

**VALUE CHAIN ANALYSIS FOR ROBUSTA  
COFFEE IN KODAGU DISTRICT OF KARNATAKA**

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**DEPARTMENT OF AGRICULTURAL ECONOMICS**

**UNIVERSITY OF AGRICULTURAL SCIENCES**

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**VALUE CHAIN ANALYSIS FOR ROBUSTA  
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**SUSHMA, M. PRAKASH**

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*Thesis submitted to the*

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***MASTER OF SCIENCE (Agriculture)***

**in**

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*Dedicated to  
My Beloved  
Family, Friends  
and  
Respected Guide*



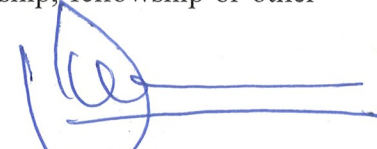
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**CERTIFICATE**

This is to certify that the thesis entitled “VALUE CHAIN ANALYSIS FOR ROBUSTA COFFEE IN KODAGU DISTRICT OF KARNATAKA” submitted by Ms. SUSHMA, M. PRAKASH, ID No. PALB 9136 in partial fulfilment of the requirements for the degree of MASTER OF SCIENCE (Agriculture) in AGRICULTURAL ECONOMICS to the University of Agricultural Sciences, Bangalore is a record of *bona-fide* research work done by her during the period of her study in this University under my guidance and supervision and the thesis has not previously formed the basis for the award of any other degree, diploma, associateship, fellowship or other similar titles.

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**(SUSHMA, M. PRAKASH)**

# **VALUE CHAIN ANALYSIS FOR ROBUSTA COFFEE IN KODAGU DISTRICT OF KARNATAKA**

**SUSHMA, M. PRAKASH**

## **ABSTRACT**

The study was conducted on Value chain analysis for Robusta coffee in Kodagu district of Karnataka. Data was collected from 30 coffee growers, five traders, five curing works, five multi-national companies, five local merchant exporters and 120 coffee consumers and analysed using cost and returns analysis, value chain mapping, descriptive analysis, marketing channel, price spread and producer share in consumer rupee. From cost and return analysis of growers, it was found that labour cost accounts for more than 65 per cent of the total cost and rest was material costs. The value chain mapping analysis indicated that the main actors in the coffee value chain are growers, traders, curers, Multinational Companies (MNCs) and exporters. Governance structure between the grower and downstream actors was market form of governance with limited coordination in terms of quality and specifications in the coffee value chain. In Robusta cherry coffee, price spread and producer share in consumer rupee were Rs. 85.10 per kg and 44.41 per cent, respectively, while in case of Robusta Parchment price spread was Rs. 62.95 per kg and producer share in consumer rupee was 65.96 per cent. It was further found that, 80 per cent of the respondents were aware of Arabica and Robusta coffee. Considering the low share of producer in the consumer rupee and high price spread, study stresses the need for implementing integrated digital platform like block chain-based marketplace for all the stakeholders involved in the coffee value chain.

January, 2022

Department of Agricultural Economics  
GKVK, Bangalore

DR. JAGANNATH OLEKAR  
(Major Advisor)

ಕರ್ನಾಟಕದ ಕೊಡಗು ಜಿಲ್ಲೆಯಲ್ಲಿ ರೋಬಸ್ಸಾ ಕಾಫಿ ಮೌಲ್ಯ ಸರಪಳಿ ವಿಶ್ಲೇಷಣೆ.

ಸುಷ್ಮಾ, ಎಮ್. ಪ್ರಕಾಶ್

ಸಾರಾಂಶ

ಪ್ರಸ್ತುತ ಅಧ್ಯಯನವು ಕರ್ನಾಟಕದ ಕೊಡಗು ಜಿಲ್ಲೆಯಲ್ಲಿ ರೋಬಸ್ಸಾ ಕಾಫಿಯ ಮೌಲ್ಯ ಸರಪಳಿ ವಿಶ್ಲೇಷಣೆಯನ್ನು ವಿಶ್ಲೇಷಿಸಿದೆ. 30 ಕಾಫಿ ಬೆಳೆಗಾರರು, ಐದು ವ್ಯಾಪಾರಿಗಳು, ಐದು ಕ್ಯೂರಿಂಗ್ ವರ್ಕ್ಸ್, ಐದು ಬಹುರಾಷ್ಟೀಯ ಕಂಪನಿಗಳು, ಐದು ಸ್ಥಳೀಯ ವ್ಯಾಪಾರಿ ರಫ್ತುದಾರರು ಮತ್ತು 120 ಕಾಫಿ ಗ್ರಾಹಕರಿಂದ ಮಾಹಿತಿಯನ್ನು ಸಂಗ್ರಹಿಸಲಾಗಿದೆ. ವೆಚ್ಚ ಮತ್ತು ಆದಾಯ ವಿಶ್ಲೇಷಣೆ, ಮೌಲ್ಯ ಸರಪಳಿ ಮ್ಯಾಪಿಂಗ್, ವಿವರಣಾತ್ಮಕ ವಿಶ್ಲೇಷಣೆ, ಮಾರಾಟ ಮಾರ್ಗ, ಬೆಲೆ ಹರಡುವಿಕೆ ಮತ್ತು ಗ್ರಾಹಕ ರೂಪಾಯಿಯಲ್ಲಿ ಉತ್ಪಾದಕರ ಪಾಲು ವಿಶ್ಲೇಷಿಸಲಾಗಿದೆ. ಬೆಳೆಗಾರರ ವೆಚ್ಚ ಮತ್ತು ಆದಾಯ ವಿಶ್ಲೇಷಣೆಯಿಂದ, ಕಾರ್ಮಿಕ ವೆಚ್ಚವು ಒಟ್ಟು ವೆಚ್ಚದ ಶೇಕಡಾ 65 ಕ್ಕಿಂತ ಹೆಚ್ಚಾಗಿರುವುದು ಕಂಡು ಬಂದಿರುತ್ತದೆ. ಕಾಫಿ ಮೌಲ್ಯ ಸರಪಳಿಯ ಪ್ರಮುಖ ಪಾತ್ರಗಳಲ್ಲಿ ಬೆಳೆಗಾರರು, ವ್ಯಾಪಾರಿಗಳು, ಕ್ಯೂರರ್ ಮತ್ತು ರಫ್ತುದಾರರು ಸೇರಿದ್ದಾರೆ ಎಂದು ಸೂಚಿಸಿದೆ. ಬೆಳೆಗಾರ ಮತ್ತು ಮಧ್ಯವರ್ತಕರ ನಡುವಿನ ಆಡಳಿತ ರಚನೆಯು ಕಾಫಿ ಮೌಲ್ಯ ಸರಪಳಿಯಲ್ಲಿ ಗುಣಮಟ್ಟ ಮತ್ತು ವಿಶೇಷಣಗಳ ಪರಿಭಾಷೆಯಲ್ಲಿ ಸೀಮಿತ ಸಮನ್ವಯದೊಂದಿಗೆ ಆಡಳಿತದ ಮಾರುಕಟ್ಟೆ ರೂಪವಾಗಿದೆ. ರೋಬಸ್ಸಾ ಚೆರಿ ಕಾಫಿಯಲ್ಲಿ, ಬೆಲೆ ಹರಡುವಿಕೆ (ರೂ. 85.10 ಪ್ರತಿ ಕೆಜಿಗೆ) ಮತ್ತು ಗ್ರಾಹಕ ರೂಪಾಯಿಯಲ್ಲಿ ಉತ್ಪಾದಕರ ಪಾಲು (ಶೇ. 44.41) ಹಾಗೂ ರೋಬಸ್ಸಾ ಪಾರ್ಷ್ವಮೆಂಟ ಕಾಫಿಯಲ್ಲಿ ಬೆಲೆ ಹರಡುವಿಕೆ ರೂ. 62.95 ಪ್ರತಿ ಕೆ.ಜಿ ಮತ್ತು ಗ್ರಾಹಕ ರೂಪಾಯಿಯಲ್ಲಿ ಉತ್ಪಾದಕರ ಪಾಲು ಶೇ. 65.96 ಆಗಿತ್ತು. ಒಟ್ಟು ಗ್ರಾಹಕರಲ್ಲಿ ಶೇ. 80 ರಷ್ಟು ಗ್ರಾಹಕರು ಅರೇಬಿಕಾ ಮತ್ತು ರೋಬಸ್ಸಾ ಕಾಫಿಯ ಬಗ್ಗೆ ತಿಳಿದಿದ್ದರು. ಗ್ರಾಹಕರ ರೂಪಾಯಿಯಲ್ಲಿ ಉತ್ಪಾದಕರ ಕಡಿಮೆ ಪಾಲು ಮತ್ತು ಹೆಚ್ಚು ಬೆಲೆ ಹರಡುವಿಕೆಯನ್ನು ಪರಿಗಣಿಸಿ, ಕಾಫಿ ಮೌಲ್ಯ ಸರಪಳಿಯಲ್ಲಿ ತೊಡಗಿರುವ ಎಲ್ಲಾ ಪಾಲುದಾರರಿಗೆ ಬ್ಲಾಕ್ ಚೈನ್ ಆಧಾರಿತ ಮಾರುಕಟ್ಟೆಯಂತಹ ಸಮಗ್ರ ಡಿಜಿಟಲ್ ವೇಧಿಕೆ ಅನ್ನು ಕಾರ್ಯಗತಗೊಳಿಸುವ ಅಗತ್ಯವನ್ನು ಈ ಅಧ್ಯಯನವು ಒತ್ತಿಹೇಳುತ್ತದೆ.

ಜನವರಿ, 2022

ಕೃಷಿ ಅರ್ಥಶಾಸ್ತ್ರ ವಿಭಾಗ

ಕೃಷಿ ವಿಶ್ವವಿದ್ಯಾನಿಲಯ, ಗಾಕೃವಿಕೆ, ಬೆಂಗಳೂರು

ಡಾ. ಜಗನ್ನಾಥ ಒಲೆಕರ್

(ಪ್ರಮುಖ ಸಲಹೆಗಾರ)



# Mapping the value chain and price spread of Robusta coffee in Kodagu district of Karnataka

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## Introduction

Coffee is the world's favourite beverage with an estimated 3 billion cups relished every day- either alone or with family, friends or colleagues and on the other hand, coffee provides livelihoods for at least 100 million people, across coffee producing countries.

Coffee occupies a prime position among the plantation crops in the country. It is cultivated in about 4.60 lakh hectares and is mainly confined to southern states of Karnataka, Kerala and Tamil Nadu, which form the traditional areas. To a lesser extent, coffee is also grown in Non-Traditional Areas of Andhra Pradesh & Odisha as well as in North Eastern States.

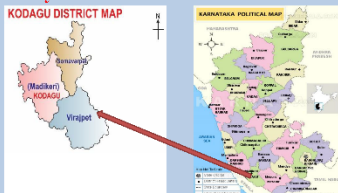
Robusta coffee is major chunk in India's coffee exports with the share of about 80 per cent of country's green coffee exports. Hence, the study was focused on identifying the actors, mapping of the actors and estimating the price spread in export-oriented Robusta coffee value chain.

## OBJECTIVES

- To study the important marketing channels and actors involved (mapping) in the domestic coffee value chain
- To estimate the price spread distributed between different actors of the coffee value chain

## Methodology

### Study area



**Sampling framework and data source:** The present study was taken-up in Virajpet taluk of Kodagu district in Karnataka. The purposive sampling was employed to select study area and random sampling design was used for the selection of respondents. The sample size was 30 coffee growers, five traders, five curing works, five multi-national companies and five local merchant exporters. Total sample size was 50.

The primary data was collected from the selected respondents using pre-tested well structured schedule during April 2021 for the agriculture year 2019-20.

### Analytical tools:

- Value chain mapping
- Marketing channel, price spread and producer share in consumer rupee

$$\text{Price spread} = P_c - P_p$$

$$\text{Producer share in consumer rupee} = \frac{P_p}{P_c} \times 100$$

Where,

P<sub>c</sub> - Price paid by the consumer.

P<sub>p</sub> - Price received by the producer.

## Results

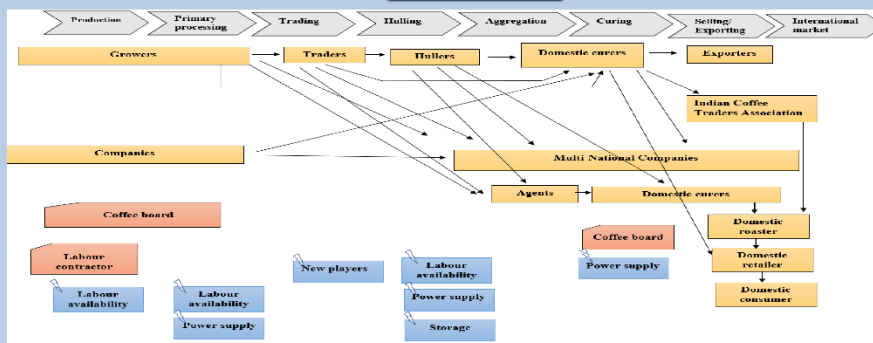


Fig. 1: Mapping of value chain of Robusta coffee

Table 1: Price spread in marketing of Robusta cherry

Value chain actors	Cost (Rs. / Kg)	Price received (Rs. / Kg)	Margin (Rs. / Kg)
Grower	52.25	68.00	15.75 (44.41)
Trader	70.53	73.54	3.01 (48.03)
Curer	116.99	134.10	17.11 (87.58)
Local merchant exporter	140.09	153.10	13.01 (100.00)
Multi-National Company	139.81	153.10	13.29 (100.00)

Note: Figures in parentheses respective actors share in consumer rupee

Table 2: Price spread in marketing of Robusta parchment

Value chain actors	Cost (Rs. / Kg)	Price received (Rs. / Kg)	Margin (Rs. / Kg)
Grower	81.96	122.00	40.04 (65.96)
Trader	124.53	127.54	3.01 (68.95)
Curer	155.78	168.95	13.17 (91.34)
Local merchant exporter	174.94	184.95	10.01 (100.00)
Multi-National Company	174.66	184.95	10.29 (100.00)

Note: Figures in parentheses respective actors share in consumer rupee

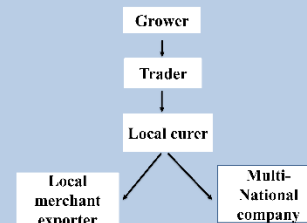


Fig. 2: Marketing channel

## Summary

➤ Price spread is wide in both Robusta cherry and Robusta parchment coffee, since small growers are unable to directly access the exports/multi-national companies market since they are constrained by intermediaries.

➤ When comparing the price spread of Robusta cherry and parchment coffee, Robusta cherry has a wider price spread since growers add less value to the product than other intermediaries.

➤ Producer share in consumer rupee for Robusta parchment is high as there is value addition at growers' level, fetching them higher margin



Plate 1: Researcher interacting with respondents

## Discussion

➤ Coffee is traded down through a network of downstream actors that includes local traders, hullers, curers, international traders, exporters, roasters, and retailers, all of whom take a cut of the retail value (Fig. 1).

➤ For the analysis, one marketing channel have been considered. In this channel traders approached the growers during coffee season hence growers do not incur any marketing cost. From traders it was sold to curers and then from curers to local merchant exporters and Multi-National Company (Fig. 2).

➤ The estimated price spread of Robusta cherry coffee was Rs. 85.10 / kg and producer share in consumer rupee was 44.41 per cent (Table 1) whereas in Robusta parchment coffee price spread was Rs. 62.95 / kg and producer share in consumer rupee was 65.96 per cent (Table 2).

➤ Growers' margin on Robusta parchment coffee was Rs. 40.07 per kg of dry parchment because they add value through pulping, giving them a higher margin for parchment coffee than cherry coffee (Rs. 15.75 / kg).

## Advisory Committee

**Chairman :** Dr. Jagannath Olekar  
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 Dr. Loksha H  
 Dr. B. G. Hanumantharaya  
 Dr. B. N. Pradeepa Babu

## CONTENTS

<b>CHAPTER</b>	<b>TITLE</b>	<b>PAGE No.</b>
I	INTRODUCTION	1-5
II	REVIEW OF LITERATURE	6-17
III	METHODOLOGY	18-30
IV	RESULTS AND DISCUSSION	31-55
V	SUMMARY AND CONCLUSION	56-61
VI	REFERENCES	62-66
	APPENDICES	67-77

## LIST OF TABLES

<b>Table No.</b>	<b>Title</b>	<b>Page No.</b>
3.1	Demographic profile of the district	21
3.2	Land use pattern in the study area (in ha)	22
3.3	Sampling design for selecting sample growers	23
4.1	Age of the sample coffee growers	31
4.2	Educational status of sample coffee growers	32
4.3	Land holdings of sample coffee growers	33
4.4	Farm machineries and implements possessed by the sample coffee growers	34
4.5	Multiple cropping system of coffee growers	35
4.6	Cost of cultivation in Robusta cherry coffee – Irrigated system	37
4.7	Cost of cultivation in Robusta parchment coffee – Irrigated system	39
4.8	Governance structures in value Chain	47
4.9	Price spread in marketing of Robusta cherry	49
4.10	Price spread in marketing of Robusta parchment	51
4.11	General information of sample consumers	53
4.12	Consumer preference for type of coffee	55

## LIST OF FIGURES

<b>Figure No.</b>	<b>Title</b>	<b>Between Pages</b>
3.1	Map showing the study area	22-23
4.1	Percentage share of labour and material cost to the annual working capital of Robusta cherry	38-39
4.2	Percentage share of labour and material cost to the annual working of Robusta parchment	38-39
4.3	Mapping of value chain of Robusta coffee	40-41
4.4	Relationship between income of respondents and different coffee blends	54-55
4.5	Attributes that are considered while consuming coffee	54-55
4.6	Favourable cup of coffee for consumers	54-55

## LIST OF PLATES

<b>Plate No.</b>	<b>Title</b>	<b>Between Pages</b>
3.1	Primary data collection from sample farmers in the study area	22-23

## LIST OF ABBREVIATIONS

<b>Abbreviation</b>	<b>Full Form</b>
FYM	Farm Yard Manure
GM	Genetically Modified
ICO	International Coffee Organization
ICTA	Indian Coffee Traders Association
MT	Metric Ton
MNC	Multinational Company
₱	Philippine peso
SHG	Self Help Group
UK	United Kingdom
USD	United States Dollar

## I INTRODUCTION

Coffee was an established commercial crop by the turn of the 19<sup>th</sup> century and was exported to Europe. The coffee plant belongs to the Rubiaceae family. Two main species of coffee are cultivated today. *Coffea arabica*, known as Arabica coffee, accounts for 75-80 per cent of the world's production. *Coffea canephora*, known as Robusta coffee, accounts for about 20 per cent and differs from the Arabica coffees in terms of taste. About 70 per cent of the coffee production in India is that of Robusta and rest is Arabica coffee. Arabica originates from Ethiopia and produces mild, flavorful tasting coffee. It is most popular type worldwide. However, it is expensive to grow because the Arabica plant is sensitive to environment, requiring shade, humidity and steady temperature between 60-75<sup>0</sup> F. The Robusta coffee plant is more economical to grow because it is resistant to disease and survives in a wider range of temperature between 65-67<sup>0</sup> F, it can also withstand harsh climate changes such as variation in rainfall and strong sunlight.

Coffee contains essential nutrients, which can improve energy levels in the body. Coffee is an intricate mixture of more than thousand chemicals. Human body response to coffee can also vary substantially across individuals. Moderate doses of coffee may cause increased alertness, energy and ability to concentrate, while higher dose may have negative effects such as anxiety, restlessness, insomnia and increased heart rate.

Coffee is the world's favourite beverage with an estimated three billion cups relished every day- either alone or with family, friends or colleagues and on the other hand, coffee provides livelihoods for at least 100 million people, across coffee producing countries. As per International Coffee Organization (ICO), coffee production at global level during 2020-21 is estimated at around 169.50 million bags of 60 kg each which is equivalent to about 101.70 lakh tonnes. The major producing countries in the world during 2020-21 are Brazil, Vietnam, Columbia, Indonesia, Ethiopia, Honduras, India, Uganda, Mexico and Peru. India ranks seventh among coffee producing countries of the world([www.ico.org](http://www.ico.org)).

The major coffee consuming countries are the developed countries. The top 10 coffee importing markets in the world are USA, Germany, Italy, Japan, France, Belgium, Canada, Spain, Netherlands and Russia. These top 10 coffee importing countries together account for about 60 per cent of the global coffee imports.

Thus, coffee has been viewed as a tropical commodity that links producing countries in the global South, along the 'bean belt' that lies between the Tropics of Cancer and Capricorn, with consuming countries in the global North. Coffee has primarily remained an export-oriented commodity wherein the producing countries have been exporting the green bean to consuming countries.

Coffee is not only a source of export earnings but also provides a livelihood for about 25 million small coffee growers, producing about 80 per cent of coffee in the world. Coffee is a source of income for more than 12 million farms in the world, one-third of which were operated by women. An estimated 100 million families depend on the coffee sector for their living (Anonymous, 2019<sup>(a)</sup>).

Coffee occupies a prime position among the plantation crops in the country. It is cultivated in about 4.60 lakh hectares and is mainly confined to southern states of Karnataka, Kerala and Tamil Nadu, which generally called as traditional coffee growing areas. To a lesser extent, coffee is also grown in non-traditional areas of Andhra Pradesh and Odisha as well as in North-Eastern states for improving the livelihood of local tribal by providing them with sustainable income generation and reforestation in the barren hills affected by shifting cultivation.

Indian coffee industry registered a remarkable growth during the last seven decades during which the area under coffee increased by more than four-fold from 92,523 ha to 4,59,730 ha between the period 1950-51 and 2020-21 while the production increased from about 18,893 tonnes to 3,34,000 tonnes during the same period with the record crop production of 3,48,000 tonnes during 2015-16 ([www.indiacoffee.org/Database](http://www.indiacoffee.org/Database)).

In India, Karnataka, Tamil Nadu and Kerala are the three states cultivating the coffee predominantly. Karnataka accounting for 71.03 per cent of India's total coffee

production is owned the pride place (Thanuja and Singh, 2014). Further, the major coffee growing areas of Karnataka and Kerala which account for nearly 90 per cent of country's production have been battered by unprecedented heavy rains during August 2018, August 2019 and August 2020 leading to extensive crop losses and landslides. In Karnataka, coffee is confined to three districts, namely Kodagu, Chikkamagaluru and Hassan. These districts respectively account for 45.66, 38.99 and 15.45 per cent of the area and 54.06, 34.10 and 11.84 per cent of the production of coffee in the state. With that Kodagu stands first in coffee production. It referred as the 'Coffee Cup of India.'

Coffee being labour-intensive industry, demand more labour for cultivation which sharply increased the labour wages by 42 per cent, 78.94 per cent and 58.31 per cent in states like Karnataka, Kerala and Tamil Nadu, respectively ([www.indiacoffee.org/](http://www.indiacoffee.org/) Database) which in turn increased the cost of production.

Nearly 75 per cent of coffee produced in the country is being exported while the rest is consumed within the country. India has created a niche for itself in the international market as an origin of high-quality coffees. The Indian Arabicas earn premiums under 'Other Milds' category and the Indian Robusta is rated as the best in the world. Indian Robusta coffee profoundly preferred for its blending quality in the European Union. Indian Robusta's command high premiums in the international market. The premiums earned by Indian washed Robusta range from USD 500 to USD 1,100 per tonne over the international prices and Robusta cherry premium ranged from USD 300 to 600 per tonne. Robusta coffee is major chunk in India's coffee exports with the share of about 80 per cent of country's green coffee exports. Hence, the study was focused on identifying the actors, mapping of the actors and estimating the price spread in export-oriented Robusta coffee value chain.

The overall objective of the study is to estimate economies of Robusta coffee cultivation and identifies who are all the actors involved in coffee value chain and examines the price spread associated with each actor in the value chain which is essential for understanding the coffee growers share in consumer rupee.

## **Scope of the study**

Coffee is traded down through a network of downstream actors that includes commission agents, local traders, village level consolidators, curers, international traders, exporters, roasters and retailers, all of whom take a cut of the retail value. Against this backdrop, the purpose of this study is to identify who are all the actors involved in Robusta coffee value chain and to examine their share in consumer rupee. The outcomes of the study help in identifying the strategies for improving the coffee farmers share in consumer rupee and minimize the price spread across the downstream actors in the Robusta coffee value chain.

## **Objectives of the study**

- To study the economics of Robusta coffee cultivation in Kodagu district of Karnataka
- To study the important marketing channels and actors involved (mapping) in the domestic coffee value chain
- To estimate the price spread distributed between different actors of the coffee value chain
- To examine consumer preference for the type of coffee

## **Hypotheses of the study**

- Labour cost is more than the material cost in Robusta coffee cultivation
- The producer share in consumer rupee is low
- Price spread is more across the downstream actors in the coffee value chain

## **Constraints of the study**

The study is primarily qualitative for developing value chain and the majority of the data was coded to preserve data confidentiality. The study does not use complex quantitative tools because they require a bigger sample size and more time and effort to collect data. The number of respondents was limited to 30 growers and a few downstream

actors. Because coffee-growing households are dispersed, there is a constraint in terms of respondent availability. In addition, secondary data on raw coffee prices in the Kodagu area, as well as the price of clean coffee and the value of coffee exports, are utilized to estimate price spread. As a result, there are inherent restrictions to price spread estimation. The main reason for adopting secondary data is because information collected from intermediaries may be skewed because their responses were primarily based on guesswork.

### **Presentation of the study**

This thesis is organized and presented in six chapters

Chapter I – It delineates the introduction, objectives of the study, hypothesis, scope and constraints of the present study.

Chapter II – It includes review of previous studies in consonance with the objectives of present study.

Chapter III – Deals in detail with the methodology covering description of the study area, sampling design, source of data, methods of data collection and different analytical tools employed in the analysis of the data including definitions of terms and concepts used in the study.

Chapter IV – It encompasses the presentation of major findings of study in the form of tables and figures and also discussion of the outcomes of the study in the light of plausible reasons.

Chapter V – This chapter provides summary, conclusion and also suggest policy recommendations based on the outcomes of the study.

Chapter VI – This chapter lists the references of the referred literature (research articles, reports, books and web sites, etc.) during the course of the present investigation

## II REVIEW OF LITERATURE

In this chapter, the review of literature of the past research work relevant to the present research objectives were collected. A review of past research work helps in understanding the theoretical and conceptual framework pertinent to the study. In addition, it provides insights into further able areas and research gaps. The reviews are presented under the following headings keeping in view the objectives of the study:

- 2.1 To work out the economies of coffee cultivation in Kodagu district of Karnataka
- 2.2 To study the important market channels and actors involved(mapping) in the domestic coffee value chain
- 2.3 To estimate the price spread distributed between different actors in the domestic coffee value chain
- 2.4 To examine consumer preference for the type of coffee

### **2.1 To work out the economies of coffee cultivation in Kodagu district of Karnataka**

Sikka *et al.* (1989) estimated economics of potato processing at village level where the cost of processing of 480 quintals of potatoes found to be ₹ 53,850 which included cost of potatoes, labour charges, fuel, chemical, maintenance and other overhead charges. After processing of 480 quintals of potatoes, yielded only 77.52 quintal of potato chips where the recovery rate reported was 17 per cent. Chips were sold at ₹11 per Kg and the gross income realized was ₹ 85, 272 with a net profit of ₹ 2.45 per Kg of chips sold.

Shivaraya (1997) has undertaken a study on processing of red gram and estimated the total cost incurred for a quintal of red gram processing was ₹ 2,169.05 and per quintal of output (dal was Rs 2,711.31). Among the total cost, variable cost constituted more than 98.20 per cent. The net returns realized for a quintal of processed red gram was ₹112.34 for large sized dal mills as compared to small size dal mills (₹90.16).

Avinash (2011) analyzed the production of coffee in Chikmagalur district of Karnataka. Per hectare establishment cost of coffee was found to be ₹ 3,93,371 and

₹ 3,61,860 in small and large plantations, respectively. Per hectare maintenance cost during bearing period worked out to be ₹ 1,10,761.90 and ₹ 1,02,968.20 in small and large plantations, respectively. The average yield from small plantation was 3,143.80 kg / ha and from large plantation it was 3,125.96 Kg / ha. The net returns were ₹ 2,01,634.40 and 2,15,664.67 from small and large plantation, respectively.

Mamata and Reddy (2013) studied the economics of organic and inorganic coffee production in Kodagu district. The results indicated that organic coffee production was labour intensive and productivity was 6.88 q/acre when compared to that of inorganic coffee productivity (8.30 q/acre). Although, cost of cultivation (₹ 22,485 /acre) and gross returns (₹ 44,214 /acre) were higher in inorganic coffee, the net return reported higher in organic coffee production (₹ 21,729 /acre) because of premium price enjoyed by the latter. The partial budget analysis revealed that net incremental benefit from organic coffee production was positive, it was ₹ 2,625 per acre and even producer surplus also turned out to be positive it was ₹ 1,353.62 per acre.

The study conducted on economics of coffee production in Kabba / Bunu in Kogi state by Mohamed *et al.* (2013) revealed that 74 per cent of the farmers were male while 26 per cent were female farmers were engaged in coffee production. The mean age of the farmers were 56 years, mean household size was eight persons and they cultivated an average of 1.5 ha of farmland with over 25 years of experience in coffee production. The cost and return analysis showed that coffee production in the area had a profitability index of 0.29 with a return margin of ₹ 8,855.40 per hectare.

Swamy *et al.* (2016) analyzed the cost of coffee cultivation in Kodagu. The result showed that, the coffee productivity in medium plantations was 1,051.20 kg per acre as against 758.50 and 789.20 kg in the case of small and large plantations. An annual net return per acre was highest in the case of medium planters (₹ 26,109.30) as against ₹ 20,566.70 and ₹ 18,572.70 in the case of small and large planters, respectively. Cost of production per ha was lowest in the case of small planters (₹ 18.90 per kg) followed by medium planters (₹ 21.20 per kg) and large planters (₹ 22.50 per kg).

Thanuja and Singh (2017) carried out an investigation to know the cost, returns and investment feasibility of coffee plantation in Kodagu district. A sample of 60 farmers based on probability proportion to number of farmers available in each group were selected for the study. The total establishment cost of coffee plantation was ₹ 4,64,947.47 on small farmers, ₹ 4,42,513.24 on large farmers. Maintenance cost during gestation period increased over the years with increased age of coffee plants. Net return from the plantation was ₹ 1,76,586.92 / ha.

Satish *et al.* (2019) estimated the cost and returns of coffee cultivation in Visakhapatnam district of Andhra Pradesh, India. Per hectare total variable cost per hectare of coffee cultivation was ₹ 27,674.22 whereas total return from coffee cultivation was ₹ 84,550.39. The cost of production per kg of fresh fruit berries was ₹ 9.82. Per hectare gross margin was ₹ 56,876.17 which indicates that coffee cultivation was profitable in the study area. Benefit Cost ratio was 3.05 which indicated that coffee cultivation was a prominently profitable enterprise. Profitability index was 2.05, which indicated that coffee farmers in the study area earned ₹ 2.05 on each rupee invested in production process.

Chandan *et al.* (2020) conducted research on Economic analysis of coffee production in Arghakhanchi and Gulmi districts of Nepal. The total cost incurred in coffee production was USD 19.16 per ropani. The share of labor cost in total cost was 40 per cent. The coffee yield realized was 75.00 kg / ropani. The coffee production was found to be lucrative in Gulmi than in Arghakhanchi due to its high B:C ratio. It was recommended to invest in the coffee sector to uplift the status of mechanization which will reduce the share of labor costs and will ultimately enhance the household economy and living standard of people.

Based on above research studies, it is clear that coffee cultivation is a profitable business. It was recommended to invest in the coffee sector to uplift the status of mechanization which will reduce the share of labor costs and will ultimately enhance the household economy and living standard of people.

## **2.2 To study the important market channels and actors involved(mapping) in the domestic coffee value chain.**

Singla and George (1969) identified the marketing channels for oranges in Punjab. They found that most of the producers sold their oranges through pre-harvest contract system (77.70 %) and the less important channels used were sale in the local market to retailers (0.24 %) and direct sale to consumers (0.10 %).

Qadri (1976) studied marketing of apples in Jammu and Kashmir and reported that commission agents acting as pre-harvest contractors handled 95 per cent of production. Another four per cent produce was sold through commission agents by the pre-harvest contractors. The remaining one per cent produce was handled by the pre-harvesting agents, co-operatives and other channels in the study area.

Shah *et al.* (2010) conducted a study to estimate marketing margins of different actors involved in citrus marketing in Haripur district of NWFP, Pakistan. The study reported that commission agents in citrus marketing acted as bridge between seller (producer or contractor) and buyer and charged a fixed rate of ₹ 15.80 per crate from seller and ₹ 6.30 per crate from buyer. The major cost items for commission agent were labour, rent of office, salary of staff etc. Wholesalers purchased citrus from commission agents in auction and sold to the retailer. Growers received 35.70 per cent of the retail price and the remaining 64.30 per cent was distributed among different market functionaries.

Navya (2014) studied on value chain management of rubber with special reference to rubbermark where the study revealed that the cost of production incurred by rubbermark factories were very high. Due to over emphasis on rules, regulations and sanctions and high-quality specifications decreased the profitability of the federation. This study recommended the rubbermark was to take more measures to directly support the actors in the industry and make the value chain more effective.

Chengappa *et al.* (2018) conducted a study on coffee value chains in India: Exploring sustainability-oriented markets reported that trend towards Robusta coffee has reduced the share of Arabica coffee resulting in moving away from the quality segment of

the market. Coordination was stronger in certified and organic chains, but incentives and motivation for upgrading of value chain largely stem from individual efforts to add value rather than those taking place at the chain-level. Organic and certified coffee proved to be beneficial as compared to conventional coffee in terms of gains to the actors and sustainability point of view and suggested that integrating sustainability principles in a broad-based branding strategy could be difficult at the level of the chain without institutional support or the entry of chain champions.

Hanadi *et al.* (2018) conducted a study on value chain analysis of tomato production and its related activities, conducted in Khartoum state. This study revealed that the degree of value addition of each actor involved in the value chain that was 53 per cent at primary processor in stage of farmer, 21.70 per cent added in stage of middlemen, wholesalers added 10.20 per cent and retailers added 15.10 per cent. The highest percentage of total profit gained by retailer (52.10 %), while the farmer got the lowest one (8.80 %), however, the middleman and wholesaler extremely got equal percentages of total profits (19.20 %) and (19.90 %), respectively. The study recommended that the decision makers should take up initiatives for strengthening of the tomato value chain by establishing processing units in the production belts as well as improving credit services can enhance income generated from tomato marketing through increasing production and reducing dependence on middlemen.

A study was conducted by Khadka and Solbjerg (2020) on the value chain of apple in two apple producing mountainous districts of Nepal; Mustang and Jumla. Economic analysis revealed that the benefit cost ratio for production of apple in Mustang and Jumla were 1.98 and 2.44, respectively. Marketing margin was ₹ 95.33 per kg in Mustang and ₹ 107 per kg in Jumla district. And producer's share was 47.03 per cent in Mustang whereas only 28.67 per cent in Jumla.

Tizazu (2019) analyzed the value chain of Groundnut in Pawi Woreda, Metekel zone, Beni-shangul Gumuz region. Results showed that the main groundnut value chain actors in the study area were groundnut producers/farmer, input suppliers, local assembler, wholesalers, retailers, processors and consumers. It was also found that groundnut passes

through several intermediaries with little value added before reaching the end users. The chain was governed by wholesalers and processors who had capital advantage over the other chain actors. Therefore, farmers were forced to capture a lower share of profit margin.

Ankita *et al.* (2020) were analyzed the value chain of Pea in Kullu district of Himachal Pradesh. The study highlighted the value chain map of diverse actors, who participated directly or indirectly in the value chain. Four channels were identified in the marketing system of Pea in the study area. Out of four channels, channel-C (Producer-Local trader/commission agent-Wholesaler-Retailer-Consumer) was found most preferred channel of sample vegetable growers among them 58.23 per cent of pea was traded through this channel. Degree of value addition in pea varied from 2.20 per cent to 5.85 per cent among different chain actors. Finally, the study recommended for the development of off-season pea pocket by leveraging the small-scale tomato processing units, cooperative societies and self-help groups in the pea growing region.

### **2.3 To estimate the price spread distributed between different actors in the domestic coffee value chain.**

Sidhu and Kahlon (1967) were analyzed and identified three marketing channels for apples in Kulu valley. In the contract system, the produce sold in the market through agents and sold directly to consumer. It was found that 62.20 per cent of the orchard owners sold their fruits on contract basis, 34.10 per cent sold in the market and only 3.60 per cent sold directly to consumer.

Rao (1974) studied the marketing of arecanut in Karnataka and found that 34.66 per cent of the producers sold arecanut exclusively through co-operatives, 10.60 per cent exclusively through commission agents and 54.60 per cent through both. The co-operatives were popular due to higher prices realized by the producer with lower marketing expenses.

Gummagolmath (1994) studied the marketing and price spread in the marketing of mango in Dharwad district. The results revealed that producer's share in consumer's rupee was 65.70 per cent in channel-I (producer → commission agent → retailer → consumer)

and it was 58.40 per cent in channel- II (producer→ pre-harvest contractor cum wholesaler→ retailer →consumer).

Senthilnathan *et al.* (1994) conducted a study on production and marketing of poovan banana in Trichiraphli district and analyzed the profitability and motivation of farmers through regulated market. It was observed that the benefit cost ratio of poovan banana was 2.3:1 in the study area which increased the scope for further expansion of crop area in the district. The price spread analysis indicated the producer's share in consumer rupees was highest (71.06 %) when the produce was marketed through regulated market. The study recommended that the regulated markets and institutional finance to motivate the farmers to market the banana through regulated market.

Chauhan and Chhabra (2005) conducted a study on marketable surplus and price-spread for maize in Hamirpur district of Himachal Pradesh. This study found that the, Producer → Local trader → Wholesaler/ Commission agent → Processor/ Consumer as the main channel in the marketing of maize followed by about 71.93 per cent farmers, accounting for about 70.00 per cent of the produce marketed through this channel. The producer's share in consumer's rupee was estimated at 78.01 per cent in this channel.

Upendranadh (2010) conducted a study on coffee conundrum: whether the future of small growers in India. This study identified critical issues in the coffee sector, in terms of production conditions, marketing and trade, labour, promotional measures and role of various actors with a specific focus on small growers. Results indicated that vertical integration of small producers is important in order to enhance value for the primary producers and recommended for product diversification, quality improvement, mechanization of certain operations, professional management and technical inputs, post-harvest processing, supplementary income earning opportunities would enable small growers to remain in production chain with cost competitiveness.

Bhavya (2011) conducted a study on value chain analysis of coffee in Kodagu district, results showed that there is huge difference in the prices obtained from the producer at the farm gate level to the retail prices. The producer share in consumer rupee

in domestic coffee market was 60 per cent where in the total marketing cost incurred by producer accounted for 1.96 per cent of consumer's price. Price spread was found to be ₹ 35,350 per ton (41.42 %). It is clear that as the coffee moves from producer to each level of actor, there is certain amount of value added to it.

Asogwa and Okwoche (2012) examined sorghum marketing among rural farm households in Nigeria. The marketing margin of sorghum marketer in the study area was 34.43 per cent which figured that 100 per cent retail price paid by the final consumer resulted in farm-to-retail price spread (marketing margin) of 34 per cent. A sorghum marketer in the study area earned a farm-to-retail price spread of 0.34 Naira for every one Naira retail price paid by the final consumer in the marketing process. The marketers in the study area had significant marketing margin during their marketing transaction.

Nkuba *et al.* (2016) studied on rice value chain analysis in Tanzania and the results revealed that rice was staple crop for more than 50 per cent of the communities in Kilombero, Kyela and Mvomero districts; and less than 30 per cent in Rorya, Mbarali and Maswa districts. It was also observed that it was an important cash crop (79 – 100 %) in all districts. There were about 44 and 61 per cent of the total cropped area cultivated per household, in lowland rainfed and irrigated ecosystems, respectively were under rice cultivation. About 61.93 percent of farmers sold their paddy to collectors, used non-standard measurements. Farmers profits ranged from USD 206.63 to 994.85 per hectare. Producer's share in consumer rupee for rice ranged from 34 to 40 per cent. This implies that upgrading strategies are required that can increase producers' market share and improve competitiveness of rice value chain.

Bardhana *et al.* (2019) examined value analysis of buffalo meat in India, the chain actors involved farmers, peri-urban and urban dairies, aggregators, traders/sub-traders, retailers, restaurants/roadside stalls, and export-oriented abattoirs. The quantitative mapping showed that aggregators constituted the main link between farmers and live animal markets and accounted for 72 per cent of the total flow of buffaloes to livestock markets. Sub-traders/traders shipped the bulk of the flow (94 %) from markets to abattoirs. Of the total meat produced, 71 per cent was shipped directly to importing countries and the

rest to local markets; retailers took away 87 per cent and restaurants 13 per cent. Of the total value added, traders in the domestic value chains and export-oriented units captured a significant share.

Khanal *et al.* (2019) conducted research on value chain analysis of coffee in Palpa and Gulmi districts of Nepal. They mapped the value chain of coffee and analyzed marketing cost and margin of various marketing actors in the study area. The producers share in consumer's price was found 64.05 per cent. The gross contribution margin of collectors, processors and retailers was found 30.51 per cent, 39.00 per cent and 0.90 per cent, respectively while the total gross marketing margin was found 35.94 per cent.

Dahal and Rijal (2020) a study had undertaken in Sindhuli, a part of Central Nepal for analyzing value chain of ginger. Value chain analysis revealed that producer, traders (wholesaler and exporter), retailer and consumer were the major actors involved. Farmers received substantial margin of 55 per cent of the retail price, but the rest of the profit was shared to unscrupulous traders. BC ratio of ginger farming in the study area was 2.42 revealing that ginger farming was a profitable business; with investment of ₹ 1.00 (0.0088US\$) in ginger, farmers earned additional 1.42 rupees. Low productivity of ginger in the study area was caused by severe incidence of rhizome rot.

Nilo *et al.* (2020) studied on value chain analysis of organic range chicken showed that the farmers sold live organic/range chicken at a farm gate price of about ₹ 250.00 per Kg to the middlemen. In turn, the middlemen sold the dressed chicken at about ₹ 300.00 a Kg to its processor in public or cities markets. In turn, the processor sold it to public market/consumers and realizes a net margin of approximately ₹ 30.00 to ₹ 50.00 per Kg. The results revealed that there was an unequitable distribution of profit along the value chain of organic chicken wherein the middlemen got more profit.

Sreeja (2020) analyzed the value chain of medicinal rice in Kerala where various chains and actors involved in the value chain highlighted that there were two marketing channels for navara rice and three for rakthashali rice in the study area. The price spread efficiency in the value chain showed that, the increase in the number of intermediaries in a

value chain decreases the market efficiency through increasing cost and margin of intermediary. The percentage of producers share in consumer rupee was better for lesser intermediary chain. Among the two channels in the Navara rice marketing, channel I is least efficient with market efficiency of 0.60. Channel II is most efficient channel with market efficiency of one. The producers share in consumer rupee was found to be higher in channel II (100.00 %) followed by channel I (66.67 %). In the case of marketing channels of rakthashali rice, channel I and channel II were least efficient with market efficiency with 0.6. The producers share in consumer rupee was found to be higher in channel III (100.00 %) followed by channel II (66.66 %) and channel I (60.00 %).

It is clear that as the coffee moves from producer to each level of actor, there is certain amount of value added to it where farmers were forced to capture a lower share of profit and rest of the profit was shared to intermediaries. The results also revealed that there was an unequitable distribution of profit along the value chain and need for upgrading strategies which will increase producers' market share and improve competitiveness of the value chain.

#### **2.4 To examine consumer preference for the type of coffee**

Pelsmacker *et al.* (2005) conducted a study on consumer preferences for the marketing of ethically labelled coffee. The results revealed that fair trade labelled coffee is the most preferred over eco- and bio-labels. European government labels, or labels issued by non-governmental organizations, were preferred over national (Belgian) government endorsed labels. Consumers prefer extra information on the package, in addition to a label. Out-of-shop promotion of the label and the type of brand are of minor importance.

Arnoult *et al.* (2007) studied the UK consumer's attitudes to and willingness to pay for imported foods. Using a choice experiment they estimate willingness to pay for foods of a designated origin together with certification for organic and GM free status. The results indicated that there was a preference for locally produced food, which was GM free, Organic and produced in the traditional season.

Henseleit *et al.* (2007) analyzed determinants of consumer preferences for regional food. The objective was to identify and quantify the determining factors of consumers' preferences for regional food. The results of binary logit model indicated that cognitive and normative factors were the main determinants of consumer preference for regional food, whereas affective and socio-demographic variables only were taking marginal influence. Especially consumers' perceptions, that regional food had better product attributes and offers a higher food safety, are significant and important determining factors. Contrarily, no significant influence could be examined for most of the socio-demographic variables, e.g., level of education, location size, and level of income.

Giacalone (2016) studied on Quality does not sell itself: Divergence between objective product quality and preference for coffee in naïve consumers. The results showed that preferences were equally distributed among the high and low-quality samples, and that consumers did not perform better than chance level in the identification task. These results suggested that current grading systems used in the industry may be poorly correlated with the way consumers actually experience coffee, and thus that quality inference in the marketplace is more likely influenced by external cues (e.g., brand, label and price) than to intrinsic product quality.

Berampu *et al.* (2019) conducted a study on relationship of consumer preference, value creation, and global supply chain in the third wave coffee business in Sumatera Utara, Indonesia. This study focused on how the coffee business trend in the third wave era can be enhanced through preference and value creation based on global supply chain and consumer preference as theoretical background. This study utilized non-probability sampling and there 97 coffee shop owners were participated. The result of this study showed that value creation has a significant effect on the global supply chain, value creation has no significant effect on preference. Value creation has a significant effect on global supply chain through consumer preference in the third wave coffee business in Sumatera Utara.

Based on these studies, it was seen that consumers preferred extra information on the package, in addition to a label. Out-of-shop promotion of the label and the type of brand are of minor importance and value creation had a significant effect on global supply chain.

### **III METHODOLOGY**

Designing of proper methodology is important to carry out a systematic analysis of any research problems. This chapter deals with the methodology followed in the present study, which includes the nature and source of data, analytical techniques employed and statistical procedures followed. The details of each are presented under the following headings:

3.1 Selection and description of study area

3.2 Sampling framework and database

3.3 Analytical tools/ techniques

3.4 Consumer preference

#### **Conceptual framework**

The study used Value Links methodology explicated by Kaplinsky and Morris (2001) that expands the value chain tools and methods for upgrading the coffee farmers in the value chain. In this context, the study first identified the key actors involved in the coffee value chain, mapping these actors graphically and identified the supporters, enablers, and disablers of the chain. The study also estimated the cost of production, cost of procurement, cost of value addition, out turn losses, gross margin and profit at each stage of coffee value chain in Kodagu district of Karnataka.

Value chain analysis is an analytical tool to explore the interaction among different players in order to transfer goods or service from its point of origin to the end consumer. Additionally, it breaks a chain into its elements for comprehending their organization and role by identifying the players at every phase and allocating costs and added value to each phase in order to help understand the complete system and point out intervention areas. Furthermore, Value Chain Analysis figure out how the greatest possible value of a product can be created to its final consumers. The analysis answers to a set of questions such as how the process of production is carried out; who are the actors at various steps; where do

the actors interact and for what benefits, etc. Such information gathered is very pivotal to explore intervention for the enhancement of economic wellbeing of all the actors.

### **3.1 Selection and description of study area**

Kodagu district lies in the Western Ghats region of Karnataka. The district of Kodagu occupies Eastern and Western slopes of Western Ghats. Kodagu district in Karnataka state (75°25-76°14E, 12°15-12°45N) is a major coffee growing region located in the Western Ghats mountains. The topography of Kodagu district has a mountainous configuration with valleys and ravines. In Kodagu, agriculture forms a lifeline for majority of households. The main crops are coffee, spices and paddy, with the former two grown in plantations. Fruits such as orange, guava, sapota, lime, pineapple and banana were grown in large quantities earlier. Presently, with the exception of banana cultivation other fruit crops are declining. The district produces nearly one-third of Indian coffee, mostly in agroforestry systems under native tree cover. Altogether, forests and agro-forests account for nearly 80 per cent of the Kodagu district. Forest covers almost 50 per cent of the district, making it one of the most densely forested districts in the country. Kodagu is the second smallest district in Karnataka state, occupying an area of 4,102 square kilometers in the Western ghats of southwestern Karnataka. Its population was 5,54,762 as per 2011 census and the district is bounded on the North by Dakshina Kannada district and Sakleshpur taluk of Hassan district and on the South by Wynaad taluk of Kerala. On the West, it is bounded by Dakshina Kannada and Malabar and on the East, by Hassan and Mysore districts. The west, northwest and southwest boundary runs along the foot of the Western Ghats, which overlook the low lands of South Canara and Malabar. On the North and East for a short way, the Cauveri and the Hemavathy rivers mark the boundary between Mysore and Kodagu. On the south, the Brahmagiri range of hills forms the line of division from the Wynaad division.

#### **Climate**

It is known to be quite pleasant and healthy, characterized by high humidity, heavy rainfall and cool summer. A major part of the year consists of rainy season as the monsoon period starting in June last till the ends of September. Even during the post monsoon

months of October and November certain parts of the district receive a significant amount of rainfall. The southwest monsoon sets in usually during the early part of June. Generally, June, July and August are the months of heavy rainfall and the precipitation in July is incessant and very heavy. The average annual rainfall for the district is 2,552.54 mm and the number of rainy days ranges between 85 and 153, with an average of about 118 rainy days in a year. The amount of rainfall and the number of rainy days varies considerably within the district.

### **Economic wealth**

The economic mainstay of the district is coffee, cardamom and pepper. Paddy is staple food crop cultivated once a year and most of the agriculture in the district is rainfed. Horticultural crops like oranges, bananas and cardamom were inter-planted in the coffee estates. The two popular varieties of coffee grown are Arabica and Robusta. Other crops cultivated are coconut, arecanut, ginger, and some of the spices. Kodagu is known for growing excellent quality coffee, pepper and cardamom.

### **Demography**

Kodagu is the second smallest district of Karnataka. The district comprises of three taluks namely Madikeri, Somvarpet and Virajpet. Madikeri is the district headquarters of Kodagu district. The total population of the Kodagu district as per 2011 census was 5,54,519 which include 2,74,608 male and 2,79,911 female. The sex ratio was 1,019 females per 1,000 males, which has healthier as compared to state (973) in 2001 census. The population density was only 135 inhabitants per square kilometer compared to state density of 319. The decadal growth for population during the period 2001-2011 was 1.09 per cent compared to 15.60 per cent of the state. The overall literacy rate of the district was 82.61 per cent as per 2011 census (State literacy rate is 75.36 %). There are three Taluk Panchayats in Kodagu district (Table 3.1).

### **Land use pattern**

In Virajpet, out of the total geographical area, gross cropped area was 78,220 hectares amidst net cropped area of 70,733 hectares (42.67 %). Highest area was under net

cropped area (42.67 %), land under permanent pasture weighs 3.77 per cent, area under fallow constitute 3.65 per cent of the total geographical area. Barren and uncultivable land accounts to 5.15 per cent and land under non-agricultural uses accounts to 2.13 per cent as indicated in Table 3.2.

### 3.2 Sampling framework and database

The study was conducted in Kodagu district of Karnataka. Kodagu is the leading coffee producer in the county which accounts for approximately 37 per cent of India's coffee production with the share of about 23 per cent (1,07,566 ha.) in the total planted area under coffee ([www.indiacoffee.org/Database](http://www.indiacoffee.org/Database)).

**Table 3.1: Demographic profile of the district**

Sl. No.	Particulars		Kodagu district
1	Geographical area (Sq. Km)		4,102
2	Taluks (numbers)		3
3	Villages (numbers)		528
4	No. of Gram Panchayats		104
5	No. of Hoblies		16
6	Population (numbers)	Male	2,74,608
		Female	2,79,911
		Total	5,54,519
7	Density of population (per sq. km)		135
8	Literacy rate (%)		82.61
9	Per capita Income (₹) at constant prices		80,855

Source: District Census Handbook, Kodagu, Census 2011

**Table 3.2: Land use pattern in the study area (in ha)**

Sl. No.	Particulars	Kodagu district	Virajpet taluk
1	Geographical Area	4,10,775 (100)	1,65,731 (100)
2	Forest	1,34,597 (32.76)	66,234 (39.96)
3	Land put to Non-Agricultural uses	24,299 (5.91)	3,535 (2.13)
4	Barren and Uncultivable land	31,010 (7.54)	8,537 (5.15)
5	Cultivable-waste	9,076 (2.20)	708 (0.42)
6	Permanent Pasture	13,884 (3.37)	6,255 (3.77)
7	Trees and Groves	17,871 (4.35)	1,500 (0.90)
8	Current fallow land	8,917 (2.17)	4,471 (2.69)
9	Other fallow land	3,896 (0.94)	1,583 (0.95)
10	Net area sown	1,64,877 (40.13)	70,733 (42.67)
11	Area sown more than once	23,728 (5.77)	7,487 (4.51)
12	Gross cropped area	1,88,605 (45.91)	78,220 (47.19)

Note: Figures in parenthesis represent percentage to total

Source: Kodagu District at Glance-Statistical Report - FY 2019-20

Robusta coffee is mainly grown in Kodagu which accounts for about 44 per cent of the Robusta coffee production in the country. About 84 per cent of the Coffee produced in Kodagu district is Robusta and rest 16 per cent is Arabica coffee. Hence, Kodagu district is chosen for the study (Fig. 3.1).

Among the three taluks of the district, Virajpet taluk is having the highest area (50,050 hectares) under Robusta coffee cultivation ([www.indiacoffee.org/Database](http://www.indiacoffee.org/Database)), therefore Virajpet taluk has been selected for the collection of primary data from the growers. Study involved extensive field observations on production and marketing practices and interaction with different actors in the value chain. The sample structure is as follows:

- Three villages were selected randomly and in each village 10 Robusta coffee growers were chosen randomly. Totally 30 respondents of coffee growers were selected. The study used semi-structured, pre-tested survey with both open and closed ended questions to collect relevant information from growers based on their records and memory. The survey addressed information related to production, cost of cultivation, processing, and marketing practices (Table 3.3).

**Table 3.3: Sampling design for selecting coffee grower of sample respondents**

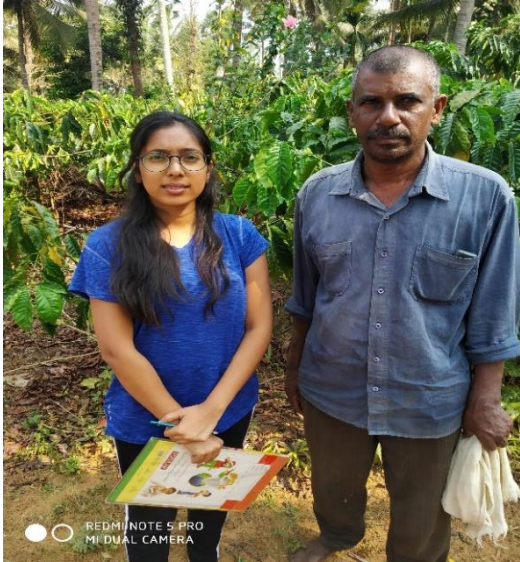
District	Taluk	Village	No. of growers
Kodagu	Virajpet	Ammati	10
		Heggala	10
		Maldare	10
<b>Total</b>	<b>01</b>	<b>03</b>	<b>30</b>

- Five traders who deals with coffee in Kodagu district were interviewed using sperate checklist
- Five curing works surrounding the Virajpet and Kushalnagara were selected to conduct the study

## KODAGU DISTRICT MAP



Fig. 3.1: Map showing the study area



**Plate 3.1: Primary data collection from sample respondents in the study area**

- Five multi- national companies were interviewed in the study
- Five local merchant exporters in Kodagu district were interviewed
- 120 coffee consumers residing in Bengaluru urban

Thus, a total of 170 respondents were selected for the study.

### **3.3 Method of data collection**

#### **Primary data**

The required data was collected from both primary and secondary sources. The primary data were collected from the coffee growers and downstream actors (Plate 3.1). A semi-structured, pre-tested survey with both open and close ended questions were used to collect relevant information from growers based on their records and memory. The data relating to general information of the farmers, the size of the holdings, price aspects, marketing aspects were collected from the growers. For downstream actors, separate questionnaire was used to elucidate the information on costs of procurement, gross returns, cost of value addition and margins made through detail discussions.

#### **Secondary data**

Secondary data were collected from the publications of Coffee Board regarding area, production, productivity and exports.

### **3.4 Analytical tools**

The following were used for analysis of collected data.

#### **3.4.1 Value chain mapping**

Value chain map is a graphical representation showing the major actors and their relationship along with the sequence of activities involved in the value chain. It applies both qualitative as well as quantitative methods in order to show the linkage and operation of the chain [Kaplinsky and Morris (2001)]. In order to understand the traits of the value chain players and the interrelationships among them a value chain map of coffee sub-sector was prepared with all attempt to make the maps easily comprehensible.

### **3.4.2 Governance structure**

Value chain governance refers to the relationship among buyers, sellers, service providers and regulatory institutions that operate within or influence the range of activities required to bring a product or service from inception to its end use. Governance is about power and the ability to exert control along the chain – at any point in the chain, some firm (or organization or institution) sets and enforces parameter under which others in the chain operate. An essential property of the chain is its governance structure determining the allocation of resources and gains and their flow within the chain. Indeed, the overall mode of governance of a chain refers to the extent of control which the leading segment(s) has on the exchange of information and production activities, and thereby able to shape the functional division of labour along the chain and to set entry barriers through which economic profits may be concentrated in particular segments. These various activities in the chain found within the firms and in the division of labour between firms are subjected to governance. Further, identified two broad categories of governance structures namely, ‘producer-driven’ and ‘buyer-driven’. Producer-driven chains refers to production systems common in capital - or technology-intensive industries controlled at upstream level while the buyer-driven chains are used to describe production networks controlled by labor-intensive sectors including downstream-located manufacturers, large retailers, brand-name merchandisers, or trading companies.

#### **Types of value chain governance**

The connection between industry activities within a chain can be described along a continuum extending from the market, characterized by “arm’s – length” relationships, to hierarchical value chains illustrated through direct ownership of production processes. Between these two extremes are three network style governance modes. Network – style governance represents a situation in which the lead firm exercises power through coordination of production vis-à-vis suppliers (to varying degrees), without any direct ownership of the firm

1. Markets - Market linkages do not have to be completely transitory, as is typical of spot markets; they can persist over time, with repeat transactions. The essential point is that the costs of switching to new partners are low for both parties.
2. Modular value chains - Typically, suppliers in modular value chains make products to a customer's specifications, which may be more or less detailed. However, suppliers take full responsibility for competencies surrounding process technology, use generic machinery that limits transaction-specific investments, and make capital outlays for components and materials on behalf of customers.
3. Relational value chains - In these networks, we see complex interactions between buyers and sellers, which often creates mutual dependence and high levels of asset specificity. This may be managed through reputation, or family and ethnic ties. Many authors have highlighted the role of spatial proximity in supporting relational value chain linkages, but trust and reputation might well function in spatially dispersed networks where relationships are built-up over time or are based on dispersed family and social groups.
4. Captive value chains - In these networks, small suppliers are transactionally dependent on much larger buyers. Suppliers face significant switching costs and are, therefore, 'captive'. Such networks are frequently characterized by a high degree of monitoring and control by lead firms.
5. Hierarchy - This governance form is characterized by vertical integration. The dominant form of governance is managerial control, flowing from managers to subordinates, or from headquarters to subsidiaries and affiliates.

Gereffi *et al.* (2005) identified three variables which shape Value Chain governance structures.

1. Complexity of information and knowledge transfer required to sustain a particular transaction particularly with respect to product and process specifications;

2. Codification of information and knowledge; i.e., can it be codified and transmitted efficiently without transaction specific investment between parties to the transaction;
3. Capabilities of actual and potential suppliers in relation to the requirements of the transaction.

### **3.4.3 Upgrading strategies**

The purpose of value chain analysis is identification of leverage points and recommendation of the possible intervention activity for enhancement of existing value. Addressing the constraints at each level, the upgrading opportunities for production, processing and marketing were explored.

### **3.4.4 Descriptive analysis**

The collected data were analyzed by simple descriptive statistics tools like average, percentages to estimate cost of production, returns, value addition, and margin made. To maintain uniformity, for all the actors, cost, returns, and cost of value addition and margins made are estimated for clean coffee.

### **3.4.5 Different concepts and definitions used in the study**

#### **Cost of cultivation**

Estimation of unit cost of cultivation and its behavior is an important consideration in determining value addition at producer level. This study is confined to annual working capital as the margin obtaining by growers per year was less hence the fixed cost had not taken into account. It was observed that at the time of data collection the growers were more familiar with using acre as the unit of land. Hence, the costs and returns for coffee have been estimated on per acre basis. While one kg is taken as the unit to work out the price spread across the value chain actors. Both paid out and imputed costs were considered while determining the 'unit cost' estimates. The main cost concepts used in present study are given below.

## **Costs**

For analyzing the cost of production, the study considered only variable costs.

### **Variable cost**

The variable cost included were cost of labour (for harvesting and intercultural operation), cost of fertilizer, cost of plant protection, operation cost of irrigation and other costs. They comprised of the following costs

### **Labour cost**

The expenditure incurred on human labour constituted the labour costs. In the case of human labour, the total labour employed in each activity was recorded. Whenever the contract labour was employed, the actual amount paid by growers was divided by the wage rate to get labour use in man-days. Some of the operations like shade regulation, lime application was not done every year. The total amount actually invested by the grower in these activities was apportioned for relevant period to arrive at annual costs.

### **Material cost**

The material costs include expenditure on fertilizers including FYM, lime, plant protection chemicals and cost of irrigation. For estimating the cost of FYM, the price prevailing in the locality was imputed even though many a times part of it was produced on the farm itself.

### **Returns from coffee**

To workout returns, average price received by the farmer in the current year at farm gate was used to evaluate the returns at grower level. The ICTA price of clean coffee was considered for estimating the returns at curer level and Free on Board price (FoB) price was considered for estimating the returns at exporter level. Returns worked out were gross returns (quantity produced multiplied by price received), returns over annual working capital (gross returns less annual working capital).

## **Gross Returns**

Gross return per ton was worked out by multiplying by total output of coffee with its price. This can be denoted as:

$$\text{Gross Returns (GR)} = \text{Output} \times \text{Price}$$

## **Net returns over annual working capital**

Net return over annual working capital was worked out by deducting annual working capital from gross return and it is denoted as

$$\text{Net returns over annual working capital} = \text{Gross Return} - \text{Annual working capital}$$

## **Returns per rupee of expenditure**

Returns per rupee of expenditure is worked out by dividing the gross return by annual working capital.

## **Marketing channel, price spread and producer share in consumer rupee**

An attempt was made to study some aspects of marketing from the viewpoint of coffee grower-seller. The aspects include the marketing channels, marketing costs and price spread. Marketing channel refers to the alternate routes of product flow from the producer to final destiny. Price spread was worked out by computing the difference between the price received by the producer and price paid by the consumer.

$$\text{Price spread} = P_c - P_p$$

Where,

$P_c$  - Price paid by the consumer.

$P_p$  - Price paid by the producer.

$$\text{Producer share in consumer rupee} = \frac{\text{Price received by the producer}}{\text{Price paid by the consumer}} \times 100$$

### **3.4.6 Consumer preference**

The Computer-Assisted Web-based Interviewing (CAWI) method was used to collect all data. The survey was conducted on a group of 120 adult respondents in Bengaluru Urban that reported the consumption of coffee. The respondents completed an online questionnaire. A link to the questionnaire in google forms format was sent via whatsapp® and e-mail. A questionnaire provided on a webpage increases the sense of anonymity and gives an opportunity to participate in the study at a time convenient for the respondent, and in time of pandemic COVID-19 was very useful. Tools employed to examine consumer preference are descriptive statistics like average and percentage.

Inclusion criteria of respondents for study were as follows:

1. Everyone consuming the coffee.
2. Sample consumers residing in Bengaluru urban

## IV RESULTS AND DISCUSSION

In this chapter the results of the study are presented in accordance with the objectives under the following headings.

4.1 General characteristics of sample respondents

4.2 Cost of cultivation of Robusta coffee

4.3 Mapping of the value chain

4.4 Price spread in marketing of Robusta coffee

4.5 Consumer preference for the type of coffee

### 4.1 General characteristics of sample growers

#### 4.1.1 Age of the sample coffee growers

Of the total sample growers, 56.66 per cent belong to the age group of 20-40 years, followed by the old age group (30 %) and remaining growers belong to the younger age group as shown in the Table 4.1. It can be concluded that growers belonging to the middle age group were managing coffee farms and young people were abandoning agriculture due to heavy drudgery and uncertain flow in the income.

**Table 4.1: Age of the sample coffee growers**

Sl. No.	Particulars	Number of growers
1	Young (Less than 40 years)	4 (13.33)
2	Middle age (40-60 years)	17 (56.66)
3	Old age (>60 years)	9 (30.00)
<b>Total</b>		<b>30</b> <b>(100.00)</b>

Note: Figures in parentheses represent percentage to total

#### 4.1.2 Educational status of sample coffee growers

On the education front, there were a greater number of graduates in the sample planters, as evident from the Table 4.2. The educational profile of respondents which reveals that around 40 per cent of the total respondents were graduates and 36.66 per cent of the respondents were completed pre-university education. The remaining respondents who were educated up to high school and primary school constituted 16.66 and 6.66 per cent of total respondents, respectively.

**Table 4.2: Educational status of sample coffee growers**

Sl. No.	Particulars	Number of respondents
1	Illiterates	-
2	Primary school	2 (6.66)
3	High school	5 (16.66)
4	PU	11 (36.66)
5	Graduates	12 (40.00)
<b>Total</b>		<b>30</b> <b>(100.00)</b>

Note: Figures in parentheses represent percentage to total

#### 4.1.3 Land holdings of sample coffee growers

As revealed in Table 4.3, the size of holdings by the sample growers. Among the total sample growers, 6.66 per cent of growers having 2-4 hectares, 73.33 per cent of growers with 4-10 hectares of land holdings and 20.00 per cent of growers with 10-25 land holdings. It was calculated from the table that growers with small holdings (80 %) are more in number than growers with large holdings (20 %).

**Table 4.3: Land holdings of sample coffee growers**

Sl. No.	Size of holdings in hectares	Number of sample growers
1	<b>Small holdings</b>	
a	<2	-
b	2-4	2 (6.66)
c	4-10	22 (73.33)
Total small holdings		24 (80.00)
2	<b>Large holdings</b>	
a	10-25	6 (20.00)
b	>25	-
Total large holdings		6 (20.00)
<b>Total</b>		<b>30</b> <b>(100.00)</b>

Note: Figures in parentheses represent percentage to total

Source: Plantation labour act, 1957

#### 4.1.4 Farm machineries and implements possessed by the sample coffee growers

The results of farm machineries and implements possessed by the sample growers are presented in Table 4.4. Among the sample growers, 86.66 per cent of the growers have their own drying yard and spraying machine (86.66 %). Nearly 80 per cent of growers possess sprinkler irrigation and 70 per cent of growers' own farm vehicles (Jeep and Pick up). Very few of them possess conventional pulper (20.00 %), farm pond (20.00 %) and storage house (30.00 %).

**Table 4.4: Farm machineries and implements possessed by the sample coffee growers**

Sl. No.	Particulars		Number of growers	Percentage
1	Farm buildings	Dwelling house	30	100.00
		Drying yard	26	86.66
		Storage house	9	30.00
2	Tractor		12	40.00
3	Power tiller		19	63.33
4	Farm vehicle		21	70.00
5	Sprinkler irrigation		24	80.00
6	Drip irrigation		-	-
7	Dug well		6	20.00
8	Bore well		12	40.00
9	Diesel engine		9	30.00
10	Electric motor		13	43.33
11	Conveyance		5	16.66
12	Farm pond		4	13.33
13	Weed cutter		18	60.00
14	Pulper	Conventional	6	20.00
		Eco pulper	-	-
15	Spraying machine		26	86.66

#### 4.1.5 Multiple cropping system of sample coffee growers in the study area

As shown in Table 4.5, sample growers followed five systems of farming pattern that were coffee, coffee+pepper, coffee+pepper+areca, coffee+coconut+avacado, and coffee+coconut+orange+pepper. Of the total 36.67 per cent of growers followed the coffee+coconut+orange+pepper farming system, 26.66 per cent of growers followed the coffee+coconut+avacado farming system and very few followed the only coffee farming system.

**Table 4.5: Multiple cropping system of coffee growers**

Sl. No.	Systems	Number of growers	Area (acre)
1	Coffee	2 (6.66)	28.67
2	Coffee+Pepper	6 (20.00)	138.25
3	Coffee+Pepper+Arecanut	3 (10.00)	62.50
4	Coffee+Coconut+Avacado	8 (26.66)	180.24
5	Coffee+Coconut+Coorg orange+Pepper	11 (36.67)	215.34
<b>Total</b>		<b>30 (100.00)</b>	<b>625</b>

Note: Figures in parentheses represent percentage to total

## 4.2 Cost of cultivation in Robusta coffee

As shown in Table 4.6, the annual working capital of Robusta cherry coffee was ₹ 72,116 / acre. The two operations that required higher labour man days were harvesting and bush management which together accounted for about 50 per cent of the total labour cost. Because of uneven fruit ripening on account of non-uniform blossoming which impairs harvesting efficiency and quality of coffee and requires repetitive plucking which contributed 27.39 per cent (₹ 13,600) to the total labour cost. Bush management accounted for about 21.91 per cent (₹ 10,880) of the total labour cost. Bush management is one of the important cultural operations in coffee which is essential to minimize year-to-year yield fluctuations and to achieve threshold yield.

The labourers in the coffee plantations require specific skills and in the light of limited options for mechanization due to undulating landscape, dependence on the skilled labour becomes a necessary for the coffee growers. A shortage of skilled labour for bush management (topping, pruning, desuckering) and harvesting resulted in increased cost of production at coffee plantations.

Usually, growers hire a large number of labourers from North Karnataka, Assam, West Bengal and Tamil Nadu to harvest coffee cherries. During the study period, due to the lockdown on account of COVID-19 pandemic, coffee growers were facing difficulty in bringing labourers from other districts and states which has resulted in severe man power crunch in the coffee plantations.

Other major labour intensive operations that are carried out by growers are shade management by lopping lower canopy (Dadap) two to three times a year and permanent shade trees once in two years to provide required filtered shade and light intensity for the growth of coffee plant, correcting the soil pH by the application of liming materials like agriculture lime, dolomitic lime etc., to make the soil more productive, cradle pit renovation (is done once in two or three years before the onset of monsoon), fertilizer application, irrigation (blossom and backing) and weeding. Since cherry coffee is sun dried, the processing cost was very low which is about one percent of the annual working capital.

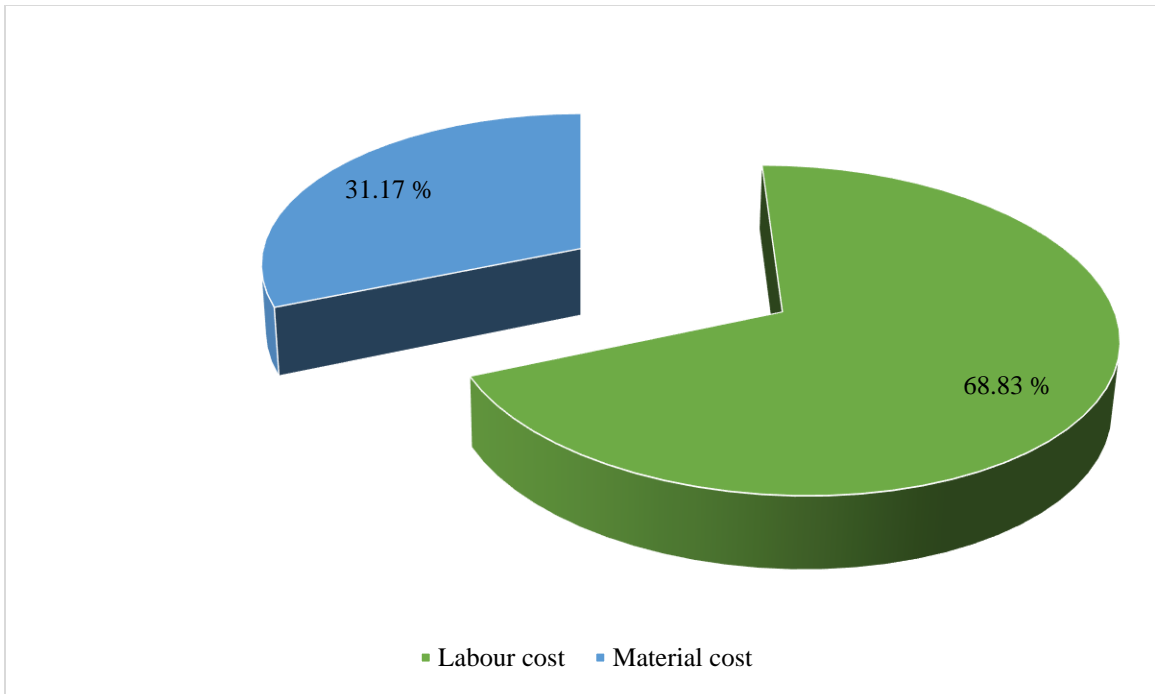
**Table 4.6: Cost of cultivation in Robusta cherry coffee – Irrigated system****(₹ /acre)**

<b>Particulars</b>	<b>Labour (Man days)</b>	<b>Labour cost</b>	<b>Material cost</b>	<b>Total</b>
Fertilizer including FYM	10	3,400 (6.84)	12,099 (68.21)	15,498 (21.49)
Shade regulation	19	6,460 (13.01)	-	6,460 (8.95)
Weeding operation	19	6,460 (13.01)	-	6,460 (8.95)
Bush management (Pruning + Desuckering)	32	10,880 (21.91)	-	10,880 (15.08)
Soil management (Cradle pit renovation + Lime application)	12	4,080 (8.21)	1,326 (7.46)	5,406 (7.49)
Pest/Disease management	3	1,020 (2.05)	966 (5.45)	1,986 (2.75)
Harvesting operation	40	13,600 (27.39)	-	13,600 (18.85)
Processing operation	2	680 (1.36)	-	680 (0.94)
Irrigation	6	2,040 (4.10)	2,044 (11.52)	4,084 (5.66)
Miscellaneous	3	1,020 (2.05)	1,302 (7.34)	2,322 (3.21)
Interest on working capital @ 7 %	-	-	-	4,740
<b>Annual working capital</b>	<b>146</b>	<b>49,640</b> <b>(100.00)</b>	<b>17,737</b> <b>(100.00)</b>	<b>72,116</b> <b>(100.00)</b>
Gross Returns (₹) = 93,840 [Price = ₹ 68 / kg and average yield = 1,380 kg (27 - 28 bags) per acre]				
Net Returns (₹) = 21,384				
Return per rupee of expenditure = 1.30				

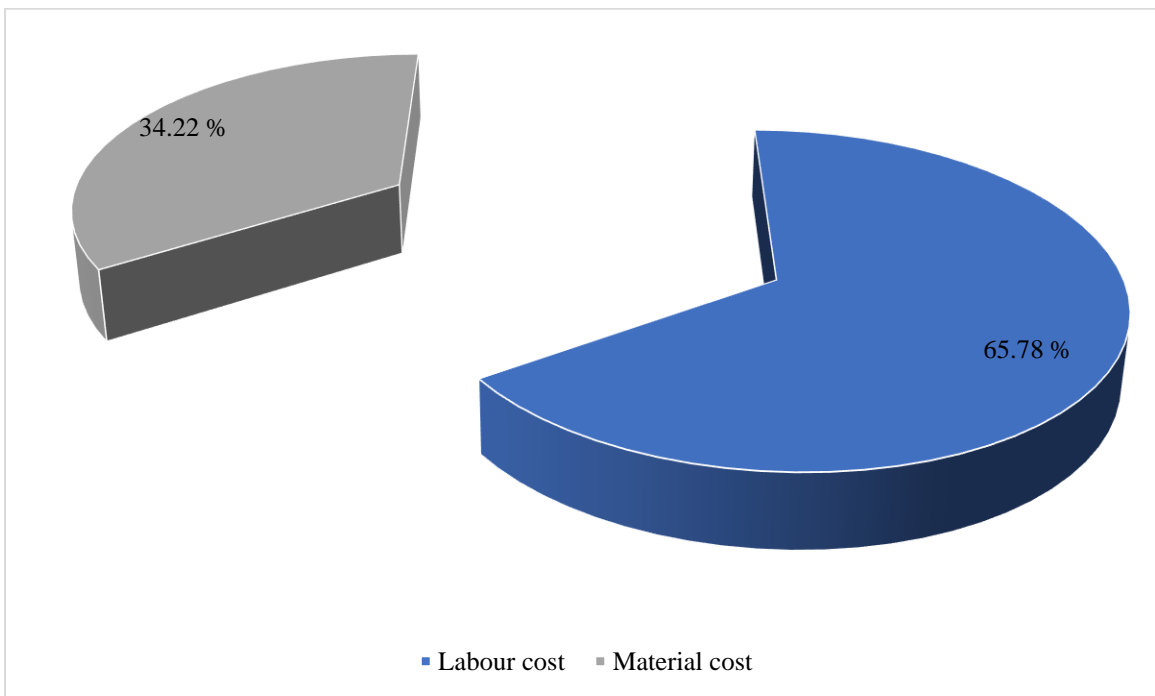
- Note: 1. Figures in parentheses represent percentage to respective total  
2. For the purpose of the above calculation, wage rate of 340 / man day is considered  
3. Cost of production estimated at ₹ 52.25 per kg and ₹ 52,257 per ton  
4. 1 bag = 50 kg

The cost incurred towards material was about ₹ 17,737 / acre (24.59 % of the annual working capital). Among the total material costs, the cost of fertilizer (including FYM) accounted for maximum share of ₹ 12,099 / acre (68.21 % of the total material cost). Coffee being labour intensive crop (Upendranadh, 2010), the total labour cost is accounted for about 68.83 per cent (₹ 49,640 / acre) of the annual working capital and rest 31.17 per cent is material costs. The average price of dry cherry coffee in the year 2020 was for ₹ 3,400 per 50 kg bag. The average yield was about 27-28 bags of dry cherry. The estimated gross return from Robusta cherry coffee was ₹ 93,840 per acre. Hence, it was clear that the net returns were ₹ 21,384 / acre. Return per rupee of expenditure was 1.30.

As depicted in Table 4.7, Robusta parchment coffee, estimated annual working capital of Robusta parchment coffee is accounted to ₹ 79,587 per acre. All the operations carried out in Robusta cherry cultivation remain as such in parchment coffee cultivation except the processing type followed. Processing costs for parchment growers were higher (₹ 6,390 per acre) compared to Robusta cherry (₹ 680 per acre). The gross return from Robusta parchment coffee was ₹ 1,18,462 / acre, the gross margin was ₹ 38,875 / acre and return per rupee of expenditure was 1.49, which indicated that the Robusta parchment coffee production was a profitable compared to Robusta cherry. However, Robusta parchment requires higher capital investment on pulping machines and de-mucilization facilities. Further, the parchment production requires high amount of clean water due to wet coffee processing. India is the market leader in the production of Robusta parchment coffee which earns highest premiums in the international market. Indian Robusta parchment preferred by Italian and other quality-conscious European roasters to prepare ‘espresso’ blends. Due to this, Indian Robusta parchment commands a premium over the Intercontinental Coffee Exchange, Europe. Though net returns from Robusta parchment coffee are higher than Robusta cherry coffee, nearly 80 per cent of growers in Kodagu region go for dry processing as they lack required infrastructure for processing into parchment coffee and also due to cost of processing parchment coffee is more than dry cherry coffee.



**Fig. 4.1: Percentage share of labour and material cost to the annual working capital of Robusta cherry**



**Fig. 4.2: Percentage share of labour and material cost to the annual working of Robusta parchment**

**Table 4.7: Cost of cultivation in Robusta parchment coffee – Irrigated system****(₹ / acre)**

<b>Particulars</b>	<b>Labour (Man days)</b>	<b>Labour cost</b>	<b>Material cost</b>	<b>Total</b>
Fertilizer including FYM	10	3,400 (6.49)	12,099 (54.78)	15,499 (19.47)
Shade regulation	19	6,460 (12.33)	-	6,460 (8.11)
Weeding operation	19	6,460 (12.33)	-	6,460 (8.11)
Bush management (Pruning + Desuckering)	32	10,880 (20.77)	-	10,880 (13.67)
Soil management (Cradle pit renovation + Lime application)	12	4,080 (7.79)	1,326 (6.00)	5,406 (6.79)
Pest/Disease management	3	1,020 (1.94)	966 (4.37)	1,986 (2.49)
Harvesting operation	44	14,960 (28.57)	-	14,960 (18.79)
Processing operation	6	2,040 (3.89)	4,350 (19.69)	6,390 (8.02)
Irrigation	6	2,040 (3.89)	2,044 (9.25)	4,084 (5.13)
Miscellaneous	3	1,020 (1.94)	1,302 (5.89)	2,322 (2.91)
Interest on working capital @ 7 %	-	-	-	5,140
<b>Annual working capital</b>	<b>154</b>	<b>52,360</b> <b>(100.00)</b>	<b>22,087</b> <b>(100.00)</b>	<b>79,587</b> <b>(100.00)</b>
Gross Returns (₹) = 1,18,462 [Price = ₹ 122 / kg and average yield = 971 kg per acre (Avg. 19-20 bags / acre)]				
Net Returns (₹) = 38,875				
Return per rupee of expenditure = 1.49				

- Note: 1. Figures in parentheses represent percentage to respective total  
2. For the purpose of the above calculation, wage rate of 340 / man day is considered  
3. Cost of production estimated at ₹ 81.96 / kg and ₹ 81,964 per ton  
4. 1 bag = 50 kg

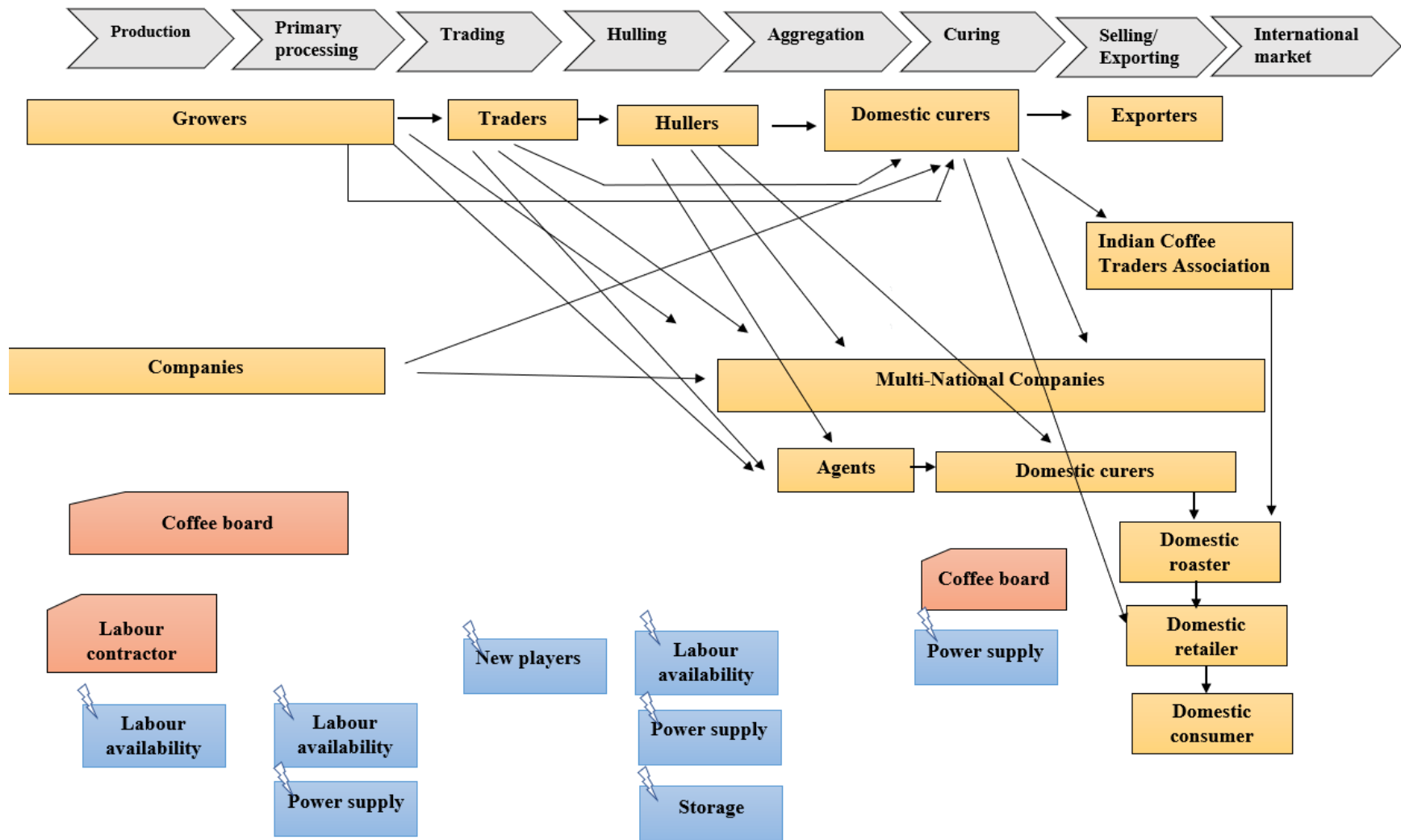
As depicted in Fig. 4.1 and Fig. 4.2, labour cost in Robusta cherry (68.83 %) and Robusta parchment (65.78 %) were more than material cost of Robusta cherry (31.17 %) and Robusta parchment (34.22 %). Hence, hypothesis that labour cost is more than the input cost in Robusta coffee cultivation is accepted. Similar results were observed by Pradeepa *et al.* (2019) who estimated the average total variable cost for Robusta cherry which was ₹ 65,254 / acre and the total labour cost was accounted about 73 per cent (₹ 47,382) of the total variable costs in Chikkamagaluru and Hassan districts of Karnataka.

### **4.3 Mapping of value chain**

Based on the Value Links methodology, a differentiation is made between the processes in the chain denoted by large arrows and small arrows link the various actors, associated with the different processes denoted by rectangles, and various institutional supporters denoted by trapezoids as depicted in Fig. 4.1. Constraints existing in the coffee value chain were depicted by comment boxes with a lightning bolt.

#### **4.3.1 Coffee growers**

Majority of the grower in Kodagu region opted for Robusta coffee cultivation as it is lower susceptibility to diseases and higher productivity. Most of the growers in Virajpet taluk belongs to small growers opted for Robusta coffee cultivation since the production and maintenance of Arabica was more complex and it required higher amount of care and maintenance charges which is not easily affordable by the small growers. Small growers preferred dry processing as they were unable to produce parchment coffee because of lack of required infrastructure in their own farm. Fewer growers ventured into producing parchment coffee in that some of the small growers processed their coffee in neighboring farms where pulping facilities are available on rental basis. Some growers timed the sale of their produce (in several consignments) based on their financial requirements; the majority of small growers sold their produce immediately after processing at farm level. Since growers lived in the isolated area; they mainly prefer to sell their produce to traders to evade transportation costs and also, they sell to particular traders mainly because of the trust they have on them to avoid the risk. Over 80 per cent of the growers sell their produce at farm gate level due to easy accessibility to the local traders and village level



**Fig. 4.3: Mapping of value chain of Robusta coffee**

consolidators. Hence, growers are not involved in marketing of coffee and are not much benefitted in terms of value addition and prices. Only, a few growers sold their produce to agents/facilitators of domestic companies and MNCs.

#### **4.3.2 Traders**

Traders purchase coffee from growers at the farm gate, where they offer gunny bags, weighing facility, transportation, and immediate cash payment. They are cognizant with updated price information, as well as provision credit and storage facilities. They control the local market and act as vital link between growers and curers/exporters. While procuring coffee, they check for basic parameter such as moisture content from a sample of a kilogram of Robusta coffee. Testing is done by moisture meter and biting method. Based on the quality parameters, traders make their price offers to growers. If growers fail to maintain these standards, pro rata deductions are made from the final price. The tolerance limits for moisture content in 11.50 per cent for cherry coffee and 10.50 per cent for parchment coffee. If the moisture content of the coffee exceeds the tolerance level, it is discounted by weight for every per cent rise in moisture content beyond the tolerance level. They live at a more convenient location to coffee farms, allowing growers to contact them more quickly. They offered competitive prices to the growers, some may resort to the use of scrupulous practices such as under weighing and unauthorized quality deductions. The prevalence of such practices indicates marketing inefficiency, depriving growers of competitive prices.

#### **4.3.3 Hullers**

Hulling is the process of removing the outer skin of dry cherry coffee. Hullers are typically located near the production centers and act as intermediary processors. Hulling, on the other hand, produces low-quality coffee since it results in a higher amount of broken beans due to the rudimentary machines utilized.

#### **4.3.4 Local curers**

Curing is the most significant function in the coffee value chain for increasing value. The steps involved in curing are receiving raw coffee from the growers/traders,

redrying it to the prescribed standards if required, milling (peeling, dehusking), grading and sorting as per the prescribed standards, bulking and packing. There are over 70 curing works in India, the majority of which are medium and small units that handle relatively small volumes with technology (Chengappa *et al.*, 2018). They procure coffee from coffee growers or traders, cure it, store it, and then sell it to exporters or MNCs involved in the coffee business, or the curers themselves exports.

#### **4.3.5 Local merchant exporters**

Coffee is primarily an export-oriented commodity in India as more than 75 per cent of the production is being exported to more than 120 destinations across the world.

Green Coffee is primarily exported by local exporting companies and a few MNCs. India's top 20 exporters account for almost 86 per cent of the country's total coffee exports (Bhavya, 2011). Indian coffees are mainly imported by traders and roasters in the importing companies, who subsequently sell it to retailers and super markets. Coffee exporters need to register with the Coffee Board by obtaining Registration Cum Membership Certificate (RCMC). Export permit and International Coffee Organization (ICO) Certificate of Origin issued by the Coffee Board are the mandatory documents for the export of coffee from India. Usually, merchant exporters source coffee from curers, traders and growers. Majority of the green coffee is exported through New Mangalore Port Trust (NMPT) considering its proximity to the coffee growing districts *viz*, Kodagu, Chikkamagaluru and Hassan. Most of the shipments happens through Free On Board (FOB) terms.

#### **4.3.6 Multinational companies**

Similarly, MNCs obtain coffee from coffee growers, traders, and local curers, process it, and then store it in order to speculate on price swings and sell it on both domestic and international markets. Some of them facilitate the coffee growers to obtain Voluntary Sustainable Standard (VSS) certification to their plantations. Most of the MNCs have their own curing units and involved in exporting of coffee thus this has led to market concentration by undertaking a variety of processing and marketing tasks such as curing, certification, export, branding, and retailing, resulting in high level of functional

integration. They have advanced technologies and also efficiency is more when compared with local merchant exporters.

#### **4.3.7 Enablers**

##### **(a) Coffee Board**

The Coffee Board is a statutory body established under the Coffee Act of 1942, and it is administered by the Ministry of Commerce and Industry of the Government of India. During the pre-liberalized era, the Coffee Board was vested with the powers for marketing the entire coffee produced in the country under a unique pool marketing system. The pool marketing system was liberalized in a phased manner during 1994 to 1996. After dismantling of pool market system, the Coffee Board's role has been redefined to serve as the friend, philosopher and guide to the coffee sector covering the entire value chain. Currently, the core activities are primarily directed towards research & development, transfer of technology, quality improvement, extending development support to growing sector, promotion of Indian coffee in export market and consumption of coffee in domestic market.

##### **(b) Indian Coffee Traders Association**

The Indian Coffee Traders Association (ICTA) was created in 1993. ICTA auction is held once a week in Bengaluru. This auction offers local price-discovery mechanism for all grades of coffee and also act as an indicator of domestic prices in India. However, overall scenario is that less than 10 per cent of coffee is sold through auctions as most small growers prefer to sell unprocessed coffee directly to exporters or roasters through agents (Upendranadh, 2010). In ICTA auctions, the coffee is traded in the cured form, once the coffee has been cured, income derived from its sale will be treated as non-agricultural income and taxed as per the Rule 7(b) of the Income Tax Rules, 1962. This regulation has discouraged several coffee growers from curing, grading and branding of their coffees, which resulted in poor participation of the coffee growers in ICTA auctions.

### **(c) Labour contractor**

Given the labour-intensive nature of coffee cultivation, it absorbs large number of workers. Big plantations (and corporations) developed a system of modern labour management with statutory provisioning. Among small planters, labour management is more informal in nature, where in certain cases a number of labourers are tied to the families over generations as permanent workers. Historically, the weather and living conditions in coffee areas are rather hostile – it continues to remain the same with high rainfall, in spite of improved communication facilities over the time. This has necessitated even the small planters to seek workers as permanent workers and create several provisions for their housing, health and education. Coffee plantations in Kodagu district mainly depend on migrant labourers. Generally, the labour contractor brings labourers from North Karnataka districts, North Eastern states, Tamil Nadu etc., to make up the labour shortage during the picking season.

### **(d) Associations of Growers, Co-operatives and Farmers Producers Companies**

The primary role of associations in the coffee industry is to improve their policy communication with the grower community and other stakeholders in the industry. Industry associations were frequently represented on issues such as taxation, price stabilization, and incentives. The United Planters' Association of Southern India, the Coorg Planters' Association, and the Karnataka Planters' Association have all helped to facilitate such processes in the past. Small growers, on the other hand, have little participation in these three institutions due to their lack of clout and interest. Karnataka Growers Federation represents small growers as an apex body of associations. Several of these apex groups publish newsletters and other materials that serve as key sources of information and ideas exchange. Few Growers Cooperatives exist (for example, the Kodagu District Coffee Growers Cooperative Society Ltd), although they have traditionally played an important role in market interventions and price benchmarking. It is necessary to identify such institutions and revitalize them through professionalization in order to ensure the long-term viability of small growers. There have been non-governmental organizations (NGOs) engaged in the conservation and environmental fields. International agencies, on the other hand, have shown an interest in addressing concerns of production and sustainability,

coinciding with the emergence of groups promoting fair trade and environmental sustainability. It is here that the importance of non-governmental organizations (NGOs) is recognized, as they give new and creative technology, educate planters on various sustainable activities, and develop commercial links. There appeared to be a general reluctance among coffee growers to upgrade coffee. There is a need to collaborate with grower communities to develop conservation and sustainability practices that are appropriate for the local context.

Self-Help Groups (SHGs) have recently developed as a new way to empower coffee farmers. This concept's main goal was to bring together small coffee growers in potential locations and register them under the State's Organizations Act, which governs cooperative societies. The Coffee Board of India is assisting small growers in forming collectives, SHGs, Farmers Producers Organizations (FPOs) and co-operatives, as well as encouraging them to engage in community-based coffee marketing through financial incentives. This will allow them to increase not just the quality of their coffee, but also the value of their coffees, as well as collective bargaining.

Recently, the Kodagu Coffee growers formed Farmer Producer Companies in the district. These Farmers Producers Companies involved in value addition and Export Business. Examples: Biota Coorg FPC and Puthari Farmers Producer Co. Ltd.

#### **4.3.8 Quality parameters**

It was seen that, there were four quality parameters usually checked at farmgate level by downstream actors.

- Moisture content was the first to be checked by all the actors.
- The out-turn of the coffee - This test was based on hulling a sample of one kg to determine the growers' out-turn.
- Berry-borer infected beans- The infected beans are often rejected and fetch less value to the producers
- Blacks and Bits

Pro rata deduction is made with prices according to the quality parameters checked by different intermediaries.

#### **4.3.9 Governance in the value chain**

In the study region, the governance structure between the grower and trader was found to be of market form of governance with pricing and basic quality standard such as moisture content and out-turn defining interactions between them. The complexity of information was found to be minimal under this kind of governance, while the ability to codify information was found to be high. The transaction was also founded on mutual dependency, which was governed by trust, because the majority of the transactions were carried out as a result of good connections that had developed between them as a result of their proximity to each other's region. The rationale for this coordination was that growers preferred to sell their produce to traders to reduce transportation costs and because they believed that if the produce was sold to a trustworthy individual, they would be less likely to be tricked. Furthermore, the governance structure between traders and curers was discovered to be market-like, with strong capacities of codifying information between traders and curers. The transactions were also founded on mutual dependency, which was regulated by trust, because the majority of the transactions were carried out as a result of good relationships. While the governing structure between the curers and exporters/MNCs was found to be modular in nature, the coffee was sorted, graded, and sold according to the demand of firms and their product criteria, and the procedure involved was equally complex. The ability to codify information was determined to be high. Furthermore, the diversity and number of intermediaries between growers and ultimate purchasers filters the information gathered by growers in order for them to develop more specialized products. However, some of the growers in the study area involved in the production of differentiated coffees like voluntary sustainable standard certified coffees, estate branded coffees etc., and these growers exports their coffees directly at premium price without any intermediaries.

Majority of small growers in the Kodagu district have relatively little price bargaining power due to their small land holdings and reliance on downstream actors in

the value chain, primarily traders. They only had a limited understanding of quality issues and standards. Furthermore, rising standards such as certified and specialty coffee are erecting obstacles to entry for small coffee growers who lack the necessary resources and abilities to compete in these markets. The transparency in the flow of information to small scale growers was low. Small holdings, lack of capital to take up value addition, branding, and lack of direct marketing activities were the main factors for lower producer share in coffee value chain.

**Table 4.8: Governance structures in Value Chain**

<b>Governance type</b>	<b>Complexity of transactions</b>	<b>Ability to codify information</b>	<b>Capabilities in the supply base</b>	<b>Degree of coordination and power asymmetry</b>
Market	Low	High	High	Low ↓ High
Modular	High	High	High	
Relational	High	Low	High	
Captive	High	High	Low	
Hierarchy	High	Low	Low	

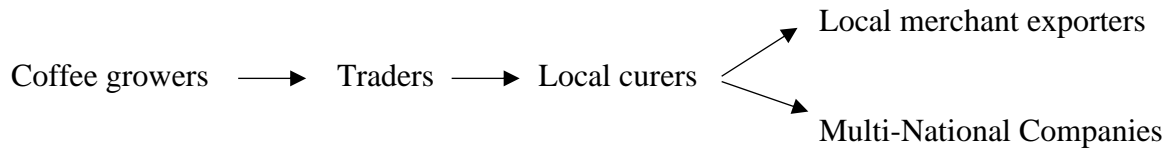
Source: Gereffi *et al.*, 2005

Similar results were observed by Chengappa *et al.* (2018) who found that value chain for coffee was largely diffuse in nature, with limited coordination in terms of quality and specifications in the conventional chain and by Bhavya (2011) found that the main actors in the coffee value chain included producers, hullers, agents, curers, exporters, roasters and retailers and finally consumers and most traded channel was found to be through the local purchasing agents.

## 4.4 Price spread in marketing of Robusta coffee

### 4.4.1 Marketing channel

For the analysis, one marketing channel have been considered. In this channel traders approached the growers during coffee season hence growers do not incur any marketing cost. From traders it was sold to curers and then from curers to local merchant exporters and MNCs.



### 4.4.2 Price spread in marketing of Robusta coffee

As shown in Table 4.9, the estimated cost of production for Robusta coffee growers in Kodagu district was ₹ 52.25 per kg of cherry coffee. Local traders paid ₹ 68.00 at the farmgate and spent ₹ 2.53 per kg of cherry for gunny bags, transportation and storage. Despite significant value addition to the product, local traders' margins were estimated to be ₹ 3.21 per kg of cherry. The Robusta cherry coffee was sold to curers at an average sale price of ₹ 73.54 per kg. For curers, since the conversion factor between cherry coffee to clean coffee is 50 per cent, the curer needs to procure two kg of cherry coffee in order to obtain one kg of clean coffee. The out-turn losses for curer were estimated at ₹ 36.77 per kg of clean coffee, while transportation and storage costs were estimated to be ₹ 1.62 per kg, the cost of out-turn losses has been considered while estimating the total cost incurred by the curers. Aggregate costs incurred by the curers towards the value addition was ₹ 43.43 per kg of clean coffee. Selling price of ₹ 134.10 per kg of Robusta cherry -AB grade for curer was considered for the analysis as Robusta cherry-AB accounts for about 30 to 35 per cent of India's green coffee exports. The total green bean procurement for local merchant exporter was ₹ 134.10 and the average FOB price was ₹ 153.10 per kg of clean Robusta cherry-AB grade coffee. Since MNCs and local merchant exporters buy directly from curers, there is no much value addition; they just export the coffee to other nations. Although MNCs were more efficient as they deal with large volumes, their costs were lower than those incurred by local merchant exporters, while average FOB prices remain

the same for both since the prices are aligned with the international futures markets. Hence the estimated price spread was ₹ 85.10 per kg of Robusta cherry coffee. Producer share in consumer rupee was 44.41 per cent.

**Table 4.9: Price spread in marketing of Robusta cherry**

Value chain actors	Cost components	Cost (₹ / kg)	Selling price (₹ / kg)	Margin (₹ / kg)
Growers	Cost of Production	52.25	68.00	15.75 (44.41)
Traders	Purchase cost	68.00	73.54	3.01 (48.03)
	Value addition (Curing)	-		
	Transportation + Storage + bags	2.53		
	Total cost	70.53		
Curers	Purchase cost	73.54	134.10	17.11 (87.58)
	Value addition (Curing)	5.06		
	Transportation + Storage	1.62		
	Out turn losses	36.77		
	Total cost	116.99		
Local merchant exporters	Purchase cost	134.10	153.10	13.01 (100.00)
	Bill of lading charges including GST	0.79		
	Transportation + Loading + Gunny bags	4.37		
	Charges towards export documentation including GST	0.52		
	Charges towards customs house agent including GST	0.31		
	Total cost	140.09		
Multi-National Companies	Purchase cost	134.10	153.10	13.29 (100.00)
	Bill of lading charges including GST	0.75		
	Transportation + Loading + Gunny bags	4.16		
	Charges towards export documentation including GST	0.50		
	Charges towards customs house agent including GST	0.30		
	Total cost	139.81		
<b>Price spread in Robusta cherry coffee</b>			<b>₹ 85.10 / kg</b>	
<b>Producer share in consumer rupee</b>			<b>44.41 %</b>	

Note: Figures in parentheses respective actors share in consumer rupee

As depicted in Table 4.10, growers' margin on Robusta parchment coffee was ₹ 40.07 per kg, which is higher than the margin obtained by the growers under cherry coffee production. Indian Robusta parchment earn significant premiums in the international market due to huge demand in the European countries to mix it in blends as the quality is superior, higher premium is an incentive for the coffee growers to take up parchment production but parchment production is considered to be expensive as labourers are paid more to pick fully ripened fruits and also water intensive. Thus, the parchment production was largely seen in large holdings.

In case of parchment coffee production, the growers undertake value addition through pulping which resulted in higher value for realization for parchment coffee than cherry coffee. The average price of Robusta parchment coffee was ₹ 122 per kg in the Kodagu district, which was higher than the Robusta cherry coffee (₹ 68.00 / kg). Curers had incurred ₹ 25.50 towards the out-turn losses considering the conversion factor between parchment coffee to clean coffee is 80 per cent, The cost of value addition (milling, grading and sorting) incurred by curer in terms of was ₹ 1.12 per kg, which is lower compared to cherry coffee because parchment coffee does not require hulling. Hence, the margin for curers in processing of parchment coffee was relatively less (₹ 13.17 / kg) compared to processing to cherry coffee (₹ 17.11 / kg). The average selling price of Robusta parchment -AB grade was ₹ 168.95 per kg. The estimated price spread was ₹ 62.95 per kg of Robusta parchment coffee, which was low compared to cherry coffee production. Producer share in consumer rupee was estimated to be 65.96 per cent.

Price spread was wide in both Robusta cherry and Robusta parchment coffee, which resulted in low producer share in consumer rupee, since small growers are unable to add much value for their coffees as they do not have the capital to install eco-pulper, curing unit and roasting machines. Further, small coffee growers do not have directly access to the export market since they are constrained by intermediaries. Thus, hypotheses that producer share in consumer rupee is low and price spread is more across the downstream actors in the coffee value chain are accepted. While the price spread in Robusta cherry coffee value chain is high compared to Robusta parchment coffee, due to lesser value addition at farm level. Producer share in consumer rupee for Robusta parchment is relatively higher as there is value addition at growers' level, fetching them higher margin.

**Table 4.10: Price spread in marketing of Robusta parchment**

<b>Value chain actors</b>	<b>Cost components</b>	<b>Cost (₹ / kg)</b>	<b>Selling price (₹ / kg)</b>	<b>Margin (₹ / kg)</b>
Growers	Cost of Production	81.96	122.00	40.04 (65.96)
Traders	Purchase cost	122.00	127.54	3.01 (68.95)
	Value addition (Curing)	-		
	Transportation + Storage + Bags	2.53		
	Total cost	124.53		
Curers	Purchase cost	127.54	168.95	13.17 (91.34)
	Value addition (Curing)	1.12		
	Transportation + Storage	1.62		
	Out turn losses	25.50		
	Total cost	155.78		
Local merchant exporters	Purchase cost	168.95	184.95	10.01 (100.00)
	Bill of lading charges including GST	0.79		
	Transportation+Loading+Bags	4.37		
	Charges towards export documentation including GST	0.52		
	Charges towards customs house agent including GST	0.31		
	Total cost	174.94		
Multi-National Companies	Purchase cost	168.95	184.95	10.29 (100.00)
	Bill of lading charges including GST	0.75		
	Transportation + Loading + Gunny bags	4.16		
	Charges towards export documentation including GST	0.50		
	Charges towards customs house agent including GST	0.30		
	Total cost	174.66		
<b>Price spread in Robusta parchment coffee</b>			<b>₹ 62.95 / kg</b>	
<b>Producer share in consumer rupee</b>			<b>65.96 %</b>	

Note: Figures in parentheses respective actors share in consumer rupee

Hence, main actors in the coffee value chain include growers, traders, curers, MNCs and exporters. Most traded channel was found to be through the traders. Also, curers and exporters are important players in the chain. Although majority of coffee is exported, the direct contact of producers and exporters was less.

The findings of the present study are on par with the studies conducted Bhavya (2011) who opined that producer share in consumer rupee and price spread were high in marketing channel (Farmers-Agents-Curers -Local Roasters) i.e., 60 per cent and ₹35,350 per tonne, respectively and another study conducted by Pradeepa *et al.* (2019) opined that there was a huge difference in the prices obtained by growers at farmgate level and at exporters level and estimated price spread was ₹ 34,147 per ton of Robusta Cherry-AB.

#### **4.4.3 Upgrading strategies in the existing value chain**

Upgrading refers to improvement in the value chain by introducing new knowledge and technology to address problems and constraints. Principally, upgrade strategy considers the weakest link within the value chain and maneuvers a way out by providing possible measures to overcome the constraints.

Product upgrading in the coffee value chain can occur through quality enhancements that enable growers to tap into the specialty, premium coffee segment. Adoption of internal and external standards (certification schemes or labels) for economic, social and environmental sustainability. Upgrading facilitates producers' access to high value coffee markets and is often associated with higher farm income, since consumer pay a price premium for the high quality.

Functional upgrading: Growers' and firms' taking on new roles such as transforming green coffee, into more complex products, such as roasted or soluble coffee and more recently new ready-to-drink products.

Process upgrading involves increasing productivity like improved varieties, good agricultural practices, mechanization of cultivation and harvest and reducing per-unit cost which results in a corresponding increase in the gross margins of market participants, such as coffee farmers or processors (Anonymous 2019<sup>(b)</sup>)

#### 4.5 Consumer preference for the type of coffee

Demographic breakdown of the sample respondents as depicted in Table 4.11. It shows that, 53 per cent of the respondents were females and 47 per cent were male. As for the age distribution, nearly 69.16 per cent of sample respondents fall between the age group “18-24”, 18.33 per cent were between “25-34” and 12.50 per cent were between the age group of “35-44”. However, there were no respondents above the age of 44. Of the total respondents, over 69.16 per cent were students, 27.50 per cent of the respondents were employed, and four per cent of the respondents were unemployed. As for the personal income per year, nearly 72.50 per cent of respondents falls under less than 5 lakhs income, 15.00 per cent were between “1-5 lakhs”, 9.16 per cent were between “5-10 lakhs” and only 3.33 per cent falls under more than 10 lakhs.

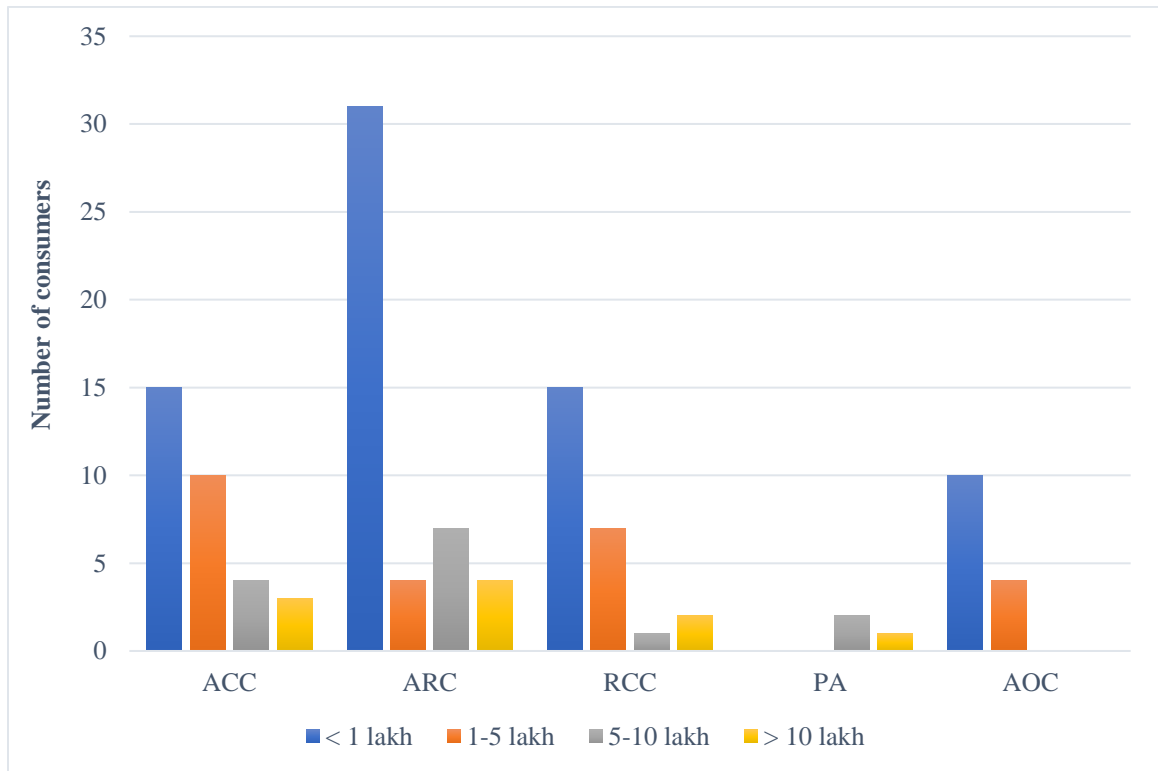
**Table 4.11: General information of sample consumers**

Sl. No.	Particulars	Number	Percentage
1	<b>Age</b>		
	18 – 24	83	69.16
	25 - 34	22	18.33
	35 - 44	15	12.50
	45 - 54	-	-
	55 and above	-	-
	Total	120	100.00
2	<b>Gender</b>		
	Male	56	46.66
	Female	64	53.33
	Total	120	100.00
3	<b>Personal income per year</b>		
	Less than 5 lakhs	87	72.50
	1-5 lakhs	18	15.00
	5-10 lakhs	11	9.16
	More than 10 lakhs	4	3.33
	Total	120	100.00

Table 4.12 illustrates, 44.16 per cent of the total respondents preferred drinking filter, while 35.83 per cent of the respondents love to drink soluble or instant coffee, 10.83 per cent of the respondents answered ready-to-drink coffee as their most preferred kind of coffee and only 9.16 per cent of the respondents preferred brewed coffees such as cappuccino, latte, black coffee, americano, and espresso. The respondents most often drink coffee at canteen (50.00 %) and at home (25.00 %), some of them also drank coffee in café coffee chains like starbucks, café coffee day, hattı kapi etc. (13.33 %) and a few people consume coffee in India coffee house run by Coffee Board. Out of 120 respondents, 96 respondents were aware of Arabica and Robusta coffee, which account for almost 80 per cent of the total. As shown in Fig. 4.4, When relationship between income of respondents and different coffee blends, Of the respondents earning less than 1 lakh, 15 respondents preferred Arabica and chicory in an 80:20 ratio and 31 respondents preferred Arabica and Robusta in an 80:20 ratio, 15 respondents earning between 1-5 lakh preferred for Robusta and chicory in a 70:30 ratio and very few preferred pure arabica. (Table 4.12).

Analysis of major factors affecting the purchasing of coffee as depicted in Fig. 4.5. It shows that price was the most important factor influencing coffee purchases, according to 85 per cent of respondents, followed by aroma (82.50 %), flavour (81.66 %), taste (68.33 %), and place of origin (57.50 %). The most favourable cup of coffee for the sample respondents based on acidity, sweetness, bitter and coffee strength were low acidity (59.16 %), medium sweetness (55.83 %), low bitterness (45.83 %) and high coffee strength (54.16 %) (Fig 4.6).

The findings of the present study are on par with the study conducted by Skubina *et al.* (2021) who opined that quality, flavour, habits, brand, and price as the most important factors affecting the purchase of coffee and contrarily more than half (50.90 %) of the respondents choose easy-to-prepare instant coffee than other types of coffee.



**Fig. 4.4: Relationship between income of respondents and different coffee blends**

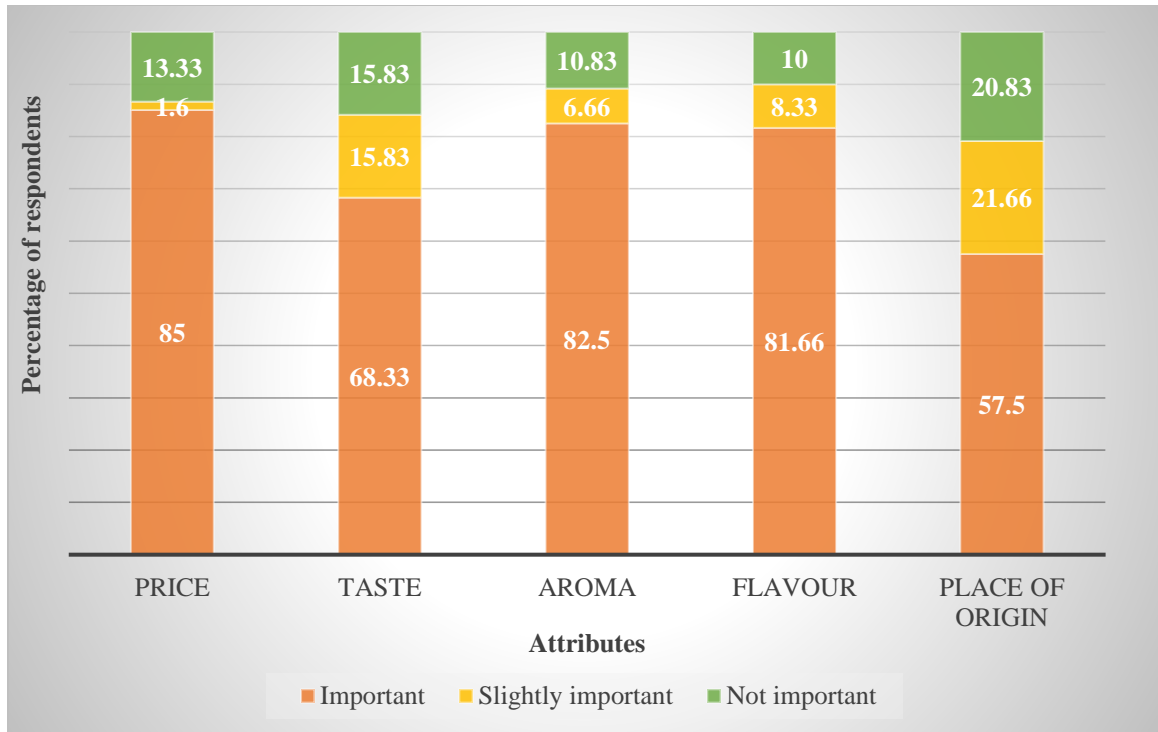
Note: ACC: Arabica and Chicory in the proportion of 80:20

ARC: Arabica and Robusta in the proportion of 80:20

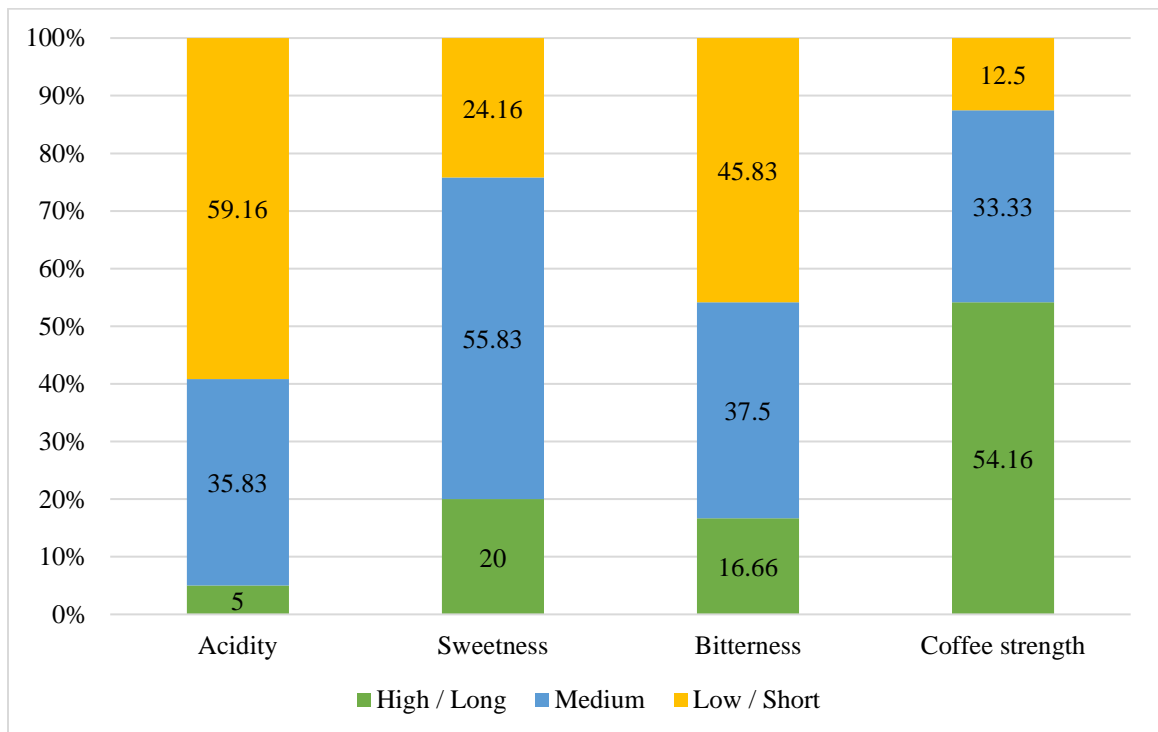
RCC: Robusta and Chicory in the proportion of 70: 30

PA : Pure arabica

AOC: Any other combinations



**Fig. 4.5: Attributes that are considered while consuming coffee**



**Fig. 4.6: Favourable cup of coffee for consumers**

**Table 4.12: Consumer preference for type of coffee**

<b>Sl. No.</b>	<b>Particulars</b>	<b>Number</b>	<b>Percentage</b>
1	<b>Type of coffee respondents' drink</b>		
	Filter coffee	53	44.16
	Soluble/Instant coffee	43	35.83
	Brewed coffees	11	9.16
	Ready to drink coffees	13	10.83
	Total	120	100.00
2	<b>Place to drink coffee</b>		
	At home	30	25
	At canteen	60	50
	Coffee housechains	16	13.33
	India coffee house run by Coffee Board	7	5.83
	India coffee house run by co-operatives	-	
	Other	7	5.83
	Total	120	100.00
3	<b>Awareness about Arabica and Robusta coffee</b>	96	80
	Total	120	100.00

## V SUMMARY AND CONCLUSION

A crisp summary of the research findings is presented in this chapter. Policy recommendations based on the results of the present study are also proposed for planners and administrators to be incorporated while framing policies.

### 5.1 Introduction

Coffee is the world's favourite beverage with an estimated three billion cups relished every day- either alone or with family, friends or colleagues and on the other hand, coffee provides livelihoods for at least 100 million people, across coffee producing countries. Coffee has primarily remained an export-oriented commodity wherein the producing countries have been exporting the green bean to consuming countries. Thus, coffee has been viewed as a tropical commodity that links producing countries in the global South, along the 'bean belt' that lies between the Tropics of Cancer and Capricorn, with consuming countries in the global North.

Indian coffee industry registered a remarkable growth during the last seven decades during which the area under coffee increased by more than four-fold from 92,523 ha to 4,59,730 ha between the period 1950-51 and 2020-21 while the production increased from about 18,893 tonnes to 3,34,000 tonnes during the same period with the record crop production of 3,48,000 tonnes during 2015-16 ([www.indiacoffee.org/Database](http://www.indiacoffee.org/Database)).

However, the coffee growing sector in the country is facing severe crisis situation for the past 5 years, the years 2016 and 2017 were drought years with erratic blossom and backing showers leading to setbacks in production. Further, the major coffee growing areas of Karnataka and Kerala which account for nearly 90 per cent of country's production have been battered by unprecedented heavy rains during August 2018, August 2019 and August 2020 leading to extensive crop losses beyond 33 per cent and landslides.

Coffee is traded down through a network of downstream actors that includes commission agents, local traders, village level consolidators, curers, international traders, exporters, roasters, and retailers, all of whom take a cut of the retail value. Against this

backdrop, the purpose of this study is to identify who are all the actors involved in Robusta coffee value chain and to examine their share in consumer rupee. The outcomes of the study help in identifying the strategies for improving the coffee farmers share in consumer rupee and minimize the price spread across the downstream actors in the Robusta coffee value chain.

## **Objectives**

- To study the economics of Robusta coffee cultivation in Kodagu district of Karnataka
- To study the important marketing channels and actors involved (mapping) in the domestic coffee value chain
- To estimate the price spread distributed between different actors of the coffee value chain
- To examine consumer preference for the type of coffee

## **5.2 Methodology**

The present study was taken-up in Virajapet taluk of Kodagu district in Karnataka. The purposive sampling was employed to select study area and random sampling design was used for the selection of respondents. The sample size was 30 coffee growers, five traders, five curing works, five multi-national companies, five local merchant exporters and 120 coffee consumers.

**Primary data:** The data relating to general information of the farmers, the size of the holdings, price aspects, marketing aspects were collected from the growers. For downstream actors, separate questionnaire was used to elucidate the information on costs of procurement, gross returns, cost of value addition and margins made through detail discussions. To examine consumer preference, Computer-Assisted Web-based Interviewing (CAWI) method was used to collect data pertaining to their consumption preferences.

**Secondary data:** Secondary data were collected from the publications of Coffee Board regarding area, production, productivity and exports.

### **5.3 Analytical tools**

**Value chain mapping:** Value chain map is a graphical representation showing the major actors and their relationship along with the sequence of activities involved in the value chain. It applies both qualitative as well as quantitative methods in order to show the linkage and operation of the chain (Value Links methodology explicated by Kaplinsky and Morris (2001)).

**Descriptive analysis:** The analysis of the data involved computation of simple descriptive statistics tools like average, percentages to estimate cost of production, returns, value addition, and margin made. To maintain uniformity, for all the actors, cost, returns, and cost of value addition and margins made are estimated for clean coffee.

**Marketing channel, price spread and producer share in consumer rupee:** An attempt was made to study some aspects of marketing from the viewpoint of coffee grower-seller. The aspects include the marketing channels, marketing costs and price spread. Marketing channel refers to the alternate routes of product flow from the producer to final destiny. Price spread was worked out by computing the difference between the price received by the producer and price paid by the consumer.

### **5.4 Major findings of the study**

1. Out of 30 sample respondents, most of the growers (56.66 %) belong to the middle age group (20-40 years), followed by the old age group (30.00 %) and only 13.33 per cent of the growers belong to the younger age group. It can be concluded that growers belonging to the middle age group were managing coffee farms and young people were seeking work in the cities, side-lining agriculture
2. The educational profile of respondents reveals that around 40 per cent of the total respondents were graduates and 36.66 per cent of the respondents were educated up to

PU. The remaining respondents who were educated up to high school and primary school constituted 16.66 and 6.66 per cent of total respondents, respectively.

3. Growers with small holdings (80 %) are more in number than growers with large holdings (20 %) in the sample growers.
4. The annual working capital of Robusta cherry coffee cultivation was ₹ 72,116 per acre. Coffee being labour intensive crop (Upendranadh, 2010), the total labour cost was accounted for about 68.83 per cent (₹ 49,940 / acre) of the annual working capital and rest 31.17 per cent was material cost. and the average yield was about 27-28 bags of dry cherry, the gross return from Robusta cherry coffee was ₹ 93,840 per acre. Hence, it is clear that the gross margin was ₹ 21,384 per acre.
5. The annual working capital of Robusta parchment coffee was accounted to ₹ 79,587 per acre. All the operations carried out in Robusta cherry cultivation remain as such in parchment coffee cultivation except the processing type followed. The gross return from Robusta parchment coffee was ₹ 1,18,462 per acre and the gross margin was ₹ 38,875 per acre.
6. Though net returns from Robusta parchment coffee are higher than Robusta cherry coffee, nearly 80 per cent of growers in Kodagu region go for dry processing as they lack required infrastructure for processing into parchment coffee and also due to cost of processing parchment coffee is more than dry cherry coffee.
7. The main actors in the coffee value chain include growers, traders, curers, MNCs and exporters. Most traded channel was found to be through the traders. Also, curers and exporters are important players in the chain. Although majority of produce was exported, the direct contact of producers and exporters was less.
8. In the study region, the governance structure of growers found to be of market form of governance with pricing and basic quality standard such as moisture content and out-turn defining interactions between them. Growers in the Kodagu region have relatively

little price bargaining power due to their small land holdings and reliance on downstream actors in the value chain, primarily traders.

9. One marketing channel was identified in the study area, *i.e.*, Grower → Traders → Curing works → Exporters and Multi-National Companies (MNCs). Growers' margin on Robusta parchment coffee was ₹ 40.07 per kg of dry parchment because they add value through pulping, giving them a higher margin for parchment coffee than cherry coffee (₹ 15.75 per kg of dry cherry).
10. The estimated price spread was ₹ 85.10 per kg of Robusta cherry coffee and producer share in consumer rupee was 44.41 per cent for Robusta cherry coffee. The estimated price spread was ₹ 62.95 per kg of Robusta parchment coffee, which was comparatively low. Producer share in consumer rupee for Robusta parchment was 65.96 per cent. Price spread was wide in both Robusta cherry and Robusta parchment coffee, which resulted in low producer share in consumer rupee, since small growers are unable to add much value for their coffees as they did not have the capital to install eco-pulper, curing unit and roasting machines. Further, small coffee growers did not have direct access to the export market since they are constrained by intermediaries. When comparing the price spread in Robusta cherry and parchment coffee, Robusta cherry had a wider price spread since growers add less value to the product than other intermediaries. While, the price spread in Robusta cherry coffee value chain was high compared to Robusta parchment coffee, due to lesser value addition at farm level. Producer share in consumer rupee for Robusta parchment was relatively higher as there was value addition at growers' level, fetching them higher margin.
11. Out of 120 respondents, 96 were aware of Arabica and Robusta coffee, which account for almost 80 per cent of the total respondents. Filter coffee was preferred by nearly 44.16 per cent of respondents while 35.83 per cent of the respondents love to drink soluble or instant coffee, 10.83 per cent of the respondents answered ready-to-drink coffee as their most preferred kind of coffee and only 9.16 per cent of the respondents prefer brewed coffees such as cappuccino, latte, black coffee, americano, and espresso.

## 5.5 Policy suggestions

- The results indicated that, growers realized higher price by little value addition in parchment coffee than dry cherry coffee, although many small growers interested in taking up value addition practices *viz.*, parchment coffee production, roasted and ground coffee production and exporting their coffees directly without any intermediaries but they do not have the capital to install eco-pulper, curing unit, roasting machines, which is a capital constraint for small coffee growers. Therefore, it is suggested to form Farmer Producers Organization (FPO) for coffee, for taking up value addition activities and marketing.
- The existing coffee value chain involved more intermediaries and hence, there is a need to reinvent with lesser intermediaries which would become more efficient and able to generate win-win economic transactions for all actors including coffee growers in the value chain with wider buyer network by implementing integrated digital platform like block chain-based marketplace for all the stakeholders involved in the coffee value chain.
- At present, onus should be on developing improved machineries and farm implements to carry out operations in the coffee cultivation in order to reduce the cost of farming and increase productivity level since in India coffee cultivation remains as a labour-intensive crop.

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## APPENDICES

Department of Agricultural Economics, GKVK, Bengaluru

UNIVERSITY OF AGRICULTURAL SCIENCES, BENGALURU

### “Value Chain Analysis for Robusta Coffee in Kodagu District of Karnataka”

Schedule for primary data collection

Research student: Sushma M Prakash

#### 1. Personal details

Name

Age (years)

Education (1=Primary, 2=high, 3=collegiate, 4=Bachelor's, 5=Masters)

Farming experience (years)

Place

Contact Number

#### 2. Land and farm details

Cultivated land		Uncultivated land		Total land (acres)
Acres	Value Rs/acre	Acres	Value Rs/acre	

### Major farm implements

Particulars	Nos.	Year of Purchase/ construction	Purchase value (Rs.)	Present value	Annual maint. cost	Expected life
Farm building 1.Dwelling House 2.Cattle Shed 3.Storage House						
Tractor (H.P.)						
Power tiller						
Seed drill						
Plough						
Trolley						
Dug-well						
Bore-well						
Diesel engine						
Electric motor						
Conveyance						
Water storage structure						
Weeding tools						
Others						

### 3. Cropping pattern for the year 2020-21:

Crop	Area (acre)	Production (kg)
Coffee		
Paddy		
Pepper		
Cardamom		
Oranges		
Arecanut		
Others _____		

Coffee type	Area (acre)	Cherry production (bags)	Parchment production (bags)	Spacing (ft X ft)	Beginning harvest month	End harvest month	Frequency of harvest
Robusta							

Note: Spacing codes: 1= 5X5, 2=6X6, 3=7X7, 4=8X8, 5=10X10, 6 = other (enter)

Month codes: 1=Dec, 2=Jan, 3=Feb, 4=Mar, 5=April.

Frequency of harvest: 1=Weekly, 2=Twice per month, 3=Monthly, 4=Other

#### 4. Details of cost of cultivation

Variety:

Acreage:

Year of planting:

#### Establishment cost

S.N.	Particulars	Quantity	Value (Rs/ha)
<b>Investment cost</b>			
1	Well (Nos)		
2	Pumpset and Pump house (Nos)		
3	Sprinklers and Sprayers (Nos)		
4	Go downs + Drying yard (Nos)		
5	Farm vehicle (Nos)		
6	Pulping unit (Nos)		
7	Land preparation (Man days)		
8	Digging of pits and planting (Man days)		
9	Shade tree planting (Man days)		
10	Planting material (Number of plants)		
11	Shade tree planting material (Number of plants)		
	<b>Total</b>		
<b>Maintenance cost during gestation period</b>			
1	1 <sup>st</sup> year		
2	2 <sup>nd</sup> year		
3	3 <sup>rd</sup> year		
4	4 <sup>th</sup> year		
5	5 <sup>th</sup> year		
	<b>Sub total</b>		
	<b>Total establishment cost</b>		

## Maintenance cost

Operations		Total cost (Rs.)
Labour costs		
Fertilizer costs		
Pesticide costs		
Processing costs	Cherry	
	Parchment	
Irrigation costs		
Other costs		

## 5. Sales behaviour of farmers:

		Beginning Month	Ending Month	Average Price (Rs./bag)	Volume (bags)	Frequency (times /season)	No. of buyers	Primary Buyer Type	Years of Relationship
Robusta	Cherry								
	Parchment								

Note: Month codes: January=1, February=2, March=3, April=4, May=5, June=6, July=7, August=8, September=9, October=10, November=11, December=12

Primary buyer type codes: Local Trader=1; Companies=2, Curing agency=3, Auction=4, Exporter= 5, Broker=6 Others \_\_\_\_\_ =7

## 6. Number of possible traders that you could work with?

## 7. Do you prefer a particular set of traders for selling your coffee? [Yes=0, No=1]

(if "No," skip to question 9)

## 8. If response to 8 is "Yes", why?

8.1 Access to credit

8.2 Long-term relationship

8.3 Good prices

8.4 Reliable in payment

8.5 Reputation in community

8.6 Provision of services

8.7 Staggered sale facility

8.8 Others

**9. How are you paid for your coffee?**

Codes: 1=Immediate payment (by cash or wire within 1-2 days), 2=Deferred payment, 3=Partial payment (instalments)

**10. If you are not paid in cash at time of delivery, how many days does it take on average to get paid?**

**11. Selling Price for 50 Kg bag of Cherry coffee?**

**Selling Price for 50 Kg bag of parchment coffee?**

**12. What are recent strategies of value addition? (Technology, process, diversification, exploring new markets) What are the drivers behind these strategies?**

**Traders**

Who are your suppliers?	
Where do you procure?	
What are the quality parameters?	
How do you check the quality parameters while procuring?	
Capacity of the firm	
What is the final product?	
How do you sell and to Whom	
Constrains in the business	

Form of coffee procured	Procurement		Expenses		Selling	
	Quantity	Cost	Activities	Cost	Quantity	Price

### Curing units

Role of curers in coffee value chain	
Who are your suppliers?	
How do you procure your coffee bean?	
Are there any quality parameters considered while bean procurement?	
What kind of relationship do you maintain with suppliers and buyers?	
What are steps in curing? What are the other activities you carry out?	
What is the output of curing process?	
Is there difference between processing of Robusta or other cherry/parchment beans? What is the conversion rate (out turn rate)?	
What are recent strategies of value addition? What are the drivers behind these strategies?	

Form of coffee procured	Procurement		Expenses		Selling	
	Quantity	Cost	Activities	Cost	Quantity	Price

### Multi-national Companies

Who are your suppliers?	
Are there any quality parameters considered while bean procurement?	
What are recent strategies of value addition? What are the drivers behind these strategies?	

## Exporters

Who are your suppliers? Where do you procure?	
Are there any quality parameters considered while bean procurement?	
What are the quality parameters required for exported coffee?	
What are recent strategies of value addition? What are the drivers behind these strategies?	
What is your opinion about future prospectus of coffee export?	

Form of coffee procured	Procurement		Expenses		Selling	
	Quantity	Cost	Activities	Cost	Quantity	Price
			Curing Roasting Packing Transportation Storage Customs expenditure Certificates expenditure FOB Price			

## Consumers

Name -:

1) Are you male or female?

Female

Male

Other:

2) What is your age?

a. 18 to 24

b. 25 to 34

c. 35 to 44

d. 45 to 54

e. 55 and above

3) What is your education? \_\_\_\_\_

4) What is your occupational status? (choose the one which most accurately describes you.)

a. Student

b. Employed

c. Unemployed

d. Retired

5) Which of these describes your personal income per month? (confidential)

a. Nil Income

b. Rs.10000-50000

c. Rs.50000-100000

d. Rs.100000-200000

e. Rs.200000-300000

f. Above Rs.300000

6) Which type of coffee you drink daily?

a. Filter coffee

b. Soluble/Instant coffee

c. Brewed coffees such as (cappuccino, Latte, Black coffee, Americano, Espresso, etc.)

d. Ready to drink coffee

7) What is your favourite coffee drink?

- a. Filter coffee
  - b. Soluble/Instant coffee
  - c. Cappuccino
  - d. Americano
  - e. Espresso
  - f. Doppio
  - g. Cortado
  - h. Red eye
  - i. Galao
  - j. Lungo
  - k. Macchiato
  - l. Mocha
  - m. Ristetto
  - n. Flat white
  - o. Affogato
  - p. Cafe au lait
  - q. Irish coffee
  - r. Ice coffee
  - s. Black coffee
  - t. Latte
- Other:

8) When do you drink coffee?

- a. Morning
- b. Noon
- c. Afternoon
- d. Night

9) I prefer to .....

- a. Make my coffee at home
  - b. Buy it from a coffee shop
  - c. Drinking coffee at hotel/restaurant/cafeteria
- Other:

10) How much coffee do you drink?

- a. 1 cup or less per day
- b. 1-2 cups per day
- c. 3-4 cups per day
- d. 5 or more cups per day

11) Where do you buy coffee powder?

- a. Retail outlets of coffee chains (Café coffee day, Starbucks, Hatti coffee, Bayars coffee, etc)
  - b. Kiraana Shops
  - d. Local Roasters
  - e. Online
  - f. Directly from growers (Estate Branded Coffees)
  - g. Super markets
- Other:

12) How often do you visit coffee shops?

- a. 0 times per week
- b. 1-2 times per week
- c. 3-4 times per week
- d. 5 or more times per weeks

13) How do you like your coffee?

- a. Black coffee without Sugar
  - b. Black coffee with sugar
  - c. Coffee with milk
  - d. Coffee with milk and sugar
  - e. Coffee with Jaggery
- Other:

14) While ordering coffee from a restaurant, I typically add;

- a. Nothing (prefer black coffee)
- b. Creamer only (either dairy or non-dairy)
- c. Sweetener only (either sugar or artificial)
- d. Both creamer and sweetener

15) For what reason would you drink coffee? (you could choose more than one)

- a. Drinking habit
  - b. Release stress
  - c. Refreshing
  - d. Social occasions
  - e. Health benefits
  - f. To avoid Procrastination
- Other:

16) Which machine your using at home for coffee preparation?

- a. South Indian coffee filter
  - b. Espresso machine
  - c. None
- Other:

17) What attributes are important to you when consuming coffee?

(Rating Score 5 - Very important, 4 - Fairly important, 3 - Important, 2 - Slightly important, 1 - Not at all important)

	1	2	3	4	5
Price					
Taste					
Aroma					
Flavour					
Ease of brewing					
Place of origin					

18) What kind of taste you like in coffee

Bitter

Sweeter

Mild taste