

**A STUDY ON CONSUMER PREFERENCE
FOR RICE BRANDS IN BENGALURU CITY**

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Project report submitted to the

University of Agricultural Sciences, Bengaluru

In partial fulfilment of the requirement for the award of the degree of

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*Affectionately Dedicated
To My Beloved
Parents.*

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

CERTIFICATE

This is to certify that the Project Report entitled “A STUDY ON CONSUMER PREFERENCE FOR RICE BRANDS IN BENGALURU CITY” submitted by Mr. YAR MOHAMMAD, ID No. MBAL 7032, in partial fulfilment of the requirements for the degree of MASTER OF BUSINESS ADMINISTRATION (AGRIBUSINESS MANAGEMENT) to the University of Agricultural Sciences, Bengaluru is a bonafide record of research work done by him during the period of his study in this University, under my guidance and supervision and the project work has not previously formed the basis of the award of any degree, diploma, associateship, fellowship or other similar titles.

Bengaluru,
July, 2019


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A STUDY ON CONSUMER PREFERENCE FOR RICE BRANDS IN BENGALURU CITY

YAR MOHAMMAD

ABSTRACT

Rice is the second most important food grain in the world and the most preferred food grain in India particularly in southern parts of the country. The study was conducted to indentify factors influencing consumer preference for rice brands, to analyse the consumption pattern of rice and to understand the source of procurement of rice by the retailers and wholesalers. The study based on with 100 consumers randomly selected from different locations of Bengaluru city and 30 rice retailers & traders. There were several brands of basmati and non-basmati rice available in the study area. The study revealed that taste, income and family preference were the most preferred factors of consumers at the time of purchasing branded rice whereas, keeping quality, attractive packages and advertisement were indicated as the least preferred factors for customers who were consuming branded rice. With respect to consumption pattern, majority of the respondent were eating cooked rice two times a day and lunch time was indicated as the most preferred eating time. Almost all types of non-basmati rice were grown in the state Raichur, Ballary, Davangere, Mysuru in Karnataka. Tumakuru and Mandya were the leading suppliers of rice to the city. Andhra Pradesh, Tamil Nadu Maharashtra were the three neighbouring states supplying rice to Bengaluru APMC. Similarly the basmati type of rice is sourced from Haryana and Punjab states of the country. The study also revealed that the retailers in different parts of the city procured rice from APMC Yeshwanthpur. While wholesalers procured rice in bulk from different states of the country and different districts of the state of Karnataka.

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Dr. M. S. GANAPATHY
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ಬೆಂಗಳೂರು ನಗರದಲ್ಲಿ ಅಕ್ಕಿ ಬ್ರಾಂಡ್‌ಗಳಿಗಾಗಿ ಗ್ರಾಹಕರ ಆದ್ಯತೆಯ ಬಗ್ಗೆ ಅಧ್ಯಯನ

ಯಾರ್ ಮೊಹಮ್ಮದ್

ಸಾರಾಂಶ

ಅಕ್ಕಿ ವಿಶ್ವದ ಎರಡನೇ ಪ್ರಮುಖ ಆಹಾರ ಧಾನ್ಯವಾಗಿದೆ ಮತ್ತು ಭಾರತದಲ್ಲಿ ವಿಶೇಷವಾಗಿ ದೇಶದ ದಕ್ಷಿಣ ಭಾಗಗಳಲ್ಲಿ ಹೆಚ್ಚು ಆದ್ಯತೆಯ ಆಹಾರ ಧಾನ್ಯವಾಗಿದೆ. ಪ್ರಸ್ತುತ ಅಧ್ಯಯನವನ್ನು ಅಕ್ಕಿ ಬ್ರಾಂಡ್‌ಗಳಿಗೆ ಗ್ರಾಹಕರ ಮೇಲೆ ಆದ್ಯತೆಯ ಪ್ರಭಾವ ಬೀರುವ ಅಂಶಗಳು, ಅಕ್ಕಿಯ ಬಳಕೆಯ ಮಾದರಿಯನ್ನು ವಿಶ್ಲೇಷಿಸುವುದು, ಚಿಲ್ಲರೆ ವ್ಯಾಪಾರಿಗಳು, ಸಗಟು ಮಾರಾಟಗಾರರು ಮತ್ತು ಚಿಲ್ಲರೆ ವ್ಯಾಪಾರಿಗಳಿಂದ ಅಕ್ಕಿ ಸಂಗ್ರಹದ ಮೂಲವನ್ನು ಅರ್ಥಮಾಡಿಕೊಳ್ಳುವ ಉದ್ದೇಶದಿಂದ ನಡೆಸಲಾಗಿದೆ. ಬೆಂಗಳೂರು ನಗರದಲ್ಲಿ 100 ಗ್ರಾಹಕರು, 30 ಅಕ್ಕಿ ಚಿಲ್ಲರೆ ವ್ಯಾಪಾರಿಗಳು ಮತ್ತು ವ್ಯಾಪಾರಿಗಳ ಮಾದರಿ ಪ್ರತಿವಾದಿಯೊಂದಿಗೆ ಈ ಅಧ್ಯಯನವನ್ನು ಕೈಗೊಳ್ಳಲಾಗಿದೆ. ಎರಡೂ ಬಗೆಯ ಅಕ್ಕಿಗಳ ಮಾದರಿಯಲ್ಲಿಹಲವಾರು ಬ್ರಾಂಡ್‌ಗಳು ಇದ್ದವು, ಅಂದರೆ ಬಾಸ್ಮತಿ ಮತ್ತು ಬಾಸ್ಮತಿ ಅಲ್ಲದವು ಅಧ್ಯಯನ ಪ್ರದೇಶದಲ್ಲಿ ಲಭ್ಯವಿದೆ. ಬ್ರಾಂಡ್‌ ಅಕ್ಕಿ ಖರೀದಿಸುವಾಗ ರುಚಿ, ಆದಾಯ ಮತ್ತು ಕುಟುಂಬ ಅದ್ಯತೆ ಗ್ರಾಹಕರಿಗೆ ಹೆಚ್ಚು ಆದ್ಯತೆಯ ಅಂಶಗಳಾಗಿವೆ ಎಂದು ಈ ಅಧ್ಯಯನದಿಂದ ಕಂಡುಬಂದಿದೆ. ಗುಣಮಟ್ಟ, ಆಕರ್ಷಕ ಪ್ಯಾಕೇಜ್ ಮತ್ತು ಜಾಹಿರಾತನ್ನು ಇಟ್ಟುಕೊಂಡು ಬ್ರಾಂಡ್ ಅಕ್ಕಿಯನ್ನು ಸೇವಿಸುವ ಗ್ರಾಹಕರಿಗೆ ಕನಿಷ್ಠ ಆದ್ಯತೆಯ ಅಂಶಗಳಾಗಿ ಸೂಚಿಸಲಾಗಿದೆ. ಬಳಕೆಯ ಮಾದರಿಗೆ ಸಂಬಂಧಿಸಿದಂತೆ, ಪ್ರತಿಕ್ರಿಯಿಸಿದವರಲ್ಲಿ ಹೆಚ್ಚಿನವರು ದಿನಕ್ಕೆ ಎರಡು ಬಾರಿ ಬೇಯಿಸಿದ ಅನ್ನವನ್ನು ತಿನ್ನುತ್ತಿದ್ದರು ಮತ್ತು ಮಧ್ಯಾಹ್ನ ಊಟದ ಸಮಯವನ್ನು ಹೆಚ್ಚು ಆದ್ಯತೆಯ ಆಹಾರ ಸಮಯ ಎಂದು ಸೂಚಿಸಲಾಗುತ್ತದೆ. ರಾಯಚೂರು, ಬಳ್ಳಾರಿ, ದಾವಣಗೆರೆ, ಮೈಸೂರು, ತುಮಕೂರು ಮತ್ತು ಮಂಡ್ಯ ನಗರಗಳಲ್ಲಿ ಬಹುತೇಕ ಎಲ್ಲಬಗೆಯ ಭತ್ತಗಳು ಬೆಳೆಯುತ್ತಿವೆ. ಆಂಧ್ರಪ್ರದೇಶ, ತಮಿಳುನಾಡು ಮಹಾರಾಷ್ಟ್ರ ಮೂರು ನೆರೆಯ ರಾಜ್ಯಗಳಾಗಿದ್ದು, ಬೆಂಗಳೂರು ಎಪಿಎಂಸಿಗೆ ಅಕ್ಕಿ ಸರಬರಾಜು ಮಾಡುತ್ತಿವೆ. ಅದೇ ರೀತಿ ಬಾಸ್ಮತಿ ಅಕ್ಕಿಯನ್ನು ಹರಿಯಾಣ ಮತ್ತು ಪಂಜಾಬ್ ರಾಜ್ಯದಿಂದ ಪಡೆಯಲಾಗುತ್ತಿದೆ. ನಗರದ ವಿವಿಧ ಭಾಗಗಳಲ್ಲಿನ ಅಕ್ಕಿ ಚಿಲ್ಲರೆ ವ್ಯಾಪಾರಿಗಳು ದೇಶದ ವಿವಿಧ ರಾಜ್ಯಗಳಿಂದ ಮತ್ತು ಕರ್ನಾಟಕ ರಾಜ್ಯದ ವಿವಿಧ ಜಿಲ್ಲೆಗಳಿಂದ ಬೃಹತ್ ಪ್ರಮಾಣದಲ್ಲಿ ಅಕ್ಕಿ ಖರೀದಿಸಿದ ಎಪಿಎಂಸಿ ಮತ್ತು ಯಶ್ವಂತಪುರ ಅಕ್ಕಿ ಸಂಪೂರ್ಣ ಮಾರಾಟಗಾರರಿಂದ ಅಕ್ಕಿ ಸಂಗ್ರಹಿಸಿದ್ದಾರೆ ಎಂದು ಈ ಅಧ್ಯಯನದಿಂದ ತಿಳಿದುಬಂದಿದೆ.

ಜುಲೈ, 2019

ಕೃಷಿ ಮಾರಾಟ, ಸಹಕಾರ ಮತ್ತು
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A Study on Consumer Preference for Rice Brands in Bengaluru City



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Introduction

Rice is a staple food for nearly one half of the world's population and an important staple food crop for millions of Indians with 5.98kg per capita consumption monthly. world rice consumption has increased by 40 per cent in the last 30 years. Consumption continues to increase as a result of population growth, urbanization and change in consumption habits.

There are quite a range of diverse socio-cultural factors underlining the consumption pattern and consumer preference for rice in Bengaluru city.

Consumer preference for rice may depend on socio-economic characteristics such as age, gender, income, house hold number, education level, nationality, race and socioeconomic status, etc. Consumers always seek to purchase those products that have value for the price they pay for and at the same time the quality must be convenient.

Afghanistan imports different branded Basmati rice from India and it creates potential demand in Afghanistan's market and customers prefer Indian Basmati over those rice which are importing from Pakistan particularly in festivals this will lead to more trade between India and Afghanistan.

Objective

- To assess the factors influencing consumer preference for different Rice brands

Methodology

Study area:

The present study was conducted in Bengaluru city.

Source of data:

The primary data on consumers preference was collected through personal interview method using pre-tested schedule from 100 consumers from five important locations such as Amruthahalli, Jakkur, Yelhanka new town, Sahakarnagar and R.T. Nager in Bengaluru city which were randomly selected. The secondary data was collected from various published sources and journals.

Tools and techniques:

Principle Component Analysis or Factor analysis method was used for analysing the factors which are influencing the consumption of rice in Bengaluru city.



Fig 1: Map depicting the study area.

Results

Table 1: KMO and Bartlett's test for variance among factors

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.573
Bartlett's Test of Sphericity	115.008
Degrees of freedom	55
Significance level	0.000

Table 2: Factors influencing consumption of Branded rice in Bengaluru city.

Attributes	Rotated Component Matrix ^a				
	Lifestyle	Discount	Need	Quality	Promotion
Taste	0.750	0.059	0.045	-0.252	-0.033
Income	-0.701	0.061	0.275	0.039	-0.076
Offer	-0.014	0.696	-0.145	0.448	0.307
Family Preference	-0.330	0.674	-0.155	0.242	-0.233
Availability	-0.119	-0.230	0.752	0.141	0.011
Festivals	0.081	0.284	0.703	-0.092	0.013
Grain Quality	0.005	-0.051	-0.015	0.862	0.005
Keeping Quality	0.357	-0.302	-0.198	-0.523	-0.265
Attractive Package	-0.225	0.135	-0.010	0.011	0.803
Advertisement	0.387	-0.360	0.047	0.184	0.603

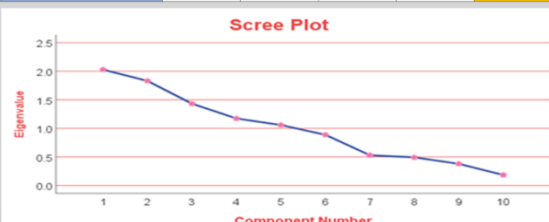


Fig. 2: Cattell's scree plot for factors influencing consumer preference for branded rice.

Discussion

Consumers all over the country have varying product preferences that are mostly guided by their perceptions, taste, and the utility they derived from this commodity. This means that some factors predetermine the consumption of rice. In order to analyze factors influencing consumers preference for branded rice *FACTOR ANALYSIS* was used.

The KMO measuring of sampling adequacy for selected sample was found to be 0.573, this shows that the adequacy of the factors influencing consumers to go for branded rice and the level of significance is 0.000 indicating that the observed factors were highly significant (Table 1).

The variables that significantly influenced the consumers preference for branded rice were taste, income, offer, family preferences, availability, festivals, keeping quality, attractive packages and advertisement. Taste and income were highly significant factors for consumers preference while attractive packages and advertisement were the least important factors by consumers while purchasing branded rice (Table 2).

The variables that highly influence consumer for branded rice in this study majorly cover 75 per cent of the reasons, why consumer prefer branded rice over unbranded.

Graphs and Photographs

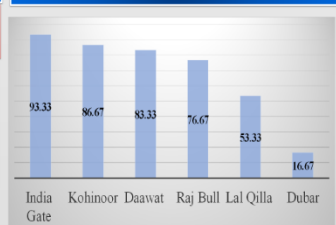


Fig 3: Brand preference for Basmati rice.

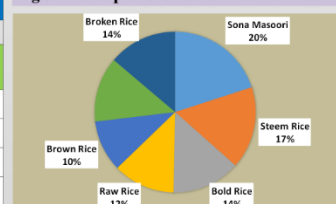


Fig 4: Brand preferences for Non Basmati rice.



Fig 5: Different brand of rice available in Bengaluru city.

Summary

The study found that, 65 per cent of the interviewed customers were consuming branded rice. The factors that influence consumer to prefer branded rice over unbranded are taste, income, offer, family preferences, availability, festivals and etc. There are many brands in different rice types for instances in Basmati India Gate, Daawat, Kohinoor and etc, in Non-Basmati like Mantra of Sona Masori, Saviti of Steam, SG Gold of broken, Meera of Raw rice and so on. Taste and income are the factors that majorly influence consumer to prefer branded rice while attractive package and advertisement are the least preferred factors. The interviewed customers also mentioned that the preference for branded rice is much more during festivals and some special occasion like wedding and etc.

CONTENTS

CHAPTER	TITLE	PAGE No.
I	INTRODUCTION	1
II	REVIEW OF LITERATURE	11
III	METHODOLOGY	24
IV	RESULTS & DISCUSSION	31
V	SUMMARY AND IMPLICATIONS	54
VI	REFERENCES	60

LIST OF TABLES

TABLE No.	TITLE OF THE TABLE	PAGE No.
4.1	Socio-demographic characteristics of consumers in Bengaluru city	32
4.2	Socio-economic profile of consumers in Bengaluru city	33
4.3	KMO and Bartlett's Test for variance among the factors	35
4.4	Rotated factor matrix for factors influencing consumption of Branded rice	36
4.5	Total variance explained by major factors influencing customers	37
4.6	Retailers' factors for attraction of consumer to purchase branded rice	38
4.7	Frequency of cooked rice consumption by respondent	39
4.8	Time wise preference of respondents for cooked rice	40
4.9	Households grocery purchasing person	41
4.10	Amount of rice purchased monthly by households	41
4.11	Place of purchase of rice by respondent	42
4.12	Consumption pattern of different rice made cooked meals	44
4.13	Socio-economic profile of rice retailers in Bengaluru city	46
4.14	General information about rice stores in Bengaluru city	48
4.15	Major Rice producing districts of Karnataka	49
4.16	Sourcing of rice by Bengaluru traders from other states of the country	50
4.17	Major Basmati branded rice sold by retailers in Bengaluru city	51
4.18	Major Non-Basmati rice sold by retailers in Bengaluru city	52

LIST OF FIGURES

FIGURE No.	TITLE OF THE FIGURE	BETWEEN PAGES
1.	Map depicting the study area Bengaluru City of Karnataka state	30-31

I INTRODUCTION

As a cereal grain paddy (*Oryza sativa* or *Oryza glaberrima*), rice is the most widely consumed staple food for a large part of the world's human population (Dutta, 2014). It is the staple food for more than 50 per cent of the world population, particularly in India, China and countries in Asia and also some countries in Africa (Ogundele and Okuruwa, 2006). Supplying 20 per cent of the calories consumed worldwide. With increase in the population rice consumption is also increasing particularly in the countries where rice is the staple food for instances Asian countries like China, India, African countries like Soudan, Ethiopia, Kenya and *etc.* The food consumption pattern is changing all over the world and the income level of the people is increasing with this the demand for branded food grains especially rice is also emerging and the food processing and food producing companies are seeking to create branded food products in order to satisfy their customers.

India is the second largest producer of rice and the second biggest exporter of non-Basmati rice in the world. The country has the largest acreage under rice cultivation, which accounts for 42.7 million hectars with probably a yield of 3.78 million tonnes (2018). The low yield in India is on account of rain fed agriculture and poor irrigation system. Rice is the most prominent crop of India as it is the staple food for most of the people of the country. This food crop is very important source of livelihood for millions of rural households and plays vital role in the country's food security, so the term "rice is life" is most appropriate in Indian context. The country has an important position both in area and production of rice. With the implementation of improved production technologies such as high-yielding varieties/hybrids, expansion of irrigation potential, and usage of chemical fertilizers, supply of rice in the country has kept pace with the increase in demand. Demand for rice is expected to further increase in future as population is continuously increasing, so production of rice also needs to be increased. There is a need to further increase rice productivity because land area under rice cultivation is declining. Major constraints for productivity and sustainability of rice-based systems in the country are the inefficient use of inputs (fertilizer, water, labor), increasing scarcity of water and labor especially for rice cultivation, new emerging

challenges from climate change, rising fuel prices, low level of modernization increasing cost of cultivation, and socioeconomic changes such as migration of labor, urbanization, less liking for agricultural work by youths, and concerns from environmental pollution.

The only way to sustain rice production for meeting the increasing population demand is to increase the productivity per unit of area of rice with enhanced resource use efficiency. The climatic change affecting the production of rice but adoption of modern practices can increase the production and productivity is increasing and the market for Indian rice both for Basmati and Non-Basmati also increasing, in case of Basmati India is the world largest rice producer and exporter while in case of Non-Basmati India is second in production and export as well after China. The demand for Indian Basmati is increasing day by day from different countries of the world particularly from African and Middle Eastern countries.

1.1 World rice production

Rice is the world's second most important food crop following by corn. Approximately 482 million metric tonnes of paddy rice has produced in the world in 2017. Asian and South Asian countries and African countries are the most suitable areas for the cultivation of rice in the world and they account for maximum of 90 per cent world rice production according to 2018 data China is the world biggest rice producer followed by India. Top five major producer countries of the rice in the world are China, India, Indonesia, Bangladesh, and Vietnam the mentioned countries are producing almost 90 per cent of world rice.

1.2 Rice production in India

India is second largest producer of rice. India has outperformed China in terms of exporting rice registering 22 per cent growth in 2017. The exports were boosted on account of flood hit in neighboring country Bangladesh. There are 1000 varieties of rice produced worldwide but in India white rice and brown rice are the major varieties of rice

produced. India is also famous for basmati rice, but they don't acquire major share in total rice exports as compared to non-basmati rice.

As agriculture in India is based on monsoon, the past 2 years experienced lower production of rice. But in 2017 the rice industry re-emerged and by 2018 it is expected to include African nations in the export countries, which have been importing from Thailand. The government of India heavily supports the rice producing farmers and the rice mills, by providing seeds, fuel, funds and advanced machineries as well as some beneficial insurance schemes to protect farmers' crops against disasters.

1.3 Rice production in Karnataka

Karnataka is a major rice-producing state of India. The farmers are growing rice of different varieties. Rice production in Karnataka depends heavily on monsoon and only 44 per cent of the total rice acreage is under irrigation (Rajanna 2010). The exceptional feature of rice cultivation in the Karnataka state is that either sowing or transplanting is seen in all seasons of the year (Rajanna 2010). The duration of the rice varieties in the Karnataka state differ from 98 to 178 days and the rice-growing ecosystems of the state can be broadly divided into six categories (Rajanna 2010). They are coastal area, hilly area, transitional area, tank-fed area, irrigated maidan area (south) and irrigated maiden area (north).

Kharif (June–July) and summer (January–February) are the two main rice seasons of the state. There are six rice-growing ecosystems in Karnataka. Out of this, Kharif sowing is more common. In summer, rice is cultivated mainly in the irrigated maidan areas of north and south. In coastal area, crop is sown in September– October and harvested in January–February and then another crop sowing season is in December–January and the harvesting is in March–April. In the tank-fed areas, the crop cultivation is mainly done in the months of August–September depending upon the arrival of monsoon. The state also has plenty of traditional rice varieties cultivated. The most popular traditional varieties cultivated are Rajaboga, Rajamudi, Kayame, Ratnachudi and Jeerasanna.

1.4 Rice exports

Rice is staple food crop of India which is being exported to different countries. India is mainly exporting rice in two different categories such as Basmati rice to a small extent and non-Basmati Rice. According to APEDA cereals exports recorded USD 6074 million during 2016-17. Rice occupies the major share in India's total cereals export with 93 per cent during the same period. Sella rice, Steamed rice, Brown rice, Pusa rice and Parboiled rice are the different types of rice that are exported under Basmati rice category. While Parboiled rice, Broken rice, Sella rice, Swarna rice and Sona Masoori Rice are the types that are exported under Non-Basmati rice category.

1.5 Branded rice

In India there are two types of rice i.e. Basmati and non-Basmati which have different varieties and selling under different brand name that some of them are as follow.

1.5.1 Basmati rice

1. India Gate

When a customer (domestically and internationally) think about Basmati rice the brand name India Gate is coming to picture customers are also loyal to this brand because of the quality products that the company offers. This brand of rice is being marketed for around 120 years. The farmers are producing this special rice for this company using both modern and traditional method to produce the best quality of rice for the customers. The price range starts from Rs 100 per kg.

2. Kohinoor Basmati rice

It has the best range of rice with long grains, best of aroma and taste. The packing of the rice is made in such a way which gives the guarantee that the rice will not lose flavor and one would get the best of rice to have in their homes. All the products are certified under ISO 9001:2000. The price range varies from Rs 70 to 200 per kg.

3. Lal Qilla Basmati rice

This rice is made under the flagship of brand Amar Singh Chawal Wala Company from Amritsar, Punjab. This Basmati rice has the best of flavors and long grains. This rice is properly aged so that post-cooking elongation becomes fluffy with best of aroma. The price of the basmati rice varies from Rs 80 to Rs 235 per kg depending on the variants.

4. Dawaat Basmati rice

This rice is one of the best rice brands under Amritsar based brand LT foods. This rice becomes long after cooking to about two times, which give a rich look to the dishes of rice. It is purchased from the various local markets of North India to the Himalayan hills. These rice brands are aged so that the rice become fluffy, non-sticky and separated from each other. It ranges from Rs 90 per kg to Rs 200 per kg as per its variants.

5. Amira Basmati Rice

This rice has covered major areas of the local market as the taste and flavor goes to the best of expectations of a customer. The rice is prepared customer demand and proper research is being done to assure the preference. The price varies from Rs 50 per kg as per the variants. Amira offers an extensive portfolio of brands that have been carefully developed to appeal to local markets around the world. Customer tastes and expectations have been finely segmented to deliver authentic flavors that go well with a variety of popular cuisines.

6. Aeroplane Basmati Rice

This rice has the best of the nutritional value, it has the low-fat content and is highly digestible. This rice is supplying from the high yielding paddy areas such as Haryana and Punjab. All the rice is aged under the controlled temperature so the different rice could get the best of their flavor, appearance and aroma. The price of this variants starts from Rs 90 per kg.

7. Hanuman Basmati rice

This rice is known for the best of quality and higher nutrition value. There is huge demand for this rice all over India as well as all over the Iran, Saudi Arabia and Dubai. After all, the quality checks this rice is released into the market. The price is around Rs 70 to 200 per kg.

8. Sun Gold Basmati rice

This rice goes against all the hardship in order to get selected for the customers. The rice is being processed and cultivated under various modern procedures to preserve nutritional value in it. The price ranges as per variants and starts from Rs 40 per kg.

9. Mezbani Basmati rice

For this the special preference is given to the control of quality. It is being admired by the whole world because of its longer shelf life, rich aroma and taste. The price of rice starts from Rs 40 per kg.

10. Best Basmati rice

This rice is being most commonly used for both the purposes of having them with the curry dishes or with some special dishes of rice. It mixes well with, both as it has the best taste and aromatic aroma to which one feels to have it. The price of its variants starts from Rs 50 per kg.

1.5.2 Non-Basmati Branded Rice

1. Sona Masoori

Sona masoori the most cultivated and consumed rice of the country is one of the finest rice of non-basmati origin and is largely grown in the Tungabhadra belt of Karnataka and Andhra Pradesh. It is largely consumed in South India and also the most preferred rice type in Southern part of the country, mainly in Karnataka, Andhra Pradesh and Telangana.

2. White Rice

Short-grain white rice is very starchy and becomes soft and sticky upon cooking, which makes it ideal for sushi. Short-grain rice is also used in paella and risotto dishes, and sometimes mixed into chili and stews. Long-grain rice, such as jasmine and basmati, contains less starch, so the cooked grains are drier and don't clump together. White rice is about 90 percent carbohydrate, 8 percent protein and 2 per cent fat. White rice is a good source of magnesium, phosphorus, manganese, selenium, iron, folic acid, thiamine and niacin. It is low in fiber and its fat content is primarily omega-6 fatty acids, which are considered pro-inflammatory.

3. Brown Rice

Short-grain and long-grain varieties of brown rice is chewier and heartier than white rice, and takes almost twice as long to cook because it contains less starch. Brown rice is a whole grain and contains as much as four times the fiber of white rice. Fiber slows down the rate at which carbohydrates convert into glucose in the bloodstream, helping to stabilize blood sugar levels. As such, brown rice has a lower glycaemic load compared to white rice. Brown rice is about 85 percent carbohydrate, 8 percent protein and 7 percent fat. It has more minerals, especially magnesium, than white rice.

1.6 Characteristics of rice grain quality

Rice grain quality is multidimensional; includes both physical and chemical characteristics, the physical properties of rice influence appearance and chemical characteristics are mainly influencing cooking quality. Grain quality is determined by variety; production and harvesting conditions; and postharvest handling, milling, and marketing techniques. Variety directly imports some quality characteristics and interacts with environment and processing to influence other characteristics indirectly. Varietal differences in crack resistance, for example while milling, influence head rice recovery in combination with drying and milling techniques.

At least a dozen types of rice provide different textures, tastes and nutritional value. Brown and wild rice contain the whole grain, meaning that both the germ and the

bran of the grain are preserved. Consequently, brown and wild rice are considered healthier because they contain more nutrients and fiber in contrast to white varieties of rice.

In addition to the technical determinants, there are economic dimensions of quality. Consumers express their preferences for rice quality by paying a premium for rice with the desired characteristics. If these retail price premiums are transmitted back to farmer through the marketing system, then market participants have the incentive to improve quality. Because grain quality is complex, rice research can improve grain quality in several ways. Chemists can identify varietal characteristics and their links to cooking quality.

1.7 Market Trends, Drivers and Challenges

In the era of technology advancement, there is trend of producing genetically modified (GM) rice to ascertain the quality of rice and food security. Though commercially there is no production of GM rice, but many varieties have been approved for commercial production which is expected to boost the India rice industry. Rice is a staple crop for 70% of the world and thus the demand for rice is expected to continue to grow over the forecast period. The food security concerns all over the world is driving the growth of the India rice industry, which by exporting rice to various countries is contributing towards global food security. With the climate change, continuous rising demand by consumers and the food security, rice industry is facing the challenge of producing rice without compromising on efficiency, equitability, environmentally-friendly, and more resilience to climate change. It has become imperative to produce rice at lesser land, with lesser water and labour. India is also facing lack of adequate agriculture infrastructure such as technologically developed equipment, logistics and transportation network, and effective public private partnership.

1.8 Importance of the study

Rice is the staple food for nearly half of the world population which majorly produced in Asian countries China is the leading producer of world rice followed by

India. This study will help the rice traders and retailers to know about the preference of customers for different branded rice and also it will help the customers to know different rice brands available in Bengaluru city. The rice traders will also be motivated to create brand names under different rice types, so there are different brands of rice sold in Bengaluru.

With this background, the present study was carried out with the following specific objectives.

1.9 Objectives of the study:

1. To assess the factors influencing consumer preference for different rice brands,
2. To analyse consumption pattern of rice and
3. To understand the sources of supply of rice sold by retailers.

1.10 Hypotheses of the study

1. Socio economic factors influence consumer's preference for different brands of rice
2. Rice is preferred over other food grain.

1.11 Scope of the study

The changing food habits and life styles, rising middle class population, increase in disposable income has resulted in increased consumption of branded rice. The growth in organized food retailing has particularly influenced the consumption of branded products including rice which encourages rice producers to sell branded rice in domestic market. Many rice businesses initiated their brand in rice by offering quality and reasonable price to the customer therefore these findings would help both customer and branded rice producer, distributor and retailer for appropriate strategies.

1.12 Limitation of the study

This study is based on the primary data which is collected from sample consumers and retailer with pre tested schedule by conducting a direct survey process. The data on different varieties and brands of rice was also collected. Consumers' preference and

important facts collected were subject to recall memory and knowledge. The study area was limited to Bangalore metropolitan and the findings may not be applied to other places, as vast difference exists among the consumers with regard to demographic and psychographic characteristics.

II REVIEW OF LITERATURE

In this chapter, an attempt was made to review the past work resources related to the present study published by other researchers such studies help in choosing appropriate analytical tools variables and interpretation of results obtained. With respect to objectives of the study, the review of literature has been presented under the following headings.

2.1 Factors influencing consumer preference for different rice Brands,

2.2 Consumption pattern of rice and

2.3 Sources of supply of rice sold by retailers.

2.1 Factors influencing consumer preference for different Rice Brands

Veena (1996) analyzed brand switching and brand faithfulness of the processed fruits and vegetable products in the state of Karnataka. The outcome of the study exposed that Maggi, Kissan and Sil were having market retention of 74.20, 48.74 and 55.78 per cent, for products of jam. The equilibrium shares decided in order to forecast future market situation between the diverse brands indicate that shares of Kissan, Rex. Other brands were probable to drop, mostly on account of rise of market shares of Gala, Maggi.

Guerrero *et al.* (2000) explained that choice and acceptance of food by consumers are complex phenomena, influenced by marketing-related psychological and sensory factors. Any interaction between a consumer and a food product involves the consumer considering and evaluating a range of quality attributes in the food. These attributes would contribute, in differing proportions, to the overall level of satisfaction derived from purchasing or consuming the product.

Ara (2003) adopted a stated preference approach to elicit consumer willingness to pay for multiple attributes of organic rice in the Philippines using conjoint analysis. Attributes that were covered included; price, reduced health risk level, environmental quality, eating quality, type of organic certification and a fair-trade factor. Health risk was the primary concern among all consumers. In Manila, consumers revealed organic certification to be the second most important factor while improvement of the farm

environment was the second highest factor in Naga city. Results showed that consumers who lived further from the production site had a higher preference for certification while those living in rural areas expressed a lower demand for certification.

Nandagopal and Chinnaiyan (2003) studied the brand preference for soft drinks in Tamil Nadu. The research of Nandagopal and Chinnaiyan revealed that people were buying soft drink because better quality and price of the products were the second issue for purchasing of soft drinks.

Narang (2006) opined that, a buyer do not stick to one brand in the case of food purchasing. They should be able recall different brand names when they go for purchase. Repetitive 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.

The increase in the demand for non-traditional staple food such as wheat and secondary products derived from traditional staple material sources are heavily linked with the increase of consumers' income. The more affluent the consumers, the greater attention they will pay to the quality of foods. The traditional marketing, which was characterized as "production-oriented market", where farmers and processors had significant power in the past, now seems to be irrelevant. The market has turned to a "consumer-oriented market", where affluent consumers have more power to demand, especially in terms of quality, health and safety for their food consumptions (Henson *et al.*, 2006).

Jafar *et al.* (2008), standard consumer preference for rice, as in Japan and other countries were demanding a wide range of added values for rice. These characteristics include food texture (stickiness and hardness), rice nutrients and constituents (protein, amylase allergens) and aroma, colour, size and shape of the rice kernel.

Linnemann and Suwannaporn (2008) analyzed consumer preferences and buying criteria in the export market for Thailand Jasmine rice. Discriminate analysis was

performed to investigate differences in buying criteria between traditional rice consuming and non-rice-consuming countries. Marketing activities, price, and country of origin were the best discriminators, whereas quality was a poor discriminator for Thailand.

Azabagaoglu and Gaytancıoglu (2009) used focus groups and market surveys to analyse consumer preference for different rice varieties in Turkey in order to analyse consumer behaviour. Results indicated that consumers expressed that Baldo and US Cal rose rice varieties were significantly different from ordinary rice regarding the outlook, good cooking, palatability and cleanliness. Consumers were willing to pay more for Baldo than other varieties.

Banovic *et al.* (2009) suggested that the quality perception process basically covers two phases; quality expectations are formed at the purchase point (based on perceived intrinsic and extrinsic attributes) and after meal preparation and consumption of the product at home, quality experience is formed when quality expectations are actually confirmed or rejected.

Jang *et al.* (2009) pointed out that food attributes has become a main criteria in the consumers' decision-making process and therefore have received much attention in the food marketing literature. Both intrinsic and extrinsic attributes influence consumers' perception of quality of food.

Ranaweerflr *et al.* (2009) conducted a study on purchasing behavior of rice consumers and potential for rice branding in Sri Lanka the study found that amount of rice purchased by a consumer is determined directly by the income of the consumer. Profession of the consumer bears no direct relationship with the brand preference and the type of rice purchased. Consumer perceived quality is also very important because consumer decides to pay a premium price for the brand based on quality. Properly denned brand names and maintaining product quality would be permit charging a premium price. If producers go for variety-based branding, they will be able to leverage on different qualities with different varieties for different prices. There is an increasing demand for branded rice in the market and benefits derived from increased demand could be

delivered to farmer' Millers should be motivated provide all relevant information of different brands to the consumer.

Untong and Kaosa-ard (2010), analyzed relationship between price and quality of rice in modern trade market in China using Hedonic price model with a total of 102 samples obtained from survey of packed rice in modern trade markets in Shenzhen and Guangzhou. The results revealed that factors which had positive impacts on price of rice were the fragrant of HomMali rice followed by quality of package and rice brand. However, the certification logo of Thai HomMali rice standard was not included in the model and reflected that Chinese consumers do not concern about the certification logo in the short period of marketing.

Abiriwe *et al.* (2011) ranked factors that identify consumer preference for attributes of rice in Ghana. Using a Hedonic price model, they determined factors that influenced consumers' preference which in turn influence demand for various rice brands in the city of Tamale and the quality characteristics that affected prices. The study found that, attributes that define the quality of rice most preferred by consumers were taste, cooking quality, cooking time and aroma.

Virmani (2011) examined the effect of advertisements for the brand preference of tea in the state of Uttar Pradesh. They indicated that factors which impact on brand preference were availability and quality of the product, but the quality of the product was ranked first. Majority of the consumers replied that advertisement has less influence on buying of tea but people buying tea because of better quality.

Gupta and Jain (2014) analyzed consumer attitude towards branded food products in urban and rural regions in India. The study revealed that the loyalty and belief of the customers were unlike in urban and rural regions. In rural area 23.33 per cent of consumers recommended the brand to others while in city area 14.67 per cent consumers recommended the same. In rural area 22 per and in city area 27.33 per cent of interviewer buying from the same area. Further, 12 per cent consumers of rural region and 16 per cent respondent of urban region were influenced by the brand image. There were some other

issues also which affected the 16.67 per cent of rural area respondent and 12.6 per cent of urban region interviewer. The study shows that 84 per cent of the customers had positive performance towards branded food products. More than 90 per cent of the customers were well aware of all the brands accessible in the market

Ginigaddara *et al* (2017) conducted a study in *Kegalle* district, in Sri Lanka to determine the factors affecting on consumer preferences and purchasing decision making on traditional rice varieties at the markets. The results of logistic regression proved that awareness on traditional rice was the main factor significantly influencing on purchasing decision where as other factors such as community, education level, income of household head, presence of household members with uncommunicable diseases, and the number of diseased persons in a family also affect the decision. Factors analyzed revealed that eating quality related attributes, nutritive attributes, marketing related attributes, and cooking quality related attributes were significantly affecting consumer preference of traditional rice. Overall results imply that traditional rice sector needs to identify these trends in the market and production and marketing plans should be made accordingly in order to obtain economic benefits from the industry.

Dennis *et al.* (2017) determine the factors influencing household preference for locally produced rice in the Upper East Region, Ghana. Primary data was obtained from a sample of 180 households with the aid of a structured questionnaire. Probit model and Kendall's coefficient of concordance were used to analyze the data. Significant socioeconomic factors include income, age, sex, and marital status, whereas the quality factors such as the absence of foreign materials, packaging, and aroma were also significant determinants of preference for local rice. The top three traits consumers consider in their choice for local rice were good-looking grains, excellent packaging, and absence of foreign materials in the rice. There was an evidence of an increased preference for quality local rice. Hence, increased investment in the rice value chain, particularly the processing stage where quality standards remain the topmost priority, will help boost consumers' confidence in the local rice market.

2.3 Consumption pattern of rice

Singh (1968) had analyzed data of the 15th round of NSSO and examined the role of occupational factors on consumption pattern including the rural and urban sections of western U.P. The major occupational categories were professionals, semiprofessionals, clerks, storekeepers, and cultivators, skilled and semiskilled workers with one category for unemployed and unidentified workers. The study pointed out that the difference in resource allocation to the various consumption items was due to the heterogeneity in socio-economic and cultural background. The study further revealed that urban households spent more food items like vegetables, meat, egg, fish etc. whereas rural households spent more of their income on inferior food items like cereals and rice.

Unnevehr (1986) used implicit prices of grain characteristics in terms of physical characteristics (milling quality) such as color, rate of breakage, shape of grain, percentage of chalky grain and purity and chemical characteristics (cooking quality) such as percentage of amylase content, gel consistency to measure softness of rice, Gelatinization temperature (Alkali spread) to identify cooking time and aroma to evaluate rice breeding in Thailand, Indonesia and the Philippines and found that demand for grain shape and some chemical characteristics, such as per cent of amylose, varies across these three countries.

Papola (1992) conducted a study on variations in food consumption patterns of population. The study highlighted that there were gross inequalities in the world related to the patterns of food consumption. On one hand food consumption requirement tell below minimum physiological needs for a major part of the population and on the other hand it exceeded considerably in a smaller proportion of population. Population at both these ends suffers considerably due to the ill health. The data has been taken from the secondary sources like FAO, NNMB and WHO. The analysis of data revealed that while levels of food supply and per capita daily protein intake were marginally adequate in the relatively poor countries, they were far away from generally accepted nutritional requirements in case of the highly affluent countries. In countries like USA, calories intake was 3666 per capita/day whereas it was nearly 2603 per capita /day in India. The

difference in the pattern of food consumption also had a great bearing on the reported causes of deaths in these countries.

Sinha (1994) conducted a study on food consumption in India and in the world. The study highlighted that food consumption was a complex phenomenon and hence human beings eat variety of foods and thus comparisons of average food consumption across different countries and regions was not much fruitful, but such comparisons were perhaps a good base to initiate exploration into the food situation in any particular region or country. The study hence aimed at comparing the food consumption statistics of per capital daily consumption of calories, proteins and fats of different parts of the world. The study used the data of FAO agricultural and food statistics of 1990. The study found striking difference in the consumption of essential food components in India and developed regions of the world like Europe, the United States of America, USSR and Australia.

Bakhshoodeh and Farajzadeh (2004) investigated urban consumer's behavior in Iran and determined the role of habit effect in forming the consumption pattern over the period 1980-2000. The survey items covered household consumption quantity and total expenditure on foods, including bread, flour and its products, dairy products and eggs, fats, fruits and vegetables, groceries, sugar and tea, etc. The results obtained from decomposing the total effect of price changes indicated that habit effect had a significant role in food consumption changes. That is, despite price changes for most food items, consumers tend to keep their consumption pattern almost unchanged. It is revealed that income and substitution effects are weaker than the habit effect.

Prabhu (2004) conducted a study on the changing pattern of household consumption expenditure. The aim of the study was to identify some important estimates of how household behave. The data had been taken from the National Sample Survey and three kind of exercises had been done on the data namely, driving of empirical distributions of consumption over the four time points i.e. 1983, 88, 94 and 2000. Then the proportions of expenditure on various commodities has been constructed by various sectors and the state and then total expenditure for each of the commodity groups had

been calculated and then to compare them with National Account Statistics. The data for various states has been further divided into two categories, per capita total expenditure of top 10 percent of the total population below the poverty line and the bottom 10 percent of the population above the poverty line. For the urban sector, commodities like food, fuel, intoxicants, rent and miscellaneous services had been taken into consideration. The results of the study revealed that in urban areas, the proportion spent on food had fallen from 63 percent in 1987-88 to 54 percent in 1999-00. In rural areas the drop was from 69 to 62 percent during the same period.

Evawany Aritonang *et al.* (2016) conducted a study on relationship of food consumption and nutritional status on employees of health polytechnic directorate health ministry medan. The study indicated that poor dietary habit, which is low in fiber and high in fat, can lead to weight gain. The purpose of this study was to determine the relationship of dietary habit to nutritional status. The research used cross sectional design. The measured factors were carbohydrate and fat intake, the type of food and nutritional status. The data were obtained based on the interviews using food recall, FFQ and questionnaires and measurement of IMT. Data were analyzed using chi square test. The results showed that there was a relationship between the adequate intake of carbohydrates and adequate intake of fat to nutritional status while the type of food consumed does not show relationship to nutritional status. It is recommended that The Management of Health Polytechnic Directorate, Health Ministry, Medan to do concealing, make policy and supervision to carry out continuous sport, provide sports facilities which can be used by all employee to resolve the incident of overweight and obesity.

2.4 Sources of supply of rice sold by retailers.

Shahabuddin (1992) indicated that since both domestic procurement and open market sales are essentially seasonal operations influenced by seasonal factors, a more disaggregated approach using seasonal data was considered more appropriate to estimate the quantities of grains to be procured during harvest season and sold in the lean season to achieve the floor and ceiling price targets. Such a consistent derivation of quantity targets would not only contribute towards the preparation of a more realistic food budget

but would also assist in a better targeting of policy instruments for reducing both the inter and the intra year fluctuation of food grain prices.

Chowdhury (1994) reported that domestic rice procurement is a relatively small source, accounted for 20 per cent of the Public Food Distribution System (PFDS) throughout per year during the 1980s. The study finds that farmers' share to public procurement is very little so that the financial coverage was too limited to ensure farmers' participation in procurement. Moreover, there was collusion between the procurement functionaries, basically government officials, and the traders. However, the study states that procurement program has an independent and positive effect on rural rice prices.

Shahabuddin and Islam (1999) evaluated effectiveness of the domestic procurement program in terms of participation of farmers, traders and millers and problems faced by them in the process of both paddy and rice procurement. They found that the participation of farmers, especially small and medium farmers in the domestic procurement program was very low (only 10%). In order to increase farmers' participation in the procurement program, they suggest to reorganize procurement program at Local Storage Depot (LSD) to minimize unofficial payments to both officials/staff and laborer, to initiate procurement program soon after harvest, to minimize irregularities in weighing, to create temporary storage at LSD premises to prevent damage of farmers' paddy due to inclement weather, etc.

Beverland (2001) in his study analyzed the level of brand awareness in New Zealand market for ZESPRI kiwi fruit and the effectiveness of branding strategy employed for kiwi fruit in New Zealand. The study was based primary data collected from 160 kiwi fruit consumers outside three major super market chains in Auckland and New Zealand. The results showed that the level of brand awareness for ZESPRI was low among the consumers. The study concluded that brand awareness could be increased through a relationship-making programme involving targeted marketing and supply chain management.

Dorosh *et al.* (2001) observes that Boro procurement has been much more reliable than Aman procurement. Procurement of Boro exceeded 80% of the target on 9 out of 13 years and failed at least 60 per cent of the target in only one year. Aman procurement, on the other hand, exceeded 80 per cent of the target in only 2 out of 12 years, and failed to reach 60% of the target in 8 out of 12 years. In these eight years, Aman procurement averaged only 18.5 per cent of the target. The major problems in supplying rice to the procurement centers are illegal payment, taking extra amount, and unnecessary harassment. Based on the views reported by the farmers, traders and millers, the author suggests for early start of procurement, stopping corruption and bribing, establishment of a procurement center at the village level, setting the procurement price higher than the market price, directly receiving the paddy/rice after arrival at the procurement center, increasing the duration of procurement.

Rickardson and Rabiee (2001), The study developed an experiment to examine consumer's willingness to pay for five apple varieties. They considered three treatments to estimate the effect of brand, in this case the varietal name, on consumer preference. The study revealed that brands have the influence in the fresh produce category. Furthermore, the study found out that the brand used for the new varieties influences consumer preference for branded apple varieties, but has little impact on markets for traditional apple varieties. Hence the study concluded that the success of a new product would depend on consumer response, but at the same time it is especially difficult to measure how a new apple variety would create demand in the market.

Pearson *et al.* (2003) studied on the "Australia fresh fruits and vegetables". The main objective for this study was to examine why most of fresh fruits and vegetables were unbranded. The brands have the potential value to buyers and to the organisations that own them. However, the study has revealed that brands are valuable to buyers when they have several attributes like taste and quality. The study has revealed that brands are relevant only for apples, oranges, rock melons and grapes, but not for potatoes, onions or mushrooms. This is mostly due to changes in the attributes of vegetables. Hence the study concluded that many fresh fruits and vegetable products are likely to remain unbranded.

Jin *et al.* (2005) studied on the choosing brands, fresh produce versus other products. This study presents a framework to analyze how uncertainty about product attributes affects consumers' willing to pay for brand products over generic ones, incorporating key elements of a random utility model and product attribute models. The study found that in comparison to electronics, clothing, and processed food, consumers may not buy branded vegetables and fruits because of quality uncertainty, and they can easily reduce uncertainty of product quality of fresh vegetables and fruits by seeing, touching, smelling, and tasting. Hence, consumers are less willing to pay for brands of fresh vegetables and fruits. However, simulation results also show that brands of fresh fruits and vegetables may have price premium similar to other products, but they lack the market share. Thus, the main challenge in building brands in vegetables and fruits is to establish a critical mass in marketing.

Arfini *et al.* (2008) in their empirical study on the “Quality markers and consumer communication strategies” assessed the role of brands and territorial markers (PDO, PGI) in enhancing and promoting “very fresh” food products, particularly in fruit and vegetables in Italy. The first part of the work identifies the most widely used quality markers, and the legal and organizational aspects for some of them. The second part is empirical case studies on PDO and PGI, the two company brands (Melinda and Marlene) in the fruit and vegetable sector and, finally, one collective brand, “QC – Qualità Controllata” set up by a regional authority, Emilia Romagna Region. The results revealed that quality is a key factor when consumers choose fresh food products, but at the same time it is difficult for them to assess. On the demand side, consumers require protection measures, and on the supply side, efficient communications need to be available to all operators. In this context, quality markers such as logos, brands that distinguish a product from its competitors can be a strategic way of transmitting information, especially for firms which cannot afford resources for communications or their own brand name. The study revealed that collective brands and indications alone are not a sufficient condition for commercial success. What is essential, is the organisation of supply and brand strategy.

Shahabuddin *et al.* (2009) recommended improving the effectiveness of procurement policy and price support to the farmers by introducing a system of open tendering in order to reduce costs and improve the reliability of the program. However, the studies show variable results. This pose a real challenge for policy makers to understand the program effectiveness in terms of how the program delivers in fulfilling its objectives. This is very important since over the time, the implementation of program has been varying and rice production seasons changing - from Aus dominated rice production to Boro dominated rice production.

Jeevananda (2011) analyzed the consumer perception on four P's of marketing. This reveals that male and female have different opinion with regards to the impact of branding, packaging, pricing, promotion and quality in terms of marketing of FMCG. The study also showed that consumer's perception on branding of FMCG product based on promotion of this product, increase the price of the product but consumer purchase FMCG product based on quality.

Yue and Tong (2011) studied on the "consumer preferences and willingness to pay for existing and new apple varieties". The main objective of this study was to determine how much consumers are willing to pay for 13 new and existing apple varieties and analyze the quality attributes the consumers' like or dislike compared to new and existing apple varieties. The authors used choice experiments to investigate consumers' preferences and willingness to pay for various apple varieties. The experiments also asked consumers to evaluate a series of quality attributes by allowing them to taste apples. The choice experiments were conducted in real markets where consumers were purchasing fruits to eliminate any decontextualized biases. The results revealed that compared with other apple varieties, participants were willing to pay the highest prices for 'SweeTango', followed by 'Zestar TM' and 'Honeycrisp'. The regular and infrequent buyers were willing to pay significantly higher amounts for most of the studied varieties. The study concluded that attributes liked by consumers will help apple breeders to make targeted breeding decisions by understanding what quality attributes consumers like or dislike about the selected varieties.

Ghose and Lowengart (2012) studied on consumer choice and preference for brand categories. The focus of the research was to understand the phenomena of consumer choice and preference in the market. The study revealed that, the entry of new international brands affects market dynamics in a market where national, international and private brands are present. The estimated model provides with several diagnostic findings with respect to what kinds of product attributes affect choice probabilities of different categories of brands in respect of the international, the national and the private brands.

Vishal *et al.* (2013) conducted a study on supply chain management of rice in India. The study found that the primary stage of the rice supply chain is held by the paddy farmers who supply paddy to the rice processing companies, which is supplied both directly and through intermediaries, depending on the type of farmers. Large land holding farmers involved in organized production from business point of view who produce on very large scale and, the second type of farmers which are Small land holding farmers, working on small farms in villages, whose productivity is low, and can spare very low amount of paddy after keeping the year's stock for their own use. Based on the kind of production they are involved into; they are divided into two types: Organic farmers, those who are involved in organic farming where cultivation of the paddy was based on the use of green manure, compost and the approved natural substances while without any use of the manufactured chemicals, fertilizers, and pesticides including the insecticides, fungicides and the herbicides. Secondly, Inorganic farmers are those who use the manufactured chemicals, fertilizers, and the pesticides for cultivation of paddy.

III METHODOLOGY

The methodology refers to the theoretical analysis of the methods used in a field of study. In any research, the clear understanding and interpretation of primary and secondary data are possible only with the adoption of the suitable method of analysis. This chapter essentially maps out of the methods used in this study for analysis of the primary as well as secondary data. The details of the methodology used in this study are presented under the following headings.

3.1 Selection and description of data

3.2 Sampling procedure/design

3.3 Collection of data: a source of data and type of data

3.4 Analytical tools and techniques employed in the study

3.1 Selection and description of data

3.1.1 Selection of the study area

Bengaluru is the principal administrative, cultural, commercial, and industrial and knowledge city of the state of Karnataka. Bengaluru is also been identified as the country's 'Silicon Valley' and it is one of the technological innovation hubs with a technological achievement index (TAI) of 134 according to the Human Development Report (United Nations Development Programme, 2001). Bengaluru also houses numerous other leading commercial and educational institutions, and industries like textiles, aviation, space, biotechnology, etc. Bengaluru has become a shopper's glory. The city has popular shopping areas like M G Road, Brigade Road, Commercial Street, Majestic area, and Jayanagar Shopping Complex.

Bengaluru is currently seeing something of a retail boom. The organized retail outlets have spread all over the Bengaluru City. Several supermarkets and malls have grown up in the recent past. To put some examples of modern stores, the biggest mall in the city is Mantri Square which is located in Malleshwaram, there are some other modern retail stores i.e. malls for instances Fab mall, Brand & new family Mart, Sunday to

Monday at the same time there are some hypermarkets like Big Bazaar, the Metro Cash & Carry which is a type of B2B retailing format is also functioning in Bengaluru city located in Yeshwanthpur and Kanakpura Road. Keeping this in mind Bengaluru city was purposefully selected for the study.

3.1.2 Description of the study area

Bengaluru, the capital city of Karnataka, is a veritable melting pot of various cultures. The city has well – laid out parks, gardens, long avenues of blossoming trees and salubrious climate. Bengaluru has a population of 12.47 Million, making it India's, fourth largest city, with a decadal growth rate of 47% per cent (2018). Bengaluru is the next fastest growing Indian metropolis afterward New Delhi. The city was established during the 16th century, by great dynasties like the Kadambas, and the Hoyasalas. Bengaluru city is located at an height of 920 meters above sea level. The city, which is spread over an area of 2190 square kilometers, enjoys a pleasant climate throughout the year due to its elevation. According to 2011 census, the literacy rate of the city is 88.48 per cent. Its tree-lined streets and abundant greenery have led to it being called the Garden City of India. The highest temperature recorded is 39°C (102°F) and the lowest is 7.8°C (46°F). The wettest months are August, September, and October; with the heaviest rainfall of 180 mm in a 24-hour period.

3.2 Sampling procedure/design

Bengaluru was mainly selected for the study since it is the hub of many organized retail outlets, multi-store, hypermarkets shopping malls and as well as different brand of food and non-food products are being sold in the city. All the organized retail outlets also run food retail outlets. These organized retail outlets in Bengaluru city also selling branded rice. Further, there are many branded rice wholesaler/dealers established their trade for the last two to three decades in Bengaluru city since there is a growing demand for branded rice.

The primary data was collected from two different population i.e. retailers and consumers who are in this channel of dealing with branded rice. 100 sample of

consumers were interviewed regarding their preference for branded rice by administering pre-tested structured schedule the survey method was face to face interview with pen and paper. In addition to this 30 different retailer, whole sellers and dealers of branded rice were interviewed about the preferences of consumers for branded rice and the source of supply of rice they are procuring rice. The convenient method for sampling was adopted to select the respondents. The data from a sample of 100 consumers and 30 rice dealers were collected from different localities of Bengaluru city. The primary data collected from sample respondents were mainly related to attitude and factors influencing the consumption of branded rice, consumption pattern and source of rice procurement.

3.3 Nature and sources of data

The study is based on both primary and secondary data. The primary data regarding the socio-economic characteristics of the consumers and the consumers preferences towards branded rice was collected by administering pre-tested schedule which included questions regarding age, education, occupation, income, type of family, food habit, consumption pattern, nature of purchase decision, frequency of purchase, monthly expenditure on branded rice, place of purchase, level of satisfaction of consumers. On the other hand, 30 different rice dealers, wholesalers and retailers were also interviewed about their socio-economic factors, source of procurement of rice, selling pattern consumer preferences and *etc.*

3.3.1 Period of study

The primary data was collected during the period from January to April 2019. The secondary data related to the area, production and marketing of branded rice in India was collected in different years 1991-92 to 2016-17.

3.4 Analytical tools and techniques employed in the study

The analysis of the data is the procedure of cleaning, inspecting, modeling and transforming the achieved data with the goal of underlining valuable information and suggesting conclusions. The data analysis has approached, encompassing various techniques under a diversity of names in different domains. The choice of suitable

analytical tools is important in a research study as they have a crucial bearing on the results and their clarification.

The primary data collection were tabulated and analyzed by using suitable statistical/analytical tools and technique, keeping in view, the particular objectives of the study to draw meaningful conclusions and inferences. Based on the nature and extent of the data, the methods and tools/techniques of analysis employed in the present study are elaborated under following headings.

3.4.1 Descriptive statistics

3.4.2 Percentage analysis

3.4.3 Garrett's ranking technique

3.4.4 Factor analysis

3.4.1 Descriptive statistics

Descriptive statistics is a summary statistic that quantitatively describes or summarizes features of a collection of information, while descriptive statistics in the mass noun sense is the process of using and analyzing those statistics. Descriptive statistics are distinguished from inferential statistics (or inductive statistics), in that descriptive statistics aims to summarize a sample, rather than use the data to know about the population that the sample of data is thought to represent. This commonly means that descriptive statistics, unlike inferential statistics, is not developed on the basis of probability theory and are frequently nonparametric statistics. Even when a data analysis draws its main conclusions using inferential statistics, descriptive statistics are generally also presented. For example, in papers reporting on human subjects, typically a table is included giving the overall sample size, sample sizes in important subgroups (e.g., for each treatment or exposure group), and demographic or clinical characteristics such as the average age, the proportion of subjects of each sex, the proportion of subjects with related comorbidities, etc.

3.4.2 Percentage analysis

A percentage is a way of stating a number, particularly a ratio, as a fraction of 100. It is often indicated using the per cent sign (%). The percentages are used to show how large/small one quantity is relative to another quantity. The main quantity commonly represents a portion of or a conversion in the second quantity, which must be bigger than zero. Percentage analysis is the method to represent raw streams of data as a percentage (a part in 100 - percent) for better understanding of collected data.

3.4.3 Factors analysis

Factor analysis is a statistical method used to define variability between observed correlated variables in terms of potentially lower number of unobserved variables called factors. Factor analysis searches for joint variations in response to unobserved latent variables. The observed variables are modeled as linear combinations of the potential factors, plus error terms. The information gained about the interdependencies between observed variables can be used later to reduce the set of variables in a dataset.

Factor analysis model

$$X_i = A_{i1}F_1 + A_{i2}F_2 + A_{i3}F_3 + \dots + A_{im}F_m + V_iU_i$$

Where, $X_i = i^{\text{th}}$ standardized variable

A_{ij} = standardized multiple regression co-efficient of the variable on common factor j

F = common factor

V_i = standardized regression co-efficient of variable i on the unique factor

U_i = Unique factor for variable i

m = number of common factors

The unique factors are uncorrelated with each other and with common factors. The common factors themselves can be a linear combination of the observed variables.

$$F_i = W_{i1}X_1 + W_{i2}X_2 + W_{i3}X_3 + \dots + W_{ik}X_k$$

Where, F_i = estimate of the i^{th} factor

W_i = weight or score of the co-efficient

k = number of variables

It is possible to select weight or factor score coefficient so that the first factor explains the major portion of the over-all variance. Then, the second set of weights can be selected so that the second factor accounts for most of the variance subject to being uncorrelated with the first factor. The same standard can be useful for selecting additional weights for the additional factors.

3.4.4 Concepts used in the study

Bartlett's test of sphericity

It is a statistic test for examine the hypothesis for showing that the variables are uncorrelated in the population i.e., the population correlation matrix is an identity matrix. Bartlett's test of sphericity tests the hypothesis that a correlation matrix is an identity matrix, which would indicate that the variables are unrelated and therefore unsuitable for structure detection. Each variable correlates perfectly with itself ($r=1$) but has no correlation with the other variables ($r=0$).

Correlation matrix

A correlation matrix is a table showing correlation coefficients between sets of variables. Each random variable in the table is correlated with each of the other values in the table. This allows seeing which pairs have the highest correlation. It is a lower triangle matrix showing the simple correlation r , among all possible pairs of variables involved in the analysis. The diagonal elements which are all 1 are usually omitted.

Factor scores

The Factor scores are compound scores assessed for each respondent on the deriving factors.

Factor Loadings

Factor loadings are coefficients found in either a factor pattern matrix or a factor structure matrix. Factor loadings help in labelling and interpreting the factors. It measures that how closely the variables in the factor are associated. Furthermore, it is calling factor variable correlation. These are the correlation coefficients between the variables and the factors.

Eigen value

Eigen values are the variances of the factors. They measure the variance in all the variables similar to the factor. Furthermore, Eigen values are calculated by adding the squares of factor loading of all the variables in the factor. It helps in explanation of the factor importance with respect to variables. Generally, factors with Eigen values more than one are considered stable. The factors that have low Eigen values (<1.0) may not explain the variance in the variables related to that factor.

Communalities

Communalities measure the percentage of variance in each variable clarified by the factors extracted. It is denoted by h^2 and ranges from 0 to 1. A high communality value indicates that the maximum amount of variance in the variable is explained by the factors extracted from the factor analysis.

Total variance explained

It is the percentage of the total variance of the variables explained. This is calculated by adding all the communality values of each variable and dividing it by the number of variables.

Factor variance explained

It is the percentage of total variance explained by the factors. It is added by calculated by adding the squared factor loadings of all the variables and dividing it by the number of variables.

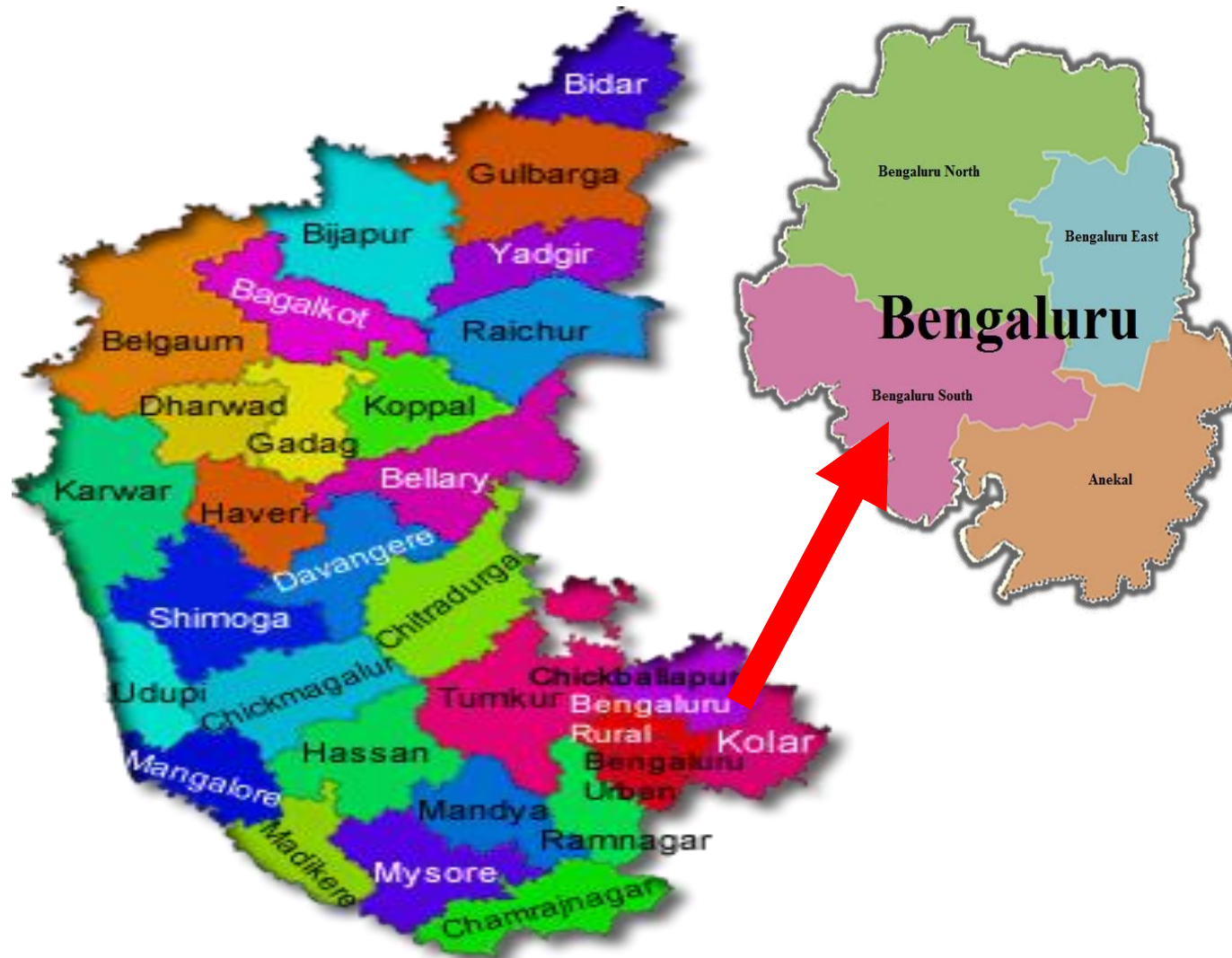


Fig. 1: Map depicting the study area Bengaluru City of Karnataka state

IV RESULTS AND DISCUSSION

The results of the analysis carried out for fulfilling the objectives of the study are presented under the following headings:

- 4.1 General information regarding consumers of branded rice in Bengaluru City.
 - 4.1.1 Socio-economic characteristics of the consumers.
 - 4.1.2 Socio-demographic characteristics of the consumers.
- 4.2 Factors influencing consumer preference for different Rice Brands.
- 4.3 Consumption pattern of rice.
- 4.4 Sources of supply of rice sold by retailers.

4.1 General characteristics of consumers buying branded rice in Bengaluru city

4.1.1 Socio-demographic characteristic of consumers in Bengaluru city

The socio-demographic characteristic of consumers was presented in the Table 4.1., which includes the information about the gender, age group, marital status, food habit and family type. The table reveals that among the 100 consumers studied more than half of the consumers (63%) were males and the remaining (37%) were females.

With respect to the age 30 per cent of consumers belonged to the age group of 39 to 48 years which included the professionals and business people. About 24 per cent of the consumers were in the age group of 29 to 38 years. Further, 19 per cent of consumers were in the age group of 49 to 58 years, 17 per cent of consumers were in the age group of 20 to 28 years and the rest of 10 per cent were in the age group of above 58 years.

With respect to marital status, a vast majority of the respondent consumers (76%) were married and only 24 per cent were single, which clearly indicates that the family requirements increase after the marriage and also purchase decision will be influenced by both husband and wife. With respect to food habits majority of the respondent consumers (67%) were non-vegetarians and the rest (33%) were vegetarians. With reference to the type of family, a vast majority (85 %) of consumers had a nuclear family and a marginal

number of (15%) of the consumers were of joint family. It clearly depicts that nuclear families are more in number.

Table 4.1: Socio-demographic characteristics of consumers in Bengaluru city

(n=100)

Sl. No.	Characteristic	Category	Number of consumers	Percentage to the total
1.	Gender	Male	63	63.00
		Female	37	37.00
Total			100	100.00
2.	Age (Years)	Between 20 and 28	17	17.00
		Between 29 and 38	24	24.00
		Between 39 and 48	30	30.00
		Between 49 and 58	19	19.00
		More than 58	10	10.00
Total			100	100.00
3.	Marital status	Married	76	76.00
		Single	24	24.00
Total			100	100.00
4.	Food habit	Non-Vegetarian	67	67.00
		Vegetarian	33	33.00
Total			100	100.00
5.	Family type	Nuclear	85	85.00
		Joint	15	15.00
Total			100	100.00

4.1.2 Socio-economic profile of consumers in Bengaluru city

The socio-economic profile of consumers in Bengaluru city is presented in the Table 4.2. The socio-economic profile includes education level, occupation, earning members in the family and family income. With regard to literacy level, majority of the

consumers were under-graduates (38%) which shows that consumers are well educated and aware of what is good for health, followed by post-graduates (27%), (18%) consumers were studied up to high school, about 11 per cent of the consumers were interviewed had the PUC level education and about 6 per cent of the consumers were educated up to PhD level. It was interesting to note that none of the respondent consumers were illiterates.

Table 4.2: Socio-economic profile of consumers in Bengaluru city

(n=100)

Sl. No.	Characteristics	Category	Number	Percentage
1.	Educational level	High school	18	18.00
		PUC	11	11.00
		UG	38	38.00
		PG	27	27.00
		Ph.D.	6	6.00
Total			100	100.00
2.	Occupation	Own Business	23	23.00
		Employees	20	20.00
		Student	19	19.00
		Housewife	7	7.00
		Others	31	31.00
Total			100	100.00
3.	Earning members in the family	One	31	31.00
		Two	46	46.00
		More than two	23	23.00
Total			100	100.00
4.	Family income	5000 – 10,000	16	16.00
		10,000-50,000	27	27.00
		50,000 – 100000	34	34.00
		Above 1 lakh	23	23.00
Total			100	100.00

With respect to occupation of the respondent consumers the table shows that the majority of the consumers interviewed i.e. 31 per cent were in the different level of occupation for instances bank employees, IT sector worker and also telecommunication companies workers, 23 per cent of the interviewed respondent had their own business, about 20 per cent of them were government employees, 19 per cent were students they were in different level of study, the remaining 7 per cent were housewives.

With respect to earning members in the family, majority (46%) of families had two earning member in their family, followed by 31 per cent of families had one earning members and 23 per cent of families had more than two earning members indicating that those consumers who have own business and high income they are buying branded rice.

With respect to the family income, 34 per cent of the families were earning between Rs. 50,000 to Rs. 100,000 per month. Further 27 per cent of respondent consumers were earning in the range of Rs. 10,000 to Rs. 50,000, 23 per cent of the families were earning more than Rs. one lakh per month the remaining 16 per cent of the interviewed respondent had the income level of less than 10,000 it is to be mentioned that those consumers with less than 50,000 income per month they were less likely to buy branded rice.

4.2 Factors influencing consumer preference for different rice brands

Factor analysis was used to assess the factor influencing consumer preference to the different rice brand. The first step in factor analysis is to check the adequacy of sample size i.e. data with the help of Kaiser-Meyer-Olkin (KMO) Measure and Bartlett's Test Table 4.3 The KMO measure was found to be 0.573 which shows that the factors that are extracted will account for fair amount of variance. The overall significance of correlation matrix was tested with Bartlett's test of Sphericity. The Chi-square value for Bartlett's Test was significant, thus rejecting the null hypothesis of independence among the variables.

Eigenvalues greater than one were considered for determining the number of factors influencing consumer preference for consumption of branded rice. With the help

of Cattell's scree plot the factors were determined. Five factors had Eigen values greater than one, thus these factors were considered.

The rotated factor matrix for factors influencing consumer preference for consumption of branded rice is presented in Table 4.4. It could be observed from the table that "Taste", of the branded rice compare to unbranded rice" and "Income of the consumer" were substantially considered on factor 1, while "Offer" and "Family preferences were significantly loaded on factor 2. "Availability" and "Festivals" were loaded on factor 3, "Grain quality" and "Keeping quality" were loaded on factor 4, "Attractive packages" and "Advertisement were loaded on factor 5, the above factors were considered based on the consumer preferences for branded rice.

A high score of Factor 1 reveals that consumers preferred branded rice and its products because of availability and accessibility of the consumers to branded rice and also because of consumers preferred to consume branded rice in some special occasions like festivals

Table 4.3: KMO (Kaiser-Meyer-Olkin) and Bartlett's test for variance among the factors

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.573
Bartlett's Test of Sphericity	Approx. Chi-Square	115.008
	Degree of freedom	55
	Significant level	0.000

The variables that significantly influenced the consumer's preference for branded rice were taste, income, offer, family preferences, availability, and festivals, keeping quality, attractive packages and advertisement. Taste and income were highly significant factors for consumers' preference while attractive packages and advertisement were the least important factors by consumers at the time of purchasing branded rice.

The study also found that about 65 per cent of the interviewed customers were consuming branded rice telling the reason that the unique taste and grain quality of

branded rice are far better than unbranded rice. In addition to this from the retailers and rice traders point of view every business in terms of food grain in the country in order to be in the market for a longer period and at the same time for the satisfaction of their customers quality of the products they are serving their customers should be of superior and to maintain the customer loyal to their products the rice traders and retailers should create a strong brand name being patent to that business.

With respect to consumption of rice in the study area which is a staple food item, customers will definitely seek the unique and qualitative items that itself is covered in this study and the respondent answered that branded items are always far better than unbranded even though its prices are higher than others.

Table 4.4: Rotated factor matrix for factors influenced consumption of branded rice

Sl. No.	Attributes	Component				
		Lifestyle	Discount	Need	Quality	Promotion
1.	Taste	0.750	0.059	0.045	-0.252	-0.033
2.	Income	-0.701	0.061	0.275	0.039	-0.076
3.	Offer	-0.014	0.696	-0.145	0.448	0.307
4.	Family Preference	-0.33	0.674	-0.155	0.242	-0.233
5.	Availability	-0.119	-0.23	0.752	0.141	0.011
6.	Festivals	0.081	0.284	0.703	-0.092	0.013
7.	Grain quality	0.005	-0.051	-0.015	0.862	0.005
8.	Keeping quality	0.357	-0.302	-0.198	-0.523	-0.265
9.	Attractive package	-0.225	0.135	-0.01	0.011	0.803
10.	Advertisement	0.387	-0.36	0.047	0.184	0.603

The Total column gives the eigenvalue, or amount of variance in the original variables accounted for by each component. The percentage of Variance column gives the ratio, expressed as a percentage, of the variance accounted for by each component to the total variance in all of the variables. The Cumulative percentage column gives the percentage of variance accounted for by the first n components. For example, the

cumulative percentage for the second component is the sum of the percentage of variance for the first and second components. Totally about 75 per cent of influence are brought out by first five factors that the first factor i.e. taste account for (20.28%) of the variance followed by the second factor that is income 18.30 per cent both the income and taste are account for 38.58 per cent of the total variance the third factor which is offer accounted for 14.32 per cent of the variance followed by family preferences and availability which both accounts for 22.31 per cent of the variance so table also indicated that the remaining other five factors were got the value less than 10 per cent of variance which were not much significantly influenced customers to buy branded rice.

The first five factors had also got the eigenvalues of greater than one that also indicates that those factors are significantly influenced customers to purchase branded rice the study also revealed that not all the factors and variables that made customers to buy branded rice were included in this study there are also more different variables that are influencing customers to prefer branded rice over unbranded.

Table 4.5: Total variance explained by major factors influencing customers

Sl. No.	Factors	Initial Eigenvalues			Extraction Sums of Squared Loadings		
		Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1.	Taste	2.028	20.28	20.28	2.02	20.28	20.28
2.	Income	1.831	18.30	38.58	1.83	18.30	38.58
3.	Offer	1.432	14.32	52.91	1.43	14.32	52.91
4.	Family Preference	1.173	11.73	64.64	1.17	11.73	64.64
5.	Availability	1.059	10.58	75.23	1.05	10.58	75.23
6.	Festivals	0.888	8.88	84.11	-	-	-
7.	Grain quality	0.531	5.30	89.42	-	-	-
8.	Keeping quality	0.492	4.92	94.34	-	-	-
9.	Attractive package	0.38	3.80	98.14	-	-	-
10.	Advertisement	0.185	1.85	100	-	-	-

As it is mentioned in the methodology that a sample of 30 rice traders and retailers were also selected in order to understand the sourcing of rice along with which of the factors that retailers focus on to influence them for buying the branded rice.

Fife major factors were considered as following grain quality, price, brand loyalty, package size and advertisement as shown in Table 4.6:, grain quality of the rice got the first ranking score with a mean score of (60%) following by price that got the mean score of 56.83 per cent, brand loyalty was the third ranked factors by getting 51.67 per cent mean score following by package size which has got a mean score of (42.50%) and stood in fourth rank and finally advertisement was the fifth and last variables with a mean score of 39 per cent.

The above ranking was done by retailers they indicated that among the mentioned fife factors grain quality and price of the branded rice are highly significant factors that influence customer to buy branded rice. In the other hand brand loyalty and package size of the branded rice are also important in order to attract the customer at the time of purchasing branded rice but advertisement is not much significant factor to make the customer of branded rice to buy more products.

The factors form customers' point of views and the variables form rice traders and retailers point of view to influence customers while purchasing branded rice are different to some extend but there are still some share factors for instances grain quality, price, package size and as will as attractive package that both customers and retailers are focusing on in order to sell/purchase the products on the other hand there are some variables and factors that are different from both the sides.

Table 4.6: Retailers' factors for attraction of consumer to purchase branded rice

SI. No.	Particular	Mean score	Garrett's Ranks
1.	Grain Quality	60.00	I
2.	Price	56.83	II
3.	Brand Loyalty	51.67	III
4.	Package size	42.50	IV
5.	Advertisement	39.00	V

4.3 Consumption pattern of rice

The consumption pattern of food items are varies from country to country but at the same time within a single country people in different localities consuming food items with different behavior and manner in addition to that the cooking pattern of food grain are also differ in different places, in this particular objective an attempt has done to know about rice meal and its consumption pattern in the study area i.e. Bengaluru city.

As it is already indicated in the previous different chapters that rice is the staple food in the study area for the better understanding respondent were also asked about how often they prefer to eat rice meals. The daily consumption pattern in terms of cooked rice is presented in the Table 4.6: The table reveals that among the interviewed respondent (42%) of them were consuming rice meals once in a day, (35%) of the respondent were eating rice meals twice a day at the same time 15 per cent of them were answered that they were eating rice meals three time in a day the remaining 8 per cent of the interviewed customers responded that they were eating rice meal only once in every two days.

The study found the reason that why respondents daily cooked rice preference were changing that was the respondents income level, high income level customers consumption pattern were differ from middle and low level income, customers with high income were eating rice meals once and maximum up to two times daily, middle income level were eating rice meals two times in a single day, with respect to low level income they were consuming rice meals in all the three eating times i.e. three times in a day.

Table 4.7: Frequency of cooked rice consumption by respondent

Sl. No.	Frequency	Number of respondents	Percentage to the total
1.	Three time in a day	15	15.00
2.	Twice a day	35	35.00
3.	Once in a day	42	42.00
4.	Once in two days	8	8.00
Total		100	100.00

In the previous table the frequency of cooked rice was explained the information about preferred meal time is presented in table 4.8. it could be observed from the table that about 40 per cent of the interviewed customers were prefer to eat rice meal at lunch time, 37 per cent of the respondent answered that they prefer to eat rice at dinner time and the remaining 23 per cent of the interviewed respondent were prefer to eat rice meal at breakfast time.

If we compare Table 4.7: with Table 4.8: on the previous table explained that the majority of the customer were eating cooked rice two to three times a day and the table 4.8: indicating the preference meal time, the most preferred meal time was lunch followed by dinner and the least preferred meal time for rice consumption was breakfast.

Table 4.8: Time wise preference of respondents for cooked rice

Sl. No.	Particulars	Number of respondents	Percentage to the total
1.	Lunch	40	40.00
2.	Dinner	37	37.00
3.	Breakfast	23	23.00
Total		100	100.00

The information about the purchasing person of groceries in the households is presented in Table 4.9. The table reveals that in the different households the person who are purchasing groceries are varies , 45 per cent of the interviewed customers answered that they themselves were purchasing groceries, 33 per cent of them were responded that their spouse were purchasing the food items from retail stores or malls it is to be mention that those who answered that their spouse are purchasing groceries all of them were male respondent this means that their wives or in general women are most likely to purchase the groceries for their households.

Fourteen per cent of the respondent answered that their parents are purchasing groceries for them, the remaining 8 per cent of the respondent mentioned that neither them nor their other family members are purchasing groceries for them but the house workers that are working for them are responsible of purchasing the groceries, those who

answered that their house workers are responsible of groceries purchasing were highly income people their monthly income level were more than 1 lack rupees per month. With respect to the middle level and low-level income customers either they themselves or their other family members were buying groceries for them.

Table 4.9: Households grocery purchasing person

Sl. No.	Particulars	Number of respondents	Percentage to the total
1.	Self	45	45.00
2.	Wife/husband	33	33.00
3.	Parents	14	14.00
4.	Others	8	8.00
Total		100	100.00

With respect to the number of family members in the households it was differ from each other and it is directly affects food amount that they were consuming monthly, some of the respondent i.e. 33 per cent indicated that their monthly rice purchasing level is in the range of 15 to 20kg followed by 30 per cent which they mentioned that they are purchasing 10-15kg of rice per month, about 21 per cent of the interviewed customers answered that they were buying more than 20kg of rice monthly, an average amount of less than 5kg rice were purchasing by 9 per cent of the interviewed customers and the remaining 7 per cent of the respondent indicated that their monthly rice purchasing amount is in the range of 5 to 10kg.

Table 4.10: Amount of rice purchased monthly by households

Sl. No.	Amount in Kg	Number of respondents	Percentage to the total
1.	Below 5	9	9.00
2.	5 – 10	7	7.00
3.	10 – 15	30	30.00
4.	15 – 20	33	33.00
5.	More than 20	21	21.00
Total		100	100.00

The interviewed customers were also asked about the frequency of rice purchasing that in how long they were likely to purchase rice, 99 per cent of them answered that they are purchasing monthly, the preferred package size were also changed among customers those who were purchasing more than 15kg of rice they prefer 20kg package and indicating that the advantage of large package is cheaper than other packages, the remaining customers were either purchasing loose rice or small packages like 5kg.

The information about the place of purchasing rice by retailers is presented in Table 4.11: The table indicates that majority of the interviewed customers i.e. 57 per cent are purchasing rice from modern retail stores following by 30 per cent of the customers who were preferring to buy rice from rice and grain stores, 12 per cent of the respondent mentioned that they were purchasing rice from APMC Bengaluru and the remaining 1 per cent of the customers answered that they were purchasing rice from rice mills.

The customers who were purchasing rice from modern retail stores indicated that rice and all other food grains are always available at cheaper price in the malls they also mentioned that a wide varieties of rice are available and they can comfortably select their own choice of products on the other hand those who were preferring to buy rice from rice and grain stores mentioned the reason that those stores were near to their home place and also the loyalty of them to the mentioned stores, they can always find the same brand and types of products in that particular places.

Table 4.11: Place of purchase of rice by respondent

Sl. No.	Particulars	Number of respondents	Percentage to the total
1.	Modern retail stores	57	57.00
2.	Rice and grain stores	30	30.00
3.	APMC	12	12.00
4.	Rice Mills	1	1.00
Total		100	100.00

With respect to consumption pattern of rice i.e. cooked rice in the study area different types of rice items were preferred people were consuming the same on a daily basis. Some of the important rice meals are as rice & sambar, curd rice, jeera rice, veg fried rice, palav, biryani, tomato rice, lemon rice, ghee rice, puliyogare and *etc.*

The information about the frequency of consumption of the mentioned meals is presented in Table 4.11. The table reveals that the above meals are consuming at the different period i.e. some of them are daily consumed some weekly 2 to 6 times and some monthly or occasionally. The mentioned cooked rice meals are ranked by consumer in a percentage level. Rice & sambar was the most preferred item (92%) of the respondent were consumed daily followed by 32 per cent that curd rice meals were consumed 6 times weekly. Puliogare and curd rice were also consumed frequently i.e. 4 times weekly 52 per cent of the respondent were agreed on it, the respondent answered that all the above mentioned cooked meals were consuming by them minimum 2 times weekly, tomato rice consumption ranked 26 per cent followed by jeera rice which were ranked 23 per cent with 2 times consumption weekly, biryani and Palau were consuming respectively 22 and 21 per cent.

Some types of rice meals were consuming on monthly or occasionally basis according to the interviewed customers 81 per cent of them were ranked veg fried rice and Lemon rice meals on the monthly consumption basis followed by ghee rice which also got 80 per cent for monthly consumption and jeera rice got 70 per cent preference in the monthly consumption basis.

With respect to rice meals vegetarian and non-vegetarian respondent were differed jeera rice, rice & sambar, curd rice, puliyogare, and ghee rice were the most preferred meals by vegetarian on the other hand Biryani, Palau, rice & Sambar and curd rice were the most preferred rice by the non-vegetarian customers.

Majority of the customers also indicated that some types of rice meals they are consuming only in some special occasion like festivals, wedding parties and some special occasions.

Table 4.12: Consumption pattern of different rice made cooked meals

(n=100)

Sl. No.	Particulars	Curd Rice	Jeera Rice	Plane Biryani	Veg fried Rice	Palou	Biryani	Lemon Rice	Rice and Sambar	Puliyogare	Ghee Rice	Tomato Rice
1.	Daily	0	0	0	0	0	0	0	92	6	0	0
2.	6 time weekly	32	0	6	2	5	10	0	2	13	3	0
3.	4 time weekly	52	7	10	2	4	6	9	2	52	3	2
4.	2 time weekly	8	23	21	15	22	21	10	4	18	14	26
5.	Monthly or occasionally	8	70	63	81	69	63	81	0	11	80	72
Total		100	100	100	100	100	100	100	100	100	100	100

4.4 Sources of supply of rice sold by retailers

The socio-economic characteristic of rice retailer is presented in the (Table 4.13.) which indicates the information about gender, age group, and marital status and education level of the retailers.

The retailers which interviewed were in different business level and as well as they were not doing only pure rice trading but also they were selling all grains on the other hand the wholesaler were only pure rice traders and they had all types of rice branded and unbranded the general rice procurement of retail stores were mainly Bengaluru APMC and also rice whole sellers from Yeshwanthpur but whole seller respondent were sourcing the rice from rice mills, and some of whole sellers had their own rice mills in and they were sourcing paddy directly from farmers through contract farming system the leading rice producing district in Karnataka was Raichur mentioned by traders following by Tumkur, Davangere and Mysore, the rice traders in Bengaluru APMC also pointed out that they are also sourcing rice from other States for instances Andhra Pradesh, Tamil Nadu and etc. It is to be mention that the rice which are using for making the rice and sambar is mainly supplying from Tamil Nadu state of the country.

Nearly 88.33 per cent of the interviewed retailers were male and the rest of 16.37 per cent were female it is to be mention that the female retailers were either the wives or daughters of the owner of the retailers. The interviewed retailers were in different age groups the majority i.e. 46.67 per cent of them were in the age group of between 31 to 40 years old, 26.67 of the were in the range of 26 to 30 years old, about 23.33 per cent of the interviewed retailers were belong to the age group of above 40 years old and the remaining 3.33 per cent of them were in the age group of below 25 years, with respect to the marital status about 76.67 per cent of the respondent were married and the remaining 23.33 per cent of them were not married.

The question regarding education level of the respondent i.e. retailers were also included about 50 per cent of the respondent had the education level of undergraduate, 20 per cent of them graduated from high school, nearly 13.33 per cent of the interviewed

retailers left their education level with completing the PUC degree and the surprising thing that is the remaining 1 person i.e. 3.33 per cent of the respondent had PhD degree.

Table 4.13: Socio-economic profile of rice retailers in Bengaluru city

(n=30)

Sl. No.	Characteristic	Category	Number of retailers	Percentage to the total
1.	Gender	Male	25	83.33
		Female	5	16.67
Total			30	100.00
2.	Age (Years)	Below 25	1	3.33
		26-30	8	26.67
		31-40	14	46.67
		Above 40	7	23.33
Total			30	100.00
3.	Marital Status	Married	23	76.67
		Single	7	23.33
Total			30	100.00
4.	Education level	High school	6	20.00
		PUC	4	13.33
		UG	15	50.00
		PG	4	13.33
		Ph.D.	1	3.33
Total			30	100.00

The interviewed respondent i.e. retailers were also asked about some specific questions for instances, whether the respondents were selling branded rice or unbranded, the type of the store, the place of procurement of rice and one question was also asked that whether the interviewed stores had their own store brand name in the different rice or not.

Out of the total respondents 80 per cent of them were selling branded rice this shows that there is a great demand for branded rice in the city and the remaining 20 per cent were answered that they are not selling branded rice. Different type of stores were interviewed nearly 26.67 per cent of the respondent stores were rice traders they were both in whole sell and retail, 26.67 per cent of the interviewed stores were convenience store i.e. rice and grain shops, 23.33 per cent of the store were in modern retail format and the remaining 23.33 per cent of the respondent stores or traders were in the Bengaluru APMC that they were the main rice whole sellers in the city.

The stores respondent were also asked about the procurement and sourcing of the rice the study found different answers to this question, about 48.78 per cent of the respondent were sourcing directly from the APMC market where a bulk of rice wholesalers and traders are there, 36.59 per cent of the interviewed retailers were sourcing rice from rice mills, 7.32 per cent of the respondent mentioned that they are procuring rice from whole sellers in the different place particularly from Yeshanthpur rice wholesalers and the remaining 7.32 per cent of the respondent answered that they have their own rice mills and through contract farming they sourcing directly paddy from farmers and then the processing of paddy were taking place in the rice mills and then the processed rice are selling in the whole sells both by their own traders and other traders also buying rice from the mentioned rice mills.

The respondent were also asked about their own store brands i.e. whether they have their own store brands or not the study found that majority of the rice traders do not have their own store brands about 73.33 per cent of the respondent were selling other companies branded rice and these type of the rice traders were either wholesalers or convenience stores owners on the other hand about 23.73 per cent of the respondent which majority of them were modern retail format they had their own store brand in rice under different brand names for instances More Mega store has different rice both basmati and non-basmati under the brand name More, Big Bazar had the brand name of store at different rice varieties and Reliance Fresh has the brand name of Good Life in their stores.

Table 4.14: General information about rice stores in Bengaluru city**(n=30)**

Sl. No.	Question	Category	Number of retailers	Percentage to the total
1.	Selling of branded rice	Yes	24	80.00
		No	6	20.00
Total			30	100.00
2.	Type of store	Rice traders	8	26.67
		Modern retail	7	23.33
		Convenience store	8	26.67
		APMC	7	23.33
Total			30	100.00
3.	Place of procurement	Wholesale	3	7.32
		Rice mill	15	36.59
		Farmers	3	7.32
		APMC	20	48.78
Total			41	100.00
4.	Store brand	Yes	8	26.67
		No	22	73.33
Total			30	100.00

The leading rice producing districts in the Karnataka state are presented in table (4.15). The major rice producing districts are ranked by the Bengaluru APMC rice traders where the traders source the rice from. The ranking is done from first to seventh the first rank shows the leading supplier of rice and seventh shows low rice supplier district. Out of the total rice traders in the APMC market 25 of them ranked the district Raichur first, 2 respondent ranked the second and remaining 3 respondent ranked from third to fifth position, Ballary district of the state was majorly ranked in the second position i.e. out of the total respondent 16 ranked first 7 of them ranked in sixth and remaining ranked in the different levels. Davangere was ranked in the third position which from the total

respondent 12 of them ranked as first position, 4 respondents ranked fourth and the rest of the interviewed retailers ranked in the different positions.

Gulbarga district was ranked fourth by the respondent. Out of the total respondent 11 ranked first 7 ranked fourth and remaining interviewed retailers ranked the Gulbarga district in different levels, Shivamogga, Mandya and Tumkuru districts were ranked as fifth, sixth and seventh positions respectively.

Table 4.15: Major rice producing districts of Karnataka

Sl. No.	Districts	First	Second	Third	Fourth	Fifth	Sixth	Seventh	total	Percentage to the total
1.	Raichur	25	2	1	1	1	0	0	30	83.33
2.	Bellary	3	16	6	2	0	2	1	30	53.33
3.	Davangere	4	0	12	4	6	4	0	30	40.00
4.	Gulbarga	0	0	7	11	0	4	8	30	36.67
5.	Shivamogga	1	5	1	6	10	2	5	30	33.33
6.	Mandya	3	6	3	6	1	9	2	30	30.00
7.	Tumkur	0	1	4	6	4	8	7	30	23.33

Table (4.15.) shows that the leading rice producer districts in the state of Karnataka are Raichur, Bellary, Davangere, Gulbarga, Shivamogga, Mandya, Tumkur, Mysore, Hassan and Kolar. Even though in all the districts of the state rice are cultivating but the above-mentioned districts are the leading and high producing districts in terms of rice production as per Bengaluru APMC rice traders.

All the rice which are consuming in Bengaluru city are not produced with in the state of Karnataka there are different varieties and types of rice which are importing from other states of the country. It is quite usual that from the bordering states more rice are importing while there are some varieties of rice which are sourcing from other states that are far from the state of Karnataka Tamil Nadu, Andhra Pradesh and Maharashtra are the three bordering states that are supplying more rice to Karnataka i.e. Bengaluru city APMC while Punjab and Haryana are the two states which are supplying less rice but

majorly the Basmati rice are sourcing from the states of Punjab and Haryana according to the APMC rice traders the above information were taken from rice whole sellers and the mentioned states were ranked from first up to fifth as shown in table (4.16).

From the total interviewed rice traders and retailers about 86.67 per cent of them ranked the state Andhra Pradesh the First, Tamil Nadu got 80 percentage of ranking and stood in the second position, nearly 53.33 per cent of the respondent ranked the state of Maharashtra in the third position, 43.33 per cent of the rice dealers ranked Punjab state in the fourth position in terms of supplying rice to Bengaluru city and Haryana state of the country got 33.33 per cent ranking score and stood in the fifth position.

The types and varieties of rice which are sourcing by Bengaluru APMC from different states are also differ for instances Bengaluru citizens are eating a type of meal daily made from rice named as Rice & Sambar the particular rice which are using to cook this meal are majorly supplying from the neighboring state of Tamil Nadu.

Basmati rice aromatic and high price rice both domestically and internationally which are producing in some of the states of India in the state of Karnataka Basmati rice production is negligible but the demand for Basmati rice in the Karnataka state is more both in rural and urban areas

Table 4.16: Sourcing of rice by Bengaluru traders from other states of the country

Sl. No.	States	First	Second	Third	Fourth	Fifth	Total	Percentage to the total
1.	Andhra Pradesh	26	4	0	0	0	30	86.67
2.	Tamil Nadu	4	24	2	0	0	30	80.00
3.	Maharashtra	0	0	16	4	10	30	53.33
4.	Punjab	1	2	8	13	6	30	43.33
5.	Haryana	0	4	7	9	10	30	33.33

Basmati rice of India is one of the premium crop both domestically and internationally, customers are consuming this particular rice in different occasion and

also as part of daily meal. According to the Bengaluru retailers Basmati rice has always kept on and above the middle of its demand at any point of time.

Table 4.17 shows the different branded Basmati rice that are selling by retailers and the respondent indicated at what position of customer preference the mentioned different brands are, the majority of the retailers and rice traders i.e. 93.33 per cent ranked India Gate as the top preferred Basmati rice in Bengaluru city, 86.67 per cent of the respondent ranked Kohinoor brand as the second choice in Basmati rice, (83.33%) of the retailers ranked in third position the brand of Daawat which is preferred by customers, Raj Bull Basmati brand got the fourth position by getting 76.67 percent ranking score, 53.33 per cent of the rice traders ranked Lal Qilla brand in fifth position.

Dubaa brand of Basmati rice got the sixth position with a ranking percentage of 16.67 per cent, and the remaining two more brands got 13.33 and 6.67 per cent ranking score stood in seventh and eighth position respectively. It is to be mentioned that there are more different brand names in basmati rice available in Bengaluru city but the most preferred were the above-mentioned brands that were ranked in the different levels by rice traders and retailers.

Table 4.17: Major types of Basmati branded rice sold by retailers in Bengaluru city

Sl. No.	Particular	Respondent	Percentage	Rank
1.	India Gate	28	93.33	I
2.	Kohinoor	26	86.67	II
3.	Daawat	25	83.33	III
4.	Raj Bull	23	76.67	IV
5.	Lal Qilla	16	53.33	V
6.	Dubaa	5	16.67	VI
7.	Charminar	4	13.33	VII
8.	Best	0	0.00	VIII
Total		30	100.00	

Table 4.18 shows the major Non-Basmati rice available in the city, as per the rice traders and retailers the most preferred Non-Basmati rice is Sona Masoori which was ranked first by retailers with a ranking percentage of 96.67 followed by Steam rice which got 80 per cent preference score by the traders, 66.67 per cent of the respondent ranked Bold rice in the third position, the same ranking score was given to Brown rice also i.e. 66.67 per cent, 63.33 per cent of the retailers made Raw rice in fifth position with respect to preferences by customers, Broken rice stood in the sixth position with a ranking percentage of 60 per cent and finally kulam rice were ranked in the seventh stage the ranking score was 50 per cent.

It is to be mention that every mentioned Non-Basmati rice has different brand name for instances Mantra of sona masoori, saviti of Steam, SG Gold of broken, meera of raw rice, and Best brand in the brown rice, bb royal in kulam rice and nirapara in Broken rice.

Different brand names under different non-Basmati rice available Bengaluru city every rice traders made a brand name in all types of the Non-Basmati rice in order to capture the market and attract the customer, 99 per cent of the customer in the study area indicated that in all type of the rice they were consuming daily sona masoori rice is playing the major role and almost 75 per cent of the meals cooked out rice is made from either sona masoori or Steam rice.

Table 4.18: Major types of non-Basmati rice sold by retailers in Bengaluru city

Sl. No.	Particular	Respondent	Percentage	Rank
1.	Sona Masoori	29	96.67	I
2.	Steam rice	24	80.00	II
3.	Bold rice	20	66.67	III
4.	Brown rice	20	66.67	IV
5.	Raw rice	19	63.33	VI
6.	Broken rice	18	60.00	VII
7.	Kulam	15	50.00	VIII
Total		30	100.00	

As per the rice traders almost 90 per cent of the rice consuming in Bengaluru city are produced within the state of Karnataka but still there are some types and brands of rice that are sourcing from other states for instances all Basmati branded rice are supplying from Punjab and Haryana, some types of white and bold rice are supplying to the city of Bengaluru from the state of Tamil Nadu and Maharashtra.

Within the state of Karnataka major rice producing districts are Kopal, Davangere, Bellary, Raichur, Mandya, Tumkur Mysore, Chamraj Nagar and Hassan, even though in all the districts of the state rice are producing but the above mentioned districts are the major producing districts that the Karnataka Rice Mills Association have different rice mills in all the districts and also some mills are near to the city in order to process paddy into processed and polished rice.

V SUMMARY AND IMPLICATIONS

Rice is a seed of the monocot plants *Oryza sativa* or *Oryza glaberrima*. As a cereal grain, rice is the most widely consumed food grain for a large part of the world's human population. It is the staple food for more than (50%) of the world population, particularly in India, China and some other Asian countries also some countries in Africa.

Rice is the staple food grain in India mainly it is the most preferred food crop for south Indians as they are consuming two times daily, in today's era all the companies & businesses are seeking to attract the customers' attention toward their business and satisfied them with the products that they offer, in addition to that the customer of today's world is also seeking to purchase quality products both in food and non-food items. The companies and business who are in the trading and producing of food items want to create a strong brand name in order to be in the market for a longer period.

With respect to quality production of food grains predominantly rice with being the staple food grain of the population under the study branded rice is one of the most important food grain in the city of Bengaluru, the customers with high income level desired to purchase branded rice and majorly they buy branded rice without any especial occasion on the other hand people with middle level income were purchasing branded rice in some especial conditions for instances during festival times they prefer branded rice more than any other time.

The present study draws an inference about socio-economic factors that influence consumers to prefer branded rice, consumption pattern of rice was also considered, in addition to that the source of rice procurement by different rice wholesalers and retailers were also tried to understand.

With this background, the present study was carried out in Bengaluru city of Karnataka state with the following objectives:

1. To assess the factors influencing consumer preference for different rice brands,
2. To analyse consumption pattern of rice and
3. To understand the sources of supply of rice sold by retailers.

The primary data were collected through pre-tested schedule regarding consumer preference and consumption pattern from 100 sample customers similarly sources of rice procurement by rice traders from 30 sample of rice whole sellers and retailers were collected, the sample population were selected randomly for the study, the secondary data have been collected from different published sources and journals.

5.1 Major findings of the study

- Both male and female customer were interviewed with 63 per cent of male and 37 per cent female belonging to different age groups, majority of the interviewed customers i.e. (30%) were at the age group of 39 to 48 years old followed by (24%) of them were in the age group of 29 to 38 years old.
- Among all the interviewed customers 76 per cent of the respondent were married and the nearly one third of them were single.
- Majority i.e. 67 per cent of the respondent were non-vegetarian and the remaining 33 of them were vegetarian.
- With respect to education level all the sample customers were educated with different levels of education majority of them were studied up to undergraduate level.
- The interviewed customers were busy in different occupations such as government employees, own businesses, IT engineers *etc.*
- A minimum of one and a maximum of four earning members have been reported by the respondent in their families.
- Among all the respondent a major group of income level with monthly 50,000 to 100,000 rupees were cited out.
- Sixty-five per cent of the sample customers were indicated that they were consuming branded rice the remaining 35 per cent of them were denied from consumption of branded rice.

- Taste and income highly influenced customers to prefer branded rice however attractive packages and advertisement were the least preferred factors.
- From the retailer point of view grain quality and price of the branded rice were the most important variables that customers seeking while purchasing the products.
- Among the interviewed customers 42 per cent were consuming rice three times daily followed by 35 per cent of the sample customers who were consuming rice twice a day the remaining 15 per cent of the respondent were eating rice meals only once in a day.
- Eating rice meals during lunch time have been preferred the most followed by dinner that the next preferred eating time was indicated.
- Nearly 45 per cent of the interviewed customers have been indicated that they themselves were the responsible of grocery purchasing followed by 33 per cent of them who responded that their spouse was purchasing groceries, 8 per cent of the responded pointed out that their home workers were purchasing groceries.
- Among the customers interviewed 1/3 of them purchasing amount of rice in the range of 15 to 20kg following by 30 per cent of the customers who have been consuming 10 to 15kg of rice monthly, 21 per cent of the respondent have been consuming more than 20kg of rice monthly.
- Among all the interviewed customers 1/2 of them have been purchasing groceries from modern retail stores following by 30 per cent of the respondent who have been preferred to purchase rice and other food grains from rice and grain stores, 12 per cent of the customers interviewed have been indicated that they were purchasing rice from Bengaluru APMC the remaining 1 per cent of them have been purchasing rice from rice mills, none of the respondent have been purchasing rice online.
- The most cooked and preferred rice meal in the study area was rice and sambar which 92 per cent of the respondent ranked the first which have been eaten daily, curd rice

have been consumed all most 6 times in a week which was the second most preferred rice meal following puliyogare which was the third preferred rice meal with a consumption of 4 times weekly, other types of rice meals such as biryani, jeera rice, veg fried rice, lemon rice ghee rice, tomato rice and etc. have been either consumed weekly once or monthly some time in some special occasions were preferred to consume.

- A sample of 30 rice traders and retailers have been interviewed which 83.33 per cent of them were male and the remaining 16.67 per cent of them were female.
- The respondent were belonged to different age groups the majority of them i.e. 46.67 per cent of the interviewed rice dealers were in the age group 31 to 40 years old followed by 26.67 per cent which have been in the age group of 26 to 30 years old, (23.33%) of the rice retailers and dealers indicated that they are in the age group of above 40 years old and the remaining 3.33 per cent of the respondent were in the age group of below 25 years old.
- Among all the rice dealers $\frac{3}{4}$ of them pointed out they were married and the remaining $\frac{1}{4}$ per cent of them were not married.
- With respect to education levels of the respondent rice dealers the majority of them i.e. 50 per cent have been studied till undergraduate level followed by 20 per cent who have been stopped studying at high school, 13 per cent of the responded had completed their post-graduation degree and 13 per cent of the respondent traders had the education level with PUC and the remaining 3.33 per cent of the have been studied till PhD degree.
- Among all the interviewed respondent rice traders 80 per cent of them were indicated that they were selling both branded and unbranded rice on the other hand 20 per cent of them pointed out that they are selling only unbranded rice.
- Among all the interviewed rice dealers 26.67 per cent of them were only rice traders followed by 26.67 per cent of them which were modern retail stores, 23.33 per cent

of the stores interviewed were convenience stores and the remaining 23.33 per cent of the stores interviewed were in the APMC Bengaluru.

- Among all the retailers interviewed 48.78 per cent of them have been procured the rice from APMC followed by rice mills which 36.59 per cent of them has indicated they source from, 14.64 per cent of the rice dealers had directly contract with farmers and source paddy from them.
- With respect to own store brand, 73.33 per cent of the retailers indicted that they do not have their own store brand and the remaining 26.67 per cent of them answered that besides other brands they have their own store brand also.
- Nearly in all the districts of the state Karnataka rice is cultivating and producing but according to APMC Bengaluru the major rice producers districts are Raichur, Bellary, Davangere, Gulbarga, Shivamogga, Mandya, Tumkur, Mysore and *etc.* district Raichur have been ranked the top rice producing district in the state followed by Ballary which has been ranked in the second position, and accordingly other districts are ranked up to tenth position respectively.
- Bengaluru APMC traders indicated that the rice in the market is not only sourcing form the state of Karnataka but also it has been sourced from other states.
- Andhra Pradesh is ranked the first state which the APMC sourcing rice from, following by Tamil Nadu that stood in the second place and Maharashtra, Punjab and Haryana were the three states which have been ranked third, fourth and fifth respectively that Bengaluru APMC sourcing rice from.
- The retailers have been asked to rank the basmati rice brands from customer's point of view and it was ranked as follow.
- India Gate got the first rank with a ranking percentage of 93.33 per cent following by Kohinoor which got the second ranking score of 83.33 per cent Daawat, Raj Bull, Lal

Qilla, Dubar, Charminar and Best brands of basmati stood in the ranking levels of third, fourth, fifth, sixth, seventh, and eight rank respectively.

- In non-basmati rice brands, the brand of Sona Masoori got the first rank following by Steam rice, which have got the second ranking score, Bold rice got 66.67 per cent ranking score and make it in the third rank, the other brands such as Brown rice, Raw rice, Broken rice and Kulam got fourth, fifth, sixth and seventh ranking levels respectively.

Implications of the study

- The income of the customers in the study area is increasing with this they are more likely to purchase branded products both in food and non-food items. In this case the food producing companies need to document on promoting branded products in order to satisfy the customers.
- With increase in the income level of the customers their food consumption pattern is also changing the preference to buy food items from modern retail stores is emerging indicating that the demand for purchasing food items in modern retail stores is also increasing in Bengaluru city.
- Both in basmati and non-basmati rice there are different brands names are available and customers are willing to purchase all the brands.
- Nearly all types of rice grown within the state of Karnataka still there are some types of rice which are sourced from other states. Hence there is a great demand for rice grown in other parts of the country.

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