A STUDY ON CONSUMER PREFERENCE FOR MARINE FISH AND MARINE FISH PRODUCTS IN MANGALURU CITY

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(AGRIBUSINESS MANAGEMENT)

BENGALURU **DECEMBER, 2018**



Affectionately Dedicated

to My Beloved Parents,

Brother and My Guide

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 MARINE FISH AND MARINE FISH PRODUCTS IN MANGALURU CITY"** submitted by **Ms. GANA P.D., ID No. MBAL 6009,** 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 her during the period of her 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,
DECEMBER, 2018

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December, 2018 ***Gana P. D.***

A STUDY ON CONSUMER PREFERENCE FOR MARINE FISH AND MARINE FISH PRODUCTS IN MANGALURU CITY

GANA P. D.

ABSTRACT

The present study was conducted with an objective of assessing Consumers' preference for marine fish and fish products in Mangaluru city, document different types of marine fish and marine fish products available in the market; socio-economic factors influencing the purchase and preference of consumers on different type of market outlet and to identify the constraints faced by the retailers of fish and fish products. The primary data were collected from 110 randomly selected respondents through a pre-tested schedule, which include consumers (90) and retailers (20). The analytical tool employed includes descriptive statistics, Garrett's ranking and factor analysis. The results revealed that the most important factors impacting the purchase of marine fishes was the unique taste of the fish which was ranked first by the consumers' with a mean Garrett's score of 68.34. Among the various factors promoting increased consumption of Marine fish, reasonable price was the most important factors with a mean Garrett's score of 59.74. Among various preferred varieties of Marine fishes, the Sardine was ranked first by the sample consumers with the mean Garrett's score of 61.68. Among the various preferred varieties of Marine fish products, the dried fish was ranked first with a mean Garret's score of 61.89. The high transportation and storage costs were the major constraints expressed by the modern retailers which ranked first with a mean Garret's score of 84.50.

December, 2018
Dept. of Agricultural Marketing
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Dr. M. SHIVAMURTHY
Major Advisor

ಮಂಗಳೂರು ಪಟ್ಟಣದ ಸಮುದ್ರದ ಮೀನು ಮತ್ತು ಸಮುದ್ರ ಮೀನಿನ ಉತ್ಪನ್ನಗಳ ಗ್ರಾಹಕರ ಪ್ರಾಧಾನ್ಯತೆಯ ಬಗ್ಗೆ ಒಂದು ಅಧ್ಯಯನ

ಗಾನ, ಪಿ.ಡಿ.

ಸಾರಾಂಶ

ಪ್ರಸ್ತುತ ಅಧ್ಯಯನವನ್ನು ಮಂಗಳೂರು ಪಟ್ಟಣದಲ್ಲಿ ಸಮುದ್ರದ ಮೀನು ಮತ್ತು ಸಮುದ್ರ ಮೀನಿನ ಉತ್ಪನ್ನಗಳ ಮೇಲೆ ಗ್ರಾಹಕರ ಆದ್ಯತೆಯನ್ನು ತಿಳಿಯಲು, ಮಾರುಕಟ್ಟೆಯಲ್ಲಿ ದೊರೆಯುವ ವಿವಿಧ ರೀತಿಯ ಸಮುದ್ರದ ಮೀನುಗಳು ಹಾಗೂ ಮೀನಿನ ಉತ್ಪನ್ನಗಳನ್ನು ದಾಖಲಿಸಲು, ಗ್ರಾಹಕರು ವಿವಿಧ ರೀತಿಯ ಮಾರಾಟ ಕೇಂದ್ರಗಳಲ್ಲಿ ಮೀನು ಮತ್ತು ಮೀನಿನ ಉತ್ಪಾದನೆಗಳ ಖರೀದಿ ಮತ್ತು ಆದ್ಯತೆಯ ಮೇಲೆ ಪ್ರಭಾವ ಬೀರುವ ಸಾಮಾಜಿಕ ಹಾಗೂ ಆರ್ಥಿಕ ಅಂಶಗಳನ್ನು ತಿಳಿಯಲು ಹಾಗೂ ಮೀನು ಮತ್ತು ಮೀನಿನ ಉತ್ಪನ್ನಗಳ ಚಿಲ್ಲರೆ ಮಾರಾಟಗಾರರು ಎದುರಿಸುವ ಸಮಸ್ಯೆಗಳನ್ನು ತಿಳಿಯಲು ನಡೆಸಲಾಯಿತು. ಈ ಅಧ್ಯಯನಕ್ಕಾಗಿ ಪ್ರಾಥಮಿಕ ಮಾಹಿತಿಯನ್ನು 90 ಗ್ರಾಹಕರಿಂದ ಹಾಗೂ 20 ಚಿಲ್ಲರೆ ವ್ಯಾಪಾರಿಗಳಿಂದ ಪಡೆಯಲಾಯಿತು. ಮಾಹಿತಿಯನ್ನು ವಿವರಣಾತ್ಮಕ ಸಂಖ್ಯಾ ಶಾಸ್ತ್ರ, ಗ್ಯಾರೇಟ್ಸ್ ರ್ಯಾಂಕಿಂಗ್ ಹಾಗೂ ಫ್ಯಾಕ್ಟರ್ ಅನಾಲಿಸಿಸ್ ಬಳಸಿ ವಿಶ್ಲೇಷಿಸಲಾಯಿತು. ಈ ಅಧ್ಯಯನದ ಫಲಿತಾಂಶದಿಂದ ತಿಳಿದು ಬಂದಿರುವುದೇನೆಂದರೆ: ವಿಶಿಷ್ಟವಾದ ರುಚಿ, ಈ ಅಂಶವು ಗ್ಯಾರೇಟ್ಸ್ ರ್ಯಾಂಕಿಂಗ್‌ನಲ್ಲಿ 68.34 ಅಂಕಗಳನ್ನು ಪಡೆದು ಸಮುದ್ರದ ಮೀನಿನ ಖರೀದಿಗೆ ಗ್ರಾಹಕರ ಮೇಲೆ ಪ್ರಭಾವ ಬೀರುವ ಪ್ರಮುಖ ಅಂಶವಾಗಿದೆ. ಸಮುದ್ರದ ಮೀನಿನ ಬಳಕೆಯನ್ನು ಹೆಚ್ಚಿಸುವ ಹಲವಾರು ಅಂಶಗಳ ಪೈಕಿ 'ಸಮಂಜಸವಾದ ಬೆಲೆ' – ಅಂಶವು ಗ್ಯಾರೆಟ್ ರ್ಯಾಂಕಿಂಗ್‌ನಲ್ಲಿ 59.74 ಅಂಕಗಳೊಂದಿಗೆ ಮೊದಲ ಸ್ಥಾನದಲ್ಲಿದೆ. ಗ್ರಾಹಕರು ಆದ್ಯತೆ ನೀಡುವ ವಿವಿಧ ಸಮುದ್ರದ ಮೀನುಗಳ ಪೈಕಿ 'ಸಾರ್ಡೀನ್' ಮೀನು ಗ್ಯಾರೆಟ್ ರ್ಯಾಂಕಿಂಗ್‌ನಲ್ಲಿ 61.68 ಅಂಕಗಳನ್ನು ಪಡೆಯುವ ಮೂಲಕ ಗ್ರಾಹಕರ ಮೊದಲ ಆದ್ಯತೆಯಾಗಿದೆ. ಸಮುದ್ರದ ಮೀನುಗಳ ಉತ್ಪನ್ನಗಳ ಪೈಕಿ 'ಒಣ ಮೀನು' ಗ್ಯಾರೆಟ್ ರ್ಯಾಂಕಿಂಗ್‌ನಲ್ಲಿ 61.89 ಅಂಕಗಳನ್ನು ಪಡೆಯುವ ಮೂಲಕ ಗ್ರಾಹಕರ ಮೊದಲ ಆದ್ಯತೆಯಾಗಿದೆ. 'ಅಧಿಕ ಸಾರಿಗೆ ಮತ್ತು ಶೇಖರಣಾ ವೆಚ್ಚ' ಇದು ಗ್ಯಾರೆಟ್ ರ್ಯಾಂಕಿಂಗ್‌ನಲ್ಲಿ 84.50 ಅಂಕಗಳನ್ನು ಪಡೆದು ಚಿಲ್ಲರೆ ವ್ಯಾಪಾರಿಗಳು ಎದುರಿಸುತ್ತಿರುವ ಪ್ರಮುಖ ಸಮಸ್ಯೆಯಾಗಿವೆ.

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ಡಾ. ಎಂ. ಶಿವಮೂರ್ತಿ
(ಪ್ರಧಾನ ಸಲಹೆಗಾರರು)

A Study of Consumers' Preference for Marine Fishes in Mangaluru City

GANA, P. D., MBAL 6009 and M. SHIVMURTHY

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Introduction

Preference for different varieties of fishes depends on varieties, quality and price . The existing fish market and consumption situation in Mangaluru is facing an interesting dynamism where the fish consumers are supplied with variety of fish species with variations in quality and price. Mangaluru is a major fish market in Karnataka and consumers of Mangaluru have very high preference for animal protein in general, and fish in particular.

Fish is among the healthiest foods on the planet. It is loaded with important nutrients such as proteins and vitamins. Fish is also the world's best source of omega-3 fatty acids, which are incredibly important for body, brain and eyes. Eating atleast 'one serving of fish per week' has been linked to reduce the World's biggest killer diseases like heart attacks and strokes.

Objective

To analyse consumers' preference for marine fishes in Mangaluru city

Methodology

Study Area:

- The study was conducted in Mangaluru city.

Sampling design :

- For the study, 90 respondents were selected from major fish outlets in Mangaluru city.



Fig. 1: Map of Mangaluru city

- **Analytical tools:**

Garrett's Ranking technique was used to analyse consumers' preference for marine fishes. The order of the merit given by the respondents was converted into ranks by using the following formula.

$$\text{Per cent position} = \frac{100\,(R_{ij} - 0.5)}{N_j}$$

where,

R_{ij}= Rank given for i^{th} item by j^{th} individual

N_j= Number of items ranked by j^{th} individual.

Results

Table 1: Consumer preference for marine fishes of Mangaluru city

Sl. No.	Fishes	Garrett's Mean Score	Rank
1.	Sardine	61.68	I
2.	Mackerel	61.66	II
3.	Seer Fish	57.37	III
4.	Prawns	56.28	IV
5.	Crab	48.97	V
6.	Squid	48.73	VI
7.	Clams	46.71	VII
8.	Silver Fish	45.92	VIII
9.	Pomfret	42.22	IX
10.	Lady Fish	33.37	X

Table 2: Factors influencing purchase of marine fishes of Mangaluru city

Sl. No.	Factors	Garrett's Mean score	Rank
1.	Unique taste	68.34	I
2.	Easy availability	66.51	II
3.	Availability in fresh condition	59.06	III
4.	Price	52.49	IV
5.	Traditionally used fishes	50.77	V
6.	Size	49.28	VI
7.	Easy to cook	44.34	VII
8.	Locally produced from the deep sea fishes	41.53	VIII
9.	Appearance	41.28	IX
10.	Scale / finlets	39.4	X
11.	Typical smell	36.07	XI

Discussion

The results have revealed that the consumers' preference for marine fishes was indicated as Sardine (61.68), Mackerel (61.66) and Seer Fish (57.37) Consumers' preferred Sardine and Mackerel fishes because they were available at cheaper rates and Seer fish was preferred for its taste. The remaining marine fishes are costlier and their availability is seasonal (Table 1).

The important factors influencing purchase of marine fishes reveals that unique taste, easy availability, availability in fresh conditions and price stood first four places respectively and remaining factors such as traditionally used fishes, size, easy to cook influenced the consumers' buying behavior in the order of ranking.

Graphs

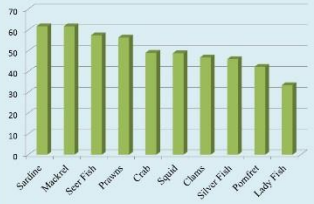


Fig. 2: Consumers' preference for Marine Fishes

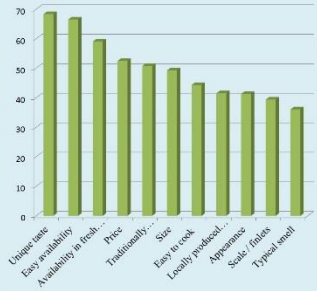


Fig. 3: Factors influencing purchase of Marine Fishes

Summary

Fish is an important source of vitamins and proteins. The preference of consumers is based on purchasing power, easy availability and quality of the fishes. Sardine and Mackerel fishes are available sustainably in huge quantities at cheaper rates. Most of the consumers' preferred and consumed these fishes frequently as compared to other fish species.

There are other factors such as unique taste, easy availability, available in fresh conditions and competitive price influences the consumers to purchase fishes.

Advisory Committee

Chairperson: Dr. M. Shivmurthy

Members: Dr. B.M. Shashidhara
Dr. G.N. Nagaraja
Dr. K.B. Murthy

CONTENTS

CHAPTER	TITLE	PAGE No.
I	INTRODUCTION	1
II	REVIEW OF LITERATURE	10
III	METHODOLOGY	23
IV	RESULTS AND DISCUSSION	31
V	SUMMARY AND CONCLUSION	52
VI	REFERENCES	56

LIST OF TABLES

TABLE No.	TITLE	PAGE No.
1	Socio economic characteristics of marine fish consumers in Mangaluru city	34-35
2	Socio-economic characteristics of sample retailers of Mangaluru city	36
3	Consumers preference on different types of market outlets	38
4	Factors influencing the source of purchase and response in case of non-availability of preferred fish species	39
5	Factors influencing purchase of marine fishes by consumers' in Mangaluru city	40
6	Factors promoting increased consumption of marine fish in Mangaluru city	41
7	Details regarding purchase of marine fishes and fish products by consumers in Mangaluru city	42
8	Time and place of consumption by consumers in Mangaluru city	44
9	Decision maker in the family regarding purchase of Marine fishes in Mangaluru city	44
10	Preferred varieties of marine fishes by consumers in Mangaluru city	45
11	Per capita consumption per month of preferred varieties of marine fishes by consumers in Mangaluru city	46
12	Preferred marine fish products by consumers in Mangaluru city	46
13.1	KMO and Bartlett's test for variance among factors	47
13.2	Related factor matrix for common barriers of consumption of fish by consumers	47
14	Constraints faced by organized retailers in Mangaluru city	49
15	Constraints faced by traditional retailers in Mangaluru city	50

LIST OF FIGURES

Figure No.	Title	Between Pages
1.	Map depicting the study area	24-25
2.	Cattel's Scree plot for barriers of consumption of fish and fish products in Mangaluru city	48-49

LIST OF PLATES

Plate No.	Title	Between Pages
1.	Different types of marine fishes available in Mangaluru city	38-39
2.	Different types of marine fish products available in Mangaluru city	38-39

I INTRODUCTION

Fishes are oceanic vertebrates which breathe with gills and need appendages with digits. It is trusted that fishes came to planet before 415 million years. A shot revelation in 1955 uncovered a broad fossil bed dating from Devonian Period. This 360-370 million years of age fossil store contains the remaining parts of thousands of freshwater angle.

Fishing and aquaculture in India has a long history. For a considerable length of time, India has had a customary routine with regards to fish culture in little lakes in Eastern India. Huge advances in profitability were made in the state of West Bengal in the mid nineteenth century with the controlled reproducing of carp in Bundhs (tanks or impoundments where waterway conditions are reenacted). Fish culture got striking consideration in Tamil Nadu as right on time as 1911, thusly; States, for example, West Bengal, Punjab, Uttar Pradesh, Gujarat, Karnataka and Andhra Pradesh started fish culture through the foundation of Fisheries Departments. In 2006, the Indian Central Government started a devoted association concentrated on fisheries, under its Ministry of Agriculture.

Fish is one of most important animal source of food for a healthy diet. It is high in lysine and sulfur amino acids which makes it especially appropriate for supplementing the high-starch diet winning in a lot of India. Besides, it is anything but difficult to process because of absence of connective tissue. A few scientists have examined the dietary benefit of fish and its significance in human eating routine from different viewpoints. A few investigations uncovered that fish utilization helps anticipating cardiovascular sicknesses, hypertension, cholesterol, Alzheimer's infection, and different sorts of disease. Fish is the main wellspring of creature protein in nations like Japan and China. India has a pivotal potential as far as fishery items because of its lakes, dams, and streams and furthermore on the grounds that it is encompassed via ocean on three sides. Fish can fill in as a significant wellspring of nutrients A and D if its oil is ingested. Fish is additionally a decent wellspring of minerals, for example, phosphorus and iron. Fish bones, which might be eaten in little fish, for example, sardines, are especially wealthy in calcium and phosphorus. Marine species have noteworthy levels of iodine and of omega-

3 fish oils, which are viable in keeping up safe levels of blood cholesterol and triglycerides. Since fish, including its meat, bones and organs, contains great measures of nutrient An, iron and iodine, it might be helpful in battling the particular nourishing inadequacy which can result in dietary visual impairment, frailty and goiter.

Fish likewise has an incentive as a vitality source. It tends to be hard to get adequate vitality from rice and other massive starches, particularly for little youngsters. With its high supplement thickness, fish can make a critical commitment to the vitality supplies of individuals in danger of lack of healthy sustenance.

Aside from the particular supplements it can give, fish has various unmistakable characteristics. Many observe its taste and surface to request. It is effortlessly cooked and promptly processed; and it is generally accessible. As seasoning, it can make rice and other flat nourishments more acceptable and along these lines advance their utilization in bigger amounts. Fish decreased to glue or powder frame can be exceptionally helpful as a protein-rich weaning sustenance.

On a unit weight premise, angle is moderately costly in correlation with vegetables and grains and it is additionally more expensive than other elective creature protein sources. In connection to its healthy benefit, it tends to be very economical, even contrasted and vegetable protein source.

The real drawback of fish is high perishability. Nonetheless, there are various techniques for safeguarding fish, for example, drying, smoking and canning. Such handling can likewise build its appeal and its accommodation for utilize.

1.1 Global Overview of Fisheries Sector

Numerous centuries after earthbound nourishment generation moved from seeker gatherer exercises to agribusiness, amphibian sustenance creation has progressed from being essentially founded on catch of wild fish to culture of expanding quantities of cultivated species. A point of reference was come to in 2014 when the aquaculture

segment's commitment to the supply of fish for human utilization surpassed that of wild-got angle out of the blue.

Development in the worldwide supply of fish for human utilization has outpaced populace development in the previous five decades, expanding at a normal yearly rate of 3.2 percent in the period 1961– 2013, twofold that of populace development, bringing about expanding normal per capita accessibility. World per capita clear fish utilization expanded from a normal of 9.9 kg during the 1960s to 14.4 kg during the 1990s and 19.7 kg in 2013, with starter gauges for 2014 and 2015 pointing towards further development past 20 kg. Notwithstanding the expansion underway, different elements that have added to rising utilization incorporate decreases in wastage, better usage, enhanced appropriation channels, and developing interest connected to populace development, rising livelihoods and urbanization. Universal exchange has additionally assumed a vital job in giving more extensive decisions to buyers. Notwithstanding the expansion underway, different components that have added to rising utilization incorporate decreases in wastage, better usage, enhanced circulation channels, and developing interest connected to populace development, rising livelihoods and urbanization. Global exchange has additionally assumed a vital job in giving more extensive decisions to shoppers.

Albeit yearly per capita utilization of fish has developed consistently in creating districts from 5.2 kg in 1961 to 18.8 kg in 2013 and in low salary sustenance deficiency nations from 3.5 to 7.6 kg, it is still impressively lower than that in more created locales, despite the fact that the hole is narrowing. In 2013, per capita obvious fish utilization in industrialized nations was 26.8 kg. A sizeable and developing offer of fish expended in created nations comprises of imports, attributable to enduring interest and static or declining local fishery generation. In creating nations, where angle utilization has a tendency to be founded on locally accessible items, utilization is driven more by supply than interest. In any case, fuelled by rising residential wage, customers in developing economies are encountering an enhancement of the sorts of accessible fish through an expansion in fishery imports.

This noteworthy development in fish utilization has upgraded individuals' eating regimens around the globe through expanded and nutritious sustenance. In 2013, angle represented around 17 percent of the worldwide populace's admission of creature protein and 6.7 percent of all protein expended. Additionally, angle furnished in excess of 3.1 billion individuals with very nearly 20 percent of their normal per capita admission of creature protein.

Worldwide fish creation has developed consistently over the most recent five decades with sustenance angle supply expanding at a normal yearly rate of 3.2 percent, outpacing total populace development at 1.6 percent. The creation of fish and fisheries worldwide is around 170.01 million tons for every year, and their utilization is 18.5 for every capita every year. This amazing advancement has been driven by a mix of populace development, rising earnings and urbanization and encouraged by the solid extension of fish generation and more proficient dissemination channels.

China has been in charge of the greater part of the development in fish accessibility, attributable to the sensational extension in its fish generation, especially from aquaculture. Its per capita evident fish utilization likewise expanded at a normal yearly rate of six percent in the period 1990– 2010 to around 35.1 kgs in 2010. The yearly per capita angle supply in whatever is left of the world was around 15.4 kgs in 2010 (11.4 kgs during the 1960s and 13.5 kgs during the 1990s). Notwithstanding the flood in yearly per capita evident fish utilization in creating districts (from 5.2 kgs in 1961 to 18.8 kgs in 2013) and Low-Income Food-Deficit Countries (LIFDCs) (from 4.9 to 10.9 kgs), created locales still have more elevated amounts of utilization, in spite of the fact that the hole is narrowing. Worldwide fishery creation in marine waters was 82.6 million tons in 2011 and 79.7 million tons in 2012. Eighteen nations (11 in Asia) got in excess of a normal of one million tons for each year, representing more than 76 percent of worldwide marine gets.

Worldwide aggregate catch fishery generation in 2014 was 93.4 million tons, of which 81.5 million tons from marine waters and 11.9 million tons from inland waters. China is the significant maker of Marine fisheries on the planet.

Generation of oceanic creatures from aquaculture in 2014 added up to 73.8 million tons, with an expected first-deal estimation of US$160.2 billion. China represented 45.5 million tons in, at least 2014 than 60 percent of worldwide fish generation from aquaculture.

The extent of fisheries generation utilized for direct human utilization expanded from around 71 percent during the 1980s to more than 87 percent (146 million tons) in 2014, with the rest of (million tons) bound to non-nourishment utilizes (e.g. fishmeal and angle oil).

Fish stays among the most exchanged sustenance products around the world. In 2014, around 200 nations announced fares of fish and fishery items. The fishery exchange is particularly imperative for creating countries, sometimes representing the greater part of the aggregate estimation of exchanged items. In 2012, it spoke to around 10 percent of aggregate rural fares and one percent of world stock exchange esteem terms.

China is, by a wide margin, the biggest maker and exporter of fish and fishery items. Be that as it may, since 2011, it has turned into the world's third-biggest bringing in nation, after the United States of America and Japan. The European Union is the biggest market for imported fish and fishery items and its reliance on imports is developing.

1.2 Indian Scenario

Indian fisheries and aquaculture is a vital segment of sustenance generation, giving healthful security to the nourishment crate, adding to the horticultural fares and connecting around fourteen million individuals in various exercises. With different assets running from remote oceans to lakes in the mountains and more than 10 percent of the worldwide biodiversity as far as fish and shellfish species, the nation has indicated nonstop and maintained additions in fish generation since autonomy. India stands second in worldwide fish creation. Further, India stands number two in the divisions of inland catch and aquaculture and number seven in marine catch creation. Establishing around

6.3 percent of the worldwide fish creation, the part adds to 1.1 percent of the GDP and 5.15 percent of the horticultural GDP. The aggregate fish generation of 10.07 million metric tons by and by has almost 65 percent commitment from the inland part and about the equivalent from culture fisheries.

The nation has 429 Fish Farmers Development Agencies (FFDAs) and 39 back water Fish Farms Development Agencies (BFDAs) for advancing freshwater and waterfront aquaculture. The yearly carp seed creation is to the tune of 25 billion and that of shrimp around 12 billion, with expanding enhancement in the ongoing past. Alongside nourishment angle culture, decorative fish culture and high esteem angle cultivating are picking up significance in the ongoing past. With more than 2.4 lakh angling creates working in the drift, six noteworthy angling harbors, 62 minor angling harbors and 1511 landing focuses are working to oblige the requirements of more than 3.9 million fisher people.

Fish and fish items have by and by developed as the biggest gathering in agrarian fares of India, with 10.51 lakh tons regarding amount and Rs.33, 442 crores in esteem. This records for around 10 percent of the aggregate fares of the nation and almost 20 percent of the horticultural fares. In excess of 50 unique sorts of fish and shellfish items are traded to 75 nations around the globe.

India has a broad coastline and incredible freshwater sources. Around 11 percent of the world's fish species are found in India. Out of these 2,200 species, around 66% (or 1,440 species) are a piece of the marine biological community, which incorporates the Arabian Sea and the Bay of Bengal while the rest are partitioned between warm freshwaters, including lakes and waterways, bitter waters or estuaries where seawater blends with crisp water from streams and cool freshwaters. Pomfret, bhetki, rohu, catla, mackerel, bombay duck and surmai (lord mackerel) are the most mainstream angle species that are expended in India. Pomfret is notable for delicate, white and generally boneless tissue while bhetki is considered as most delectable fish among the boneless fishes. Rohu and catla are the most prominent individuals from carp family. Mackerels are found in wealth along the landmass India whose tissue is high in solid oil. Lord

mackerels are the most estimated fish of Southern and Western India whose substance is firm and sleek with substantial surface.

1.2 Fish Production in Karnataka

Karnataka state developed as a sea State in 1956 with the redesign of the States. An autonomous Department of Fisheries was set up in 1957. From that point forward, the Department of Fisheries has been reliably endeavoring hard for in general advancement of fisheries and of anglers by executing a few formative plans both in marine and inland parts. The fisheries area assumes a vital job in the financial improvement of State, in perspective of its commitment to the sustenance bin, nourishing security, huge outside trade profit, work age and wage.

The land region of Karnataka is 192,204 sq. km which is around 5.85 percent of the aggregate territory of the Indian Union. Karnataka state is invested with immense marine and new water assets and has an enormous potential for fish creation. It has 5.60 lakhs ha. of freshwater sources comprising of 2.93 lakh ha. of lakes, tanks and 2.67 lakh ha. of stores. The state has 300 km of drift line, 27,000 sq. km mainland rack and 87,000 sq. km of elite monetary zone other than 8,000 ha of saline water territory.

Karnataka state rose as a sea State in 1956 with the revamping of the states. The foundation of Department of Fisheries in 1957 has offered driving force to the general advancement of fisheries and of anglers by actualizing a few formative plans both in Marine and Inland divisions.

The fish creation in Karnataka was around two lakh tons in mid 80's and come to a pinnacle of more than three lakh tons in mid 90's. The normal fish generation over the most recent 5 years is around 2.73 lakh tons with 64 percent commitment of marine area and inland part 36 percent. The marine fish generation amid 2010-11 was 3.41 lakh Metric Tons (MT) esteemed at Rs.1335.64 crores. The marine fish creation amid 2011-12 was 3.47 lakh metric tons. The fish generation from the state contributed around 4.80 percent of India's aggregate fish creation. Amid 2010, per-capita accessibility of fish in the state was around 5.3 kg.

The Gross Domestic Product (GDP) of the state has seen an unfaltering increment throughout the years. The commitment of fisheries division to GDP at the overarching costs amid 1998-99 was Rs. 16,316 lakh, which has expanded to Rs. 92,318 lakh in 2011-12.During 2010-11, 104795 MT of marine items worth Rs.688.13 crores was traded from the State. Amid 2011-12, 86299 MT of marine items worth Rs.658.46 crores has been traded.

Ordinarily discovered types of marine fish in Karnataka coastline are Indian mackerel, diviner, sardines, shark, fish, skates and beams, pomfrets, crabs, prawns, squids, estuarine fishes-woman angle, mullets, and so forth.

Around 60 percent of the marine fish creation is expended locally. Fish generation from marine is for the most part sold in urban markets. Because of dietary patterns and constrained acquiring intensity of individuals living near fish landing destinations, most fish is transported available to be purchased to urban focuses (FAO, 2012).

Significance of the examination:

Around 94 percent of all fisheries happen in creating nations. They give sustenance and business to a large number of the world's poorest individuals and furthermore add to the in general financial prosperity by methods for fare ware exchange, tourism and diversion. Fish is a low-fat top notch protein. Fish is loaded up with omega-3 unsaturated fats and nutrients, for example, D and B2. Fish is wealthy in calcium and phosphorus and an incredible wellspring of minerals, for example, press, zinc, iodine, magnesium, and potassium. Human bodies don't deliver omega-3 unsaturated fats and subsequently, it must be acquired through nourishment. Omega-3 unsaturated fats are found in each sort of fish.

In Karnataka, Mangaluru is the fundamental fishing and promoting focus. Among the distinctive species landed and circulated in the local market, mackerel and oil sardine represent around 70 percent of the aggregate marine fish creation. This demonstrated the net offer of fisher in the customer's cost was low between 25-27 percent and significant offer was accepted away as edges by the middle organizations. Market cost about Rs. 2 to

3 for each kg. This demonstrates the advertising framework is considerably less proficient.

Costs of marine fish change broadly amid the angling season. Costs are identified with amount of catch or fish arriving at the port. There are two particular periods of angling viz., Peak or flush season from September to December and lean season from January to May. There is no angling from June to August which is the reproducing period of fishes. Fish get is more in pinnacle season and thus costs are for the most part low in this period, while get decreases from January onwards when costs begin rising. In this way, there is negative connection between amount of landing and the costs.

The present investigation is an unassuming endeavor to examine the profile of fish customers; factors impacting the buy of fish by buyers; buy conduct of fish shoppers; and the imperatives looked by fish retailers. The examination is limited to a point by point enquiry of buyers' inclination for marine and marine fish items in Mangaluru city.

With this background, the present was created out with the following specific objective

1. To document different types of marine fishes and marine fish products available in the market,
2. To analyse the socio-economic factors influencing the purchase of fish and fish products,
3. To assess the preference of consumers on different type of market outlet
4. To identify the constraints faced by the retailers of fish and fish products

II REVIEW OF LITERATURE

A review of the research work relevant to the objective of the present study is presented in this chapter. In this chapter an attempt is made to review the work done by other researchers related to the topic of investigation. The studies regarding consumer preference for Marine Fish and Marine Fish Products in Mangaluru city have been reviewed and also reviews of the other comparable studies pertaining to the objective of the present study have been presented under the following sub-headings.

2.1 Document different types of marine fishes and marine fish products

2.2 Socio- economic factors influencing the purchase of Marine Fish and Marine Fish Products

2.3 Preference of consumers on different types of market outlets

2.4 Constraint faced by the retailers of fish and fish products

2.1 Document different types of marine fishes and fish products

Moksha (2016) conducted the study on different neem based and non neem based pesticides available in Kolar district. The results indicated that various Neem oil products like Nembecidine, Neemza, Indika, Vijaya neem, Neem ban, Neemarin and various neem cake products like Anandam sahubam, Parryneem, Avana, Organic gold and Eco garden were readily available.

Monika (2016) conducted the study on major brands of packaged drinking water available in Chandigarh. It was found that about 5 different brands of packaged water were available in the Chandigarh i.e. Bisleri, Kinley, Bailey, Kingfisher and Aquafina

Harshitha (2017) conducted a study on consumer preference for processed organic food products in Bengaluru city. The results indicated that various products and product range of processed food products were marketed in Bengaluru city. The study revealed various rice brands like 24 Mantra, Terra Green, Timbuktu Organic, LP, Phalad pure and Sure, Safe Harvest, pristine fields of Gold, Turn Organic and Gramya darma, were the various rice brands. Along with that some of the brands like G10, Organic Tattva, Pro

Nature, Organic Arya, Dhanya, Phalad pure and Sure and Sanjeevani Organic were identified for other organic food products like wheat, millets, dal, Bengal gram, green gram, and urad dal.

Saranya (2017) conducted a study on different brands of milk and milk products available in Salem city of Tamil Nadu. The study revealed that Aavin, Arokya, Cavin's Amirta, Nanda, Vijay, Godrej, Sudhan and Aaghar were the different brands of milk. The different brands of ghee were Hutsun, GRB, Aavin, Udhaiykrishna, Aroma, RKG, Gowardhan, Ambikaa, Nambisan's, Rasi Gold, Ajai Emira, Britannia, Milky, mist, Aashirvad, Patanjali, Amul and ACCP, Arun , Dairy Day, Kwality Wall's , Sovai, Ponni, Pepsi and Good Luck were the various ice-cream brands. Apart from those, there were also some other milk products like butter, cheese, curd, paneer, milk powder, buttermilk, milk shake , khoa, yoghurt and shrikhand being sold under the same above mentioned brand names.

2.2 Socio-economic factors influencing the purchase of marine fish and marine fish products

Abdur (2008) conducted a study on socio-economic condition of fishermen of the "Mail Beel" under Mohanpur Upazila of Rajshahi district in Bangladesh and revealed that the socio-economic status of the fishermen is very dull and fishermen community in the study area is poorer among the poor.

Iris and wim (2008) analyzed Sustainable food consumption among young adults in Belgium: Theory of planned behaviour and the role of confidence and values Stepwise multiple regression models showed that 50% of the variance in intention to consume sustainable dairy was explained by the combination of personal attitudes, perceived social influences, perceived consumer effectiveness and perceived availability. In addition, different levels of confidence and value orientation yield different strengths of the determinants. The findings yield public policy and marketing recommendations for stimulating sustainable food consumption among young adults.

Sunil *et al.* (2008) studied Consumption pattern and consumer preference for value- added fish and fish products in north zone of India and results reveal that socio economic variables affect consumption of value-added fish and fish products. A sum of 49 per cent respondents were of middle age gathering (35 to 50 years). All were literates with the exception of 1 per cent from the provincial region. All were acquiring fish in any event once in 15 days. A sum of 90 per cent respondents in rustic, 11 per cent in semi urban and 50 per cent in urban zone were unaware of value-added fish and fish products. About 10 per cent of respondents had consumed it, out of which most were from urban region. Demand analysis by Cobb Douglas (CD) Demand function; revealed that when price of fish, price of the substitutes, income of family and family size were used as independent variables, variation in demand of fish explained by CD Demand function was about 39 per cent in urban area, 24 per cent in semi urban area and 22 per cent in rural area. From Garette ranking technique major problems in fish consumption found were irregular supply, lack of fresh fish, high price and presence of bones in fish. While lack of awareness, unavailability, no preference and unacceptable taste were major problems for consumption of value-added fish and fish products.

Haghiri *et al*. (2009) studied the consumer willingness-to-pay a premium to purchase organic fresh fruits and vegetables with environmental and health attributes. The study concluded that while making food choices, although the environment could be regarded as an important aspect, but the consumers in Eastern New Brunswick were seen prioritizing their health over the environment. Moreover, the household income and consumer's fondness also had more impact on consumer willingness to pay a premium for fresh organic produce.

Smith *et al*. (2009) analyzed the consumer purchasing behavior of organic fresh fruits and vegetables by using 2006 Nielsen Homescan panel. Logit model mainly quantifies the impacts of economic and socio-demographic factors on the probability of household belonging to a specific organic user group-devoted, casual and nonuser. The results suggest that price and income, to some extent affect the consumer to purchase the organic produce. Additionally, the profile of organic produce users was also the main reason that influenced the consumers' to purchase organic fresh fruits and vegetables.

Mecki et al. (2010) studied Socio-economic drivers and indicators for artisanal coastal fisheries in Pacific island countries and territories and their use for fisheries management strategies and results suggested that communities in countries with somewhat unfavourable conditions and limited access to alternatives and fishing households in communities with overall favourable economic conditions are at highest vulnerability as they have the highest dependence on coastal fisheries resources.

Ravibhushana (2011) analysed the socio – economic profile of consumers of value added products of potato in Bengaluru city. He reported that majority (72 %) of the consumers belonged to the age group of 21 to 30 years followed by age group of 31 to 40 years, more than 41 years and up to 20 years accounting for 20 per cent, 6 per cent and 2 per cent respectively. Hence the study concluded that young consumers (21 to 30 years) were showing more inclination towards consuming value added potato products.

Akpinar (2012) studied the consumer purchasing habits in case of fresh fruits and vegetables outlets that were being affected by various socio-economic factors along with the product, price, distribution channel, and advertisement. The results indicated that consumer age and marital status had no significant correlation with the preferences. On the other hand, the test results showed that gender, education, income and female employment status did have a significant correlation with the preference for outlets in the fresh fruit and vegetable supply chains.

Chandraprabha (2012) analyzed the consumer preference for value added products of tomato in Bengaluru city. She reported that majority (56 %) of the consumers belonged to the age group of 31 to 50 years followed by above 50 years (40 %) and up to 30 years (4 %). Hence the results of the study concluded that consumers under the age group of 31 to 50 years were the major consumers of value added products of tomato in Bengaluru city.

Apu et al. (2013) studied Fish Consumers' Behaviour at Selected Fish Markets of Tripura, India and it was observed that 45% of the consumers was in the age group of 35-45 years and 53.75% had a family size of 5-7 members. Purchasing of fish was done

mainly by the male members of the family (86.87%). Price (level & fluctuation) is the major constraint faced by the consumers of the state followed by availability of fish, lack of fresh fish, non-availability of preferred species and lack of hygiene.

Sheena *et al.* (2013) studied situational determinants of fish consumption in UK by random sampling method and the results revealed that Analyses suggest that the factors that influence consumer choice are predominantly environmental, and a model of situational determinants of consumption (the behavioural perspective model or BPM) is proposed as a theoretical framework.

Friis *et al.* (2014) conducted a study to estimate the prevalence of energy drink consumption and examine the associations of socio-demographic factors and health behaviour with energy drink consumption among young adults in Denmark. The results indicated that young adults used to drink energy drinks on a weekly basis. Men were having higher odds of weekly energy drink consumption than women. The study also showed that age, employment status and educational level were associated with weekly energy drink consumption. Overall, compared to European countries the prevalence of energy drink consumption found to be relatively low in Denmark.

Maksuda and Taj (2012) studied Socioeconomic factors influencing food security status of maize growing households in selected areas of Bogra district and the results of the study revealed that almost all rural households in Bogra district were food secured. It was checked by using recommended minimum calorie requirement (i.e., 2122 kcal). The results of logit model indicated that four variables out of eight have influence on household's food security condition. The factors influencing household food security were found to be age of household head, household size, monthly agricultural income and food expenditure. An unit increase in food expenditure would increase the probability of the household being food secure. Further, households with older heads being more food insecure and household food security decreased with increasing household size.

Ugur *et al.* (2014) conducted a study to determine the impact of socio-demographic and ecological factors on vegetable consumption. The socio-demographic

attributes which determined the vegetable consumption were average monthly budget for vegetables. The two important attributes were cleanliness and freshness.

Adam and Colin (2015) study revealed that juice consumption was highest among the children and declined sharply with age, whereas whole fruit consumption was highest among older adults. Total fruit and whole fruit consumption were generally highest among the higher income individuals and educated persons.

Domenico *et al.* (2015) studied Consumer purchasing behaviour towards fish and seafood products. Patterns and insights from a sample of international studies and revealed that the main driver of fish consumption is the positive attitude towards eating fish shown by the large majority of consumers.

Florkowski *et al.* (2015) study revealed that the emerging market fruit and vegetable consumption was very responsive to the economic factors, but also highly dependent on socio-demographic factors such as household size, occupation, and education level of consumers. Although the average consumption of fruits and vegetables was near to the WHO daily suggested level, but some groups were not consuming the required amount. The differences in consumer choices of fruits and vegetables pertaining to Poland and Ghana were identified.

Mehmet *et al*. (2015) conducted a study on fish consumption preferences and factors influencing it and found that Fish consumption level and frequency were significantly positively correlated with education ($p<0.01$), income ($p<0.05$) and total meat consumption ($p<0.01$). The stepwise multiple regression model explained 41.7% ($p<0.01$) of the total variance for fish consumption. However it was found that fish consumption in Antakya is far below the average consumption in Turkey and in the world.

Musaba and Namukwambi (2015) conducted a study to analyze the influence of household characteristics on consumers decision in purchasing fish species like horse mackerel, hake, and snoek. Specific factors considered in the model were gender, age, education, household size and income. The results revealed, firstly that education, income

and household size have negative significant effect on consumers' decision to purchase mackerel. Secondly, it was found that age and income have positive significant effect on the probability to purchase hake. Thirdly, household size and income have a positive significant effect on the probability to purchase snoek but marital status had a significant negative effect on the decision to purchase snoek.

Nicole and Adam (2015) analyzed foods of lower nutritional value and lower quality diets and found that their cost per calorie was very less and these products were tended to be selected by groups of lower socio-economic status. A number of nutrient dense foods were available at low cost but not always palatable or culturally acceptable to the low-income consumer. Acceptable healthier diets were uniformly associated with higher costs. Food budgets in poverty were insufficient to ensure optimum diets. Socioeconomic disparities in diet quality may be explained by the higher cost of healthy diets. The study concluded that identifying food patterns that are nutrient rich, affordable, and appealing should be a priority to fight social inequalities in nutrition and health.

Shashikiran and Madhavaiah (2015) opined that socio-economic factor is one of the major factors determining the purchase behaviour of organic food products in Bangalore city. The research work explained the degree and nature of its impact. The study revealed that organic retailers had observed the shift in the trend of organic product consumption and wanted to respond with suitable strategies to address the positive shift. The results indicated the purchase behavior of the respondents and the factors influencing to buy the organic food products.

Zahra *et al.* (2016) conducted a study on role of cultural and socioeconomic factors in fish consumption among Omani population. A pilot survey and study revealed that exploration of cultural and socioeconomic factors was done with the help of descriptive and inferential statistics. The outcome of this study could be useful in promoting fish consumption among Omani people. However, the sample size used in this study was less, and may not be the representation of Oman.

2.3 Preference of consumers on different types of market outlets

Ghosh *et al*. (2010) in their study on "Food retailing positioning strategy: a means-end chain analysis" explored the extent to which the findings can be used to inform the retail positioning strategy of food retailers in UK, using data obtained from 15 respondents. Using means-end theory as the theoretical underpinning of the study, the study employed laddering methodology to identify linkages between food retail store attributes and personal values. The findings of the study presented consumer's personal orientation towards food retail store image with attributes like "good quality products", "good reputation", "store has additional services" and "value for money". The findings of the study supported previous value driven research, concluding that "happiness" and "quality of life" were the most strived personal values.

Ravilochanan and Shyamala (2012) analyzed customer preference in organized retail stores and the results revealed that a number of factors influencing the customer choice of the type of retail outlet needed a critical evaluation and that could help organized outlets in generating favourable customer response. The study provided an insight in to a few aspects of the retail experience of the customers which, when analyzed could help to design the strategy that can emerge as win-win strategy for both the retailers and the customers.

Sangvikar and Hemant (2012) conducted a study on consumer purchase behaviour in organized retail outlets and the researchers observed that the customers prefer retail outlets because of price discount, followed by variety of products in the store and convenience to the customer.. Researchers have also observed that departmental stores were most popular amongst consumers. Customers purchase behaviour varies with price and availability of products and customers spending pattern shrinks due to poor quality of products.

Hyun-Joo and Zee-Sun (2014) conducted a study on consumers' perception of organic food attributes and cognitive and affective attitudes as determinants of their purchase intentions towards organic food. The results revealed that consumer's perception of the food attributes. influenced their utilitarian and hedonic attitudes and

intentions to purchase organic food. Specifically, consumers' perceptions of the natural content attribute of organic food attracted them towards organic food outlets.

Hassan *et al*. (2015) conducted a study on factors that affect the choice of Consumers in selecting retail store, for grocery shopping and the study concluded that convenience, variety, product quality, prices and store loyalty were the main factors identified through initial study and literature review as factors affecting consumers choice of retail stores and hence a research framework designed evaluated these factors and how they affect store choice.

Kumar (2015) studied consumer preference towards organized retail stores in Erode district, Tamil Nadu-India and the results revealed that the factors influencing their purchases in organized retail stores were the additional facilities given and the improvement in handling defective goods.

Yadav *et al.* (2015) conducted a study on Consumer Preference towards Retail Stores for Food and Grocery in Evolving Retail Market. The study reveals that young and high income consumer preferences for grocery shopping are gradually shifting from local kirana stores to organized retail stores.

Amrita (2016) studied on consumer buying behaviour towards branded retail outlets in India and the results revealed that some of the specific elements like product information, customer involvement, atmosphere, customer attributions and choices play critical roles during various stages of the customer decision process. As a result customers are now showing preference for shopping malls that enables them to shop variety of products under one roof with shopping experience in term of ambience and entertainment.

Eric *et al*. (2016) studied consumer's choice of retail outlets for African indigenous vegetables, among rural and urban households in Kenya and this study evaluated socio-economic, institutional and product characteristics that influence the consumers choice. Findings revealed that local open air markets and green groceries were the most preferred retail outlets in rural and urban households, respectively. Additionally,

gender, age and education level of the key decision-maker, household size, varietal diversity, vegetable bunch size, market distance and perceptions regarding AIV retail prices significantly influenced the choice for AIV retail outlets.

2.4 Constraints faced by the retailers of fish and fish products

Jaffer (2002) analysed the marketing problems of banana growers using Garrett Ranking Technique and found that fluctuation in the prices of banana was the major problem with the mean score of 73.86. Inadequate finance was the next important problem faced by the grower with a mean score of 62.12.

Amatul and Laxmi (2007) identified the prospects and problems of retailing in India and states that the main constraints were higher taxes, multiple laws, wrong policy decisions, unnecessary illegal imports, poor infrastructure and logistics, high cost of equipment and packing material.

Patil *et al*. (2009) conducted a study to analyse the constraints faced by the dairy farmers in Nagpur district and found that majority of the respondents (72.44 per cent) stating their constraint as low milk production from the local breeds, 45.33 per cent as shortage of green fodder and 41.33 per cent as lack of clean water while 25.33 per cent stated lack of preservation facility as their constraint. Referring to the financial constraints, 78.22 per cent respondents stated their constraint as delay in milk payment, 63.11 per cent as inadequate money and lack of loan facility whereas high cost of concentrates as the constraint by 56.44 per cent of the respondents. As regards of technical constraints, majority of the respondents (68.00 per cent) have stated their constraint as inadequate knowledge of diseases, their prevention and control while 56.89 per cent have referred their constraint as non-availability of veterinary services.

Singarwad *et al.* (2009) study revealed that constraints like difficulties in control of pests and diseases were severe problem which was expressed by 93.33 per cent of flowers growers. In the next order, non-availability of transport facilities was opined by 92.22 per cent of them. Then the difficulties faced were pruning (86.66 per cent) and control of weeds (84.44 per cent). As regard the suggestions, about 91.11 per cent of

flowers growers gave emphasis on pests control and 84.4 per cent for provision of training over pruning problem.

Suresh *et al*. (2012) analysed the marketing of aromatic crops in Uttar Pradesh and reported that major marketing constraints in aromatic crops are less number of buyers, absence of legal market information, lack of regulated market, ignorance of quality of produce and delay in payment.

Balaji *et al*. (2013) conducted a study to know the problems faced by consumers in the purchase of fruits and vegetables from both the modern and traditional mom and pop store. The study concluded that selling low quantity, poor refilling and slow checkouts were the major constraints faced by the consumers in targeting modern fruits and vegetable retail store outlets. Whereas, narrow range of merchandise, limited quantity and high cost was identified as the major problem in the case of mom and pop stores. The study concluded that consumers' in the modern retail units who purchase fruits and vegetables were providing feedback to the retailers and which would enhance the performance of retail outlets.

Rahaman *et al.* (2013), conducted a study on problems and constraints in production and marketing of fish in West Bengal and found that the price spread is highest in channel III amounting Rs. 24.07 per kg of fish followed by Rs.10.14 in channel II, while there is a price spread of only Rs. 4.05 per kg of fish in channel I as the farmers sell their catch directly to the consumers. This indicates a very normal situation with greater marketing efficiency. The major constraints faced in production and marketing of fishes are theft and pilferages, non-availability of quality fish seeds, lack of government support both technically and financially, quarrel and litigations among the owners of the pond, poor adaptability of fish seed in new environment, non-availability of quality fish seeds, , lack of government support, labour crisis, high degree of perishability of the product, cut throat competition, inconsistent supply of fish, lack of storage facility etc.

Dilip and Rajeev (2014) observed that problems faced by the handicraft industry were manifold. It starts right from the procurement of the raw material due to non-

availability of required standard input, unavailability of skilled artisans, unawareness about the technical supports and lack of customer awareness towards the craft products. One of the major issues faced by handicraft sector was in information dissemination. This has led to a situation where customers had no information related to the craft products.

Nwabunike (2015) studied Constraints of Fish Marketing in Abakaliki Metropolis and it has been observed that fish marketing in Abakaliki urban is a lucrative venture. Although, fishes are marketed in different forms either as fresh, smoked or dried fish.

Patel *et al.* (2015) conducted a study in six talukas of Banaskantha district of North Gujarat area to know the constraints faced by Dairy Farm Women in improved Animal Husbandry and concluded that the most important constraints faced by dairy farm women are economic constraints, technical constraints, input-supply constraints and administrative constraints.

Singh *et al.* (2015) conducted a study to know the constraints faced by farmers in adoption of dairy as an entrepreneurship revealed that all farmers entered into profession after getting training in dairy farming. The problems associated with dairy farmers are feeding and health care practices which ranked first (61 %) followed by constraints in adoption of milking practices (58.3 %), breeding practices (51.0 %) and housing practices (48.8 %). Inadequate facilities of artificial insemination centre (71.1per cent), high price of concentrate mixture (84.4 %), and lack of capital for housing (66.7 %), low economic gains (80.0 %) and non-availability of adequate veterinary services (77.8 %) were main constraints faced by farmers. The study indicates that there is direct need to frame policy at government level to remove bottlenecks faced by commercial dairy farmers in order to adopt dairy as entrepreneurship.

Mandip (2016) studied Fish Marketing in Tripura: Structure and Constraints and it is clear that fish markets in the state is traditional, having structural defects and infrastructural inadequacies. The market facilities and services are generally of very poor order, showing serious shortcomings on the part of the authorities who collect revenue and are responsible for market upkeep and development. Fish farmers and marketing

intermediaries are suffering from several problems and constraints which are of course discouraging factors for the sector to expand at its optimal level in the state.

Akhi *et al*. (2017) studied on "Livelihood status of fish retailers and marketing system of three fish markets in Dinajpur district, Bangladesh." and the results revealed that the economic status of urban retailers was healthier than peri-urban and rural area. Common health problems were cough and cold, lesion between fingers, joint pain, etc. Lack of capital, infrastructure and communication, inadequate storage and transport facilities, too many intermediaries and high price of inputs were the major problems faced by the fish retailers which need to be addressed through building proper market infrastructure and training for the retailers.

Rajpoot *et al.* (2018) conducted a study to analyse the constraints faced by the dairy farmers in Dhar district of Madhya Pradesh. The study was conducted in four villages of three blocks of Dhar district by personal interviewing 80 dairy farmers. The results concluded that, the main constraints faced by dairy enterprises in Dhar district of Madhya Pradesh are Low price of Milk and Milk products (83 %), Lack of Technical Knowledge to manage the dairy (78 %), Lack of Storage Facility of Milk (75 %), High cost of construction (74 %), and Lack of Knowledge to prepare project proposal (67.5 %). In case of scientific dairy management the results determined that 68 per cent respondents are facing lack of loan facility and whereas 90per cent farmers do no adopt cattle insurance policy.

III METHODOLOGY

The present investigation was embraced to look at the profile of fish customers; to examine the variables impacting the buy of marine and inland fish by buyers; and to break down the buy conduct of marine and inland fish shoppers. This part covers the accompanying viewpoints:

3.1Description of study area

3.2 Sampling design and data collection

3.3 Analytical tools

3.4 Garrett's Ranking technique

3.1 Description of study region

3.1.1 Geographical location

Mangalore, formally known as Mangaluru, is the central port city of the Indian territory of Karnataka. The name Mangaluru is after the Goddess Mangala Devi. It is situated around 352 km (219 mi) west of the state capital, Bengaluru, between the Arabian Sea and the Western Ghats Mountain run. The number of inhabitants in the urban agglomeration was 6,23,841, as indicated by the temporary aftereffects of the 2011 National registration of India.

Mangaluru developed as a port in the Arabian Sea during ancient times and became a major port of India. This port handles 75 percent of India's espresso and cashew sends out. The port is utilized as an arranging point for ocean activity along the Malabar Coast.

Mangaluru is the biggest city and regulatory base camp of the Dakshina Kannada region, and is a standout amongst the most multicultural non-metro urban communities of India. It is additionally the biggest city in the Coastal and Malnad locales of Karnataka, other than being a business, modern, instructive and medicinal services center on the West Coast of India. This port city has the second biggest airplane terminal in Karnataka.

Mangaluru city urban agglomeration stretches out from Ullal in the south to Mulki in the north, covering a separation of more than 40 km (25 mi). The city's scene is described by moving slopes, coconut palms, freshwater streams and hard red-dirt tiled-rooftop structures. Mangaluru is situated at 12.87°N 74.88°E in the Dakshina Kannada area of Karnataka. It has a normal height of 22 m (72 ft.) above mean ocean level. It is the managerial home office of the Dakshina Kannada area, the biggest urban waterfront focal point of Karnataka. Mangaluru is arranged on the west shore of India, and is limited by the Arabian Sea to its west and the Western Ghats to its east. Mangaluru city, as a metropolitan substance, ranges a region of 132.45 km2 (51.14 sq. mi).

3.1.2 Climate and precipitation

Mangaluru encounters moderate to windy breezes at amid day time and delicate breezes around evening time. The geography of the city is plain up to 30 km (18.64 mi) inside the drift, and changes to undulating uneven landscape pointedly towards the east in Western Ghats. The geography of the city is described by hard laterite in uneven tracts and sandy soil along the seashore. The Geological Survey of India has recognized Mangaluru as a modestly tremor inclined urban focus and classified the city in the Seismic III Zone.

Mangaluru has a tropical storm atmosphere and is under the immediate impact of the Arabian Sea part of the southwest rainstorm. Mangaluru gets around 95 percent of its aggregate yearly precipitation inside a time of around a half year from May to October, while remaining to a great degree dry from December to March. The yearly precipitation in Mangaluru is 3,479 millimeters. The dampness is roughly 75 percent by and large, and crests amid May, June and July. The most extreme normal dampness is 93 percent in July and normal least moistness is 56 percent in January. From December to February, the temperatures at mid day time goes beneath 30 degree Celsius and drop to around 19 degree Celsius during the evening. This season is before long pursued by a sweltering summer, from March to May. The late spring offers route to the rainstorm season, when the city encounters more precipitation than most urban focuses in India, because of the

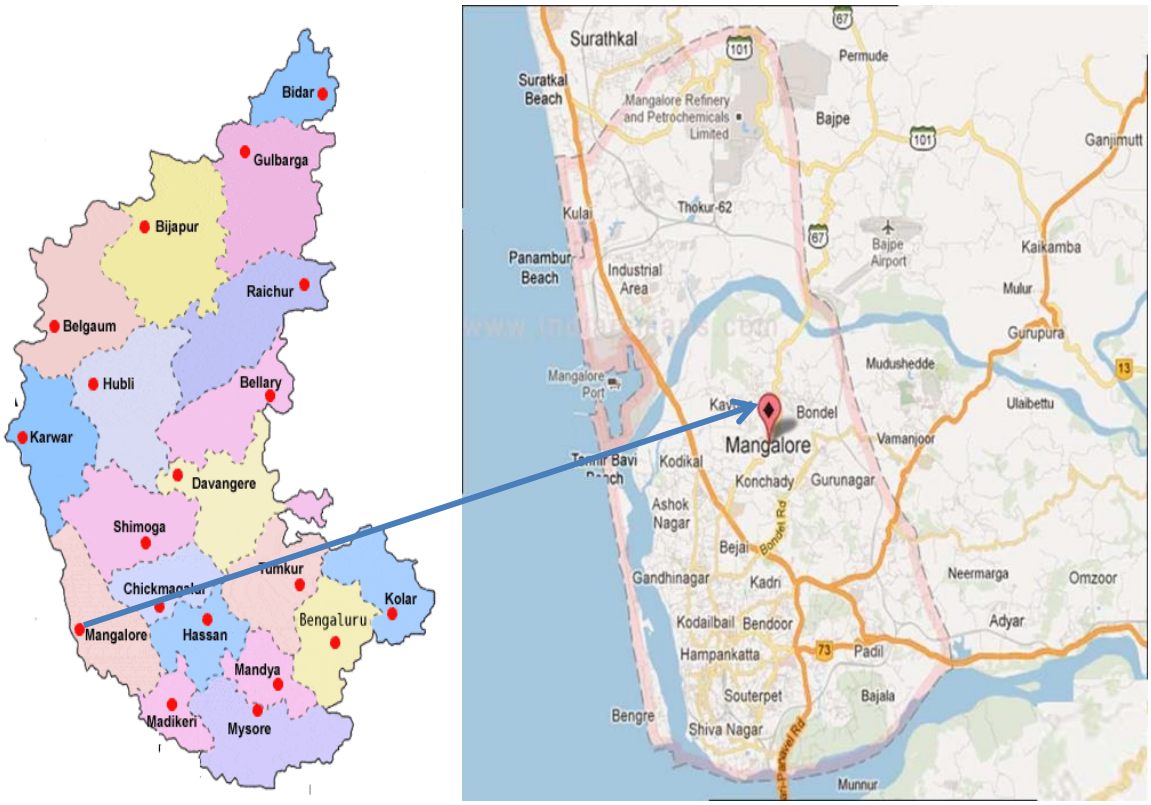


Fig. 1: Map of the study area – Mangaluru city

Western Ghats. The downpours died down in September, with the incidental precipitation in October.

The least recorded temperature at Panambur is 15.6 °C (60 °F) on January 8, 1992, and at Bajpe it is 15.9 °C (61 °F) on November 19, 1974. In Mangaluru, the temperature has never contacted 40 °C (104 °F), as indicated by the India Meteorological Department (IMD). The most elevated at any point recorded temperature in Mangaluru is 38.1 °C (101 °F) on March 13, 1985. The mid-year offers path to the rainstorm season, when the city encounters the most noteworthy precipitation among every single urban focus in India, because of the impact of the Western Ghats. The downpours die down in September, with the infrequent precipitation in October.

The most elevated precipitation recorded in a 24-hour time frame is 330.8 millimeters (13 in) on 22 June 2003. In the year 1994, Mangaluru got substantial yearly precipitation of 5,018.52 millimeters (198 in).

3.1.3 Demographic characteristics

Populace of Mangaluru in 2011 is 488,968; of which male and female are 242,512 and 246,456 individually. In spite of the fact that Mangaluru city has populace of 488,968; its urban/metropolitan populace is 623,841 of which 309,380 are guys and 314,461 are females.

Hinduism is dominant part religion in Mangaluru city with 68.99 percent adherents. Hinduism is the biggest religion in Mangaluru, with Devadiga, Mogaveera, Billavas, Ganigas, Bunts, Kota Brahmins, Shivalli Brahmins, Havyaka Brahmins, Sthanika Brahmins, Goud Saraswat Brahmins (GSBs), and Chitpavan Brahmins, Daivadnyas are the real networks in Hindus. Islam is second most prominent religion in city of Mangaluru with roughly 17.40 % tailing it. In Mangaluru city, Christianity is trailed by 13.15 percent, Jainism by 0.21 percent, Sikhism by 0.08 percent and Buddhism by 0.08 percent. Around 0.00 expressed roughly 0.12 percent expressed 'No Particular Religion'. The four fundamental dialects in Mangaluru are Tulu, Konkani, Beary and

Kannada. There are two Konkani dialects one talked by Hindu Community and one talked by Catholic people group. There are slight contrasts in dialect.

3.2 Sampling design and Data collection

3.2.1 Sampling design

The examination was directed in Mangaluru city. An example of 90 shoppers were drawn for the present investigation. Furthermore, 15 retailers were additionally drawn for the investigation bringing about an aggregate example of 105.

The general data gathered included name of the buyer, age, sexual orientation, area, training, nature, size and organization of family, occupation, family wage and sustenance propensity.

The particular data evoked incorporated the data relating to near inclination of the customers for marine fish and marine fish items, factors affecting shoppers choice to buy marine fish and marine fish items, place of utilization, chief with respect to buy of fish, types of fish, place of procurement, recurrence of procurement, amount per buy, cost paid per buy, favored types of marine and marine fish items and issues the buyers go over in obtaining, putting away and use of fish.

3.2.2 Nature and sources of data

Essential information was gathered from the two shoppers and retailers utilizing a pre-tried organized calendar.

3.3 Analytical tools

To fulfill the specific objectives of the study, based on the nature and extent of the data, the following analytical tools and techniques were used.

3.3.1 Descriptive statistics

3.3.2 Garrett’s Ranking Technique

3.3.3 Factor analysis

3.3.1 Descriptive statistics

These were used to describe the basic features of data gathered from various sources. They provide simple summaries about the sample and following measures like averages, ratios, percentages etc. in the study.

3.3.2 Garrett's Ranking Technique

Garrett's ranking technique was used to rank the factors influencing the purchase of marine fish and marine fish products by consumers, based on their importance. The order of the merit given by the consumers was converted into per cent position using the formula.

$$\text{Per cent position} = 100^{*} (Rij-0.5)/Nj$$

where,

R_{ij}= Rank given for i^{th} item by j^{th} individual

N_j= Number of items ranked by j^{th} individual.

The per cent position of each rank then converted into scores referring to the Table given by Garrett and Woodworth (1969). For each factor, the scores of individual respondents were added together and divided by the total number of the respondents for whom scores were added. These mean scores for all the factors were arranged in descending order, ranks were given and the most important factors were identified.

3.3.3 Factor analysis

Factor analysis is a statistical method used to describe variability among 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 modelled 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.

3.3.3.1 Factor analysis is used in following cases

To identify underlying factors that explain the correlation among a set of variables. A set of statements can be used to measure the profile of consumers. These statements may be then factor analyzed to identify the underlying factors. To identify a new, smaller set of uncorrelated variables and replace the original set of correlated variables in the subsequent multivariate analysis (Regression/Discriminant analysis).

3.3.3.2 Factor analysis model

$$Xi = Ai1F1 + Ai2F2 + Ai3F3 + \ldots\ldots\ldots\ldots\ldots + AimFm + ViUi$$

Where,

Xi= ith standardized variable

Aij= standardized multiple regression co-efficient of the variable on common factor j

F= common factor

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

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.

$$Fi = Wi1X1 + Wi2X2 + Wi3X3 + \ldots\ldots\ldots\ldots\ldots\ldots\ldots + WikXk$$

Where,

Fi= estimate of i^{th}factor

Wi= weight or score of co-efficient

k= number of variables

It is possible to select weight or factor score co-efficient so that the first factor explains the largest portion of the total variance. Then, a 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 principle can be applied for selecting additional weights for the additional factors.

Definitions

Bartlett's test of sphericity

It is a test statistic used to examine the hypothesis 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 to see which pairs have the highest correlation. It is a lower triangle matrix showing the simple correlation r, between all possible pairs of variable included in the analysis. The diagonal elements which are all 1 are usually omitted

Factor scores

Factor scores are composite scores estimated 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 interpreting and labeling the factors. It measures how closely the variables in the factor are associated. It is also called 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 corresponding to the factor. Eigen values are calculated by adding the squares of factor loading of all the variables in the factor. It aids in explaining the importance of

the factor 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 explained by the factors extracted. It is denoted by h2 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 calculated by adding the squared factor loadings of all the variables and dividing it by the number of variables.

IV RESULTS AND DISCUSSION

Keeping the objectives in view, the results of the study are presented and discussed under the following headings.

4.1 Socio-economic characteristics of respondents

4.2 Document different types of Marine fishes and fish products available in the market

4.3 To assess the preference of consumers on different types of market outlets

4.4 To identify the constraints faced by the retailers of fish and fish products

4.1 Socio-economic profile of fish consumers in Mangaluru city

The demographic characters examined in the Table 1 incorporate socio-economic aspects such as age, gender, educational levels, type of family, size of the family, occupation and an annual income of the family. The demographic characteristics of households are essential when analyzing the primary data because such factors influence the consumer preference for purchase of marine fish and fish products in Mangaluru city. The socio-economic characteristics of respondent consumers is presented in Table1 and explained under the following headings.

4.1.1 Age of respondents

The distribution of the respondents according to their age is presented in table 1. The age wise classification of the respondents showed that 53.33 per cent of respondents belonged to age group 25 to 40 years, followed by age group below 25 years (36.67%) and age group between 40-50 years (5.55%). The remaining respondents were under the age group of 50 years and above (4.45%).

4.1.2 Gender of the respondents

The distribution of the respondents according to their gender is presented in the table 1. The gender wise classification of the respondents shown that 76.67 per cent of respondents were female and remaining 23.33 per cent of the respondents were male.

Through this data we could conclude that majority of the consumers were females as females are those usually who shop groceries for their household.

4.1.3 Literacy levels of the respondents

Education plays a key role in enhancing an individual knowledge of the members. Education is one of the major determinants of respondents in accessing to market. The literacy levels of the respondents reveals that 27.78 per cent of the consumers were graduates and 26.67per cent respondents had studied upto PUC, 24.44 per cent of the were post graduates. There were respondents who studied secondary education of about 14.44 per cent and the least per cent of respondents had completed primary education and it consisted of 6.67 per cent. From the Table 1 we can say that majority of the consumers were graduate which means that consumers in the study area were educated. Education was given priority in the study area.

4.1.4 Occupational status of the respondents

The occupation patterns of the consumers revealed that 28.89 per cent of the respondents were government employees followed by 24.44 per cent of the respondents were private employees. Homemakers consists of 21.11 per cent and self-employed consists of 16.67 per cent. Students were only 8.89 per cent.

4.1.5 Type of family

The type of family of the respondents revealed that majority (78.00 %) of them were living in nuclear families consisted of husband wife and children. The remaining 22.00 per cent have joint families. The joint families consists of more than one nuclear family that includes grandparents, uncles, aunts and cousins. This indicated that the respondents in the study area are in modern mode of society.

4.1.6 Size of the family

The family size of the majority respondents ranged between 4 to 5 (60.00%). Some families consisted of only father mother and a child and it constitutes for 28.89 per cent and 6.67 per cent were between 6 to 7 family members followed by 4.44 per cent

with more than 7 members in a family. Through this data one can conclude that maximum size of the family in the sample respondents of Mangaluru city ranged between 4 to 5 family members.

4.1.7 Classification of respondents based on monthly income of the family

It could be observed from the Table 1 that, the monthly family income of 66.67 per cent of the respondents was ranging between Rs. 10,001 and Rs.50,000, followed by 17.78 per cent in the range of Rs.50,000 - Rs.1 lakh. The respondents with low monthly family incomes in the range of Rs. 5000 to Rs. 10000 was about 13.33 per cent and 2.22 per cent of the respondents were with annual income more than Rs. 1 lakh.

4.1.8 Monthly expenditure on food

Table 1 shows that the monthly expenditure of majority families is between 5,000 and 10,000 (45.56%), followed by the monthly expenditure on food between 10,001 and 15,000 (21.11%), followed by the expenditure on food above 20,000 (17.78%). Only 15.55 per cent of the respondents spent between 15,001 and 20,000 on food per month.

4.1.9 Monthly expenditure on fish

Amount spent per month by sample respondents was found that 32.22 per cent of the respondents spent 501 to 1000 Rs. per purchase on fish consumption, 26.67 per cent less than 500 Rs., 16.67 per cent spent 1001 to 1500 Rs., 13.33 per cent spent Rs.1501 to 2000, 6.67 per cent of the consumers spent Rs. 2001 to 3000 Rs. Per purchase and only 4.44 per cent of the consumers spent more than 3000 Rs. The amount paid towards purchase of fish per transaction is a function of the quantity purchased. Infact, the expenditure incurred per transaction is directly proportional to the quantity of fish purchased. Hence, the respondents incurred expenditure in relation to the quantity of fish purchased per transaction.

Table 1: Socio economic characteristics of marine fish consumers in Mangaluru city

(n=90)

Sl. No.	Particulars	Frequency	Percentage
1.	**Age group (in years)**		
a)	< 25	33	36.67
b)	26- 40	48	53.33
c)	41-50	5	5.55
d)	>50	4	4.45
Total		**90**	**100**
2.	**Gender**		
a)	Male	21	23.33
b)	Female	69	76.67
Total		**90**	**100**
3.	**Literacy Level**		
a)	Primary	6	6.67
b)	High school	13	14.44
c)	PUC	24	26.67
d)	Graduate	25	27.78
e)	Post-graduate	22	24.44
Total		**90**	**100**
4.	**Occupation**		
a)	Government Employee	19	28.89
b)	Private Employee	31	24.44
c)	Self-employed	8	16.67
d)	Student	20	8.89
e)	Housewife	12	21.11
Total		**90**	**100**
5.	**Type of family**		
a)	Nuclear	70	78.00
b)	Joint	20	22.00
Total		**90**	**100**

Sl. No.	Particulars	Frequency	Percentage
6.	**Size of family**		
a)	< 3	26	28.89
b)	4-5	54	60.00
c)	6-7	8	6.67
d)	**>7**	2	4.44
Total		**90**	**100**
7.	**Family income per month**		
a)	5000-10000	12	13.33
b)	10001-50000	60	66.67
c)	50001-100000	16	17.78
d)	>100000	2	2.22
Total		**90**	**100.00**
8.	**Monthly amount spent on food**		
a)	5000-10000	41	45.56
b)	10001-15000	19	21.11
c)	15001- 20000	14	15.55
d)	Above 20000	16	17.78
Total		**90**	**100**
9.	**Monthly amount spent on fish**		
a)	<500	24	26.67
b)	501- 1000	29	32.22
c)	1001- 1500	15	16.67
d)	1501- 2000	12	13.33
e)	2001- 3000	06	6.67
f)	>3000	04	4.44
Total		**90**	**100**

Socio-economic characteristics of marine fish retailers in Mangaluru city

Table 2: Socio-economic characteristics of sample retailers of Mangaluru city

(n=20)

Sl. No.	Particulars	Frequency	Percentage
1.	**Age group (in years)**		
a)	Up to 40	5	25.00
b)	41 to 50	9	45.00
c)	Above 50	6	30.00
Total		**20**	**100**
2.	**Literacy level**		
a)	Illiterate	4	20.00
b)	High school	6	30.00
c)	PUC	5	25.00
d)	Under graduation	5	25.00
Total		**20**	**100**
3.	**Experience in marketing**		
a)	Up to 10 years	10	50.00
b)	11 years to 20 years	6	30.00
c)	>20 years	4	20.00
Total		**20**	**100**

From the Table 2, we can notice that 45.00 per cent of the sample retailers were of the age group of 41 to 50 years, 30 per cent of the sample retailers were of the age group above 50 years and 25 per cent of the sample retailers were up to the age of up to 40 years.

Details pertaining to the literacy level in table 2 revealed that 30 per cent of the respondents had completed high school and 25 per cent of the respondents had completed PUC and under-graduation. Whereas, the remaining 20 per cent were illiterate.

From table 2 we can notice that fifty per cent of the respondents had experience in marketing up to 10 years, 30 per cent of the respondents had experience from 11 to 20 years and 20 per cent had more than 20 years of experience.

4.2 Document different types of marine fishes and fish products available in the market

List of different types of Marine fishes and fish products which are available in Mangaluru city market is listed below.

4.2.1 Different types of Marine Fishes

Different types of marine fishes available in Mangaluru city are Sardine, Mackerel, Seer fish, Silver fish, Lactareous, Crab, Sole, Black Pomfret, White Pomfret, Squid, Lady fish, Pink Perch, White Prawns, Brown Prawns, Tiger Prawns, Pearl spot, Cat Fish, Butter Fish, Tuna, Sea bass, Grey Millet, Red Snaper, Indian Salomon, Mud Crab, Baracuda, Shark. Consumers of Mangaluru are very found of fishes when compared to other meat products, since it is the main fishing hub of Karnataka. Fishes like Sardine and Mackerel are cheaply available and available in almost all seasons and it is almost the staple food for people of Mangaluru.

4.2.2 Different types of fish products available in the market

Different types of marine fish products available in the market was fish fingers, dried fishes, fish pop corns fish chutney, prawns fish pickles, dried fish strips.

4.3 The preference of consumers on different types of market outlets

From table 3 it was observed that 61.11 per cent of the consumers were purchasing the marine fishes regularly from the local market. Fifty per cent of the consumers were purchasing marine fish from the vending shops occasionally. The consumers from fish landing centers purchased fishes occasionally i.e., 54.44 per cent and more than one third (61.11 %) of the consumers purchases fishes fortnightly from the supermarket whereas 52.22 per cent of the consumers purchases fishes occasionally from the push carts.

Table 3: Consumers preference on different types of market outlets

(n=90)

Sl. No.	Particulars	Frequency	Percentage
1.	**Local fish market**		
a)	Twice in a week	55	61.11
b)	Once in a week	32	35.56
c)	Fortnightly	3	3.33
Total		**90**	**100.00**
2.	**Fish vending shops**		
a)	Twice in a week	15	16.67
b)	Once in a week	45	50.00
c)	Fortnightly	30	33.33
Total		**90**	**100.00**
3.	**Fish landing centers**		
a)	Twice in a week	9	10.00
b)	Once in a week	49	54.44
c)	Fortnightly	32	35.56
Total		**90**	**100.00**
4.	**Supermarkets**		
a)	Twice in a week	11	12.22
b)	Once in a week	24	26.67
c)	Fortnightly	55	61.11
Total		**90**	**100**
5.	**Push carts**		
a)	Twice in a week	8	8.89
b)	Once in a week	47	52.22
c)	Fortnightly	35	38.89
Total		**90**	**100**



Sardine



Mackerel



Seer fish



Silver fish



Lactareous



Sole



Squid



Lady fish



Pink Perch



Pearl Spot



Baracuda



Tiger Prawns

Plate 1: Different types of marine fishes available in Mangaluru city



Fish Fingers



Dry Fish



Prawns Chutney



Fish popcorn



Fish pickle

Plate 2: Different types of marine fishes available in Mangaluru city

4.3.1 Factors influencing source of purchase and response in case of non-availability of preferred fish species by the consumers of Mangaluru city

Table 4: Factors influencing the source of purchase and response in case of non-availability of preferred fish species

(n=90)

Sl. No.	Particulars	Frequency	Percentage
1.	**Factors influencing source of purchase of fish**		
a)	Proximity	13	14.44
b)	Available in fresh form	43	47.78
c)	Available in processed form	11	12.22
d)	Available of preferred species	23	25.56
Total		**90**	**100.00**
2.	**Response in case of non-availabity of preferred fish species**		
a)	Purchase other species	40	44.44
b)	Don't purchase	22	24.44
c)	Switch over to other meat products	28	31.12
Total		**90**	**100**

The factors influencing source of purchase of fish by sample consumers is furnished in Table 4. The Table revealed that majority of the fish consumers preferred to purchase fish in fresh form by the respondents (47.78 %) followed by available of preferred species (25.56 %), proximity of the outlet (14.44 %) and available in processed form (12.22 %). The availability of fish in fresh form was the major factor for about 36 per cent of the consumers. As fish is highly perishable in nature, its availability in fresh form also influenced the source of purchase of fish. Availability of preferred species was also a major factor since there are a variety of fishes available and even the taste of each fish varies due to which each family has their own preference.

From the data collected by the sample respondents it was found that the demand for a particular good determines its supply in the market. With regard to the response by

consumers in the event of non-availability of the preferred species at the time of purchase, about 44.44 per cent of them bought the species available as per the advice of vendors and 31.12 per cent of the respondents switched to other meat products while the rest, i.e., around 24.44 per cent of them did not purchase the species available. This clearly indicates that most of the fish consumers who couldn't find the preferred fish species in the market at the time of purchase were not actually very particular about the preferred species and bought the species available at that particular time.

Table 5: Factors influencing purchase of marine fishes by consumers' in Mangaluru city

(n=90)

Sl. No.	Factors affecting purchase of fish	Mean Garrett's score	Rank
1.	Unique taste	68.34	I
2.	Easy availability	66.51	II
3.	Availability in fresh condition	59.06	III
4.	Price	52.49	IV
5.	Traditionally used Fishes	50.77	V
6.	Size	49.28	VI
7.	Easy to clean	44.34	VII
8.	Locally produced from the deep sea fishes	41.53	VIII
9.	Appearance	41.28	IX
10.	Scale / finlets	39.40	X
11.	Typical smell	36.07	XI

Factors influencing the purchase of marine fishes by sample consumers was depicted in Table 5. Based on the Mean Garrett's score, the unique taste of the fish was ranked first by the consumers with a score of 68.34 followed by the factors, viz., easy availability (Garrett's score of 66.51), availability in fresh conditions (Garrett's score of 59.06), price (Garrett's score of 52.49), traditionally used fishes (Garrett's score of 50.77), size of the fish (Garrett's score of 49.28), easy to clean (Garrett's score of 44.34), locally produced from the deep sea fishes (Garrett's score of 41.53), appearance

(Garrett's score of 41.28), scale/finlets (Garrett's score of 39.40) and typical smell (Garrett's score of 36.07). Fish is one of the most delicious non-vegetarian food available and hence, naturally unique taste was the most important factor which influenced its consumption. The second important factor influencing fish consumption was easy availability, indicating the growing sedentary lifestyle among people in the cities, where people anticipate their tasks to be accomplished quickly without risk. The other factors which influenced the purchase of fish were availability in fresh condition, price, and traditionally used food, size, easy to cook. Generally, price is an important factor influencing the purchase of a good. The last factor was typical smell.

Table 6: Factors promoting increased consumption of marine fish in Mangaluru city

(n=90)

Sl. No.	Factors	Mean Garrett's score	Rank
1.	Reasonable price	59.74	I
2.	Information about its nutrients	59.63	II
3.	Species with less bones	56.49	III
4.	Proximal availability	47.28	IV
5.	Information about fish recipes	47.12	V
6.	Odourlesness	45.27	VI
7.	Information about its source	45.11	VII
8.	Enhanced shelf life	38.91	VIII

The opinion of consumers with regard to factors that would promote increased consumption of marine fish was depicted in Table 6. Based on the mean Garrett's score, reasonable price of fish was ranked first with a score of 59.74, followed by the factors, viz., information about its nutrients (Garrett's score of 59.63), species with less bones (Garrett's score of 56.49), proximal availability of fish (Garrett's score of 47.28), information about fish recipes (Garrett's score of 47.12), odourlesness (Garrett's score of 45.27), information about its source (Garrett's score of 45.11) and enhanced shelf-life of fish (Garrett's score of 38.91). Reasonable price was the most important factor. It is a well-known fact that the demand for a good is inversely proportion to its price and hence,

reasonable prices of fish would promote increased consumption. The second most important factor was information about its nutrition. Fish being rich in proteins and omega-3 fatty acids, has its own unique health benefits. Hence, enriching the consumers' knowledge about the nutritional value of fish would promote enhanced consumption of fish. However you can see that there is only slight score difference between reasonable price and information about its nutrition, which means that these are the two factors which goes hand in hand with each other. The third important factor was species with less bones. Generally, most fish species contain lot of bones and hence, is a hindrance to easy consumption, especially, for kids. Therefore, fish species with relatively less bones would definitely promote enhanced consumption.

Table 7: Details regarding purchase of marine fishes and fish products by consumers in Mangaluru city

(n=90)

Sl. No.	Particulars	Frequency	Percentage
1.	**Time of purchase**		
a)	Morning	51	56.67
b)	Afternoon	15	16.67
c)	Evening	24	26.66
Total		**90**	**100.00**
2.	**Frequency of purchase**		
a)	Daily	14	16.00
b)	Weekly	60	66.66
c)	Fortnightly	12	13.33
d)	Monthly	4	4.00
Total		**90**	**100.00**
3.	**Quantity / purchase**		
a)	<1.50	43	47.78
b)	1.51- 3	33	36.67
c)	> 3	14	15.56
	Total	**90**	**100.00**

Table 7 presents the details of time of purchase, frequency of purchase, quantity per purchase and amount spent per month for consumption of fish by sample consumers. Majority (56.67%) of the consumers preferred morning for purchase of fish, followed by evening (26.66%) and 16.67 per cent in the afternoon. From this Table we can say that morning is the mostly preferred time to purchase fishes as they get fresh fishes directly from the retailers. Evening are next preferred as the retailers purchase fishes from the fish centers two times a day once in the morning and next in the evening, so consumers when returning back from office prefer to purchase fresh fishes.

Frequency of purchase of fishes by sample consumers was found that 66.66 per cent of the consumers preferred weekly purchase, 16.00 per cent daily purchase, 13.33 per cent fortnightly and lastly monthly consumption by only 4.00 per cent. The respondents opined that since fish is a nutritious food, rich in proteins and omega-3 fatty acids, they consumed regularly. The consumption pattern of the consumers endorses the importance of fish in their dietary habits.

Quantity per purchase by the sample consumers also found that 47.78 per cent of the consumers purchased less than 1.50 kgs per purchase, 36.67 per cent of them purchased between 1.51 and 3 and only 15.56 of them purchased more than 3kgs per purchase. This may be due to the fact that majority (78.00%) of the families of consumers were nuclear in nature and hence, purchased quantities of up to or less than 1.50 kgs of fish which was ideal quantity for their consumption.

4.3.2 Time and place of consumption by consumers in Mangaluru city

With regards to the time of consumption, it is seen that 42.22 per cent of the consumers preferred to consume in the afternoon, 40.00 per cent of the consumers preferred to consume at night and the rest i.e., 17.78 per cent preferred to consume fish in the morning.

With respect to the place of consumption of fish by consumers, it was found that majority (54.44%) of the consumers consumed fish only at home, 42.22 per cent consumed at home as well as outside (restaurants and functions) while the remaining

(3.33%) consumers consumed fish only outside. Fish consumption at home might be time taking but the preferred style of preparation and the preferred taste can be prepared only at home. Since, most of the traditionally prepared fishes are prepared from earthen pots which give dishes authentic taste which makes it special when prepared at home.

Table 8: Time and place of consumption by consumers in Mangaluru city

(n=90)

Sl. No.	Particulars	Frequency	Percentage
1.	**Time to consume**		
a)	Morning	16	17.78
b)	Afternoon	38	42.22
c)	Night	36	40.00
Total		**90**	**100.00**
2.	**Place of consumption**		
a)	At home	49	54.44
b)	Outside	3	3.33
c)	At home as well as outside	38	42.22
Total		**90**	**100.00**

Table 9: Decision maker in the family regarding purchase of Marine fishes in Mangaluru city

(n=90)

Sl. No.	Particulars	Frequency	Percentage
1.	**Decision maker in the family**		
a)	Parents	55	61.11
b)	Children	26	28.89
c)	Grand parents	9	10.00
Total		**90**	**100.00**

In majority (61.11 %) of the families, the parents were the decision-maker with respect to purchase of fish, followed by kids (28.89 %), and grandparents (10.00 %). It is quite obvious in the Indian families parents are the decision makers. In addition, the children also play an important role in decisions pertaining to choice of their food at home. As usual, the role of grandparents is limited in decision-making.

Table 10: Preferred varieties of marine fishes by consumers in Mangaluru city

(n=90)

Sl. No.	Fish varieties	Mean Garrett's score	Rank
1.	Sardine	61.68	I
2.	Mackerel	61.66	II
3.	Seer Fish	57.37	III
4.	Prawns	56.28	IV
5.	Crab	48.97	V
6.	Squid	48.73	VI
7.	Clams	46.71	VII
8.	Silver Fish	45.92	VII
9.	Pomfret	42.22	IX
10.	Lady Fish	33.37	X

The preferred varieties of Marine fishes by consumers in Mangaluru city shows mean Garrett's score was depicted in Table 10. Sardine was ranked first by the sample consumers with the score of 61.68, followed by viz., Mackerel (Garrett's score of 61.66), Seer fish (Garrett's score of 57.37), Prawns (Garrett's score of 56.28), Crab (Garrett's score of 48.97), Squid (Garrett's score of 48.73), Clams (Garrett's score of 46.71), Silver Fish (Garrett's score of 45.92), Pomfret (Garrett's score of 42.22), Lady fish (Garrett's score of 33.37). From this data we remark that Sardine and Mackerel are closely ranked as they are mostly used by the sample Consumers since it is easily available at all seasons and the price of these fishes is comparatively cheaper than other fishes. Sardine and Mackerel are traditionally used fishes widely in Mangaluru. Seer fish and Prawns is

ranked third and fourth respectively as it is very tasty and popular, it is very expensive too and it is seasonal in nature.

Table 11: Per capita consumption per month of preferred varieties of marine fishes by consumers in Mangaluru city

(n=90)

Sl. No.	Fish varieties	Average per capita consumption (in Kgs)
1.	Sardine	4.55
2.	Mackerel	3.74
3.	Seer Fish	1.55
4.	Prawns	1.25
5.	Crab	1.05
6.	Squid	0.79
7.	Clams	0.61
8.	Silver Fish	1.60
9.	Pomfret	0.59
10.	Lady Fish	0.36

From the table 11, it is clear that Sardine is consumed more when compared to other marine fish varieties i.e 4.55 kgs per month followed by Mackerel which is 3.74 kgs per month followed by Seer fish (1.55 kgs/month), Prawns (1.25 kgs/ month), Crab (1.05 kg/ month), Squid (0.79kg/month), clams (0.61 kgs/ month), Silver fish (1.60 kgs/ month), Pomfret (0.59 kgs/ month) and Lady fish (0.36 kgs/ month)

Table 12: Preferred marine fish products by consumers in Mangaluru city

(n=90)

Sl. No.	Marine fish products	Mean Garrett's score	Rank
1.	Dried fish	61.89	I
2.	Chutney	56.09	II
3.	Pickle	51.76	III
4.	Fish oil	30.27	IV

From the Table 12, we can get to know the preference of sample consumers on Marine fish products which is widely used in the region. Dried fish was ranked first by the sample consumers with Garret's score of 61.89, followed by viz., Chutney (Garrett's score of 56.09), Pickle (Garrett's score of 51.76) and fish oil (Garrett's score of 30.27). From this we can notice that Dried fish was used extensively as it was used as an alternative of raw fish in case not available. Chutney was prepared in home itself and it is also used extensively. Fish oil is used in cases only for kids in case of malnutrition as suggested by the Doctors.

Common barriers of consumption of fish by consumers in Mangaluru city

Table 13.1: KMO and Bartlett's test for variance among factors

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.520
Bartlett's Test of Sphericity	Approx. Chi-Square	98.947
	Df	45
	Sig.	0.000

Table 13.2: Rotated factor matrix for common barriers of consumption of fish by consumers

Sl. No.	Rotated Component Matrix[a]				
	Particulars	Components			
		1	2	3	4
1.	Price of the product	0.187	**0.576**	-.134	.009
2.	Smell	.001	**0.768**	.106	.017
3.	Bones	-.031	.451	.068	**0.730**
4.	Bad taste	-.024	.220	**-0.756**	-.082
5.	Unavailability of preferred varieties	-.237	.370	.469	.233
6.	Preparation difficulties	**0.584**	.341	.138	.009
7.	Preparation time	.082	.116	**0.717**	-.079
8.	Preservation	**0.738**	.135	-.155	.094
9.	Freshness	**0.843**	-.162	.092	.011
10.	Difficulties In assessing the quality	.135	-.186	.005	**0.866**

The common barriers of consumption of fish were analysed using factor analysis. In factor analysis, the first step is to check the adequacy of factor analysis with the help of Kaiser-Meyer-Olkin (KMO) measure and Bartlett's Test.

In this study, the KMO measure was 0.520 which revealed that the factors extracted will account for moderate amount of variance. The chi-square value for Bartlett's test was significant and therefore, rejecting the null hypothesis of homogeneity in variance among variable.

Eigen values greater than one was considered for determining the common barriers of consumption of fish by consumers. With the help of Cattell's scree plot the factors were determined. Four factors had Eigen values greater than one, thus these factors were considered.

The rotated factor matrix for common barriers of consumption of fish by consumers in Mangaluru city. It can be observed from the table that quality dimension was loaded with factor 1, while price and smell dimension was significantly loaded on factor 2. Taste dimension were loaded on factor 3, while "bones" and "difficulties in assessing quality" was loaded in factor 4. Thus, it can be inferred from table that factor 1 labeled as "quality dimension", collects variables with higher loadings which includes variables preparation difficulties, preservation and freshness A high score on this factor reveals the common barriers of marine fish products consumption.

4.4 Constraints faced by the retailers of Fish and Fish products

The major constraints faced by organized retailers in shown in the Table 14. High transportation and storage costs was ranked one from the Garrett's mean score of 84.50, no bargaining allowed (Garrett's score of 70.67), low demand from costumers staying away from the vicinity (Garrett's score of 59.17), handling and storage costs (Garrett's score of 58.33), lack of regular buyers (Garrett's score of 56.17), bulk buyers or institutional buyers preferring traditional outlets (Garrett's score of 46.50), old aged customers prefer traditional outlets (Garrett's score of 46.00), lack of personalized services to the consumers(Garrett's score of 42.33), high labor costs (Garrett's score of

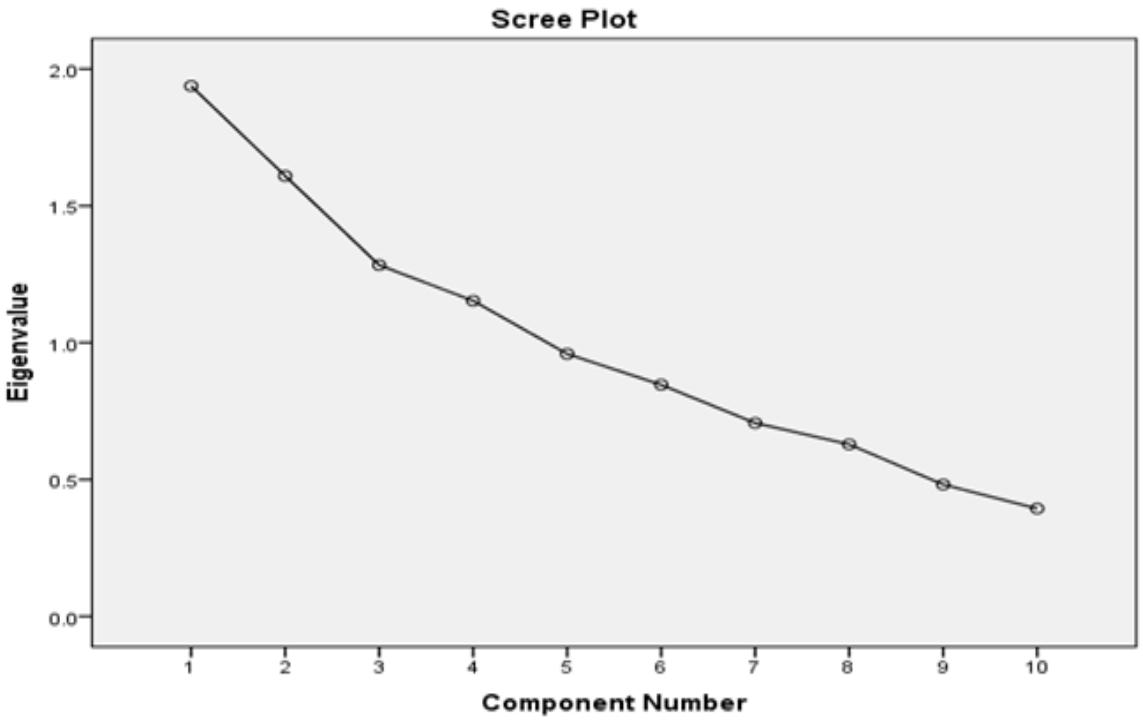


Fig. 2: Cattel's Scree plot for barriers of consumption of fish and fish products in Mangaluru city

39.50) and lack of personal relationship with the customers (Garrett's score of 17.83). The results revealed that high transportation and storage cost was the major constraint for the retailers as fish needs lot of sophisticated mode of transport and since fish is highly perishable retailers need to have cold storage or icing facility. the second major constraint was no bargaining allowed since modern type of retailers do not entertain bargaing and have fixed costs, the consumers prefer to purchase in traditional outlets as the retailers give them discounts. Customers who stay in and around retail outlets prefer buying fish in their particular outlets as it is more convenient and do not prefer to go to a next area and buy fishes as it is time consuming for them. Handling and storage costs are very high for the modern retailers as the retailers have to pay huge amount for the maintenance charges.

Table 14: Constraints faced by organized retailers in Mangaluru city

(n=10)

Sl. No.	Constraints	Mean Garrett's score	Rank
1.	High transportation and storage cost	84.50	I
2.	No bargaining allowed	70.67	II
3.	Low demand from customers staying away from the vicinity	59.17	III
4.	Handling and storage costs	58.33	IV
5.	Lack of regular buyers	56.17	V
6.	Bulk buyers/ Institutional buyers preferring traditional outlets	46.50	VI
7.	Old aged customers prefer traditional outlets	46.00	VII
8.	Lack of personalized services to the customers	42.33	VII
9.	High labour costs	39.50	IX
10.	Lack of personal relationship with the customers	17.83	X

Table 15: Constraints faced by traditional retailers in Mangaluru city

(n=10)

Sl. No.	Constraints	Mean Garrett's score	Rank
1.	Low volume of sales due to high competition	60.22	I
2.	Threat from modern retailers	59.56	II
3.	lack of good ambience	58.89	III
4.	Increased icing and transportation cost	56.11	IV
5.	Price fluctuations	54.22	V
6.	Inconsistent supply of fish	52.33	VI
7.	Standardization in quality and grading is very difficult	50.00	VII
8.	Variation in business in terms of day to day volume	47.78	VII
9.	Quality deterioration during procurement	47.11	IX
10.	Lack of sufficient storage facility	45.89	X
11.	Taste of marine fishes vary	45.67	XI
12.	High bargaining done by customers	43.22	XII
13.	Quantity wasted during procurement	42.78	XIII
14.	Lack of continuity in supply	42.33	XIV
15.	Absence of wide range of fish species	39.56	XV

The major constraints faced by traditional retailers are given in the Table 15. Low volume of sales due to high competition was ranked first and the Garrett's mean score was 60.22, threat from modern retailers(Garrett's score of 59.56), lack of good ambience (Garrett's score of 58.89), increased icing and transportation cost (Garrett's score of 56.11), price fluctuations(Garrett's score of 54.22), inconsistent supply of fish (Garrett's score of 52.33), standardization in quality and grading is very difficult (Garrett's score of 50.00), variation in business in terms of day to day volume(Garrett's score of 47.78), quality deterioration during procurement (Garrett's score of 47.11), lack of sufficient storage facility (Garrett's score of 45.89), taste of marine fishes vary (Garrett's score of 45.67), high bargaining done by customers (Garrett's score of 43.22), quantity wasted

during procurement (42.78),lack of continuity in supply(Garrett's score of 42.33), absence of wide range of fish species (Garrett's score of 39.56).

The results revealed that low volume of sales due to high competition Is one of the major constraints, there are many fish vending shops nearby which makes it difficult for the retailer. Threat from modern retailers was the second factor. Consumers who are young prefer supermarkets as it is more convenient as fishes will be in cleaned which reduces consumers extra effort to prepare fishes. Lack of good ambience is also the third main factor as only old consumers prefers traditional outlets and young consumers always prefer modern outlet as the ambience in modern outlet will be good when compared to traditional outlet.

V SUMMARY AND SUGGESTION

Fishes are aquatic vertebrates which respire with gills and lack limbs with digits. It is believed that fishes came to planet before 415 million years. A chance discovery in 1955 revealed an extensive fossil bed dating from Devonian Period. This 360-370 million years old fossil deposit contains the remains of thousands of freshwater fish.

Fish is one of most essential creature wellspring of nourishment for a sound eating regimen. It is high in lysine and sulfur amino acids which makes it especially appropriate for supplementing the high-starch diet winning in quite a bit of India. Besides, it is anything but difficult to process because of absence of connective tissue.

Fish likewise has an incentive as a vitality source. It tends to be hard to get adequate vitality from rice and other massive starches, particularly for little kids. With its high supplement thickness, fish can make an essential commitment to the vitality supplies of individuals in danger of lack of healthy sustenance.

Aside from the particular supplements fishes can give various unmistakable characteristics, similar to taste and surface, effortlessly cooked and promptly processed. As enhancing, it can make rice and other dull sustenances more palatable and subsequently advance their utilization in bigger amounts. Fish decreased to a glue or powder frame can be exceptionally helpful as a protein-rich weaning nourishment.

The present investigation is an unobtrusive endeavor to examine the profile of fish buyers; factors affecting the buy of fish by shoppers; buy conduct of fish buyers; and the requirements looked by fish retailers. The examination is restricted to a nitty gritty enquiry of customers' inclination for marine and marine fish items in Mangaluru city. The study is confined to a detailed enquiry of consumers' preference for marine and marine fish products in Mangaluru city. The specific objectives of the present study are as follows.

1) To document different types of marine fishes and marine fish products available in the market,

2) To analyse the socio-economic factors influencing the purchase of fish and fish products,

3) To assess preferences of consumers to buy fish and fish products from different type of market outlet

4) To identify the constraints faced by the retailers of fish and fish products.

For the study, a sample of 90 respondents was purposively selected. The data regarding consumer preference for marine fish and fish products was collected using a pre-tested structured schedule. The simple random sampling method was used to select the respondents from different localities in Mangaluru city. The data collected for the study was analyzed using factor analysis and garrets ranking.

The general information regarding socio economic characteristics, data regarding specific objectives like, factors influencing the purchase of fish and fish products, were collected from respondents randomly by personal interview method. Further 20 retailers were selected to identify the constraints faced by the retailers of fish and fish products in Mangaluru city.

5.1 Major findings of the study

1. Majority of the consumers belonged to the age group of 26-40 years.
2. The level of female consumers acquiring marine fish and fish items is marginally higher (76.67 %) contrasted with male purchasers (23.33 %).
3. All the consumers were literates with education level extending from elementary school to post graduation. About 27.78 per cent of the buyers were graduates.
4. 28.89 per cent of the consumers were Government representatives pursued by 24.44 per cent of shoppers were private employees. Almost 21.11 percent were Homemakers and 16.67 percent were independently employed. The rest (8.89 %) were understudies.
5. Majority (78.00 %) of the consumers belongs to nuclear families.
6. The family size of the consumers' extended between 4 and 5 i.e. 60 per cent.

7. 66.67 per cent of consumers' income was between Rs. 10,001 - Rs.50, 000 every month.
8. 45.56 per cent of consumers' use was going between Rs. 5000-10,000 every month.
9. Amount spent per month on fish by sample respondents was found that 32.22 per cent of the respondents spent Rs. 501 to Rs.1000.
10. Majority of the customers purchased other fish species (44.44%) in case of non-availability of preferred fish species
11. Majority of the retailers belonged to the age group of 41-50 years.
12. 30 per cent of the retailers had finished their instruction level upto secondary school.
13. Majority of the retailers had 10 years of experience in marketing.
14. 61.11 per cent of the consumers' were acquiring the marine fishes frequently from the nearby market.
15. Half (50 %) of the consumers' were obtaining marine fish from the vending shops occasionally.
16. More than half (54.44 %) of the consumers were purchasing ocassionally from fish landing centers.
17. More than one third (61.11%) of the consumers purchased fishes rarely from the supermarket.
18. 52.22 per cent of the consumers' acquired the fishes once in a while from the push carts.
19. 47.78 per cent of the fish consumers preferred to purchase fish in fresh form.
20. With respect to factors impacting the purchase of marine fishes, the unique taste of the fish was positioned first by the consumers' with a mean Garrett's score of 68.34.
21. Among the various factors promoting increased consumption of Marine fish, reasonable price was the most important factor with mean Garrett's score of 59.74.
22. With respect to time of procurement, larger part (56.67 %) of the consumers favored morning to purchase fish.

23. With respect to recurrence of procurement, larger part (66.66 %) of the consumers bought fish on a week by week premise.
24. Majority (47.78 %) of the consumers' bought under 1.50 kgs of fish for every exchange.
25. With respect to the time of consumption, it is seen that 42.22 percent of the consumers liked to consume in the afternoon.
26. With respect to the place of consumption of fish, larger part (53.33 %) of the consumers consumed fish only at home.
27. In dominant part (61.11 %) of the families, the guardians were the chief decision makers in purchasing of fish.
28. Among the various preferred varieties of Marine fishes, the Sardine was ranked first by the sample consumers with the mean Garrett's score of 61.68.
29. Among the various preferred varieties of Marine fish products, the dried fish was ranked first by the sample consumers with the mean Garret's score of 61.89.
30. The high transportation and storage costs were the major constraint faced by the modern retailers which ranked first with a mean Garret's score of 84.50.
31. The Low volume of sales due to high competition was the major constraint faced by the traditional retailers which ranked first with a mean Garret's score of 60.22.

5.2 SUGGESTIONS

- The dietary data about fish and the proximal accessibility of fish were found to advance expanded fish utilization among shoppers
- Lack of good ambience in shops was the significant issue for greater part of the purchasers. Thus, sufficient mindfulness might be made among fish retailers about the significance of clean conditions in their premises.

VI REFERENCES

ABDUR RAZZAQ JOADDER, 2008, Socio-economic condition of fishermen of the "Mail Beel" under Mohanpur Upazila of Rajshahi district in Bangladesh. *Research Journal of Biological sciences,* **3**(10): 1178-1181.

ADAM DREWNOWSKI AND COLIN D REHM, 2015, Socio economic gradient in consumption of whole fruit and 100% fruit juice among US children and adults. *Nutrition Journal,* **14** (3): 1-9.

AKHI SARKER, MA SALAM AND KM SHAKIL RANA, 2017, Livelihood status of fish retailers and marketing system of three fish markets in Dinajpur district, Bangladesh. *International Journal of Fisheries and Aquatic Studies,* **5** (2): 647-651.

AKPINAR GOKSEL, M., 2012, Analysing the effects of consumers' demographic characteristics on the preferences of fresh fruit and vegetable supply chains. *African Journal of Agricultural Research,* **7** (9): 1442-1449.

AMATUL BASEER AND LAXMI PRABHA, G., 2007, Prospects and problems of Indian Retailing. *Indian journal of Marketing,* **37** (10): 7-12.

AMRITA SAHNEY, 2016, A study on consumer buying behavior towards branded retail outlets in India. *International Journal of Advanced Research and Development*, **1** (6): 25-28.

APU DAS, NALINI RANJAN KUMAR, BISWAJIT DEBNATH, DEBTANU BARMAN AND MANIK DATTA, 2013, Fish Consumers' Behaviour at Selected Fish Markets of Tripura, India**.** *Fishery Technology* **50**:185-190.

BALAJI, C. KARTHIKEYAN AND D. SURESHKUMAR, 2013, A study on problems faced by the consumers and retailers in modern and traditional retail store outlets in India. *International Journal of Commerce and Business Management*, **6** (2): 268-275.

CHANDRAPRABHA, S., 2012, Production and Marketing Dynamics of Tomato in Karnataka. *M.Sc. (Agri.) Thesis*,(unpublished) University of Agricultural Sciences, Bangalore.

DOMENICO CARLUCCI A., GIUSEPPE NOCELLA B, BIAGIA DE DEVITIIS C, ROSARIA VISCECCHIA C, FRANCESCO BIMBO D, AND GIANLUCA NARDONE C., 2015, Consumer purchasing behaviour towards fish and seafood products. Patterns and insights from a sample of international studies. *Appetite,* **82** ; 212-227.

DILIP KUMAR AND RAJEEV, P.V., 2014, Marketing Challenges of Handicrafts Retailers in Changing Environment. *International Journal Business Economics and Management Research*, **4** (10): 22-33.

ERIC O. GIDO, OSCAR I. AYUYA, GEORGE OWUOR AND WOLFGANG BOKELMANN, 2016,Consumer's choice of retail outlets for African indigenous vegetables: Empirical evidence among rural and urban households in Kenya. *Cogent Food & Agriculture*, **2**:1-14.

FLORKOWSKI, W.J., MENG, T. AND KLEPACKA, A.M., 2015 Consumption of fruit and vegetables: Influence of economic and socio-demographic factors in selected countries. *Acta Hortic.* 1088, 41-45.

FRIIS KARINA, JEPPE I. LYNG, MATHIAS LASGAARD, AND FINN B. LARSEN, (2014) Energy drink consumption and the relation to socio-demographic factors and health behaviour among young adults in Denmark. A population-based study. *European Journal of Public Health*, **24**(5): 840-844.

GHOSH P., TRIPPATHI V., KUMAR A., 2010, Customer expectations of store attributes: A study of organized retail outlets in India. *Journal of Business Research*,**3**(2): 77-83.

HASSAN ZULQARNAIN, ABAID ULLAH ZAFAR AND MOHSIN SHAHZAD, 2015, Factors that affect the choice of Consumers in selecting Retail Store, for Grocery Shopping. *International Journal of Multidisciplinary and Current Research*, **3**:1167-1172.

HAGHIRI MORTEZA, JILL E. HOBBS, AND MEAGHAN L. MCNAMARA, 2009, Assessing Consumer Preferences for Organically Grown Fresh Fruit and Vegetables in Eastern New Brunswick. *International Food and Agribusiness Management Review,* **12** (4): 81-100.

HARSHITHA, K.R., 2017, Consumer Preference for Processed Organic Food Products: A Case Study in Bengaluru city. *MBA (ABM) Thesis* (unpublished), University of Agricultural Sciences, Bangalore.

HYUN-JOO LEE AND ZEE-SUN YUN, 2014, Consumers' perception of organic food attributes and cognitive and affective attitudes as determinants of their purchase intentions towards organic food. *Food Quality and Preference,* **39:** 259-267.

IRIS VERMIER AND WIM VERBEKE, 2008, Sustainable food consumption among young adults in Belgium: Theory of planned behaviour and the role of confidence and values. *Ecological Economics,* **3** (64): 542-553.

JAFFER MOHAMED, A., 2002, Marketing of Banana in Theni District, *Ph.D. Thesis* (Unpublished) submitted to Madurai Kamaraj University, Madurai.

KUMAR, 2015, A study on consumer buying behaviour towards organized retail stores in Erode district, Tamil Nadu-India. *International Journal of Management Research & Review,* **5** (12): 1124-1133.

KYLIE BALL, KAREN E. LAMB, CLAUDIA COSTA, NICOLETA CUTUMISU, ANNE ELLAWAY, CARLIJN B. M. KAMPHUIS, GRACIELA MENTZ, JAMIE PEARCE7, PAULA SANTANA, RITA SANTOS, AMY J. SCHULZ, JOHN C. SPENCE,LUKAR E. THORNTON, FRANK J. VAN LENTHE5 AND SHANNON N. ZENK, 2015, Neighbourhood socioeconomic disadvantage and fruit and vegetable consumption: a seven countries comparison. *International Journal of Behavioural Nutrition and Physical Activity*, **68** (12): 1-13.

MANIDIP ROY, 2016, Fish Marketing in Tripura: Structure and Constraints. *Paripex - Indian Journal of Research,* **5**(2) : 183-184.

MECKI KRONEN, ALITI VUNISEA, FRANCK MARGON AND BRIAN MCARDLE, 2010, Socio-economic drivers and indicators for artisanal coastal fisheries in Pacific island countries and territories and their use for fisheries management strategies. *Marine Policy,* **34**(6): 1135-1143.

MEHMET FERIT CAN, AYTEKIN GUNLU AND HAYRIYE YESIM CAN, 2015, Fish consumption preferences and factors influencing it. *Food Science and Technology,* **35**(2): 1-11.

MUSABA. E. C AND M. NAMUKWAMBI, 2015, Socio-economic determinants of consumer fish purchase in Windhoek, Namibia .*African Journal of Agricultural Research*, **6**(6): 1483-1488.

MAKSUDA MANNAF AND MD. TAJ UDDIN, 2012, Socioeconomic factors influencing food security status of maize growing households in selected areas of Bogra district. *The Bangladesh Journal of Agricultural Economics*,**35**(2): 177-187

MOKSHA, V., 2016, An Analysis of Brand Preference and Market Share of Neem based Pesticide in Kolar district. *M.Sc. (Agri.) Thesis* (unpublished), University of Agriculture Sciences, Bangalore.

MONIKA TAKUR, 2016, A Study on Marketing of Packaged Drinking Water in Chandigarh city. *MBA (ABM) Thesis* (unpublished), University of Agricultural Sciences, Bangalore.

NICOLE DARMON, ADAM DREWNOWSKI, 2015, Contribution of food prices and diet cost to socioeconomic disparities in diet quality and health: a systematic review and analysis, *Nutrition Reviews*, **73**(10): 643–660.

NITHIN KUMAR, M. S., 2017, Consumers' preference for marine and inland fish- a study in Bengaluru city. *MBA (ABM) Thesis* (unpublished), University of Agricultural Sciences, Bangalore.

NWABUNIKE M. O., 2015, Constraints of Fish Marketing in Abakaliki Metropolis. International Journal of Fisheries and Aquatic Studies, **2**(4): 337-344.

PATIL, A.P., GAWANDE, S.H., NANDE, M.P., AND GOBADE, M.R., 2009, Constraints faced by the dairy farmers in Nagpur District while adopting animal management practices. *Veterinary World*, **2**(3): 111-112.

PATEL KHUSVANT, CHAUDHARY, G.M., GHASURA, R.S., AND ASWAR, B.K., 2015, Constraints Faced by Dairy Farm Women in Improved Animal Husbandry Practices of Banaskantha District of North Gujarat. *Indian Journal of Hill Farming*, **28**(2): 130-132.

RAVILOCHANAN AND B. SHYAMALA DEVI, 2012, Analysis of Customer Preference in Organized Retail Stores. *International Journal of Trade, Economics and Finance*, **3**(3): 209-212.

RAVIBHUSHANA, M., 2011, Value Chain Analysis of Potato – A Study in Karnataka. *MBA (ABM) Thesis* (unpublished), University of Agricultural Sciences, Bangalore.

RAJPOOT, J.S., KIRAD, K.S., BADAYA, A.K., AND CHAUHAN, S.S., 2018, Constraints faced by dairy Farmers while adopting animal management practices in Dhar District of Madhya Pradesh, India. *International Journal of Current Microbiology and Applied Sciences*, **7**(1): 3163-3166**.**

SANGVIKAR AND HEMANT J. KATOLE, 2012, A study of consumer purchase behavior in organized retail outlets. *Journal of Business and Retail Management Research*, **7**(1): 39-47.

SARANYA PALANISAMY, 2017, A study on consumer behaviour on milk and milk products

in Salem city of Tamil Nadu. *MBA (ABM) Thesis* (unpublished), University of Agricultural Sciences, Bengaluru.

SHASHIKIRAN L., AND C., MADHAVAIAH, 2015, Impact of Socio Economic Factors on Purchase Behaviour of Organic Food Products. *International Journal of Economics and Business Administration*, **1**(2): 82-86.

SHEENA LEEK, SARAH MADDOCK AND GORDON FOXALL, 2013, Situational determinants of fish consumption. *British Food Journal*, **102**(1): 18-39,

SINGARWAD, P.S., PERKE, D.S., TAW ALE AND MOHD. ASMOTODDIN, 2009, Constraints in production and marketing of flower in Nanded district of Maharashtra. *Journal of Commerce and Business Management*, **2**(1): 43-44.

SINGH PRINCEJOT, BHATTI, J.S., HUNDAL, J.S., AND KANSAL, S.K., 2015, Constraints faced by farmers in adoption of dairy as entrepreneurship. *Haryana Vet*, **54**(1): 67-69.

SMITH A TRAVIS, CHUNG L. HUANG, AND BEING-HWAN LIN, 2009, Does Price or Income Affect Organic Choice? Analysis of U.S. Fresh Produce Users. *Journal of Agricultural and Applied Economics*, **41**(3): 731–744.

S. M. RAHAMAN, B. K. BERA AND G. S. ANANTH, 2013, A study on problems and constraints in production and marketing of fish in West Bengal. *Journal of Crop and Weed,* **9**(1):110-113.

SUNIL SABAT, ARPITA SHARMA AND SHYAM S. SALIM, 2008, Consumption pattern and consumer preference for value- added fish and fish products in north zone of India. *Indian fish association,* 35: 19-27.

SURESH, R., KUMAR, S., SINGH, V., PRAVESH, R., TOMAR, V. K. S. AND SINGH, 2012, Economics of production to marketing of aromatic Crops in Uttar Pradesh: A case study. *Agricultural Economic Research Review*, **25**(1): 157-160.

UGUR ATNAN, YASAR GOK AND HACER GOK UGUR, 2014, Impact of socio-cultural and economic factors on vegetable consumption behaviours: case of Giresun province, Turkey. *Food Sci. Technol*, **34**(4): ISSN 1678-457X.

VINAY M. HATTE, SWADESH PRAKASH, N.R.KUMAR, M.KRISHNAN, VINAY A, AND STANZIN GAWA, 2015, Market Structure and Constraint Analysis af Fish Markets in Nanded District of Maharashtra. *Indian Journal of Agricultural Marketing*,**29**(2): 127-133.

YADAV, RAJESH K. AND VERMA, MANOJ, 2015, Consumer Preference towards Retail Stores for Food and Grocery in Evolving Retail Market. *International Letters of Social and Humanistic Sciences,* 60: 102-111.

ZAHRA KHAMIS MOHAMMED AHMED AL RIYAMI, AZZA ALI AL‑ISMAILI, HALIMA SAID AL‑HATTALI, MUSTHAFA MOHAMED ESSA, JAYAPAL SATHISHKUMAR, AND ANNAMALAI MANICKAVASAGAN, 2016, Role of cultural and socioeconomic factors in fish consumption among Omani population: A pilot survey. *International Journal of Nutrition, Pharmacology, Neurological Diseases,* **6**(3): 119-124.