A STUDY ON VALUE CHAIN MODEL AND SUPPLY CHAIN MANAGEMENT OF RICE IN JAMMU REGION

By

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(J-18-M-58-ABM)

Project submitted to Faculty of Post graduate Studies

In partial fulfilment of the requirements

For the degree of

MASTERS OF BUSINESS ADMINISTRATION

(AGRI-BUSINESS MANAGEMENT)

Division of Agricultural Economics and ABM
Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu
Main Campus, Chatha, Jammu 180009
2020

CERTIFICATE - I

This is to certify that the project entitled **"A Study on Value Chain Model and Supply Chain Management of Rice in Jammu Region"** submitted in partial fulfilment of the requirements for the degree of **MBA (Agri-Business Management)** to the faculty of Post- Graduate Studies, Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu is a record of bonafide research carried out by **Ms. Nayak Anamika Devi,** Registration No. **J-18-M-58-ABM,** under my supervision and guidance. No part of the project has been submitted for any other degree or diploma. It is further certified that such help and assistance received during the course of investigation have been duly acknowledged.

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(Major Advisor)

Place: Jammu

Date: 10.11.2020

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CERTIFICATE - II

We, the members of Advisory Committee of **Ms. Nayak Anamika Devi,** Registration No. **J-18-M-58-ABM**, candidate for the degree of the MBA (Agri-Business Management) have gone through the manuscript of the project **"A Study on Value Chain Model and Supply Chain Management of Rice in Jammu Region"** and recommended that it may be submitted by the student in the partial fulfilment of the requirement of the degree.

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ACKNOWLEDGEMENT

Above all, I take this opportunity to thank the Almighty who gave me strength, endurance, good health and blessed me with wonderful people in my life.

It is an honour and great privilege to pay ineffable gratitude to my Advisor and Chairperson of my advisory committee **Dr. Jyoti Kachroo**, *Professor & Head, Division of Agricultural Economics and Agri Business Management, SKUAST-Jammu for her perseverance, generous guidance, valuable suggestions, constant encouragement, constructive criticism and affection showed throughout the course of my study and research. Her inspiring guidance and sustained interest throughout the period resulted in the completion and presentation of this thesis.*

The words at my dominion are really scarce to articulate my deep sense of appreciation and gratitude to **Dr. Sudhakar Dwivedi,** *Associate Professor, Division of Agricultural Economics & ABM, SKUAST- Jammu, my Co-advisor for his noble inspiration, keen interest, judicious direction, suggestions and comments during preparation and presentation of manuscript of the thesis. I am greatly thankful to* **Dr. Monika Sood**, *Assistant Professor, Division of Food Science and Technology, SKUAST- Jammu, member of my advisory committee for his affectionate encouragement, valuable suggestions, guidance and kind concern during the entire course of research. I also gratefully acknowledge* **Dr. Bharat Bhushan**, *Joint Registrar (Acad), SKUAST- Jammu, my Dean Nominee and advisory committee member, whose adroit guidance, keen interest and constant support envisaged, nurtured and shaped the present work.*

I am very thankful to the Hon'ble Vice Chancellor, **Dr. J.P. Sharma** *and Dean, Faculty of FOA,* **Dr. D.P. Abrol**, *for providing us with sufficient time for successful completion of our thesis during the ongoing Covid-19 pandemic.*

It is my sole prerogative to place on records my everlasting gratitude and ecstatic thanks to **Dr. S.P. Singh** (Assistant Professor, Division of Agricultural Economics & ABM), **Dr. Anil Bhatt** (Assistant Professor, Division of Agricultural Economics & ABM), **Mr. Ashish Kumar Isher** (Assistant Professor, Division of Agricultural Economics and ABM), **Ms. Sabbey Sharma** (Assistant Professor, Division of Agricultural Economics & ABM) *and* **Ms. Mallika Sharma** (Assistant Professor, Division of Agricultural Economics & ABM) *for their precious advice and help throughout my master's study.*

I do extend my thanks to the non-teaching staff of my division for their help during the present study, especially **Mrs Monika, Mrs Jyoti Devi, Mr. Harvinder Singh, Mr. Manjeet Singh, Mr. Ramesh and Ms. Rani Devi.**

I express sincere thanks to my respected seniors **Ms. Arjumand Zahoor**, **Ms. Ishanka, Ms. Priyanka, Ms. Susmita, Ms. Arya, Ms. Shivani, Mr. Subham sharma, Mr. Subham Rohila, Mr. Amit, Mr. Yasir, Mr. Aquib, Mr. Maninder, Ms. Sneha and Ms. Nupoor** *for their constant support and encouragement during the entire course of my study and research.*

From the inner core of my heart I would like to thank my classmates **Honey Basetia, Rahul Pratap, Pooja uniyal, Pankaj, Ankit, Waqar and Mohammad** for all the Support, laughters and fun times during the entire course of study and research. My beloved juniors **Arun Lalotra, Kartikey, Kajal, Neha, Promila, Nikita, Pankaj, Nikhet, Gurav, Vikas, Subham** deserve my appreciation and acknowledgement. My sub juniors Ankush, Yogesh, Sahil, Sourav, Akanksha and Vanshika also deserve my affection.

I have been highly fortunate to be blessed with great friends as their presence was evident at every stage of happiness, achievements, tension and anxiety. I would like to acknowledge the best human being **BDS Rahul** and my friends **Anamika Walia, Rupali Kaushik, Sipra Mishra, Hema, Pooja.P, Diksha, Sakshi, Mamta, Maneesha, Sneha and Satish** for their constant presence during the entire course of my master's degree directly and indirectly. I am indebted to them for their constant support, encouragement and positivity in my life here at this University.

Most importantly, none of this would have been possible without the love, patience and encouragement of my beloved parents (**Sh. Lalatendu Nayak** and **Smt. Annapurna Nayak**) and my little brother **Ganesh Prasad Nayak**. Today, wherever I am standing is due to the tireless efforts of my parents for me, right from the day I took my first step. Diction is inadequate to express my feelings for the love, affection, care and blessings that they have showered on me throughout my whole life. I would like to thank my beloved husband **Mr. Krupa Santosh Chowdary** and my god gifted parents (**Sh. Brundavan Chowdary** and **Smt. Suhasini Chowdary**). Last but not least thank my cute pet **Snookie** for its unconditional innocence and love. This thesis is therefore dedicated to my family members who have been my backbone and constant source of love, concern, support and strength throughout all these years.

Thanking each and every person, from the bottom of my heart who have been a part of this journey with me and remembered me in their well wishes.

NAYAK ANAMIKA DEVI

Place: Jammu

Dated: 05.02.2021

ABSTRACT

Titleof Project	:	**"A Study on Value Chain Model and Supply Chain Management of Rice in Jammu Region"**
Name	:	**Nayak Anamika Devi**
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Degree tobeawarded	:	**MBA (ABM)**
Year of awardofdegree	:	**2020**
Name of University	:	**Sher-e-Kashmir University Sciences and technology, Jammu**

The present study investigation entitled **"A Study on Value Chain Model and Supply Chain Management of Rice in Jammu Region"** was carried out on the basis of primary as well as secondary data.The research was conducted with the help of schedule/questionnaire based on the information collected from the stakeholders in Jammu region.The present study has adopted convenience sampling technique to conduct the survey among the stake holders. The sample used in this study consisted of 20 producers, 5 commission agents, 5 processors, 5 retailers, 5 wholesalers and 25 consumers from different areas of Jammu region. The total sample size for the study was 65.

From the study it is revealed that the storage and transportation facilities in warehouse have been done on their own and the government do not provide any of those facilities. Lack of government initiatives is one of the constraints in supply chain of rice in Jammu. In Jammu, there is a lack of information flow between the actors of supply chain which is also a constraint. In Rice mills, storage facilities for paddy is one of the major constraints. Reduction of quality and quantity of produce due to biotic and abiotic stresses. Lack of knowledge on digital marketing is one of the main constraints while selling to exporters. There is a GST imposed only on branded basmati rice, because of that processors who already registered their brand were imposed GST and non-branded basmati doesn't imposed any GST. There is an elevation in prices due to involvement of middlemen.

Keywords: Rice, Marketing, Supply chain management, Value chain, Stakeholders.

Signature of Major Advisor

Signature of Student

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INTRODUCTION

CHAPTER-I

INTRODUCTION

1.1 Supply chain management:

Supply Chain Management(SCM) in agriculture is defined as "The management of the movement of agricultural commodities, from the farm through the agricultural and concrete markets to achieve reaching the doorsteps of the end consumer- both household and the industrial consumer; consists of varied players, ranging from the agricultural producer, commission agents and traders, the majority purchasers or procurers, millers or intermediary processor, warehousing agents, or cold storage space providers and transporters, through whom material finally reaches either retail distribution system for raw consumption or the food processing industries where it goes through the value addition processes and moves through a definite and a separate supply chain to reach the targeted consumers". (Ramana & Ajoy, 2005)

The SCM in agriculture is illustrated in Fig. 1.1. From the farming of basic raw materials to delivery of ultimate products to the consumers, each different step within the entire production process is viewed as a link within the supply chain. Therefore, it represents the management of the whole production, transformations, distribution, and marketing activities by which a consumer is provided with the desired product. (Acharyulu & Sudhakar, 2007)

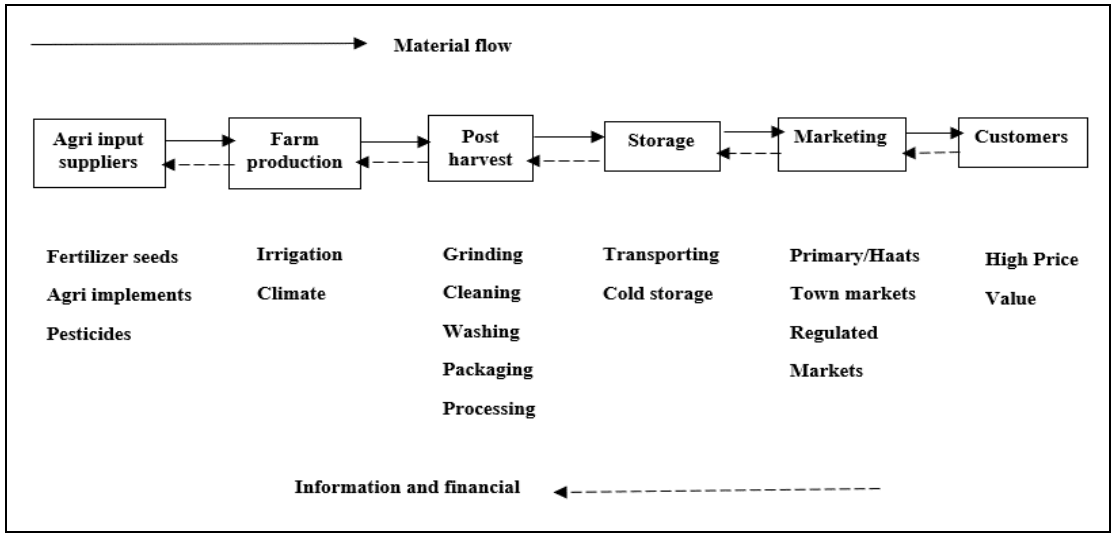

Fig 1.1: Supply chain management in agriculture

The supply chain acts as a bridge between demand and supply. It conveys the demand to the supply point and delivers the supply to the demand point. It includes activities like procurement of inputs, the transformation of those inputs into intermediate and finished products, and also the distribution of those finished products to customers. (American Production and inventory control Society).

1.2 Value chain model:

The value chain is the full range of activities including design, production, marketing, and distribution of products to final consumers. It starts with the raw materials accustomed to make their products and consists of everything added before the merchandise is sold to consumers. The merchandise gains value because it passes through the various stages within the value chain analysis. It may be a process; it includes the primary and support activity that adds value to its final product. The value chain concept is that the idea of actors connected along a chain producing and delivering goods to consumers through a sequence of activities, it includes the first and support activity that adds value to its final product. It represents all the inner activities a firm engages in to supply goods and services. It consists of primary activities that add value to the ultimate product directly and support activities that add value indirectly. It is more applicable to differentiated products and segmented markets.

The steps in the value chain process include:

- Value chain analysis is the process of breaking a series into its constituent parts to better understand its structure and functioning.
- The analysis consists of identifying chain actors at each stage and discerning their functions and relationships.
- Determining the chain governance or leadership, to facilitate chain formation and strengthening.
- Identifying value-adding activities within the chain and assigning costs and added value to each of these activities.
- The flows of products, information, and finance through the assorted stages of the chain are evaluated to detect problems or identify opportunities to enhance the

contribution of specific actors and therefore the overall performance of the chain. (ILO, 2009)

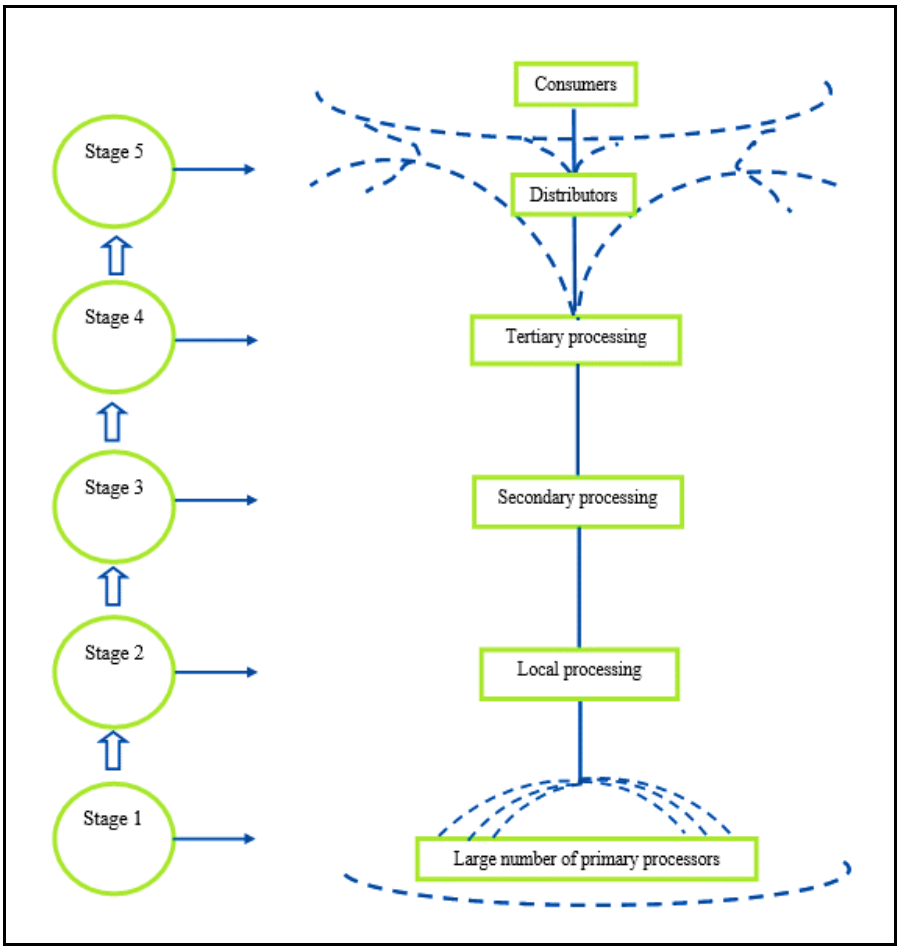

Figure 1.2: Process of a simple value chain

1.3 Global scenario of rice:

The whole world rice production was 782 Million tonnes and the area harvested was 167 Million hectares in 2018 (FAOSTAT, 2019). Monitoring the rice market could be a critical task considering quite half the world's population consume rice on a routine. South and East Asia are the two main regions for paddy rice production within the world. China and India are considered as the main producers of paddy rice worldwide with a major gap in Indonesia in third place. In 2018, China's paddy rice production amounted to over 200 million metric tons, which amounted to about one-third of the entire global paddy production (Statista, 2020).

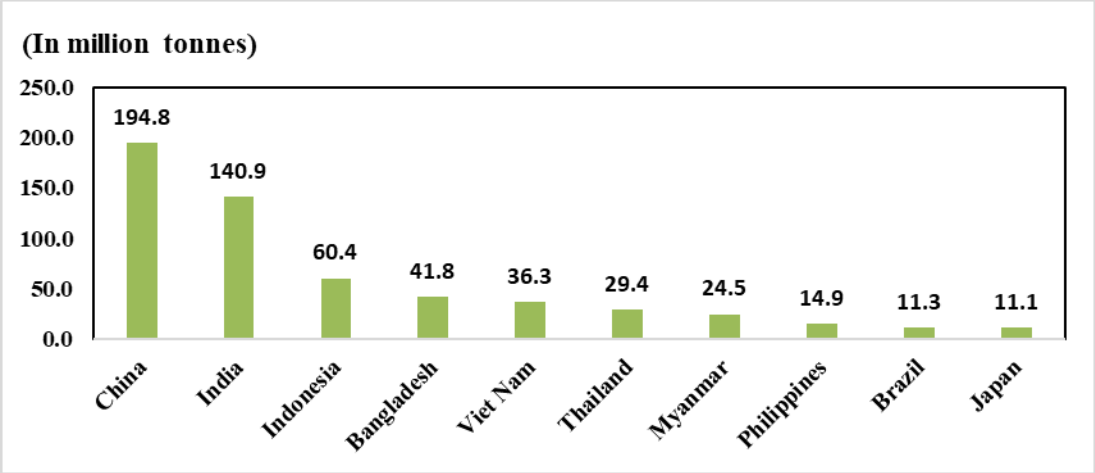

Figure 1.3: Rice production of India in 2017

Source: FAOSTAT (Retrieval Date: April 30, 2020)

Total global supply of rice:

This graph illustrates the availability of rice worldwide from 2000 to 2019, measured in million metric tonnes milled equivalent. In 2018/2019, the total global supply of rice amounted to about 738.75 million metric tons. within a previous couple of years, the worldwide rice supply amounted to over 700 million metric tons of milled equivalent annually. The production of milled rice was estimated to increase over 495 million metric tons globally in 2018-2019. (Statista, 2019).

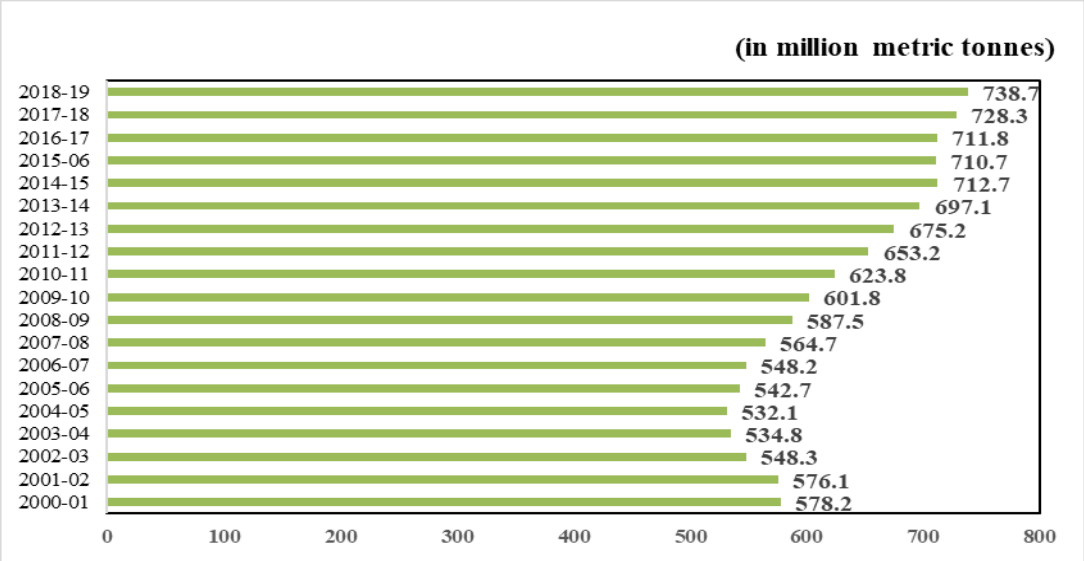

Figure 1.4: Global supply of rice 2000-01 to 2018-19

Sources: Statista 2020

1.4 Current status of rice in India

Production of rice in India is uncertain on economic and ecological grounds. The decline is the concern of study and it may be either because of the technology, production, distribution, and marketing (Shergill, 2007). Basmati 370, Karnal local, Type 3, Basmati 217 are some of traditional varieties qualified for export. India exported rice amounting to nearly 540 billion rupees in fiscal year 2019 (FAO). India is the leading exporter of the Basmati rice to the global markets. During 2018-19, India has exported globally about 40.45 lakh metric tonnes of Basmati rice and 63.66 metric tonnes of Non-Basmati rice. (Directorate of Rice Development)

Minimum Support Price (MSP) for Rice (Paddy) during 2014-15 to 2018-19:

MSP for both Common and Grade 'A' quality of Paddy has increased from 2014-15 to 2019-20. This figure has increased by Rs. 65 i.e., 3.5 percent within the year 2019-20 over 2018-19.

Table 1.1: MSP for Rice (Paddy) during 2014-15 to 2018-19

MSP (Unit: Rs/ Quintal)						
Rice Quality	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2018-19**
Common	1360	1410	1470	1550	1750	1815
Grade 'A'	1400	1450	1510	1590	1770	1835

Source: Commission for Agricultural Costs and Prices (CACP)

India export price of rice:

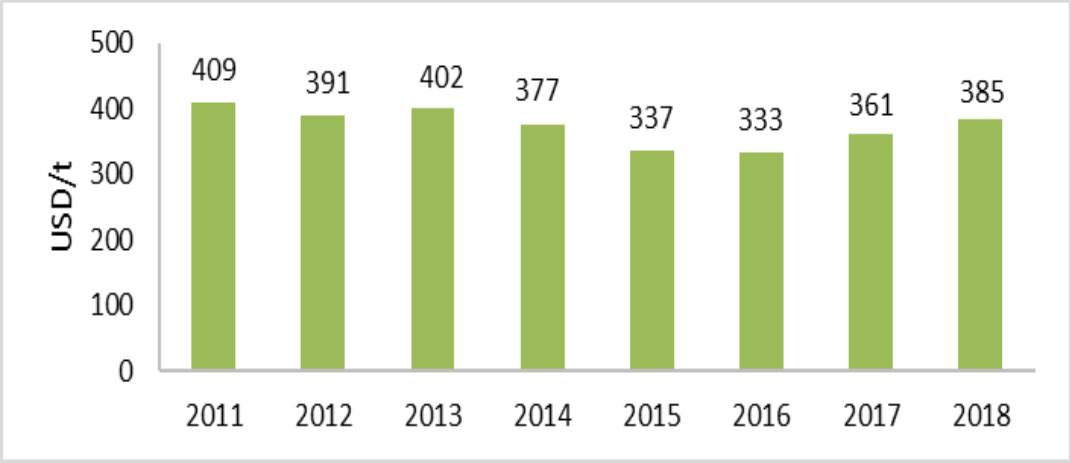

Figure 1.5: Export price of rice in India from 2011-2018

Source: Rice Price Monitor, FAO

The economics of rice in India:

The economics of rice in India including production, supply, consumption, and yield, besides the agriculture land for paddy farming has continuously shown a growing trend for a while, however, with many fluctuations and inconsistencies. After a growing trend, it's shown a declining trend in all these areas within recent times which is that the time of global change and it may be interpreted as a negative sign if it's about the coping of the rice industry with changing scenarios.

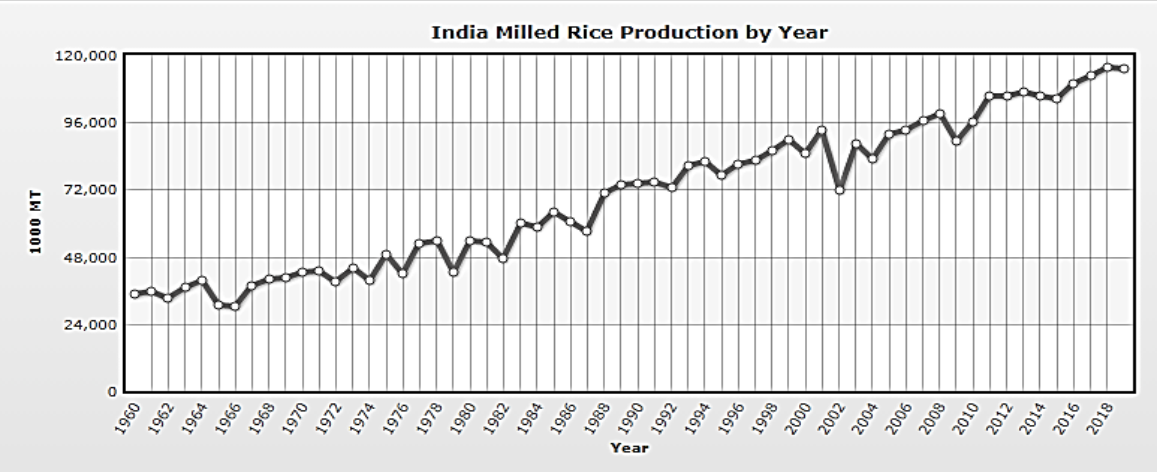

Figure 1.6: Total production of milled rice in India from 1960-2018

Source: United States Department of Agriculture

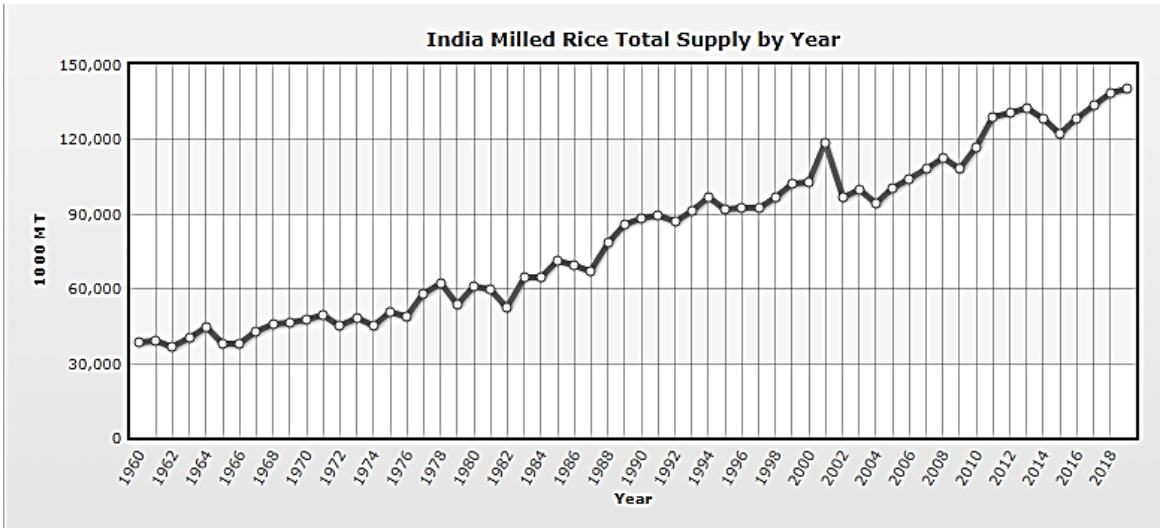

Figure 1.7: Total supply of milled rice in India from 1960-2018

Source: United States Department of Agriculture

Area, Production and Yield data of paddy in Jammu district:

Table 1.2: Area, Production and Yield data of paddy in Jammu district from 1997-98 to 2014-15

Year	Season	Area (Hectare)	Production (Tonnes)	Yield (Tonnes/Hectare)
1997-1998	Kharif	57940	1060	0.02
1999-2000	Kharif	50332	62898	1.25
2000-2001	Kharif	50161	97243	1.94
2001-2002	Kharif	50176	87378	1.74
2002-2003	Kharif	46885	66348	1.42
2003-2004	Kharif	58426	106547	1.82
2004-2005	Kharif	53706	90148	1.68
2005-2006	Kharif	57336	94780	1.65
2007-2008	Kharif	50716	93887	1.85
2014-2015	Kharif	65470	116969	1.79

Source: www.aps.dac.gov.in

1.5 Rice supply chain process in India

As rice is the basic grain of daily consumption in India, it always has a significant demand which shows a seasonal growing trend especially at the time of festivals and during the seasons of cultural events. Identifying the appropriate demand and meet them properly in a profitable way is the primary concern of the rice supply chain. A proper supply chain management framework is very essential for efficient sourcing, processing, distribution, and retailing and hence meeting the customer demands without facing a situation of lost sales. Production and business of rice have been one of the most traditional and major concerns of the Indian Economy, but still, no proper supply chain framework for it has been developed, which very often causes unfulfilled demands, stock-outs and overstocking, and distribution issues. The main reason behind not getting proper attention is, the rice industry has always been treated as the subject of Agricultural Economics and never became able to portray itself as a topic of supply chain studies. Most of its operations are very traditional which needs to be reformed if it has to gain a competitive advantage in the era of globalization.

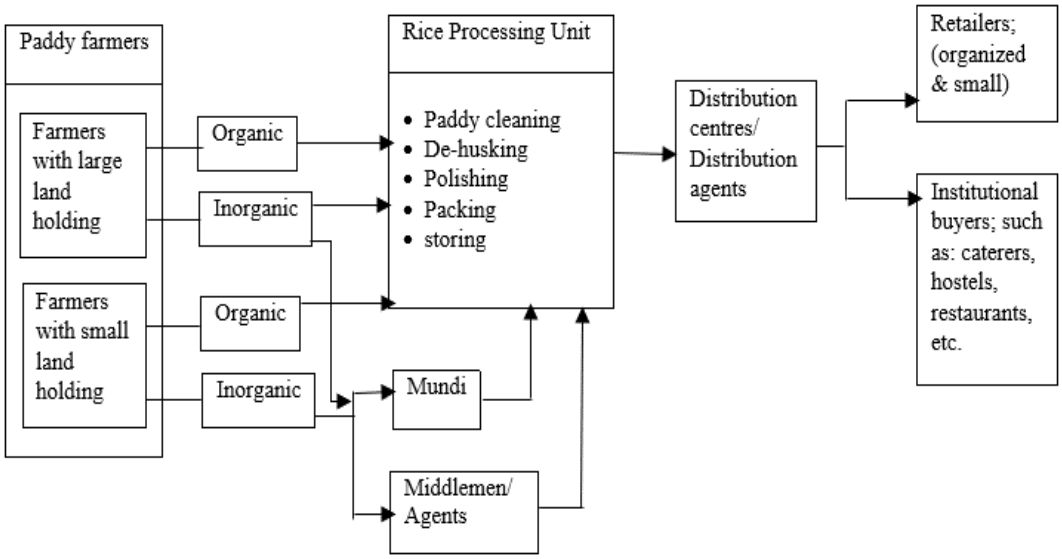

Fig 1.8: Supply chain process of rice in India

Source: Vishal Sharma et.al. (2013)

A traditionally followed basic framework for rice supply chain management generally follows the multi-stage supply chain system including farmers as the basic supplier of paddy, middlemen or agents, rice processing industries, distribution agents and retailers; as the interlinked upstream and downstream stages. During the long supply chain process, many activities take place at every stage which affects the function of the next stage and requires it to co-operate in a customized manner. To understand the detailed process, the study describes a detailed supply chain framework, as shown in 'Figure 1.8', which explains the complete supply chain activities currently being practiced in the rice sector. The process clearly explains where the supply chain requires the intermediaries and where it is sourced and distributed directly to the next major stage.

The primary stage of the rice supply chain is held by the paddy farmers who supply paddy to the rice processing companies, which is supplied both directly and through intermediaries, depending on the type of farmers and their productivity. The farmers may be categorized into two types: large land holding farmers and the Small landholding ones, based on the land they own, their production capacity, and reachability to the market. Large Land Holding Farmers involved in organized production from a business point of view who produce on a very large scale and, the second type of farmers

which are Small Land Holding Farmers, working on small farms in villages, whose productivity is low and can spare very low amount of paddy after keeping the year's stock for their use. Based on the kind of production they are involved into; they are divided into two types: Organic Farmers, those who are involved in organic farming where cultivation of the paddy is based on the use of green manure, compost, and the approved natural substances while without any use of the manufactured chemicals, fertilizers, and pesticides including the insecticides, fungicides and the herbicides. Secondly, Inorganic Farmers are those who use manufactured chemicals, fertilizers, and pesticides for the cultivation of paddy.

Both the farmers with large landholding and the ones with small landholdings use the same kind of strategy with the distribution of organic crops of paddy, as they are directly sent to the rice processing company without the involvement of any intermediary. These crops are produced on the special demands and orders from rice processing companies. As it is produced on no pesticides and chemicals it has low productivity and high cost and thus produced on the orders. The natural process of production which uses natural contents only, at every stage of the production of the crop; also requires the produced paddy must not contain any sign of the chemicals and pesticides and hence requires the continuous monitoring and control measures, which makes it necessary for the rice processing company to directly procure the organic paddy from farmers irrespective of their land size without involving any middleman. On the other hand, the process for inorganic farmers is different based on their land sizes. The rice processing companies adopt the different supply chain strategies with both large lands holding farmers and the smaller ones to source the paddy.

Large landholding farmers most often directly supply their paddy to the rice processing companies which reduces their middlemen cost and increases the revenue. Rice processing companies also find it profitable to source directly from the farmers as it reduces their procurement cost, logistics cost, intermediary cost and supply chain cost. However in some instances, the paddy farmers with large land holding, are not able to directly supply the inorganic paddy because of: low demand, or the quantity supplied in bulk has not covered all the quantity of paddy prepared for sales, or paddy has been

stored to be sold in lower quantities in different seasons to generate more revenue or some other reasons. Therefore, they require following an indirect mode of distribution generally through various forms of intermediaries for the sale of their paddy.

The Supply chain process is not as direct for the small landholding inorganic farmers. Inorganic farmers with small land holding either sell their paddy in Mundi, a marketplace in the town areas where the small farmers of nearby villages sell their yields from farms and the processing units purchase the grains and vegetables from, either directly or through agents, which is considered as a convenient place for the small paddy farmers to sell and also for rice processing companies to procure. In another way, the rice processing companies procure the paddy through Middlemen or Agents, who purchase the paddy from small farmers in small quantities and then sell them in bulk to the rice processing companies. Direct procurement is not profitable for the rice processing companies from the small farmers, as their cost of logistics and supply chain will be very higher compared to the cost of sourcing through Mundis and Agents. The operations process of the rice processing unit involves: Paddy cleaning, where straw, weed seeds, soil, and other inert materials are removed from paddy; De-husking, where the husk layer is removed from paddy by friction, also known as De-hulling; Polishing, the process where white rice is produced in two forms: full length and broken, after removing the bran layer and the germ, and finally, it goes through the process of Packing, after which it is stored for distribution. After the operations process, the rice is finally distributed to the Retailers or directly to the Industrial Buyers through the Distribution Centers or Distribution Agents. (Vishal Sharma et.al. 2013)

CHAPTER – II

THE PROJECT

CHAPTER-II

THE PROJECT

2.1 Title and statement of problem

The project work entitled **"A Study on Value Chain Model and Supply Chain Management of Rice in Jammu Region"** was carried out in different areas of Jammu region of J&K during the year 2019-20.

Rice was domesticated from the wild grass *Oryza rufipogon* roughly 10,000-14,000 years ago. It is one among the oldest cereals with a history of over 2800 years. It originated in South East Asia. As a cereal grain, it is the foremost widely consumed staple food for an outsized part of the World human population, especially in Asia and the West Indies. After maize, rice has the second-highest worldwide production. It is also an honest source of thiamine, riboflavin, niacin, and dietary fiber. Un-milled rice contains more nutrients than milled or polished rice. Rice is the primary source of carbohydrates and protein besides, rice also contains small quantities of fat, ash, fiber and moisture. It has a high calorific value (363 KCal) than the other cereal crop with easily digestible carbohydrates (80.40 percent) and high-quality protein (6.76 percent) with biological value as high as egg protein, because of the high content of amino acids. Vitamins and Minerals are present largely in bran and germ. Aside from being consumed as rice, there are several other values- added products, like parboiled rice, dry cereal, rice flakes, rice flour, rice wine, rice glue, paper, rice starch, and other by-products like rice bran, rice bran oil, rice husk used ash within the brick industry, broken rice used as feed for poultry and fish ponds. The by-product paddy straw is utilized as a fodder for cattle.

Rice is the world's second most vital cereal crop after Maize. Nearly 482 million metric tons of husked rice were produced within the last harvesting year worldwide. Asian countries have the most important share in world rice production. According to the foremost recent official data, with a production volume of over 210 million metric tons in 2017, China was the world's leading paddy rice producer, followed by India.

Other major rice exporting nations included Thailand and Vietnam with around 10 and 5.8 million metric tons, respectively. The most important rice importers were

China and Nigeria in 2016-2017. According to the United Nations Food and Agriculture Organization, the standard rice price index remained relatively stable over the past few years before it declined in 2015.

In 2016-2017, the total global consumption of milled rice was approximately 477.77 million metric tons. China consumed around 146 million metric tons of milled rice per annum and was by far the world's leading rice consumer therein year. As compared, the U.S. consumed some 3.85 million metric tons. Rice is one of the foremost important food crops in India in terms of area, production, and consumer preference. Rice and wheat are the foremost staple food crops in South and North India respectively. In some states of the country, viz., Andhra Pradesh, Kerala, and west Bengal, rice is a monoculture crop and also the source of prosperity and livelihood of a majority of the population. Rice is obtained by milling paddy. The practice of milling is as old because the cultivation of rice itself and finds reference even in Vedic literature. Different types of milling equipment for shelling /polishing of rice existed in Indian homes many centuries ago. The invention of parboiling was one of the foremost important achievements in food science and thus the credit for this discovery goes to India. (Statista 2020)

The food supply chain in India is extremely fragmented. The number of intermediaries within the chain is exceedingly high. These intermediaries are important because they act as a substitute for infrastructure where none exists. But over the years a layer of intermediaries has grown most of which add little value to the product but collectively they add significantly to the ultimate cost. The marketing of agriculture produce is different and tougher than many industrial products due to perishability, seasonality, and bulkiness. The very nature of the tiny size of landholdings by the farmers, varied weather, production cover an outsized geographic area mainly in remote villages, diversified consumption habits of Indian consumers and poor supply chain infrastructure makes marketing of agriculture produce more complicated. Supply chain efficiency not only helps in increased production and per capita consumption but also contributes to the economic development of the country. Efficient SCM in marketing, not only increases the profitability and efficiency of the retailers but also adds value to the varied stakeholders like farmers and consumers.

2.2 Objectives of the Study

- To formulate the supply chain model of rice
- To study the value chain model of rice adopted by the processors
- To find the factors influencing the cognitive behaviour of stakeholders

2.3 Scope of the study

This study helps in identifying actors in supply chain and value chain of rice in Jammu region and understanding the price variations from one stake holder to other both in supply chain and value chain model. Supply chain and value chain analysis in this study provides a basic idea about production, assembling, processing, wholesale and retail consumption. It also identifies limitations in supply chain and value chain, opportunities for upgrading value chain. This report contains suggestions to improve the marketing of rice in Jammu region. The value chain of the agricultural commodities is becoming more complex due to diversified value addition. Keeping the above aspects in view the present study is proposed not only to understand the key roles of the actors but also to improve the value addition. This study is based on primary and secondary data. The study is entirely focused towards its objectives.

2.4 Limitations of the study

- Personal bias of respondents was a limitation to the study.
- Some of the respondents were not ready to give the responses.
- Some carrying/forwarding agents were not responding due to threat of publicizing their commission rate and market practices.
- Respondents ignorance to certain question also posed barrier towards certain responses.
- Time constraint is another limitation of the study due to Covid-19 pandemic situation.

CHAPTER – III

REVIEW OF LITERATURE

CHAPTER-III

REVIEW OF LITERATURE

It is always necessary to analyse the research work already done in a particular field for the systematic development of science. Therefore, it is necessary to retrospect the research work already done, related with the supply chain and value chain model. To make the study more rational and useful a review of the research findings is given below:-

3.1 To study and evaluate supply chain model of paddy

Van Rooyenet et al. (1987) in his study stated that smallholder farmers in traditional agriculture will generally make rational economic decisions if the technical and economic constraints they face are removed.

Beamon (1999) stated that the method of selecting appropriate supply chain performance measures are difficult because of the complexity of those systems. The paper presents a summary and evaluation of the performance measures utilized in supply chain models and also presents a framework for the selection of performance measurement systems for manufacturing supply chains. Three forms of performance measures are identified as necessary components in any supply chain performance measurement system, and new flexibility measures for supply chains are developed.

Meyr et al. (2000) stated that before starting an improvement process one must have a transparent picture of the structure of the prevailing supply chain and the way it works. Consequently, an in-depth analysis of operations and processes constituting the supply chain is important. Therefore, tools are needed that support an adequate evaluation, modeling, and outline of supply chains. Performance measures are presented.

Stank et al. (2001) states that collaboration with external supply chain entities influences increased internal collaboration, which successively improves service performance. This relationship could also be the key to helping managers understand how best to facilitate behavioural change. The implication is that collaborating with customers and suppliers is that the initiative toward effective collaboration within the firm.

Lowe and Preckel (2004) characterize the agri-food supply chain because of the ones with the long lead times and misalignment and uncertainty between their demand and supply.

Ahumada and Villalobos (2008) during a study of the agri-food supply chain, describe the production and distribution model of agri-foods that rely on crops.

Simatupang and Timmer (2008) describe the rice production, its growth, and challenges and suggest improvements in their study of Indonesian rice production.

Blanchard (2010) stated that supply chain management encompasses the planning and management of all activities involved in sourcing and procurement, conversion and logistics management activities. It also includes coordination and collaboration with channel partners i.e., suppliers, intermediaries, third-party service providers, and customers. Supply chain management assimilates supply and demand management within and across companies.

Wong et al. (2010) within the study of supply chain management of the Malaysian paddy and rice industry, has presented a summary of the rice supply chain, with various challenges faced and reforms needed within the Malaysian rice and agri-food industry.

Oden (2011) during a study of the availability chain of rice has described various stages, structure, and reforms within the production and distribution of rice during pre-liberalization and post-liberalization periods in Mali.

Wiboonpongse and Sriboonchitta (2011) describe various traditional and modern rice production, distribution, and retailing structures and its players in Thailand while exploring the availability chain, distribution, and marketing strategies.

Achchuthan and Kajananthan (2012) during a study of the value chain of the paddy sector in Sri Lanka describes the strengths, weaknesses, opportunities, and threats among the various supply chain and marketing players during this sector and explores various challenges to beat to create Sri Lanka a far better place for paddy production and distribution.

Rath et al. (2012) while reviewing the marketing and logistics strategies by various rice mills in Odisha, India emphasize a sustainable logistics and distribution model for the fashionable rice mills in India.

Yu et al. (2016) presented a literature review on E-commerce logistics in supply chain management from the view of practice perspective. Global implementations and consistent models alongside supportive are studied during this paper.

Zhong et al. (2016) focused on big data for supply chain management within the service and manufacturing areas: challenges, openings, and future perception.

3.2 To study the value chain model of paddy adopted by the processors

A value chain is that the full range of activities (including design, production, marketing, and distribution) businesses undergo to bring a product or service from conception to delivery. For companies that produce goods, the value chain starts with the raw materials want to make their products and consists of everything that's added to it before it is sold to consumers.

Kogut (1985) explained that a value chain in its most basic form is "the full range of activities which are required to bring a product or service from conception, through to the different phases of production, delivery to final consumers, and final disposal after use".

Porter (1985) was the first to introduce the concept of a value chain. He has discussed the value chain concept in his book “Competitive Advantage: Creating and Sustaining Superior Performance”. He transcribed “Competitive advantage cannot be understood by observing at an organisation as a whole. It stems from the various discrete activities a firm performs in designing, producing, marketing, delivering, and supporting its product. Each of those activities can contribute to a firm's relative cost position and build a basis for differentiation”. Porter suggests that activities within an organization add value to the service and products that the company produces and that all of these activities should be run at an optimum level if the organization is to achieve any real competitive advantage.

Håkansson and Johanson (1992) explained that the Upassala approach focuses on marketing links, which deals with networks of actors, activities, and resources.

Gereffi and Korzeniewicz (1994) explained that the global commodity chain or global value chain, which is an extension of the commodity chain, is defined as a set of transnational inter-organizational linkages that consists of the production, distribution, and consumption of a commodity. This is a modification of the filiere approach.

Gereffi (1999). explained that the global value chain provides new practical insights on governance structures and upgrading opportunities of the firms in the value chains of many industries, and is widely used as a tool for integrating small firms into the global value chain and as a tool for small enterprise development

Raikes et al. (2000) explained that the Filiere approach focuses on flows, activities, and actors within the chain (Filiere) and deals with vertical integration. Porter's value chain, the most popular one, uses all of the activities that a firm performs to design, produce, and market, deliver and support its product. The model uses to analyze a firm's competitive advantage within an industry.

Kaplinsky and Morris (2001) explained that every economic actor occupies a position in the value chain; upstream suppliers provide inputs before passing them downstream to the next link in the chain, the customer. They emphasize that production is only one of several value links in value chains, that there is a range of activities within each link, and that these 'intra-chain linkages' are mostly bidirectional. For instance, activities in a particular link in a value chain are affected by the outputs of upstream activities; they must also take into account constraints in downstream links. Thus, using the value chain does not necessarily mean understanding action situations and their influence on each other in a sequential way; action situations at the end of the value chain can also influence action situations by the beginning or by any other sequence in the value chains.

Dekker (2003) explained about the value chain analysis that interfirm relationships introduce new challenges for management accounting. One such challenge is that the provision of data for the coordination and optimization of activities across

firms during a value chain. According to the literature, a value chain analysis (VCA) could be a useful gizmo to satisfy this challenge. However, little empirical evidence has been published on the utilization of this analysis in practice. Dekker explained the use of an activity-based costing model by a large UK retail firm and a group of suppliers for supporting their supply chain management practices.

Humphrey Memedovic (2006) Value chain structures are often acquainted with concluding the participation of the poor and thus the potential impact that value chain promotion can wear poverty reduction. And grouped such promotion policies in three, broad areas of focus on ensuring the continued access of agro-producers to global markets and supporting the competitiveness of the sector, growing revenues from the agro-industrial sector mainly through adding value both for local and export markets and enhancing the poverty alleviation impact of export-oriented businesses.

Da Silva and De SuzaFilho (2007) stated in his studies that farmers, traders, wholesalers, retailers, big retail chains, and consumers are major actors within the value chain. With the collective enlightenment of all stakeholders, proper enabling environment (institutions, infrastructures, and policies) are created within which various actors of the value chain are functioning. Agro-value chains encompass activities that occur at various levels (farm, rural, and urban), starting with the input supply and continuing through product handling, processing, distribution, and recycling. As products move successively through the varied stages, transactions occur between multiple chain actors, money, and data are exchanged and value is progressively added.

Brown (2009) explained that the value-chain approach has been driven by a functional business view that evaluates costs and benefits, and considers the added-value as a basis for competitive comparisons.

Jonathan et al. (2009) in his study stated that a value chain helping them to capture market opportunities, obtain fair deals, and produce high-quality products improves value chain performance while increasing rural income and employment to them. 30% of agriculture produce in rural areas is wasted because of constrains in rural value chains. It includes problems like inadequate storage, processing facilities, communication networks and marketing and infrastructure.

Anjani Kumar et al. (2011) in his study stated that agro-food systems are undergoing rapid transformation and the emergence of integrated food value chains is one of the most visible phenomena in India. The traditional way of food production is being replaced by the manufacturing process with greater coordination across farmers, processors, retailers and other stakeholders in value rural producers are the starting point of most value chains.

Kumaresh. K et al. (2013) explained that producer organizations or cooperatives can link farmers directly with retailers, exporters, and traders. Porter distinguishes between primary activities and support activities. Primary activities are directly concerned with the manufacturing or delivery of a product or service. Current agricultural value chains raise and become more sophisticated as countries industrialize and strengthen their spot in global markets. Value might be added to a product through value-adding activities because it passes through the chain Value chain may be a kind of the availability chain. In recent times several forms of research under the National Agriculture Research System and CGIAR institutes implemented projects on SCM including crop science, horticulture, fisheries, dairy, etc. These projects are mostly funded by the NAIP of ICAR.

3.3 To identify the factors influencing the cognitive behaviour of stakeholders

The study of cognitive Behaviour can enable a person to manage his/her problems by changing the way one thinks and behaves in a particular situation or difficulties. Stakeholders are a vital element in all complex systems problems; there are customers, users, clients, suppliers, employees, regulators, and team members of a system. Each stakeholder contributes their value-added perspective, as described by the principle of the system known as complementarily.

Stakeholder behavior is classified in terms of acting or influencing others to act. This behavior is then analyzed using the theory of reasoned control. In Individual behavior, this would suggest two categories of pathways in decision making: The first is those that are a result of personal beliefs and decisions, from one’s knowledge, skill and values set, and the second those which come from social pressure, the influence of others and from the role of the individual in the society. Personal beliefs can be further

categorized through factors related to the importance of the issue, and those that increase an ability to act.

To analyse the underlying meanings of stakeholder's attributes, behaviours, and decision-making strategies from the practitioners' perspectives, and indicate the influence of stakeholder related factors and decision-making strategies, an interview, questionnaire survey, and case study were adopted. Empirical studies suggest that three stakeholder attributes (power, urgency, and proximity) and four types of stakeholder behaviour (cooperative potential, competitive threat, opposite position, and neutral attitude) are perceived by the practitioners as important to dealing with stakeholder claims.

World bank (2002) mentioned that smallholder farmers are often illiterate, with poor technological skills, which may be serious obstacles in accessing useful formal institutions that disseminate technological knowledge. Most emerging producers aren't equipped with financial and marketing skills and are unable to satisfy the standard standards set by fresh produce markets and food processors. Lack of product knowledge results in lower quality in production.

D'Hease and Kirsten (2003) said that prime transaction costs are caused inter alia by poor infrastructure and communication services in remote rural areas. Transaction costs also result from information inefficiencies and institutional problems like the absence of formal.

Bienabe et al. (2004) Smallholder farmers don't have access to on-farm infrastructures like store-rooms and cold-rooms to stay their products in good condition after harvest. Lack of access to facilities like post-harvest, storage, and processing facilities constitutes a barrier to entry into agricultural markets since the stress of buyers is more on quality. Access to storage facilities increases farmers' flexibility in selling their products, also as their bargaining power.

Bienabe et al. (2004) said that rural producers, and particularly small farmers, have little information about the market demand, which is expensive to get. they'll gather information through contact with other actors within the commodity chain, but the

accuracy of this information isn't certified, since those actors could be exhibiting "opportunistic behaviour".

Lowe et al. (2004) said that the majority of small-scale farmers haven't any means of transport to hold their produce to markets. Transportation problems end in loss of quality and late delivery, which successively results in lower prices, and this is often considered the best problem faced by emerging farmers.

Carter and Rogers (2008) in their study stated that requirements for successful SCM include organizational culture, strategy, risk management, and transparency, all of which affect the nature of decision making.

Pagell and Wu (2009) has begun to explore the subject of decision making in SCM via empirical Case Study Research, this has not done so with explicit reference to decision theory.

Wong et al. (2010) worked on supply chain management research that does address contemporary decision theory such as does not consider characteristics central to SCM. Decision theory directly relates to many concepts mentioned in SCM research.

Abbasi and Nilsson (2012) in their study mentioned that the challenges to Successful SCM include uncertainty, complexity, operationalization, cost, and mindset.

Gimenez and Tachizawa (2012) stated that cultural change Collaboration is a key driver so inter-firm decision-making processes are important.

CHAPTER – IV

RESEARCH METHODOLOGY

CHAPTER-IV

RESEARCH METHODOLGY

4.1 Research methodology

A methodology is usually a guideline system for solving a problem, with specific components such as phases, tasks, methods, techniques and tools. The main goal of this study is to study the value chain model and supply chain management of rice in Jammu region. The present investigation entitled **"A Study on Value Chain Model & Supply Chain Management of Rice in Jammu Region"** was carried out in 2019-2020. The sampling structure and techniques adopted during the course of investigation have been described in this chapter.

4.2 Locale of study

The research was conducted with the help of schedule/questionnaire based on the information collected from the stakeholders in Jammu region.

4.3 Sample Size

The sample used in this study consisted of the producers, commission agents, wholesalers, retailers and consumers in different areas of Jammu region. The present study has adopted convenience sampling technique to conduct the survey among the stake holders. The sample size consisted of 20 producers, 5 commission agents, 5 processors, 5 retailers, 5 wholesalers and 25 consumers.

4.4 Data collection

The data collection is the method to collect important information to keep on record for further use, to make important decisions about different issues and is of vital significance for others. The present study has adopted both the primary as well as the secondary data collection techniques.

Primary Data: It involved the first hand information collected through

- Schedules/ questionnaires method
- Direct personal interview method

Secondary Data: The data which has already been collected, compiled and presented earlier by any agency was used for purpose of investigation. The data has been collected through various websites, journals related to fast food industry, research papers, journals related to brand and advertisement, newspapers, magazines etc.

4.5 Methods of analysing data

Descriptive statistics, Tabular analysis, Bar graphs, Flow charts and other Statistical tools like Percentage analysis and Henry Garret ranking technique are adopted for analysis purpose.

Percentage analysis

Percentage refers to a special kind of ratio. It is used to make comparison between two or more series of data. They can be used to compare the relative items, the distribution of two or more series of data, since the percentage reduces everything to a common base and there by allow meaningful comparisons to be made.

Formula:

Percentage = (x/y) X (100/1)

Where:

x= number of respondents respond

y= total number of respondents

Henry Garret ranking technique:

In this technique, the percentage position of each rank obtained is converted into scores by referring to the table given by Henry Garret. Then for each factor the scores of individual respondents are added together and divided by the total number of respondents for whom the scores are added.

Formula:

Percentage position=$100(R_{ij}-0.5)/n$

Where:

R_{ij} is the rank

N= number of items

CHAPTER – V

RESULTS

CHAPTER-V

RESULTS AND DISCUSSION

The results pertaining to the present study "**A Study on Value Chain Model & Supply Chain Management of Rice in Jammu Region**" have been presented in this chapter along with appropriate tables and figures.

5.1 Demographics

Details of stakeholders

The title of the study was "A Study on Value Chain Model & Supply Chain Management of Rice in Jammu Region". 65 stakeholders were selected for carrying out the research as the sampling unit and out of them, 30.7 per cent were producers, 7.7 per cent were commission agents, 7.7 per cent were processors, 7.7 per cent were retailers, 7.7 per cent were wholesalers and 38.5 per cent were consumers.

Table 5.1: Details of stakeholders

S.No	Stakeholders	Frequency	Percentage
1	Producers	20	30.7
2	Commission agents	5	7.7
3	Processors	5	7.7
4	Retailers	5	7.7
5	Wholesalers	5	7.7
6	Consumers	25	38.5

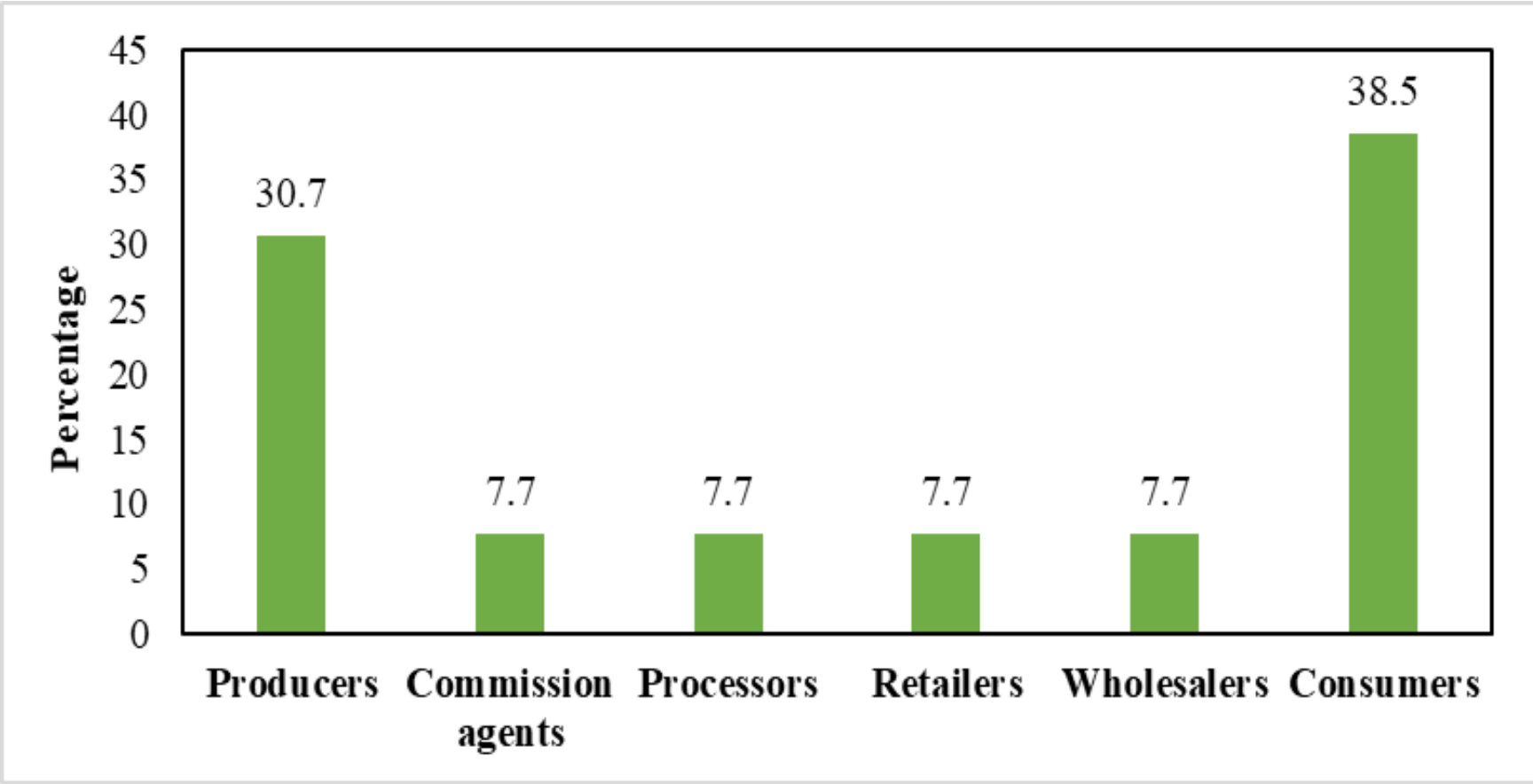

Fig 5.1: **Details of stakeholders**

Demographic details of producers

Table 5.2 and Figure 5.2 revealed that out of 20 producers, 20 per cent lies under the age group 21-30 years, 45 per cent lies under 31-40 years, 10 per cent lies under 41-50 years, 20 per cent lies under 51-60 years and 5 per cent lies under 61-70 years. 95 per cent were male and 5 per cent female. 30 per cent respondents belong to Chatha, 5 per cent belongs to Miran Sahib, 50 per cent belongs to RS Pura and 15 per cent belongs to Nandual. 70 per cent respondents acquire 0.5-1.5 acres of land, 10 per cent respondents acquire 1.5-2.5 acres of land, 10 per cent respondents acquire 2.5-3.5 acres of land and 10 per cent respondents acquire 3.5-4.5 acres of land.

Table 5.2: Demographic details of producers

Demographics	Unit	Percentage	Frequency
Age	21-30	20	4
	31-40	45	9
	41-50	10	2
	51-60	20	4
	61-70	5	1
Gender	Male	95	19
	Female	5	1
Respondent area	Rs Pura	50	10
	Miran Sahib	5	1
	Chatha	30	6
	Nandual	15	3
Land holding (in acres)	0.5-1.5	70	14
	1.5-2.5	10	2
	2.5-3.5	10	2
	3.5-4.5	10	2

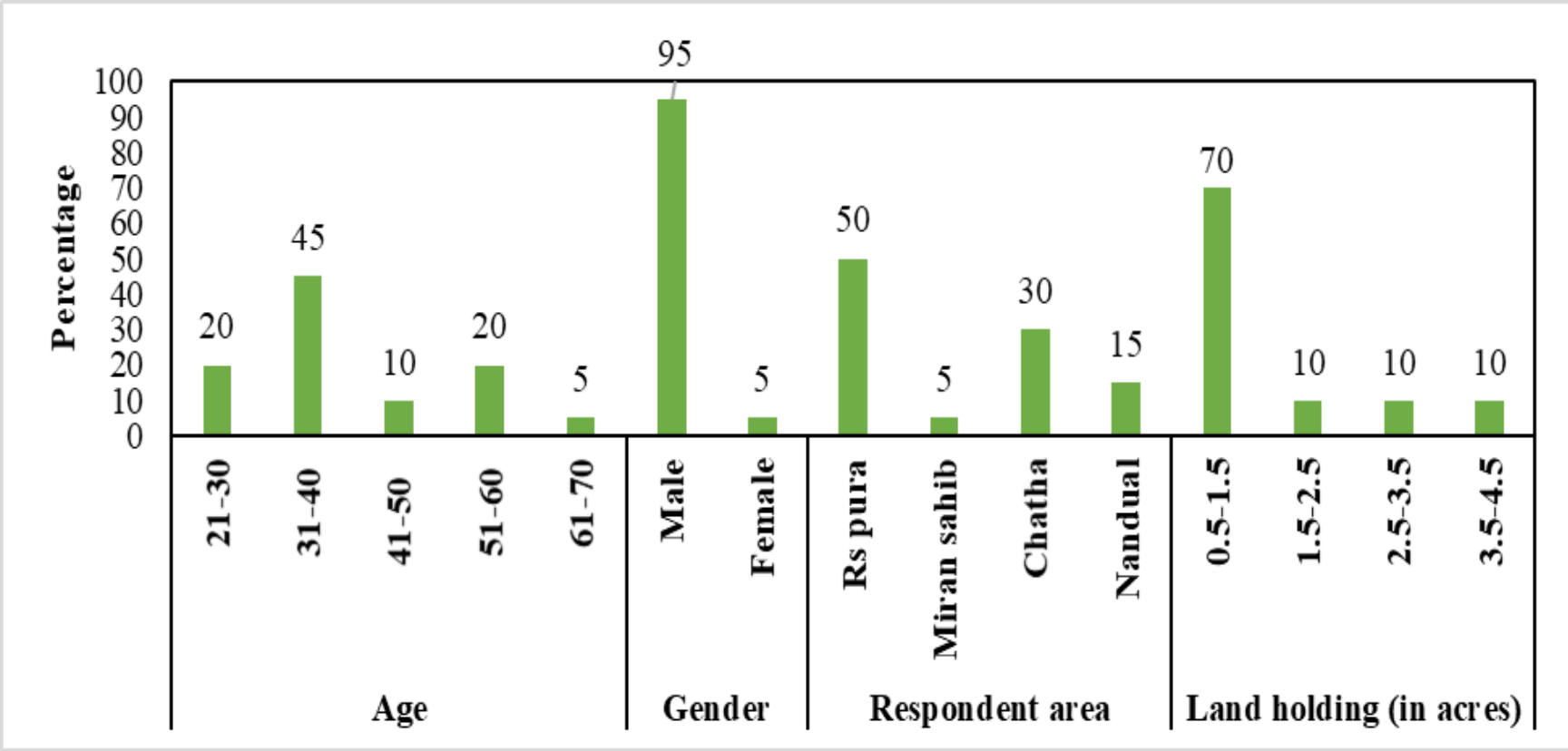

Fig 5.2: **Demographic details of producers**

Marketing details of producers

Table 5.3 and Figure 5.3 revealed that producers sell 70 per cent paddy to processors and 30 per cent to commission agents. 35 per cent buyers are from within the village and 65 per cent from within the block. During the last season 60 per cent producers sold 1-10 Quintals of paddy, 15 per cent sold 10-20 Quintals, 10 per cent sold 20-30 Quintals and 5 per cent sold 30-40 Quintals. 15 per cent producers sold paddy at price ranging from 25-30 Rs/Kg, 15 per cent at 30-35 Rs/Kg, 65 per cent at 35-40 Rs/Kg and 5 per cent at 40-45 Rs/Kg.

Table 5.3: Marketing details of producers

Marketing Details	Unit	Frequency	Percentage
Buyer	Processor	14	70
	Commission Agent	6	30
Buyer location	Within Village	7	35
	Within Block	13	65
	Within District	0	0
	Within State	0	0
Sale during last season (In Quintals)	1-10	12	60
	10-20	3	15
	20-30	2	10
	30-40	1	5
Selling price (In Rs/Quintal)	2500-3000	3	15
	3000-3500	3	15
	3500-4000	13	65
	4000-4500	1	5

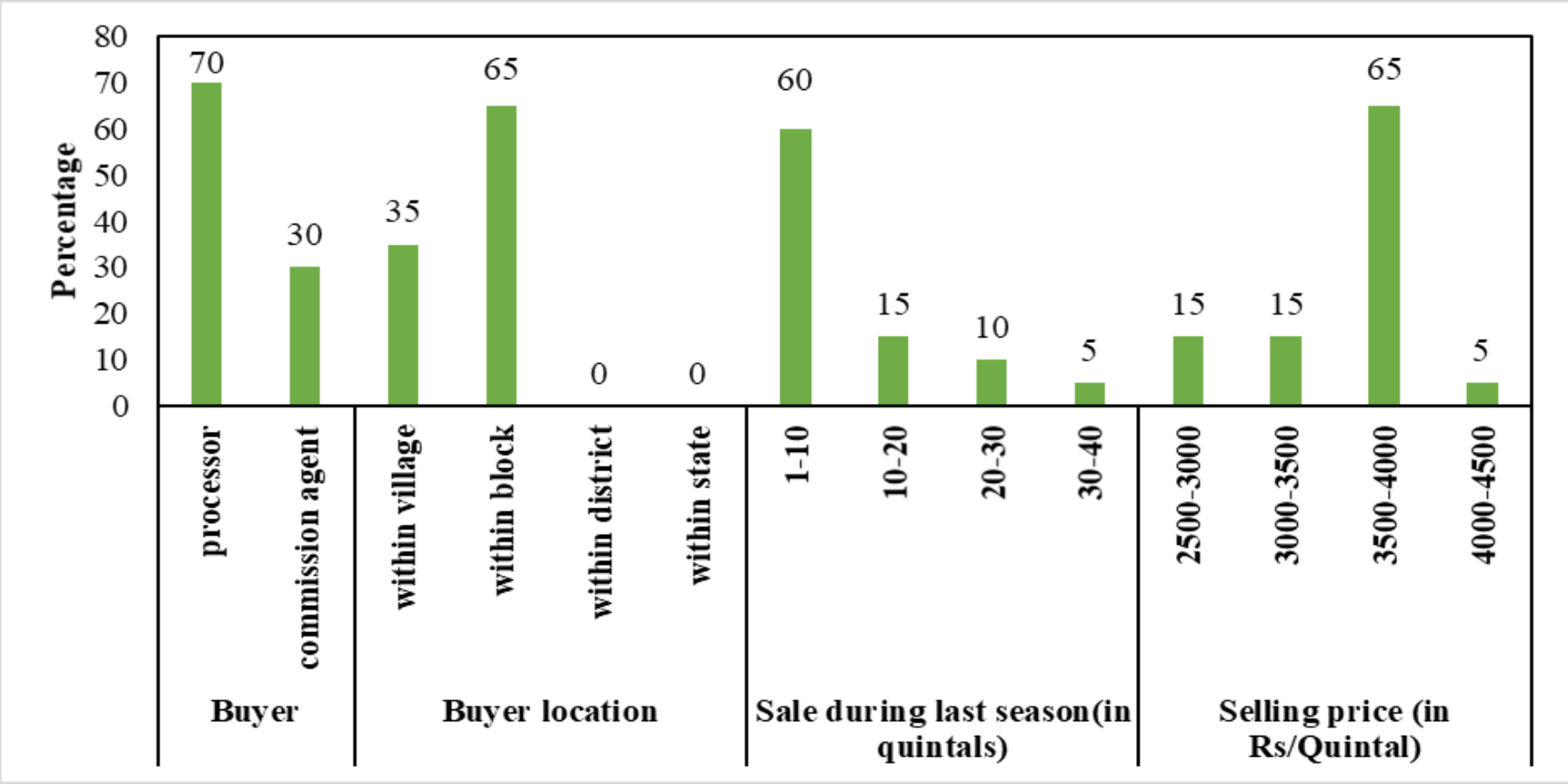

Fig 5.3: Marketing details of producers

Demographic details of commission agents

Table 5.4 and Figure 5.4 revealed that out of 5 commission agents, 40 per cent lies under the age group 31-40 and 60 per cent lies under 41-50. 100 per cent respondents were male.

Table 5.4: Demographic details of commission agents

Demographics	Unit	Frequency	Percentage
Age	31-40	2	40
	41-50	3	60
Gender	Male	5	100
	Female	0	0

Fig 5.4: Demographic details of commission agents

Marketing details of commission agents

Table 5.5 and Figure 5.5 revealed that Commission agents buy paddy from local producers. 20 per cent of commission agents buy 21-30 Tonnes/year, 20 per cent buy 31-40 Tonnes/year and 60 per cent buy 41-50 Tonnes/year. 20 per cent commission agents purchase rice at price ranging from 30-35 Rs/Kg, 40 per cent at 35-40 Rs/Kg and 40 per cent at 40-45 Rs/Kg. 20 per cent wholesalers sold Rice at price ranging from 35-40 Rs/Kg, 40 per cent at 40-45 Rs/Kg and 40 per cent at 45-50 Rs/Kg.

Table 5.5: Marketing details of commission agents

Marketing details	Unit	Frequency	Percentage
Quantity purchased (in tonnes)	21-30	1	20
	31-40	1	20
	41-50	3	60
Buying price (in Rs/Quintal)	3000-3500	1	20
	3500-4000	2	40
	4000-4500	2	40
Selling price (in Rs/Quintal)	3500-4000	1	20
	4000-4500	2	40
	4500-5000	2	40

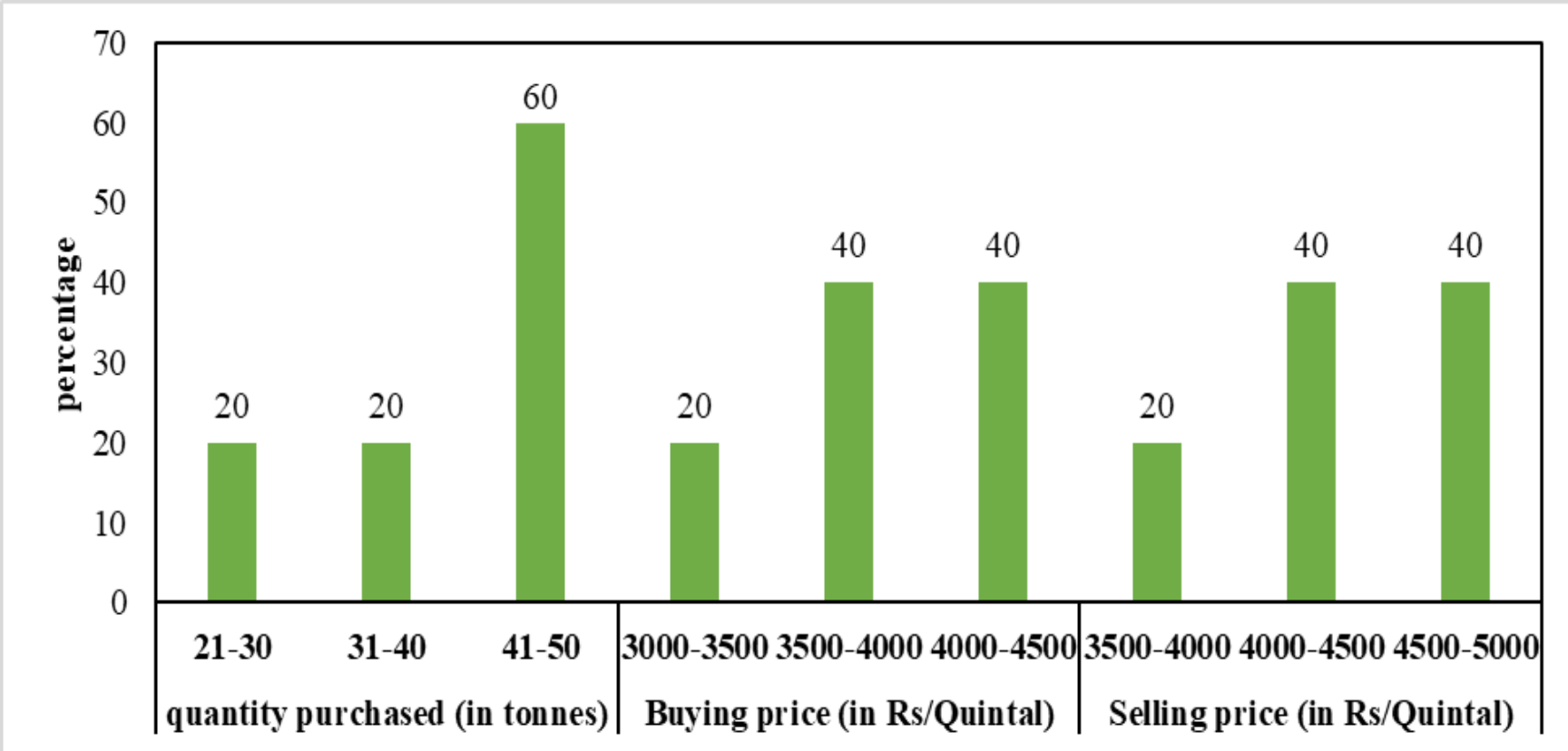

Fig 5.5: Marketing details of commission agents

Marketing details of processors

Table 5.6 revealed that the processors are Jai Durga Rice & Gen Mills, Zamindara Rice & Gen Mills, Sardhar Rice & Gen Mills, J.N. Rice & Gen Mills and Asha Rice & Gen Mills belongs to RS Pura. Their outbound products are White Rice, Brown Rice, Broken Rice, Bran and Husk. Processors buy paddy from local commission agents and farmers within 15 km radius. They bought around 1500-2000 tonnes/year. They purchase paddy as an input or raw material at price 40-50 Rs/Kg. They prefer varieties of Basmati like 370, SARBATI. The raw materials are placed under roofed storage which has capacity ranges 2420-4840 Sq. Yards. They sell White Rice to local retailers, universities, supermarkets and wholesalers; Brown Rice to Companies like India-mart, Dabur, LT Foods etc. at places like Delhi, Panipat and Punjab; Broken Rice to local Retailers, dealers and poultry; Bran to local dealers and Industries and Husk to local farmers, Dealers and Industries. White rice and broken rice are combinedly processed at the rate of 1000-5000 tonnes/year and sold at the rate of 80-100 Rs/Kg, brown rice at the rate of 100-500 tonnes/year and sold at the rate of 60-80 Rs/Kg, bran at the rate of 20-60 tonnes/year and sold at the rate of 12-15 Rs/Kg and husk at the rate of 150-200 tonnes/year and sold at the rate of 1-2 Rs/Kg. They use three types of packaging i.e., 5kg at the rate of 10 Rs/bag; 10Kg at the rate of 15 Rs/bag and 25 kg at the rate of 20 Rs/bag. They make profit around 200-500 Rs/Quintal. They get financial support from J&K bank from Rice Plus Scheme.

Table 5.6: Marketing details of processors

List of Processing Industries	Jai Durga Rice & Gen Mills	
	Zamindara Rice & Gen Mills	
	Sardhar Rice & Gen Mills	
	J.N. Rice & Gen Mills	
	Asha Rice & Gen Mills	
Inbound	Dealing	Farmers and Commission Agents Within 15km Radius
	Quantity Bought (Tons/Year)	1500-2000
	Price Paid (Rs/Kg)	40-50
	Type of Storage	Roofed
	Storage Capacity (Sq. Yards)	2420-4840

	Input	Output
Product Portfolio	Paddy	White Rice
		Brown Rice
		Broken Rice
		Bran
		Husk
List of Machinery Used	**Name**	**Function**
	Shifter	Separates different kinds of paddy.
	Elevator	Receives only grains and weighing, cleaning before moving it forward.
	Separator	Brown rice is separated from paddy.
	Rubber Sheller	Removes husk from the paddy
	Paddy Cleaner	Removes the stones in paddy
	Polisher	Polishes the rice
	Sortex	Common name (Colour Sorter) Separate the items by their colours.
	Weighing Machine	Weigh the end product before packaging
Packaging	**Type of Packaging**	**Cost (Rs/Bag)**
	5kg	10
	10kg	15
	25kg	20
Outbound	Product	Production/Year
	White Rice	1000-1500 Tonnes
	Broken Rice	
	Brown Rice	100-500 Tonnes
	Bran	20-60 Tonnes
	Husk	150-200 Tonnes
Price	**Product**	**Price/Kg**
	White Rice	80-100
	Broken Rice	80-90
	Brown Rice	60-80
	Bran	12
	Husk	2
Profit	Rs/Quintal	200-500
Financial Support	Banks	J&K Bank - Rice Plus Scheme

Demographic details of wholesalers

Table 5.7 and Figure 5.6 revealed that out of 5 wholesalers, 40 per cent lies under age group 41-50, 40 per cent lies under 51-60 and 20 per cent lies under 61-70. 100 per cent were male. 100 per cent respondents belong to warehouse.

Table 5.7: Demographic details of wholesalers

Demographics	Unit	Frequency	Percentage
Age	31-40	2	40
	41-50	2	40
	51-60	1	20
Gender	Male	5	100
	Female	0	0
Respondent area	Warehouse	5	100

Fig 5.6: Demographic details of wholesalers

Marketing details of wholesalers

Table 5.8 and Figure 5.7 revealed that wholesalers buy rice from local processors and processors from Haryana and Punjab. 60 per cent of wholesalers buy 50-60 Tonnes/year, 40 per cent buy 60-70 Tonnes/year. 20 per cent wholesalers purchase rice at price ranging from 35-40 Rs/Kg, 40 per cent at 40-45 Rs/Kg and 40 per cent at 45-50 Rs/Kg. 20 per cent wholesalers sold Rice at price ranging from 40-45 Rs/Kg, 40 per cent at 45-50 Rs/Kg and 40 per cent at 50-55 Rs/Kg.

Table 5.8: Marketing details of wholesalers

Marketing details	Unit	Frequency	Percentage
Quantity purchased (in tonnes)	50-60	3	60
	60-70	2	40
Buying price (in Rs/Quintal)	3500-4000	1	20
	4000-4500	2	40
	4500-5000	2	40
Selling price (in Rs/Quintal)	4000-4500	1	20
	4500-5000	2	40
	5000-5500	2	40

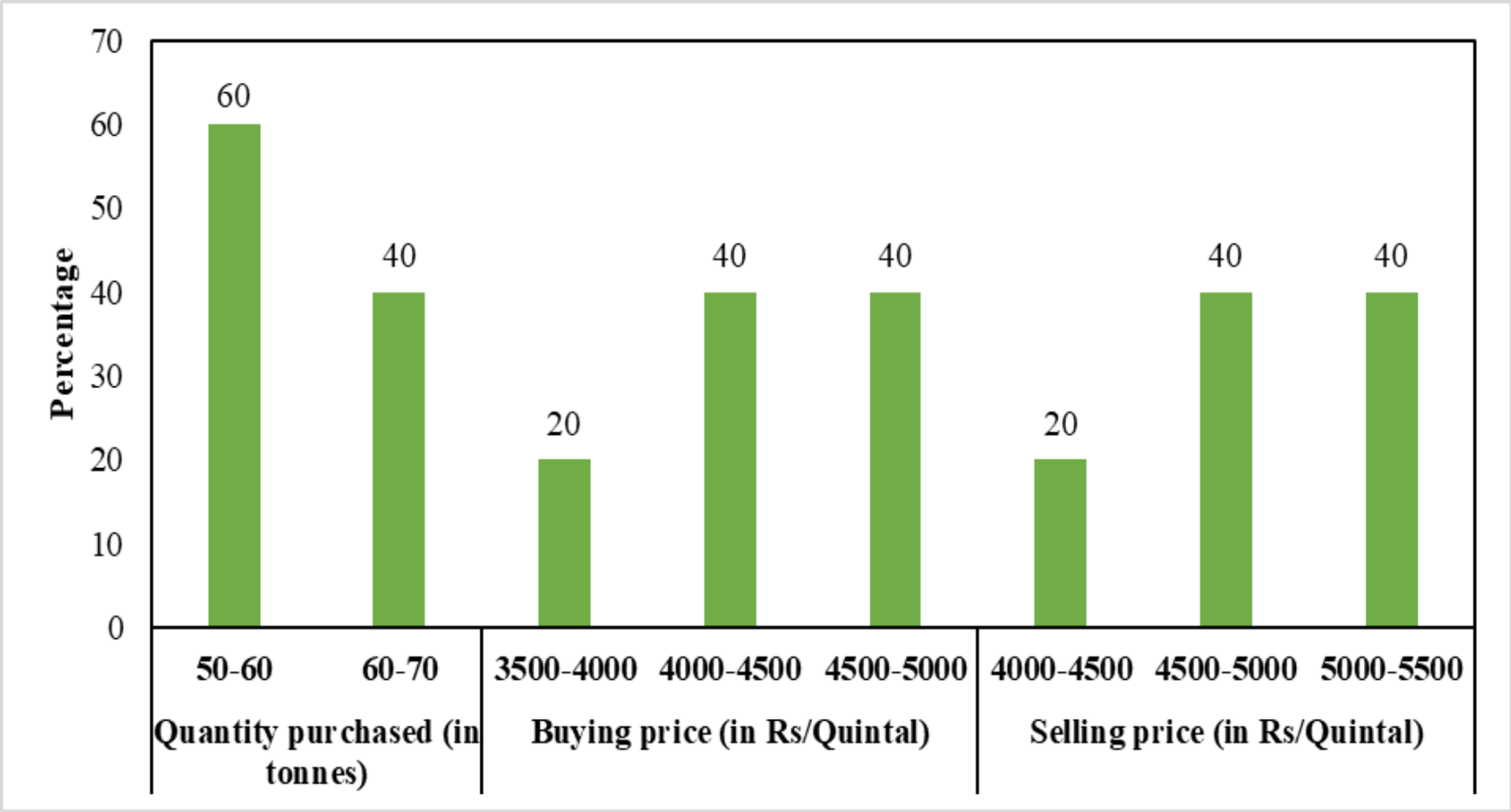

Fig 5.7: Marketing details of wholesalers

Demographic details of retailers

Table 5.9 and Figure 5.8 revealed that out of 5 Retailers, 20 per cent lies under 31-40, 40 per cent lies under 41-50 and 40 per cent lies under 51-60. 100 per cent are male. 20 per cent respondents belong to Chatha, 40 per cent belongs to Miran sahib, 40 per cent belongs to RS Pura.

Table 5.9: Demographic details of retailers

Demographics	Unit	Frequency	Percentage
Age	31-40	1	20
	41-50	2	40
	51-60	2	40
Gender	Male	5	100
	Female	0	0
Respondent area	Rs Pura	2	40
	Miran Sahib	2	40
	Chatha	1	20

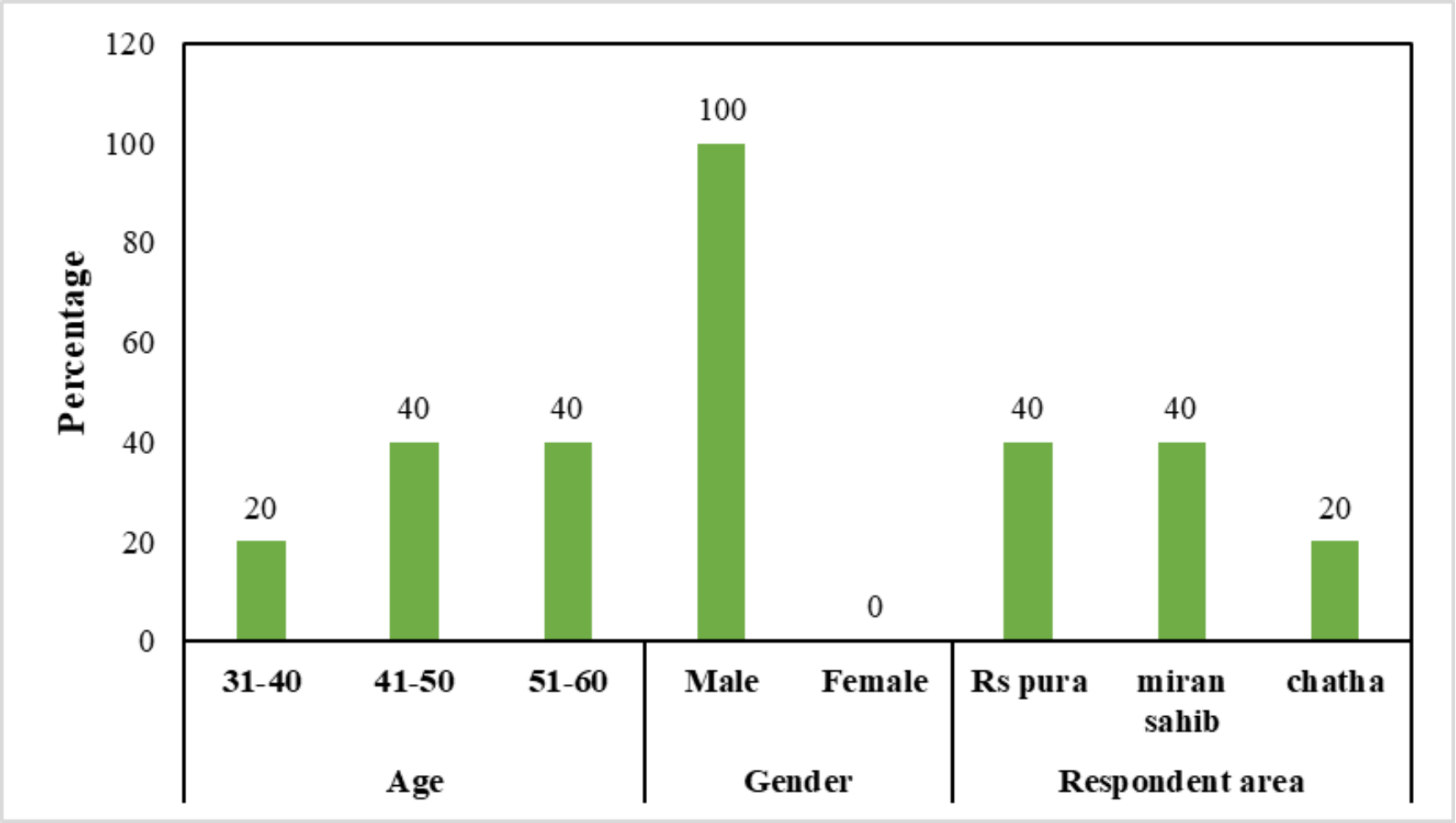

Fig 5.8: Demographic details of retailers

Marketing details of retailers

Table 5.10 and Figure 5.9 revealed that retailers buy rice from ware house in Jammu and rice mills in RS Pura. 40 per cent of consumers buy 1-5 Quintals/Month, 40 per cent buy 6-10 Quintals/Month, 20 per cent buy 16-20 Quintals/Month. 20 per cent retailers purchase rice at price ranging from 40-45 Rs/Kg, 40 per cent at 45-50 Rs/Kg and 40 per cent at 50-55 Rs/Kg. 20 per cent retailers sold rice at price ranging from 45-50 Rs/Kg, 40 per cent at 50-55 Rs/Kg and 40 per cent at 55-60 Rs/Kg.

Table 5.10: Marketing details of retailers

Marketing details	Unit	Frequency	Percentage
Quantity purchased (in Quintal)	1-5	2	40
	6-10	2	40
	11-15	0	0
	16-20	1	20
Buying price (in Rs/Quintal)	4000-4500	1	20
	4500-5000	2	40
	5000-5500	2	40
Selling price (in Rs/Quintal)	4500-5000	1	20
	5000-5500	2	40
	5500-6000	2	40

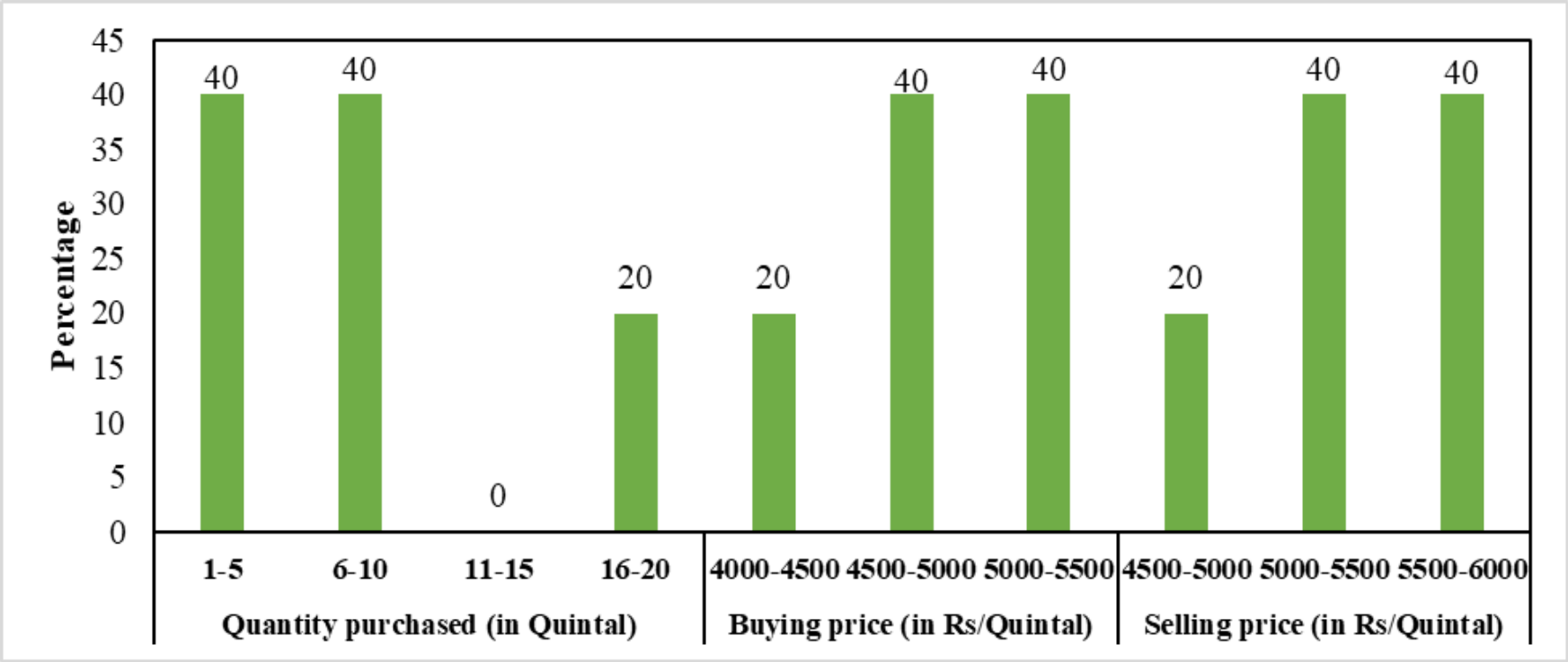

Fig 5.9: Marketing details of retailers

Demographic details of consumers

Table 5.11 and Figure 5.10 revealed that out of 25 consumers, 4 per cent lies under the age group 11-20 Years, 8 per cent lies under the age group 21-30 years, 30 per cent lies under 31-40 years, 12 per cent lies under 41-50 years, 12 per cent lies under 51-60 years 20 per cent lies under 61-70 years and 4 per cent lies under 71-80 years. 60 per cent are male and 40 per cent are female. 56 per cent respondents belong to Chatha, 12 per cent belongs to Chohala, 12 per cent belongs to RS Pura, 12 per cent belongs to Gagiyan, 4 per cent belongs Trikuta and 4 per cent belongs to Badror.

Table 5.11: Demographic details of consumers

Demographics	Unit	Frequency	Percentage
Age	11-20	1	4
	21-30	2	8
	31-40	10	40
	41-50	3	12
	51-60	3	12
	61-70	5	20
	71-80	1	4
Gender	Male	15	60
	Female	10	40
Respondent area	Chatha farm	14	56
	Chohala	3	12
	Rs pura	3	12
	Gagiyan	3	12
	Trikuta	1	4
	Badror	1	4

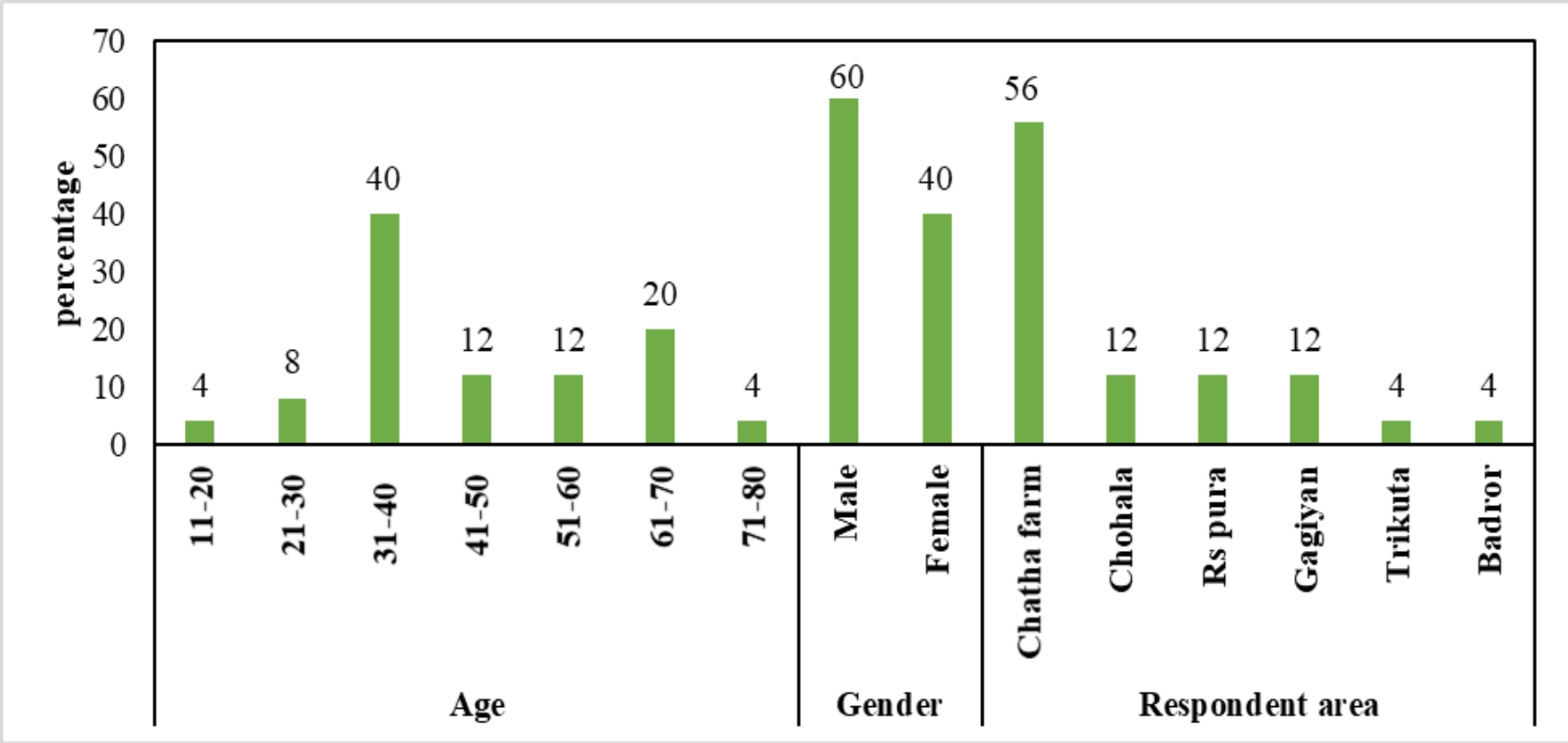

Fig 5.10: Demographic details of consumers

Buying details of consumers

Table 5.12 and Figure 5.11 revealed that consumers buy 50 per cent rice from retailers such as Mom and pop shops, 4 per cent from rice mills and 14 per cent utilize paddy produced in their own farm. 40 per cent of consumers buy 1-5 kgs/month, 40 per cent buy 6-10 kgs/month, 20 per cent buy 16-20 kgs/month. 6.25 per cent consumers purchase rice at price ranging from 31-40 Rs/Kg, 56.25 per cent at 41-50 Rs/Kg, 12.5 per cent at 51-60 Rs/Kg, 18.75 per cent at 61-70 Rs/Kg and 6.25 per cent at 81-90 Rs/Kg.

Table 5.12: Buying details of consumers

Buying details	Unit	Frequency	Percentage
Quantity purchased (in Kgs/month)	1-5	2	40
	6-10	2	40
	11-15	0	0
	16-20	1	20
Seller	Mom and pop store	15	60
	Rice mill	1	4
	Own farm	4	16
Purchasing price (in Rs/Kg)	31-40	1	6.25
	41-50	9	56.25
	51-60	2	12.5
	61-70	3	18.75
	71-80	0	0
	81-90	1	6.25

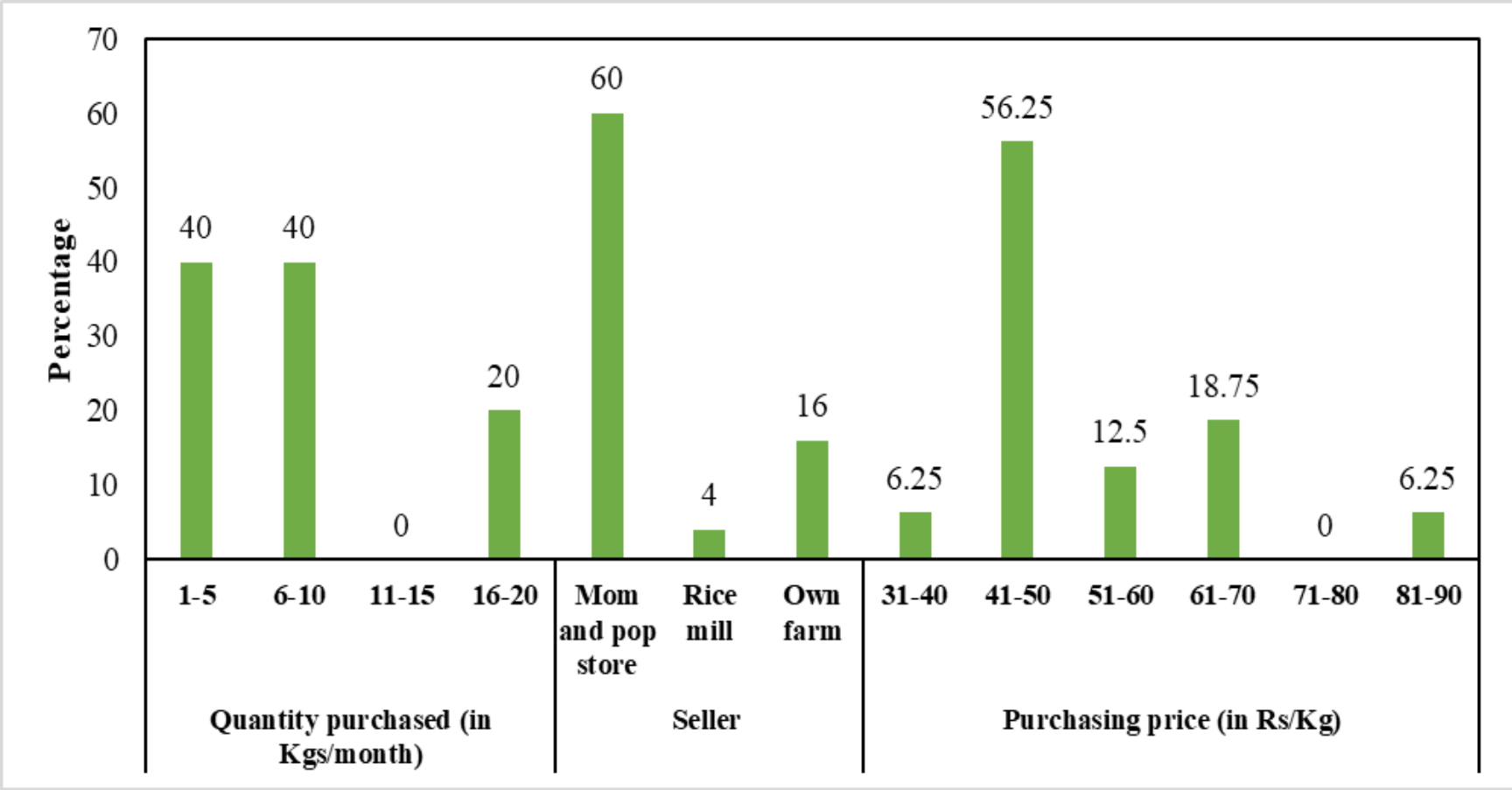

Fig 5.11: Buying details of consumers

5.2 To study and evaluate supply chain model of paddy

Buying pattern of rice in Jammu region

Figure 5.12 revealed the buying pattern of rice in Jammu region. It states that Consumers buy rice from retailers such as Mom and pop shops, rice mills and also few utilize paddy produced in their own farm. Retailers buy Rice from ware house in Jammu and rice mills in RS Pura. Wholesalers buy rice from local processors and processors from Haryana and Punjab. Processors buy paddy from local commission agents and farmers with in 15 km radius. Commission agents buy Paddy from local producers. Producers sell Paddy to Processors and commission agents.

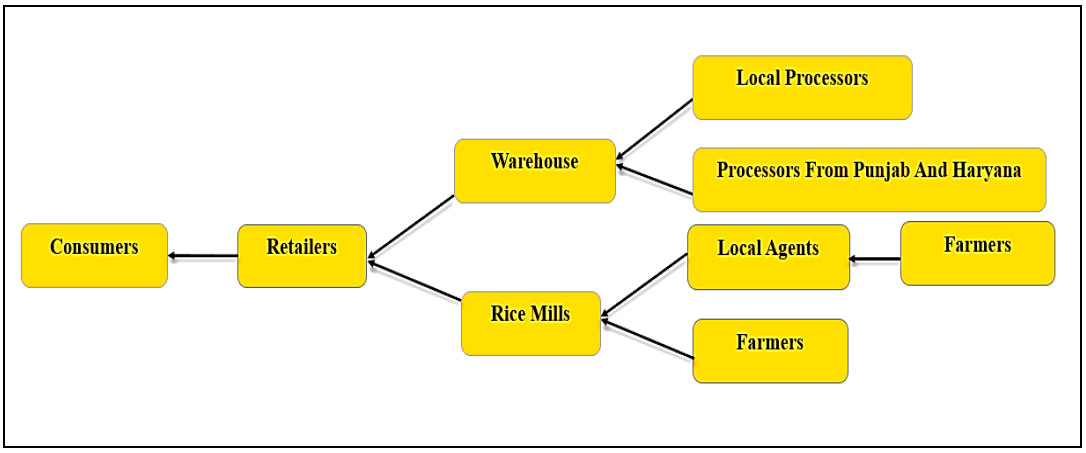

Fig 5.12: Buying pattern of rice in Jammu region

Supply chain of rice in Jammu region

Figure 5.13 revealed the supply chain of rice in Jammu region. It states that Producers sell Paddy to commission agents and Processors i.e., local agents and rice mills where rice mills provide transportation facilities. Commission agents sell paddy to local rice mills which was collected from local producers. Processing is done in mills and their outbound products are White Rice, Brown Rice, Broken Rice, Bran and Husk. They sell White Rice to local retailers, universities, supermarkets and wholesalers; Brown Rice to Companies like India-mart, Dabur, LT Foods etc. at places like Delhi, Panipat, Punjab; Broken Rice to local Retailers, dealers and poultry; Bran to local dealers and Industries and Husk to local farmers, Dealers and Industries.

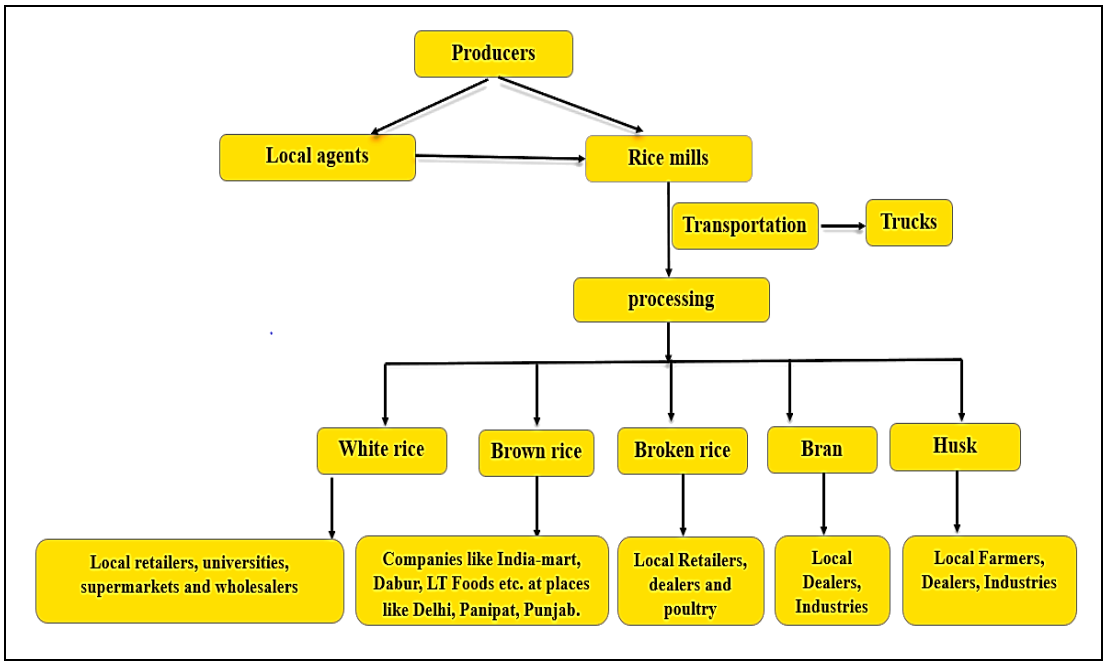

Fig 5.13: Supply chain of rice in Jammu region

5.3 To study the value chain model of paddy adopted by the processors

Figure 5.14 revealed the Value chain model adopted by processors in Jammu region in which it states that all the processing activities where value addition is done takes place. It states that paddy is processed and converted into byproducts such as white rice, brown rice, broken rice, bran and husk.

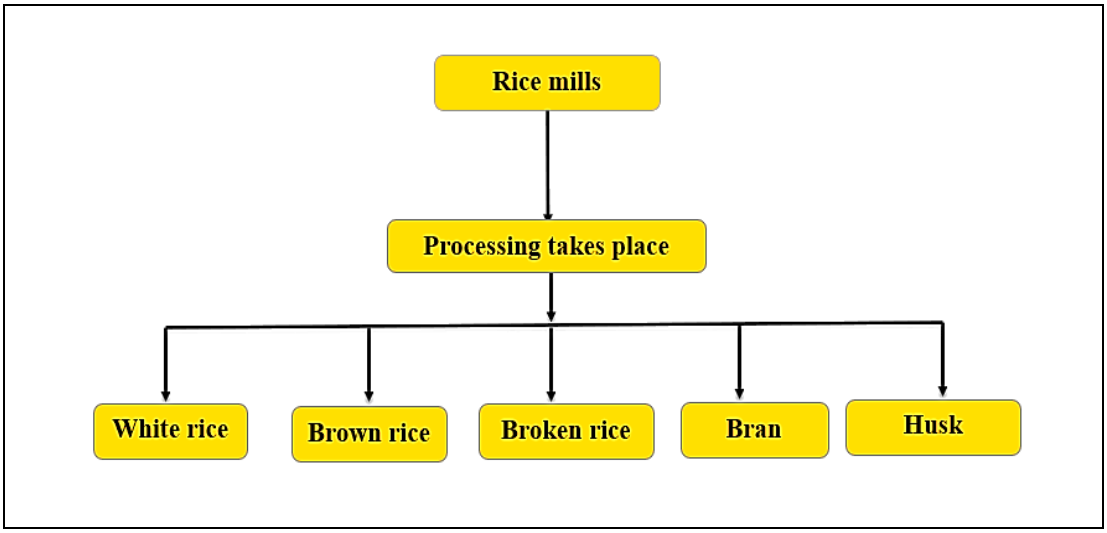

Fig 5.14: Value chain model adopted by processors in Jammu region

Process across value chain of paddy adopted by processors of Jammu region

Figure 5.15 revealed the process across value chain of paddy adopted by processors of Jammu region. It states that value chain process of converting paddy to rice has different steps like Procurement, Storage, Drying for moisture loss, Cleaning & Shelling, De-husking, Whitening, Warehousing & Ageing, Polishing, Colour sorting, Thickness and length grading and Packaging.

- **Procurement** - Paddy procurement from farmers and agents takes place
- **Storage** - Storage of paddy to naturally reduce moisture content
- **Drying for moisture loss** - Mitigate scope of fermentation and bacterial/fungal infections, while simultaneously preserving natural aroma
- **Cleaning & Shelling** - Impurities and unfilled grains are removed
- **De-husking** - Only outer husk is removed, germ & bran is retained
- **Whitening** - Polishing of rice to remove the bran layer
- **Warehousing & Ageing** - Storage of paddy to eliminate moisture and enhance fragrance
- **Polishing** - White rice sent to fine polishers where the loose bran layers are removed to get clean white rice
- **Colour sorting** - Define the shade of color of the grain
- **Thickness and length grading** - Small and large brokens are separated from the head rice
- **Packaging** - Finished rice is packed in bags

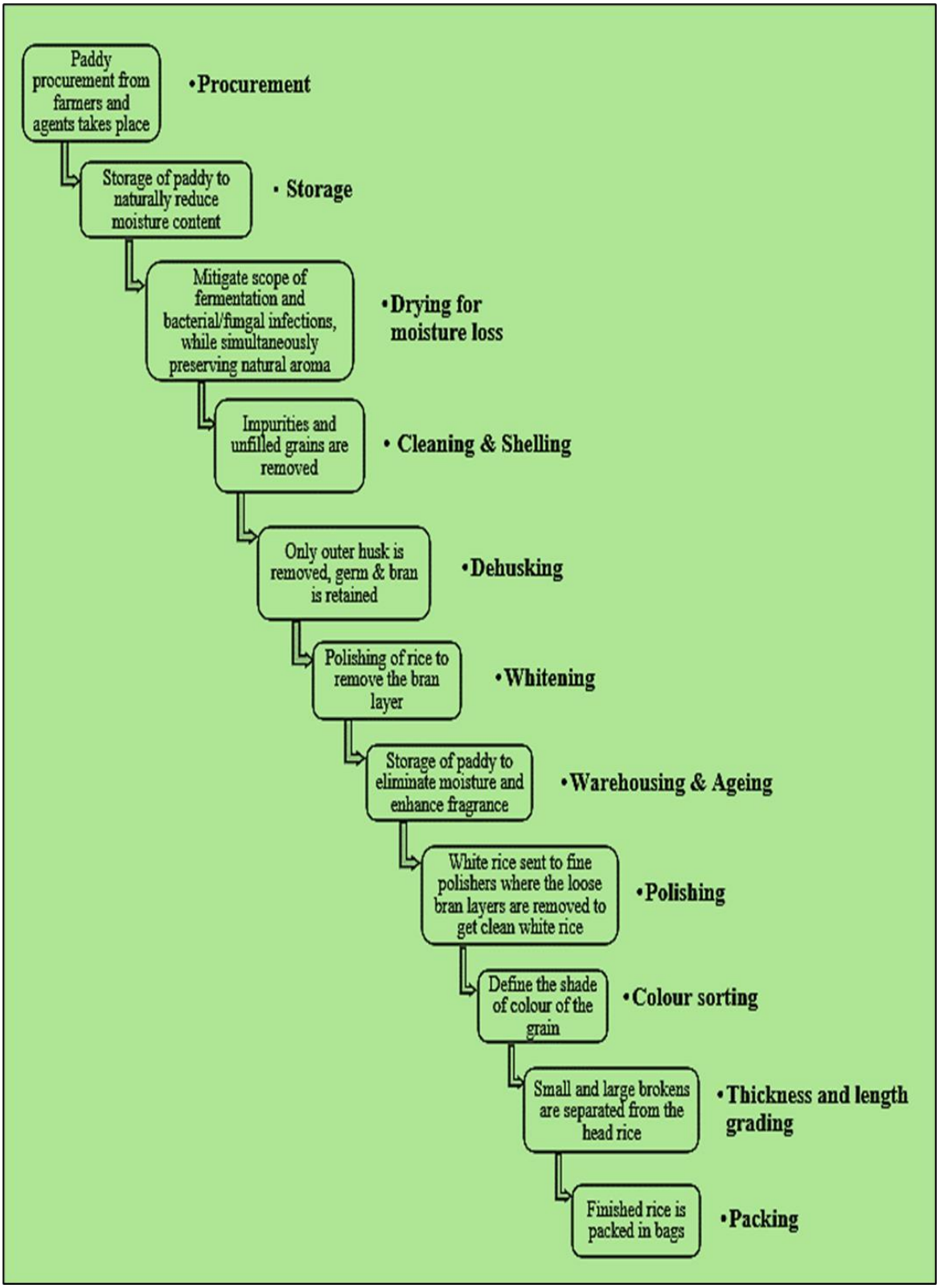

Fig 5.15: Process across value chain of paddy adopted by processors of Jammu region

Process across value chain of paddy adopted by processors of Jammu region

Raw material storage

Paddy dumped into elevators for processing

Processing

Sorting & grading

Packaging

Storage of finished goods.

5.4 To identify the factors influencing the cognitive behaviour of stakeholders

Garret ranking for cognitive behavior of producers of paddy in Jammu region

Table 5.13 and Figure 5.16 revealed that Garret ranking technique for cognitive behaviour of producers, the study concluded in terms of the price ranks number 1, followed by geographical limits, past experience, transparency, transportation, trust worthiness, known buyer and quick payment at 2^{nd}, 3^{rd},4^{th},5^{th},6^{th},7^{th} and 8^{th} positions respectively.

Table 5.13: Garret ranking for cognitive behavior of producers of paddy in Jammu

S. No	Factors	Average	Rank
1	Price	76.75	**I**
2	Trust worthiness	68.8	VI
3	Geographical limits	72.4	II
4	Transportation	69.1	V
5	Past experience	71.1	III
6	Known buyer	67.35	VII
7	Quick payment	42.8	VIII
8	Transparency	70.05	IV

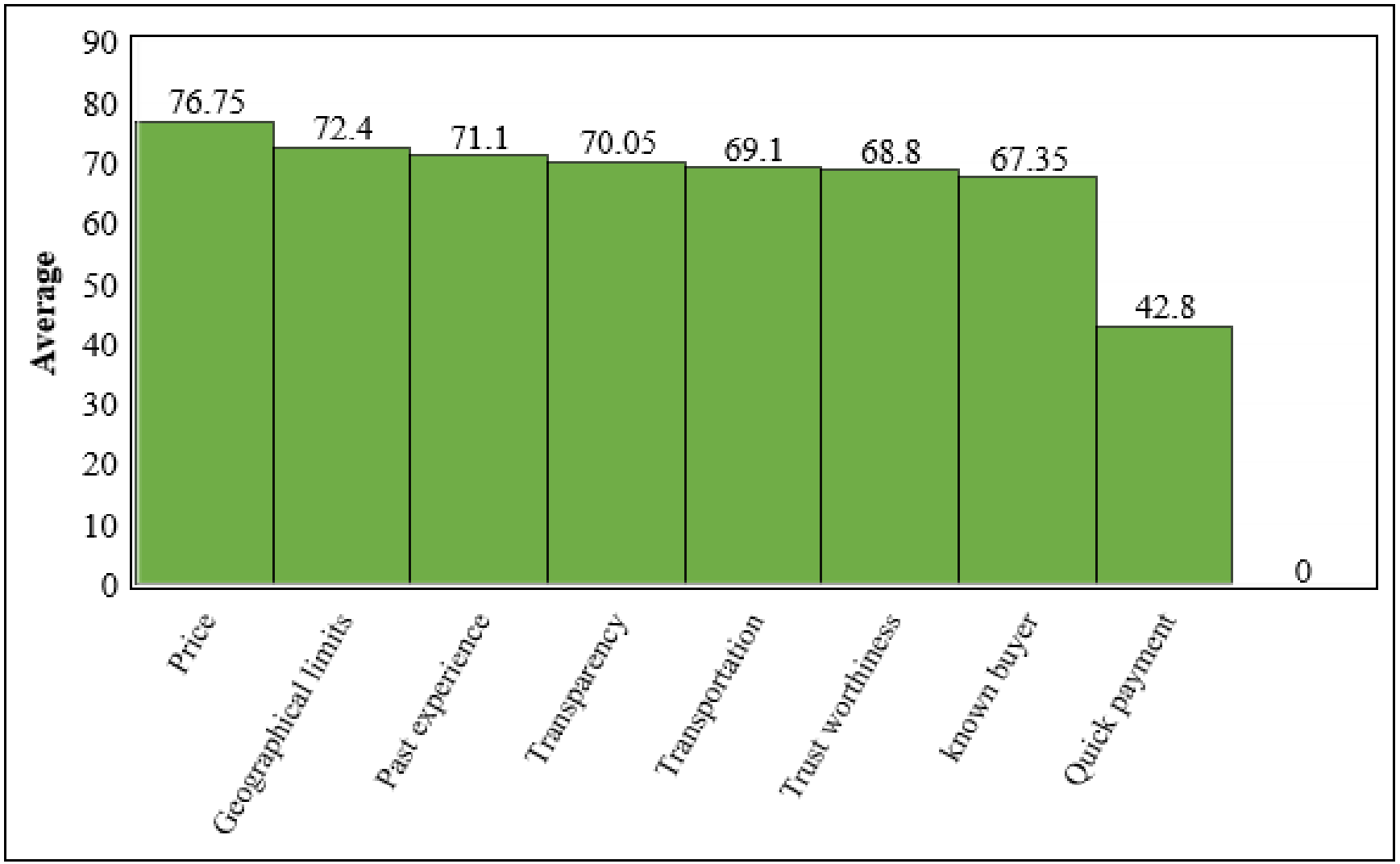

Fig 5.16: Garret ranking for cognitive behavior of producers of paddy in Jammu region

Garret ranking for cognitive behavior of commission agents of paddy in Jammu region

Table 5.14 and Figure 5.17 revealed that Garret ranking technique for cognitive behaviour of commission agent, the study concluded in terms of the quality ranks number 1, followed by price, cost, distance, past experience and quantity at 2^{nd}, 3^{rd},4^{th},5^{th},6^{th} positions respectively.

Table 5.14: Garret ranking for cognitive behavior of commission agents of paddy in Jammu region

S. No	Factors	Average	Rank
1	Quality	77	**I**
2	Quantity	44	VI
3	Price	74.2	II
4	Cost	68	III
5	Distance	65	IV
6	Past experience	49.2	VI

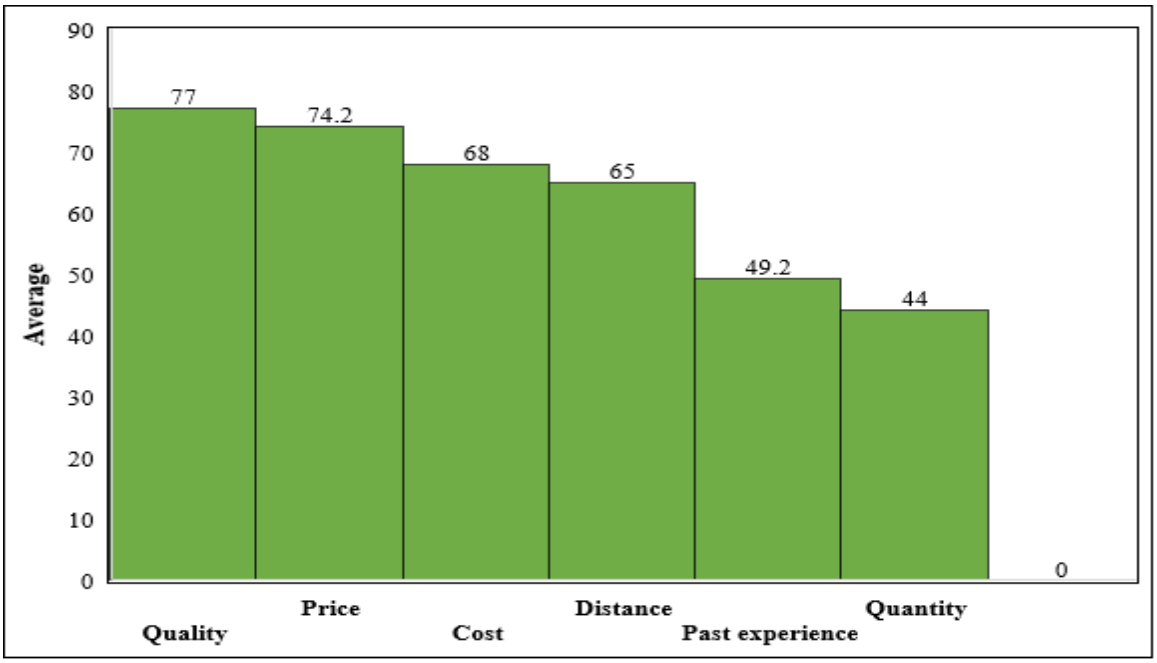

Fig 5.17: Garret ranking for cognitive behavior of commission agents of paddy in Jammu region

Garret ranking for cognitive behavior of processors of rice in Jammu region

Table 5.15 and Figure 5.18 revealed that Garret ranking technique for cognitive behaviour of processors, the study concluded in terms of the quality ranks number 1, followed by price, distance, transportation, cost, past experience and quantity at 2^{nd}, 3^{rd},4^{th},5^{th},6^{th} ,7^{th} positions respectively.

Table 5.15: Garret ranking for cognitive behavior of processors of rice in Jammu region

S. No	Factors	Average	Rank
1	Quality	76.4	
2	Quantity	51.4	VII
3	Price	73.8	II
4	Cost	66.2	V
5	Distance	68.6	III
6	Past Experience	61.6	VI
7	Transportation	66.8	IV

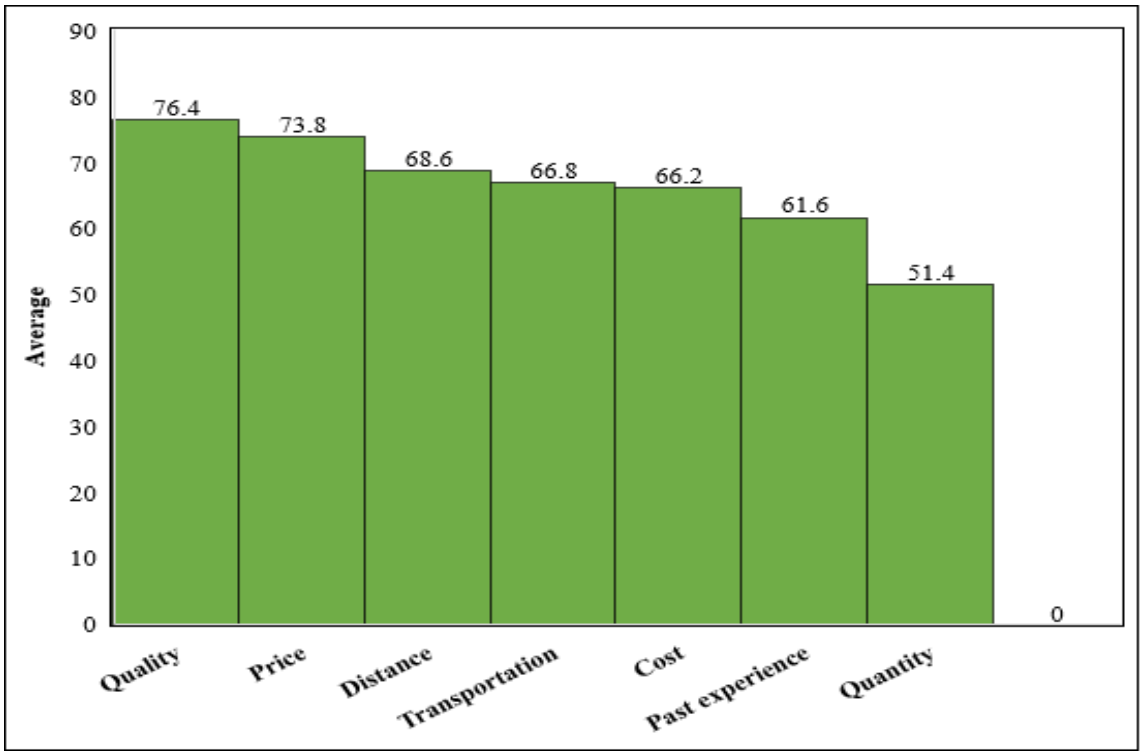

Fig 5.18: Garret ranking for cognitive behavior of processors of rice in Jammu region

Garret ranking for cognitive behavior of traders of rice in Jammu region

Table 5.16 and Figure 5.19 revealed that Garret ranking technique for cognitive behaviour of traders, the study concluded in terms of the quality ranks number 1, followed by cost, price, past experience, quantity and time at 2^{nd}, 3^{rd},4^{th},5^{th},6^{th} positions respectively.

Table 5.16: Garret ranking for cognitive behavior of traders of rice in Jammu region

S. No	Factors	Average	Rank
1	Quality	73.3	I
2	Quantity	63.1	V
3	Price	65.4	III
4	Cost	69.1	II
5	Time	60.8	VI
6	Past Experience	64.7	IV

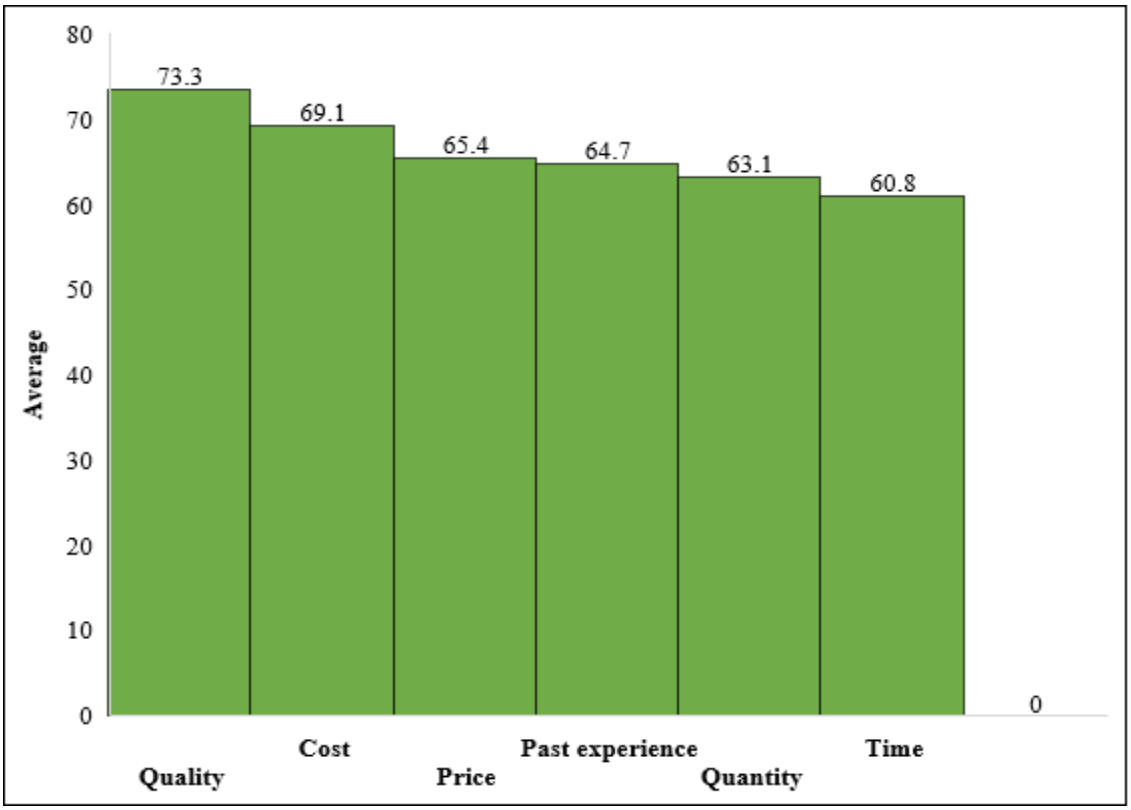

Fig 5.19: Garret ranking for cognitive behavior of traders of rice in Jammu region

Garret ranking for cognitive behavior of consumers of rice in Jammu region

Table 5.17 and Figure 5.20 revealed that Garret ranking technique for cognitive behaviour of traders, the study concluded in terms of the quality ranks number 1, followed by past experience, known buyer, price distance and quantity and time at 2nd, 3rd,4th,5th,6th positions respectively.

Table 5.17: Garret ranking for cognitive behavior of consumers of rice in Jammu region

S. No	Factors	Average	Rank
1	Quality	76.44	I
2	Quantity	57.4	VI
3	Price	61.32	IV
4	Distance	59.44	V
5	Past Experience	67.44	II
6	Known Buyer	63.96	III

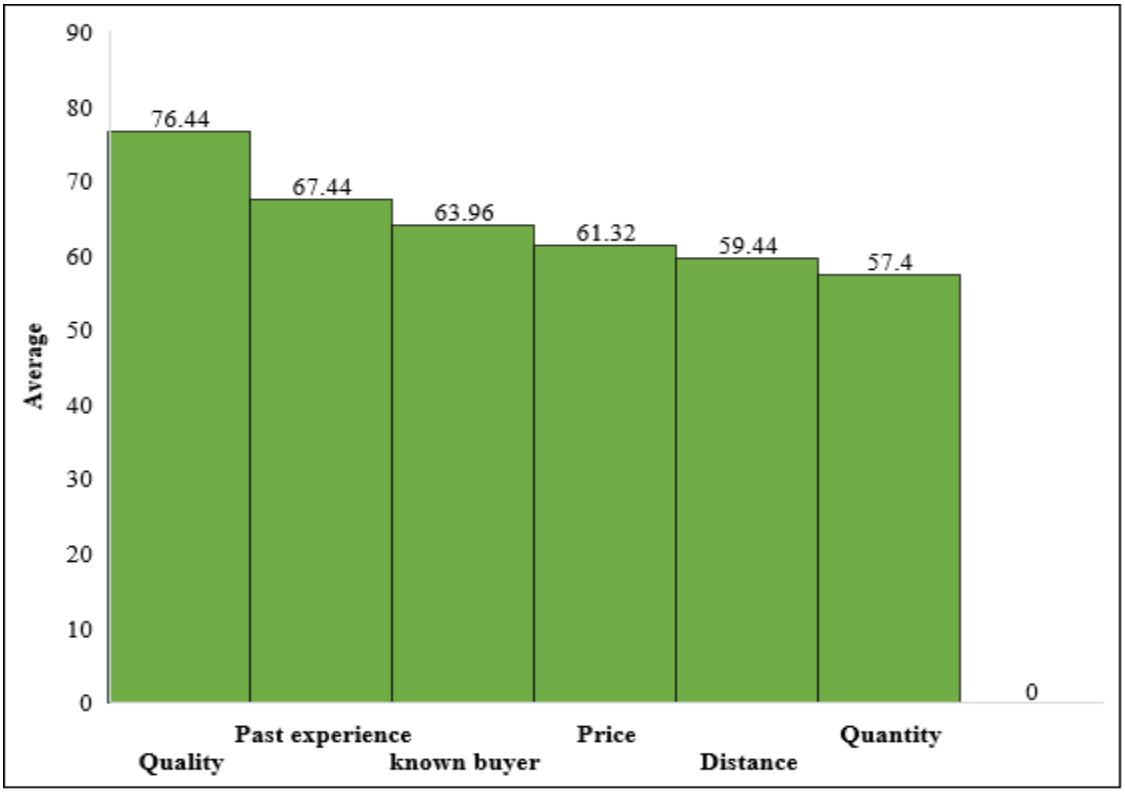

Fig 5.20: Garret ranking for cognitive behavior of consumers of rice in Jammu region

Snapshots during survey

Data collection from producers

Data collection from processors

Data collection from traders

CHAPTER – VI

SUMMARY

AND

CONCLUSION

CHAPTER-VI

SUMMARY AND CONCLUSION

6.1 Summary

The project entitled **"A Study on Value Chain Model & Supply Chain Management of Rice in Jammu Region"** was carried out in different areas of Jammu region in 2019-2020. A total of 65 sample respondents (20 producers, 5 commission agents, 5 processors, 5 retailers, 5 wholesalers and 25 consumers) were selected from the sample area. The information was collected from the sample area. The data collected was subject to analysis for examining the objectives of investigation. The finding of the present investigation has been briefly summarized in this chapter.

6.1.1 To study and evaluate supply chain model of paddy

Jammu region is one of the greatest places for Basmati rice production. Buying pattern of rice in Jammu region states that Consumers buy rice from retailers such as Mom and pop shops, rice mills and also few utilize paddy produced in their own farm. Retailers buy Rice from ware house in Jammu and rice mills in RS Pura. Wholesalers buy rice from local processors and processors from Haryana and Punjab. Processors buy paddy from local commission agents and farmers with in 15km radius. Commission agents buy Paddy from local producers. Producers sell Paddy to Processors and commission agents. The supply chain of rice in Jammu region states that producers sell Paddy to commission agents and Processors i.e., local agents and rice mills Where they provide transportation facilities. Commission agents sell paddy to local rice mills which was collected from local producers. Processing is done in mills and their outbound products are White Rice, Brown Rice, Broken Rice, Bran and Husk. They sell White Rice to local retailers, universities, supermarkets and wholesalers; Brown Rice to Companies like India-mart, Dabur, LT Foods etc. at places like Delhi, Panipat, Punjab; Broken Rice to local Retailers, dealers and poultry; Bran to local dealers and Industries and Husk to local farmers, Dealers and Industries.

6.1.2 To study the value chain model of paddy adopted by the processors

This objective states that all the processing activities where value addition is done takes place. It states that value chain process of converting paddy to rice has different steps like Procurement, Storage, Drying for moisture loss, Cleaning & Shelling, De-husking, Whitening, Warehousing & Ageing, Polishing, Colour sorting, Thickness and length grading and Packaging. the processors are Jai Durga Rice & Gen Mills, Zamindara Rice & Gen Mills, Sardhar Rice & Gen Mills, J.N. Rice & Gen Mills and Asha Rice & Gen Mills belongs to RS Pura. Their outbound products are White Rice, Brown Rice, Broken Rice, Bran and Husk. Processors buy paddy from local commission agents and farmers with in 15km radius. They bought around 1500-2000 tonnes/year. They purchase paddy as a input or raw material, they prefer varieties of Basmati like 370, SARBATI. The raw materials are placed under roofed storage which has capacity ranges from 2420-4840 Sq. Yards. They sell White Rice to local retailers, universities, supermarkets and wholesalers; Brown Rice to Companies like India-mart, Dabur, LT Foods etc. at places like Delhi, Panipat, Punjab; Broken Rice to local Retailers, dealers and poultry; Bran to local dealers and Industries and Husk to local farmers, Dealers and Industries. White rice and broken rice are combinedly processed at the rate of 1000-5000 tonnes/year. Brown rice at the rate of 100-500 tonnes/year. Bran at the rate of 20-60 tonnes/year and husk at the rate of 150-200 tonnes/year. They use three types of packaging i.e., 5kg at the rate of 10 Rs/bag; 10Kg at the rate of 15 Rs/bag and 25 kg at the rate of 20 Rs/bag. They make profit around 200-500 Rs/Quintal. They get financial support from J& k bank from Rice Plus Scheme.

6.1.3 To identify the factors influencing the cognitive behavior of stakeholders

Cognitive behavior of different stakeholders was identified based on Garret ranking technique. For cognitive behaviour of producers, the study concluded in terms of the price ranks number 1, followed by geographical limits, past experience, transparency, transportation, trust worthiness, known buyer and quick payment at 2^{nd}, 3^{rd},4^{th},5^{th},6^{th},7^{th} ^{and} 8^{th} positions respectively. For cognitive behaviour of commission agent, the study concluded in terms of the quality ranks number 1, followed by price, cost, distance, past experience and quantity at 2^{nd}, 3^{rd},4^{th},5^{th},6^{th} positions respectively. For cognitive

behaviour of processors, the study concluded in terms of the quality ranks number 1, followed by price, distance, transportation, cost, past experience and quantity at 2^{nd}, 3^{rd},4^{th},5^{th},6^{th} ,7^{th} positions respectively. For cognitive behaviour of traders, the study concluded in terms of the quality ranks number 1, followed by cost, price, past experience, quantity and time at 2^{nd}, 3^{rd},4^{th},5^{th},6^{th} positions respectively. For cognitive behaviour of traders, the study concluded in terms of the quality ranks number 1, followed by past experience, known buyer, price distance and quantity and time at 2^{nd}, 3^{rd},4^{th},5^{th},6^{th} positions respectively.

6.2 Conclusion

Supply chain plays a very crucial role in the supply of produce from farmers to its end consumers. Supply chain of rice should be very efficient and effective. The present study was carried out with the main aim to study and evaluate supply chain model of paddy, to study the value chain model of paddy adopted by the processors and to identify the factors influencing the cognitive behaviour of stakeholders in Jammu region. The study revealed:

- The storage and transportation facilities in warehouse have been done on their own and the government do not provide any of those facilities.
- Lack of government initiatives is one of the constraints in supply chain of rice in Jammu.
- In Jammu, there is a lack of information flow between the actors of supply chain which is also a constraint.
- In Rice mills, storage facilities for paddy is one of the major constraints.
- Reduction of quality and quantity of produce due to biotic and abiotic stresses.
- Lack of knowledge on digital marketing is one of the main constraints while selling to exporters

- There is a GST imposed only on branded basmati rice, because of that processors who already registered their brand were imposed GST and non-branded basmati doesn't imposed any GST.
- There is an elevation in prices due to involvement of middlemen.
- There is a decline in sale of RS Pura Basmati variety in local market due to Basmati 1121 variety from Punjab.

6.3 Recommendations

- Farmers must be acknowledged with the information where and how processors who directly purchase the produce for a good value.
- The producers should sell their produce directly to the processors without involving the commission agents so the value which is given to the commission agents can be added at the producer level.
- Crop protection like integrated pest management and integrated disease management can be followed at primary level. Selection of good quality seed material also increases quality and quantity at primary level.
- Farmers can form a group and establish an FPO so as to get more income.
- Farmers can be educated about primary processing, so that the quality of commodities can increases which may results in fetching more prices.
- Digital marketing techniques for local processors and traders may increase their efficiency in marketing as well as to generate income from their produce.
- Government should provide a Minimum Support Price for Basmati rice.

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APPENDIX

Sher-e-Kashmir University of Agricultural Sciences and Technology, Jammu

Division of Agricultural Economic and Agri-Business Management

SCHEDULE/QUESTIONNAIRE

Producers

1	**Farmer name**		
2	**Address**		
3	**Marketing**		
3.a	**Commission agents**	**Quantity (kg)**	**Price (Rs)**
	i. Within village ii. within block iii. within district iv. within state		
3.b	**Processors**	**Quantity (kg)**	**Price (Rs)**
	i. Within village ii. within block iii. within district iv. within state		
4	**Constraints**		
5	**Factors influencing their behaviour in selling their product**		
	a.		
	b.		
	c.		

Commission agent

1	**Basic information:**		
a	**Name:**		
b	**Phone number:**		
c	**Village name:**		
2	**Selling and buying pattern:**		
	Commodity		
	Quantity:		
	From whom:		
	Price:		
	To whom:		
	Price:		
3	**Constraints:**		
4	**Factors influencing their behavior in selling their product**		
	a.		
	b.		
	c.		

Traders

1	**Basic information**		
a	**Name**		
b	**Phone no**		
c	**Address**		
2	**Commodity details**		
a	**Buying pattern**		
	Quantity(qt)		
	From whom		
	Price		
b	**Selling pattern**		
	Quantity(qt)		
	To whom		
	Price		
	Profit		
3	**Financial support**		
a	**Banks**		
b	**Private agencies**		
c	**Money lenders**		
d	**Amount (Rs)**		
e	**Interest (Rs)**		
4	**Rent for storage (Rs)**		
5	**Names of processing industries dealing with**		
6	**Constraints**		

Consumers

1	**Basic information**	
a	**Name**	
b	**Age**	
c	**Phone no**	
d	**Address**	
2	**Quantity(kg) they buy**	
a	**From whom**	
b	**From where**	
c	**Price paid(Rs)**	
d	**Products they used**	
	Product 1	
	Product 2	
	Product 3	
3	**Factors influencing to buy**	
a	**Quality**	
b	**Quantity**	
c	**Brand**	
d	**Price**	

Processors

1	**Basic information**	Name of the industry					
		Name of the owner					
		Phone number					
		Address					
2	**Inbound**		**Inputs of production**				
			Input 1	**Input2**	**Input3**	**Input4**	**Input5**
		From where he is buying produce					
		quantity bought(tons/year)					
		how many loads/ year					
		Type of vehicle					
		type of storage(roofed/open)					
		storage capacity(Sq. yards)					
		storage space/load					
3	**Product Portfolio**	Product1					
		Product2					
		Product3					
		Product4					
		Product5					
4	**Processing plant**	quantity processed per day					
		process involved(value Addition)	**1**	**2**	**3**	**4**	**5**
		List of Machinery used	**Function**				
		Machinery maintenance					

		cost			
		Type of packaging(end product)			
		Packaging material cost			
		type of Storage			
		storage capacity(Sq. yards)			
5	**Out turn/ton of input**	**Product Portfolio**	**Unit cost of product(Rs/ton)**		
		Product1			
		Product2			
		Product3			
		Product4			
6	**Out-bound**	**Product**	**Production/year**	**To whom**	**Type of Transport**
		Product1			
		Product2			
		Product3			
		Product4			
7	**Profit**				
8	**Factors influencing their behaviour in selling their product**				
	A				
	B				
	C				
9	**Constraints**				
	Transportation				
	Packaging problems				
	Technology				
	Storage				

CERTIFICATE -IV

Certified that all the necessary correction as suggested by the external examiner and advisory committee have been duly incorporated in the thesis entitled **"A Study on Value Chain Model and Supply Chain Management of Rice in Jammu Region"** submitted by **Ms. Nayak Anamika Devi,** Registration No. **J-18-M-58-ABM.**

Dr. Jyoti Kachroo

Major Advisor& Chairman

Advisory Committee

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Date: 05.02.2021

Head of Division 05.02.2021

Division of Agricultural Economics & ABM

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VITA

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