchasing and consumption behaviour towards processed peach products. *New Medit,*. **1** (1): 45-49.

KANDARPA KUMAR BARMON, 1997, The production behaviour of pulses in Assam; its growth and instability. *Agricultural Situation in India,* **53**(10):697-701.

KHAIROOWALA, Z. AND SIDDIQUI, S, 2001, Buying behavior of rural consumers in haat markets. *Indian Journal of Marketing,* **31**(1): 14-24.

KUBENDRAN, V. AND VANNIARAJAN, T., 2005, Comparative analysis of rural and urban consumers on milk consumption. *Indian journal of marketing,* **35** (12): 27-30.

KUMAR, K., AMBARISH, JORDAN, B.B. AND BARKER TANSU, A., 1987, Made in India, what it means to Indian consumers? *Indian journal of marketing*, **17**(9):26-34.

MAGNUSSON, M.K., ARVOLA, A., HURSTI, U.K.K., ÅBERG, L. AND SJÖDÉN, P. O., 2001, Attitudes towards organic foods among Swedish consumers. *British Food Journal*, **103**(3):209-227.

NAGARAJA, B., 2004, Consumer behaviour in rural areas : A micro level study on consumer behaviour in Kavi mandal. *Indian journal of marketing*, **34** (11): 30-36.

NARANG, R., 2006, A study on branded foods. *Indian journal of marketing*, **36** (11): 3-9.

PAGIRE, B.V, AND JADHAV, M.S, 1998, Problems in marketing of grapes in Maharastra. *Drakshvritta Souvenir,* **51**(1): 137-140.

PURI, R. AND SANGHERA, J., 1989, Nutritive value and consumption pattern of some processed foods. *Indian journal of marketing*, **46** (6): 24-27.

REES, A.M., 1992, Factors influencing consumer choice. *J. Soc. of Dairy Tech.*, **45** (4): 112-116.

SAXENA, H.M, 1992, Rural markets: A perspective for development - A case study of Rajasthan. Dept. of PG Studies in Geography, Karnataka University, Dharwad, pp. 141-146.

SHARMA AND POONAM, 1997, Consumer quality preference for quality of cut flowers in Bangalore city: an economic analysis. M.Sc. *Thesis* (unpublished), University of Agricultural Sciences, Bangalore

SHARMA, D. K., 1997, Consumer acceptance studies. *Indian Dairy Management,* 49(2): 27-31

SHAW, A.M. AND MALHOTHRA, N.N., 1993, A study of consumer attitudes towards processed foods. *Indian Food Packer,* 29-41.

SHIVKUMAR, J., 2004, Buying behaviour of consumers towards the products produced by SSI units. *Indian Journal of Marketing,* **34** (3): 19-25.

SINGH, P. K., MALHOTHRA, L.N., and SANGHERA P. K., 1995, Nutritive value and consumption pattern of some milk and milk products. *Indian Dairy Management,* 32(4): 47-51

SINGH, S., 2003, Contract farming in India: Impacts on women and child workers, The Gatekeeper Series Paper No.111, International Inst. For Environment and Development (IIED), London. *Indian Journal of Agricultural Marketing,* **23** (11): 22-25.

SINGH, S., 2003, Marketing of organic produce and minor forest produce. *Indian Journal of Agricultural Marketing,* **17**(3):77-83.

SRINIVASAN, N. AND ELANGOVAN, D., 2000, Consumer perception towards processed fruits and vegetable products. *Indian Journal of Marketing,* **30** (11-12): 22-25.

VEDINI, K.H. AND GRACY, C.P, 1995, Marketing and price spread of jasmine flowers in Mysore. *Indian Journal of Agricultural Marketing,* **9** (12): 50-51.

VINCENT, N., 2006, A study on brand consciousness among children and its effect on family buying behaviour in Bangalore city. *Indian Journal of Marketing*, **36** (1): 12-18.

WANDEL, M., 1995, Dietary intake of fruits and vegetables in Norway; influence of life phase and socio economic factors. *International Journal of Food Sciences and Nutrition.* **8**(4): 341-352.